AstraZeneca

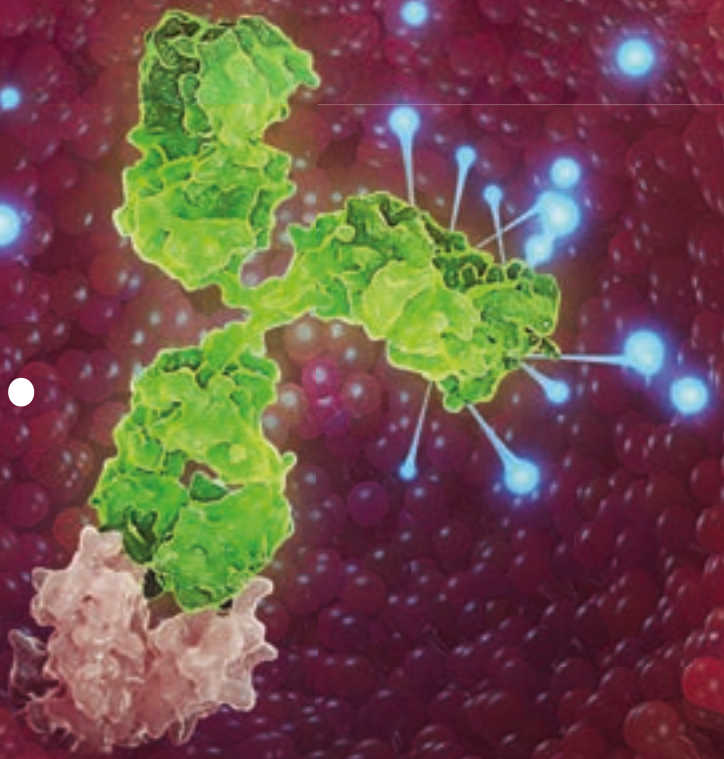
What science can do

AstraZeneca Annual Report and Form 20-F Information 2019

Welcome

We are a global, science-led, patient-focused pharmaceutical company and in this Annual Report we report on the progress we made in 2019 in pushing the boundaries of science to deliver life-changing medicines.

What science can do... Next?



Our strategic priorities are focused on delivering value to patients and society.

Delivering growth and therapy area leadership

by supplying medicines that can transform care and ensuring that they reach patients who need them.

See Delivering growth from page 31.

Accelerating innovative science

in search of solutions that prevent, treat, and even cure, some of the world's most serious health challenges.

See Innovative science from page 25.

Being a great place to work

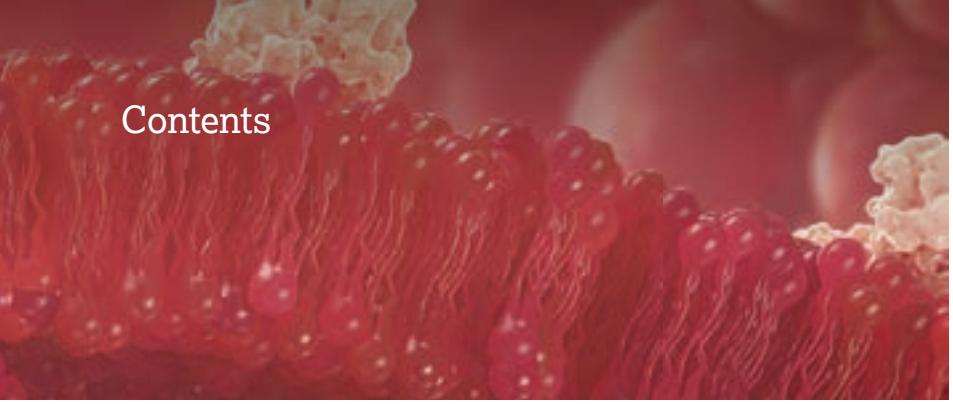
by living our Values and behaviours, delivering as an enterprise team and leading in sustainability.

See A great place to work: Employees from page 44 and Contributing to society from page 49.

Use of terms
In this Annual Report, unless the context otherwise requires, 'AstraZeneca', 'the Group', 'we', 'us' and 'our' refer to AstraZeneca PLC and its consolidated entities.

Front cover image:
Antibody-drug conjugates (ADCs)

ADCs are among the most exciting technologies for the treatment of cancer. AstraZeneca is developing novel ADC targets that include therapy-resistant tumours and cancer stem cells. We are building a library of payloads, and using our antibody engineering expertise for site-specific conjugation and next-generation ADCs.



Contents

Financial highlights

Total Revenue*

Up 10% at actual rate of exchange to $24,384 million (up 13% at CER), comprising Product Sales of $23,565 million (up 12%; 15% at CER) and Collaboration Revenue of $819 million (down 21%; 20% at CER)

2019	**$24,384m**
2018	$22,090m
2017	$22,465m

$24.4bn

Net cash flow from operating activities

Up 13% at actual rate of exchange to $2,969 million

2019	**$2,969m**
2018	$2,618m
2017	$3,578m

$3.0bn

Reported operating profit

Down 14% at actual rate of exchange to $2,924 million (down 16% at CER)

2019	**$2,924m**
2018	$3,387m
2017	$3,677m

$2.9bn

Core operating profit

Up 13% at actual rate of exchange to $6,436 million (up 13% at CER)

2019	**$6,436m**
2018	$5,672m
2017	$6,855m

$6.4bn

Reported EPS

Down 40% at actual rate of exchange to $1.03 (down 44% at CER)

2019	**$1.03**
2018	$1.70
2017	$2.37

$1.03

Core EPS

Up 1% at actual rate of exchange to $3.50 (0% at CER)

2019	**$3.50**
2018	$3.46
2017	$4.28

$3.50

// Denotes a scale break. Throughout this Annual Report, all bar chart scales start from zero. We use a scale break where charts of a different magnitude, but the same unit of measurement, are presented alongside each other.

For more information in relation to the inclusion of Reported performance, Core financial measures and constant exchange rate (CER) growth rates as used in this Annual Report, see the Financial Review from page 78.

* As detailed from page 173, Total Revenue consists of Product Sales and Collaboration Revenue.

Key

For more information within this Annual Report

For more information, see www.astrazeneca.com

BV Denotes sustainability information independently assured by Bureau Veritas

This Annual Report is also available on our website, www.astrazeneca.com/annualreport2019

AstraZeneca at a glance

We are a global, science-led, patient-focused, pharmaceutical company. We have transformed our pipeline and returned to growth. As a result of continued pipeline delivery and commercial execution, we are now entering a new stage in our journey.

This is focused on enhanced innovation and the sustainable delivery of life-changing medicines that improve patient outcomes and health experience.

Our strategic priorities

Strategy from page 17 and Key Performance Indicators from page 20.

Reflect how we are working to achieve our Purpose: to push the boundaries of science to deliver life-changing medicines

1. Deliver Growth and Therapy Area Leadership
2. Accelerate Innovative Science
3. Be a Great Place to Work

A science-led innovation strategy

Innovative science from page 25.

Distinctive R&D capabilities
Small molecules, biologics, protein engineering and innovative delivery devices, as well as new scientific modalities, new technologies and new biology

8
new molecular entities (NMEs) in Phase III/ pivotal Phase II or under regulatory review covering 13 indications

Broad R&D platform in three main areas

Innovative science from page 25 and Therapy Area Review from page 54.

Oncology
Our ambition is to push the boundaries of science to change the practice of medicine, transform the lives of patients living with cancer, and ultimately eliminate cancer as a cause of death

Cardiovascular, Renal & Metabolism
We are committed to the seamless management of heart failure, cardiovascular, renal and metabolic diseases, improving patient outcomes and decreasing the mortality rate

Respiratory
We aim to transform the treatment of respiratory diseases through our inhaled combination medicines, biologics for unmet medical need and scientific advances, with the ambition of achieving remission or even cures for patients

Other Disease Areas
We have medicines and vaccines in other disease areas that have an important impact for patients

Portfolio of specialty and primary care medicines (Product Sales)

$8,667m
37% of total
2018: $6,028m
2017: $4,024m

Sales growth of 44% (47% at CER), including:

Tagrisso sales of $3,189 million, representing growth of 71% (74% at CER)

Imfinzi sales of $1,469 million, representing growth of 132% (133% at CER)

Lynparza sales of $1,198 million, representing growth of 85% (89% at CER)

The performance of legacy medicines included a decline in *Faslodex* sales of 13% (11% at CER) to $892 million, reflecting the launch of multiple generic medicines

$6,906m
29% of total
2018: $6,710m
2017: $7,266m

Sales growth of 3% (6% at CER), including:

Brilinta sales of $1,581 million, representing growth of 20% (23% at CER), due to continued patient uptake for ACS and post-MI

Farxiga sales of $1,543 million, with growth of 11% (14% at CER), reflecting pricing pressure in the US and a sales increase of 40% in Emerging Markets (48% at CER) to $471 million

Crestor sales of $1,278 million, down 11% (8% at CER), reflecting generic competition and the effect of volume-based procurement in China

$5,391m
23% of total
2018: $4,911m
2017: $4,706m

Sales growth of 10% in the year (13% at CER), including:

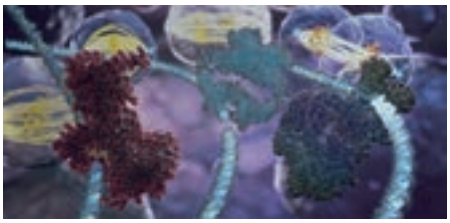
Symbicort sales of $2,495 million, down 3% (stable CER), as competitive price pressures in the US continued

Pulmicort sales of $1,466 million, representing growth of 14% (18% at CER), with Emerging Market sales up 20% (24% at CER) representing 81% of global sales

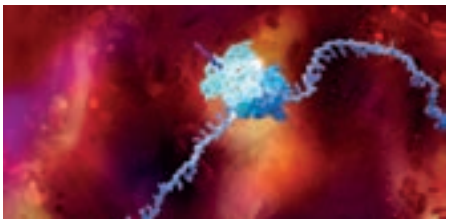
Fasenra sales of $704 million, up by 137% (139% at CER), with strong sales growth in the US, Europe and Japan

$2,601m
11% of total
2018: $3,400m
2017: $4,156m

Product Sales declined by 24% (21% at CER) and represented 11% of total Product Sales, down from 16% in 2018. This included *Nexium* sales down by 13% (11% at CER) to $1,483 million



Oncology. See page 54.



Cardiovascular, Renal & Metabolism. See page 60.

Respiratory. See page 66.

Global commercial presence, with strength in Emerging Markets (Product Sales)

Delivering growth from page 31.

Emerging Markets

$8,165m
35% of total
2018: $6,891m
2017: $6,149m

Product Sales increased by 18% (24% at CER). New Medicines[1] represented 23% of Emerging Market sales in the year, up from 15% in 2018

US

$7,747m
33% of total
2018: $6,876m
2017: $6,169m

Product Sales increased by 13%, reflecting the success of the new Oncology medicines

Europe

$4,350m
18% of total
2018: $4,459m
2017: $4,753m

Product Sales declined by 2% (grew 2% at CER), reflecting a strong performance by our Oncology medicines, offset by a decline in *Nexium* and legacy Respiratory medicines

Established Rest of World

$3,303m
14% of total
2018: $2,823m
2017: $3,081m

Product Sales grew by 17% (18% at CER) reflecting the strong performance of New Medicines in Japan. We are also impacted by divestments in Canada and *Symbicort* analogues competition in Australia

Our talented and diverse employees

Committed to attracting, retaining and developing a talented and diverse workforce united in the pursuit of our Purpose and living our Values

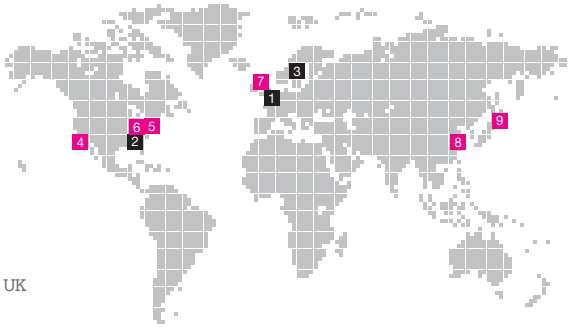
A great place to work: Employees from page 44.

70,600
employees
2018: 64,600
2017: 61,100

45.4%
of our senior roles are filled by women

91
manuscripts published by our scientists in high-impact peer-reviewed journals

>3,100
employees with PhDs



Strategic R&D centres
1. Cambridge, UK (HQ)
2. Gaithersburg, MD, US
3. Gothenburg, Sweden

Other R&D centres and offices
4. South San Francisco, CA, US
5. Boston, MA, US
6. New York, NY, US
7. Alderley Park and Macclesfield, UK
8. Shanghai, China
9. Osaka, Japan

A sustainable business

Committed to operating in a way that recognises the interconnection between business growth, the needs of society and the limitations of our planet

Sustainability from page 51.

Priority 1
Access to healthcare

Priority 2
Environmental protection

Priority 3
Ethics and transparency

100%
of employees trained in Code of Ethics

access to medicine index

CDP
DRIVING SUSTAINABLE ECONOMIES

MEMBER OF
Dow Jones Sustainability Indices
In Collaboration with RobecoSAM

FTSE4Good

Our capital allocation priorities

Striking a balance between the interests of the business, our financial creditors and shareholders, and supporting our progressive dividend policy

Financial Review from page 78.

Distributions to shareholders

Dividends

$3,592m
2018: $3,484m
2017: $3,519m

Proceeds from issue of shares[2]

$(3,525)m
2018: $(34)m
2017: $(43)m

Total

$67m
2018: $3,450m
2017: $3,476m

R&D expenditure

$6,059m
2018: $5,932m
2017: $5,757m

Credit rating (Standard & Poor's)

BBB+
Long-term:
stable outlook

Credit rating (Moody's)

A3
Long-term:
negative outlook

[1] *Brilinta, Tagrisso, Imfinzi, Lynparza, Calquence, Farxiga, Lokelma, Fasenra, Bevespi* and *Breztri*.

[2] In April 2019, the Company completed a placing of 44,386,214 new Ordinary Shares of $0.25 each in the Company. For more information, see page 263.

Chairman's Statement

In the first full year of our return to Product Sales growth, we made good progress in line with our strategy. We anticipate 2020 to be another year of progress.

"Looking ahead, …we will maintain our focus on executing a strategy centred on science and patients."

$2.80

Full-year dividend of $2.80 per share

Broad-based progress

AstraZeneca's financial performance in 2019 reflected a year of innovation for patients. Results from our New Medicines[1] and Emerging Markets accompanied positive news for patients and growing sales in all three of our therapy areas. This balance across our medicines and regions is matched by a balance across primary and specialty care treatments, which, together with our healthy pipeline of candidate medicines, forms a firm foundation for what we believe will be growth in the coming years.

Responding to a changing world

Our return to Product Sales growth also reflects our success in responding to a changing world. It is a world of economic growth and increasing wealth, of a growing and ageing global population and challenged by an increasing burden of chronic and non-communicable diseases.

It is also a world of pricing pressures and of strong competition in which unparalleled scientific and technological advances are transforming both the pharmaceutical sector and people's ability to manage their own health.

Success will come to those companies able to grasp the opportunities offered and overcome the challenges faced. The Board and I are encouraged by AstraZeneca's re-emergence as a science leader, and how it is embracing those opportunities and driving change in the industry.

Nowhere is change more evident than in the US, where we are working with policymakers to ensure patients continue to have access to the medicines they need. We are actively supporting solutions that provide access and affordability while continuing to support scientific innovation. These include efforts to reform the system of rebates, ensuring patients are benefiting from the discounts we provide and the broader implementation of value-based reimbursement models.

Working with stakeholders

We are only able to achieve this because of the strong team Pascal has assembled at AstraZeneca. But driving change only happens as a result of engaging successfully with a wide range of stakeholders beyond our shareholders – employees and patients, healthcare providers and governments, suppliers and the communities in which we operate. We report on how we do that in the Corporate Governance Report from page 104 and I have seen this with my own eyes when representing AstraZeneca across the world.

Leading in sustainability

Leading in science means we have a responsibility to take a lead in applying the science to the world in which we live. It is why I am proud of our Ambition Zero Carbon strategy announced at the World Economic Forum in January 2020 to eliminate emissions by 2025 and be carbon negative across the entire value chain by 2030.

2019 performance and what's next

With Product Sales in 2019 up by 12% (15% at CER), we delivered a year of strong revenue growth. Good progress was also made with a pipeline that produced an extensive number of regulatory approvals and data readouts. Of course, seeking to lead and push the boundaries of science means that sometimes we do not succeed and our results in 2019 reflect an intangible asset impairment following the closure of the Phase III STRENGTH trial for *Epanova* due to its low likelihood of demonstrating a benefit to patients.

So far as 2020 is concerned, we anticipate another year of progress for AstraZeneca with continued focus on improving operating leverage and cash generation. In light of this, the Board reaffirmed its commitment to the progressive dividend policy; with a second interim dividend of $1.90 per share taking the unchanged full-year dividend per share to $2.80.

Our outlook for 2020 reflects our assessment of the Covid-19 virus outbreak and assumes an unfavourable impact lasting up to a few months.

Looking ahead, and as we reinforce our commitment to achieving our long-term climate change and decarbonisation targets, we will maintain our focus on executing a strategy centred on science and patients.

Leif Johansson
Chairman

Chief Executive Officer's Review

AstraZeneca's first full year of returning to Product Sales growth was made possible by our ability to deliver our science to patients. We are now maximising and exploring the full potential of our leading medicines, rapidly advancing the next wave of science and positioning your Company for continued success.

"Underpinning our return to growth has been our science-led innovation."

Science-led growth

In 2019, Product Sales grew by 12% (15% at CER) to $23,565 million, driven by progress in all three of our therapy areas.

Underpinning our return to growth has been our science-led innovation. The panel to the right lists the medicines we have launched from our main therapy areas since 2013. The two we launched in 2019, together with the launch of roxadustat in 2020, brings the total to 12. It is these 12 new medicines that are largely responsible for the 59% growth (62% at CER) in Product Sales of our New Medicines[1] in 2019 to almost $10 billion. New Medicines also represented 42% of total Product Sales, up from 30% in 2018.

2019 was also another exceptional year for our science, with our pipeline producing overwhelmingly positive news for patients. This included a record number of 63 regulatory events, either submissions or approvals for our medicines in major markets. That performance is backed by a healthy pipeline of high potential medicines, with the number of Phase II and Phase III pipeline progressions indicating our ability to deliver longer-term sustainable growth. In 2019, we had 22 pipeline progressions, and an average of 24 progressions in each of the last four years.

Delivering our science for patients

Thanks to the strength of our science, we are reaching patients quickly.

Oncology

As shown in the panel, our Oncology therapy area has delivered six new cancer medicines to patients since 2013 – meeting our 2020 target early.

Of these medicines, *Lynparza*, which we are developing in collaboration with MSD, is now approved in 73 countries and is the industry-leading PARP inhibitor: approved in three tumour types, ovarian, breast and pancreatic, in 2019 *Lynparza* became the only PARP inhibitor to show clinical benefit in a fourth type – prostate. A particular benefit of *Lynparza* is its administration in the 1st-line setting which brings the goal of long-term remission and cure closer. With annual sales of more than $1 billion, *Lynparza* benefited some 15,000 new patients in 2019.

It was also another strong year for *Tagrisso*, which is approved in more than 87 countries and is our largest selling medicine, with more than 68,000 new patients in 2019. And, *Imfinzi*, which is now approved in 15 countries for bladder cancer and in 61 countries for lung cancer, benefited some 25,000 new patients in 2019 and achieved sales of more than $1 billion.

We have a range of clinical trials under way investigating the full potential of our marketed medicines and there are plenty more projects in our pipeline. Of course, in pushing the boundaries of science, we sometimes experience setbacks which, in 2019, included disappointing results from the Phase III trial of *Imfinzi* plus tremelimumab in Stage IV non-small cell lung cancer. Overall, however, we continue to make good progress advancing new and exciting candidate medicines designed to change the practice of medicine and ultimately eliminate cancer as a cause of death.

New medicines launched since 2013 (date of first launch)

Oncology
- *Lynparza* (2014) for ovarian, breast and pancreatic cancer
- *Tagrisso* (2015) for lung cancer
- *Imfinzi* (2017) for lung and bladder cancer
- *Calquence* (2017) for mantle cell lymphoma and chronic lymphocytic leukaemia
- *Lumoxiti* (2018) for hairy cell leukaemia
- *Enhertu* (2019) for breast cancer

CVRM
- *Qtern* (2017) for diabetes
- *Lokelma* (2018) for hyperkalaemia
- Roxadustat (2020) for anaemia

Respiratory
- *Fasenra* (2017) for severe asthma
- *Bevespi Aerosphere* (2017) for chronic obstructive pulmonary disease (COPD)
- *Breztri Aerosphere* (2019) for COPD

[1] *Brilinta* plus *Tagrisso*, *Imfinzi*, *Lynparza*, *Calquence*, *Farxiga*, *Lokelma*, *Fasenra*, *Bevespi* and *Breztri*. Of our remaining recently launched medicines, *Enhertu* and roxadustat will be added to this list in due course, while commercialisation rights of *Lumoxiti* were licensed to Innate Pharma for the US and EU in 2018.

Chief Executive Officer's Review *continued*

59%

59% growth (62% at CER) in Product Sales of our New Medicines in 2019 to almost $10 billion

63

63 regulatory submissions or approvals for our medicines in major markets

45%

Women now make up just over 45% of senior leaders today, compared with 40% in 2012

"By harnessing the unprecedented possibilities of science and technology, by transforming the way we work and by engaging with patients in everything we do, I am confident that we will realise our pipeline's potential to the full and deliver continued success."

Perhaps the most exciting is *Enhertu* which was approved in the US in December for the treatment of HER2-positive breast cancer. This is a difficult to treat cancer and, together with partner Daiichi Sankyo, we are exploring *Enhertu*'s full potential with five ongoing pivotal trials and over 40 clinical trials planned across HER2-expressing cancers.

CVRM

In our CVRM portfolio, *Farxiga*, our treatment for diabetes, is now approved in more than 100 countries. While we received a Complete Response Letter (CRL) from the FDA during the year in respect of type-1 diabetes, the real excitement with this medicine is in following the science to explore its potential to go beyond diabetes and treat patients with heart failure. Here, our trials are demonstrating that *Farxiga* can reduce the risk of heart failure in patients with, and without, diabetes.

We are also following the science in our pipeline by, for example, exploring diseases such as non-alcoholic fatty liver disease, or other innovative approaches, including regenerating the heart by growing heart muscle back.

Respiratory

Finally, in our Respiratory portfolio, *Fasenra* is now approved in more than 50 countries for the treatment of severe asthma with an eosinophilic phenotype. First approved in 2017, it was our first respiratory biologic medicine and has already helped 50,000 patients. We continue to explore *Fasenra*'s potential in treating severe asthma as well as other diseases where eosinophils are believed to play a major role.

Approvals for *Breztri Aerosphere* (PT010) in China and Japan in 2019 on the strength of the Phase III KRONOS trial, were followed by positive results from its Phase III ETHOS trial which showed a significant reduction in the rate of moderate to very severe COPD exacerbations. This evidence will be used in response to the CRL we received from the FDA in response to our regulatory submission. We are also researching tezepelumab which has the potential to treat a broad population of asthma patients currently ineligible for biologic therapies.

Our Respiratory therapy area is expanding to include immunology, where candidate medicines include anifrolumab, a potential treatment for lupus, we hope to bring soon to patients who have only seen one new treatment in some 60 years.

A global, balanced business

The contribution that each of our three therapy areas is making in delivering for patients is symptomatic of diversity and greater balance in our Company: for the first time in 2019 around half our Product Sales were in a specialty care and half in a primary care setting.

Balance is also evident in our global commercial presence, where we operate across all geographies. We have particular strength in Emerging Markets, where Product Sales increased by 18% (24% at CER) in 2019, with growth in China of 29% (35% at CER). In the US, Product Sales increased by 13%, while in Europe they declined by 2% in the year (up by 2% at CER). In Japan, Product Sales increased by 27% (26% at CER).

None of this commercial success would have been possible without the operational excellence that underpinned 106 successful market launches during the year and 31 independent inspections of our manufacturing sites with no critical observations.

Being a great place to work

To be successful, we must remain a great place to work. This is because our innovation requires breakthrough ideas that can only come from people encouraged to be themselves at work, enabled to contribute to their full potential, and empowered to challenge conventional thinking. For us that means being an inclusive and diverse workplace, attracting and retaining the best people. For example, women now make up just over 45% of senior leaders today, compared with 40% in 2012, and we are aiming to reach 50% by 2022.

To ensure our organisation is best able to deliver our ambition, in January 2019, we announced changes that created therapy area-focused R&D units responsible for discovery through to late-stage development – one for Oncology and one for BioPharmaceuticals (CVRM and Respiratory). While we continue to make decisions on a Group-wide basis based on overall therapeutic considerations, these changes have enabled us to follow the science by accelerating promising early-stage assets and life-cycle management programmes, as well as making us more agile and collaborative in the way we work.

Global Product Sales by therapy area

	2019			2018			2017		
	Product Sales $m	**Actual growth %**	**CER growth %**	Product Sales $m	Actual growth %	CER growth %	Product Sales $m	Actual growth %	CER growth %
Oncology	**8,667**	**44**	**47**	6,028	50	49	4,024	19	19
Cardiovascular, Renal & Metabolism	**6,906**	**3**	**6**	6,710	(8)	(8)	7,266	(10)	(10)
Respiratory	**5,391**	**10**	**13**	4,911	4	3	4,706	(1)	(1)
Other Disease Areas	**2,601**	**(24)**	**(21)**	3,400	(18)	(19)	4,156	(18)	(17)
Total	**23,565**	**12**	**15**	21,049	4	4	20,152	(5)	(5)

Working with patients to deliver more

As we accelerate growth, our strategy is focused on exploring the full potential of our leading medicines and advancing our science. For us that means continued innovation – both in our science and the way we work. Throughout this Annual Report and listed to the right are examples of how we are doing that, including ideas which we crowdsourced from employees.

Putting patients at the heart of what we do is central to those efforts and an example of how we live our Values. That means recognising patients as people first and working with them to help us innovate and deliver advances across everything that a patient experiences – from prevention and awareness, diagnosis, treatment and post-treatment to wellness.

As the case studies also indicate, we are using digital technology more generally to transform the way we work and reimagine healthcare across all areas, from R&D to Commercial, and from Operations to our enabling units.

Sustaining the planet

We are a Company that has long recognised the interconnection between business growth, the needs of society and the limitations of our planet. Climate change is an urgent threat to public health, the environment and the sustainability of the global economy. Since 2015, we have reduced our carbon emissions from operations by almost one third and our water consumption by almost one fifth. But now is the time to act even faster and, in January 2020, we announced an ambitious $1 billion programme for zero carbon emissions from our global operations by 2025 and to ensure our entire value chain is carbon negative by 2030. This would bring forward our decarbonisation plans by more than a decade.

This announcement builds on our longstanding commitment to leading in sustainability and contributing to society. For example, 2019 was the fifth anniversary of our Healthy Heart Africa programme. It was also the tenth year of our award-winning Young Health Programme where, with our recently announced partnership with UNICEF, we will have a truly global disease prevention programme working in some of the hardest to reach areas of the world.

Our long-term future

Our decarbonisation plans for the planet are for the long term. Our Company is also for the long term. As well as delivering our science for patients today, we have ambitious future plans built on our healthy pipeline. By harnessing the unprecedented possibilities of science and technology, by transforming the way we work and by engaging with patients in everything we do, I am confident that we will realise our pipeline's potential to the full and deliver continued success.

That confidence stems from the talented team we can draw on in AstraZeneca, as well as our many partners, and the continued support of Leif and the Board of Directors. I am grateful to them all.

Pascal Soriot
Chief Executive Officer

Delivering our strategy

Understanding disease better: Transforming the discovery and development of innovative new medicines. See page 27.

Redefining clinical trials: Making clinical trials better and easier for patients. See page 30.

Improving patient access: Exploring new value-based payment models. See page 36.

Improving outcomes for patients: Establishing Health Innovation Hubs to deliver patient-focused disease management solutions. See page 43.

Being a great place to work: Attracting and retaining the best people. See page 48.

Ambition Zero Carbon: Our strategy to eliminate emissions by 2025 and be carbon negative by 2030. See page 53.

Business model and life-cycle of a medicine

AstraZeneca at a glance summarises our business. In this section, we review our business model – how we create financial and non-financial value and the resources we need in order to bring benefits to patients.

Why AstraZeneca?

We are a global pharmaceutical business which has:

- A science-led innovation strategy
- An R&D platform across small molecules and biologics, as well as new scientific modalities
- Three main therapy areas: Oncology; Cardiovascular, Renal & Metabolism; and Respiratory
- A portfolio of specialty care and primary care medicines
- A global footprint
- A talented and diverse workforce who are committed to our Purpose and who live our Values

Lipid nanoparticle breaking the endosomal membrane to release modified mRNA into the cytoplasm.

Who we are

Our Purpose

We push the boundaries of science to deliver life-changing medicines.

Our Purpose underpins everything we do. It gives us a reason to come to work every day. It reminds us why we exist as a Company. It helps us deliver benefits to patients and create value for shareholders.

A focus on patients.

We aim to improve the entire patient experience and deliver the health outcomes that people care about most so that they can enjoy fulfilling lives. We can do that better if we walk in patients' shoes, listen to their experiences and embed their insights to innovate and strengthen how we work.

Our Values

We follow the science.
We put patients first.
We play to win.
We do the right thing.
We are entrepreneurial.

Our Values determine how we work together and the behaviours that drive our success. They guide our decision making and define our beliefs.

Our Culture

Our Values foster a strong AstraZeneca culture in which our people are empowered and inspired to make a difference to patients, society and our Company. By performing as an enterprise team, committing to life-long learning and development and being champions of inclusion and diversity, we ensure that AstraZeneca is a great place to work. All of this is underpinned by the high ethical standards embodied in our Code of Ethics which we employ when carrying out all aspects of our business globally.

Our Sustainability

We are committed to operating in a way that recognises the interconnection between business growth, the needs of society and the limitations of our planet.

Our sustainability priorities in access to healthcare, environmental protection, and ethics and transparency support the delivery of our business strategy.

Business Review from page 24.

What we do

Our business activities span the entire life-cycle of a medicine.

How we create financial value

Investment

We invest in the discovery, development, manufacturing and commercialisation of our pipeline of innovative small molecule and biologic prescription medicines, including targeted business development through collaboration, in-licensing and acquisitions.

Revenue generation

We generate revenue from Product Sales of our existing medicines and new medicine launches, as well as from our collaboration activities. Our focus is on creating medicines that facilitate profitable future revenue generation, while bringing benefits to patients.

Reinvestment

We reinvest in developing the next generation of innovative medicines and in our business to provide the platform for future sources of revenue in the face of losses of key patents.

Life-cycle of a medicine

Research and development phases – duration: 5–15 years

1. Find potential medicine
> Identify unmet medical need and undertake scientific research to identify potential new medicines.
> Initiate process of seeking patent protection.

2. Pre-clinical studies
> Conduct laboratory and animal studies to understand if the potential medicine is safe to introduce into humans and in what quantities.
> Determine likely efficacy, side effect profile and maximum dose estimates.

3. Phase I trials
> Begin clinical trials with small groups of healthy human volunteers (small molecules) or patients (biologics) to understand how the potential medicine is absorbed into the body, distributed around it and excreted.
> Determine approximate dosage and identify side effects.

4. Phase II trials
> Conduct trials on small- to medium-sized groups of patients to test effectiveness and tolerability of the medicine and determine optimal dose.
> Design Phase III trials to generate data needed for regulatory approvals and pricing/reimbursement globally.

5. Phase III trials
> Engage in trials in a larger group of patients to gather information about effectiveness and safety of the medicine and evaluate the overall benefit/risk profile.
> Initiate branding for the new medicine in preparation for its launch.

6. Regulatory submission and pricing
> Seek regulatory approvals for manufacturing, marketing and selling the medicine.
> Submit clinical data to regulatory authorities (and, if requested, generate further data increasingly in real-world settings) to demonstrate the safety and efficacy of the medicine to enable them to decide whether to grant regulatory approvals.

Launch phase – duration: 5–15 years

7. Launch new medicine
> Raise awareness of patient benefit and appropriate use, market and sell the medicine.
> Clinicians begin to prescribe the medicine and patients begin to benefit.
> Continuously monitor, record and analyse reported side effects. Review need to update the side effect warnings to ensure that patients' wellbeing is maintained.
> Assess real-world effectiveness, and opportunities to support patients and prescribers, to achieve maximum benefit from the medicine.

8. Post-launch research and development
> Conduct studies to further understand the benefit/risk profile of the medicine in larger and/or additional patient populations.
> Life-cycle management activities to broaden understanding of the medicine's full potential.
> Consider additional diseases or aspects of disease to be treated by, or better ways of administering, the medicine.
> Submit data packages with requests for life-cycle management to regulatory authorities for review and approval.

Post-exclusivity – duration 20+ years

9. Post-exclusivity
> Patent expiry and generic entry.
> Reinvestment of returns.

Note: This is a high-level overview of a medicine's life-cycle and is illustrative only. It is neither intended to, nor does it, represent the life-cycle of any particular medicine or of every medicine discovered and/or developed by AstraZeneca, or the probability of success or approval of any AstraZeneca medicine.

Business model and life-cycle of a medicine *continued*

What does our business model require to be successful?

A talented and diverse workforce
We need to acquire, retain and develop a talented and diverse workforce united in pursuit of our Purpose and Values and fostering a strong AstraZeneca culture.

See A great place to work: Employees from page 44.

70,600
employees

A leadership position in science
We need to achieve scientific leadership if we are to deliver life-changing medicines. To that end, we need to focus on innovative science, prioritise and accelerate our pipeline and transform our innovation and culture model.

See Innovative science from page 25.

$6.1bn
invested in our science

Understand our stakeholders
We need to understand the factors and issues that are most important to the various stakeholders that interact with, and are impacted by, our business.

See Connecting with our stakeholders from page 104.

>120m
Our medicines impacted more than 120 million patient lives in 2019

Effective collaborations
We need business development, specifically partnering, which is an important element of our business model. It supplements and strengthens our pipeline and our efforts to achieve scientific leadership.

See Business development on page 40.

>730
collaborations worldwide

Commercialisation skills
We need a strong global commercial presence and skilled people to ensure that we can successfully launch our medicines, that they are available when needed and that patients have access to them.

See Delivering growth from page 31.

>100
countries in which we are active

Intellectual property (IP)
We need to create and protect our IP rights. Developing a new medicine requires significant investment over many years, with no guarantee of success. For our investments to be viable, we seek to protect new medicines from being copied for a reasonable period of time through patent protection.

See Intellectual Property from page 41.

>100
countries where we obtain patent protection

A robust supply chain
We need a supply of high-quality medicines, whether from one of the 26 Operations sites in 16 countries in which we manufacture or the $14 billion we spend on the purchase of goods, services and active pharmaceutical ingredients (APIs).

See Operations from page 37.

$14bn
spent with suppliers

Financial strength
We need to be financially strong, including having access to equity and debt finance, to bear the financial risk of investing in the entire life-cycle of a medicine.

See Financial Review from page 78.

$3.0bn
net cash flow from operating activities

How we add value

Improved health
Continuous scientific innovation is vital to achieving sustainable healthcare which creates value by:

- improving health outcomes and transforming the lives of patients who use our medicines
- enabling healthcare systems to reduce costs and increase efficiency
- improving access to healthcare and healthcare infrastructure
- helping develop the communities in which we operate through local employment and partnering.

See A great place to work: Contributing to society from page 49.

Financial value
Revenue from our Product Sales and collaboration activities generates cash flow, which helps us:

- fund our investment in science and the business to drive long-term value
- follow our progressive dividend policy
- meet our debt service obligations.

This involves balancing the interests of our business, financial creditors and shareholders.

See Financial Review from page 78.

Healthcare in a changing world

Economic growth and increasing wealth, an expanding and ageing global population, together with technological change, are contributing to growth in the pharmaceutical industry. However, social, economic and political challenges remain in addressing unmet medical need.

Increasing demand for healthcare

> Economic growth and increasing wealth have raised many people out of extreme poverty
> The world's population is growing and life expectancy is increasing
> While communicable diseases continue to pose a threat, especially in emerging markets, chronic and non-communicable diseases (NCDs) are increasing
> Digital and other technologies are transforming the pharmaceutical industry and enabling people to become more active participants in managing their healthcare
> Society's expectations of business are changing and new challenges are being faced

A growing pharmaceutical sector

> The US is the largest pharmaceutical market, with 48% of global sales, while China now represents 8%
> Pharmaceutical sales grew by 6.0% in 2019, led by emerging markets
> Global healthcare spending is projected to increase at an annual rate of 4.7% from 2018-2023

Opportunities and challenges for the sector

> Pricing, regulation and patent exclusivity present opportunities as well as challenges
> The sector is reshaping itself at the same time as it seeks to build trust with key stakeholders

Increasing demand for healthcare

Growing and shifting global economy

The October 2019 World Economic Outlook of the International Monetary Fund commented that global economic activity remained weak after slowing sharply in the last three quarters of 2018. It observed that rising trade and geopolitical tensions had increased uncertainty about the future of the global trading system and international cooperation more generally, taking a toll on business confidence, investment decisions and global trade.

Over the longer term, in the two decades to 2018, global GDP rose by some 80% to $82.5 trillion (World Bank). Figures from the International Development Association of the World Bank indicate these decades saw significant progress in many of the world's poorest countries. The extreme poverty rate fell from more than 50% to about 30%. Child mortality declined from nearly 14% to 7%. Access to electricity increased by 57% and the share of people using at least basic drinking water and sanitation services increased by 22% and 41%, respectively.

At the same time, with markets such as China and India developing and urbanising rapidly, economic growth is shifting east and away from advanced economies such as North America, Western Europe and Japan. By some estimates, Africa could represent the fourth largest economy in the world by 2040 and, by 2050, India could overtake the US as the world's second largest economy.

80%
Global GDP grew by nearly 80% between 1998 and 2018. (World Bank)

30%
Between 1998 and 2018, the rate of extreme poverty fell from more than 50% to about 30%. (International Development Association)

Immune system response to a virus.

Healthcare in a changing world *continued*

Increasing demand for healthcare *continued*

Growing and ageing populations

As shown on the right, the world's population is rising and, with more people living longer, ageing. Indeed, in some markets, such as Japan and Western Europe, where the number of people over 65 in 2023 is forecast to be 29% and 22%, respectively, ageing populations mean the size of the labour force will stagnate or decline. This will result in a potential shortage of labour compared with the abundance of labour that has fuelled growth since the 1970s.

Estimated world population (UN, bn)

Life expectancy (Economist Intelligence Unit, years)

// Denotes a scale break.

Increasing burden of chronic disease

An ageing population and changes in society are contributing to steady increases in NCDs with developing countries particularly affected as their populations grow. For example, nearly 425 million people were living with diabetes in 2017; by 2045, that number is projected to increase to 629 million.

In particular, while urbanisation presents opportunities, such as greater wealth and access to better healthcare, it also presents new hazards and healthcare challenges, including an increase in the prevalence of NCDs. These diseases include cancer and cardiovascular, metabolic and respiratory diseases which are often associated with urban lifestyle choices, including smoking, diet and lack of exercise. NCDs are also associated with ageing and, with the majority of the world's workforce ageing, healthcare costs are rising as people are living longer.

41m
NCDs killed 41 million people in 2016, compared with 31 million in 2000, up by one third. (WHO)

85%
More than 85% of 'premature' deaths arising from NCDs occur in low- to middle-income countries. (WHO)

$47tn
The World Economic Forum has estimated that NCDs could cost the global economy a cumulative $47 trillion in the 20 years to 2030.

Digital and technical breakthroughs

Advances in digitisation, analytics, artificial intelligence (AI), machine learning and automation are redefining how business and industries work. They will transform the workplace and business processes as people interact with increasingly smarter machines. New entrants from the technology sector are bringing different competencies to healthcare, applying their knowledge to accelerate scientific discovery, improve health through technology and better understanding of the patient.

At the same time, the digitisation of healthcare is improving prevention, facilitating more accurate diagnoses and treatment regimens, and putting more information in people's hands, empowering them to play a larger role in managing their own health.

38bn
It is estimated that by 2025, more than 38 billion internet-connected devices will be installed globally. (Strategy Analytics)

Changing society and business

As the burden of NCDs grows, so do public expectations, while governments' ability to meet them is constrained as finances are under stress. Low- and middle-income countries are also disproportionately affected by issues such as air pollution and climate change, thereby exacerbating social, economic and demographic inequalities. Society's view of business is also changing. Organisations are no longer valued or trusted solely on the quality of products and services, and financial performance, but also their engagement with employees, customers, communities and society as a whole as well as the way in which they consider sustainability issues, such as environmental or human rights issues.

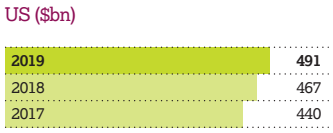
Workforce dynamics are also changing for many, as working for a single employer is replaced by working independently in a number of different roles.

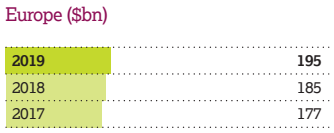
"Organisations are no longer valued or trusted solely on the quality of products and services, and financial performance, but also their engagement with employees, customers, communities and society as a whole."

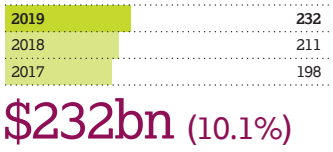
A growing pharmaceutical sector

Global pharmaceutical sales

As shown in the chart on the right, global pharmaceutical sales grew by 6.0% in 2019. Established Markets saw an average revenue increase of 4.9% and Emerging Markets revenue grew at 10.1%. The US, Japan, China, Germany and France are the world's top five pharmaceutical markets by 2019 sales. In 2019, the US had 47.5% of global sales (2018: 47.9%; 2017: 47.7%).







// Denotes a scale break.

Data based on world market sales using AstraZeneca market definitions as set out in the Market definitions on page 268. Changes in data subscriptions, exchange rates and subscription coverage, as well as restated IQVIA data, have led to the restatement of total market values for prior years. Source: IQVIA, IQVIA Midas Quantum Q3 2019 (including US data). Reported values and growth are based on CER. Value figures are rounded to the nearest billion and growth percentages are rounded to the nearest tenth.

Estimated pharmaceutical sales and market growth to 2023

The table of estimated pharmaceutical sales and market growth to 2023 on the right also illustrates that we expect developing markets, including Africa, the Commonwealth of Independent States (CIS), the Indian subcontinent and Latin America, to fuel pharmaceutical growth. Market growth in China is expected to remain below historical levels at a compound annual growth rate of 5.7%. This is due to the continued slowdown of the major hospital sector.

Estimated pharmaceutical sales in 2023. Data are based on ex-manufacturer prices at CER. Source: IQVIA.
Estimated pharmaceutical market growth. Data are based on the compound annual growth rate from 2018 to 2023. Source: IQVIA.

Healthcare in a changing world *continued*

Opportunities and challenges for the sector

In addition to the global trends set out on the previous pages, the pharmaceutical sector faces a number of opportunities and challenges, as set out below. The Strategy section of this Annual Report includes an overview of how we are responding to this environment. More detail can be found in the relevant sections of this Annual Report as indicated below.

For more information, see Strategy from page 17.

Innovation

Scientific innovation is critical to addressing unmet medical need but R&D productivity across the industry has fallen in recent years. For example, in its report, *Ten years on*, Deloitte charted the pressures that had led to a decline in return on investment, with the average cost of bringing a medicine to market increasing by two thirds, to almost $2 billion, in the decade to 2019.

R&D models are therefore changing in an effort to be more productive. For example, scientific and technological breakthroughs in the next generation of therapeutics have the potential to help accelerate innovation and are leading to new treatment options. Such advances have already resulted in significant numbers of FDA Priority Reviews and Breakthrough Therapy Designations.

Innovation can also be accelerated through the use of large volumes of data from disease biology and genomics, which is driving precision medicine, while advances in data management and integration can improve the speed and quality of clinical trials. Additionally, a better understanding of disease biology can assist the delivery of new medicines and new approaches to health, including improved methods of prevention.

Against this background, and as shown to the right, the FDA approved 48 novel drugs in 2019. The role of regulation in the pharmaceutical sector is explored further below.

48

FDA novel medicine approvals

Link to strategy

Accelerate Innovative Science

For more information, see Risk from page 246.

Regulatory environment

Public expectation of safe, effective and high-quality medicines is reflected in a highly regulated biopharmaceutical industry. At the same time, we are seeing instances of government policy and regulation being introduced to stimulate innovation in drug development, and of regulatory health authorities implementing programmes intended to speed up patient access to transformative medicines. Examples include the 21st Century Cures Act of 2016 and the FDA Reauthorization Act of 2017 in the US; the EMA Regulatory Science to 2025 in Europe; a new conditional early approval system in Japan; worksharing processes between authorities in Australia, Singapore, Canada and Switzerland; and proposed changes to regulations in China. Facilitated review pathways relying on assessments conducted in a reference agency have been introduced in many developing authorities to speed up patient access to medicines. In addition, international harmonisation of regulatory requirements is being advanced in many areas and will contribute to faster access to new medicines for patients and promote public health.

There are also uncertainties. In Europe, they include how the UK will work with the EU regulatory system after the end of the transition period, which runs to 31 December 2020 following its exit from the EU on 31 January 2020 and the approach the UK will take to establishing its own regulatory system outside the EU. Additionally, the relocation of the EMA from London to Amsterdam, Netherlands has created some disruption and delay to regulatory processes.

The implementation of the EU Clinical Trials Regulation has also been delayed. Nevertheless, paediatrics, use of digital tools, and of data sources other than randomised controlled clinical trials in clinical development, as well as patients' access to innovative medicines and stakeholders' interactions to improve drug development, are high on the EU and US agenda as well as being key objectives of the China regulatory reforms. In the EU, there is now stronger evidence that the Commission and the Member States are reviewing the full pharmaceutical legislation framework and may put forward relevant actions to the new Commission which was established in 2019.

In biosimilar development, regulatory requirements for the registration of biosimilar products are becoming better defined. However, significant areas of regulatory policy are still evolving. Among these are transparency of data regarding the level of evidence to support approval of claims for biosimilarity in labelling, standards for interchangeability and pharmaceutical substitution, and traceability of pharmacovigilance reports through naming conventions that permit differentiation of products.

Increased transparency of data used for regulatory decision making continues to be an area of interest to regulatory authorities in the EU, the US and now Canada. New policies continue to be evaluated by other regulatory authorities around the world.

"Public expectation of safe, effective and high-quality medicines is reflected in a highly regulated biopharmaceutical industry."

Link to strategy

Accelerate Innovative Science

For more information, see Risk from page 246. For more information about biosimilars, see Loss of exclusivity and genericisation opposite.

Pricing of medicines

Pricing and reimbursement remain challenging in many markets. We continue to see examples where healthcare services (including pharmaceuticals) are highly regulated by governments, insurers and other private payers through various controls on pricing and reimbursement. Implementation of cost-containment reforms and shifting market dynamics are further constraining healthcare providers, while difficult economic conditions burden patients who have out-of-pocket expenses relating to their medicines. Pharmaceutical companies are now expending significant resources to demonstrate the economic as well as the therapeutic value of their medicines.

The need and desire for payers to manage drug expenditure has been heightened by the shift over the last decade from a primary care to a specialty care focus. Specialty drugs are used for the treatment of complex, chronic or rare conditions, such as cancers, and pricing for these products reflects the higher value they bring to patients and payers, as well as the smaller patient numbers as a result of targeted treatment options.

Pricing controls and transparency measures remain a priority in key markets such as China, where the National Reimbursement Drug List was updated in 2017. In 2019, China expanded value-based procurement (VBP), placing downward pressure on the pricing of products that have lost exclusivity in the VBP.

In Europe, governments continue to implement and expand price control measures for medicines, and the EU has committed to introducing a harmonised health technology assessment (HTA) review. In other markets, there has been a trend towards rigorous and consistent application of pricing regulations, including reference pricing and group/alliance purchasing.

There is also pressure on pricing in the US. For example, federal and state policymakers are considering legislative and regulatory efforts to lower drug prices and to implement transparency measures. While legislative efforts to repeal and replace the Affordable Care Act have not been successful, the current administration and members of Congress remain focused on healthcare policy priorities, including efforts to decrease drug prices and increase competition and generic drug use in government programmes, which could create downward pressure on pricing. The healthcare industry may also be used as a means to offset government spending. US federal agencies continue to propose and implement policies and programmes with the goal of reducing costs, increasing transparency, transforming the delivery system, and improving quality of care and patient outcomes.

"We continue to see examples where healthcare services (including pharmaceuticals) are highly regulated by governments, insurers and other private payers through various controls on pricing and reimbursement."

Link to strategy

Deliver Growth and Therapy Area Leadership

For more information, see Risk from page 246.

Loss of exclusivity and genericisation

Patent protection for pharmaceutical products is finite and, after protection expires, payers, physicians and patients gain greater access to generic alternatives (both substitutable and analogue) in many important drug classes. These generic alternatives are primarily lower priced because generic manufacturers are largely spared the costs of R&D and market development. As a result, demand for generics is high. For prescriptions dispensed in the US in 2019, generics constituted 84.8% of the market by volume (2018: 84.8%).

Generic competition can also result from patent disputes or challenges before patent expiry. Increasingly, generics companies are launching products 'at risk', for example, before resolution of the relevant patent litigation. This trend, which is likely to continue, creates significant market presence for the generic version while the litigation remains unresolved. Given the unpredictable nature of patent litigation, some companies have settled such challenges on terms acceptable to the innovator and generic manufacturer.

Biologics typically retain exclusivity for longer than traditional small molecule pharmaceuticals, with less generic competition. With limited experience to date, the substitution of biosimilars for the original branded product has not followed the same pattern as generic substitution in small molecule products and, as a result, erosion of the original biologic's branded market share has not been as rapid. This is due to biologics' complex manufacturing processes and the inherent difficulties in producing a biosimilar, which could require additional clinical trials. However, with regulatory authorities in Europe and the US continuing to implement abbreviated approval pathways for biosimilar versions, innovative biologics are likely to face increased competition. Like biologics, some small molecule pharmaceutical products are in complex formulations and/or require technically challenging manufacturing and thus may not follow the pattern of generic market erosion seen with traditional, tableted pharmaceuticals. For those products, the introduction of generic alternatives (both substitutable and analogue) can be slower.

84.8%

For prescriptions dispensed in the US in 2019, generics constituted 84.8% of the market by volume (2018: 84.8%).

Link to strategy

Deliver Growth and Therapy Area Leadership

For more information, see Intellectual Property from page 41.

Healthcare in a changing world *continued*

Opportunities and challenges for the sector *continued*

Trust

The pharmaceutical industry continues to face challenges in building and maintaining its reputation and the trust of its stakeholders. This reflects sales and marketing practices by some companies, for example in connection with the selling of opioid pain relievers, or pricing practices, including price gouging. It also reflects inquiries or investigations by government and regulatory authorities. For example, companies have been investigated by the US Department of Justice (DOJ) and Securities and Exchange Commission (SEC), under the Foreign Corrupt Practices Act, and by the UK Serious Fraud Office under the UK Bribery Act.

To address these challenges, companies are seeking to operate in a way that meets the expectations of all stakeholders, for example, by:

> embedding a culture of ethics and integrity
> adopting higher governance standards
> promoting sustainability programmes
> improving relationships with employees, shareholders and other stakeholders.

More generally, to be trusted by stakeholders, companies need to operate in a way that meets their expectations.

"The pharmaceutical industry continues to face challenges in building and maintaining its reputation and the trust of its stakeholders."

Link to strategy

Be a Great Place to Work

For more information, see Ethics and transparency on page 52.

Reshaping of the sector

Our competitors include large, research-based pharmaceutical companies (like AstraZeneca) that discover, develop and sell innovative, patent-protected prescription medicines and vaccines, smaller biotechnology and vaccine businesses, and companies that produce generic medicines. The pharmaceutical market is highly competitive. For example, the global respiratory market is likely to see changes with new branded or generic products with new combinations and devices. In immuno-oncology, the large number of clinical trials being carried out highlights the competitive nature of this area.

While our peers face similar challenges and opportunities, they approach them in different ways. Some companies have pursued a strategy focused on branded prescription pharmaceuticals. Others have diversified by acquiring or building branded generics businesses or consumer portfolios, or have looked to geographic expansion, especially in Emerging Markets. Companies are also focused on improving R&D productivity and operational efficiency. Across the industry, mergers and acquisitions, business development deals (including licensing and collaborations) and competition for business development opportunities have continued.

Companies are also adopting more 'patient-centric' approaches that go 'beyond the pill' to encompass all aspects of disease management – prevention, screening, diagnosis, treatment and rehabilitation.

The speed of technological change may also transform current business models. Existing and new entrants to the sector, for example from the technology sector, are focusing on patient outcomes rather than just products and services, and prediction and prevention rather than just diagnosis and treatment. This may also entail new ways of competing. If new approaches such as outcomes-based pricing are to be successful, companies will need to develop systems that capture outcomes data linked to the use of their medicines. The sustainability and growth of a more patient-centric pharmaceutical industry is predicated on organisations being able to take full advantage of these breakthroughs in digital and other technologies.

More generally, to be successful, companies will need to be able to respond to the pressures and demands made on them by patients and caregivers, health authorities, payers, policymakers and others.

"Existing and new entrants to the sector... are focusing on patient outcomes rather than just products and services, prediction and prevention rather than just diagnosis and treatment."

Link to strategy

Global, science-led, patient-focused pharmaceutical company

For more information, see Risk from page 246.

What's Next?

In 2018, we achieved a significant milestone by returning to Product Sales growth. In 2019, we refreshed our strategy to focus on what comes next, and where we want our business to be in 2025. Our strategy is set out on the following pages. It reflects ideas which we crowdsourced from our employees and is underpinned by the following initiatives intended to accelerate delivery of our strategy.

Understanding disease better

Transforming the discovery and development of innovative new medicines.

See page 27.

Redefining clinical trials

Making clinical trials better and easier for patients.

See page 30.

Improving patient access

Exploring new value-based payment models.

See page 36.

Improving outcomes for patients

Establishing Health Innovation Hubs to deliver patient-focused disease management solutions.

See page 43.

Being a great place to work

Attracting and retaining the best people.

See page 48.

Ambition Zero Carbon

Our strategy to eliminate emissions by 2025 and be carbon negative by 2030.

See page 53.

Biocatalysis: enabling efficient and sustainable synthesis of AstraZeneca drug molecules.

The fundamentals of our strategy are clear. We focus on innovative science and leadership in our three main therapy areas: Oncology; Cardiovascular, Renal & Metabolism; and Respiratory. With a broad R&D platform and portfolio of specialty and primary care medicines, we have a global presence, with strength in Emerging Markets, particularly China.

Our strategic priorities

While the fundamentals of our strategy are unchanged, the world around us is changing and the burden of disease is increasing. We are responding by enhancing our focus on growth through innovation – fostering a patient-centric culture and embedding it across our organisation, doing more with technology, digital and data, and advancing cutting-edge science.

All this is reflected in our strategic priorities, listed below, which were refreshed in 2019 to support delivery of the next phase of our strategy.

These priorities are accompanied by our unwavering commitment to being a trusted partner for all our stakeholders, having a positive impact on society, and being an indispensable ally in the quest to meet rising global demand for effective healthcare.

1. Deliver Growth and Therapy Area Leadership
2. Accelerate Innovative Science
3. Be a Great Place to Work

Achieve Group Financial Targets

Effective delivery of our three strategic pillars will help us achieve our financial targets. We aim to deliver great medicines to patients while maintaining cost discipline and a flexible cost base, driving operating leverage, and increased cash generation.

We wish to maintain a progressive dividend policy and a strong balance sheet.

How we report our progress

Key Performance Indicators (KPIs)

The following pages present our KPIs for the year ending 31 December 2019. Our KPIs are aligned to our three strategic priorities and are the indicators against which we measure our productivity and success. We also monitor financial targets, which indicate whether we have delivered our strategy in a way that allows us to continue to operate as a successful business.

Our remuneration arrangements are also aligned to our strategic priorities as set out in our Group scorecard and reflected in our KPIs. Deliver Growth and Therapy Area Leadership, Accelerate Innovative Science and Achieve Group Financial Targets are included in the annual bonus targets.

For more information, see the Directors' Remuneration Report from page 125.

Strategic Report

Our operating model comprises key business functions that are aligned to the delivery of our strategy. In addition, our therapy areas provide strategic direction for each of our disease areas all the way from early-stage development to commercialisation.

Our Strategic Report therefore includes three types of review and our Principal Risks:

Business Review

Provides information on key activities and progress within each of the three strategic pillars. Within this section we report on our pipeline, the key business functions that are integral to delivering our strategy (R&D and Commercial), as well as those that we see as vital strategic enablers (Business Development and Operations) or which underpin our business model (Intellectual Property). We report on our employees, how we do business sustainably and our broader contribution to society.

Therapy Area Review

Looks at each of our therapy areas, their developments and focus for 2019, as well as what is in the pipeline.

Financial Review

Reviews our financial performance during the year.

Risks

We also review the risks that might challenge the delivery of our strategy.

For more information, see Business Review from page 24, Therapy Area Review from page 54, Risk Overview from page 74 and Financial Review from page 78.

Strategic priority	Deliver Growth and Therapy Area Leadership	Accelerate Innovative Science	Be a Great Place to Work
What this means	Driving growth through successful innovation and commercial excellence, and creating sustainable profitability by managing costs and scaling efficiently as we build. Impacting and improving the whole patient experience, from disease prevention and awareness, diagnosis, treatment, post-treatment to wellness. Collaborating with the funders of healthcare to increase the use of value-based pricing solutions that focus on the outcomes our medicines deliver to patients and healthcare systems.	Advancing high-potential late-stage pipeline projects with a continued focus to ensure sustainable delivery of new products. Pursuing the next wave of disruptive biology with new scientific modalities, such as ProTACs, in vivo biologics and cell therapy; new technologies, such as OMICs; and new biology, such as the microbiome. Accelerating efforts in artificial intelligence (AI) data science and digital technology, enabling new insights, accelerated processes and an improved patient experience and adherence.	Making a difference to medicine and patients, delivering the next wave of science, shaping the patient ecosystem and focusing on outcomes. Leading in sustainability which means improving access to healthcare, environmental protection and maintaining ethics and transparency. Performing as an enterprise team, building a culture of lifelong learning and development and also being champions of inclusion and diversity. Living our Values and behaviours.
How our current strategy responds to market trends Our strategy, on which we report in this Annual Report, including the initiatives listed on page 17, reflects the way we have chosen to respond to the opportunities and challenges posed by the marketplace in which we operate, as outlined in Healthcare in a changing world from page 11.	Aiming to shift from a focus on treatment to improve the whole patient experience and develop new payer models that improve access to our medicines: > Fostering a patient-immersed culture, building fully-integrated therapy area ecosystem models, and establishing 'health innovation hubs'. > Engaging with policymakers to support improvements in access, coverage, care delivery, quality of care and patient care outcomes. > Leveraging technology across prevention and awareness, diagnosis, treatment and post-treatment to wellness to deliver better patient outcomes more efficiently. > Enabling our Emerging Markets to deliver better and broader patient access through faster submissions, innovative and targeted equitable pricing strategies and practices. > Partnering with industry, governments and academia to find ways to bring new medicines to market more quickly and efficiently. > Basing pricing policy on four principles: value, sustainability, access and flexibility; and develop novel and flexible ways to assess and pay for medicines. > Pursuing a strong patent strategy – building robust patent estates that protect our pipeline and products to defending and enforcing patent rights. See Delivering growth from page 31.	Aiming to lead in new science platforms, leveraging technology to transform R&D productivity and the patient's experience: > Focus on innovative science in three main therapy areas, a range of drug modalities, emerging drug platforms and new technologies, such as cell therapy, ProTACs and OMICs. > Strengthening our ability to match targeted medicines to patients who need them most. > Driving R&D productivity by focusing on quality rather than quantity at all stages of drug discovery and development, and leveraging technology including the provision of enhanced data and clinical insights, as well as digital and AI approaches. > Partnering with academia, governments, industry, and scientific and patient organisations to access the best science, drive innovation and streamline and standardise regulatory processes to increase access to our medicines worldwide. > Maintaining effective working relationships with health authorities worldwide. > Making information about our clinical research publicly available to enhance scientific understanding while ensuring respect for the privacy of patients. See Innovative science from page 25 and Therapy Area Review from page 54.	Aiming to be a great and sustainable organisation, trusted by all our stakeholders: > Empowering employees through our Code of Ethics to make decisions in the best interests of the Group and society. > Refusing to tolerate bribery or any other form of corruption. > Recruiting the best talent which underpins our innovation and growth. > Living our Values and engendering a high-performing culture and lifelong learning. > Harnessing different perspectives, talents and ideas to create an inclusive culture, as well as ensuring that employees reflect the diversity of the communities in which we operate. > Contributing to society in support of the United Nations Sustainable Development Goals. > Broadening access to healthcare solutions for life-changing treatment and prevention. > Addressing the environment's impact on human health. See A great place to work: Employees from page 44 and Contributing to society from page 49.

Key Performance Indicators

Our KPIs and remuneration

A number of KPIs on the following pages are used to measure the remuneration of Executive Directors.

In 2019, we made changes to our KPIs to reflect shareholder feedback. As a result of requests to simplify the metrics used for determining remuneration, as well as improve transparency by disclosing targets, we have introduced three additional 'total' KPIs in 2019.

These additional KPIs have been used for remuneration purposes and allow us to disclose aggregated targets without

Key Performance Indicators

Deliver Growth and Therapy Area Leadership

Focus on revenue performance of our sales platforms:

Emerging Markets

Focus on delivering innovative medicines by investing in Emerging Markets' capabilities, with a focus on China and other leading markets, such as Brazil and Russia. The ongoing transformation of our capabilities is supporting new medicines and improving access and affordability.

Respiratory

Work to maximise pipeline value, devices and medicines to fulfil unmet medical need and improve patient outcomes in asthma and COPD. Includes all respiratory brands.

New CVRM

Since 2017, the New CVRM sales platform has included *Brilinta*, *Onglyza* franchise (*Onglyza* and *Kombiglyze*), *Farxiga* franchise (*Farxiga* and *Xigduo*), Exenatide Total (*Byetta* and *Bydureon*), *Symlin*, *Qtern*, roxadustat and *Lokelma*. *Epanova* was previously included but we have now terminated the Phase III STRENGTH trial.

Japan

Strengthen the performance of our New Medicines, particularly our Oncology brands.

Oncology

Includes entire Oncology portfolio. We have met our target of delivering six new cancer medicines to patients by 2020: *Lynparza*, *Tagrisso*, *Imfinzi*, *Calquence*, *Lumoxiti* and *Enhertu* that make a meaningful difference to patients.

[1] Reconciliation of Total Product Sales from sales platforms to total Product Sales is shown in the Financial Review from page 78. This reconciliation is shown for 2018 and 2019 only.

Total[1]

$21,894m

Product Sales from sales platforms

2019	**$21,894m**
2018	$18,464m

Actual growth	CER growth
2019 +19%	**2019 +22%**
2018 +13%	2018 +12%

Emerging Markets

$8,165m

Product Sales

2019	**$8,165m**
2018	$6,891m
2017	$6,149m

Actual growth	CER growth
2019 +18%	**2019 +24%**
2018 +12%	2018 +13%
2017 +6%	2017 +8%

Respiratory

$5,391m

Product Sales

2019	**$5,391m**
2018	$4,911m
2017	$4,706m

Actual growth	CER growth
2019 +10%	**2019 +13%**
2018 +4%	2018 +3%
2017 -1%	2017 -1%

New CVRM

$4,376m

Product Sales

2019	**$4,376m**
2018	$4,004m
2017	$3,567m

Actual growth	CER growth
2019 +9%	**2019 +12%**
2018 +12%	2018 +12%
2017 +9%	2017 +9%

Japan

$2,548m

Product Sales

2019	**$2,548m**
2018	$2,004m
2017	$2,208m

Actual growth	CER growth
2019 +27%	**2019 +26%**
2018 -9%	2018 -11%
2017 +1%	2017 +4%

Oncology

$8,667m

Product Sales

2019	**$8,667m**
2018	$6,028m
2017	$4,024m

Actual growth	CER growth
2019 +44%	**2019 +47%**
2018 +50%	2018 +49%
2017 +19%	2017 +19%

Changes to KPIs in 2019

The total of Product Sales from sales platforms is a new KPI as outlined in Our KPIs and remuneration above and combines the five sales platforms' metrics. It removes the double-counting of certain Product Sales which are included in more than one platform. Reconciliation to the number used for calculating annual bonus is shown from page 135.

Delivering growth from page 31; Therapy Area Review from page 54.

90%

Revenue from sales platforms of $21,894 million in 2019 represented 90% of Total Revenue

disclosing sensitive commercial information at the individual KPI level. These changes are explained in more detail throughout this section and more information can be found in the Directors' Remuneration Report from page 125.

Any variances between the KPI and values used in determining remuneration are explained in the Directors' Remuneration Report from page 125.

KPI key

- New in 2019
- Used for remuneration of Executive Directors
- // Denotes a scale break.

Key Performance Indicators

Accelerate Innovative Science

The Accelerate Innovative Science KPIs measure the performance of the pipeline. Pipeline progression events (Phase II NME starts/progressions and Phase III investment decisions) measure innovation and sustainability. Regulatory events demonstrate the advancement of this innovation to patients and the value to the Group.

By measuring both Phase II and Phase III pipeline progressions, we are focused on both near-term and longer-term delivery. Phase II NME starts ensure the ongoing robustness and future stability of the pipeline (and reflect the outcome of nearer-term strategic investment decisions). Phase III investments measure assets that will deliver nearer-term value (and reflect the outcome of longer-term strategic investment decisions).

Submissions and approvals metrics demonstrate the advancement of this innovation through filing and approval in our four major markets (US, EU, Japan and China).

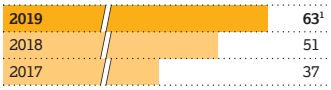
Pipeline progression events

22

[1] 17 against our Group scorecard for determining annual bonus.

Regulatory events

63



[1] 37 against our Group scorecard for determining annual bonus.

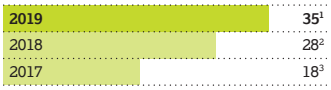
NME Phase II starts/progressions

8

[1] 6 against our Group scorecard for determining annual bonus.

NME or LCM project regulatory submissions in major markets

35



[1] 14 against our Group scorecard for determining annual bonus.
[2] 24 for determining annual bonus.
[3] 13 for determining annual bonus.

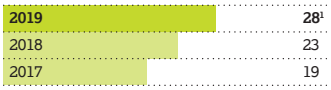
Phase III investment decisions

14

[1] 11 against our Group scorecard for determining annual bonus.

NME and major LCM regional approvals

28



[1] 23 against our Group scorecard for determining annual bonus.

Changes to KPIs in 2019

The totals of Pipeline progression and Regulatory events are new KPIs as outlined in Our KPIs and remuneration above. The former is a total of NME Phase II starts/progressions and Phase III investment decisions. The latter represents the total of NME or LCM regulatory submissions and approvals.

Innovative science from page 25; Therapy Area Review from page 54; Development Pipeline from page 238.

"In 2019, we had 22 pipeline progressions, and an average of 24 progressions in each of the last four years."

Key Performance Indicators *continued*

Key Performance Indicators

Be a Great Place to Work BV

Our Great Place to Work strategy is built around two priorities: 'Contribution to the enterprise' and 'Contribution to society'.

A great place to work from page 44.

Employee belief that AstraZeneca is a great place to work[1]

86%

2019	**86%**
2018	83%
2017	81%

[1] Source: December Pulse survey for each year. 2019 was a full census survey, 2018 and 2017 surveyed a 50% sample of the organisation.

Contribution to the enterprise

This priority is built on three pillars: performing as an enterprise team, committed to lifelong learning and development, and championing of inclusion and diversity.

A great place to work: Employees from page 44.

[2] December Pulse survey: 2019 was a full census survey, 2018 and 2017 surveyed a 50% sample of the organisation.

Performing as an enterprise team[1,2]

77%

2019	**77%**
2018	74%
2017	73%

[1] Source: December Pulse survey for each year, based on the question 'effective collaboration between teams'.

Building a culture of lifelong learning and development[1,2]

83%

2019	**83%**
2018	80%
2017	78%

[1] Source: December Pulse survey for each year, based on the question 'opportunity for personal development and growth'.

Inclusion and diversity[1]

45.4%

2019	**45.4%**
2018	44.6%
2017	44.4%

[1] Women representation at career level F+ (the most senior 12% of the employee population).

Contribution to society – Leading in sustainability

The Leading in sustainability KPIs measure the progress of our environmental, social and governance practices. They are representative indicators of each of the three priorities for our sustainability approach – to broaden access to healthcare, to protect the environment, and to foster ethics and transparency.

A great place to work: Contributing to society from page 49.

Access to healthcare: through our access to healthcare programmes[1,2]

19.8m
people

2019	**19.8m**
2018	14.4m
2017	9.2m

[1] Our access to healthcare programmes, including Healthy Heart Africa, Healthy Lung, Phakamisa, and Young Health Programme (YHP), have reached 19.8 million people through education, screenings, diagnosis and treatment cumulatively since the start of each programme. See from page 49 for more information.

[2] We expanded this measure to include the YHP for all years. Totals for each programme individually are reported in the Sustainability Data Summary at www.astrazeneca.com/sustainability.

Environmental protection: operational greenhouse gas (GHG) footprint[1]

1,975 kt CO_2e

2019	**1,975 kt CO_2e**
2018	1,852 kt CO_2e
2017	1,768 kt CO_2e

[1] Operational GHG footprint is emissions from all Scope 1, 2 and selected Scope 3 sources. See page 266.

Ethics and transparency: non-compliance with our Code of Ethics[1]

63.3
per 1,000 employees in Commercial Regions

2019	**63.3**
2018	56.6
2017	41.4

[1] There were 2,597 instances, most of them minor, of non-compliance with our Code of Ethics or supporting requirements in our Commercial Regions by employees and third parties. See page 35 for more information.

Changes to KPIs in 2019

The Contribution to the enterprise KPIs have been revised from previous years to align to our strategy. Previous metrics are available in the Sustainability Data Summary at www.astrazeneca.com/sustainability.

A great place to work from page 44.

"…we announced an ambitious $1 billion programme for zero carbon emissions from our global operations by 2025 and to ensure our entire value chain is carbon negative by 2030."

Key Performance Indicators

Achieve Group Financial Targets

Product Sales
Growth in Product Sales demonstrates our ability to deliver medicines to patients.

Net cash flow from operating activities
Cash generation is a key driver of long-term shareholder returns and facilitates re-investment in our pipeline, critical for delivering new medicines and future value.

EPS
EPS is an important profitability metric, and a key driver of shareholder value. For more information on our Core measures, please see from page 81 in the Financial Review.

Financial Review from page 78.

[1] Reconciliation to the number used for calculating annual bonus is shown from page 135.

Product Sales[1]

$23,565m

2019	**$23,565m**
2018	$21,049m
2017	$20,152m

Actual growth	CER growth
2019 +12%	**2019 +15%**
2018 +4%	2018 +4%
2017 -5%	2017 -5%

// Denotes a scale break.

Net cash flow from operating activities[1]

$2,969m

2019	**$2,969m**
2018	$2,618m
2017	$3,578m

Actual growth
2019 +13%
2018 -27%
2017 -14%

Reported EPS

$1.03

2019	**$1.03**
2018	$1.70
2017	$2.37

Actual growth	CER growth
2019 -40%	**2019 -33%**
2018 -28%	2018 -29%
2017 -14%	2017 -15%

Core EPS[1]

$3.50

2019	**$3.50**
2018	$3.46
2017	$4.28

Actual growth	CER growth
2019 +1%	**2019 0%**
2018 -19%	2018 -19%
2017 -1%	2017 -2%

Changes to KPIs in 2019
We have removed dividend per share as a KPI as it is not a measure used by the Group to determine performance against strategy.

Financial Review from page 78.

"AstraZeneca's financial performance in 2019 represented a year of innovation for patients."

Business Review

Following our return to Product Sales growth in 2018, our renewed focus is on delivering growth through innovation. This focus is underpinned by embedding patient centricity across the organisation, doing more with technology, digital and data, and advancing more cutting-edge science.

Oncology tumour drivers – cell surface and lipid bilayer with receptor.

In this Business Review, we report on how the elements of our business are delivering against our strategic priorities which are to:

1. Deliver Growth and Therapy Area Leadership
2. Accelerate Innovative Science
3. Be a Great Place to Work

In January 2019, we announced organisational changes to support continued scientific innovation and commercial success as we enter the next phase in our strategic development. We wanted AstraZeneca to be more agile, collaborative and focused on bringing innovative medicines to patients.

The changes were designed to further integrate R&D and accelerate decision making and the launches of new medicines, consolidating what we believe is already one of the most exciting and productive pipelines in the industry. We also enhanced our commercial functions to increase collaboration with our R&D organisation, enabling greater commitment to our main therapy areas.

The functions share many common areas, including basic biology and science platforms, as well as medicine supply, manufacturing and IT infrastructure to improve efficiency. These resources will continue to be allocated on a Group-wide basis, according to the overall therapy area considerations and strategy.

Since 2007, we have made significant efforts to restructure and reshape our business to control costs and improve long-term competitiveness.

Full details are provided in the Financial Review from page 78.

Research & Development (R&D)

Our R&D activities focus on three strategic R&D centres: Gaithersburg, MD, US; Gothenburg, Sweden; and Cambridge, UK, which is also our global HQ.

In January 2019, we created therapy area-focused R&D units that are responsible for discovery through to late-stage development – one for Oncology and one for BioPharmaceuticals (CVRM and Respiratory). These are designed to enable us to follow the science by accelerating promising early-stage assets and life-cycle management programmes, as well as providing new opportunities for combinations.

Operations

Our Operations function plays a key role in development, manufacturing, testing and delivery of our medicines to our customers.

Commercial

In 2018, our sales and marketing functions were grouped into regions: North America (US and Canada); Europe; and International (Emerging Markets, including China, Australia and New Zealand). Japan was categorised separately.

In January 2019, we created two commercial units – one for Oncology and one for BioPharmaceuticals. These units align product strategy and commercial delivery across the US and Europe-Canada and sharpened our focus on our main therapy areas. The International commercial organisation remains unchanged and Japan continues to be reported separately.

Innovative science

We are using our distinctive scientific capabilities to deliver a pipeline of life-changing medicines.

2019 Overview

- Created new R&D organisations
- Published 91 manuscripts in 'high-impact' publications
- Embarked on collaboration with BenevolentAI to help understanding of disease biology
- Began strategic collaboration with Daiichi Sankyo for *Enhertu* as part of our efforts to create next generation of therapeutics
- Piloted ways to better predict clinical effectiveness and make clinical trials easier for patients
- Delivered clinical trial data and submissions that resulted in 28 approvals
- Scientific rationale resulted in 18 regulatory designations
- Bioethics Advisory Group ensured continued focus on bioethics
- Construction continued at Cambridge, UK R&D centre, new centre announced in Shanghai, China and new office opened in New York, NY, US

Research & Development

In 2019, we created therapy-area focused R&D organisations responsible for discovery through to late-stage development – BioPharmaceuticals R&D focuses on CVRM and respiratory diseases, and Oncology R&D focuses on cancer. The span across the entire life-cycle of a potential new medicine is designed to enable us to follow the science by accelerating promising early-stage assets and life-cycle management programmes, as well as providing new opportunities for combinations.

Our drug discovery and development is guided through a 5R framework – right target, right patient, right tissue, right safety and right commercial potential. In the four years after its introduction in 2012, the proportion of pipeline molecules advancing from pre-clinical investigation to completion of Phase III clinical trials has increased from 4% to 19% within the small molecules portfolio. To further improve our R&D productivity, we are exploring emerging technologies to accelerate the design and testing of potential medicines. Artificial intelligence (AI) is being used increasingly in the pharmaceutical sector, building on the emergence of novel computing technologies and the exponential increase in data and deep learning algorithms. Our teams are looking to harness new technologies to further automate processes and create efficiencies.

One of the measures of our success in accelerating innovative science and demonstrating the quality of our research is the number of publications in high-quality and 'high-impact' journals. It is also critical for recruiting and retaining the best scientists from around the world. Our scientists from R&D have published 91 manuscripts in 'high-impact' peer-reviewed journals, each with an impact factor exceeding 15 (Thomson Reuters 5yr IF score) and a score exceeding 870 in total. This represents a thirteen-fold improvement since 2012, when the 5R framework was first introduced.

We are determined to advance our understanding of disease biology to uncover novel drivers for the diseases we aim to treat, prevent, and even cure. We aim to foster an environment where our scientists can freely share their ideas and collaborate with the best external partners. Our approach to science is exemplified by the number of joint research facilities we have established with leading scientific centres, such as the Karolinska Institutet in Sweden and the CRUK Cancer Institute in Cambridge. In 2019, we opened the Functional Genomics Research Centre at the Milner Therapeutics Institute in Cambridge to better understand gene changes and disease onset, using CRISPR-gene editing technology. We also embarked on a long-term collaboration with BenevolentAI to use AI and machine learning to build biomedical knowledge graphs for chronic kidney disease (CKD) and idiopathic pulmonary fibrosis, in order to contextualise scientific data and the relationships between them. For more information on knowledge graphs, see page 27. Such collaborations aim to uncover the underlying biology of these complex diseases and accelerate drug discovery.

Next generation of therapeutics

We continue to design new ways to target the drivers of disease to create the next generation of therapeutics. In 2019, 12 new modalities were in clinical development, compared with six in 2012, which demonstrated the diversity of technology in our early pipeline. In conjunction with Ionis Pharmaceuticals, we are developing antisense oligonucleotides (ASOs) in two of our therapy areas: Oncology and CVRM. Danvatirsen (AZD9150) is currently in Phase II clinical trials, and is being evaluated for anti-tumour activity in combination with *Imfinzi*. We are also exploring ASOs in CKD, in non-alcoholic steatohepatitis. In 2019, we initiated a new collaboration with Seres Therapeutics to evaluate microbiome-based approaches to predict which patients may respond best to cancer immunotherapies. Additionally in 2019, our work with Pieris Pharmaceuticals allowed us to progress AZD1402 through Phase I clinical development as a novel inhaled medicine for asthma based on its proprietary Anticalin protein platform. In our long-standing relationship with Moderna, we have worked on AZD8601 and produced the largest batch ever of modified ribonucleic acid (mRNA) suitable for clinical testing. We continue to partner with Bicycle Therapeutics to develop potential new therapies for respiratory and cardiovascular diseases, using their novel bicyclic peptide platform. We are also working with Ethris GmbH to enhance our respiratory expertise using the stabilised non-immunogenic mRNA (SNIM) technology, and APT Therapeutics to access their therapeutic protein platform. Finally, in 2019, we announced a strategic collaboration with Daiichi Sankyo to accelerate and expand development of *Enhertu*, a novel antibody-drug conjugate (ADC).

For more information, see Therapy Area Review from page 54.

Predicting clinical effectiveness

We are adopting cutting-edge technologies to improve our ability to predict the clinical effectiveness of our candidate drug molecules. Our work with Definiens focuses on developing analytical tools to characterise the immuno-oncology landscape of tumours, as well as the expression of biomarkers for many of the drugs in our pipeline. Advances in humanised models have generated improved data about toxicity and efficacy compared with previous methods. In 2019, our collaboration with Emulate published research which demonstrated the ability of its Liver-Chip to model liver toxicity of eight previously studied compounds. With the University of Colorado, US, we continue to show how different patient derived xenograft models can help define new combination therapies in oncology. To recreate the mechanical and electrical forces in a beating heart, we have partnered with Novoheart to leverage their 3-D human ventricular cardiac organoid chamber – 'heart-in-a-jar' – technology to reproduce key characteristics of heart failure with preserved ejection fraction. Our progress in ctDNA monitoring has the potential to identify patients with high risk of recurrence post-surgery and patients with micro-metastatic disease prior to relapse. We are capturing exquisite cellular detail using mass-spectrometry imaging to inform pre-clinical decision making, for example for how drug-drug interactions influence blood-brain barrier permeability, which was previously difficult to predict without this technology.

Pioneering new approaches to engagement in the clinic

In 2019, we conducted more than 270 global clinical trials and we piloted several trials using digital solutions to help patients to find clinical trials easier. For more information, please see Redefining clinical trials on page 30. Through the use of digital tools, we are also starting to design and drive the performance of our clinical trials, adopt electronic health records to improve clinical trial implementation and accurately forecast clinical trial drug supplies to investigator sites to avoid waste or delays.

We are also working towards digital solutions to improve disease understanding and patient outcomes. In several early clinical trials, we are exploring new digital markers, for example in the

Phase IIa INCONTRO programme to assess the relevance of FeNO (fractional exhaled nitric oxide) as a biomarker in the assessment of lung inflammation and exacerbation risk. We are developing novel digital therapeutics to improve clinical outcomes, optimise medication use and adherence, and to reduce, manage or prevent adverse events. For example, with Voluntis and the National Cancer Institute in the US, we are developing a digital therapeutic for women undergoing treatment for recurrent platinum-sensitive high-grade ovarian cancer in clinical trials of cediranib plus *Lynparza*. This digital solution supports patients through tolerability and management of adverse effects, and recently won the Prix Galien award for best patient engagement technology.

Development pipeline

During 2019, we delivered clinical trial data and submissions that resulted in 28 approvals for new medicines in the US, EU, China and Japan. As shown in the table below, our pipeline includes 167 projects, of which 144 are in the clinical phase of development. We are making significant progress in advancing our late-stage programmes through regulatory approval with 35 NME or major LCM regulatory submissions in the US, EU, China and Japan during 2019.

At the end of the year, we had eight NME projects in pivotal trials or under regulatory review (covering 13 indications), compared with eight at the end of 2018.

Also in 2019, 20 NMEs progressed to their next phase of development and 18 projects were discontinued: 12 for poorer than anticipated safety and efficacy results; five as a result of a strategic shift in the environment or portfolio prioritisation; and one for economic reasons.

Accelerating our pipeline

We are prioritising our investment in specific programmes, focusing on scientific innovation. As a result, we had numerous positive trial read-outs in 2019 including: *Lynparza* in germline BRCA-mutated metastatic pancreatic cancer (POLO); *Calquence* in previously treated patients with chronic lymphocytic leukaemia (CLL) and in patients with previously untreated CLL; *Imfinzi* in patients with previously untreated extensive-stage small cell lung cancer (CASPIAN); *Enhertu* in patients with HER2-positive metastatic breast cancer (DESTINY-Breast01); *Lynparza* in men with metastatic castration-resistant prostate cancer (PROfound); *Lynparza* in women with advanced ovarian cancer (PAOLA-1); *Imfinzi* + tremelimumab in previously untreated Stage IV (metastatic) non-small cell lung cancer (NSCLC) (POSEIDON); roxadustat for the treatment of patients with anaemia in CKD that are either non-dialysis dependent or dialysis dependent; *Brilinta* in patients with established coronary artery disease and type-2 diabetes (THEMIS); *Farxiga* for the treatment of patients with heart failure (DAPA-HF); *Breztri Aerosphere* in patients with moderate to very severe chronic obstructive pulmonary disease (ETHOS); and anifrolumab for the treatment of systemic lupus erythematosus (TULIP 2).

In January 2020, we announced positive high-level results from the registrational Phase II trial for *Enhertu* for gastric cancer (DESTINY-Gastric01) and from the Phase III *Brilinta* trial for stroke (THALES).

As is to be expected when we are investigating treatments for diseases that are hard to address, we also had some setbacks during the year. These included disappointing Phase III data results. For example, the results from the Phase III NEPTUNE trial with *Imfinzi* in combination with tremelimumab in patients with Stage IV NSCLC. The trial did not meet its primary endpoint of improving overall survival (OS) compared to standard of care (SoC) chemotherapy. We also discontinued development of savolitinib as a monotherapy treatment for papillary renal cell carcinoma and closed the Phase III STRENGTH trial for *Epanova* due to its low likelihood of demonstrating a benefit to patients with mixed dyslipidaemia who are at increased risk of cardiovascular (CV) disease.

In 2019, we presented scientific rationale that resulted in 14 Regulatory Designations for Breakthrough Therapy, Priority Review or Fast Track for new medicines which offer the potential to address unmet medical need in certain diseases. We also secured Orphan Drug Designation for the development of four medicines to treat very rare diseases.

For more information, see Development Pipeline from page 238.

Development pipeline overview (as at 31 December 2019)

167 projects

Our development pipeline includes projects in early- and late-stage development as outlined below. Projects are counted here until they have launched in all applicable major regions.

Phase I — 34

> 34 projects in Phase I, including:
- 32 NMEs or novel combinations
- 2 significant additional indications for projects that have reached Phase III

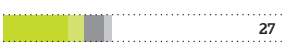
Phase II — 50

> 50 projects in Phase II, including:
- 39 NMEs or novel combinations
- 11 significant additional indications for projects that have reached Phase III

Late-stage development* — 27

> 27 projects in late-stage development, either in Phase III/pivotal Phase II trials or under regulatory review:
- 8 NMEs or novel combinations not yet approved in any market
- 11 projects exploring additional indications for these NMEs
- 8 NMEs already approved or launched in the EU, China, Japan and/or the US

* NMEs or novel combinations and significant additional indications.



Life-cycle management projects* — 56

> 56 LCM projects
- 41 LCMs not yet approved in any market
- 15 LCMs already approved or launched in the EU, China, Japan and/or the US

* Only includes material projects where first indication is already launched.

Oncology CVRM Respiratory Other

Next leaps are impossible

Link to strategy: Accelerate Innovative Science

Understanding disease better

Using artificial intelligence and machine learning to transform the discovery and development of innovative new medicines.

By better understanding what causes or drives diseases, we hope to find new ways to treat, prevent or even cure them.

We are using knowledge graphs – networks of contextualised scientific data facts such as genes, proteins, diseases and compounds, and the relationship between them – to give scientists new insights.

Our collaboration with BenevolentAI aims to build knowledge from the masses of data to better understand disease biology. We are combining AstraZeneca's disease area expertise and large, diverse datasets with BenevolentAI's leading AI and machine learning capabilities to build knowledge graphs for idiopathic pulmonary fibrosis and chronic kidney disease.

We are working together to interpret these knowledge graphs to understand better the underlying mechanisms of these complex diseases and identify more quickly new potential drug targets.

For more information see Research & Development on page 25.

"We are generating and have access to more data than ever before. By harnessing artificial intelligence and machine learning to unlock this wealth of data, we have the potential to transform the way we discover and develop innovative new medicines."

Mene Pangalos
EVP, BioPharmaceuticals R&D

Bioethics BV

'Bioethics' refers to the range of ethical issues that arise from the study and practice of biological and medical science. We are committed to working in a transparent and ethical manner across all our bioethics subject matter areas. Our Global Standard on Bioethics sets out our principles which apply to all our research activity, whether conducted by us or by third parties acting on our behalf. The following sections summarise our activities in the main areas, and our Global Standard on Bioethics is available on our website, www.astrazeneca.com/sustainability.

Our Bioethics Advisory Group (BAG) is sponsored by the Chief Medical Officer and oversees the operation of the Global Standard on Bioethics. It acts as a source of bioethical advice to the business, bringing together the subject matter leads for each of the key bioethical areas, supported by other experts and specialists. BAG receives reports on governance and practice from subject matter leads, responds to requests for advice and support from the business, and carries out horizon-scanning activities to identify emerging scientific, technological and regulatory issues. BAG met six times in 2019. Ethical discussions in 2019 included the use of precision genome editing in research and development, potential impacts of AI on healthcare, and potential delays to supply of influenza vaccines resulting from any change to the scope of the Nagoya Protocol to include non-human genetic sequence data.

Clinical trials

We believe that transparency enhances the understanding of how our medicines work and benefit patients. We publish information about our clinical research, as well as the registration and results of our clinical trials – regardless of whether they are favourable – for all products and all phases, including marketed medicines, drugs in development and drugs where development has been discontinued.

In 2019, we conducted a range of clinical trials across regions as shown in the charts on the right. This broad span helps ensure that study participants reflect the diversity of patients for whom our medicines are intended and identifies the patients for whom the medicine may be most beneficial. Our global governance process provides the framework for ensuring a consistent, high-quality approach worldwide. Protecting participants throughout the trial process is a priority and we have strict procedures to help ensure participants are not exposed to unnecessary risks.

All our clinical trials are designed and finally interpreted in-house. Some are conducted by contract research organisations (CROs) on our behalf and we require these organisations to comply with our global standards.

As of 31 December 2019, we shared anonymised individual patient-level data from 147 studies with 50 research teams and responded to 161 requests from external researchers using our portal, http://www.astrazenecagroup-dt.pharmacm.com, to request our clinical data and reports to support additional research. In 2019, we continued to participate in the industry-wide portal www.trialsummaries.com where we publish Trial Result Summaries in easy-to-understand language and translate these to the local language for all sites where a study is conducted. As of 31 December 2019, we published Trial Result Summaries for 108 AstraZeneca trials.

As of 31 December 2019, we have published a total of five Clinical Study Packages, which includes hundreds of study reports, on regulatory agency web portals under EMA policy 0070 and Health Canada's PRCI process. Additional clinical study documents can be requested by researchers through our data request portal.

For more information, see our website, www.astrazeneca.com, or our clinical trials website, www.astrazenecaclinicaltrials.com.

Patient safety

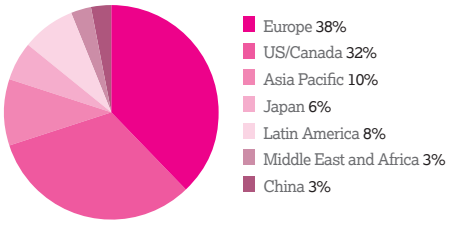
One of our Values is to put patients first and, by detecting, assessing, understanding and preventing adverse effects or any other drug-related problems, our pharmacovigilance processes and systems seek to minimise the risks and maximise the benefits of our medicines for patients.

For all our medicines, under development as well as on the market, we have systems in place for identifying and evaluating possible adverse drug effects. Information concerning the safety profile of our medicines is provided to regulators, healthcare professionals and, where appropriate, patients. Each medicine has a dedicated safety team, which includes a responsible global safety physician and one or more pharmacovigilance scientists. Marketing companies have assigned patient safety managers in place.

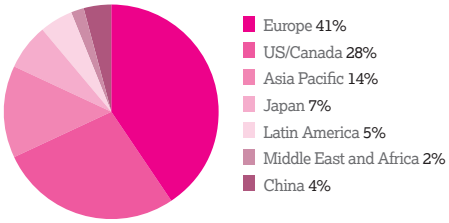
Our Chief Medical Officer is accountable for the benefit and risk profiles of our products, providing medical oversight and enforcing risk assessment processes that help us make efficient and informed decisions about patient safety. As part of our commitment to patient safety, and in order to be an industry leader in pharmacovigilance, we continue to improve the competence of the patient safety staff, and refine our processes, systems and tools. This includes exploring the use of emerging technologies, such as automation support, machine learning and digital communication interfaces which have the potential to further enhance our product safety evaluation, communication and risk mitigation capabilities.

Clinical trial active sites by region*

BioPharmaceuticals



Oncology



* Percentages have been rounded to the nearest whole number.

Research use of human biological samples

The use of human biological samples, such as solid tissue, biofluids and their derivatives, plays a vital role in developing a deeper understanding of human diseases and their underlying mechanisms, which helps us develop effective, new and personalised medicines.

We are committed to minimising the use of fetal tissue by exploring technological alternatives. In 2019, no additional new research proposals that include use of cells derived from human fetal tissue (hFT) were approved while three projects using hFT had progressed as at 31 December. An additional project using human embryonic stem cells (hESC) was approved in 2019, resulting in 10 projects using 21 different hESC lines or derived cells having been approved as at 31 December. Four projects are ongoing.

Animal research

Technology has not yet advanced to the stage where animal use can be eliminated. In addition, some animal studies are required by international regulators before medicines progress to human trials. Animal studies therefore remain a small, but necessary, part of the process of developing new drugs. We are alert to the issues around the use of animals and are working constantly to ensure our animal studies are properly justified, conducted and reported.

We are committed to helping the public understand the continuing need for animals in research, and our approach to replacing, reducing and refining our use of animals (the 3Rs). We share our 3Rs advances externally through presentations at international conferences and workshops, and contribute to the work of organisations and societies supporting the 3Rs around the world. Our Chief Veterinary Officer leads the Council for Science and Animal Welfare (C-SAW), which is the governance and oversight body for the use of animals in research and development, providing assurance to senior leaders on our responsible use of animals. C-SAW drives initiatives on the 3Rs, openness about our use of animals, and promotes a culture of care in the way we conduct our research. For example, C-SAW runs an annual global awards scheme recognising excellence in the 3Rs, achievements in openness about the use of animals and the best examples of a caring research culture. In 2019, our winning entries included a team implementing refinement in anaesthetic procedures for rats; a novel molecular biology approach allowing reduction in the number of mice needed in some studies; a collaborative project ultimately leading to changes in regulations and the replacement of some studies, which previously used fish, with non-animal alternatives. C-SAW also provides general information and education opportunities about the use of animals in research both within and outside AstraZeneca.

Animal research use varies depending on many interrelated factors, including our amount of pre-clinical research, the nature and complexity of the diseases under investigation and regulatory requirements. We believe that without our active commitment to the 3Rs, our animal use would be much greater. In 2019, animals were used for in-house studies 108,674 times (2018: 121,823[1]). In addition, animals were used on our behalf for CRO studies 35,210 times (2018: 29,853). In total, over 97% were rodents or fish.

[1] 2018 figure includes some animals used only for breeding.

For more information, see our Sustainability Report available on our website, www.astrazeneca.com/sustainability.

R&D resources

We have approximately 9,200 employees in our R&D organisation, working in various sites around the world. We currently have three strategic R&D centres: Cambridge, UK; Gaithersburg, MD, US; and Gothenburg, Sweden. Other R&D centres are located in the UK (Alderley Park and Macclesfield), the US (Waltham, MA and South San Franscico, CA), Japan (Osaka) and China (Shanghai). We also have a site in Poland (Warsaw) that focuses on late-stage development.

In November 2019, we announced the creation of a global R&D centre in Shanghai, China to carry out R&D for potential new medicines that will more than double the local R&D headcount to around 1,000. During 2019, we also opened an office in New York, NY, US with a specific focus on delivery of our Oncology pipeline, particularly in the clinical and medical space. The addition of this new office ensures that we have a presence in all four of the nationally-recognised top areas for biopharmaceutical innovation in the US.

Cambridge

Cambridge, UK is a world-leading academic and life sciences hub. Having relocated our global corporate headquarters to Cambridge in 2016, we continue to progress the build of our new strategic R&D centre on the Cambridge Biomedical Campus (CBC) and now have 2,800 employees located in and around the city. We are already seeing the impact of significant scientific and strategic collaborations within the Cambridge cluster as a result of the relationships forged.

Construction of our R&D centre began in April 2015. During 2019, activities at the site focused on the fit-out of laboratory and scientific support spaces, interior design of the office areas and landscaping. We expect to start occupation of the building from 2020, with practical completion expected at the end of 2021. Following the review of costs by the new construction manager, the latest cost projection for the R&D centre is in the region of $1.3 billion (c.£1.0 billion). Costs for the project have risen since our original projection due to the complexity of the build, construction cost inflation, including the impact of a weakening pound, and increased investment in new technologies and equipment (for example, genomics and screening lab) as part of our ongoing investment in R&D in the UK. The project is being funded out of operational cash flows.

Sustainability remains a key driver to our infrastructure in Cambridge. We have built Europe's largest ground source heat pump system that will generate energy for the R&D centre. We remain committed to fostering sustainable solutions within the building's operations strategy, such as harvesting rain water from the roof, and solar tracked blinds and lighting systems to maximise natural daylight.

As an integral part of the Cambridge ecosystem, we are working to co-develop future and sustainable travel solutions with the community and investing in developing scientific capability in the next generation. For example, the Energy Challenge STEM initiative fostered a community of volunteers across AstraZeneca's employees in Cambridge to bring a science challenge to more than 4,000 local primary school pupils. With its focus on scientific method and topicality around fostering awareness of the calorific value in foods, the Energy Challenge has been recognised as a contributor to health awareness in the community through recent awards.

In 2019, we also progressed the planning phase of amenities for our CBC-based employees and further consolidated our late-stage development, office-based employees across three offices in central Cambridge until our overall vision of co-location at the CBC campus is complete. This vision will enable our non-laboratory based Cambridge colleagues to be co-located on the CBC and near our key scientific, research and clinical partners. We are now updating the overall master plan for the site and the next stage will be the development of an office building opposite our R&D centre that can accommodate an additional 1,000 people.

Investment

In 2019, R&D expenditure was $6,059 million (2018: $5,932 million; 2017: $5,757 million), including Core R&D costs of $5,320 million (2018: $5,266 million; 2017: $5,412 million). In addition, we spent $1,835 million on acquiring product rights (such as in-licensing) (2018: $476 million; 2017: $404 million). We also invested $10 million on the implementation of our R&D restructuring strategy (2018: $94 million; 2017: $201 million). The allocations of spend by early-stage and late-stage development are presented in the R&D spend analysis table below.

R&D spend analysis

	2019	2018	2017
Discovery and early-stage development	**36%**	37%	36%
Late-stage development	**64%**	63%	64%

Link to strategy: Accelerate Innovative Science

Next level patient experience

Redefining clinical trials

Making clinical trials better and easier for patients.

We are developing the use of digital solutions to make clinical trials better and easier for patients. For example, once patients are on a clinical trial, we are seeking to reduce the number of visits patients need to make to clinics by:

- enabling 70% of the data we need to be collected from home, using devices and sensors
- using apps to help the patient know where they are in their clinical trial and share their own information with their doctor, as well as providing feedback on information collected and sharing the result of the clinical trial.

We recently won the Prix Galien award for best patient engagement technology for our work with Voluntis and the National Cancer Institute in the US developing a digital solution that supports women undergoing treatment for ovarian cancer in clinical trials of cediranib plus *Lynparza* through tolerability and management of adverse effects.

Our ambition is to develop digital health solutions to support improved patient outcomes, including digital therapeutics, across our three therapy areas.

For more information see Research & Development on page 25.

>270
global clinical trials conducted in 2019

>123,000
patients involved within these trials each year

>19,000
investigator sites used annually

~60
countries involved

"Our use of innovative digital tools and technologies seeks to provide patients with an industry-leading clinical trial experience and improved patient outcomes."

José Baselga
EVP, Oncology R&D

Business Review
Delivering growth

Delivering growth

Our return to Product Sales growth is underpinned by our focus on our sales platforms and leveraging our strong global commercial presence, particularly in Emerging Markets, to ensure the right medicines are available and that patients have access to them.

2019 overview

- Product Sales grew by 12% (15% at CER) to $24 billion
- Emerging Markets sales increased by 18% (24% at CER), with China sales growth of 29% (35% at CER); US sales increased by 13%; Europe sales declined by 2% (up by 2% at CER); Japan sales increased by 27% (26% at CER)
- Sales of New Medicines increased by 59% (62% at CER) to $10 billion, representing 42% of total Product Sales
- Working with payers to explore novel and flexible ways to assess and pay for our medicines
- Committed to high ethical standards; 162 people removed from roles for breaches
- 106 successful market launches
- CDP Climate A List rating for the fourth year running
- More than 730 collaborations around the world
- Focus on cybersecurity with successful employee awareness training

Putting patients first

We believe that putting patients first, or patient centricity, will make a real difference to the lives of people living with serious and life-threatening diseases. It requires us to walk as if in the shoes of patients, listen to their experiences, embed their insights and co-create with them to help us innovate and strengthen the way we work in order to deliver advances across the whole patient experience – from prevention and awareness, diagnosis, treatment and post-treatment to wellness. Our thinking extends beyond individual patients to include their caregivers, family and friends, as well as co-workers and healthcare professionals.

By understanding the people who are living with the diseases we aim to treat, considering their unique experiences and acting upon the insights we uncover, we believe we can help people in the most effective and compassionate way. Further, by working across AstraZeneca, from R&D to commercial development, and with external partners in the broader healthcare environment, we believe we can deliver the healthcare experience and outcomes that people care about most so that they can enjoy fulfilling lives.

Sales and marketing

Our Commercial teams, which comprised around 41,000 employees at the end of 2019, are active in more than 100 countries. In most countries, we sell our medicines through wholly-owned local marketing companies. We also sell through distributors and local representative offices. We market our products largely to primary care and specialty care physicians.

Our return to Product Sales growth in 2019 was underpinned by our sales platforms. As shown on page 20 and in the Financial Review from page 78, these comprise our three main therapy areas, together with Emerging Markets and Japan. In 2019 they grew by 18% (22% at CER) and represent 90% of Total Revenue.

Sales of our New Medicines[1] generated incremental sales of $9.9 billion at CER and represented 42% of total Product Sales. These New Medicines are important platforms for future growth. In Emerging Markets, they represented 23% of sales, up from 15% in 2018 and, in the US, they represented 63% of Product Sales, up from 48%. Overall, US performance reflected the success of the new Oncology medicines.

In Europe, Product Sales reflected a strong performance by our Oncology medicines, offset by a decline in *Nexium* and legacy Respiratory medicines. New Medicines represented 41% of Product Sales in Europe, up from 27% in 2018. In Established Rest of World, New Medicines represented 42% of sales in the year, up from 24% in 2018.

The pharmaceutical market remains highly competitive. For example, our Diabetes franchise continues to see pricing pressure. In Oncology, the large number of clinical trials that are being carried out highlight the competitive nature of this area and renders speed to market critical.

[1] *Tagrisso, Imfinzi, Lynparza, Calquence, Brilinta, Farxiga, Lokelma, Bevespi, Breztri* and *Fasenra.*

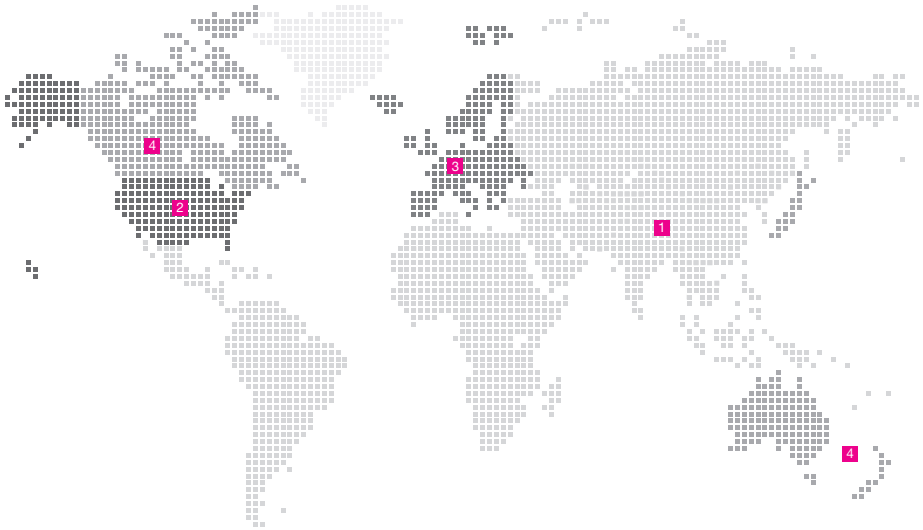
Regional Product Sales

1. Emerging Markets
18%
18% growth in the year (24% at CER) to $8,165m

2. US
13%
13% growth in the year to $7,747m

3. Europe
(2)%
2% decline in the year (2% growth at CER) to $4,350m

4. Established Rest of World
17%
17% growth in the year (18% at CER) to $3,303m



All numbers as at 31 December 2019.

Pricing and delivering value

Our medicines help address unmet medical need, improve health and create economic benefits. Treatments that are targeted and effective as well as innovative and personalised, can lower healthcare costs by reducing the need for more expensive care, preventing more serious and costly diseases and increasing productivity. We are committed to a pricing policy for our medicines based on four principles:

> We determine the price of our medicines while considering their full **value** for patients, payers and society. The agreement on price involves many national, regional and local stakeholders, reflecting factors such as clinical benefit, cost-effectiveness, improvement to life expectancy and quality of life.

> We aim to ensure the **sustainability** of both the healthcare system and our research-led business model. We believe we share a collective responsibility with healthcare providers and other stakeholders to work together to enable an efficient healthcare system for patients today and support a pipeline of new medicines for patients tomorrow.

> We seek to ensure appropriate patient **access** to our medicines. We work closely with payers and providers to understand their priorities and requirements, and play a leading role in projects to align better the specifications of regulatory and health technology assessment (HTA) agencies or other organisations that provide value assessment of medicines. For example, we have a leading role in the European IMI ADAPT-SMART programme for exploring adaptive licensing.

> We pursue a **flexible** pricing approach that reflects the wide variation in global healthcare systems. We have developed patient access programmes that are aligned with a patient's ability to pay and a healthcare system's ability to respond. We are committed to the appropriate use of managed entry schemes and the development of real-world evidence and we are investigating innovative approaches to the pricing of medicines, such as payment for outcomes received by the patient and healthcare system.

By way of example of our approach, we apply Tiered Pricing Principles globally. This defines price levels commensurate with affordability based on a country's ability to pay. We believe that this approach to pricing is sustainable and fair, and that it will increase access and improve patient outcomes in Emerging Markets.

More generally, we remain committed to working with payers to explore novel and flexible ways to assess and pay for medicines towards our shared goal of delivering the outcomes that matter for patients through innovative and personalised treatments. We are collaborating with payers to conclude outcomes- and value-based reimbursement that improves patient outcomes and, in 2019, entered into 44 such agreements across all three of our main therapy areas. For more information, see the case study on page 36.

We understand that our medicines will not benefit patients if they are unable to afford them which is why we offer a number of patient assistance programmes that can help increase patients' access to medicines and reduce their out-of-pocket costs. Through these programmes, we support qualifying patients in a variety of ways, including through discounts and/or product donations. Outside the US, we generally provide these programmes in markets with limited or no public reimbursement system, no coverage beyond the most basic therapies, or where the possibility of public reimbursement is unlikely, or only after an extended period.

US

As the fifteenth largest prescription-based pharmaceutical company in the US, we have a 2.7% market share of US pharmaceuticals by sales value. In 2019, Product Sales in the US increased by 13% to $7,747 million (2018: $6,876 million).

The US healthcare system is complex with multiple payers and intermediaries exerting pressure on patient access to branded medicines through regulatory and voluntary rebates. Regulatory rebates are statutorily mandated chargebacks and discounts paid on utilisation covered by government-funded programmes such as Medicaid, Department of Defense (including TRICARE) and Department of Veterans Affairs. Voluntary rebates are paid to managed care organisations and pharmacy benefit managers for commercially insured patients, including Medicare Part D patients. In the Medicare Part D programme, in addition to voluntary negotiated rebates, branded pharmaceutical manufacturers are statutorily required to pay a percentage of the patient's out-of-pocket costs during the 'coverage gap' portion of their benefit design. From the beginning of 2019, the mandatory coverage gap discount increased to 70% from its former amount of 50%, as a result of legislation in 2018. As part of the Affordable Care Act, we also pay a portion of an overall industry Patient Protection and Affordable Care Act Branded Prescription Drug Fee.

In 2019, the overall measurable reduction in our profit before tax for the year due to discounts on branded pharmaceuticals in the Medicare Part D Coverage Gap and an industry-wide HealthCare Reform Fee was $547 million (2018: $432 million; 2017: $119 million).

In the US, there is significant pricing pressure driven by payer consolidation, restrictive reimbursement policies and cost control tools, such as exclusionary formularies and price protection clauses. Many formularies, which specify particular medicines that are approved to be prescribed in a healthcare system, or under a health insurance policy, employ 'generic first' strategies and/or require physicians to obtain prior approval for the use of a branded medicine where a generic alternative exists. These mechanisms can be used by intermediaries to limit the use of branded products and put pressure on manufacturers to reduce net prices. In 2019, 84.8% of prescriptions dispensed in the US were generic (2018: 84.8%). In addition, patients are seeing changes in the design of their health plan benefits and may experience variation, including increases, in both premiums and out-of-pocket payments for their branded medications. The patient out-of-pocket spend is generally in the form of a co-payment or co-insurance, but there is a growing trend towards high-deductible health plans which require patients to pay the full list price until they meet certain out-of-pocket thresholds.

Ongoing scrutiny of the US pharmaceutical industry, focused largely on pricing, has been the basis of multiple policy proposals in the US. Over the course of 2019, Congress and the Trump Administration have issued several proposals designed to increase generic competition, reform coverage and reimbursement of drug therapies, reduce list prices and out-of-pocket costs, limit price increases, and increase regulatory rebate liability, among other topics. Several hearings have been held in Congress on drug pricing to inform the development of specific policies. In February 2019, our CEO, Pascal Soriot, testified before the Senate Finance Committee, along with the CEOs of other pharmaceutical companies, on the topic of drug pricing. AstraZeneca is actively supporting solutions that provide access and affordability while continuing to support scientific innovation.

In addition, lawmakers at both the federal and state levels have sought increased drug pricing transparency and have proposed and implemented policies that include measures relating to the submission of proprietary manufacturer data, establishment of price parameters that are indexed to certain federal programmes, and reporting of changes in pricing beyond certain thresholds.

Though widespread adoption of a broad national price control scheme in the near future is unlikely, we continue to comply with new state-level regulations in this area. We recognise the sustained potential for substantial changes to laws and regulations regarding drug pricing that could have a significant impact on the pharmaceutical industry.

We offer a number of resources and programmes that can help increase patients' access to medication and reduce their out-of-pocket costs. We focus our formulary access on affordability for patients through rebate payments as well as savings cards for eligible patients when the out-of-pocket costs are not affordable. AstraZeneca has one of the longest-standing patient assistance programmes in the industry, AZ&Me, which provides eligible patients with AstraZeneca medicines at no cost. AstraZeneca has provided prescription savings to four million patients across the US and Puerto Rico over the past 10 years.

For more information, see Community investment on page 50.

Europe

The total European pharmaceutical market was worth $195 billion in 2019. We are the fifteenth largest prescription-based pharmaceutical company in Europe (see Market definitions on page 268) with a 1.8% market share of pharmaceutical sales by value.

In 2019, our Product Sales in Europe decreased by 2% at actual rate of exchange (2% increase at CER) to $4,350 million (2018: $4,459 million). Key drivers of the decline were the ongoing impact of divestments such as *Nexium*, *Alvesco* and *Atacand*, in addition to continued competition from *Symbicort* analogues, which we expect to persist in 2020. The continued macroeconomic environment, pricing pressure from payers and parallel trade across markets also affected sales.

Despite these conditions, we continued to launch and saw sustained performance of innovative medicines, in particular with *Tagrisso*, *Imfinzi*, *Lynparza*, *Fasenra* and *Forxiga*. Reimbursement remains a key priority to unlock potential and launch new medicines. We are focused on partnering with payers to develop innovative pricing solutions that deliver value to patients. Oncology sales in Europe grew by 35% at actual rate of exchange (42% at CER), partly driven by emerging use of *Tagrisso* for the treatment of patients in the 1st-line EGFR7-mutated (EGFRm) NSCLC setting as more countries gained reimbursement, as well as continued strong levels of demand in the 2nd-line setting. *Imfinzi* sales of $179 million (2018: $27 million) followed recent regulatory approvals and launches. *Lynparza* sales grew by 51% (59% at CER) to $287 million, benefiting from the increasing levels of reimbursement and BRCA-testing rates. *Fasenra* sales of $118 million in the year represented an increase of 268% (287% at CER), accompanied by *Forxiga* sales growth of 18% (25% at CER).

Established Rest of World (ROW)*

Japan

Japan remains an attractive market for innovative pharmaceutical companies. It is currently positioned as the second largest pharmaceutical market for R&D-driven pharmaceutical companies. However, there is continued pressure on healthcare spending. Further to that, a cost-effectiveness evaluation was introduced for certain categories of drugs from April 2019. Discussions for further drug budget restrictions are underway at the Japanese health ministry.

In 2019, our Product Sales in Japan increased by 27% at actual rate of exchange (26% at CER) to $2,548 million (2018: $2,004 million), positioning AstraZeneca as the seventh largest prescription-based pharmaceutical company in Japan with a 3.5% market share of pharmaceutical sales by value.

Despite price cuts in October and repricing for *Tagrisso* in November, we have outperformed market growth. Results have been driven by the strong achievement of our New Medicines, particularly Oncology brands *Tagrisso*, *Imfinzi* and *Lynparza*, together with *Fasenra* and *Forxiga*, all with double digit growth in 2019. In September, *Breztri* was launched in Japan, becoming the first country for AstraZeneca globally to provide the drug to patients. *Breztri* is still the only triple-combination therapy in a pressurised metered-dose inhaler device in Japan.

Canada

In 2019, Product Sales in Canada decreased by 4% at actual rate of exchange (1% at CER) to $470 million (2018: $489 million). This was primarily due to the impact of divestments such as *Alvesco* and *Omnaris*, accompanied by continued competition in *Pulmicort* and *Onglyza*. Given the significant future potential of *Forxiga*, we continue to prioritise commercial support over *Onglyza*. There continues to be pricing pressure from both public and private payers. We remain committed to exploring innovative value-based pricing solutions that improve patient outcomes. Despite these conditions, we continued to launch and saw strong performance in innovative medicines, in particular *Tagrisso*, *Lynparza*, *Imfinzi* and *Fasenra*. Oncology sales in Canada grew by 95% at actual rate of exchange (100% at CER).

13%

13% increase in Product Sales in the US in 2019 to $7,747 million

29%

29% increase in Product Sales in China in 2019 (35% at CER) to $4,880 million

"AstraZeneca was the fastest-growing top 10 multinational pharmaceutical company in Emerging Markets in 2019."

Australia and New Zealand

Our sales in Australia and New Zealand declined by 12% at actual rate of exchange (6% at CER) in 2019. This was primarily due to continued erosion of *Symbicort* with the impact of an analogue that entered the market in 2018 and the imposition of some prescription restrictions for the LABA/ICS class of medicines as well as modest declines in some of the more mature established brands such as *Seloken*, *Pulmicort* and *Losec*. However, sales in 2019 declined at a slower rate compared with that seen in 2018. The pace of generic erosion has moderated, notably with *Crestor* and *Atacand*. Sales growth from new products such as *Tagrisso* and *Fasenra* are helping to partially offset this. However, sales in the *Forxiga* family declined. Australia remains a predominantly HTA reimbursed market with products aiming to be reimbursed needing to show a clear level of cost effectiveness and benefit to patients versus existing standard of care. Within this context, the Group's pipeline of new assets and indications provide good opportunities for future growth.

* Established ROW comprises Australia and New Zealand, Canada and Japan.

Emerging Markets

Emerging Markets, as defined in Market definitions on page 268, comprise various countries with dynamic, growing economies. As outlined in Healthcare in a changing world from page 11, these countries represent a major growth opportunity for the pharmaceutical industry due to high unmet medical need and sound economic fundamentals. Emerging Markets are not immune, however, to economic downturn. Market volatility is higher than in Established Markets, and various political and economic challenges exist. These include regulatory and government interventions. In selected markets, governments are encouraging local manufacturing and investment by offering more favourable market access conditions and pricing is increasingly controlled by payers through price referencing regulations in addition to cost effectiveness and cost minimisation approaches.

Growth drivers for Emerging Markets include new medicines across our Oncology, CVRM and Respiratory portfolios. To educate physicians about our broad portfolio, we are selectively investing in sales capabilities where opportunities from unmet medical need exist. We are also expanding our reach through multi-channel marketing and external partnerships.

With revenues of $8,165 million, AstraZeneca was the fourth largest multinational pharmaceutical company, as measured by prescription sales, and the fastest-growing top 10 multinational pharmaceutical company in Emerging Markets in 2019.

China

In China, AstraZeneca is the second largest pharmaceutical company by value in the hospital sector, as measured by sales. Sales in China in 2019 increased by 29% at actual rate of exchange (35% at CER) to $4,880 million (2018: $3,795 million). We delivered sales growth above the growth rate of the hospital market sector through strategic brand investment, systematic organisational capability improvements and long-term channel expansion programmes in our main therapy areas.

Forxiga, *Lynparza* and roxadustat were listed in the National Reimbursed Drug List (NRDL) and roxadustat was launched during 2019. Pricing practices remain a priority for regulators, and new national regulations, in addition to provincial and hospital tenders, continue to put increasing pricing pressures on pharmaceutical companies in China. The introduction of the Generics Quality Consistency Evaluation (GQCE) in 2018 will have an impact on pharmaceuticals' budgets and pricing through setting new standards for bioequivalence that generic products must adhere to as part of participation in a process called Value Based Procurement (VBP) that covers up to 70% of anticipated hospital volumes. This evaluation is being applied retrospectively, so several existing generic products may fail and be withdrawn which could lead to a consolidation in the sector. This would leave fewer, higher-quality generics in the market thereby putting pressure on any originator brand price premiums and driving a reduction in overall medical costs.

In 2018, the first round of VBP, which involved *Crestor* and *Iressa*, was announced with implementation from early 2019. This resulted in a level of sales decline for *Crestor* of 5% in 2019, while sales in *Iressa* grew by 5%. In 2019, a further round of VBP was completed and *Crestor* did not win any of the tender share. The next round of VBP, with implementation during 2020, may possibly involve additional AstraZeneca brands.

The industry-wide growth rate is expected to be 5.7% over the next five years, following the updates of the NRDL and expanding health insurance coverage. Nevertheless, the healthcare environment in China remains dynamic. Opportunities are arising from incremental healthcare investment, in-licensing, strong underlying demand for our more established medicines and the emergence of innovative medicines such as *Tagrisso*, *Lynparza* and roxadustat.

Several initiatives were announced in the latter part of 2019 to support transformation of healthcare in China. As described on page 29, these included the creation of a global R&D centre in Shanghai. A new AI Innovation Centre, also in Shanghai, will be established to capitalise on the latest digital technology in R&D, manufacturing, operations and commercialisation to help accelerate the delivery of medicines to patients in China and globally. Finally, an agreement was reached with CICC, one of China's leading investment banks, to jointly create a healthcare investment fund combining CICC's strong investment and capital management expertise with AstraZeneca's expertise in the Chinese healthcare system. The fund's target size is $1 billion and will initially focus on domestic companies and partners.

Emerging market healthcare BV

We continue to make our medicines affordable to more people on a commercially and socially sustainable basis. As, on average, almost half of healthcare expenditure in emerging countries is paid for by the patient or their families, we base our approach in these markets on an understanding of their economic circumstances and the burden placed on them by healthcare costs. We are aiming to enable our Emerging Markets to deliver better and broader patient access through innovative and targeted equitable pricing strategies and practices.

We also have a variety of patient access programmes in Emerging Markets, each tailored to meet the needs of the local community. These include patient assistance programmes, such as Terapia Plus in Ukraine, Karta Zdorovia in Russia and FazBem in Brazil which offer products at a discounted cost.

For information on our access to healthcare programmes in Emerging Markets and as one of our sustainability priorities, please see pages 35 and 52 and our Sustainability Report.

Responsible sales and marketing BV

We are committed to employing high ethical standards of sales and marketing practice worldwide, in line with our Code of Ethics and supporting requirements (our policy framework). We maintain a robust compliance programme in our efforts to ensure compliance with all applicable laws, regulations and adopted industry codes. As outlined in Global Compliance and Internal Audit Services on page 112, our compliance programme is delivered by dedicated compliance professionals who advise on and monitor adherence to our policy framework.

These professionals also support our line managers locally in ensuring that their staff meet our ethical standards. A network of nominated signatories reviews our promotional materials and activities against applicable requirements. Our Internal Audit Services department, in partnership with external audit experts, also conducts compliance audits on selected marketing companies.

For more information about the assurance provided by Bureau Veritas, see page 266.

Approximately 41,000 employees are engaged in our commercial activities and, in 2019, we identified eight confirmed breaches of external sales and marketing regulations or codes (2018: four). There were 2,597 instances, most of them minor, of non-compliance with our policy framework (described in the panel on the right) in our Commercial Business Units, including instances by employees and third parties (2018: 2,042). We removed a total of 162 employees and third parties from their roles as a result of these breaches (a single breach may involve more than one person). We also formally warned 713 others and provided further guidance or coaching on our policies to 2,346 more. The Audit Committee is provided with the breach statistics on a quarterly basis. Further commentary on the most serious breaches is also provided to the Audit Committee.

Anti-bribery and anti-corruption BV

We do not tolerate bribery or any other form of corruption. We conveyed our commitment to ethical behaviour in the 2019 annual Code training, reinforced through anti-bribery/anti-corruption training materials delivered and made available to relevant employees and third parties, including mandatory training for Commercial employees in 2019 which will be followed by training for employees in other business units in 2020.

Bribery and corruption remains a business risk as we launch new medicines in markets across the globe and enter into partnerships and collaborations, and the risk is a focus of our third-party risk management process, as well as our Business Development due diligence procedures. It is also a focus of our monitoring and audit programmes. The majority of marketing company audits include anti-bribery/anti-corruption work programmes.

Transparency reporting BV

AstraZeneca is committed to the highest standards of conduct in all our operations, including the disclosure of payments to healthcare practitioners (HCPs), healthcare organisations (HCOs) and patient organisations, with full transparency where recipients have provided consent and in accordance with all current local, state and global-level obligations covering the 45 markets with existing reporting requirements. We are progressively heading towards increased disclosure in additional markets globally and, in all locations, we are committed to ensuring payments are justified and reasonable.

Code of Ethics

We are committed to employing high ethical standards when carrying out all aspects of our business globally. Our Code of Ethics (the Code) is based on our Values, expected behaviours and key policy principles. It applies to all Executive and Non-Executive Directors, officers, employees and temporary staff, in all companies within our Group worldwide. It empowers employees to make decisions in the best interests of the Group and the people we serve, now and in the long term, by outlining our commitments in simple terms and focusing on why these commitments matter. The Code is at the core of our compliance programme. It has been translated into approximately 40 languages and guides employees on how to make the best day-to-day choices and how to act in a consistent, responsible way, worldwide. There are two mandatory training courses dedicated to the Code: one is for new starters; the second is the annual training for all employees, reminding them of the key commitments. In 2019, 100% of all active employees completed the annual training on the Code of Ethics.

The Code includes four high-level Global Policies covering Science, Interactions, Workplace and Sustainability. These Global Policies continue to be complemented by underlying Global Standards, which define the global requirements we follow to deliver our business consistent with the Values, behaviours, commitments and principles embodied in our Code and Global Policies. Our Code and Global Policies, together with relevant Global Standards and Position Statements, are published on our website, www.astrazeneca.com. Our policy framework also includes additional requirements at the global, local and business unit level to support employees in their daily work.

A Finance Code complements the Code and applies to the Chief Financial Officer, the Group's principal accounting officers (including key Finance staff in major overseas subsidiaries) and all Finance function employees. This reinforces the importance of the integrity of the Group's Financial Statements, the reliability of the accounting records on which they are based and the robustness of the relevant controls and processes.

The Next stage

Link to strategy: Deliver Growth and Therapy Area Leadership

Improving patient access

Exploring new value-based payment models.

What we're doing

- We stand behind the value of our medicines, taking on financial risk and reimbursing those who pay for our medicines if the medicine does not perform as expected.
- We are investing in innovative value strategies, including value-based agreements, where we partner with payers to move towards reimbursement based on the value of our medicines and collecting data to measure real-world impact for patients.
- We are working with key stakeholders to shape policies that promote the implementation of these sorts of agreements, both for our own medicines and those of others.
- For more information, see Pricing and delivering value on page 32.

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Globally, in 2019, we entered into 44 value-based agreements across our three main therapy areas. With these new agreements, we have now entered into more than 70 agreements in the US alone.

For example, in the US, we entered into a groundbreaking agreement for University of Pittsburgh Medical Center (UPMC) Medicare patients prescribed *Brilinta* that reduced out-of-pocket costs for patients. What UPMC pays for *Brilinta* will vary based on patient outcomes, tying the cost of the medicine to its real-world clinical performance.

"Across our therapy areas, we are committed to exploring innovative value strategies to improve patient access and affordability. We are doing so by focusing on the value our medicines bring patients and deliver to the wider healthcare system."

Ruud Dobber
EVP, BioPharmaceuticals Business Unit

Business Review
Delivering growth *continued*

Operations

Our manufacturing and supply function continues to support our growth by ensuring, through our Operations 2020 plan, that we deliver new launches on time and in full, combined with strong customer service and product lead time reductions.

Operations 2020 was launched in 2015 to enhance supply capabilities in order to respond better to the expanding patient and market needs. It focuses on supporting the delivery of our many new product launches, strengthening our science and technology capabilities across the globe, creating a more agile and flexible supply chain, and embedding Lean principles throughout our network. We are working to ensure our new product launch capabilities successfully support AstraZeneca's promising new product pipeline. By creating robust standard launch processes for both small molecules and biologics, we have achieved a world-class new product launch platform – one that is sustainable and fit for the future. In 2019, we delivered 106 successful market launches and 12 pre-registration launches.

We remain on course to achieve the primary goals of Operations 2020 and have begun to develop our Operations plan for 2025 aligned to our refreshed strategy.

Quality, regulation and compliance

We are committed to high product quality, which underpins the safety and efficacy of our medicines. We maintain a comprehensive quality management system to assure compliance and quality. Similarly, we set strict standards for safety, health and environment at each of our sites. Manufacturing facilities and processes are subject to rigorous and continuously evolving regulatory standards. They are subject to inspections by regulatory authorities, who are authorised to mandate improvements to facilities and processes, halt production and impose conditions for production to resume.

To ensure compliance with global Good Manufacturing Practice regulations, the Operations Quality team continuously reviews and strengthens the Quality Systems at our manufacturing sites through internal audit programmes, external intelligence and sharing learnings between sites. In 2019, these measures helped us successfully achieve zero critical observations from 31 independent inspections. We review observations from these inspections together with the outcomes of internal audits and, where necessary, implement improvement actions.

We are committed to maintaining the highest ethical standards and compliance with internal policies, laws and regulations. We review and comment upon evolving national and international compliance regulations through our membership of industry associations, including IFPMA, EFPIA and PhRMA.

Supply chain management

We need an uninterrupted supply of high-quality raw materials and active pharmaceutical ingredients (APIs) and, with most of our API manufacturing outsourced, we place great importance on our global external sourcing and procurement organisations and policies, as well as our integrated risk management processes. We purchase materials from a wide range of suppliers and work to mitigate supply risks, such as natural or man-made disasters that disrupt supply chains or the unavailability of raw materials. Contingency plans include using dual or multiple suppliers where appropriate, maintaining adequate stock levels and working to mitigate the effect of pricing fluctuations in raw materials.

As a consequence of the UK leaving the EU on 31 January 2020, we have continued to work closely with our suppliers on their readiness for the impact of the transition period ending on 31 December 2020 without an extension or trade agreement being in place between the UK and the EU, with a view to mitigating the effect on our business.

Since late 2017, we have completed a detailed assessment of approximately 400 suppliers across all areas of our supply chain, including our major and critical suppliers. We have seen a decline in the overall level of supplier-related risk due to various mitigations, including revised logistics channels, additional warehousing, the potential to move clinical trial-related activities, stock building of product and manufacturing-related goods, movement of stock locations, and assessment of the opportunity for supplier substitution. While we continue to make progress, it is possible that adverse events will impact supplier activities. Issue management may therefore play a key element in our ability to maintain safe supply of our medicines and ongoing business operations more generally.

In addition, as part of our planning to manage the impact of the UK leaving the EU, we have continued to engage with regulators and government to ensure they have a clear view on the potential impact on pharmaceutical supply chains. We have made significant efforts to duplicate our UK testing capability within the EU and to implement system changes necessary to facilitate compliance with EU law during, and after, the transition period. Furthermore, we have revised our logistics plans (including shipping routes) and continue to maintain additional inventory in anticipation of some level of border congestion at the end of the transition period, to reduce the risk of disruption of supply to patients.

Supply chain financing

AstraZeneca has a supply chain finance programme to support the cash flow of its supply base. This programme, supported by Taulia Inc. and Greensill Capital, provides suppliers with visibility of invoices and payment dates. Suppliers can access this platform free of charge and have full optionality and flexibility on an invoice-by-invoice basis to request early payment of invoices. On election of an early payment, a charge is incurred by the supplier based on the period of acceleration, central bank interest rate, and the rate agreed between Taulia Inc. and each supplier. All early payments are paid by Greensill Capital, and AstraZeneca settles the original invoice amount with Greensill Capital at maturity of the original invoice due date.

We believe this programme offers a benefit to our suppliers, as it provides visibility and flexibility to manage their cash flow, and the rates offered can be preferential to their cost of funding. The programme is live in the US, UK, Sweden and Germany. As of December 2019, the programme had 3,032 suppliers enrolled and a potential early payment balance of $492 million.

For more information on supply chain financing, see Note 20 on page 199.

Responsible supply chain BV

Every employee and contractor who sources goods and services on behalf of AstraZeneca is expected to follow responsible business processes, which are embedded into our newly updated Global Standard for the Procurement of Goods and Services. All our procurement professionals receive detailed training on responsible procurement.

We monitor compliance through assessments and improvement programmes and we will not use suppliers who are unable to meet our standards. Our Global Standard Expectation of Third Parties is published on our website, www.astrazeneca.com/sustainability. We conducted a total of 15,519 assessments in 2019 (2018: 12,967).

In 2019, we conducted 38 audits on high-risk suppliers (external manufacturing partners), seeking to ensure that they employ appropriate practices and controls. 26% of these suppliers met our expectations, with a further 68% implementing improvement plans to address minor instances of non-compliance. Through our due diligence process, no high-risk engagements were rejected.

For more information on our Responsible supply chain, see www.astrazeneca.com/sustainability.

Manufacturing capabilities

Our principal tablet and capsule formulation sites are in the UK, Sweden, China, Puerto Rico and the US, with local/regional supply sites in Russia, Japan, Indonesia, Egypt, India, Germany, Mexico and Brazil. We also have major formulation sites for the global supply of parenteral and/or inhalation products in the US, Sweden, France, Australia and the UK. Most of the manufacture of APIs is delivered through the efficient use of external sourcing that is complemented by internal capability in Sweden.

In 2016, we sold our manufacturing site in Avlon, UK, to Avara Avlon Pharma Services Ltd. The company subsequently went into administration. In 2019, we decided to set aside a fund, to be administered independently, to make sure our former employees at the site receive redundancy payments should the ongoing administration of the site not generate enough funds to cover redundancy costs.

In January 2020, AstraZeneca acquired the Reims packing and distribution centre from Avara Reims Pharmaceutical Services. This transaction saw the site and former Avara Reims employees transfer to AstraZeneca. Reims will continue to pack and distribute for the French domestic and other markets currently served by the site.

For biologics, our principal commercial manufacturing facilities are in the US (Frederick, MD; Greater Philadelphia, PA), the UK (Speke) and the Netherlands (Nijmegen), with capabilities in process development, manufacturing and distribution of biologics, including global supply of mAbs and influenza vaccines. In Sweden, we are completing extensive qualification of our new biologics drug product manufacturing facility in order to commence manufacturing in 2020.

As part of our ongoing review of manufacturing capabilities and capacity, we announced changes to our network in 2019. In January, we announced our decision to discontinue operations at our Boulder and Longmont, CO manufacturing facilities to increase efficiencies in our global biologics supply chain. This consolidated our biologics drug substance manufacturing network to one large-scale drug substance facility, the Frederick Manufacturing Center, MD. The sites at Boulder and Longmont, CO were preserved for potential sale. As neither Boulder nor Longmont were licensed for commercial operations, there was no impact to supply or global availability of any of our biologics medicines.

In September 2019, we announced our intention to exit our manufacturing facility at Wedel in Germany by late 2021. This decision was taken after careful consideration of our future product demand, existing production capacity and our long-term business strategy. We are committed to treating those employees affected in a fair and respectful manner, and to ensuring the consistent supply of our products to patients during the transition period. In line with this, we are working closely with the local Works Council to provide outplacement and transition support.

At the end of 2019, approximately 12,800 people were employed at 25 Operations sites in 16 countries. The Reims packing and distribution centre acquired in January 2020 became our 26th Operations site.

Environmental protection BV

We follow the science to protect the planet by managing our impact on the environment across our value chain, from R&D activities, our own operations, into our supply chain and customer use of products. Our Code of Ethics as described on page 35 is the overarching document for our environmental management system. It applies to all functions and locations and is supported by global standards and procedures that establish mandatory requirements in key risk areas. We monitor and manage performance through comprehensive assurance programmes that include performance reporting and internal auditing. Our 2019 targets (against a 2015 baseline) included:

- reducing our operational greenhouse gas (GHG) footprint in line with our approved Science Based Target
- limiting the increase in our energy consumption to no more than 6% to 1,916 GWh
- limiting the increase in our waste generation to less than 19% to 36,635 tonnes
- reducing water use by 8% to 3.98 million m^3.

The tables on the right provide data on our global GHG emissions, energy use, waste production and water consumption for 2019. The data coverage includes 100% of our owned and controlled sites globally. To support the achievement of our targets, a resource efficiency capital fund has been in place since 2015 to invest in projects at sites. In 2019, $15.5 million (2018: $19 million) was committed to resource efficiency projects at our manufacturing and R&D sites, and a further $14 million has been committed for 2020.

Operational greenhouse gas footprint emissions (tonnes CO_2e)[1]

2019	**1,974,949**
2018	1,852,104
2017	1,768,071
2016	1,739,046
2015	1,845,505

1,974,949 tonnes CO_2e

Energy consumption (MWh)[1]

2019	**1,749,404**
2018	1,863,931
2017	1,757,895
2016	1,799,669
2015	1,828,712

1,749,404 MWh

% total energy from renewables[1]
2019: 29.4%
2018: 28.9%
2017: 27.0%
2016: 25.1%
2015: 6.2%

Waste production (tonnes)

2019	**34,193**
2018	31,080
2017	31,199
2016	31,899
2015	30,785

34,193 tonnes

Water use (million m^3)

2019	**3.55**
2018	4.01
2017	3.89
2016	4.02
2015	4.32

3.55 million m^3

[1] Regular review of the data is carried out to ensure accuracy and consistency. This has led to changes in the data from previous years. The data quoted in this Annual Report are generated from the revised data.

Greenhouse gas emissions reduction

During 2019, our verified science-based targets for Scope 1 and Scope 2 emissions were confirmed to be in line with the most ambitious scenario of the Paris Agreement – limiting warming to under 1.5 degrees celsius. Progress towards these targets has been made through increased fuel efficiency of our sites and commercial sales fleet and procurement of electricity from certified renewable sources increasing to represent 70% of total electricity imports. Our total Scope 1 and Scope 2 emissions have been reduced by 36% from our 2015 baseline. Although our Scope 3 emissions sources continue to fluctuate, we have made progress towards our 2025 science-based targets for these emission sources through strategic developments, including committing to changing the propellants used in our inhalers, improving our switching of freighting of goods from air to sea, and engaging our key suppliers to set science-based targets and renewable energy goals. Including emissions from patient use of our inhaler therapies, our operational GHG footprint totalled 1,974,949 metric tonnes in 2019, an increase of 7% from our 2015 baseline.

For more information on our pressurised metered-dose inhaler (pMDI) therapies, see the Product environmental stewardship section below.

Energy use

Despite anticipated net increase in activity across our site network in 2019, we aimed to limit increases in total energy consumption to 6% above our 2015 baseline. Our resource efficiency capital fund committed $14 million to energy efficiency projects in 2019, such as LED lighting and utility efficiency at our Macclesfield, UK site. In 2019, our energy use was 1,749 GWh, a decrease of 4% from our 2015 baseline. We have made further progress on our target to use 100% renewable power by 2025. In 2019, we used certified zero emission power equivalent to 62% of total power consumption, including 5,300 MWh of renewable power generated on our sites.

For more information on GHG emissions reporting, see Sustainability: supplementary information on page 266.

Waste management

Due to anticipated activity growth across our site network in 2019, we aimed to limit increases in our waste volumes to a 19% increase from our 2015 baseline. In 2019, our total waste was 34,193 metric tonnes, an 11% increase on 2015. As waste generation is linked to production volumes, our waste reduction ambitions are going to be challenged as our business grows. However, we are focusing on processes to boost our operational efficiency and investing in waste reduction projects to help us reach our target to reduce waste generation by 10% by 2025. While waste prevention is an essential goal, we seek to maximise treatment by material recycling and avoiding landfill disposal when prevention is impractical.

Water stewardship

We recognise the need to use water responsibly and, where possible, to minimise water use in our facilities. In 2019, we targeted an 8% reduction from our 2015 water use. In 2019, our water footprint was 3.55 million m^3, an 18% reduction from our 2015 baseline. Water reduction and reuse projects throughout our site network have improved the efficiency of water use across our operations. Our major sites and those in water-stressed areas work to Water Conservation Plans to ensure we are managing our water risks and to facilitate sharing of best practice in water stewardship around our site network.

Product environmental stewardship

We are committed to ensuring effective environmental management of our products from pre-launch through to product end-of-life. We work at all stages of a medicine's life-cycle from the design of API production and formulation processes, devices and packaging through distribution, patient use and final disposal.

Our pMDI therapies rely on hydrofluoroalkane (HFA) propellants, which are emitted during use and disposal, and contribute to our Scope 3 GHG footprint. While HFAs have no ozone depletion potential and a third or less of the global warming potential than the chlorofluorocarbons they replaced, they are still potent greenhouse gases.

During 2019, we progressed a project spanning all key functions in the business to investigate alternative low-Global Warming Potential propellant options available from an environmental, technical, regulatory, medical and commercial viewpoint.

Pharmaceuticals in the environment

We aim to lead our industry in understanding and mitigating the effects of pharmaceuticals in the environment (PIE). An estimated 98% of pharmaceuticals get into the environment as a result of patient use (excretion or improper disposal). While API discharge from production is only a small proportion of the environmental burden, it is the part we as an industry can deal with directly. We manage the manufacturing discharge of our APIs in a responsible manner to ensure that we do not exceed the safe discharge standards set for our own manufacturing sites and those of key suppliers. We review compliance with these safe discharge standards annually. Using a concept called 'ecopharmacovigilance', we review emerging science and literature for new information that might change the way we assess and manage any environmental risks associated with our products through patient use and API production. A thorough assessment of the environmental risks resulting from the patient use of all our APIs has indicated that all our medicines currently pose low or insignificant environmental risk.

As part of our progress towards our 2025 environmental targets, our 2019 targets included:

- Safe API discharges for AstraZeneca sites (100%) and globally managed first tier suppliers (>90%). Target met – at one AstraZeneca supply site there was a single measured API concentration that exceeded our API discharge limits. This followed a change implemented to reduce emissions. Subsequently, further process improvements and monitoring were implemented, which reduced emissions to below the safe API discharge limits.
- Management of PIE through our ecopharmacovigilance programme. Target met – programme delivered and a manuscript published describing the environmental risks of more than 120 APIs resulting from patient use in 22 countries in Europe.

We conduct collaborative research to understand the fate, behaviour and impact of pharmaceuticals on the environment. In 2019, we co-authored 12 peer-reviewed publications to enhance our knowledge of the risks associated with this emerging issue. We also hosted a stakeholder workshop in Nairobi, Kenya to understand the environmental risks associated with increased patient access to medicines in emerging economies.

Further information on our efforts in these areas, including environmental risk assessment data for our medicines, is available on our website, www.astrazeneca.com/sustainability/environmental-sustainability.

>150

Completed more than 150 major or strategically important business development transactions in the last three years, including 29 in 2019 (2018: 80)

>730

We have more than 730 collaborations worldwide

Business development

Business development, specifically partnering, is an important element of our business. It supplements and strengthens our pipeline and our efforts to achieve scientific leadership. We work with others around the world, including academia, governments, industry, scientific organisations and patient groups, as well as other pharmaceutical companies, to access the best science to stimulate innovation and accelerate the delivery of new medicines to target unmet medical need. We currently have more than 730 collaborations around the world.

Our business development activity takes many forms and can be broadly grouped into:

- alliances, collaborations and acquisitions to enhance our portfolio and pipeline in our main therapy areas
- partnering activity to maximise the value of our assets
- divestments of non-priority medicines.

Alliances, collaborations and acquisitions

We continue to assess opportunities to make strategic, value-enhancing additions to our portfolio and pipeline in our main therapy areas, including through in-licensing and acquisitions. No company acquisitions were completed in 2019.

Over the past three years, we have completed more than 150 major or strategically important business development transactions, including some 29 in 2019. Of these transactions, eight were completed on behalf of Oncology R&D and eight on behalf of BioPharmaceuticals R&D. Nine related to pre-clinical assets or programmes and 12 to precision medicine, genomics or access to genetic data[1].

Collaboration activities that focus on the development and/or commercialisation of specific medicines are a component of our strategy. They have an important role to play in the delivery of our ambition as we continue to focus on developing key products within our main therapy areas. This activity can create additional value from our existing and potential medicines, and falls broadly into two categories:

- collaborations that help us access therapy area expertise through AstraZeneca and non-AstraZeneca medicines
- collaborations that help us increase the number of patients and the reach of medicines in which we maintain an ongoing interest, but which typically sit outside our main therapy areas.

Of particular note, we announced a global development and commercialisation collaboration agreement with Daiichi Sankyo for *Enhertu* (DS-8201), a proprietary antibody-drug conjugate (ADC) and potential new targeted medicine for cancer treatment. AstraZeneca and Daiichi Sankyo will jointly develop and commercialise *Enhertu* worldwide, except in Japan where Daiichi Sankyo will maintain exclusive rights. Daiichi Sankyo will be solely responsible for manufacturing and supply. Under the terms of the agreement, AstraZeneca agreed to pay Daiichi Sankyo an upfront payment of $1.35 billion, half of which was settled in the second quarter of 2019 with the remainder payable 12 months later. Contingent payments of up to $5.55 billion comprise up to $3.8 billion for potential successful achievement of future regulatory and other milestones, as well as up to $1.75 billion of potential sales-related milestones. AstraZeneca and Daiichi Sankyo will share equally development and commercialisation costs as well as profits from *Enhertu* worldwide, except for Japan, where Daiichi Sankyo will incur all costs and AstraZeneca will receive a royalty on sales.

We also amended the existing agreement with Ironwood in mainland China, China Hong Kong and China Macau for *Linzess*, a first-in-class new treatment for patients with irritable bowel syndrome with constipation. The amended agreement gives AstraZeneca sole responsibility for developing, manufacturing and commercialising *Linzess* in the above markets. AstraZeneca will pay Ironwood three non-contingent payments, totalling $35 million, between 2021 and 2024. In addition, Ironwood could receive up to $90 million in milestone payments, contingent on the achievement of certain sales targets. Ironwood will also be eligible for royalties beginning in the mid-single digit percent, based on the annual net sales of *Linzess* in the above markets, where Ironwood will no longer jointly fund the development and commercialisation of *Linzess* or share in the profit from sales.

In addition, we acquired an FDA Priority Review Voucher from a subsidiary of Sobi for a total cash consideration of $95 million.

[1] Following the restructuring of R&D and the associated realignment of Business Development teams across AstraZeneca, the basis for reporting transaction activity has changed. As a result, metrics for 2019 are not directly comparable to those reported in previous years.

Collaboration Revenue

In March 2019, we announced an update to the presentation of Total Revenue within our Statement of Comprehensive Income, effective 1 January 2019. Total Revenue now includes 'Collaboration Revenue', which comprises upfronts, milestone receipts and royalties and other income arising from transactions involving AstraZeneca's medicines along with income of a similar nature arising from transactions where AstraZeneca has acquired an interest in a medicine and entered into an active

collaboration with the seller. Collaboration Revenue replaces the category of Externalisation Revenue, which only included income arising from transactions involving AstraZeneca's medicines.

Details of significant business development transactions which give rise to Collaboration Revenue are included in the Financial Review from page 82. The change in revenue category from Externalisation Revenue to Collaboration Revenue is described within the Group Accounting Policies on page 173. The Collaboration Revenue generated in 2019 is provided in Note 1 on page 181.

Divestments

We divest medicines that typically sit outside our main therapy areas and that can be deployed better by other companies, in order to redirect investment and resources in our main areas of focus, while ensuring continued or expanded patient access. For example, in 2019, we divested US rights to *Synagis* used for the prevention of serious lower respiratory tract infection caused by respiratory syncytial virus to Sobi. Sobi now commercialises *Synagis* in the US and around 130 AstraZeneca employees transferred to Sobi as part of the transaction. Sobi also gained the right to participate in AstraZeneca's share of US profits and losses related to potential new medicine MEDI8897. AstraZeneca will continue to develop MEDI8897 in collaboration with Sanofi. AstraZeneca received an upfront consideration of $1.5 billion, consisting of $1.0 billion in cash and $500 million in ordinary shares of Sobi. AstraZeneca will also receive up to $470 million in sales-related payments for *Synagis*: a potential $175 million milestone following the submission of the Biologics License Application for MEDI8897; potential net payments of approximately $110 million on achievement of other MEDI8897 profit and development-related milestones; and a total of $60 million in non-contingent payments for MEDI8897 during 2019-2021.

In 2019, we also divested global commercial rights, excluding China, Japan, the US and Mexico, for *Losec* and associated brands to Cheplapharm. The divestment included medicines containing omeprazole marketed by AstraZeneca or its collaborators under the *Acimax*, *Antra*, *Mepral*, *Mopral*, *Omepral* and *Zoltum* medicine names. *Losec* is a proton pump inhibitor discovered and developed by AstraZeneca, which helps reduce the amount of acid produced by the stomach in patients with gastrointestinal reflux conditions and ulcers. It has a number of approved indications and is commonly prescribed for patients with gastro-oesophageal reflux disease. Cheplapharm paid AstraZeneca $243 million on completion in the fourth quarter and may also pay sales-contingent milestones of up to $33 million across 2021 and 2022.

In addition, we completed the sale and licence of the commercial rights to *Seroquel* and *Seroquel XR* in Europe and Russia to Cheplapharm. *Seroquel* and *Seroquel XR*, used primarily to treat schizophrenia and bipolar disorder, have lost their compound patent protection in Europe and Russia. AstraZeneca will continue to manufacture and supply *Seroquel* and *Seroquel XR* to Cheplapharm during a transition period. Cheplapharm made an upfront payment of $178 million to AstraZeneca and may also make future sales-contingent payments of up to $61 million.

In a separate transaction, we completed the sale of commercial rights to *Seroquel* and *Seroquel XR* in the US and Canada to Cheplapharm. *Seroquel* and *Seroquel XR* have lost their compound patent protection in the US and Canada. Cheplapharm made an upfront payment of $35 million to AstraZeneca and may also make future sales-contingent payments of up to $6 million.

We also completed the divestment of commercial rights to *Arimidex* and *Casodex* in a number of European, African and certain other countries to Juvisé Pharmaceuticals. The medicines, used primarily to treat breast and prostate cancers, have lost their compound patent protection in these countries. Juvisé Pharmaceuticals made an upfront payment of $181 million to AstraZeneca and may also make future sales-contingent payments of up to $17 million. AstraZeneca already divested the rights to both *Arimidex* and *Casodex* in the US in 2017.

These agreements will enable us to concentrate our resources on bringing multiple new medicines to patients.

Proceeds

The resulting revenue from these activities supports our R&D investments in our main therapy areas. A total of 11 transactions that contribute to Collaboration Revenue or generate income through divestment or out-licensing were completed in 2019.

More information on our partnering activity in 2019 can be found in the Financial Review from page 78 and Notes 1 and 2 to the Financial Statements from page 180.

Intellectual Property

Our industry's principal economic safeguard is a well-functioning system of patent and related protection that recognises our efforts and rewards innovation with appropriate protection – and allows time to generate the revenue we need to reinvest in pharmaceutical innovation. Patent rights are limited by territory and duration.

A significant portion of a patent's term can be spent during R&D, before it is possible to launch the protected product. Therefore, we commit significant resources to establishing and defending our patent and related IP protection for inventions.

Patent process

We file patent protection applications for our inventions to safeguard the large investment required to obtain marketing approvals for potential new drugs. As we further develop a product and its uses, these new developments may necessitate new patent filings. We apply for patents through government patent offices around the world. These assess whether our inventions meet the strict legal requirements for a patent to be granted. Our competitors can challenge our patents in patent offices and/or courts. We may face challenges early in the patent application process and throughout a patent's life. The grounds for these challenges could be the validity of a patent and/or its effective scope and are based on ever-evolving legal precedents. We are experiencing increased challenges in the US and elsewhere in the world (such as in Australia, Brazil, Canada, China, Europe and Japan), and there can be no guarantee of success for either party in patent proceedings.

For information about third-party challenges to patents protecting our products, see Note 29 to the Financial Statements from page 221.

For more information on the risks relating to patent litigation and early loss and expiry of patents, see Risk from page 246.

The basic term of a patent is typically 20 years from the filing of the patent application with the relevant patent office. However, a product protected by a pharmaceutical patent may not be marketed for several years after filing due to the duration of clinical trials and regulatory approval processes. Patent Term Extensions (PTEs) are available in certain major markets, including the EU and the US, to compensate for these delays. The term of the PTE can vary from zero to five years, depending on the time taken to obtain any marketing approval. The maximum patent term, when including PTE, cannot exceed 15 years (EU) or 14 years (US) from the first marketing authorisation.

Patent expiries
The table on pages 243 to 245 sets out certain patent expiry dates and sales for our key marketed products.

Other exclusivities
Regulatory data protection (RDP or 'data exclusivity') is an important additional form of exclusivity which is separate from, but runs in parallel with, patent exclusivity. RDP arises in respect of data which is required to be submitted to regulatory authorities to obtain marketing approvals for our medicines. Significant investment is required to generate such data (for example, through conducting global clinical trials) and these proprietary data are protected from use by third parties (such as generic manufacturers) for a number of years in a limited number of countries. The period of such protection, and the extent to which it is respected, differs significantly among countries and varies depending on whether an approved drug is a small molecule or biologic compound. RDP is an important protection for our products, and we strive to enforce our rights to it, particularly as patent rights are increasingly being challenged. The RDP period starts from the date of the first marketing approval from the relevant regulatory authority and runs parallel to any patent protection. For small molecule drugs, RDP generally expires prior to patent expiry in all major markets.

If a product takes an unusually long time to secure marketing approval, or if patent protection has not been secured, has expired or has been lost, then RDP may be the sole right protecting a product from being copied. Generic manufacturers, we believe, should not be allowed to rely on AstraZeneca's data to support the generic product's approval or marketing until the RDP right has expired. In the EU, the RDP period is eight years followed by two years' market exclusivity.

In the US, new chemical entities (NCEs) are entitled to a period of five years of RDP under the Federal Food, Drug and Cosmetic Act. This period of RDP runs parallel to any pending or granted patent protection and starts at the approval of the new application. There are circumstances where RDP could be the sole layer of exclusivity protecting a product from being copied. Further, under the Biologics License Application process, the FDA will grant 12 years' data RDP for a new biologic to an innovator manufacturer.

Under Orphan Drug laws in the EU and US, market exclusivity is granted to an innovator who gains approval for a pharmaceutical product developed to treat a rare disease. What qualifies as a rare disease differs between the EU and US. Qualifying Orphan Drugs are granted 10 years' market exclusivity in the EU and seven years' market exclusivity in the US.

Compulsory licensing and access
Compulsory licensing (where a patent authority imposes a licence on the patentee) is on the increase in certain markets in which we operate. We recognise the right of developing countries to use the flexibilities in the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (including the Doha amendment) in certain circumstances, such as a public health emergency. We believe this should apply only when all other ways of meeting the emergency needs have been considered and where healthcare frameworks and safeguards exist to ensure the medicines reach those who need them.

More generally, we are committed to expanding access to healthcare through intellectual property and to providing transparency about where our patents are filed and enforced. See our Intellectual Property statement on our website www.astrazeneca.com to learn more about our approach, and to view patent rights for medicines used to treat Index diseases.

Information technology and information services resources
In 2019, we continued to sharpen our focus on running IT with high-quality performance – improving IT cost efficiency, systems performance and delivering higher levels of support for business priorities.

Transforming the way we work
We believe the future of healthcare is one of individualised healthcare solutions focused on improved patient outcomes, driven by science and data. We are therefore embarking on a digital transformation, developing digital solutions to: enhance the delivery of our medicines; reduce inefficiencies and support patients in engaging with their own health; redefining the clinical trial experience through the use of digital tools and technologies to improve patient safety and outcomes; harnessing data science and artificial intelligence to transform the way we discover and develop new medicines; and transforming our Group operations using digital technologies. Our drive towards integrated care is dependent on building interoperable and trusted health data frameworks to be able to unlock the full potential of scientific data for patients and healthcare systems.

With our IT foundation now firmly in place and operating at high levels of efficiency, we have a growing programme portfolio to support this business transformation and which takes advantage of data and analytics, artificial intelligence, digital and the Internet of Things. In order to deliver on these commitments, IT has actively been strengthening its capabilities through recruiting key external talent into the organisation, as the expertise to succeed in some of these technologies was not internally present at the levels needed. In addition to recruiting leaders in new technologies, the IT organisation continues to harness internal capabilities, enabling us to accelerate drug development, revenue growth and profitability.

Cybersecurity
The cybersecurity threat landscape continues to grow in both volume and complexity. The healthcare industry is increasingly becoming a target of cyber criminals as medical records often contain large volumes of valuable personal data, which could be used for criminal activity. Protecting our IT systems, IP and confidential information against cybercrimes continues to be a critical area of focus and investment. Our implementation of the National Institute of Standards and Technology Cybersecurity Framework (NIST CSF) allows us to understand cyber resilience and risk positioning, improving our ability to prevent attacks and minimise damage and data loss should a breach occur. We have seen success with our mandatory employee cybersecurity awareness training programme, which helps employees recognise and defend against common and high-risk cyber threats.

Our 'Defense in depth' strategy has focused on enhancing multiple levels of protection and detection as well as introducing additional third-party cybersecurity intelligence with an appropriate response from our 24x7 Security Operations Centre. Cybersecurity testing via both internal and external cybersecurity teams will continue to validate our cyber maturity and risk. We continue to develop our relationships with government agencies and third-party cybersecurity professionals. Our participation in various cybersecurity-related peer groups gives us the opportunity to exchange important information about cybersecurity threats from multiple industries. Cybersecurity within our third-party vendors and supply chains is a focus area for AstraZeneca. As an ongoing process, we are evaluating reasonable levels of security and associated controls, requiring contractors, vendors and critical supply chain partners to meet or exceed our cybersecurity standards.

For more details, including the risks relating to information technology and cyber threats, see Risk from page 246.

Link to strategy: Deliver Growth and Therapy Area Leadership

Next steps

Improving outcomes for patients

Establishing Health Innovation Hubs to deliver patient-focused disease management solutions.

What we're doing

> Health Innovation Hubs put us at the centre of interaction between the patient, medicine, technology, healthcare professionals and policy makers to reimagine how we can improve patient outcomes through:
  - better public-private partnerships based on a shared innovation agenda
  - innovation and co-creation with start-up companies and technology partners
  - bringing innovation to AstraZeneca as we work to improve the entire patient experience with whole disease solutions.

What's next?

> We are collaborating with partners around the world to deliver integrated care and holistic disease management across all our therapy areas.
> Our network of hubs aims to solve, showcase and scale innovative and holistic health solutions in order to optimise health management, improve patient outcomes and increase the value of our medicines – both for patients and those who pay for them.

10

We have 10 major Health Innovation Hubs. See page 65 for more information.

"We are investing around the world to meet the changing needs of patients. With our Health Innovation Hubs, we have brought together R&D, commercial and digital resources to reimagine how we can improve outcomes. We work with patients to identify the main challenges they face and then collaborate with them and partners within academia, medical professionals, government, technology companies and entrepreneurs to co-develop and implement solutions to those challenges."

Iskra Reic
EVP, Europe & Canada

Business Review
A great place to work: Employees

Employees

We grow and prosper by recruiting, retaining and developing talented people. We do that by being a great place to work, encouraging and rewarding innovation, entrepreneurship and high performance. Our People strategy supports our strategic priorities and is built on three pillars: performing as an enterprise team, being committed to lifelong learning and being champions of inclusion and diversity.

2019 overview

- Hired 16,100 permanent employees; employees with less than two years' service now represent 36% of our global workforce
- Voluntary employee turnover increased to 10.5%
- High performers were promoted at twice the rate of the wider employee population
- 'Leading Business' programme launched to develop leadership capability
- 690 women have completed the 'Women as Leaders' programme, while the proportion of women in senior roles increased to 45.4%
- Launched Global Standards on sexual harassment, and harassment and bullying
- Worked to create a 'Speak Up' culture to prevent and detect any behaviour not in line with our Values, Code of Ethics and Global Standards
- Made further progress against our safety, health and wellbeing targets
- Performed well in the results of real earnings survey of all our employees

Performing as an enterprise team

We continue to develop workforce plans to ensure we can attract and develop the critical capabilities required to deliver our strategic priorities. These plans are underpinned by predictive analytics, meaning workforce decisions are data-driven. We also use workforce analytics to ensure that we manage our global workforce in an optimum way and continue to implement a significant number of automation initiatives, including more than 20 in 2019, which allow our workforce to spend a higher proportion of their time on higher-value activity.

Attracting key talent and critical capabilities

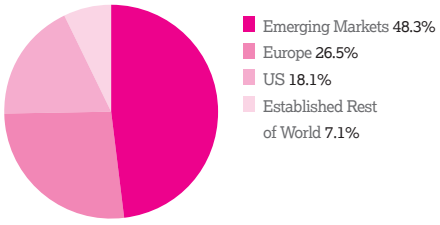
We are working to attract emerging talent, as well as investing in internships and recruitment opportunities globally. For example, we conduct a global programme to hire recent graduates for pharmaceutical technology and development, procurement, quality, engineering, IT, supply chain, and biometrics and information sciences functions. We have also implemented an MBA Development programme in our US Commercial Business, providing business rotations to give our future leaders breadth of experience.

Additionally, we offer a 12-week internship opportunity for business school students to contribute to key initiatives in our Oncology therapy area.

The talent scout model implemented in 2018 continues to be successful in enhancing our ability to attract key talent and critical capabilities into senior roles. This has been supported by an enhanced employee referral scheme, which has become an increasingly important source of hiring.

A global business

Employees by reporting region



70,600
employees

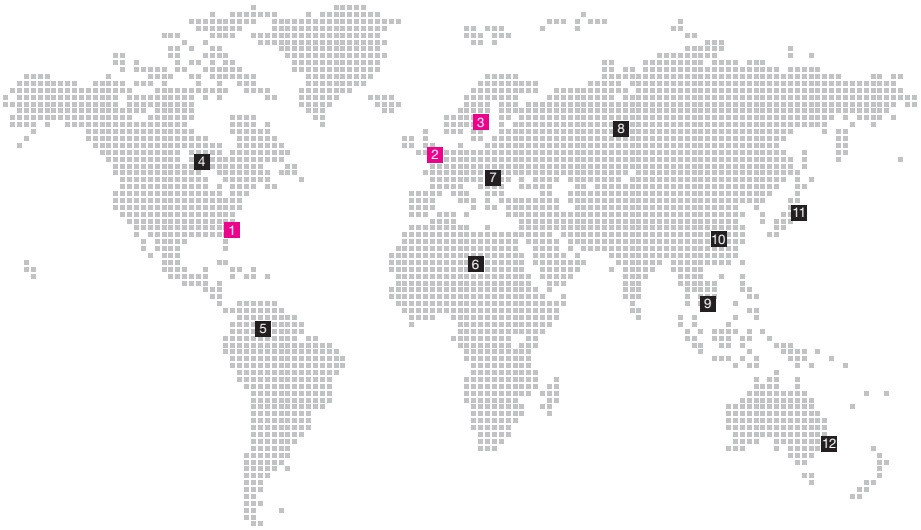
Co-located around three strategic R&D centres

1. Gaithersburg, MD, US
3,200

2. Cambridge, UK
2,800

3. Gothenburg, Sweden
2,200

By geographical area



1. US
12,800
18.1%

2. UK
7,100
10.1%

3. Sweden
6,500
9.1%

4. Canada
900
1.2%

5. Central and South America
3,000
4.3%

6. Middle East and Africa
1,700
2.5%

7. Other Europe
8,300
11.7%

8. Russia
1,200
1.7%

9. Other Asia Pacific
6,900
9.8%

10. China
18,100
25.6%

11. Japan
3,000
4.3%

12. Australia and New Zealand
1,100
1.6%

All numbers as at 31 December 2019.

During 2019, we hired 16,100 permanent employees. Hiring over recent years means that employees with less than two years' service now represent 36% of our global workforce (up from 20% in 2012). This provides a greater balance in terms of refreshing talent and retaining organisational experience. Most of this hiring has been focused in our Emerging Markets, in particular China, as we continue to reshape our workforce footprint to support our strategic objectives and to position us well for the future. Our data indicates that these recent recruits are performing strongly although, in some areas of the business, retention of this population is challenging.

Voluntary employee turnover increased to 10.5% (2018: 10.1%). The voluntary employee turnover rate among our high performers increased in 2019 to 7.0% (2018: 6.0%), while the voluntary employee turnover of recent hires remained stable at 14.4% (2018: 14.4%). We seek to reduce regretted turnover through more effective hiring and induction, exit interviews, risk assessments and retention plans.

The uncertainty faced by individuals and their families following the UK's departure from the EU could have an impact on hiring and retaining staff in some business-critical areas. Consequently, we continue to provide extensive support and information to employees who might be impacted, monitor trends in recruitment and resignation closely, and guide new hires through our recruitment process.

A culture of high performance

Continuing our emphasis on high performance, in 2019 our high performers were promoted at twice the rate of the wider employee population. We require every employee to have high-quality objectives, aligned to our strategy, which we monitor closely. Managers are accountable for working with their teams to develop individual and team performance targets, and for ensuring employees understand how they contribute to our overall business objectives.

Our salary and bonus budgets are distributed in line with our principles, allowing us to clearly differentiate reward according to performance. We encourage participation in various employee share plans, some of which are described in the Directors' Remuneration Report from page 125, and in Note 28 to the Financial Statements from page 217. Additionally, in the UK, we have made changes to the way we reward, provide benefits and support our people. These changes are designed to rebalance the reward mix, improve understanding of benefits and simplify our processes.

Listening to our workforce

Employee opinion surveys help us measure employee satisfaction and engagement, and progress in our aim of being a great place to work. Comparing our most recent survey (December 2019) to the previous year (December 2018), of the 20 items common to both surveys, we improved in 19 items and remained stable for one other. We continue to score highly for 'understanding and belief of the future direction and strategy', and we saw good progress in items around senior leader communication and prioritisation, although there is still scope for improvement. We also exceeded our scorecard target for 'I would recommend AstraZeneca as a great place to work'. Although we saw a reduction in the score for the proportion of employees who felt 'comfortable to speak up' in our mid-year June survey, a significant increase in the score in our December 2019 survey meant we exceeded the score for December 2018 and our scorecard target for this item. Despite progress in the latest survey, there remains further opportunity to simplify the way we work.

Developing a culture of lifelong learning

We encourage employees to take ownership of their own development and expect leaders to spend time supporting their employees' development. To support this, we have implemented a global platform to increase the visibility and accessibility of job opportunities and received over 27,000 applications from internal candidates through this platform in 2019.

In early 2019, we took a decision to review how we support the learning and development of our people. This work involved a substantial investment to develop a culture of lifelong learning and support the up-skilling and re-skilling of our people. This included a new operating model and global team, a technology roadmap and associated technology investments, and an integrated content strategy.

Developing our people

Following the successful launch of 'Leading People' in 2017 (a social online learning platform aimed at managers) and 'Leading Self' in 2018 (aimed at employees below manager level), and after a successful pilot in 2018, in 2019, we launched our 'Leading Business' programme, connecting 512 managers from all areas and regions of AstraZeneca to develop their leadership capability. We continue to see a positive impact of these experiences in engagement and retention measures. This is supported by 'Manager Essentials', launched in April 2019 to more than 9,000 people managers across AstraZeneca, which is a curated set of digital resources that support the development of manager capability.

Our 'Women as Leaders' programme aims to encourage more women into senior roles. Approximately 690 women had completed the programme by the end of 2019, with continuing feedback that it is providing positive career outcomes for the participants. In addition, we have developed women's networks in most countries, continued to hold empowerment summits in various locations around the world and to support mentoring relationships, for example, introducing mentoring by senior women for emerging talent in Operations.

In 2018, we launched the 'Rising Leaders Experience', a development programme aimed at emerging talent who demonstrate the potential to reach senior leadership roles. The programme accelerates and supports their development through a development centre, a leadership workshop, executive coaching, an AstraZeneca mentor, and a stretch assignment.

In addition, in 2019, we launched a global mentoring programme, with the aim of pairing mentors and mentees in order to encourage personal development and to support the implementation of a culture of lifelong learning. This has been successful, with over 900 mentors registered and almost 400 mentor-mentee relationships established.

In 2019, 80% of vacancies across the top three levels of our organisation were filled internally, reflecting our long-term commitment to develop high-quality leaders and the rigour of our leadership succession planning. To ensure our senior leadership reflects our diverse geographic footprint, we track the country of origin of senior leaders and reflect this in our diversity targets. In 2019, 18.3% of employees who are either members of the SET, or their direct reports, have a country of origin that is an Emerging Market or Japan (an increase from 5% in 2012 but below our 2019 target of 20%).

Champions of inclusion and diversity

To foster innovation, we seek to harness different perspectives, talents and ideas, as well as ensuring that our employees reflect the diversity of the communities in which we operate. We focus on inclusive leadership at all levels, creating a culture where people feel able to speak up, as well as building and sustaining a diverse talent pipeline.

As part of our commitment to inclusion and diversity, we have implemented numerous initiatives across the globe, such as unconscious bias training, the formation of various employee resource groups (such as an LGBT+ network) and updated recruitment standards to ensure diverse candidate lists. We have also established an Inclusion and Diversity Council, chaired by the CEO, in addition to holding empowerment summits across eight sites.

Gender diversity

Our commitments include a goal to increase the number of women on our leadership teams. As shown in the gender diversity figure on this page, women comprise 50.0% of our global workforce. There were four women on our Board (33% of the total) at the end of 2019 with Shriti Vadera retiring from the Board with effect from 1 January 2019. Below Board level, the representation of women in senior roles (i.e. roles at Career Level F or above which constitute the six highest bands of our employee population) increased to 45.4% in 2019 (2018: 44.6%), which exceeded our scorecard target of 45.0% for this measure and compares favourably to external benchmarks. Women are also currently promoted at a higher rate than men across all levels of seniority, positively impacting the gender balance. In 2019, the Board changes resulted in AstraZeneca ranking 39th in the FTSE 100 ranking for Women on Boards, and sixth place in the FTSE 100 for Women on Executive Committees and Direct Reports, as well as retaining our inclusion in the Bloomberg Gender Equality Index.

Leadership oversight

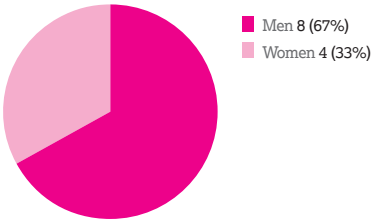
Diversity is integrated into our Code of Ethics and its associated Workforce Global Policy as described on page 35. In addition to the two diversity metrics tracked in the AstraZeneca scorecard (representation of women in senior roles and senior leadership country of origin that is an Emerging Market or Japan), on a bi-annual basis, the Senior Executive Team (SET) and Board are provided with a comprehensive overview of the AstraZeneca workforce, covering a wide range of metrics and measures (including trends around gender diversity, leadership ethnic diversity and age profile). The SET is also provided with a quarterly summary of key workforce metrics, including gender diversity and leadership ethnic diversity. Within the US, we track overall ethnic minority representation, ethnic minority representation in senior roles, and ethnic minority representation in succession plans.

We are committed to hiring and promoting talent ethically and in compliance with applicable laws. Our Code of Ethics and its supporting Standards are designed to help protect against discrimination on any grounds (including disability) and cover recruitment and selection, performance management, career development and promotion, transfer, training, retraining (including retraining, if needed, for people who have become disabled), and reward. Our Global Standard for Inclusion and Diversity sets out how we foster an inclusive and diverse workforce where everyone feels valued and respected because of their individual ability and perspective. More information on our Standards and Global Policy framework can be found on page 35 and on our website, www.astrazeneca.com/sustainability.

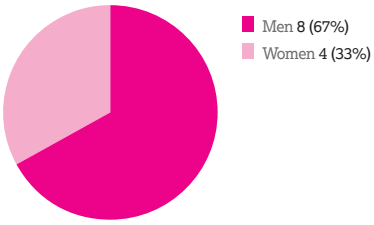
In addition to our Global Standard on Inclusion and Diversity, we launched two further Global Standards in 2019: on sexual harassment, and harassment and bullying. Drawing on our commitment to respect each other and uphold equal opportunity, we aim to build a culture where everyone feels safe to speak up. These Standards are reinforced by training and education on the importance of speaking up (which includes challenging behaviours that are inconsistent with our Values and Code of Ethics), demonstrating inclusive leadership and responding to allegations of misconduct. We have multiple channels available for reporting. Allegations are taken seriously and handled in a manner that is sensitive to the confidentiality and security of those making a report and is subject to global oversight.

Gender diversity

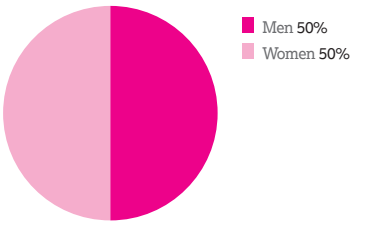
Board of Directors of the Company



Senior Executive Team



AstraZeneca employees



All numbers as at 31 December 2019.

Human rights BV

Our Code of Ethics and Human Rights Statement commit us to respecting and promoting international human rights – not only in our own operations, but also in our wider spheres of influence, such as our third-party providers. To that end, we integrate human rights considerations into our processes and practices. We are also committed to ensuring that there is no modern slavery or human trafficking in our supply chains or any part of our business. Our full statement required under section 54 of the UK Modern Slavery Act is available on our website, www.astrazeneca.com.

We support the principles set out in the United Nations Universal Declaration of Human Rights and the International Labour Organization's (ILO) standards on child labour and minimum wages. We have been members of the United Nations Global Compact on Human Rights since 2010.

We measure human rights by means of a labour review survey every two years in all countries where we have a presence. The review focuses on ILO core themes, including freedom of association and collective bargaining, child labour, discrimination, working hours and wages, including questions on the Living Wage. Where local gaps to ILO minimum standards are identified, such as maternity leave or grievance procedures, we put in place local plans to close those gaps where allowed by relevant national legislation. Our reporting in this area is assured by Bureau Veritas.

In 2017, we signed up to the 'Fair Wage' database. These independently produced data were used in our end of 2018 survey to measure against the real earnings of all our employees, in which we performed well.

For more information about the assurance provided by Bureau Veritas, see page 266.

Managing change BV

In January 2019, we announced plans to realign R&D and parts of our Commercial business to ensure we can execute on our priorities and strategy. We established dedicated teams who, guided by a clear set of People Principles, ensured the transition was executed as quickly as possible. When the business undergoes a change we keep our employees regularly informed and treat them fairly, and comply with local legislative and HR policies and practices, including consulting with employee representatives as required.

For more information on our restructuring programme, see the Financial Review from page 78.

Employee relations BV

We seek to follow a global approach to employee relations guided by global employment principles and standards, local laws and good practice. In July 2019, we established a new Global Function for Employee Relations.

The purpose of this function is to build and maintain a positive work environment where every employee can feel safe, with the right terms and conditions, productive, motivated and able to speak up. The Board of Directors, in collaboration with our Global Compliance and Employee Relations functions, supports our efforts to create a 'Speak Up' culture to prevent and detect any behaviour not in line with our Values, Code of Ethics and Global Standards.

To achieve this objective, we also work to develop and maintain good relations with local workforces and work closely with our recognised national trade unions. We also regularly consult with employee representatives or, where applicable, trade unions, who share our aim of retaining key skills and mitigating job losses. According to our internal Human Rights survey carried out in 2018 and concluded in February 2019, 67% of our employees recognise and have a relationship with trade unions. Where trade unions do not exist in an area of operation, 97% of countries have established arrangements to engage similarly with their workforce.

Safety, health and wellbeing BV

We work to promote a safe, healthy and energising work environment for our workforce and partners. Our standards apply globally and are stated in our Code of Ethics as described on page 35 and available on www.astrazeneca.com/sustainability. We have established and monitor a set of safety, health and wellbeing targets aimed at supporting our workforce and keeping AstraZeneca among the sector leaders in performance. Our performance in this area is in the Sustainability Report and Sustainability Data Summary available on www.astrazeneca.com/sustainability and is assured by Bureau Veritas.

For more information about the assurance provided by Bureau Veritas, see page 266.

Safety

Vehicle collisions

Year	Collisions per million km	Target
2019	**2.84**	**3.39**
2018	3.74	3.58
2017	4.05	3.76
2016	4.66	4.00
2015 baseline	4.13	

Work-related injuries

Year	Reportable injury rate per million hours worked	Target
2019	**1.05**	**1.37**
2018†	1.32	1.50
2017	1.48	1.60
2016	1.57	1.69
2015 baseline	1.78	

† Data restated as a result of one injury case being reported late.

As shown above, we made further progress against our strategic targets in 2019, achieving a 31% reduction in vehicle collision rate and a 41% reduction in the work-related injury rate from the 2015 baseline. In addition, there were no work-related fatalities during 2019. Building on our previous success in establishing a culture of health and wellbeing, we continue to focus on active health promotion. We have programmes to address all four essential health activities – healthy eating and drinking, physical activity, tobacco cessation and mental wellbeing – at 71% of our sites.

In 2019, we carried out several activities and initiatives focused on continuous improvements in key risk areas, including driver safety (our highest risk for significant injury and fatalities), travel security, health and wellbeing, potential serious incidents and fatal events. We also explored organisational cultural impact on safety, and developed and rolled out a new workforce wellbeing strategy to advance mental and physical health for our employees and extended workforce.

Link to strategy: Be a Great Place to Work

Next up

Being a great place to work

Attracting and retaining the best people.

Champions of inclusion and diversity

> Our Inclusion and Diversity Council, which was established in 2019 and is chaired by our CEO, Pascal Soriot, signed AstraZeneca up to two United Nations initiatives that aim to tackle discrimination and strive for diversity and equality in the workplace.
> Held five Empowerment Summits across eight sites, in the US, the UK, Sweden, Poland and Brazil in 2019.

Increased emphasis on 'Speak Up'

> The global campaign built understanding of what 'Speak Up' means across the Group, and encouraged awareness and provided guidance to all employees on how to identify and challenge behaviours not aligned to our culture.
> Increased visibility of our Employee Resource Groups, aligned them to organisational priorities and supported them with structure and funding.

Building a culture of lifelong learning and development

> Built a multi-tiered and blended Leader, Manager & Employee learning and development offering to encourage coaching and feedback, inclusive leadership, leading in digital, sustainability, and patient centricity.
> Established multi-tiered development centres to support our goal of building a diverse pipeline of future leaders.

"To secure our current and future success, we are nurturing a culture that encourages our people to be themselves and helps each of them to be the best they can be."

Fiona Cicconi
EVP, Human Resources

Contributing to society

We aim to make a significant financial contribution to the communities in which we operate. In addition, we make a non-financial contribution to society that comprises our medicines for patients and our sustainability for people and the environment. We are committed to operating in a way that recognises the interconnection between business growth, the needs of society and the limitations of our planet.

2019 overview

> 64 Healthy Lung partnerships
> Fifth anniversary of Healthy Heart Africa
> Tenth anniversary of Young Health Programme with new UNICEF partnership
> Gave more than $72 million through our community investment activities
> Employees volunteered more than 28,000 hours on community projects globally
> Sustainability strategy focused on access to healthcare, environmental protection, and ethics and transparency

As a science-led, patient-focused pharmaceutical company, our innovative medicines impacted more than 120 million patient lives in 2019. But our contribution to society extends beyond this to include our wider efforts to benefit people and the planet. Additionally, wherever we work in the world, we aim to make a positive impact on our communities, making financial contributions, supporting healthcare and STEM education programmes, volunteering, and through product donations.

As a major investor, employer and taxpayer, we also make a significant contribution to the economies of all the countries in which we operate. We pay corporate income taxes, customs duties, excise taxes, stamp duties, employment and many other business taxes where applicable in the jurisdictions in which we operate. In addition, we collect and pay employee taxes and indirect taxes such as value added tax.

Access to healthcare BV

We recognise that providing access to healthcare for all those who need it is a significant and complex global challenge. As one of the three priorities of our Sustainability strategy (see page 52), we are working towards a future where all people have access to sustainable healthcare solutions for life-changing treatment and prevention. The economic, social and environmental factors affecting access include the affordability of medicines, the maturity of healthcare systems, the existence or lack of supportive policies and insurance coverage, and the robustness of supply chains and distribution networks. Further challenges include the availability of trained staff, such as doctors, nurses and community health workers, as well as investment in primary healthcare and public health services, such as disease prevention and screening services.

Meeting these challenges requires innovation and collaboration and we are working to make a meaningful contribution to the transformation of healthcare. Our approach recognises that there is no single solution and takes account of the varying barriers to healthcare in different parts of the world. We tailor our programmes and initiatives to meet the needs of local communities, partner with the experts on the ground, and share best practice and replicate schemes when we can. Our goal is to improve health for patients and add value to society.

Below, we highlight some of our key access to healthcare programmes and initiatives. Further examples in this Annual Report include Lung Ambition (see page 57) and Precision (see page 69). For more information, see Emerging market healthcare on page 35. More detail on our access programmes can be found in our 2019 Sustainability Report, available on our website, www.astrazeneca.com/sustainability.

Healthy Lung

The Healthy Lung initiative aims to support increased awareness and prevention; earlier diagnosis; improved treatment and disease management; and establishing standards of care in line with international best practice for asthma and COPD. Launched in 2017, the Healthy Lung Asia programme focused on improving care for patients across nine Asian countries (India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand and Vietnam).

Thus far, we have initiated 64 formal partnerships and signed 23 memoranda of understanding with national and regional governments, professional organisations and NGOs to drive care improvement, which has enabled Healthy Lung to:

> support the training of more than 53,000 healthcare professionals
> enable diagnosis of more than 1.1 million cases of asthma and/or COPD
> activate more than 1,300 Respiratory Centres
> align 28 national care guidelines and care pathways to international best practice.

The programme now has a presence in Asia, Latin America, and the Middle East and Africa.

Healthy Heart

Healthy Heart Africa (HHA) was designed to contribute to the prevention and control of hypertension and decreasing the burden of cardiovascular disease across Africa. The programme supports sustainable models by working with local health systems. Each model works independently with partners in the country of implementation to address different health challenges and health environments, with the aim of providing a sustainable means of fighting hypertension in Africa.

Since launching in Kenya five years ago and subsequently expanding to Ethiopia in 2016, Tanzania in 2018 and Ghana in 2019, HHA has:

> conducted more than 13.5 million blood pressure screenings in the community and in healthcare facilities
> trained more than 7,200 healthcare workers, including doctors, nurses, community health volunteers and pharmacists, to provide education and awareness, screening and treatment services for hypertension
> activated more than 750 healthcare facilities in Africa to provide hypertension services, including, where appropriate, the establishment of a secure supply chain for low-cost, high-quality antihypertensive medicines
> identified more than 2.4 million elevated blood pressure readings.

Young Health Programme

In 2019, we celebrated the tenth year of our award-winning Young Health Programme (YHP). YHP is a philanthropic community investment programme which focuses on young people and non-communicable disease (NCD) prevention. Despite the fact that more than two thirds of premature deaths from NCDs can be linked to behaviours that first began in adolescence, young people and their health continues to be an under-recognised, under-served and under-researched component of the global health agenda. In 2019, we reached nearly one million young people with health information on NCDs and risk behaviours and trained more than 8,500 peer educators and healthcare workers. Working with local governmental and non-governmental groups, we launched new programmes in Mexico, Myanmar, Thailand and Vietnam. This brings the total number of active YHP initiatives to 18. We also announced a recommitment to the programme through to 2025, with a pledge of $35 million (£28 million) from 2021 to 2025.

We continue to deliver this programme in partnership with leading non-profit organisations that include Plan International UK, NCD Child and the NCD Alliance, following a model of investment in advocacy, research and community-based programming. We support the growth and development of young people with our ongoing collaboration with One Young World. In 2019, we offered 25 scholarships to young global health leaders bringing the total number of scholarships to 75.

In January 2020, we announced that YHP was to partner with UNICEF to prevent NCDs among young people. We will support UNICEF with a $12.5 million grant to support programming which will reach more than five million young people, train 1,000 youth advocates and positively shape public policy.

We were named Business of the Year at Third Sector's Business Charity Awards, which recognise the outstanding contribution that UK companies make to good causes.

Further information on YHP can be found on its website, www.younghealthprogrammeyhp.com.

Responsible R&D

Our initiatives include a responsible R&D strategy to drive global health outcomes. This includes: integrating access considerations into R&D governance to increase the speed and breadth of patient access; driving excellence in product life-cycle management through our work on product safety and product environmental stewardship; engaging in scientific collaborations to build local capacity for R&D; and investing in science and technology, such as digitalisation and precision medicine, which can help reduce infrastructure costs and ensure effective treatment.

Community investment BV

Our Global Standard on External Funding encompasses community investment and provides guidance to ensure a consistent, transparent and ethical approach around the world, based on local need. Our activities are focused on healthcare in the community and supporting science education. They include financial and non-financial contributions. In 2019, we gave more than $72 million (2018: $57 million) through our community investment activities to more than 900 non-profit organisations in 53 countries. The increase reflects a change in practice with a number of larger contributions being transferred to our Charitable Foundations. The amount includes more than $27.4 million (2018: $17.5 million) for product donations that were given in support of public health needs and disaster relief. The increase reflects changes in the volume and mix of products donated. In addition to these community investments, we also donated more than $801 million (2018: $686 million) of medicines in connection with patient assistance programmes around the world, the largest of which is our AZ&Me programme in the US.

Our global disaster relief partner is the British Red Cross. In 2019, we continued to support humanitarian efforts to provide healthcare to people affected by armed conflict in Northern Nigeria and we also responded to appeals for support to Ebola and Cyclone Idai relief efforts. Our global product donation partners are Americares, Direct Relief International and Health Partners International of Canada.

In 2019, our Step Up! Young Health Global Grants Programme provided a total of $151,401 to 16 organisations that are innovating to improve the health and wellbeing of young people.

We continue to support *Connections for Cardiovascular Health*℠, a programme of the AstraZeneca HealthCare Foundation that was launched in 2010 to address heart health in the US. In 2019, the AstraZeneca HealthCare Foundation provided $775,000 in continuation grants to 11 non-profit organisations for programmes that aim to help prevent, better manage and reduce cardiovascular disease.

Making a positive impact on our communities is also about volunteering. We encourage our employees to volunteer and support their efforts with one day's leave for community service. In 2019, our employees volunteered more than 28,000 hours on community projects in countries around the world.

For more information on the Step Up! Young Health Global Grants Programme, visit www.younghealthprogrammeyhp.com.

For more information on the AstraZeneca HealthCare Foundation's *Connections for Cardiovascular Health*℠ programme, visit www.astrazeneca-us.com/foundation.

For more information on the AstraZeneca HealthCare Foundation, see the Glossary from page 268.

Product donation programmes

As noted above, in some countries, our patient assistance programmes offer medicine for free to patients who cannot afford to pay. These programmes vary by country with the largest being AZ&Me in the US. AZ&Me is governed as a 501(c) (4) organisation, which categorises the activity for the purpose of social welfare and establishes specific governance requirements, which keeps it separate from our commercial business.

In 2019, we celebrated the eleventh year of our collaboration with Americares and the Sihanouk Hospital Center of Hope (SHCH) for the Cambodia Breast Cancer Initiative. The collaboration aims to strengthen existing treatment services while expanding in scale to reach additional patients. The programme screened 843 new patients; provided information on early detection and screening to more than 10,000 individuals; diagnosed 82 cases of breast cancer and continued to treat 404 patients who were previously diagnosed; and administered more than 15,000 units of free AstraZeneca medicines to post-menopausal breast cancer patients in the SHCH's treatment cohort.

For more information about AZ&Me, see page 33.

Learn more in our 2019 Sustainability Report on www.astrazeneca.com/sustainability.

Health and the environment

During 2019, we continued with our pilot programme in respiratory health at Lake Victoria's Dunga Beach, in Western Kenya, which enables the local community to transform waste into clean energy. The goal of the programme is preventing exposure to air pollutants by offering a substitute to wood-burning cookstoves and improving the respiratory health of the nearby community with an alternative fuel source. By providing a substitute for solid fuels, it also reduces the time and effort dedicated by women and children to collecting firewood, time which is then invested in schooling and income-generating activities.

The pilot is run with the Cambridge Institute for Sustainability Leadership (CISL) who studied the environmental impact of this intervention, with base-line and end-line reports published by CISL.

Sustainability BV

We want to be valued and trusted by our stakeholders as a source of great medicines over the long term. We deliver our business strategy in a way that broadens access to our medicines, minimises the environmental footprint of our products and processes, and ensures that ethics and transparency underpin everything we do.

Governance

Sustainability governance frames how we operate. Geneviève Berger, a Non-Executive Director, oversees the implementation of our sustainability matters on behalf of the Board of Directors. Our ambition is to be a leader in sustainability by delivering the strategy from the materiality assessment carried out in 2018 and as outlined in our Sustainability Report. Katarina Ageborg is responsible for the global strategy, and performance measures are tracked by the SET on the quarterly Company Scorecard.

Our Sustainability Advisory Board comprises five SET members and four external sustainability experts. It provided guidance on strategic direction, recommendations for opportunities, and insights and feedback twice in 2019. Throughout the year, we engaged with employees and external stakeholders, including investors, Ministries of Health, NGOs, patients and suppliers.

Our approach

Our approach is aligned with our Purpose and business strategy, allowing us to maximise the benefit for our patients, our business, broader society and the planet. As outlined below, we have a global strategy that integrates sustainability practices throughout our operations. In 2019, we put into operation our updated approach based on a structured sustainability materiality assessment that engaged external and internal stakeholders. We measure our progress through annual and long-term targets, and sustainability-related occurrences are incorporated into publicly released quarterly results for investors.

Benchmarking and assurance

Recognition of our work in sustainability

DJSI

> Named in the Dow Jones Sustainability World and Europe Indices
> Attained industry-best scores for: Environmental Reporting, Labour Practice Indicators, Health Outcome Contribution and Social Reporting

FTSE4Good

> Named as a FTSE4Good Index series constituent, which is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices

CDP

> Water A List – among the top 1.5% of companies participating in CDP's water security programme for our commitment to transparency around environmental risks and demonstration of sustainable water management
> Climate change A List – in recognition of our strategy and actions to reduce emissions and mitigate climate change

ISAE3000 Assured

> Bureau Veritas has provided independent external assurance to a limited level in accordance with the International Standard on Assurance Engagements 3000 (ISAE3000), and in accordance with ISAE3410 Assurance Engagements on Greenhouse Gas Statements for the sustainability information contained within this Annual Report and Form 20-F

For more information, see Sustainability: supplementary information on page 266 and the letter of assurance available on www.astrazeneca.com/sustainability.

We recognise the connection between enterprise risk management and sustainability management. Enterprise risk management helped inform the sustainability materiality assessment and we have better aligned our risk and sustainability classifications. Sustainability is considered throughout our quarterly risk reviews.

We show performance in our Sustainability Data Summary. Expanded discussion about our sustainability journey is in our 2019 Sustainability Report.

Learn more on our website, www.astrazeneca.com/sustainability.

Our sustainability strategy

At AstraZeneca, health is our business and our contribution to society. How we operate supports sustainable ecosystems for healthcare that benefit people and our planet through science-based innovation.

Our aspiration is for the future to be healthy and that we are an active participant for a healthy society, planet and business. Our pioneering medicines touch the lives of millions of people so it is a business imperative that we are partners and activists for solutions to global health. At the heart of our sustainability approach is access to healthcare and its connection to environmental protection, and ethics and transparency.

Our pillars	1. Access to healthcare Health is at the heart of our business	2. Environmental protection The health of the planet impacts all life	3. Ethics and transparency Equality and prosperity for all fuels healthy societies
Our ambitions to 2025	Work towards a future where all people have access to sustainable healthcare solutions for life-changing treatment and prevention	Manage our environmental impact across all our activities and our products	Create positive societal impact and promote ethical behaviour in all markets across our value chain
The connection to human health	Innovating, partnering in and transforming healthcare is essential for global health	Supporting a healthy environment helps prevent the onset of certain diseases and improve health outcomes	Fostering a culture of doing the right thing across our worldwide operations, including our supply chain, promotes health and wellbeing
Our material issues	Disease prevention and treatment, Responsible R&D, Investments in health systems, Environment's impact on health, and Affordability	Product environmental stewardship, Greenhouse gas reduction, Pharmaceuticals in the environment, Water stewardship, and Waste management	Ethical business culture, Inclusion and diversity, Talent and workforce evolution, Workforce wellbeing and safety, Responsible supply chain, and Human rights
Why it matters	Access to healthcare at AstraZeneca goes beyond our medicines. We are working towards a future where all people have access to sustainable healthcare solutions. We are transforming the future of healthcare along the continuum from prevention and awareness to diagnosis and treatment. We innovate across our therapy areas to address the challenges of diseases for patients, and the unmet medical need created by them. We recognise that healthcare delivery systems may be complex and multi-layered and we collaborate with experts to foster patient-centred quality healthcare designed to improve the health outcomes of patients. Our internal initiatives place a strong emphasis on the role of health in workforce wellbeing and safety, our supply chain and environmental stewardship. Information in respect of our focus areas in broadening access to healthcare can be found in this Annual Report as follows: > Investments in health systems and Disease prevention and treatment – see Access to healthcare – page 49 > Affordability – see Pricing and delivering value – page 32 > The environment's impact on health – page 50 > Responsible R&D – page 50	We are taking climate action now because we recognise the strong connection between a healthy planet and healthy people. With health at the heart of our business, we work to foster environments in which all life can thrive – seeking opportunities for environmental stewardship and mitigating climate impacts by managing natural resources and ensuring environmental safety of our products across our operations and value chain. Information in respect of our focus areas in protecting the environment can be found in this Annual Report as follows: > Greenhouse gas emissions reduction – page 39 > Waste management – page 39 > Water stewardship – page 39 > Product environmental stewardship – page 39 > Pharmaceuticals in the environment – page 39	We want to be valued not only for our medicines, but also for the way we work. We believe integrity, respect and transparency comprise the foundation of a healthy business culture. We build trust by demonstrating ethical business practices and fair treatment in everything we do across our value chain and in society. Information in respect of our focus areas in ethics and transparency can be found in this Annual Report as follows: > Ethical business culture: Our Values and norms, practices, standards and principles that guide the actions and behaviour of employees, including our Code of Ethics (see page 35), and acting in an ethical manner that goes beyond compliance with policies, laws and regulations. This applies across all our operation and our entire value chain and includes: – Bioethics (including animal welfare) – page 28 – Anti-bribery and anti-corruption – page 35 – Intellectual Property – page 41 – Responsible sales and marketing – page 35 – Transparency reporting – page 35 > Inclusion and diversity – page 46 > Talent and workforce evolution – page 44 > Workforce wellbeing and safety – page 47 > Responsible supply chain – page 37 > Human rights – page 47
Our global development impact			

For more information on our targets and performance, and contribution to the UN Sustainable Development Goals, see our 2019 Sustainability Report available on our website, www.astrazeneca.com/sustainability.

Non-Financial Information Statement

Under sections 414CA and 414CB of the Companies Act 2006, as introduced by the Companies, Partnerships and Groups (Accounts and Non-Financial Reporting) Regulations 2016, AstraZeneca is required to include, in its Strategic Report, a non-financial statement containing certain information. As required by the Regulations, the Strategic Report contains information on the following matters, which include references to our relevant policies, due diligence processes and information on how we are performing against various measures in these areas:

> Code of Ethics on page 35
> Environmental matters on pages 38-39 and page 266
> Employees on pages 44-47
> Social matters on pages 49-50 and page 52
> Respect for human rights on page 47
> Anti-corruption and anti-bribery matters on page 35

Information on the Group's Principal Risks is included in Risk Overview on pages 74-77 and information on the non-financial key performance indicators relevant to our business is included in Key Performance Indicators from page 20. A description of our business model is contained in Business model and life-cycle of a medicine from page 8.

Link to strategy: Be a Great Place to Work

Next Move

Zero carbon emissions

Ambition Zero Carbon

Our strategy to eliminate emissions by 2025 and be carbon negative by 2030.

What are we doing?

Our Ambition Zero Carbon strategy is to achieve zero carbon emissions from our global operations by 2025 and ensure our entire value chain is carbon negative by 2030. It accelerates our existing science-based targets, doubling energy productivity and using renewable energy for both power and heat. Our strategy sets out to make our global operations responsible for zero carbon emissions without relying on offset schemes to reach zero emissions on aggregate.

$1bn

We will invest up to $1 billion to achieve our goals and to develop the next-generation respiratory inhalers with near-zero Global Warming Potential (GWP) propellants.

100%

100% electric vehicle fleet five years ahead of schedule.

50m

AZ Forest is our 50-million tree reforestation initiative in collaboration with local governments and One Tree Planted, a non-profit organisation focused on global reforestation.

"The commitments AstraZeneca has made as part of our Ambition Zero Carbon strategy will enable us to speed up the reduction of our impact on climate, bringing forward our decarbonisation plans by more than a decade, and inspire collaboration at a global level to effect policy change."

Pascal Soriot
Chief Executive Officer

Oncology

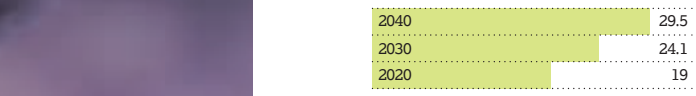
Our ambition is to push the boundaries of science to change the practice of medicine, transform the lives of patients living with cancer, and ultimately eliminate cancer as a cause of death.

Unmet medical need and world market

> Cancer is the second leading cause of death globally
> Lung cancer claims a life every 18 seconds; it has the highest cancer mortality rate, followed by colorectal, stomach, liver and breast cancer
> With over two million new cases for each in 2018, lung cancer and breast cancer are the two most common types of cancer
> Other common cancers include prostate and ovarian cancer

A portfolio of DNA damage response inhibitors that selectively kill cancer cells while minimising the impact on normal cells.

Estimated annual cancer cases (m)

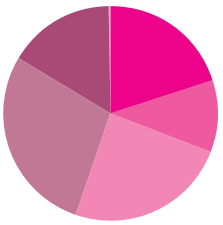


1.8m
Lung cancer was responsible for the deaths of 1.8 million people in 2018.

2.1m
Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year.

Therapy area world market
(MAT/Q3/19)

$124.4bn
Annual worldwide market value



- Chemotherapy $24.4bn
- Hormonal therapies $13.1bn
- Monoclonal antibodies (mAbs) $30.0bn
- Small molecule targeted agents $34.7bn
- Immune checkpoint inhibitors $20.9bn
- Other oncology therapies $0.1bn

Source: IQVIA.
AstraZeneca focuses on specific segments within this overall therapy area market.

Key marketed products and revenues 2019

Our Oncology performance in 2019 was driven by the rapid and broad market penetration of our new medicines, with several launches and new indications across our key markets.

Oncology Product Sales

$8,667m

37% of total

2018: $6,028m

2017: $4,024m

Product	Disease area	Revenue	Commentary
Tagrisso (osimertinib)	Lung cancer	↑ $3,189m, up 71% (74% at CER)	Approved in 80 countries, including the US, Japan, China and the EU, for 1st-line EGFRm advanced non-small cell lung cancer (NSCLC), and more than 85 countries, including the US, Japan, China and the EU, for 2nd-line use in patients with EGFRm T790M mutation-positive advanced NSCLC.
Imfinzi (durvalumab)	Lung cancer Bladder cancer	↑ $1,469m, up 132% (133% at CER)	Approved in the curative-intent setting of unresectable, Stage III NSCLC after chemoradiotherapy in 61 countries, including the US, Japan, China and the EU. Also approved for previously treated patients with advanced bladder cancer in 15 countries, including the US. Regulatory reviews are also underway in small cell lung cancer (SCLC).
Lynparza (olaparib)	Ovarian cancer Breast cancer Pancreatic cancer	↑ $1,198m, up 85% (89% at CER)	Approved in 73 countries for the maintenance treatment of platinum-sensitive relapsed ovarian cancer, regardless of BRCA status. Also approved in the US, the EU, Japan, China and several other countries as 1st-line maintenance treatment of BRCA-mutated (BRCAm) advanced ovarian cancer following response to platinum-based chemotherapy. In 58 countries, including the US and Japan, it is approved for germline BRCAm, HER2-negative, metastatic breast cancer, previously treated with chemotherapy; in the EU, this includes locally-advanced breast cancer. Approved in the US as a 1st-line maintenance treatment for germline BRCAm metastatic pancreatic cancer.
Calquence (acalabrutinib)	Mantle cell lymphoma (MCL) Chronic lymphocytic leukaemia (CLL)	↑ $164m, up 164% (164% at CER)	Approved for the treatment of adult patients with CLL in the US, Canada and Australia. Also approved for previously treated patients with MCL in 12 countries, including the US, Canada, Australia, Brazil, Qatar, the United Arab Emirates, Israel, Mexico, Argentina, Singapore, Chile and India.
Lumoxiti (moxetumomab pasudotox-tdfk)	Hairy cell leukaemia (HCL)		Approved in the US for ≥3rd-line relapsed or refractory HCL. In 2018, the commercialisation rights of *Lumoxiti* were licensed to Innate Pharma for the US and EU.
Enhertu (trastuzumab deruxtecan)	Breast cancer		Approved in the US for HER2-positive unresectable or metastatic breast cancer following two or more prior anti-HER2 based regimens. Regulatory reviews are also underway in other jurisdictions for breast cancer.
Legacy			
Faslodex (fulvestrant)	Breast cancer	↓ $892m, down 13% (11% at CER)	
Zoladex (goserelin acetate implant)	Prostate cancer Breast cancer	↑ $813m, up 8% (13% at CER)	
Iressa (gefitinib)	Lung cancer	↓ $423m, down 18% (15% at CER)	
Arimidex (anastrozole)	Breast cancer	↑ $225m, up 6% (11% at CER)	
Casodex/*Cosudex* (bicalutamide)	Prostate cancer	↔ $200m, flat at 0% (up 3% at CER)	
Others		↓ $94m, down 18% (17% at CER)	

Full product information from page 243.

Our strategy for Oncology

In 2019, we focused our Oncology business on six key areas that reflect both our commercial priorities and our key scientific platforms:

- *Tagrisso* and tumour drivers and resistance (TDR) mechanisms
- *Imfinzi* and immuno-oncology (IO)
- *Lynparza* and DNA damage response (DDR)
- *Calquence* and haematology
- *Enhertu* (DS-8201) and antibody-drug conjugates (ADCs)
- Established portfolio.

Our Oncology activities have spanned across our four strategic imperatives.

1. Focus research on four scientific platforms: Our broad pipeline of next-generation medicines is aimed at expanding our treatment options for solid tumours and haematological cancers. We are exploring several monotherapy and combination approaches across our four scientific platforms:

- **Tumour drivers and resistance:** Developing therapies that target specific molecular mutations to attack cancer cells.
- **Immuno-oncology:** Using the body's immune system to help fight cancer.
- **DNA damage response:** Targeting the DNA repair process to block tumour cells' ability to reproduce.
- **Antibody-drug conjugates:** Arming antibodies with cancer-killing agents for specific tumour targeting.

2. Focus on early stages of disease and relapsed or refractory patients: To redefine the current cancer treatment paradigm, we recognise we must both identify and treat patients earlier in their disease progression when there is a possibility of cure, and also improve the treatment of relapsed or refractory patients to extend survival and deliver the most transformative outcomes.

3. Lead precision medicine in the most prevalent and deadly tumour types: On our path to eliminating cancer as a cause of death, we have set ourselves the goal of improving five-year survival in tumour types where mortality remains high, such as ovarian and NSCLC. We also continue to concentrate on biomarker-driven indications where the benefits to patient populations are tangible and significant.

4. Leverage our global footprint: To deliver these treatment-changing solutions to as many patients in need as possible, we are building capacity across all geographies. We are also deploying new access solutions to ensure that patients that need our medicines can get them. In addition, through our Oncology Business Unit, we are increasing focus and improving response time in key markets such as the US, UK, Italy, France, Germany, Spain, Japan and China.

Therapy Area Review
Oncology *continued*

2019 pipeline highlights

In 2019, we had more than 75 new molecular entities (NMEs) under investigation in various stages of development from Phase I through to Phase III.

Our late-stage pipeline delivered a strong flow of new clinical data across our portfolio and we continued to present our scientific progress at major medical congresses. We also continued to invest in new clinical entities through partnerships and acquisitions.

Full details are given in the Development Pipeline from page 238 and highlights from the progress our Oncology pipeline made in 2019 against our KPIs are shown below.

Life-cycle phases – R&D

NME Phase II a/b starts/progressions

We have initiated Phase II clinical trials in various solid tumours with MEDI5752, our novel bispecific antibody which targets PD-1 and CTLA-4, and with AZD9833, an oral SERD in development for ER+ breast cancer. AZD4635, an A2AR antagonist and oleclumab, our IgG1 mAb against CD73, are being explored as a combination therapy in patients with prostate cancer.

Product	Cancer type
AZD4635 + oleclumab	Prostate cancer
AZD9833	Breast cancer
AZD9833 + palbociclib	ER + breast cancer
MEDI5752	Solid tumours

NME and major life-cycle management (LCM) positive Phase III investment decisions

Product	Cancer type
None	–

Investment decisions have been made for eight projects, but clinical trials have yet to start.

NME and major LCM regional submissions

2019 was a landmark year with submissions for seven different medicines in 10 indications across regions.

Product	Cancer type	Region
Bevacizumab (FKB238)	VEGF cancer treatment	US, EU, Japan
Calquence	Relapsed/refractory CLL (ASCEND)	EU, US
Calquence	1st-line CLL (ELEVATE-TN)	EU, US
Imfinzi + SoC	1st-line extensive-stage SCLC (CASPIAN)	US, EU, Japan
Lumoxiti	3rd-line HCL	EU
Lynparza	gBRCAm metastatic breast cancer (OlympiAD)	China
Lynparza	1st-line pancreatic cancer (POLO)	US, EU
Lynparza	Prostate cancer (PROfound)	US, EU
Lynparza + *Avastin*	Ovarian cancer (PAOLA-1)	US
Selumetinib	Neurofibromatosis type 1 (SPRINT)	US
Enhertu	HER2-positive unresectable or metastatic breast cancer (DESTINY-Breast01)	US, Japan

Plus one project where submissions have been made and regulatory acceptance is pending.

Life-cycle phases – approvals

NME and major LCM regional approvals

Our medicines expanded into new indications with approvals for *Calquence* in CLL and for *Lynparza* in germline BRCA-mutated (gBRCAm) pancreatic cancer, and in new regions with *Lynparza* approved in the EU for gBRCAm metastatic breast cancer and *Imfinzi* approved in China for unresectable, Stage III NSCLC. We also had the first global approval for *Enhertu* in 2019 in HER2-positive unresectable or metastatic breast cancer.

Product	Cancer type	Region
Calquence	Relapsed/refractory CLL (ASCEND)	US
Calquence	1st-line CLL (ELEVATE-TN)	US
Enhertu	HER2-positive unresectable or metastatic breast cancer (DESTINY-Breast01)	US
Imfinzi	Locally advanced (Stage III) NSCLC (PACIFIC)	China
Lynparza	gBRCAm metastatic breast cancer (OlympiAD)	EU
Lynparza	1st-line ovarian cancer (SOLO-1)	EU, Japan, China
Lynparza	1st-line pancreatic cancer (POLO)	US
Tagrisso	1st-line NSCLC (FLAURA)	China

Discontinued projects

Product	Cancer type	Reason
AZD0156	Solid tumours	Strategic
AZD4547	Solid tumours	Safety/efficacy
AZD4785	Solid tumours	Safety/efficacy
AZD8186	Solid tumours	Strategic
Imfinzi + dabrafenib + trametinib	Melanoma	Safety/efficacy
Imfinzi + *Iressa*	NSCLC	Safety/efficacy
Imfinzi + MEDI0680	Solid tumours	Safety/efficacy
Imfinzi + tremelimumab	1st-line NSCLC (NEPTUNE)	Safety/efficacy
Lynparza + AZD6738	Gastric cancer	Safety/efficacy
MEDI3726	Prostate cancer	Safety/efficacy
MEDI7247	Haematological malignancies, solid tumours	Safety/efficacy
Oleclumab + AZD4635	NSCLC	Strategic
Savolitinib	Papillary renal cell carcinoma (SAVOIR)	Strategic

For more information on the life-cycle of a medicine, see page 9.

Lung Ambition Alliance

In collaboration with the International Association for the Study of Lung Cancer (IASLC), Guardant Health and the Global Lung Cancer Coalition (GLCC), in July 2019, we announced the formation of the Lung Ambition Alliance. It has the goal of one day eliminating lung cancer as a cause of death and has identified three areas of focus that span the patient experience:

1. **Increasing lung cancer screening and early diagnosis** by raising awareness of the effectiveness of screening and addressing barriers to early detection, with continued improvements to the ease and reliability of diagnostics and contributions to better understanding of disease progression.
2. **Delivering innovative medicine** by enabling widespread paradigm shifts to earlier intervention when there is still potential for a cure.
3. **Enhancing quality care** by working with advocates and policymakers to deliver projects that address the challenges most urgent to patients on the local level and by improving coordination across the multidisciplinary team of treaters.

Through effective activation of these workstreams, the Alliance has set the goal of doubling five-year survival for lung cancer by 2025.

"Through the Lung Ambition Alliance, we are working together with top oncology minds to accelerate progress and help patients with lung cancer live longer and better lives."

David Fredrickson
EVP, Oncology Business Unit

2019 review – strategy in action

2019 saw stable performances from our established Oncology products, steady growth from our innovative new medicines portfolio, and a generally positive news flow from our late-stage pipeline in each of our four strategic pillars.

Tagrisso and tumour drivers and resistance mechanisms

Tagrisso is a best-in-class, highly selective, irreversible inhibitor of the activating sensitising EGFR mutation (EGFRm) and the resistance mutation T790M.

Our tumour drivers and resistance (TDR) mechanisms platform explores precision medicines with a biomarker-driven approach to inhibit genetic disease drivers as a clinically validated approach to shrink tumours and improve progression-free survival (PFS) and overall survival (OS). Tumours, however, eventually develop resistance to these therapies. Our programmes seek to develop therapies that target resistance mechanisms and the mutations that cause cancer cells to proliferate.

In 2019, it became our top-selling medicine as we extended its global roll-out for 1st-line NSCLC. *Tagrisso* also continues to be investigated in NSCLC in the adjuvant setting (ADAURA), in the locally-advanced unresectable setting (LAURA), in combination with chemotherapy (FLAURA2) in the metastatic setting, and with potential new medicines to address resistance to EGFR-TKIs (SAVANNAH, ORCHARD).

In September 2019, *Tagrisso* was approved as a 1st-line treatment in China for adults with locally-advanced or metastatic NSCLC. Also in September, the benefit of using *Tagrisso* in the 1st-line treatment of adult patients with locally-advanced EGFRm NSCLC was confirmed with the results of a key secondary endpoint of the Phase III FLAURA trial. Results showed a statistically significant and clinically meaningful improvement in OS, for *Tagrisso* versus gefitinib or erlotinib, both of which were previous standard of care treatments.

Several other next-generation potential medicines from our TDR platform moved into or progressed in Phase III in 2019:

- Selumetinib: A MEK 1/2 inhibitor, and part of a global strategic oncology collaboration with MSD, selumetinib was granted Breakthrough Therapy Designation by the FDA in April 2019 for the treatment of paediatric patients aged three years and older with neurofibromatosis type 1 (NF1) symptomatic and/or progressive, inoperable plexiform neurofibromas (PN), a rare, incurable genetic condition. In November 2019, we announced its filing acceptance by the FDA for a potential indication in NF1.
- Savolitinib: A selective inhibitor of c-MET receptor tyrosine kinase, savolitinib is being investigated with Hutchison China MediTech Limited (Chi-Med), both as a monotherapy and in combination. It has shown promising signs of clinical efficacy in patients with MET gene alterations in lung cancer and gastric cancer with an acceptable safety profile, including promising preliminary efficacy and safety results in the ongoing China Phase II study of savolitinib monotherapy in NSCLC patients with MET mutations. It also showed promise in the TATTON Phase Ib expansion cohort when combined with *Tagrisso* in patients with EGFRm MET-amplified NSCLC; this combination has been taken into a large Phase II trial, SAVANNAH, which is ongoing.
- Capivasertib (AZD5363): Our AKT inhibitor, capivasertib entered Phase III development in the first half of 2019 for triple negative breast cancer.

Other agents in early development include: AZD9496, a selective oestrogen receptor degrader (SERD) in Phase I development for the treatment of oestrogen receptor positive (ER+) breast cancer; AZD9833, a SERD in Phase II development for the treatment of ER+ breast cancer; AZD5153, a bromodomain-4 inhibitor in Phase I for solid tumours; and in our cell death portfolio, AZD5991 (MCL1 inhibitor) and AZD4573 (CDK9 inhibitor), which are being investigated in haematological malignancies.

Imfinzi and immuno-oncology

Imfinzi, a human mAb that binds to PD-L1 and blocks the interaction of PD-L1 with PD-1 and CD80 continued its strong commercial performance in 2019, building on its quick adoption in the US and supported by new approvals and accelerating growth in markets outside the US.

Immuno-oncology (IO) is a promising therapeutic approach that harnesses the patient's own immune system to help fight cancer. We aim to become scientific leaders in IO by identifying novel approaches that enhance the immune system's ability to fight cancer, both with IO medicines on their own, and in conjunction with other medicines.

Treating early-stage NSCLC

Imfinzi is the only immunotherapy to demonstrate OS at three years in unresectable Stage III NSCLC and represents a new standard of care treatment. In 2019, three-year OS results from the Phase III PACIFIC trial showed a durable and sustained OS benefit in patients with unresectable, Stage III NSCLC who had not progressed following concurrent chemoradiation therapy (CRT), a previous standard of care treatment. In December, *Imfinzi* was approved in China for patients with unresectable Stage III NSCLC.

Lung cancer is a key area of focus for our IO portfolio and we announced new trials in 2019 to investigate the full potential of *Imfinzi* in early-stage NSCLC:

- ADJUVANT BR.31, an externally-sponsored research study led by the Canadian Cancer Trials Group, will explore the benefits of treatment with *Imfinzi* following complete tumour resection.
- PACIFIC-2 will assess efficacy and safety of *Imfinzi* given concurrently with platinum-based CRT in Stage III NSCLC patients.
- PACIFIC-5 will assess the efficacy and safety of *Imfinzi* in patients treated with either sequential or concurrent CRT in patients with unresectable Stage III NSCLC.

Late-stage NSCLC

Our clinical trial portfolio also explores ways to improve outcomes for patients who have relapsed or are diagnosed with metastatic disease. In this setting, *Imfinzi* is being investigated as a monotherapy and in combination with tremelimumab and/or chemotherapy in the PEARL and POSEIDON trials.

In August 2019, we announced that NEPTUNE, a Phase III trial of *Imfinzi* in combination with tremelimumab, an anti-CTLA4 antibody, versus standard of care platinum-based chemotherapy in the 1st-line treatment of patients with Stage IV (metastatic) NSCLC, failed to meet its primary endpoint. We are continuing to analyse the clinical and biomarker data from this trial to gain further insights to improve IO approaches for patients with metastatic NSCLC.

In October 2019, we announced positive PFS results from the Phase III POSEIDON trial for *Imfinzi* and tremelimumab when added to chemotherapy in previously-untreated Stage IV (metastatic) NSCLC. The trial met its primary endpoint by showing a statistically significant and clinically meaningful improvement in the final PFS analysis in patients treated with the combination of *Imfinzi* and a broad choice of five standard of care platinum-based chemotherapy options versus chemotherapy alone. The triple combination of *Imfinzi* plus tremelimumab and chemotherapy also demonstrated a statistically significant and clinically meaningful PFS improvement versus chemotherapy alone as a key secondary endpoint. OS data from this trial are now expected in 2021.

Imfinzi in SCLC

SCLC, which constitutes about 15% of all lung cancer diagnoses, is a fast-growing cancer that recurs and progresses rapidly. It is the most aggressive type of lung cancer with only 6% of patients alive after five years.

In 2019, *Imfinzi* demonstrated both a significant survival benefit and improved responses in extensive-stage SCLC in the Phase III CASPIAN trial. The FDA subsequently granted Orphan Drug Designation to *Imfinzi* for the treatment of SCLC and, in November 2019, granted Priority Review for the treatment of patients with 1st-line extensive-stage SCLC.

Imfinzi is also being tested following concurrent CRT in limited-stage SCLC in the Phase III ADRIATIC trial.

Exploring other indications

Beyond lung cancer, we continue to explore the potential of *Imfinzi* and tremelimumab in head and neck squamous cell carcinoma (HNSCC) (KESTREL), bladder cancer (DANUBE, NILE, POTOMAC, NIAGARA) and in hepatocellular carcinoma (HCC) (HIMALAYA, EMERALD-1, and EMERALD-2).

Our IO pipeline

Our IO pipeline contains NMEs targeting multiple pathways, novel mechanisms to boost current immune response, and agents to modify the tumour microenvironment both alone and in combination with checkpoint inhibition. We continue to explore the adenosine pathway, which is increasingly recognised as critical to tumour suppression and represents a new frontier within IO. Some of the 2019 highlights from our IO pipeline include:

- Monalizumab: Our first-in-class humanised anti-NKG2A antibody is being investigated in HNSCC, colorectal cancer, and haematological malignancies. Monalizumab is now transitioning to a Phase III trial in HNSCC in combination with cetuximab.
- Oleclumab is our Immunoglobulin G1 (IgG1) mAb against CD73. It is being explored in combination with *Imfinzi* and chemotherapy in pancreatic cancer, as well as in combination with *Tagrisso*, AZD4635 or *Imfinzi* in lung cancer.
- AZD4635: An adenosine 2A receptor (A2AR) inhibitor is being explored as monotherapy and in combination with *Imfinzi* in solid tumours in Phase II trials.
- AZD9150: danvatirsen, a STAT3 antisense oligonucleotide (ASO) continues to be investigated in Phase II in patients with 2nd-line HNSCC and in combination with *Calquence* for haematological cancers.
- MEDI5752: A novel bispecific antibody designed to target PD-1 and CTLA-4 checkpoints on immune cells is being studied in a range of solid tumours.
- MEDI0457: a human papilloma virus (HPV) vaccine currently tested in combination with *Imfinzi* in HPV-positive HNSCC.
- MEDI5083: Preclinical data on this novel fusion protein that activates the CD40 pathway were presented at the 2019 American Association for Cancer Research (AACR) meeting.

Lynparza **and DNA damage response**

Lynparza is our first and best-in-class oral poly ADP-ribose polymerase (PARP) inhibitor, and the first targeted treatment to block DDR in cells/tumours harbouring a deficiency in homologous recombination repair (HRR), such as mutations in BRCA1 and/or BRCA2. We have a global strategic oncology collaboration with MSD to co-develop and co-commercialise *Lynparza*.

Our DNA damage response (DDR) platform exploits mechanisms that selectively damage tumour cell DNA to shrink tumours and improve PFS and OS. Our market-leading programmes focus on multiple ways to identify and exploit vulnerabilities to kill the tumour cells, while minimising toxicity to the patient.

In 2014, *Lynparza* became the world's first approved PARP inhibitor. Initially indicated for the treatment of ovarian cancer, in 2017, it became the first PARP inhibitor to demonstrate benefits in certain types of breast cancer. In 2019, *Lynparza* exceeded $1 billion in sales worldwide, demonstrating its uptake by physicians in need of treatment options for multiple cancer types.

Leadership in ovarian cancer

We are committed to changing the way advanced ovarian cancer is treated in the 1st-line setting. The positive SOLO-1 trial had already demonstrated the significant benefit of extending PFS much earlier, bringing the goal of long-term remission and cure in ovarian cancer closer for women with tumours that harbour a BRCA mutation. In 2019, results from the Phase III PAOLA-1 trial in the 1st-line maintenance setting in women regardless of biomarker status or surgical outcome and a broader patient group than in SOLO-1, showed that *Lynparza*, when added to the standard of care, bevacizumab, delivered a statistically significant and clinically meaningful improvement in PFS. Women taking the *Lynparza*-bevacizumab combination lived longer without disease progression or death compared with those taking bevacizumab alone. The goal of 1st-line treatment is to delay progression of the disease for as long as possible, with the intent of achieving complete remission or cure and these data have the potential to change clinical practice in how women with advanced ovarian cancer are treated.

First PARP inhibitor to achieve positive Phase III results in four different cancer types

In 2019, *Lynparza* became the first and only PARP inhibitor with positive Phase III trial results in four different tumour types: pancreatic and prostate, as well as ovarian and breast.

The Phase III POLO trial explored the efficacy of *Lynparza* tablets as 1st-line maintenance monotherapy in patients with gBRCAm metastatic pancreatic cancer whose disease has not progressed on platinum-based chemotherapy. POLO is the first positive

Phase III trial of any PARP inhibitor in this disease where there is a critical unmet medical need.

Results from the POLO trial showed a statistically significant and clinically meaningful improvement in PFS, where *Lynparza* nearly doubled the time patients with gBRCAm metastatic pancreatic cancer lived without disease progression or death to a median of 7.4 months compared with 3.8 months on placebo. Based on these results, *Lynparza* has now been approved in the US for the maintenance treatment of adult patients with deleterious or suspected deleterious gBRCAm metastatic pancreatic cancer whose disease has not progressed on at least 16 weeks of a 1st-line platinum-based chemotherapy regimen.

The Phase III PROfound trial of *Lynparza* in men with metastatic castration-resistant prostate cancer (mCRPC) showed a statistically significant and clinically meaningful improvement in radiographic PFS with *Lynparza* versus enzalutamide or abiraterone in men with mCRPC whose tumours harbour mutations in one of 15 potential HRR genes, including BRCA1, BRCA2 and ATM. The potential benefits of *Lynparza* in mCRPC will continue to be tested in the Phase III PROpel trial that will assess the combination of *Lynparza* with abiraterone in 1st-line mCRPC.

Progress across the DDR pipeline

Our DDR pipeline continues to expand and progress:

- AZD7648, a potent and selective DNA-PK inhibitor which could be an innovative new way to target alternative DDR dependencies.
- Adavosertib (AZD1775), our WEE1 inhibitor continues in Phase II development for ovarian and other solid tumours in combination with *Lynparza*, in combination with chemotherapy, and as a monotherapy.
- Ceralasertib (AZD6738), an ataxia telangiectasia and Rad3-related (ATR) serine/threonine protein kinase inhibitor is being evaluated in Phase I/II trials in solid tumours and haematological malignancies as monotherapy and in combination with other targeted therapies, including *Lynparza* in triple negative breast cancer. It is also being investigated in combination with *Calquence* in CLL, and in combination with radiation therapy and chemotherapy.
- AZD2811 an aurora kinase B inhibitor in development as monotherapy in Phase II in SCLC and acute myeloid leukaemia.
- AZD1390, a blood-brain barrier penetrant inhibitor of ATM is in Phase I for brain tumours.

Calquence and haematology

Calquence is our irreversible oral Bruton's tyrosine kinase (BTK) inhibitor. It was approved for the treatment of MCL in the US in 2017.

In November 2019, the FDA approved *Calquence* for adult patients with CLL or small lymphocytic lymphoma (SLL). The US approval was granted under the FDA's Real-Time Oncology Review and the newly established Project Orbis programme which provides a framework for concurrent submission and review of oncology medicines among international partners. The FDA, the Australian Therapeutic Goods Administration, and Health Canada collaborated on this review and approval for CLL in Australia and Canada followed shortly after. Approval was based on positive results from the interim analyses of two Phase III clinical trials – ASCEND and ELEVATE-TN. The ASCEND trial compared *Calquence* with rituximab combined with delalisib or bendamustine in patients with relapsed or refractory CLL and the ELEVATE-TN trial evaluated the safety and efficacy of *Calquence* alone or in combination with obinutuzumab compared with chlorambucil in combination with obinutuzumab in patients with previously untreated CLL. Together, the trials showed that *Calquence* in combination with obinutuzumab or as a monotherapy significantly reduced the relative risk of disease progression or death versus the comparator arms in both 1st-line and relapsed or refractory CLL. Across both trials, the safety and tolerability of *Calquence* were consistent with its established profile.

There was also progress made in our haematology early-phase clinical programme, with AZD5991 (an MCL1 inhibitor), AZD4753 (a CDK9 inhibitor) and AZD0466 (a dual inhibitor of Bcl2 and Bcl-xL), all being investigated as part of our cell death programme, as well as ADCs, MEDI7247 and MEDI2228. In addition, the BTK and STAT3 combination is being explored in Phase I trials with *Calquence* and danvatirsen (AZD9150), a STAT3 ASO.

Enhertu and antibody-drug conjugates

In March 2019, we added *Enhertu* (DS-8201, trastuzumab deruxtecan), a new targeted medicine for cancer treatment to our ADC portfolio by signing a global development and commercialisation collaboration agreement with Daiichi Sankyo. The agreement enables both companies to jointly develop and commercialise the medicine worldwide, except in Japan, where Daiichi Sankyo will maintain exclusive rights.

Enhertu is currently in development for the treatment of multiple HER2-expressing cancers, including breast, gastric, colorectal and NSCLC. Following positive top-line results from the pivotal Phase II DESTINY-Breast01 trial in May 2019, regulatory submissions were completed in the US and Japan for previously treated patients with HER2-positive, unresectable and/or metastatic breast cancer. In October 2019, the FDA accepted the BLA application for *Enhertu* and granted Priority Review and, in December 2019, *Enhertu* received Accelerated Approval by the FDA for the treatment of adult patients with unresectable or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting. Detailed results of the DESTINY-Breast01 trial demonstrated an overall response rate of 60.9% and a median PFS of 16.4 months, based upon a median duration of follow-up of 11.1 months.

The use of antibody-drug conjugates (ADCs) is a clinically validated, highly potent approach that selectively targets cancer cells by combining innovative antibody engineering capabilities with cytotoxic drug molecules, to attack and kill the tumour while minimising toxicity to the patient.

We are also progressing with the development of our early stage ADC pipeline – MEDI7247 in haematological malignancies and solid tumours and MEDI2228 in multiple myeloma.

Established portfolio and biosimilars

In 2019, our established oncology brands – *Faslodex*, *Zoladex* and *Iressa* – performed well, with growth in *Zoladex* and moderate sales decreases of *Faslodex* and *Iressa*.

Faslodex showed a slower decline than expected, largely led by growth in combination use with CDK4/6 inhibitors and slower generic competition in the EU. Decline in the second half of the year was primarily driven by generic competition in the US.

Iressa sales continued to decline due to generic entries in select markets, the uptake of *Tagrisso* in 1st-line EGFRm advanced NSCLC, and the pricing impact on *Iressa* from centralised procurement in China.

Zoladex double-digit growth was based on increased access to medical castration and ovarian suppression, as well as earlier detection and diagnosis in prostate and breast cancers, predominantly in China and Emerging Markets.

We are partnering with Fuji Kirin Biologics and Samsung Biologics to develop two biosimilar molecules within joint venture companies. Both programmes progressed in 2019, with the more advanced biosimilar bevacizumab programme reporting positive clinical data and achieving a successful BLA submission with the US and EU regulators. Bevacizumab is a cornerstone of VEGF cancer treatment with some 15 approved indications either as monotherapy or in combination.

Cardiovascular, Renal & Metabolism

Our mission is to protect the lives of people from the often devastating consequences of heart failure, cardiovascular, metabolic and renal diseases, and to change clinical practice to address unmet medical need. We are committed to the seamless management of diseases, improving patient outcomes and decreasing the mortality rate.

Unmet medical need and world market

Cardiovascular, Renal & Metabolism (CVRM) diseases are the leading causes of death across the globe, killing more than 20 million people each year.

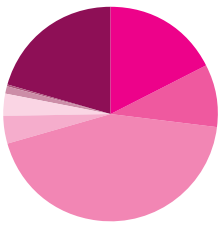
425m
Number of people living with diabetes.

64m
Number of people living with heart failure and cardiovascular disease which are responsible for the deaths of 17.9 million people per year.

200m
Number of people living with chronic kidney disease.

Therapy area world market
(MAT/Q3/19)

$194.4bn
Annual worldwide market value



- High blood pressure $34.1bn
- Abnormal levels of blood cholesterol $17.0bn
- Diabetes $89.9bn
- Thrombosis $7.6bn
- CKD $10.1bn
- CKD associated anaemia $6.9bn
- Hyperkalaemia $0.4bn
- Other CV $45.3bn

Source: IQVIA.
AstraZeneca focuses on specific segments within this overall therapy area market. Sales for CKD and CKD associated anaemia fall outside the CVRM total market. All sales for CKD associated anaemia ($6.9bn) fall within the CKD market and should not be double-counted.

Messenger RNA being read by a ribosome to produce signalling proteins.

Key marketed products and revenues 2019

Brilinta and *Farxiga* continued to provide a foundation for continued growth in the therapy area and our renal franchise made progress, with *Lokelma* launching in the US and progressively in Europe. Overall CVRM Product Sales were up 3% on 2018 (6% at CER).

CVRM Product Sales

$6,906m

29% of total

2018: $6,710m

2017: $7,266m

Product	Disease area	Revenue	Commentary
Brilinta/*Brilique* (ticagrelor)	Acute coronary syndromes (ACS) and high-risk patients with history of myocardial infarction (MI)	↑ $1,581m, up 20% (23% at CER)	Approved in more than 110 countries for ACS and more than 70 countries for high-risk patients with history of heart attack; included in major guidelines. *Brilinta* delivered consistent quarter-over-quarter growth in 2019 in all regions.
Farxiga/ *Forxiga* (dapagliflozin)	Type-2 diabetes, Type-1 diabetes	↑ $1,543m, up 11% (14% at CER)	Approved in 100 countries to improve glycaemic control in adult patients with type-2 diabetes; included in major guidelines. *Farxiga* delivered consistent, solid growth quarter-over-quarter in 2019. Approval for type-1 diabetes in EU and Japan. Complete Response Letter received from FDA for type-1 diabetes.
Bydureon (exenatide XR injectable suspension)	Type-2 diabetes	↓ $549m, down 6% (5% at CER)	Approved in more than 70 countries to improve glycaemic control in adults with type-2 diabetes; included in major guidelines. In 2019, *Bydureon* continued launch progress with *BCise* in a highly dynamic GLP-1 class.
Onglyza (saxagliptin)	Type-2 diabetes	↔ $527m, down 3% (0% at CER)	Approved in more than 85 countries for the treatment of adults with type-2 diabetes; included in guidelines. *Onglyza* maintained a strong performance in 2019 in Emerging Markets, driven by China, while facing US price pressure.
Byetta (exenatide injection)	Type-2 diabetes	↓ $110m, down 13% (11% at CER)	
Symlin (pramlintide acetate)	Type-2 diabetes	n/m $34m, movement n/m	
Qtern (metformin hydrochloride, saxagliptin and dapagliflozin)	Type-2 diabetes	↑ $18m, up 261% (276% at CER)	In 2019, our combination therapy of dapagliflozin, saxagliptin and metformin hydrochloride was approved in the US as *Qternmet* XR and in the EU as *Qtrilmet*.
Lokelma (sodium zirconium cyclosilicate (SZC))	Hyperkalaemia	n/m $14m, movement n/m	Approved with launches under way in the US, EU, Canada and China for the treatment of adults with hyperkalaemia.
Legacy			
Crestor (rosuvastatin calcium)	Dyslipidaemia Hyper-cholesterolaemia	↓ $1,278m, down 11% (8% at CER)	Financial impact has stabilised following patent expiries in the US (2016) and EU/Japan (2017). Licensed from Shionogi. The extension of the global license agreement with Shionogi for *Crestor* became effective 1 January 2014.
Seloken/*Toprol-XL* (metoprolol succinate)	Hypertension Heart failure Angina	↑ $760m, up 7% (12% at CER)	Divested rights in Europe to Recordati in May 2017. Divested US rights to Aralez effective October 2016.
Atacand/*Atacand HCT*/*Atacand Plus* (candesartan cilexitil)	Hypertension Heart failure	↓ $221m, down 15% (11% at CER)	Divested rights to Cheplapharm in 28 European markets in July 2018. Licensed from Takeda Chemicals Industries Ltd.
Others		↓ $273m, down 9% (6% at CER)	

Our strategy for CVRM

We have divided CVRM into four distinct but interrelated disease areas: cardiovascular disease, heart failure, metabolic and renal diseases. In developing targeted medicines for these diseases, we recognise that, in addition to their differences, these four areas are interconnected. Whereas shared risk factors are often currently neither diagnosed nor addressed, science suggests that, by considering common mechanisms of CVRM diseases, we can work with healthcare practitioners (HCPs) to improve outcomes in patients with one specific diagnosis before co-morbidities emerge.

Our ambition in CVRM

Our aim is to develop and grow a portfolio of medicines that address the multiple risk factors or co-morbidities across CVRM. Our efforts are built on global randomised clinical trials (RCTs) that are as close as possible to clinical practice and real-world evidence (RWE) research. These help us gather vital insights into patient needs and clinical practice, and develop treatments that meet the requirements of both patients and HCPs.

Our ambition is as follows:

- **Cardiovascular:** to help eliminate CV risk factors and stop disease progression.
- **Heart failure:** to help prevent, treat and cure this leading cause of death.
- **Renal:** to help treat life-threatening complications and slow disease progression.
- **Metabolism:** to treat beyond HbA1C (average blood glucose levels), prevent cardio-renal complications and explore non-alcoholic steatohepatitis (NASH).

With our existing medicines and those in late-stage development, we are already delivering life-changing results in the four CVRM disease areas and their complications.

- **Cardiovascular:** *Brilinta*
- **Heart failure:** *Farxiga*, *Lokelma*
- **Renal:** *Lokelma*, roxadustat, *Farxiga*
- **Metabolism:** *Brilinta*, *Farxiga*, *Bydureon*, *Qtern*

We additionally have a pipeline of more than 25 therapies and therapy combinations and believe we have a comprehensive portfolio of potential medicines that might combat these life-threatening conditions.

Beyond our research, we also invest in strategic partnerships to better educate stakeholders about these diseases and improve patient access to healthcare worldwide.

Therapy Area Review
Cardiovascular, Renal & Metabolism *continued*

2019 pipeline highlights

Our pipeline includes biologics, antisense oligonucleotides, mRNA, ProTACs and cell therapy. We are researching pioneering approaches in the field of disease regression and organ regeneration for conditions such as CKD, ACS, coronary artery disease (CAD), chronic heart failure (HF) and NASH.

Full details are given in the Development Pipeline from page 238 and highlights from the progress our CVRM pipeline made in 2019 against our KPIs are shown below.

Life-cycle phases – R&D

New molecular entity (NME) Phase II a/b starts/progressions

We have initiated Phase II clinical trials, exploring NASH and diabetic kidney disease (DKD).

Product	Disease
Cotadutide	NASH
MEDI3506	DKD
Verinurad	CKD

NME and major life-cycle management (LCM) positive Phase III investment decisions

Product	Disease
None	–

NME and major LCM regional submissions

Farxiga entered a new disease area for the treatment of heart failure and we also submitted label updates for diabetes based on results from the DECLARE trial. Our renal portfolio made regulatory filings for both *Lokelma* and roxadustat, plus data submissions for *Brilinta*.

Product	Disease	Region
Brilinta	CV outcomes trial in patients with CAD and type-2 diabetes without a previous history of MI or stroke (THEMIS)	US, EU, Japan, China
Farxiga/Forxiga	Type-2 diabetes (DECLARE)	EU, China
Farxiga/Forxiga	Worsening heart failure or cardiovascular death in patients with chronic heart failure (DAPA-HF)	US, EU
Lokelma	Hyperkalaemia	Japan, China
Roxadustat	Anaemia in CKD/end-stage renal disease (ROCKIES/OLYMPUS)	US

Life-cycle phases – approvals

NME and major LCM regional approvals

We made progress in providing new medicines such as *Lokelma* and roxadustat to renal patients where significant unmet medical need remains. The breadth of *Farxiga*'s indications grew with the label updated based on positive CV and renal outcomes data from the DECLARE trial in type-2 diabetes.

Product	Disease	Region
Bydureon BCise	Type-2 diabetes cardiovascular outcomes trial (CVOT) (EXSCEL)	US
Bydureon	Type-2 diabetes CVOT (EXSCEL)	US
Bydureon BCise	Type-2 diabetes CVOT (DURATION programme harmonisation)	US
Farxiga/Forxiga	Type-2 diabetes (DERIVE)	US
Farxiga/Forxiga	Type-1 diabetes (DEPICT)	Japan, EU
Farxiga/Forxiga	Type-2 diabetes CVOT (DECLARE)	EU, US
Lokelma	Hyperkalaemia	China
Qternmet XR (saxagliptin + dapagliflozin + metformin)	Type-2 diabetes	US
Qtrilmet (saxagliptin + dapagliflozin + metformin)	Type-2 diabetes	EU
Roxadustat[1]	Hyperkalaemia	Japan

[1] Development and commercialisation collaboration with FibroGen in China. FibroGen holds the NDA. Approved in 2019 in China for non-dialysis dependent patient population (2018 approval was for dialysis-dependent patient population).

Discontinued projects

Product	Disease	Reason
Epanova	CV outcomes study in statin-treated patients at high CV risk, with persistent hypertriglyceridaemia plus low HDL-cholesterol (STRENGTH)	Safety/efficacy

For more information on the life-cycle of a medicine, see page 9.

Improving Care for Cardiovascular Disease in China

Care for Cardiovascular Disease in China (CCC) is a multi-year project focused on improving compliance with evidence-based therapy for patients with acute coronary syndromes (ACS) and atrial fibrillation (AFib) in almost 200 tertiary and secondary hospitals across China. The programme is a collaborative effort between the American Heart Association, the Chinese Society of Cardiology, and it is supported by funding from an independent educational grant from AstraZeneca.

Four core pillars of the programme – data collection, analysis, feedback and process improvement – address the quality of ACS and AFib care in its entirety, from assessing gaps in guideline compliance, through recommending and training on opportunities for improvement, to recognising best-practice solutions.

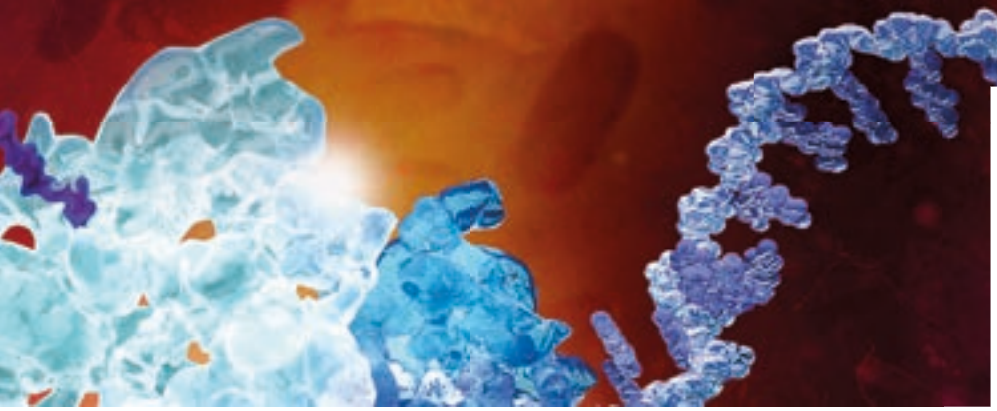
Regular data collection, which was first used to evidence the guideline compliance gap, now serves to verify the ongoing success and quality improvement achieved by the programme. For example, an 80.7% compliance rate in guideline-led care for ACS patients among those hospitals enrolled compares with 75.2% before the programme started.

81%

compliance rate in guideline-led care for ACS patients among hospitals enrolled

200

CCC projects in action in almost 200 tertiary and secondary hospitals across China



2019 review – strategy in action

As noted above, our CVRM strategy includes rigorous clinical programmes evaluating the use of our medicines in large patient populations:

- **Randomised clinical trials:** More than 22,500 patients are currently participating in our R&D-led CVRM trials at more than 3,000 sites worldwide in both Established and Emerging Markets. Our focus on diabetes research includes almost 50 clinical trials worldwide, with an enrolment target of 56,000 patients. These RCTs include the DapaCare Programme, OLYMPUS and ROCKIES, and THEMIS.
- **Real-world evidence data:** Our RWE studies have included CVD-REAL and DISCOVER, which both set out to deliver innovative data from large-scale settings.

Metabolism

Data from the landmark Phase III DECLARE-TIMI 58 trial for *Farxiga*, part of the DapaCare clinical programme which demonstrated the effective reduction in heart failure (HF) risk in a broad range of people with type-2 diabetes, provided the basis for the label updates in both the EU and the US. The FDA approved *Farxiga* to reduce the risk of hospitalisation for HF in adult patients with type-2 diabetes and established CV disease or multiple CV risk factors, based on results from DECLARE. This was following the EMA's label update for *Forxiga* to include CV outcomes and renal data from DECLARE. *Farxiga* is also currently under regulatory review in China with a decision anticipated in the first half of 2020. Throughout 2019, additional subanalyses from the DECLARE trial showed additional benefits for renal and metabolic health through earlier treatment. We are also working to illustrate the economic value and wider societal benefits of this integrated approach for type-2 diabetes and HF risk which, through earlier treatment, can avoid more serious outcomes for patients.

Another common metabolic disease is non-alcoholic fatty liver disease (NAFLD). With an estimated 25% of people worldwide currently living with NAFLD, we are exploring deeper into the mechanisms and complications of NASH, a subtype of NAFLD, and finding potential treatments through molecules such as cotadutide (MEDI0382) and AZD2693.

Heart failure

As part of our efforts to prevent, treat and cure HF as a leading cause of death, we are developing treatments that include earlier intervention across interconnected conditions like type-2 diabetes. As indicated above, the DECLARE-TIMI 58 trial provided evidence of *Farxiga*'s effectiveness in the prevention of HF, and in cardio-renal protection. We are now looking beyond type-2 diabetes in trials that have enrolled patients with and without type-2 diabetes, and are moving from the prevention to the treatment of HF.

During 2019, full results from the landmark Phase III DAPA-HF trial, the first HF outcomes trial with a sodium-glucose cotransporter 2 (SGLT2) inhibitor in patients with and without type-2 diabetes, and the first to explore SGLT2 inhibitors for use outside of diabetes, showed that *Farxiga* reduced the risk of CV death and the rate of hospitalisation from HF. In the US, the FDA granted Fast Track designation for the development of *Farxiga* in HF, followed by Priority Review for patients with HFrEF. It opens up the possibility of a once-daily pill changing the current treatment for HF. Our extensive clinical programme includes several more Phase III trials for the potential cardio-renal benefits of *Forxiga*, DAPA-CKD, DELIVER and DETERMINE. These will explore its effectiveness in addressing areas of high unmet medical need in HF, chronic HF and CKD.

HF patients are often prescribed life-saving renin-angiotensin-aldosterone system inhibitors (RAASi), which lead to elevated potassium levels. These patients have an increased risk of developing hyperkalaemia, which can be life-threatening if left untreated. *Lokelma* is a treatment for hyperkalaemia which was launched in the US and EU in 2019. Currently under way, the Phase II PRIORITIZE-HF trial is designed to evaluate the benefits and risks of using *Lokelma* to initiate and intensify RAASi therapy in HF patients.

We are also exploring innovative approaches, previously regarded as impossible, such as regenerating the heart by growing heart muscle back and studying novel molecules such as VEGF-A mRNA to work toward vascular regeneration and cardiac repair.

Therapy Area Review
Cardiovascular, Renal & Metabolism *continued*

Cardiovascular disease

In working towards our objective of eliminating CV residual risk and stopping disease progression, we believe we are already making a difference in patients with coronary artery disease (CAD), including those who previously experienced a heart attack, by reducing the risk of experiencing further life-threatening CV events. In those patients who have not experienced a heart attack or stroke, but are at a high risk of a CV event, the Phase III THEMIS trial met its primary endpoint and showed that *Brilinta* plus aspirin reduced the risk for the composite of CV death, heart attack, or stroke compared with aspirin alone, a statistically significant relative reduction of 10%, in patients with CAD and type-2 diabetes. Furthermore, in patients with CAD and type-2 diabetes who had undergone percutaneous coronary intervention, a 15% relative risk reduction was observed for *Brilinta* for CV events. We have applied to regulators in the EU, US and Japan to add a new indication to the *Brilinta* label based on the THEMIS study.

Strokes remain a significant cause of mortality and disability, and a transient ischaemic attack (TIA) can be a warning of a future stroke – these individuals are at a high risk of a subsequent CV event. High-level results from the Phase III THALES trial showed *Brilinta*, taken with aspirin for 30 days, reached a statistically significant and clinically meaningful reduction in the risk of the composite endpoint of stroke and death, compared to aspirin alone.

In January 2020, following the recommendation from an independent Data Monitoring Committee, we decided to close the Phase III STRENGTH trial for *Epanova* due to its low likelihood of demonstrating a benefit to patients with mixed dyslipidaemia.

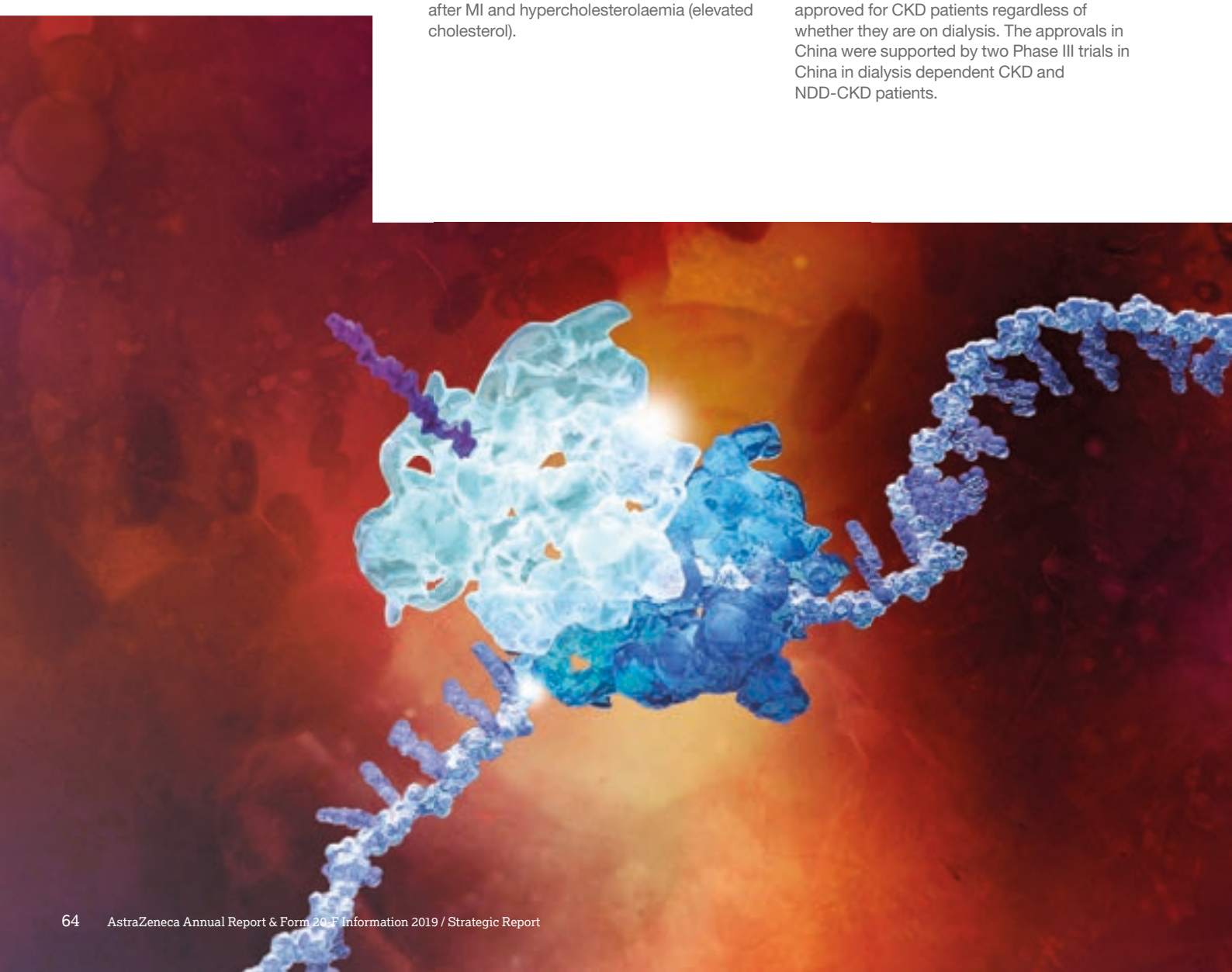
We also continue to investigate new molecules such as MEDI5884, AZD6615, AZD3366 and AZD5718 with the aim of helping to reach and transform the lives of more patients living with CV disease. We believe these molecules have the potential to prevent both primary and secondary CV events in multiple high CV risk patient groups, such as those with atherosclerosis in acute and chronic conditions after MI and hypercholesterolaemia (elevated cholesterol).

Crestor is approved in more than 115 countries for the treatment of dyslipidaemia and hypercholesterolaemia and the financial impact has stabilised following patent expiries in the US (2016) and EU/Japan (2017). *Crestor* is now subject to generic competition in a majority of markets.

Renal diseases

A CKD diagnosis currently means a rapid progression towards end-stage renal disease (ESRD), with the potential for dialysis and serious life-threatening complications. To help transform the lives of more patients, we are investigating the potential of roxadustat, *Lokelma* and *Farxiga* to treat these complications and halt disease progression.

Roxadustat is a first-in-class, oral hypoxia inducible factor prolyl hydroxylase inhibitor (HIF-PHI) that has the potential to transform the lives of people living with anaemia in CKD, both those on dialysis and not on dialysis. In August 2019, roxadustat was approved in China for the treatment of anaemia in non-dialysis dependent (NDD) patients, making China the first and only country where roxadustat is approved for CKD patients regardless of whether they are on dialysis. The approvals in China were supported by two Phase III trials in China in dialysis dependent CKD and NDD-CKD patients.



In May 2019, we announced positive top-line results from the pooled CV safety analyses of the global Phase III programme for roxadustat, the largest clinical programme in the world to investigate a HIF-PHI. Results from the Phase III OLYMPUS and ROCKIES trials and detailed results from the pooled efficacy and CV safety analyses showed positive efficacy and no increased CV risk in NDD, dialysis dependant and incident dialysis patients with anaemia in CKD versus placebo, epoeitin alfa, and epoeitin alfa, respectively. Further analyses informed the NDA filing in the US, which we submitted in December 2019 with our partner FibroGen. A regulatory decision is anticipated in the second half of 2020.

People living with CKD are at an increased risk of developing hyperkalaemia and, in addition to the launch of *Lokelma* referred to above, in June 2019, we announced results from DIALIZE, the first ever randomised, placebo-controlled Phase IIIb trial to evaluate *Lokelma* in patients on stable haemodialysis. Label updates for *Lokelma* have been submitted in the US and EU and decisions are expected in the first half of 2020. *Lokelma* was approved in China and is also under regulatory review in Japan with a decision expected in the first half of 2020.

In order to help meet the unmet medical need in CKD, we are exploring the clinical science behind our medicines with DAPA-CKD and DELIGHT, an exploratory Phase II/III trial, also part of the DapaCare programme. The two trials evaluate the potential benefits of *Farxiga* in the treatment of CKD, renal or CV death in CKD patients with and without albuminuria. DAPA-CKD will be the first trial evaluating *Farxiga*, an antidiabetic SGLT2 inhibitor by origin, in CKD patients without type-2 diabetes.

We are also progressing verinurad, a novel renal urate transporter (URAT1) inhibitor currently in Phase IIb development for the treatment of CKD. Results from the Phase IIa CITRINE trial demonstrated that treatment with verinurad plus febuxostat decreased albuminuria and serum urate in patients with type-2 diabetes mellitus, potentially slowing progression of CKD. In August 2019, the first subject was dosed in the Phase IIb SAPPHIRE trial for verinurad.

Our ambition is to transform the standard of care for CKD from day-to-day management to one that can identify and address root causes to aggressively prevent, treat, manage, modify and even halt progression of the disease. We also continue to investigate new molecules such as MEDI8367, MEDI3506 (IL33) and AZD2373 (APOL1) with the aim of stopping the progression of ESRD, treating patients with DKD and developing the first precision medicine in CKD.

Beyond research

We invest in programmes to educate stakeholders about CVRM and improve patient access to healthcare.

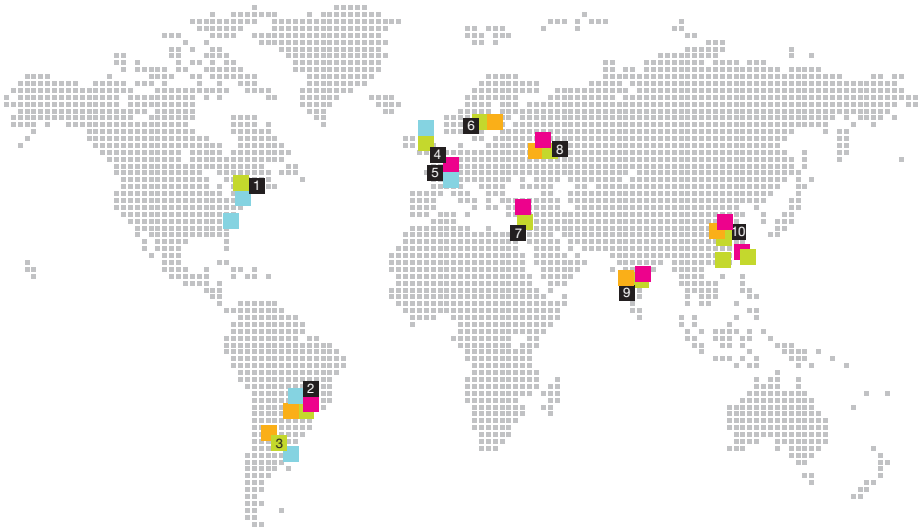
Some of our most notable programmes include Healthy Heart, which addresses hypertension and the increasing burden of CV disease (see page 49 for more information); Improving Cardiovascular Care in China (see page 63); and One Brave Idea, which aims to understand the molecular events surrounding the earliest transition from wellness to disease in coronary heart disease.

In 2019, we launched Accelerate Change Together (ACT), a cross-functional programme in diabetes, HF and CKD to drive policy and healthcare system change to better manage cardio-renal complications in type-2 diabetes, reduce incidence of HF and support earlier diagnosis of CKD.

We have taken this thinking one step further by reimagining how we can improve outcomes for patients across their personal health experience. We have created Health Innovation Hubs and a network comprising both structural locations and virtual partnerships to deliver patient-centric disease management solutions across all our therapy areas. The map below shows the 10 major hubs that form the foundation of our global Health Innovation Hub network. For more information, see page 43.

The Health Innovation Hub network

By geographical area



1. US Hub
Boston

2. Brazil Hub
Sao Paulo

3. Argentina Hub
Buenos Aires

4. UK Hub
Cambridge

5. France Hub
Paris

6. Sweden Hub
Gothenburg

7. Israel Hub
Tel-Aviv

8. Russia Hub
Moscow

9. India Hub
Bangalore

10. China Hub
Wuxi

Health Innovation Hubs

Public-Private Partnerships
AstraZeneca + technology/start-up companies + government/health system in a physical location

System Partnership
AstraZeneca + government/health system

Start-up Hubs

Start-up Hubs/Models
Incubator/accelerator models whereby we work with start-up companies to identify and solve challenges, and scale ideas

Experience Design Centres

Internal (AstraZeneca Teams/Brands)
Bring innovation to AstraZeneca to redefine how we take products, services and experiences to market

External (HCP/patient)
Work with HCPs/patients to observe and design solutions, and test innovation

Respiratory

We aim to transform the treatment of respiratory diseases with our growing portfolio of inhaled combinations at the core of care, biologics for the unmet medical needs of specific patient populations and scientific advancements in disease modification with the ambition of achieving remission or even cures for patients.

Unmet medical need and world market

Today, more than 700 million people have asthma or chronic obstructive pulmonary disease (COPD). Of the 250 million people who are in our eight largest commercial markets, more than 65 million of those with asthma and 124 million with COPD do not receive maintenance treatment for these chronic diseases. Despite currently available medicines, therapeutic advances are needed to reduce morbidity and mortality.

We estimate that new medicines and Emerging Markets will drive 6% annual growth over the next decade, reaching $47 billion by 2028.

Antibody that binds to upstream epithelial cytokines to prevent a range of inflammatory responses.

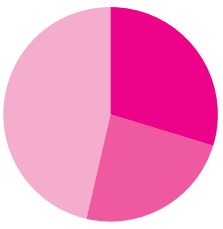
339m
339 million individuals worldwide have asthma, with prevalence expected to rise.

50%
Severe asthma accounts for about 10% of asthma patients but 50% of the physical and socio-economic burden of asthma.

384m
Globally, 384 million people have COPD, and it is the third leading cause of death worldwide. COPD exacerbations represent a significant burden for patients, carers and society. COPD costs are estimated to exceed $100 billion per year globally.

Therapy area world market
(MAT/Q3/19)

$69.9bn
Annual worldwide market value



- Asthma $20.9bn
- COPD $16.7bn
- Other $32.0bn

Source: IQVIA.
AstraZeneca focuses on specific segments within this overall therapy area market.

Key marketed products and revenues 2019

Our Respiratory business strengthened its growth in 2019, with sales up 10% (13% at CER). *Symbicort* continued volume market leadership and became the value leader in 2019 in the inhaled corticosteroid (ICS)/long-acting beta2-agonist (LABA) class. *Pulmicort* continued to deliver strong revenue growth, led by Emerging Markets in which China stood out. *Breztri Aerosphere* (PT010) was approved and launched in Japan, and approved in China. In biologics, *Fasenra* has been approved in 53 countries for severe eosinophilic asthma and is currently reimbursed in 36 countries.

Respiratory Product Sales

$5,391m

23% of total

2018: $4,911m

2017: $4,706m

Product	Disease area	Revenue	Commentary
Symbicort (budesonide/ formoterol)	Asthma COPD	$2,495m, down 3% (0% at CER)	Continued volume market leadership and became the value leader of the ICS/LABA class led by strong growth in Emerging Markets.
Pulmicort (budesonide)	Asthma	$1,466m, up 14% (18% at CER)	Brand growth led by Emerging Markets with leadership in China. Growth in China due to increased medical access supported by nebulisation room expansion and improved coverage of emerging/county hospitals.
Fasenra (benralizumab)	Severe asthma	$704m, up 137% (139% at CER)	*Fasenra* leads the IL-5 class in new prescriptions in the US, Japan, Germany and France.
Daliresp/Daxas (roflumilast)	COPD	$215m, up 14% (15% at CER)	Growth driven by favourable affordability-programme changes and inventory movements in the US.
Duaklir (aclidinium/ formoterol)	COPD	$77m, down 19% (15% at CER)	Growth in Europe is in line with expectations. *Duaklir* was approved in the US and launched by Circassia in October 2019. AstraZeneca will continue to supply the medicine.
Tudorza/Eklira (aclidinium)	COPD	$72m, down 35% (32% at CER)	Reflects the flat long-acting muscarinic antagonist (LAMA) market. Sales in the US are now booked by Circassia following its acquisition of the product in January 2019.
Bevespi Aerosphere (glycopyrrolate/ formoterol)	COPD	$42m, up 26% (26% at CER)	*Bevespi Aerosphere* revenue and growth is in line with other long-acting muscarinic antagonists/LABA launches.
Breztri Aerosphere (budesonide/ glycopyrrolate/ formoterol)	COPD	$2m, movement n/m	*Breztri Aerosphere* revenue is in line with other launches in COPD under Japan's Ryotanki restriction.
Others	Asthma COPD	$390m, down 13% (9% at CER)	

Our strategy for Respiratory

Our respiratory medicines reached more than 53 million patients receiving acute and maintenance therapy in 2019. We have a strong pipeline with more than 10,300 patients actively participating in Phase I-IV respiratory clinical trials across the world.

Our ambition is to transform outcomes for patients with respiratory diseases through:

1. Our strength in inhaled combination medicines.
2. A leading biologics portfolio.
3. An exciting early- and mid-stage pipeline.

Inhaled medicines

In inhaled medicine, our focus is on two key areas of clinical care. In asthma, we are working to prevent attacks by reducing over-reliance on short-acting beta2-agonist (SABA) reliever monotherapy and advancing anti-inflammatory reliever therapy, evidenced by the approvals of *Symbicort Turbuhaler* as an anti-inflammatory reliever as-needed in mild asthma in multiple countries in 2019. *Symbicort* continued its leadership in the ICS/LABA class, and remains a cornerstone of current asthma and COPD care. We expect to be one of only two key global players to offer the leading inhaled combination therapy classes for COPD in all major regions. Based on the full Phase III data results, *Breztri Aerosphere* has a highly competitive clinical profile across a broad range of patients and at two doses of ICS.

Biologics

In biologics, we aim to transform outcomes among patients with the greatest unmet medical need and relegate chronic oral steroid use to last resort, given its association with adverse events. Our first respiratory biologic, *Fasenra*, is approved for severe eosinophilic asthma and is also being investigated for other eosinophil-driven diseases. In the future, tezepelumab, a potential first-in-class anti-thymic stromal lymphopoietin (TSLP) mAb that blocks a key upstream driver of inflammation in asthma, has the potential to treat a broad population of severe asthma patients, including those patients who are ineligible for biologic therapies today, if the Phase III programme reflects the positive Phase IIb data.

In the pipeline

Our mid-stage and early portfolios include novel and inhaled biologics, early biology-led treatment, lung repair and regeneration. Beyond *Fasenra* and tezepelumab programmes, we have one new molecular entity in Phase III, six new molecular entities in Phase II, four new molecular entities in Phase I, two life-cycle management projects and a robust pre-clinical pipeline. In addition to asthma and COPD we are also investigating other respiratory opportunities in idiopathic pulmonary fibrosis (IPF) and chronic cough.

Our respiratory market leadership in China positions us well to support improvements in acute treatment using our leading nebulisation portfolio, which is supported with more than 17,500 nebulisation centres, and establishing maintenance inhaled treatment as the standard of care (SoC) in asthma and COPD.

Therapy Area Review
Respiratory *continued*

2019 pipeline highlights

The progress of our pipeline in 2019 reflects our commitment to transforming critical areas of care in respiratory.

In inhaled medicine, we reported Phase III trial results in COPD for *Breztri Aerosphere* (PT010), our triple-combination therapy and it was approved for COPD in Japan and China. We also advanced *Symbicort Turbuhaler* and PT027 (ICS/SABA combination) as anti-inflammatory reliever therapies in asthma, with the approval of *Symbicort Turbuhaler* as an anti-inflammatory reliever therapy in 11 countries and the continuation of the Phase III clinical trial programme for PT027 by our co-development partner, Avillion.

In line with our strategy to transform outcomes with respiratory biologics, *Fasenra* was granted additional regulatory approvals and is now approved in 50 countries around the world for severe eosinophilic asthma.

Full details of our pipeline are given in the Development Pipeline from page 238 and highlights from the progress of our Respiratory pipeline made against our KPIs in 2019 are shown below.

Life-cycle phases – R&D

New molecular entity (NME) Phase IIa/b starts/progressions

Product	Disease
AZD7594	Asthma

NME and major life-cycle management (LCM) positive Phase III investment decisions

In 2019, the first patients were enrolled in the Phase III RESOLUTE trial of *Fasenra* in COPD.

Product	Disease
Fasenra	COPD (RESOLUTE)
Fasenra	Eosinophilic granulomatosis with polyangiitis
Fasenra	Nasal polyps (China, Japan)

Plus two projects where an investment decision was made, but the clinical trial is yet to start.

NME and major LCM regional submissions

In the second half of 2019, *Symbicort* received regulatory filing acceptance by the National Medical Products Administration (NMPA) in China for use in mild asthma.

Product	Disease	Region
Breztri Aerosphere	COPD (KRONOS)	US[1], EU
Symbicort	Mild asthma	China

[1] CRL issued by the FDA relating to the NDA. See page 70.

Life-cycle phases – approvals

NME and major LCM regional approvals

Breztri Aerosphere received the first global approval for the treatment of COPD in Japan, with subsequent approval in China. *Bevespi Aerosphere* was also approved for COPD in Japan.

Product	Disease	Region
Breztri Aerosphere (budesonide/glycopyrronium/formoterol fumarate)[1]	COPD	Japan, China
Bevespi Aerosphere	COPD	Japan
Fasenra self-administration auto-injector	Severe asthma	US, EU

[1] Known as budesonide/glycopyrronium/formoterol fumarate in China.

Discontinued projects

Product	Disease	Reason
AZD1419	Asthma	Safety/efficacy

For more information on the life-cycle of a medicine, see page 9.

Redefining care for severe asthma patients

Severe asthma affects approximately 34 million people worldwide and, for many, can mean a life of frequent, severe attacks, with reduced lung function and a poor quality of life. There are significant challenges to managing severe asthma as standard treatments alone often do not work sufficiently. Contributing to the problem, in many countries, patients can spend years in primary care without getting referred to a specialist for proper diagnosis and care.

We have made a long-term investment to improve severe asthma patient care through a multi-disciplinary programme called PRECISION. PRECISION brings together leading experts in asthma and healthcare policy to ensure severe asthma patients routinely receive the right care, at the right time, in the most appropriate setting. Our efforts are focused on accelerating appropriate referrals to specialists, building capability and capacity, and improving healthcare system policies and access.

PRECISION is already operating across 45 countries and, with the involvement of more than 100,000 healthcare professionals, transforming clinical standards and patient referral pathways and identifying patients most at risk based on potential over-reliance on oral corticosteroids.

34m

people affected worldwide by severe asthma

45 countries

in which PRECISION is already operating

2019 review – strategy in action

Strength in inhaled combination medicines

In 2019, the strength of our inhaled combination medicines was reflected with the performance of *Symbicort*, which continued its volume market leadership as the number one ICS/LABA combination globally and became the value leader within the ICS/LABA class globally – a major achievement for a medicine 19 years after launch.

This performance has been driven by growth in Emerging Markets in response to high unmet medical need and rapid adoption of better medical treatment, offset by continued pricing pressure in established markets in line with expectations as prices rebase through generic entries. Growth has been particularly strong in China, where there is increased government intervention to address the unmet medical need in respiratory diseases, including, for example, the Pulmonary and Critical Care Medicine initiative to improve quality standards and COPD being listed in the China 2030 state plan. In addition, *Symbicort* has been included in the Essential Drugs List, had its 2nd-line restriction removed in the National Reimbursement Drug List (NRDL) and has preferred positioning within updated national guidelines versus other treatments.

In 2019, positive results were reported from two key trials, which were designed to reflect real-world practice and assess the effectiveness of *Symbicort Turbuhaler* taken as-needed, as anti-inflammatory reliever therapy in adults with mild or mild-to-moderate asthma. Data from the Novel START open-label trial showed a 51% reduction in the rate of annual asthma exacerbations with *Symbicort Turbuhaler* compared with albuterol. There was no difference in the exacerbation rate between *Symbicort Turbuhaler* and twice-daily maintenance budesonide plus albuterol, despite a 52% reduction in the mean steroid dose with *Symbicort Turbuhaler*. Results from PRACTICAL, a peer-reviewed trial that was independently funded by the Health Research Council of New Zealand, showed that *Symbicort Turbuhaler* used as an anti-inflammatory reliever in mild-to-moderate asthma reduced the rate of severe exacerbations versus maintenance budesonide plus terbutaline taken as-needed, a comparator regimen representative of usual care in this patient population. The safety and tolerability for *Symbicort Turbuhaler* as-needed, in both trials, was consistent with the known profile of the medicine. These data build on the results from our Phase III SYGMA trials of *Symbicort Turbuhaler* and add to the body of evidence which demonstrate the potential of *Symbicort Turbuhaler*, used as-needed, as an important treatment option for patients with mild disease at risk of asthma attacks. The trials follow on from previous studies which demonstrated the ability of *Symbicort Turbuhaler* to reduce severe exacerbations, when used as-needed for moderate-to-severe patients prescribed maintenance and reliever therapy.

In 2019, the Global Initiative for Asthma published its latest report on asthma management, calling it the most significant change in asthma management in over 30 years. The report recommended low dose ICS-formoterol combination therapy (the molecules in *Symbicort*) as-needed as the preferred reliever therapy across all asthma severities and the preferred controller and reliever therapy in mild asthma. SABA monotherapy is no longer the preferred reliever recommended for patients with mild asthma, due to increased airway inflammation and risk of serious asthma attacks, specifically the risk of serious attacks in those receiving three or more SABA canisters per year. The changes in preferred reliever therapy reflect evidence gathered during many years of our research, including more than 25 trials. In 2019, *Symbicort Turbuhaler* was approved as an anti-inflammatory reliever as-needed in mild asthma in Australia, New Zealand, Brazil, Canada, Chile, Haiti, Russia, Singapore, South Korea, Egypt and Iran. Regulatory reviews are ongoing to extend the indication in additional countries. In July 2019, the regulatory submission in the EU for *Symbicort Turbuhaler* in mild asthma was withdrawn and a new submission is anticipated during the first half of 2020. In the fourth quarter of 2019, *Symbicort* received regulatory filing acceptance by the National Medical Products Administration (NMPA) in China for use in mild asthma.

Our commitment to working to prevent attacks by reducing over-reliance on reliever monotherapy and advancing anti-inflammatory reliever therapy continues with the development of PT027. PT027 is an investigational fixed-dose combination of budesonide, an ICS and albuterol, a SABA. In 2019, our co-development partner, Avillion, initiated the second Phase III trial of PT027 in patients with mild-to-moderate asthma. Results from both the MANDALA and DENALI trials are expected to read out in 2020.

Therapy Area Review
Respiratory *continued*

In August 2019, top-line results from the Phase III ETHOS trial of PT010, our triple-combination therapy showed a significant reduction in the rate of moderate and severe exacerbations, compared with dual-combination therapies. The trial also showed, for the first time, the benefit of fixed-dose triple-combination therapy at two inhaled corticosteroid (ICS) doses, which could transform treatment practice by allowing physicians to select the optimal dose for individual patients. Safety and tolerability of PT010 were consistent with the known profiles of the dual comparators in the trial. We also received the first approvals for the treatment of COPD in Japan and China, as *Breztri Aerosphere*. In the US, the FDA issued a CRL regarding the NDA in September, and we are now working closely with the FDA regarding next steps, including submitting for review results from the positive Phase III ETHOS trial, which was not completed at the time the NDA was originally submitted.

Bevespi Aerosphere's progress also continued in 2019 with regulatory approval in Japan.

Our medicines in the US partnered with Circassia also made progress. In October 2019, *Duaklir* was launched in the US for the maintenance treatment of COPD. *Duaklir* was approved based on a broad clinical database, including data from three Phase III studies, ACLIFORM, AUGMENT and AMPLIFY, and the label includes data on exacerbation reduction from the Phase IV ASCENT study. In April, the FDA approved an sNDA for *Tudorza* which includes unique positive safety language related to COPD patients with cardiovascular disease or risk factors.

Biologic medicines

Our first respiratory biologic, *Fasenra*, continued rapid market expansion in 2019 and saw the total number of patients treated reach 50,000. It was also approved for self-administration in the EU (via a pre-filled syringe and new auto-injector device, the *Fasenra Pen)* and in the US (via *Fasenra Pen*).

The main factors driving biologic treatment rates in severe uncontrolled asthma include:

- access to approved biologics
- patient self-administration (which could capture approximately two-thirds of patients and frees up capacity in clinics to treat more patients)
- improved clinical capabilities and confidence in treating severe asthma
- evidence enabling the reduction or discontinuation of maintenance OCS use.

AstraZeneca is investing in accelerating these drivers in respiratory disease 'beyond the medicine' which should support biologics having the kind of impact that they have had in other inflammatory diseases.

For example, we recently launched Connect 360, a new, comprehensive global patient support programme designed to provide best-in-class education and support to *Fasenra* patients around the world.

In 2019, we completed enrolment of patients into our Phase IIIb PONENTE trial that is designed to further investigate the potential of *Fasenra* to eliminate maintenance oral corticosteroid use in patients with severe refractory eosinophilic asthma. PONENTE is the largest steroid-sparing trial undertaken in severe asthma to date and results are expected in 2020.

Beyond asthma, we are following the science and investing in *Fasenra*'s potential in other diseases where eosinophils are a direct cause or thought to play a critical role. This includes nasal polyps, COPD, eosinophilic esophagitis (EOE), eosinophilic granulomatosis with polyangiitis (EGPA) and hypereosinophilic syndrome (HES).

The OSTRO Phase III trial to investigate *Fasenra* in nasal polyps completed enrolment in 2019 and the first patient was enrolled in our Phase III MANDARA trial for *Fasenra* in EGPA.

In September 2019, further analysis of data from the two Phase III trials, GALATHEA and TERRANOVA, for *Fasenra* in patients with moderate-to-very-severe COPD were presented at the European Respiratory Society International Congress 2019 and published in *The Lancet Respiratory Medicine*. Building on these analyses, the first patients were enrolled in the Phase III RESOLUTE trial that will investigate the efficacy and safety of *Fasenra* 100mg in patients with moderate-to-very-severe COPD who are treated with triple inhaled therapy, have a history of frequent exacerbations and have elevated peripheral blood eosinophils. We previously reported that the GALATHEA and TERRANOVA trials did not meet their respective primary efficacy endpoints.

In April 2019, positive results from a Phase II trial, showed that *Fasenra* can achieve near-complete depletion of eosinophils and improve clinical outcomes in HES. In August 2019, the FDA granted Orphan Drug Designation for *Fasenra* for the treatment of EOE.

Positive results from the *Fasenra* Phase IIIb ANDHI trial in patients with severe eosinophilic asthma were also reported. In ANDHI, *Fasenra* on top of standard of care, demonstrated a statistically significant reduction in the annual rate of asthma exacerbations compared with placebo in patients with baseline blood eosinophil counts greater than or equal to 150 cells per microlitre (the primary endpoint). The safety and tolerability of *Fasenra* were consistent with the known profile of the medicine.

Early science

In line with our aim to develop biologics that treat the remaining unmet medical needs of severe asthma patients, we continued to progress the development of tezepelumab through the ongoing Phase III PATHFINDER programme, with our partner Amgen, and presented further results of the biomarker analysis from the Phase IIb PATHWAY trial at the American Thoracic Society 2019 International Conference in May. In the first quarter of 2019, the FDA granted saracatinib Orphan Drug Designation for the potential treatment of idiopathic pulmonary fibrosis. Saracatanib is a small molecule, highly-potent and selective inhibitor of src tyrosine kinase previously in clinical development in oncology which has completed Phase I development.

Other compounds in early-stage development include: MEDI3506 (Phase I in COPD; Phase II in atopic dermatitis), an anti-IL-33 mAb that inhibits IL-33, a key upstream epithelial cytokine that is functionally distinct from TSLP; AZD0449 (Phase I), a potential first-in-class inhaled JAK-inhibitor being developed for a broad population of asthma patients, intended as a step-through therapy between ICS therapy and biologics; and AZD8154 (Phase I), a potent selective, dual phosphoinositide 3-kinase delta-gamma inhibitor which has the potential to be the first inhaled treatment to affect lung function through targeting mixed T2/T1/T17-cell phenotypes.

Other Disease Areas

We have medicines and vaccines in other disease areas that have an important impact for patients. As such, we are selectively active in the areas of autoimmunity, infection, neuroscience and gastroenterology, where we follow an opportunity-driven approach and often work through partnerships.

Unmet medical need and world market

The WHO estimates that seasonal influenza may result in nearly one billion cases of influenza and 290,000 to 650,000 deaths each year due to influenza-related respiratory diseases.

Nanoparticles circulating in blood stream.

Key marketed products and revenues 2019

Nexium is continuing to perform strongly in China, while sales for the rest of the world are in line with expectations, given pressures from generic competition. *Fluenz* Tetra/ *FluMist* Quadrivalent continues to be licensed in multiple markets, including the US, Canada, EU, Israel and Hong Kong, and it remains a central part of the UK and Finnish paediatric national influenza vaccination programmes.

Other Product Sales

$2,601m

11% of total

2018: $3,400m

2017: $4,156m

Product	Disease area	Revenue	Commentary
Infection			
Synagis (palivizumab)	Respiratory syncytial virus (RSV)	↓ $358m, down 46% (46% at CER)	Divested US rights to Sobi. AbbVie holds rights to *Synagis* outside the US.
Fluenz Tetra/ *FluMist* Quadrivalent (live attenuated influenza vaccine)	Influenza	↑ $113m, up 3% (5% at CER)	Approved in the US, EU, Canada, Israel and Hong Kong. Daiichi Sankyo holds rights to *Fluenz* Tetra/ *FluMist* Quadrivalent in Japan.
Neuroscience			
Seroquel IR/ *Seroquel XR* (quetiapine fumarate)	Schizophrenia Bipolar disease	↓ $191m, down 47% (46% at CER)	Divested rights in Europe and Russia in October 2019 and in US and Canada in December 2019 to Cheplapharm. Luye Pharma holds rights to *Seroquel* and *Seroquel XR* in the UK, China and other international markets. The rights to *Seroquel* and *Seroquel XR* in Japan are partnered with Astellas.
Movantik/ *Moventig* (naloxegol)	Opioid-induced constipation	↓ $98m, down 10% (10% at CER)	Licensed from Nektar Therapeutics. Kyowa Kirin has held rights in the EU since March 2016. Knight Therapeutics Inc. has held rights in Canada and Israel since December 2016. Co-commercialisation in the US with Daiichi Sankyo.
Vimovo (naproxen and esomeprazole)	Osteoarthritic pain	↓ $37m, down 47% (44% at CER)	Licensed from Pozen and divested worldwide rights (ex-US) to Grünenthal in October 2018. Divested US rights to Horizon Pharma Inc. since November 2013.
Gastroenterology			
Nexium (esomeprazole)	Proton pump inhibitor to treat acid-related diseases	↓ $1,483m, down 13% (11% at CER)	Divested European rights to Grünenthal in October 2018.
Losec/ *Prilosec* (omeprazole)	Proton pump inhibitor to treat acid-related diseases	↔ $263m, down 3% (up 1% at CER)	In October 2019, divested global commercial rights, excluding China, Japan, the US and Mexico to Cheplapharm.

Therapy Area Review
Other Disease Areas
continued

Our strategy for Other Disease Areas and 2019 pipeline highlights

Our approach in these other disease areas looks to maximise revenue through externalisation and on-market products, advance the novel product pipeline with partnerships where appropriate, and preserve a stake in the most promising assets.

Full details of our pipeline are given in the Development Pipeline from page 238 and highlights from the progress of our Other Disease Areas pipeline made in 2019 against our KPIs are shown below.

Life-cycle phases – R&D

New molecular entity (NME) Phase II starts/progressions

Product	Disease
None	–

NME and major life-cycle management (LCM) positive Phase III investment decisions

Product	Disease
Nirsevimab	Passive RSV immunisation

NME and major LCM regional submissions

Product	Disease	Region
None	–	–

Life-cycle phases – approvals

NME and major LCM regional approvals

Product	Disease	Region
Linzess	Irritable bowel syndrome with constipation	China

Discontinued projects

Product	Disease	Reason
MEDI0700	Systemic lupus erythematosus	Strategic
MEDI8852	Influenza A treatment	Economic
Prezalumab	Primary Sjögren's syndrome	Safety/efficacy

For more information on the life-cycle of a medicine, see page 9.

2019 review – strategy in action

Infection

Seasonal influenza is a serious public health problem that causes severe illness and death in high-risk populations. For the 2019-20 influenza season, *FluMist* Quadrivalent/*Fluenz* Tetra continues to be licensed in multiple markets, including the US, Canada, EU, Israel and Hong Kong, and it remains a central part of the UK and Finnish paediatric national influenza vaccination programmes. Over five million doses were delivered to support the childhood vaccinations through the UK's national immunisation programme during the 2019-20 season, and the programme is scheduled to continue during the 2020-21 season. In addition, we participate in both the Centers for Disease Control and Prevention Vaccine for Children programme and adult vaccine programme, which are federally funded programmes that ensure under or uninsured children and adults have access to vaccines at little or no cost. We also have an ongoing agreement with the WHO to donate and supply stock at reduced prices in the event of an influenza pandemic.

In May 2019, Public Health England published provisional end of season vaccine effectiveness (VE) data for the 2018-19 season in the UK. In children two to 17 years old, adjusted VE with *Fluenz* was 48.6% against all circulating strains, 49.9% against circulating A/H1N1pdm09, and 27.1% against circulating A/H3N2 strains. These latest data support the real-world effectiveness demonstrated by *Fluenz* Tetra and reinforce the public health importance of influenza vaccination as the most effective way to prevent influenza disease.

Respiratory syncytial virus (RSV) is a common seasonal virus and the most prevalent cause of lower respiratory tract infections (LRTI) among infants and young children. It is the leading cause of hospitalisations and admissions to paediatric intensive care units and leads to nearly 150,000 deaths globally in children under five years of age, with most deaths occurring in developing countries. Since its initial approval in 1998, *Synagis* has become the global standard of care for RSV prevention and helps protect at-risk babies against RSV. *Synagis* is approved in more than 80 countries and we continue to work with our worldwide partner, AbbVie, outside the US, to protect vulnerable infants.

Nirsevimab, formerly MEDI8897, an extended half-life RSV mAb being investigated for the prevention of LRTI caused by RSV in all infants, is progressing in collaboration with Sanofi. It is being developed for use among a broad population of infants, so that they may only require one dose during an RSV season. In July 2019, we initiated pivotal Phase III and Phase II/III trials to measure the safety and efficacy of nirsevimab to prevent LRTI caused by RSV in full-term, healthy late pre-term and high-risk babies.

The pivotal Phase III (MELODY) study will determine if nirsevimab will prevent medically attended RSV-confirmed LRTIs in healthy infants born at 35 weeks or older, entering their first RSV season. This study will also confirm the safety of nirsevimab. The pivotal Phase II/III (MEDLEY) trial is a randomised, double-blind, palivizumab-controlled study to evaluate the safety, pharmacokinetics (PK), anti-drug antibody (ADA) response, and descriptive efficacy for nirsevimab in high-risk infants (pre-term or with chronic lung disease or congenital heart disease) eligible to receive *Synagis* when entering their first or second RSV season. The full results of both trials are anticipated in 2023.

Neuroscience

We are progressing MEDI7352, a bispecific molecule which targets both nerve growth factor and tumour necrosis factor alpha, in both painful diabetic neuropathy in Phase II and osteoarthritis pain in Phase I. Also in Phase I is MEDI0618, an anti-PAR2 (protease-activated receptor 2) antibody which we are also developing for osteoarthritis pain and AZD4041, a selective orexin 1 receptor antagonist, which is being developed for substance use disorder in a collaborative effort between AstraZeneca, Eolas Therapeutics and NIH.

We continue our collaboration with Takeda on MEDI1341 for Parkinson's disease, which is in Phase I.

In April 2019, alongside our alliance partner Lilly, we announced the termination of the collaboration on lanabecestat, an oral beta secretase-cleaving enzyme inhibitor. We collaborate with Lilly on MEDI1814, an antibody selective for amyloid-beta 1-42 that is currently in Phase I trials as a potential disease-modifying treatment for Alzheimer's disease.

Autoimmunity and inflammation

In August 2019, we announced that anifrolumab, a developmental mAb that inhibits the activity of all type I interferons (IFN), met the primary endpoint in the TULIP 2 Phase III trial in systemic lupus erythematosus (SLE). The results from TULIP 2 were presented in a late-breaking oral presentation at the American College of Rheumatology Congress (ACR) 2019, and published in *The New England Journal of Medicine* in December.

Results from the previous Phase III trial, TULIP 1, which did not meet the primary endpoint, were also presented at ACR 2019, and simultaneously published in *The Lancet Rheumatology*. The safety and tolerability findings in TULIP 1 and TULIP 2 were consistent with the known profile of anifrolumab.

In January 2020, it was announced that the Group will recover the global rights to brazikumab (formerly MEDI2070), a monoclonal antibody targeting IL23, from Allergan. Brazikumab is currently in a Phase IIb/III programme in Crohn's disease (CD) and a Phase IIb trial in ulcerative colitis (UC). Brazikumab adds to the growing presence in immunology where AstraZeneca has longstanding research and development capabilities. With our return to growth we are now in a strong position to competitively commercialise an immunology biologic like brazikumab, in addition to anifrolumab, *Fasenra*, tezepelumab and MEDI3506.

Given the increasing number of potential new medicines in development in immunology and the shared pathways and disease drivers across respiratory and immunology, in 2020, AstraZeneca plans to rename the therapy area of 'Respiratory' to 'Respiratory & Immunology'.

Gastrointestinal

In October 2019, we announced an agreement to sell the global commercial rights, excluding China, Japan, the US and Mexico, for *Losec* and associated brands to Cheplapharm. The divestment includes medicines containing omeprazole marketed by AstraZeneca or its collaborators under the *Acimax*, *Antra*, *Mepral*, *Mopral*, *Omepral* and *Zoltum* medicine names.

Use of *Nexium* continued to grow in a limited number of markets such as China and Japan in 2019. This growth is expected to continue into 2020. *Nexium* is subject to generic competition globally, except for Japan.

In January 2019, Ironwood announced they had received marketing authorisation from the NMPA in China for *Linzess* for the treatment of patients with irritable bowel syndrome with constipation. In September 2019, AstraZeneca amended its collaboration agreement with Ironwood in China mainland, China Hong Kong and China Macau for *Linzess*. The amended agreement gives AstraZeneca sole responsibility for developing, manufacturing and commercialising *Linzess* in China mainland, China Hong Kong and China Macau. Ironwood will no longer be involved in the research and development or the commercialisation of *Linzess* in China; it will also transfer manufacturing responsibility to AstraZeneca. The two companies first entered into a collaboration to co-develop and co-commercialise *Linzess* in 2012.

Our products

While this Therapy Area Review concentrates on our key marketed products, many of our other products are crucial to our business in certain countries in Emerging Markets.

For more information on our potential new products and product life-cycle developments, please see the Therapy Area pipeline tables on pages 56, 61 and 67 and the Development Pipeline table from page 238. For information on Patent Expiries of our Key Marketed Products, see from page 243.

Indications for each product described in this Therapy Area Review may vary among countries. Please see local prescribing information for country-specific indications for any particular product.

For those of our products subject to litigation, information about material legal proceedings can be found in Note 29 to the Financial Statements from page 220.

Details of relevant risks are set out in Risk from page 246.

Risk Overview

We face a diverse range of risks and uncertainties. Those risks which have the potential to have a material impact on our business or results of operations are our Principal Risks.

The Board has carried out a robust assessment of the Principal and Emerging risks facing the Group. The table overleaf provides insight into the ongoing Principal Risks, outlining why effective management of these risks is important and relevant to the business, how we are managing them and which risks are rising, falling or have remained static during the past 12 months. The procedures in place to identify emerging risks are explained below.

Managing risk

Our approach to risk management is designed to encourage clear decision making on which risks we take and how we manage these risks. Fundamental to this process is a sound understanding of every risk's potential strategic, commercial, financial, compliance, legal and reputational implications.

We work to ensure that we have effective risk management processes in place to support the delivery of our strategic priorities. This enables us to meet the expectations of our stakeholders and upholds our Values. The Board believes that existing processes provide it with adequate information on the risks and uncertainties we face. Further information on our key risk management and assurance processes can be found in Risk from pages 246 to 257, which also includes a description of circumstances under which Principal and other risks and uncertainties might arise in the course of our business and their potential impact.

Emerging risks

Emerging risks are 'new' risks which may challenge us in the future. They have the potential to crystallise at some point in the future but are unlikely to impact the business during the next year. The outcome of such risks is often more uncertain. They may begin to evolve rapidly or simply not materialise.

We monitor our business activities and external and internal environments for new, emerging and changing risks to ensure that these are managed appropriately. Annually, we combine input from each SET function and external insight to scan the horizon for emerging risks. A summary of emerging risks is presented for assessment to Audit Committee and the Board. Emerging risks continue to be monitored as part of our ongoing risk management processes.

Risk management embedded in business processes

We strive to embed sound risk management in our strategy, planning, budgeting and performance management processes.

The Board defines the Group's risk appetite, enabling the Group, in both quantitative and qualitative terms, to judge the level of risk it is prepared to take in achieving its overall objectives. The Board expresses the acceptable levels of risk for the Group using three key dimensions. These are: (i) earnings and cash flow; (ii) return on investment; and (iii) ethics and reputation. Annually, the Group develops a detailed three-year bottom-up business plan and 10-year long-range projection to support the delivery of its strategy. The Board considers these in the context of the Group's risk appetite. Adjustments are made to the plan or risk appetite to ensure they remain aligned. Our risk management approach is aligned to our strategy and business planning processes. We cross-check financial risks and opportunities identified through the business planning process and integrate our findings into the overall risk management reporting. Line managers are accountable for identifying and managing risks and for delivering business objectives in accordance with the Group's risk appetite.

The SET is required by the Board to oversee and monitor the effectiveness of the risk management processes implemented by management. Within each SET function, leadership teams discuss the risks the business faces. This process provides a Group-wide assessment for the Board, Audit Committee and SET. Quarterly, each SET function assesses changes to these risks, new and emerging risks, and mitigation plans. These are assimilated into a Group Risk Report for the Board, Audit Committee and SET. Supporting tools are in place to assist risk leaders and managers in managing, monitoring and planning for risk. We continue to work on developing our risk management standards and guidelines. Global Compliance, Finance and Internal Audit Services support SET by advising on policy and standard setting, monitoring and auditing, and communication and training, as well as reporting on the adequacy of line management processes as they apply to risk management.

We have a business resilience framework which governs our ability to prevent or quickly adapt to situations while maintaining continuous business operations and safeguarding our people, processes and reputation. Within this we have business continuity plans to address situations in which specific risks have the potential to severely impact our business. These plans include training and crisis simulation activities for business managers.

More information about our Global Compliance function and the Code of Ethics can be found in the Corporate Governance Report on page 112 and the Business Review on page 35.

Viability statement

In accordance with provision 31 of the 2018 UK Corporate Governance Code, the Board has determined that a three-year period to 31 December 2022 constitutes an appropriate period over which to provide its viability statement.

The Board considers annually and on a rolling basis, a three-year bottom-up detailed business plan. The Board also assesses the Company's prospects using a 10-year long-range projection but, given the inherent uncertainty involved, believes that the three-year statement presents readers of this Annual Report with a reasonable degree of assurance while still providing a longer-term perspective.

The three-year detailed business plan captures risks to the sales and cost forecasts at a market and SET function level. The plan is used to perform central net debt and headroom profile analysis. The following scenarios have been applied to this analysis to create a severe downside reflecting some of the Principal Risks detailed on pages 76 and 77.

- **Scenario 1** Principal Risks: pricing, affordability, access and competitive pressures; failures or delays in the quality and execution of commercial strategies; failure to obtain, defend and enforce effective IP protection. Lower than anticipated growth rates, adverse impact of generic competition and greater than anticipated pressure on pricing across multiple products and markets.
- **Scenario 2** Principal Risk: failure or delay in the delivery of our pipeline or launch of new products. Assumes no launches of new products.
- **Scenario 3** Principal Risk: failure to maintain supply of compliant, quality product. Major equipment failure or significant regulatory observation at one of our major manufacturing sites results in a 12-month supply interruption for one of our key oncology products.
- **Scenario 4** Principal Risk: failure to achieve strategic plans or meet targets and expectations. Income from divestment of core assets reinvested into core therapy areas and new products reduced by half in 2020.
- **Scenario 5** Principal Risk: pricing, affordability, access and competitive pressures. An uncontrolled exit of the UK from the EU with associated disruption to supply and distribution channels leads to inability to supply a key product from the UK for six months following a 'no deal Brexit' outcome.
- **Scenario 6** Principal Risks: pricing, affordability, access and competitive pressures; failures or delays in the quality and execution of commercial strategies. A significant incident leads to ongoing reputational damage in a key market resulting in an ongoing reduction in market share.
- **Scenario 7** Principal Risks: failure in information technology, data protection or cyber crime; failure to meet regulatory and ethical expectations on commercial practices and scientific exchanges. Legal or regulatory non-compliance results in the levy of a significant fine.

In addition, the Board has considered more stressed scenarios including restrictions on debt factoring and no access to capital markets to raise new debt. In each scenario or combination of scenarios above, the Group is able to rely on its existing cash, cash equivalents and short-term fixed income investments, committed credit facilities, leverage its cost base, reduce capital expenditure and take other cash management measures to mitigate the impacts and still have residual capacity to absorb further shocks.

Based on the results of this analysis, the Board has a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over the three-year period of their assessment.

Brexit

On 23 June 2016, the UK held a referendum on the UK's continuing membership of the EU, the outcome of which was a decision for the UK to leave the EU (Brexit). Following Royal Assent of the European Union (Withdrawal Agreement) Act on 23 January 2020 and ratification of the Withdrawal Agreement by the European Parliament on 24 January 2020, the UK left the EU on 31 January 2020 and became a third country with a transition period running to 31 December 2020. The progress of current negotiations between the UK Government and the EU on their future relationship and the ratification of the outcome of those negotiations will likely determine the future terms of the UK's relationship with the EU following the end of the transition period. Until these negotiations and parliamentary ratification processes are completed, it is difficult to anticipate the potential impact on AstraZeneca's market share, sales, profitability and results of operations.

The Group operates from a global footprint and retains flexibility to adapt to changing circumstances. The uncertainty during and after the period of negotiation is expected to increase volatility and may have an economic impact, particularly in the UK and Eurozone. Since the time of the referendum in 2016, the Group has responded by engaging proactively with key external stakeholders and establishing a cross-functional internal steering and implementation committee to understand, assess, plan and implement operational actions that may be required. The vast majority of these actions have already been implemented based on an assumption that the UK would have left the EU without a deal in 2019 (hard Brexit/no deal) such that the Group has been able to mitigate the risks arising from variable external outcomes. In January 2020, the assumption was updated to assume no extension to the transition period beyond 31 December 2020/no trade deal between the EU and UK agreed and ratified at that time, the effect of which would be similar to the previous hard Brexit/no deal assumption. Currently, the vast majority of the operational actions necessary to respond to this scenario have been implemented including, but not limited to: engagement with government and regulators; duplication of release testing and procedures for products for the EU27 and the UK markets; transfer of regulatory licences, redesign of packaging and labelling, additional inventory builds and changes to logistics plans and shipping routes; customs and duties set up for introduction or amendment of existing tariffs or processes; associated IT systems reconfigurations; and banking arrangement changes.

The Board reviews the potential impact of Brexit regularly as an integral part of its Principal Risks (as outlined overleaf) rather than as a standalone risk. The Board most recently reviewed the Group's Brexit readiness plans at its meeting in July 2019 and continues to assess its impact.

Risk Overview
continued

Principal Risks

Strategy key

- Deliver Growth and Therapy Area Leadership
- Accelerate Innovative Science
- Be a Great Place to Work
- Achieve Group Financial Targets

Trend key

- Increasing risk
- Decreasing risk
- Unchanged

Risk category and Principal Risks	Context/potential impact	Management actions	Trend versus prior year
Product pipeline and intellectual property			
Failure or delay in delivery of pipeline or launch of new products	The development of any pharmaceutical product candidate is a complex, risky and lengthy process involving significant financial, R&D and other resources. A project may fail or be delayed at any stage of the process due to a number of factors, which could reduce our long-term growth, revenue and profit	> Prioritise and accelerate our pipeline > Strengthen pipeline through acquisitions, licensing and collaborations > Focus on innovative science in three main therapy areas	⇔
Failure to meet regulatory or ethical requirements for drug development or approval	Our pharmaceutical products and commercialisation processes are subject to extensive regulation. Delays in regulatory reviews and approvals impact patients and market access, and can materially affect our business or financial results	> Quality management systems incorporating monitoring, training and assurance activities > Collaborating with regulatory bodies and advocacy groups to monitor and respond to changes in the regulatory environment, including revised process, timelines and guidance	⇔
Failure to obtain, defend and enforce effective IP protection or IP challenges by third parties	Discovering and developing medicines requires a significant investment of resources. For this to be a viable investment, new medicines must be safeguarded from being copied for a reasonable amount of time. If we are not successful in obtaining, maintaining, defending or enforcing our IP rights, and face competition from generic or biosimilar products, our revenues could be materially adversely affected Third parties may allege infringement of their IP, and may seek injunctions and/or damages, which, if ultimately awarded, could adversely impact our commercial and financial performance	> Active management of IP rights and IP litigation	⇔
Commercialisation			
Pricing, affordability, access and competitive pressures	Operating in more than 100 countries, we are subject to political, socioeconomic and financial factors, both globally and in individual countries. There can be additional pressure from governments and other healthcare payers on medicine prices and sales in response to recessionary pressures, which may lead to a reduction in our revenue, profits and cash flow	> Focus on sales platforms > Demonstrating value of medicines/health economics > Global footprint > Diversified portfolio	↑ Global economic and political conditions placing downward pressure on healthcare pricing and spending, and therefore on revenue
Failure or delays in the quality or execution of commercial strategies	If commercialisation of a product does not succeed as anticipated, or its rate of sales growth is slower than anticipated, there is a risk that we may not be able to fully recoup related launch costs	> Focus on sales platforms > Accelerate and risk share through business development and strategic collaborations and alliances	↑ Maximising the commercial potential of our new products underpins the success of our strategy and the delivery of our short- and medium-term targets
Supply chain and business execution			
Failure to maintain supply of compliant, quality products	Delays or interruptions in supply can lead to recalls, product shortages, regulatory action, reputational harm and lost sales revenue	> Establishment of new manufacturing facilities, creating capacity and technical capability to support new product launches > Contingency plans including dual sourcing, multiple suppliers, and close monitoring and maintenance of stock levels > Business continuity and resilience initiatives, disaster and data recovery and emergency response plans > Quality management systems	⇔

Risk category and Principal Risks	Context/potential impact	Management actions	Trend versus prior year
Supply chain and business execution *continued*			
Failure in information technology, data protection or cybercrime	Significant disruption to our IT systems, cybersecurity incidents including breaches of data security, or data privacy failure, could harm our reputation and materially affect our financial condition or results of operations. This could lead to regulatory penalties or non-compliance with laws and regulations	> Cybersecurity framework and dashboard > Privacy office oversees compliance with data privacy legislation > Disaster and data recovery plans > Strategies to secure critical systems and processes > Regular cybersecurity and privacy training for employees	↑ Growing multi-faceted cyber threat. Tougher legislative environment governs data protection
Failure to attract, develop, engage and retain a diverse, talented and capable workforce	Failure to attract and retain highly skilled personnel may weaken our succession plans for critical positions in the medium term. Employee uncertainty as a result of, for example, Brexit or organisational change may result in a lower level of employee engagement which could impact productivity and turnover. Both could adversely affect the achievement of our strategic objectives	> Targeted recruitment and retention strategies deployed > Identification and active support of staff potentially impacted by Brexit > Development of our employees > Evolve our culture	↔
Legal, regulatory and compliance			
Safety and efficacy of marketed products is questioned	Patient safety is very important to us and we strive to minimise the risks and maximise the benefits of our medicines. Failure to do this could adversely impact our reputation, our business and the results of operations, and could lead to product liability claims	> Robust processes and systems in place to manage patient safety and efficacy trends as well as externally reported risks through regulatory agencies and other parties. This includes a comprehensive pharmacovigilance programme supplemented by close monitoring and review of adverse events	↔
Adverse outcome of litigation and/or governmental investigations	Investigations or legal proceedings could be costly, divert management attention and/or damage our reputation and demand for our products. Unfavourable resolutions could subject us to criminal liability, fines, penalties or other monetary or non-monetary remedies, adversely affecting our financial results	> Combined internal and external counsel management	↔
Failure to meet regulatory and ethical expectations on commercial practices and scientific exchanges	Any failure to comply with applicable laws, rules and regulations, including bribery and corruption legislation, may result in civil and/or criminal legal proceedings and/or regulatory sanctions, fines or penalties, impacting financial results	> Strong ethical and compliance culture > Established compliance framework including annual Code of Ethics training for all employees > Focus on due diligence and oversight of third-party engagements	↑ Increasing government and regulatory scrutiny and evolving compliance challenges as complexity of business relationships increases
Economic and financial			
Failure to achieve strategic plans or meet targets or expectations	Failure to implement successfully our business strategy may frustrate the achievement of our financial or other targets or expectations. This failure could, in turn, damage our reputation and materially affect our business, financial position or results of operations	> Focus on sales platforms and innovative science in three main therapy areas > Strengthen pipeline through acquisitions, licensing and collaborations > Appropriate capital structure and balance sheet > Portfolio-driven decision making process governed by senior executive-led committees	↔

Financial Review

2019 generated accelerating Product Sales growth from outstanding New Medicine uptake, driving an increase to Core Operating profit.

"2019 delivered Product Sales growth of 12% (CER: 15%) to $23.6 billion, with growth across all three main Therapy Areas and markets and outstanding performances by New Medicines with growth of 59% (CER: 62%)…"

Accelerating Product Sales growth

2019 delivered Product Sales growth of 12% (CER: 15%) to $23.6 billion, with growth across all three main Therapy Areas and markets and outstanding performances by New Medicines with growth of 59% (CER: 62%), led by *Tagrisso*, *Brilinta* and *Farxiga*, with *Lynparza* and *Imfinzi* also each delivering Product Sales of more than $1 billion in the year. New Medicine sales represented 42% of Product Sales in 2019. Emerging Markets sales continued to grow at pace, increasing by 18% (CER: 24%), with China growth of 29% (CER: 35%) underpinned by encouraging New Medicine sales, which represented 19% of China Product Sales. New CVRM increased by 9% (CER: 12%) to $4.4 billion with *Farxiga* and *Brilinta* continuing to demonstrate strong demand, achieving sales growth of 11% (CER: 14%) and 20% (CER: 23%), respectively, and delivering combined sales in excess of $3 billion for 2019.

Collaboration Revenue declined by 21% (CER: 20%) to $819 million. In spite of the anticipated reduction in collaboration activity, ongoing Collaboration Revenue from the MSD arrangement on *Lynparza* and selumetinib continues to contribute significantly, with $610 million in 2019 (2018: $790 million).

Investing in future growth

Reported R&D expenses increased by 2% (CER: 5%) and Core R&D expenses increased by 1% (CER: 4%), both of which were partly driven by the promising investment in the development of *Enhertu* with Daiichi Sankyo. Reported SG&A expenses increased by 16% (CER: 20%) and Core SG&A expenses increased by 5% (CER: 8%), primarily due to the investment in additional personnel to support the China expansion strategy.

Divestment activity

2019 Reported Other operating income was $1.5 billion and included income from various disposal transactions, including the sale of the US rights to *Synagis* to Sobi and the sale of the global rights to *Losec* (excluding China, Japan, US and Mexico) to Cheplapharm.

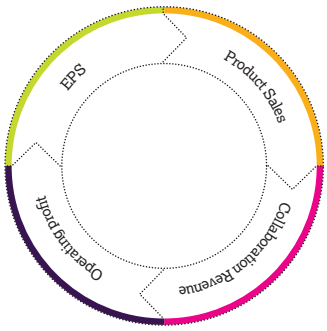
Reported Operating profit declined by 14% (CER: 16%) to $2.9 billion due to higher intangible asset impairments. Core Operating profit grew by 13% (CER: 13%) to $6.4 billion in the year, driven by the growth of Product Sales. Reported EPS was $1.03 and Core EPS was $3.50.

Share issuance generated $3.5 billion

We generated a Net cash inflow from operating activities of $3.0 billion in the year. In April 2019, we completed a placing of new Ordinary Shares, which generated proceeds of $3.5 billion to fund the initial commitments arising from the Daiichi Sankyo collaboration as well as to support a reduction in Net debt. We ended the year with total gross debt of $18.2 billion: $6.3 billion of cash, investments and derivatives; with Net debt of $11.9 billion down from $13.0 billion in 2018.

Marc Dunoyer
Chief Financial Officer

Highlights
Financial performance



Product Sales

$23.6bn
Reported and Core
(2018: $21.0bn)

Collaboration Revenue

$0.8bn
Reported and Core
(2018: $1.0bn)

Operating profit

$2.9bn
14% decline – Reported
(CER: 16%)

$6.4bn
13% growth – Core
(CER: 13%)

EPS

$1.03
40% decline – Reported
(CER: 44%)

$3.50
1% growth – Core
(CER: 0%)

Sales platforms

Emerging Markets
18%
Growth
(CER: 24%)

Respiratory
10%
Growth
(CER: 13%)

New CVRM
9%
Growth
(CER: 12%)

Japan
27%
Growth
(CER: 26%)

Oncology
44%
Growth
(CER: 47%)

Summary performance in 2019

	Reported			CER			Core		
	2019 $m	2018 $m	% change	CER growth[1] $m	Growth due to exchange effects $m	% change	2019 $m	2018 $m	% change
Product Sales	**23,565**	21,049	**12**	3,155	(639)	15	**23,565**	21,049	**12**
Collaboration Revenue	**819**	1,041	**(21)**	(210)	(12)	(20)	**819**	1,041	**(21)**
Total Revenue	**24,384**	22,090	**10**	2,945	(651)	13	**24,384**	22,090	**10**
Cost of Sales	**(4,921)**	(4,936)	**–**	(226)	241	5	**(4,761)**	(4,317)	**10**
Gross profit	**19,463**	17,154	**13**	2,719	(410)	16	**19,623**	17,773	**10**
Operating expenses	**(18,080)**	(16,294)	**11**	(2,295)	509	14	**(14,748)**	(14,248)	**4**
Other operating income and expense	**1,541**	2,527	**(39)**	(969)	(17)	(38)	**1,561**	2,147	**(27)**
Operating profit	**2,924**	3,387	**(14)**	(545)	82	(16)	**6,436**	5,672	**13**
Net finance expense	**(1,260)**	(1,281)	**(2)**	(55)	76		**(765)**	(736)	**4**
Share of after tax losses of joint ventures and associates	**(116)**	(113)	**3**	(5)	2		**(116)**	(113)	**3**
Profit before tax	**1,548**	1,993	**(22)**	(605)	160	(29)	**5,555**	4,823	**15**
Taxation	**(321)**	57	**(663)**	(370)	(8)		**(1,109)**	(540)	**105**
Profit after tax	**1,227**	2,050	**(40)**	(975)	152		**4,446**	4,283	**4**
Basic earnings per share ($)	**1.03**	1.70	**(40)**	(0.79)	0.12	(44)	**3.50**	3.46	**1**

[1] As detailed on page 81, CER growth is calculated using prior year actual results adjusted for certain exchange rate effects including hedging.

Business background and results overview

The business background is covered in the Healthcare in a changing world section from page 11 and the Therapy Area Review from page 54, which describe in detail the developments in our products.

As described earlier in this Annual Report, sales of our products are directly influenced by medical need and are generally paid for by health insurance schemes or national healthcare budgets. Our operating results can be affected by a number of factors other than the delivery of operating plans and normal competition, such as:

- The risk of competition from generics following loss of patent protection or patent expiry of one of our products, or an 'at risk' launch by a competitor, or the launch of a competitive product in the same class as one of our products, with potential adverse effects on sales volumes and prices. Details of patent expiries for our key marketed products are included in Patent Expiries of Key Marketed Products from page 243.
- The adverse impact on pharmaceutical prices as a result of the macroeconomic and regulatory environment. For instance, in the US, political leadership has continued to consider drug pricing controls and transparency measures at national and local levels. In other parts of the world, governments have continued to implement and expand price control measures, including reference pricing.
- The timings of new product launches, which can be influenced by national regulators, the speed to market relative to competitor products and the risk that such new products do not succeed as anticipated, together with the rate of sales growth and costs following new product launches.
- Currency fluctuations. Our functional and reporting currency is the US dollar, but we have substantial exposures to other currencies, in particular the Chinese renminbi, euro, Japanese yen, pound sterling and Swedish krona.
- Macro factors such as greater demand from an ageing population and increasing requirements of Emerging Markets.
- Supply chain risks including the failure of third parties to supply timely quality products, such as raw materials and the risk of catastrophic failure of critical internal processes leading to an inability to research, manufacture or supply products to patients.

Further details of the risks faced by the business are given in Risk Overview from page 74 and Risk from page 246.

Over the longer term, the success of our R&D is crucial, and we devote substantial resources to this area. The benefits of this investment are expected to emerge over the long term and there is considerable inherent uncertainty as to the scale and timing of outcomes and their transition to saleable products.

Measuring performance

The following measures are referred to in this Financial Review when reporting on our performance both in absolute terms, but more often in comparison to earlier years:

- Reported performance: Reported performance takes into account all the factors (including those which we cannot influence, such as currency exchange rates) that have affected the results of our business, as reflected in our Group Financial Statements prepared in accordance with IFRSs as issued by the IASB (IFRS) and as adopted by the EU.
- Core performance: Core financial measures are adjusted to exclude certain significant items, using a set of established principles. Readers should refer to our explanation of Core measures on page 81 for a detailed definition of this measure.

Use of non-GAAP performance measures

Non-GAAP financial measures: Core financial measures, EBITDA, Net debt, Ongoing Collaboration Revenue and Initial Collaboration Revenue are non-GAAP financial measures because they cannot be derived directly from the Financial Statements.

Management believes that these non-GAAP financial measures, when provided in combination with Reported results, will provide investors with helpful supplementary information to better understand the financial performance and position of the Group on a comparable basis from period to period. These non-GAAP financial measures are not a substitute for, or superior to, financial measures prepared in accordance with GAAP.

By disclosing non-GAAP financial and growth measures, in addition to our Reported financial information, we are enhancing investors' ability to evaluate and analyse the financial performance and trends of our ongoing business and the related key business drivers. The adjustments are made to our Reported financial information in order to show non-GAAP financial measures that illustrate clearly, on a year-on-year or period-by-period basis, the impact on our performance caused by factors such as changes in revenues and expenses driven by volume, prices and cost levels relative to such prior years or periods.

As shown in the 2019 Reconciliation of Reported results to Core results table on page 84 our reconciliation of Reported financial information to Core financial measures includes a breakdown of the items for which our Reported financial information is adjusted, and a further breakdown by specific line item as such items are reflected in our Reported income statement. This illustrates the significant items that are excluded from Core financial measures and their impact on our Reported financial information, both as a whole and in respect of specific line items.

Management presents these results externally to meet investors' requirements for transparency and clarity. Core financial measures are also used internally in the management of our business performance, in our budgeting process and when determining compensation. As a result, Core financial measures merely allow investors to differentiate between different kinds of costs and they should not be used in isolation. Readers should also refer to our Reported financial information in the Summary performance in 2019 table, our reconciliation of Core financial measures to Reported financial information in the 2019 Reconciliation of Reported results to Core results table and the Excluded from Core results table on page 84 for our discussion of comparative Actual growth measures that reflect all factors that affect our business.

Our determination of non-GAAP measures, and our presentation of them within this financial information, may differ from similarly titled non-GAAP measures of other companies.

Non-GAAP measures: definitions

The SET retains strategic management of the costs excluded from Reported financial information in arriving at Core financial measures, tracking their impact on Reported Operating profit and EPS, with operational management being delegated on a case-by-case basis to ensure clear accountability and consistency for each cost category.

We strongly encourage readers of the Annual Report not to rely on any single financial measure but to review our Financial Statements, including the Notes thereto, and our other publicly filed reports, carefully and in their entirety.

Definitions of non-GAAP measures are described on the next page.

Non-GAAP measures: definitions

Revenue

Constant exchange rate (CER) growth rates

Reconciliation, see page 84

Definition: Retranslation of the current year's performance at the previous year's average exchange rates, adjusted for other exchange effects, including hedging.

Why we use them: CER measures allow us to focus on the changes in revenues and expenses driven by volume, prices and cost levels relative to the prior period. Revenues and cost growth expressed in CER allow management to understand the true local movement in revenues and costs, in order to compare recent trends and relative return on investment. CER growth rates can be used to analyse revenues in a number of ways but, most often, we consider CER growth by products and groups of products, and by countries and regions. CER revenue growth can be further analysed into the impact of revenue volumes and selling price. Similarly, CER cost growth helps us to focus on the real local change in costs so that we can manage the cost base effectively.

Ongoing Collaboration Revenue

Reconciliation, see page 83

Definition: Ongoing Collaboration Revenue is defined as Collaboration Revenue excluding Initial Collaboration Revenue (which is defined as Collaboration Revenue that is recognised at the point in time control is transferred). Ongoing Collaboration Revenue comprises, among other items, milestones, profit sharing and royalties. The updated category of Collaboration Revenue includes all income previously included within Externalisation Revenue. For more information please see Group Accounting Policies from page 172.

Why we use it: This measure provides us with an understanding of the ongoing value derived from our collaboration arrangements, removing any distortion driven by the upfront income.

Profitability

Core measures

Reconciliation, see page 84

Core financial measures are adjusted to exclude certain significant items. In determining the adjustments to arrive at the Core result, we use a set of established principles relating to the nature and materiality of individual items or groups of items, excluding, for example, events which are (i) outside the normal course of business, (ii) incurred in a pattern that is unrelated to the trends in the underlying financial performance of our ongoing business, or (iii) related to major acquisitions, to ensure that investors' ability to evaluate and analyse the underlying financial performance of our ongoing business is enhanced. See the 2019 Reconciliation of Reported results to Core results table on page 84 for a reconciliation of Reported to Core performance, as well as further details of the adjustments.

Core financial measures merely allow investors to differentiate between different kinds of cost and they should not be used in isolation.

Restructuring costs, including charges that relate to the impact of our global restructuring programmes on our capitalised manufacturing facilities and IT assets. These can take place over a significant period of time, given the long life-cycle of our business. We adjust for these charges and provisions because they primarily reflect the financial impact of change to legacy arrangements, rather than the underlying performance of our ongoing business. However, our Core results do reflect the benefits of such restructuring initiatives.

Intangible amortisation and impairments, including impairment reversals but excluding any charges relating to IT assets. These generally arise from business combinations and individual licence acquisitions. We adjust for these charges because their pattern of recognition is largely uncorrelated with the underlying performance of the business. However, a significant part of our revenues could not be generated without owning the associated acquired intangible assets.

Other items, principally comprising acquisition-related costs and credits, which include fair value adjustments and the imputed finance charge relating to contingent consideration on business combinations and legal settlements. It should be noted that other costs excluded from our Core results, such as finance charges related to contingent consideration will recur in future years, and other excluded items such as impairments and legal settlements costs, along with other acquisition-related costs, may recur in the future.

Gross margin percentage

Reconciliation, see page 84

Definition: The margin, as a percentage, by which Product Sales exceed the Cost of sales, calculated by dividing the difference between the two by the sales figure.

Why we use it: This measure sets out the progression of key performance margins and illustrates the overall quality of the business.

EBITDA

Reconciliation, see page 85

Definition: Reported Profit before tax plus Net finance expense, Share of after-tax losses of joint ventures and associates and charges for depreciation, amortisation and impairment.

Why we use it: EBITDA allows us to understand our baseline profitability, removing any 'non-operational' expenses that are not considered by management to be reflective of the underlying performance of the Group.

Cash flow and liquidity

Net debt

Reconciliation, see page 87

Definition: Interest-bearing loans and borrowings net of Cash and cash equivalents, Other investments and Net derivative financial instruments.

Why we use it: Net debt is a measure that provides valuable additional information regarding the Group's net financial liabilities and is a measure commonly used by investors and rating agencies. It facilitates the tracking of one of our key financial priorities: deleveraging.

Revenue

Total Revenue for the year was up 10% (CER: 13%) to $24,384 million, comprising Product Sales of $23,565 million up 12% (CER: 15%) and Collaboration Revenue of $819 million; a decrease of 21% (CER: 20%).

Product Sales

By Geography

Product Sales in Emerging Markets continued to increase with growth of 18% (CER: 24%) to $8,165 million in 2019. China Product Sales comprised 60% of Emerging Markets in the year, increasing by 29% (CER: 35%) to $4,880 million. New Medicine sales, primarily driven by *Tagrisso* and *Lynparza* in Oncology and *Brilinta* and *Farxiga* in New CVRM represented 19% of China Product Sales. US Product Sales were up 13% to $7,747 million, reflecting the success of the new Oncology medicines. In Europe, Product Sales declined by 2% (CER: increased by 2%) to $4,349 million, reflecting a strong performance in Oncology, offset by a decline in *Nexium* of 73% (CER: 72%) and legacy Respiratory of 10% (CER: 5%) in the year. Established Rest of World Product Sales increased by 17% (CER: 18%) to $3,305 million with sales in Japan up 27% (CER: 26%) to $2,548 million.

By Product

Our largest selling products in 2019 were *Tagrisso* ($3,189 million), *Symbicort* ($2,495 million), *Brilinta* ($1,581 million) and *Farxiga* ($1,543 million). *Tagrisso* sales grew by 71% (CER: 74%) reflecting strong penetration across all markets. Global sales of *Symbicort* declined by 3% (CER: stable) with 11% growth in Emerging Markets (CER: 17%) being more than offset by declines in the US and Europe due to the impact of continued pricing pressure and managed market rebates. *Brilinta* Product Sales grew by 20% (CER: 23%), demonstrating continued strong patient uptake. *Farxiga* sales increased by 11% (CER: 14%), with growth of 40% in Emerging Markets (CER: 48%), offset by a 9% decline in the US (CER: 9%), where despite strong underlying demand, sales growth was adversely impacted by gross to net adjustments. There were also strong performances in the year from *Imfinzi* and *Lynparza*, with *Imfinzi* growing by 132% (CER: 133%) to $1,469 million and *Lynparza* by 85% (CER: 89%) to $1,198 million.

Sales platforms

Our sales platforms include products in our three main Therapy Areas, and a focus on Emerging Markets and Japan. Sales platforms grew by 19% (CER: 22%), representing 90% of Total Revenue after removing the effect of certain Product Sales which are included in more than one sales platform.

Oncology

Product Sales of Oncology medicines increased to $8,667 million in 2019 (2018: $6,028 million), $3,189 million of which came from *Tagrisso* (2018: $1,860 million), which continues to be our leading medicine for the treatment of lung cancer and had received regulatory approval in more than 80 countries by the end of 2019.

Emerging Markets

Product Sales in Emerging Markets grew by 18% compared with 2018 (CER: 24%) to $8,165 million partly driven by strong performances from New Medicines. Product Sales in China increased by 29% in 2019 (CER: 35%), representing 60% of Emerging Markets Product Sales in the year.

Respiratory

Product Sales of Respiratory medicines increased by 10% (CER: 13%) to $5,391 million, with the impact of pricing pressure in the US for *Symbicort* being more than offset by a strong performance by Respiratory in Emerging Markets and higher demand for *Pulmicort* in China.

New CVRM

New CVRM grew by 9% (CER: 12%) with revenue of $4,376 million. Within New CVRM, sales of *Brilinta* in the year were $1,581 million, an increase of 20% (CER: 23%). *Brilinta* sales in the US were up 21% to $710 million, as it remained the branded oral anti-platelet market leader. Diabetes Product Sales were 4% (CER: 6%) higher than in 2018, driven primarily by growth of 11% in *Farxiga* (CER: 14%) with global sales of $1,543 million as it continued to be our largest-selling Diabetes medicine.

Japan

Japan Product Sales grew by 27% (CER: 26%) to $2,548 million with *Tagrisso* growing by 100% (CER: 97%) and *Forxiga* by 16% (CER: 14%).

Sales platforms

	2019 Product Sales $m	2018 Product Sales $m	Actual growth %	CER growth %
Total sales platform Product Sales	**21,894**	18,464	**19**	**22**
Individual sales platform Product Sales: (Certain Product Sales are included in more than one sales platform)				
Oncology (total Oncology Product Sales)	**8,667**	6,028	**44**	**47**
Emerging Markets	**8,165**	6,891	**18**	**24**
Respiratory	**5,391**	4,911	**10**	**13**
New CVRM (incorporating *Brilinta* and Diabetes)	**4,376**	4,004	**9**	**12**
Japan	**2,548**	2,004	**27**	**26**
Reconciliation to Note 1 Revenue (page 180) as follows:				
Sum of individual sales platforms	**29,147**	23,838		
Add: Product Sales not included in sales platforms	**1,672**	2,585		
Less: Product Sales double counted for Emerging Markets				
Oncology	**(2,211)**	(1,528)		
Respiratory	**(1,987)**	(1,644)		
New CVRM	**(1,133)**	(850)		
Less: Product Sales double counted for Japan				
Oncology	**(1,436)**	(934)		
Respiratory	**(377)**	(318)		
New CVRM	**(110)**	(100)		
Total Product Sales	**23,565**	21,049		

Collaboration Revenue

Details of our significant business development transactions which give rise to Collaboration Revenue are given below:

MEDI8897 (Sanofi)

> In March 2017, AstraZeneca announced an agreement to develop and commercialise MEDI8897 jointly with Sanofi. Under the terms of the global agreement, Sanofi made an upfront payment of €120 million and will pay up to €495 million upon achievement of certain development and sales-related milestones. All costs and profits are shared equally. The US element of this collaboration is subject to a participation agreement with Sobi, entered into in November 2018, effective 23 January 2019.

> In July 2019, AstraZeneca received notification that the Phase III clinical milestone had been triggered, resulting in Collaboration Revenue of $33 million being recognised in 2019.

Zoladex (TerSera)

> In March 2017, AstraZeneca entered into an agreement with TerSera for the commercial rights to *Zoladex* in the US and Canada. TerSera paid $250 million upon completion of the transaction. The Group will also receive sales-related income through milestones totalling up to $70 million, as well as recurring quarterly sales-based payments at a mid-teen percent of Product Sales. AstraZeneca will also manufacture and supply *Zoladex* to TerSera, providing a further source of ongoing income from *Zoladex* in the US and Canada.

> In December 2018, TerSera paid a sales-related milestone of $35 million to AstraZeneca.

Lynparza/selumetinib (MSD)

> In July 2017, the Group announced a global strategic oncology collaboration with MSD to co-develop and co-commercialise AstraZeneca's *Lynparza* for multiple cancer types. Under the collaboration, the companies will develop and commercialise *Lynparza* jointly, both as monotherapy and in combination with other potential medicines. AstraZeneca and MSD will also jointly develop and commercialise AstraZeneca's selumetinib, currently being developed for multiple indications including thyroid cancer. Independently, AstraZeneca and MSD will develop and commercialise *Lynparza* in combination with their respective PD-L1 and PD-1 medicines, *Imfinzi* and *Keytruda*. Under the terms of the agreement, the two companies will share the development and commercialisation costs for *Lynparza* and selumetinib monotherapy and non-PD-L1/PD-1 combination therapy opportunities. Gross profits from *Lynparza* and selumetinib Product Sales generated through monotherapies or combination therapies will be shared equally. MSD will fund all development and commercialisation costs of *Keytruda* in combination with *Lynparza* or selumetinib. AstraZeneca will fund all development and commercialisation costs of *Imfinzi* in combination with *Lynparza* or selumetinib. AstraZeneca will continue to manufacture *Lynparza* and selumetinib. As part of the agreement, MSD will pay AstraZeneca up to $8.5 billion in total consideration, including $1.6 billion upfront, $750 million for certain licence options and up to $6.2 billion contingent upon successful achievement of future regulatory and sales milestones. Of the upfront payment of $1.6 billion, $1.0 billion was recognised as Collaboration Revenue on deal completion in 2017, with the remaining $0.6 billion deferred to the balance sheet.
> AstraZeneca will book all Product Sales of *Lynparza* and selumetinib; gross profits due to MSD under the collaboration will be recorded under Cost of sales.
> In November 2017, MSD exercised the first licence option resulting in Collaboration Revenue of $250 million.
> In January 2018, the FDA expanded the approved use of *Lynparza* to include the treatment of patients with certain types of breast cancer. The approval triggered a $70 million milestone payment from MSD to AstraZeneca.
> In June 2018, net sales of *Lynparza* reached $250 million cumulative sales threshold, triggering a sales-related milestone of $100 million to fall due to AstraZeneca.
> In November 2018, MSD exercised the second licence option resulting in Collaboration Revenue of $400 million. In addition to the exercise of this option, net sales of *Lynparza* reached the $500 million cumulative sales threshold, triggering a sales-related milestone of $150 million to fall due to AstraZeneca.
> In December 2018, AstraZeneca was notified of an FDA approval of *Lynparza*, which triggered the SOLO-1 $70 million milestone payment to AstraZeneca.
> In April 2019, AstraZeneca was notified that the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency had adopted a positive opinion recommending *Lynparza* as a 1st-line maintenance treatment of BRCA-mutated advanced ovarian cancer, which triggered an approval milestone, resulting in Collaboration Revenue of $30 million.
> In June 2019, AstraZeneca was notified that *Lynparza* had been approved in the EU as a maintenance treatment after 1st-line chemotherapy in patients with BRCA-mutated advanced ovarian cancer. This triggered an approval milestone, resulting in Collaboration Revenue of $30 million.
> In September 2019, AstraZeneca was notified that net sales of *Lynparza* had reached the $750 million cumulative sales threshold, triggering a sales-related milestone, resulting in Collaboration Revenue of $200 million.
> In October 2019, MSD notified AstraZeneca of its intention to exercise the third and final licence option of the agreement. The payment of $100 million was received in November 2019 and was recognised as Collaboration Revenue for 2019.
> In November 2019, AstraZeneca received notification that net sales of *Lynparza* had reached the $1 billion cumulative sales threshold triggering a sales-related payment of $250 million, which has been recognised as Collaboration Revenue for 2019.

Collaboration Revenue[1]

	2019 $m	2018 $m
Initial Collaboration Revenue		
Crestor (Almirall) – milestone	–	61
Other	–	51
Total Initial Collaboration Revenue	–	112
Ongoing Collaboration Revenue		
Lynparza/selumetinib (MSD) – option exercised	**100**	400
Lynparza/selumetinib (MSD) – milestone	**510**	390
Zoladex (TerSera) – milestone	–	35
Crestor (Almirall) – milestone	**39**	–
MEDI8897 (Sanofi) – milestone	**33**	–
Royalties	**62**	49
Other	**75**	55
Total Ongoing Collaboration Revenue	**819**	929
Total Collaboration Revenue	**819**	1,041

[1] The updated category of Collaboration Revenue includes all income previously included within Externalisation Revenue. For more information please see Group Accounting Policies on page 173.

Crestor (Almirall)

> In December 2017, AstraZeneca entered into an agreement effective January 2018 with Almirall, under which Almirall is granted an exclusive and perpetual licence to distribute and undertake certain manufacturing activities related to *Crestor* and *Provisacor* in Spain. Almirall made an upfront payment of €51 million on completion of the deal and will pay additional sales-related milestones of up to €55 million plus a royalty for 10 years.
> In 2019, AstraZeneca received notification that the three sales-related milestones had been met, triggering a payment of €35 million. Collaboration Revenue of $39 million has been recognised in respect of these payments.

Income Statement

2019 Reconciliation of Reported results to Core results

	2019 Reported $m	Restructuring costs $m	Intangible amortisation and impairments $m	Diabetes Alliance[1] $m	Other[2] $m	2019 Core[3] $m	Core 2019 compared with Core 2018[3] Actual growth %	Core 2019 compared with Core 2018[3] CER growth %
Gross profit	**19,463**	**73**	**87**	**–**	**–**	**19,623**	**10**	**13**
Product Sales gross margin %[4]	***79.1***					***79.8***		
Distribution expenses	**(339)**	**–**	**–**	**–**	**–**	**(339)**	**2**	**7**
Research and development expenses	**(6,059)**	**101**	**638**	**–**	**–**	**(5,320)**	**1**	**4**
Selling, general and administrative expenses	**(11,682)**	**173**	**1,771**	**(126)**	**775**	**(9,089)**	**5**	**8**
Other operating income and expense	**1,541**	**–**	**1**	**–**	**19**	**1,561**	**(27)**	**(26)**
Operating profit	**2,924**	**347**	**2,497**	**(126)**	**794**	**6,436**	**13**	**13**
Operating margin as a % of Total Revenue	***12.0***					***26.4***		
Net finance expense	**(1,260)**	**–**	**–**	**287**	**208**	**(765)**		
Taxation	**(321)**	**(66)**	**(519)**	**(54)**	**(149)**	**(1,109)**		
Basic earnings per share ($)	**1.03**	**0.22**	**1.52**	**0.08**	**0.65**	**3.50**	**1**	**–**

2018 Reconciliation of Reported results to Core results

	2018 Reported $m	Restructuring costs $m	Intangible amortisation and impairments $m	Diabetes Alliance[1] $m	Other[2] $m	2018 Core[3] $m	Core 2018 compared with Core 2017[3] Actual growth %	Core 2018 compared with Core 2017[3] CER growth %
Gross profit	17,154	432	187	–	–	17,773	(4)	(4)
Product Sales gross margin %[4]	*76.6*					*79.5*		
Distribution expenses	(331)	–	–	–	–	(331)	7	6
Research and development expenses	(5,932)	94	572	–	–	(5,266)	(3)	(3)
Selling, general and administrative expenses	(10,031)	181	1,582	(60)	(323)	(8,651)	10	9
Other operating income and expense	2,527	(10)	4	–	(374)	2,147	10	10
Operating profit	3,387	697	2,345	(60)	(697)	5,672	(17)	(17)
Operating margin as a % of Total Revenue	*15.3*					*25.7*		
Net finance expense	(1,281)	–	–	337	208	(736)		
Taxation	57	(146)	(487)	(73)	109	(540)		
Basic earnings per share ($)	1.70	0.43	1.47	0.16	(0.30)	3.46	(19)	(19)

1. Relating to the 2014 acquisition of BMS's share of Global Diabetes Alliance.
2. See page 81 for further details of other adjustments.
3. Each of the measures in the Core column in the above table is a non-GAAP measure.
4. Gross margin as a % of Product Sales reflects Gross profit derived from Product Sales, divided by Product Sales.

Excluded from Core results

Restructuring costs

> Restructuring expenses totalling $347 million (2018: $697 million) were driven by the Wedel site closure ($62 million) and Finance Transformation ($92 million), offset by a reversal of the 2018 impairment resulting from the announcement of the US Biologics site closures in Longmont and Boulder, CO ($93 million).

Intangible amortisation and impairments

> Amortisation totalling $1,466 million (2018: $1,663 million) relating to intangible assets, except those related to IT and to our acquisition of BMS's share of our Global Diabetes Alliance (which are separately detailed below). Further information on our intangible assets is contained in Note 10 to the Financial Statements from page 190.

> Intangible impairment charges of $1,031 million (2018: $683 million) excluding those related to IT. 2019 charges include $533 million relating to the write down of the *Epanova* intangible asset. Further details relating to intangible asset impairments are included in Note 10 to the Financial Statements from page 190.

Diabetes Alliance

> Costs associated with our acquisition of BMS's share of our Global Diabetes Alliance in February 2014 amounting to $161 million (2018: $277 million), including a fair value credit of $516 million, amortisation charges of $390 million and discount unwind in Sweden and the US of $287 million.

Other

> Other charges which include net legal provisions amounted to $1,002 million (2018: credit of $489 million). Further details of legal proceedings in which we are currently involved are contained within Note 29 to the Financial Statements from page 220.

> Also included in other charges are a $208 million discount unwind charge (2018: $208 million) and a $69 million charge (2018: credit of $126 million) for net fair value adjustments relating to contingent consideration and the Acerta Pharma put option arising on our other business combinations as detailed in Note 20 to the Financial Statements from page 199.

Gross profit
Reported Gross profit increased by 13% (CER: 16%) to $19,463 million. Core Gross profit increased by 10% (CER: 13%) to $19,623 million. These increases reflected the growth in Product Sales.

Operating expenses
Reported R&D expenses increased by 2% (CER: 5%) to $6,059 million and Core R&D expenses increased by 1% (CER: 4%) to $5,320 million. The increase of both Reported and Core R&D expenses in the year was partly as a result of investment in the development of *Enhertu*.

Reported SG&A expenses increased by 16% (CER: 20%) to $11,682 million and Core SG&A expenses increased by 5% (CER: 8%) to $9,089 million. The increase of both Reported and Core SG&A expenses was primarily driven by investment in headcount to support the China expansion strategy, as well as support for New Medicines. The difference between growth of Reported and Core SG&A expenses partly reflected the fair value adjustments arising on acquistion-related liabilities recognised in 2019, an increase in legal provisions and higher intangible impairment charges.

Other operating income and expense
Reported Other operating income and expense in the year was down 39% (CER: 38%) at $1,541 million and includes $515 million on the sale of the US rights to *Synagis* to Sobi, $243 million from the sale of the global rights to *Losec*, excluding the US, Japan, China and Mexico to Cheplapharm, $213 million from the sale of the rights to *Seroquel* and *Seroquel XR* in the US, Canada, Europe and Russia to Cheplapharm and $181 million on the sale of the rights to *Arimidex* and *Casodex* to Juvisé.

As these elements of our income arose from product divestments, where we no longer retain significant ongoing economic interest, in accordance with our Collaboration Revenue definition in the Accounting Policy note on page 173 and the requirements of IFRS 15 'Revenue from Contracts with Customers', proceeds from these divestments are recorded as Other operating income and expense.

Operating profit
Reported Operating profit declined by 14% (CER: 16%) to $2,924 million in the year. The Reported Operating margin declined by three percentage points (CER: four percentage points) to 12% of Total Revenue. Core Operating profit grew 13% (CER: 13%) in the year to $6,436 million. The Core Operating profit margin increased by one percentage point to 26% of Total Revenue, as a result of operating leverage offset by a reduction in Other operating income and expense.

Reconciliation of Reported Profit before tax to EBITDA

	2019 $m	2018 $m	Actual growth %	CER growth %
Reported Profit before tax	**1,548**	1,993	**(22)**	**(29)**
Net finance expense	**1,260**	1,281	**(2)**	**4**
Share of after tax losses of joint ventures and associates	**116**	113	**3**	**5**
Depreciation, amortisation and impairment	**3,762**	3,753	**–**	**3**
EBITDA	**6,686**	7,140	**(6)**	**(6)**

Net finance expense
Reported Net finance expense decreased by 2% (CER: increased by 4%) in the year to $1,260 million (2018: $1,281 million). Core Net finance expense increased by 4% (CER: 10%) in the year to $765 million. The increase to Reported and Core Net finance expense at CER partly reflected an adverse movement in loan interest, as well as the effect of the adoption of IFRS 16.

Profit before tax
Reported Profit before tax declined by 22% (CER: 29%) in the year to $1,548 million (2018: $1,993 million), reflecting the increase in Operating expenses and the decrease in Other operating income and expense. Pre-tax adjustments to arrive at Core Profit before tax amounted to $4,007 million in 2019 (2018: $2,830 million), comprising $3,512 million adjustments to Operating profit (2018: $2,285 million) and $495 million to Net finance expense (2018: $545 million). EBITDA decreased by 6% (CER: 6%) to $6,686 million.

Taxation
The Reported tax rate in the year was 21% and the Core tax rate was 20%. These tax rates were higher than the UK Corporation Tax Rate due to the impact of the geographical mix of profits.

The income tax paid for the year was $1,118 million (72% of Reported Profit before tax). This was $797 million higher than the Reported tax charge for the year, which benefited from a net deferred tax credit of $988 million (2018: $806 million), relating to the elimination of unrealised profit on inventory, intangible amortisation and impairment, other deferred tax items and $218 million provision releases following the expiry of the statute of limitations or the conclusion of tax authority review, partially offset by net increases in provisions for tax contingencies.

Additional information on these items is contained in Note 4 from page 183 to the Financial Statements.

We pay corporate income taxes, customs duties, excise taxes, stamp duties, employment and many other business taxes in all jurisdictions where applicable. In addition, we collect and pay employee taxes and indirect taxes such as value-added tax.

Total comprehensive income
Total comprehensive income decreased by $375 million from the prior year, resulting in net income of $616 million for 2019. The decrease in Other comprehensive income was primarily driven by the Remeasurement of the defined benefit pension liability of $364 million (2018: $46 million), Foreign exchange losses arising on designating borrowings in net investment hedges of $252 million (2018: $520 million) and Fair value movements on cash flow hedges of $101 million (2018: $37 million).

EPS
Reported EPS of $1.03 in the year represented a decline of 40% (CER: 44%). The performance was driven by a decline in Collaboration Revenue and Other operating income and expense and increased Operating expenses. Core EPS in the year grew by 1% (CER: stable) to $3.50. The difference between the Reported and Core performance in 2019 was due to an increase in legal provisions, revaluation movements on acquisition-related liabilities and higher intangible impairment charges.

Restructuring
Since 2007, we have undertaken significant efforts to restructure and reshape our business to improve our long-term competitiveness. The first phases of this restructuring, involving the integration of MedImmune, efficiencies within the R&D function and a reduction in SG&A expenses, were completed in 2011. The targeted commercial restructuring announced in 2015 has also been successfully completed with a total cost of $151 million.

In 2016, we announced plans to advance our strategy through sharper focus by streamlining operations, primarily in Commercial and Manufacturing, to redeploy investment to key Therapy Areas, particularly Oncology. Restructuring costs associated with this programme were initially forecast to be $1.5 billion by the end of 2017 and generate net annualised benefits of $1.1 billion by 2018. The total cost estimate is now $1.3 billion to be incurred by the end of 2020, with benefits expected to be $1.1 billion in 2020. In addition to the 2016 plan, there are two further active programmes. The first is the continuation of the Phase 3 restructuring that was announced in 2012, superseded by Phase 4 in 2013 and subsequently expanded in 2014. This initiative consists of centralisation of our global R&D footprint into three strategic centres,

transformation of the IT organisation, closure of a number of manufacturing facilities and other activities to simplify and streamline the organisation. At the time of the announcement, the Phase 4 programme was estimated to incur $3.2 billion of costs and deliver $1.1 billion of annualised benefits by 2016. By the end of 2019, the Phase 4 programme had incurred costs of $3.6 billion, creating headroom for investment in our pipeline and launch capability. The Phase 4 programme is now expected to complete in 2022 with total programme costs estimated to be $3.8 billion and annualised benefits of $1.2 billion.

The second step was initiated in 2016 and relates to multi-year transformation programmes within our SG&A functions (principally Finance and HR) with anticipated costs by the end of 2018 of $270 million. At the time of the announcement, we expected these transformation programmes to deliver annualised benefits of $111 million by 2020. By the end of 2019, these programmes had incurred costs of $398 million with total expected costs rising to $441 million.

The aggregate restructuring charge incurred in 2019 across all our restructuring programmes was $347 million (2018: $697 million), net of a $93 million credit relating to the impairment reversal on Longmont and Boulder, CO, and including the ongoing integration of other acquired assets. Final estimates for programme costs, benefits and headcount impact in all functions are subject to completion of the requisite consultation in the various areas.

Our priority as we undertake these restructuring initiatives is to work with our affected employees on the proposed changes, acting in accordance with relevant local consultation requirements and employment law.

Brexit readiness preparations and planning

Following the UK referendum outcome in June 2016 for the UK to leave the EU, the UK Government and European Commission negotiated the terms on which the UK would leave the EU and the framework for the future relationship. In January 2020, Royal Assent of the European Union (Withdrawal Agreement) Act by the UK Parliament was granted and the Withdrawal Agreement was ratified by the European Parliament. The UK left the EU on 31 January 2020 with a transition period running to 31 December 2020. Immediately after the UK left the EU, the UK Government and European Commission began the process of negotiating the future relationship which, if the negotiations are successfully concluded and ratified in the UK and EU, would apply after the end of the transition period. At this time, it remains unclear whether an agreement will be reached on the future relationship before the end of the transition period and if it would be ratified by the UK Parliament and the European Parliament. In the absence of a ratified future relationship agreement at the end of the transition period, it is unclear what trading relationships the UK will have with the EU and other significant trading partners after 31 December 2020 given the range of political and legal options. Until the future relationship negotiation process is completed, it is difficult to anticipate the potential impact on our market share, sales, profitability, cash flows and results of operations.

In response to the UK referendum outcome and in light of the UK parliamentary impasse on Brexit since the date of the referendum until the UK general election on 12 December 2019, the Group took the decision to implement appropriate actions to mitigate where possible the potential risk of disruption to the supply of medicines (including potential new medicines currently undergoing clinical trials), including duplication of release testing and procedures for products based in the EU27 and the UK, transfer of regulatory licences, customs and duties set up for the introduction or amendment of existing tariffs or processes and associated IT systems reconfiguration. In addition, the Group engaged with its major suppliers to assess their readiness and continues to work with them to mitigate the risk of disruption to supply chains which could arise at the end of the transition period.

The costs associated with this and certain other actions directly related to Brexit will be charged as restructuring, with the majority of such costs expected to be cash costs. The current estimate of these costs is approximately $40 million. However, until the process to determine the future relationship is concluded by the UK and EU parliaments and the impacts of transition to any new arrangement between them are known with clarity, it is difficult to anticipate the overall potential impact on the Group's operations and hence the final expected costs to be incurred.

Cash flow and liquidity – for the year ended 31 December 2019

Net cash generated from operating activities was $2,969 million for 2019 (2018: $2,618 million). The increase to Operating cash inflows reflected the underlying improvement in business performance, combined with favourable working capital movements, partly offset by an increase in Tax paid, reflecting the phasing of tax payments between periods and the impact of 2018 refunds.

Net investment cash outflows were $1,130 million (2018: inflow of $443 million).

Investment cash outflows for 2019 include $709 million (2018: $349 million) of Payments of contingent consideration arising on business combinations and $1,481 million (2018: $328 million) for the purchase of other intangible assets, including the first of two $675 million upfront payments to Daiichi Sankyo, as part of the strategic collaboration on *Enhertu* and the impact of a final true up net payment of $413 million to MSD.

Investment cash inflows include $2,076 million (2018: $2,338 million) from the sale of intangible assets, including $821 million on the sale of the US rights to *Synagis* to Sobi, $243 million from the sale of the global rights to *Losec* excluding the US, Japan, China and Mexico to Cheplapharm, $181 million on the sale of the rights to *Arimidex* and *Casodex* to Juvisé and $178 million from the sale of the rights to *Seroquel* and *Seroquel XR* in Europe and Russia to Cheplapharm. The comparative period in 2018 included $700 million on the sale of *Nexium* rights in Europe to Grünenthal, $482 million relating to the 2017 sale of our remaining anaesthetic portfolio to Aspen, $354 million on the sale of *Alvesco*, *Omnaris* and *Zetonna* rights outside the US to Covis Pharma, $275 million from the sale of UK, China and other international regions' rights to *Seroquel XR* and *Seroquel* IR to Luye Pharma and $205 million from the sale of European rights to *Atacand* to Cheplapharm.

Net cash distributions to shareholders were $67 million (2018: $3,450 million), including proceeds from the issue of Share capital of $3,525 million (2018: $nil) and the proceeds from the exercise of share options of $32 million (2018: $34 million) less dividends paid of $3,592 million (2018: $3,484 million).

Bonds

In 2019, AstraZeneca repaid a $1.0 billion 1.95% bond, which matured in September 2019. There were no bonds issued in 2019. In August 2018, AstraZeneca issued $3.0 billion of bonds in the US dollar debt capital markets with maturities of five, 10 and 30 years and repaid a $1.0 billion 1.75% bond and a $0.4 billion floating rate bond, both of which matured in November 2018.

Debt

At 31 December 2019, outstanding gross debt (interest-bearing loans and borrowings) was $18,227 million (2018: $19,113 million). Of the gross debt outstanding $2,010 million is due within one year (2018: $1,754 million).
On 1 January 2019, the Group adopted IFRS 16, which eliminates the classification of leases as either operating or finance leases. The adoption of the new standard has resulted in the initial recognition of Lease liabilities of $720 million at 1 January 2019. Net debt at 31 December 2019 was $11,904 million, compared with $13,003 million at the beginning of the year, as a result of the cash flows and Lease liabilities as described above. At 31 December 2019, Cash and cash equivalents and liquid investments totalled $6,280 million (2018: $5,726 million) and undrawn committed cash facilities totalled $4,125 million (2018: $4,125 million).

Summary cash flows

	2019 $m	2018 $m	2017 $m
Net debt brought forward at 1 January	**(13,003)**	(12,679)	(10,657)
Profit before tax	**1,548**	1,993	2,227
Sum of changes in interest, depreciation, amortisation, impairment and share of after tax losses on joint ventures and associates	**5,138**	5,147	4,486
Movement in working capital and short-term provisions	**(346)**	(639)	(50)
Tax paid	**(1,118)**	(537)	(454)
Interest paid	**(774)**	(676)	(698)
Gains on disposal of intangible assets	**(1,243)**	(1,885)	(1,518)
Fair value movements on contingent consideration arising from business combinations	**(614)**	(495)	109
Non-cash and other movements	**378**	(290)	(524)
Net cash available from operating activities	**2,969**	2,618	3,578
Disposal of intangibles (net of purchases)	**595**	2,010	1,082
Non-contingent payments on business combinations	**–**	–	(1,450)
Payment of contingent consideration from business combinations	**(709)**	(349)	(434)
Other capital expenditure (net)	**(1,016)**	(1,218)	(1,319)
Investments	**(1,130)**	443	(2,121)
Dividends	**(3,592)**	(3,484)	(3,519)
Share proceeds	**3,525**	34	43
Distributions	**(67)**	(3,450)	(3,476)
Lease liabilities: IFRS 16[3]	**(675)**	–	–
Other movements	**2**	65	(3)
Net debt carried forward at 31 December	**(11,904)**	(13,003)	(12,679)

Bonds issued in 2019 and 2018

	Repayment dates	Face value of bond $m	Net book value of bond at 31 December 2019 $m
Bonds issued in 2019:			
		–	**–**
Total 2019		–	**–**
Bonds issued in 2018:			
3.5% USD bond	2023	850	**845**
Floating rate USD notes	2023	400	**400**
4% USD bond	2029	1,000	**992**
4.375% USD bond	2048	750	**736**
Total 2018		3,000	**2,973**

Net debt reconciliation

	2019 $m	2018 $m	2017 $m
Cash and cash equivalents	**5,369**	4,831	3,324
Other investments[1,2]	**911**	895	1,300
Cash and investments	**6,280**	5,726	4,624
Overdraft and short-term borrowings	**(225)**	(755)	(845)
Lease liabilities	**(675)**[3]	–	(5)
Current instalments of loans	**(1,597)**	(999)	(1,397)
Loans due after one year	**(15,730)**	(17,359)	(15,560)
Loans and borrowings	**(18,227)**	(19,113)	(17,807)
Net derivative financial instruments	**43**	384	504
Net debt	**(11,904)**	(13,003)	(12,679)

1. Other investments in 2019 include $62 million (2018: $46 million) of non-current Treasury investments.
2. Other investments include non-current investments, which are included within the balance of $1,401 million (2018: $833 million) in the Statement of Financial Position on page 169. The equivalent GAAP measure to Net debt is 'liabilities arising from financing activities', which excludes the amounts for cash and overdrafts, other investments and non-financing derivatives shown above and includes the Acerta Pharma put option of $2,146 million (2018: $1,838 million) shown in non-current other payables.
3. Included in the Net debt reconciliation for 2019 are Lease liabilities of $675 million, which arose on the adoption of IFRS 16 on 1 January 2019. Please see 'Group Accounting Policies' from page 172 and Note 8 'Leases' on page 189 for more information.

Financial position – 31 December 2019

All data in this section is on a Reported basis.

Property, plant and equipment

In 2019, Property, plant and equipment increased by $267 million to $7,688 million with additions of $996 million (2018: $1,034 million), impairments of $53 million (2018: charge of $291 million) and exchange adjustments of $3 million (2018: credit of $301 million) offset by depreciation of $647 million (2018: $614 million) and disposals and other movements of $138 million (2018: $22 million).

Right-of-use assets

Following the adoption of IFRS 16 on 1 January 2019, the Group have recognised Lease liabilities and corresponding Right-of-use assets for arrangements that were previously classified as Operating leases. Right-of-use assets at 31 December 2019 were $647 million (2018: $nil).

Business combinations

No business acquisitions were made in 2019, 2018 or 2017.

Goodwill and intangible assets

Our goodwill of $11,668 million (2018: $11,707 million) principally arose on the acquisition of MedImmune in 2007, the restructuring of our US joint venture with MSD in 1998 and the acquisition of BMS's share of the Global Diabetes Alliance.

Intangible assets amounted to $20,833 million at 31 December 2019 (2018: $21,959 million). The decrease was mainly driven by amortisation in the year of $1,928 million (2018: $2,165 million). Intangible asset additions were $2,001 million in 2019 (2018: $513 million), $1.7 billion of which arose from the strategic collaboration with Daiichi Sankyo on *Enhertu*. Impairment charges in the year were $1,033 million (2018: $683 million) including impairments on *Epanova*, *Bydureon*, *Qtern*, *Eklira* and *FluMist*. Disposals of intangible assets totalled $10 million in the year (2018: $339 million).

Further details of our additions to Intangible assets, and impairments recorded, are included in Note 10 to the Financial Statements from page 190.

Assets held for sale

Assets held for sale of $70 million comprise tangible assets relating to the Boulder manufacturing site. In 2018, Assets held for sale of $982 million comprised mainly tangible assets relating to the US rights to *Synagis* arising from the acquisition of MedImmune.

Receivables, payables and provisions

Total current and non-current Trade and other receivables increased by $412 million with current Trade and other receivables increasing by $187 million to $5,761 million as a result of higher invoiced sales in China and a reduction in debt factoring in the US.

Trade and other payables increased by $667 million in 2019 to $20,278 million. The increase was due to the recognition of payables in relation to the strategic collaboration, entered into during the year, with Daiichi Sankyo on *Enhertu*, offset by reductions in contingent consideration liabilities arising on business combinations.

The increase to Provisions of $673 million in 2019 was primarily driven by a $444 million increase to legal provisions. Further details of the charges made against provisions are contained in Notes 21 and 29 to the Financial Statements from pages 200 and 220 respectively.

The divestment of the US rights to *Synagis*, which completed in 2019, included $150 million held as a financial liability. AstraZeneca will also receive $175 million following the submission of the Biologics License Application (BLA) for MEDI8897, potential net payments of $110 million for other MEDI8897 profit-related milestones and $60 million in non-contingent payments for MEDI8897 during the period from 2019 to 2021.

Contingent consideration

The majority of our business acquisitions have included elements of consideration that are contingent on future development and/or sales milestones, with both the Diabetes and Respiratory acquisitions in 2014 also including royalty payments linked to future revenues. The acquisitions of ZS Pharma in 2015 and Acerta Pharma in 2016 had no contingent consideration element and there were no relevant acquisitions in 2017, 2018 and 2019.

Our agreement with BMS provides for various sales-related royalty payments up until 2025. Our transaction with Almirall includes further payments of up to $0.6 billion for future development, launch, and various other sales-related milestone payments, and sales-related royalty payments as detailed in Note 20 to the Financial Statements from page 199.

All these future payments are treated as contingent consideration liabilities, and are fair valued using decision-tree analyses, with key assumptions, including the probability of success, the potential for delays and the expected levels of future revenues. The fair value is updated at each reporting date to reflect our latest estimate of the probabilities of these key assumptions. Given the long-term nature of the liabilities, the fair value calculation includes the discounting of future potential payments to their present value using discount rates appropriate to the period over which payments are likely to be made. Over time, as the target date of a consideration payment approaches, the discount in absolute terms of such future potential payment to its present value decreases. Therefore, in each period we take a corresponding charge reflecting the passage of time. We refer to this charge as 'Discount unwind'. The calculation of the fair value is considered to be a key estimate.

Summary statement of financial position – 31 December

All data in this section are on a Reported basis

	2019 $m	Movement $m	2018 $m	Movement $m	2017 $m
Property, plant and equipment	**7,688**	**267**	7,421	(194)	7,615
Right-of-use assets	**647**	**647**	–	–	–
Goodwill and intangible assets	**32,501**	**(1,165)**	33,666	(4,347)	38,013
Assets held for sale	**70**	**(912)**	982	982	–
Inventories	**3,193**	**303**	2,890	(145)	3,035
Trade and other receivables	**6,501**	**412**	6,089	233	5,856
Net deferred tax assets	**228**	**1,135**	(907)	899	(1,806)
Trade and other payables	**(20,278)**	**(667)**	(19,611)	(130)	(19,481)
Provisions	**(1,564)**	**(673)**	(891)	577	(1,468)
Net income tax payable	**(1,076)**	**(119)**	(957)	(131)	(826)
Retirement benefit obligations	**(2,807)**	**(296)**	(2,511)	72	(2,583)
Non-current other investments (excluding Treasury investments of $62m in 2019 (2018: $46m))	**1,339**	**552**	787	(76)	863
Investments in associates and joint ventures	**58**	**(31)**	89	(14)	103
Net debt	**(11,904)**	**1,099**	(13,003)	(324)	(12,679)
Net assets	**14,596**	**552**	14,044	(2,598)	16,642

Contingent consideration arising on business combinations

	2019			2018		
	Acquisition of BMS's share of Diabetes Alliance $m	Other business combinations $m	Total 2019 $m	Acquisition of BMS's share of Diabetes Alliance $m	Other business combinations $m	Total 2018 $m
At 1 January	**3,983**	**1,123**	**5,106**	4,477	1,057	5,534
Settlements	**(454)**	**(255)**	**(709)**	(349)	–	(349)
Fair value adjustments	**(516)**	**(98)**	**(614)**	(482)	(13)	(495)
Discount unwind	**287**	**69**	**356**	337	79	416
At 31 December	**3,300**	**839**	**4,139**	3,983	1,123	5,106

Payments due by period

	Less than 1 year $m	1-3 years $m	3-5 years $m	Over 5 years $m	Total 2019 $m	Total 2018 $m
Bank loans and other borrowings[1]	**2,441**	**3,794**	**3,547**	**15,906**	**25,688**	27,923
Lease liabilities[2]	**205**	**275**	**129**	**128**	**737**	–
Operating leases	**–**	**–**	**–**	**–**	**–**	684
Contracted capital expenditure	**–**	**–**	**–**	**396**	**396**	625
Total	**2,646**	**4,069**	**3,676**	**16,430**	**26,821**	29,232

[1] Bank loans and other borrowings include interest charges payable in the period, as detailed in Note 27 to the Financial Statements from page 210.

[2] Lease liabilities arose on the adoption of IFRS 16 on 1 January 2019. Please see Note 8 "Leases" on page 189 for more information.

Dividends for 2019

	$	Pence	SEK	Payment date
First interim dividend	**0.90**	**71.9**	**8.49**	**9 September 2019**
Second interim dividend	**1.90**	**146.4**	**18.32**	**30 March 2020**
Total	**2.80**	**218.3**	**26.81**	

Both the Discount unwind and any movements on the fair value of the underlying future payments can result in significant income statement movements. As detailed in the Excluded from Core section on page 84, these movements are treated as non-Core items in our Reconciliation of Reported results to Core results. In 2019, we recorded an interest charge of $356 million on the Discount unwind on contingent consideration arising on our business combinations, and a net fair value decrease on contingent consideration of $614 million (which resulted in a credit to our income statement for the same amount) driven, principally, by revised forecasts for revenues for our Diabetes franchise, particularly relating to *Farxiga*, due to the competitiveness of the diabetes market. At 31 December 2019, our contingent consideration liability was $4,139 million (2018: $5,106 million) with the movements of the balance detailed in the table on page 88.

Tax payable and receivable

Net income tax payable has increased by $119 million (2018: $131 million) to $1,076 million, principally due to cash tax timing differences. The tax receivable balance of $285 million (2018: $207 million) principally relates to cash tax timing differences.

Net deferred tax liabilities reduced by $1,135 million (2018: $899 million) in the year, resulting in a Net deferred tax asset of $228 million, due to movements in deferred tax arising on the elimination of unrealised profit on inventory and associated with intangible amortisation and impairment.

Additional information on the movement in deferred tax balances is contained in Note 4 to the Financial Statements from page 183.

Retirement benefit obligations

In terms of the Group's major defined benefit plans, approximately 91% of our total retirement defined benefit obligations (or around 80% of net obligations) are concentrated in the UK, the US and Sweden. In the UK and US, we have now largely legacy arrangements as they have been closed to new entrants since 2000. In line with local regulations, the collectively bargained Swedish plan is still open to employees born before 1979.

Retirement benefit obligations increased by $296 million in 2019 (2018: decrease of $72 million) to $2,807 million. Net remeasurement adjustments of $364 million arose principally from lower discount rate assumptions in the UK, US and Sweden driven by falls in long-term bond yields, which increased the present value of the liabilities, partially offset by higher than expected investment performance. Employer contributions to the pension schemes of $175 million helped offset the increase in the net obligations. Benefits paid amounted to $512 million (2018: $620 million).

In the UK, a High Court judgment was issued on 26 October 2018 relating to an element of pension benefits known as Guaranteed Minimum Pensions (GMPs). The ruling requires the equalisation of member benefits to address gender inequality in instances where GMP benefits are currently unequal. The Group made a provision in 2018 of £17 million ($23 million) in past service costs for the estimated financial impact of this ruling on the UK pension fund. Discussions between the Trustee and the Company are ongoing to determine the exact impact.

Separate from this, following a review of the UK Pension Fund's administrative practice and Fund Rules, a decision was made in July 2019 to change the way in which GMP is calculated. This change applies to all future pension payments from November 2019. A past service net credit of £38 million ($49 million) has been recognised in respect of these changes for the year ended 31 December 2019.

The Group has undertaken several initiatives to reduce our net defined benefit pension obligation exposure and manage the associated long-term financial risks. As well as paying cash contributions when required, in the UK, a freeze on pensionable pay has been in effect from 30 June 2010. In the US, both the qualified and non-qualified US pension plans were closed to future accrual in December 2017. Furthermore, liability management exercises have been carried out in the UK, including a Pension Increase Exchange exercise in 2016/2017 along with improvements to the 'at retirement' process to better support members in their retirement decisions.

Further details of our accounting for post-retirement benefit plans are included in Note 22 to the Financial Statements from page 201.

Commitments and contingencies

We have commitments and contingencies which are accounted for in accordance with the accounting policies described in the Financial Statements in the Group Accounting Policies section from page 172.

We also have taxation contingencies. These are described in the Taxation section in the Critical accounting policies and estimates section from page 91 and in Note 29 to the Financial Statements from page 220.

Off-balance sheet transactions and commitments

We have no off-balance sheet arrangements and our derivative activities are non-speculative. The table on page 88 sets out our minimum contractual obligations at the year end.

Research and development collaboration payments

Details of future potential R&D collaboration payments are also included in Note 29 to the Financial Statements on page 220. As detailed in Note 29, payments to our collaboration partners may not become payable due to the inherent uncertainty in achieving the development and revenue milestones linked to the future payments. We may enter into further collaboration projects in the future that may include milestone payments and, therefore, as certain milestone payments fail to crystallise due to, for example, development not proceeding, they may be replaced by potential payments under new collaborations.

Investments, divestments and capital expenditure

We have completed over 150 major or strategically important business development transactions over the past three years.

In addition to the business development transactions detailed under Collaboration Revenue from page 82 of this Financial Review, the following significant collaborations remain in the development phase:

Daiichi Sankyo

> In March 2019, AstraZeneca announced it had entered into an alliance with Daiichi Sankyo to develop and commercialise *Enhertu* for multiple cancer types. In markets where Daiichi Sankyo is selling the product, AstraZeneca is entitled to receive a royalty (in Japan) or a profit share (in other territories). Royalty income and the AstraZeneca share of gross margin from sales made by Daiichi Sankyo are recognised as Collaboration Revenue. *Enhertu* launched in the US on 31 December 2019, and a nominal amount of Collaboration Revenue has been recognised in respect of sales for 2019.

Innate Pharma

> In April 2015, we entered into two oncology agreements with Innate Pharma: firstly, a licence which provides us with exclusive global rights to co-develop and commercialise IPH2201 in combination with *Imfinzi* and, secondly, an option to license exclusive global rights to co-develop and commercialise IPH2201 in monotherapy and other combinations in certain treatment areas. Under the terms of the combination licence, we assumed exclusive global rights to research, develop and commercialise IPH2201 in combination with *Imfinzi*. We jointly fund Phase II studies with Innate Pharma and we lead the execution of these studies. Under the terms of the agreements, we made an initial payment to Innate Pharma of $250 million, which included the consideration for exclusive global rights to co-develop and commercialise IPH2201 in combination with *Imfinzi*, as well as access to IPH2201 in monotherapy and other combinations in certain treatment areas. The agreement includes a Phase III initiation milestone of $100 million, as well as additional regulatory and sales-related milestones. We record all sales and will pay Innate Pharma double-digit royalties on net sales. The arrangement includes the right for Innate Pharma to co-promote in Europe for a 50% profit share in the territory.
> In October 2018, we exercised our option over IPH2201, and simultaneously entered into a further multi-element transaction with Innate Pharma. Under the agreement, we paid $50 million to collaborate on, and acquire an option to license, IPH5201, a first-in-class anti-CD39 mAb. Additionally, we paid $20 million to acquire options over four future programmes currently being developed by Innate Pharma, and paid €62.6 million to acquire a 9.8% stake in Innate Pharma. The $100 million option fee and $50 million and the premium paid over market price for the investment in Innate Pharma have been capitalised as intangible assets. The payment for future programmes will be expensed as research and development expenditure over four years. At the same time, we licensed the EU and US rights to *Lumoxiti* to Innate Pharma for $50 million upfront plus future milestone payments of up to $25 million.

FibroGen

> In July 2013, we entered into a strategic collaboration with FibroGen to develop and commercialise roxadustat (FG-4592), a first-in-class oral compound in late-stage development for the treatment of anaemia from chronic kidney disease and end-stage renal disease (ESRD). This broad collaboration focuses on the US, China and all major markets excluding Japan, Europe, the CIS, the Middle East and South Africa, which are covered by an existing agreement between FibroGen and Astellas. Under the arrangement, we agreed to pay FibroGen upfront and subsequent non-contingent payments totalling $350 million, as well as potential development-related milestone payments of up to $465 million, and potential future sales-related milestone payments, in addition to tiered royalty payments on future sales of roxadustat in the low 20% range. Additional development milestones will be payable for any subsequent indications which the companies choose to pursue. We will be responsible for the US commercialisation of roxadustat, with FibroGen undertaking specified promotional activities in the ESRD segment in this market. The companies will also co-commercialise roxadustat in China where FibroGen will be responsible for clinical trials, regulatory matters, manufacturing and medical affairs, and we will oversee promotional activities and commercial distribution.

Moderna

> In March 2013, we signed an exclusive agreement with Moderna to discover, develop and commercialise pioneering medicines based on *messenger RNA Therapeutics* for the treatment of serious cardiovascular, metabolic and renal diseases, as well as cancer. Under the terms of the agreement, we made an upfront payment of $240 million. We will have exclusive access to select any target of our choice in cardiometabolic and renal diseases, as well as selected targets in oncology, over a period of up to five years for subsequent development of *messenger RNA Therapeutics*. In addition, Moderna is entitled to an additional $180 million for the achievement of three technical milestones. Through this agreement, we have the option to select up to 40 drug products for clinical development and Moderna will be entitled to development and commercial milestone payments as well as royalties on drug sales. We will lead the pre-clinical, clinical development and commercialisation of therapies resulting from the agreement and Moderna will be responsible for designing and manufacturing the *messenger RNA Therapeutics* against selected targets. We are currently progressing 19 projects across CVRM and Oncology. Utilising both companies' expertise, significant progress has also been made with the technology platform, with the focus on formulation, safety, and drug metabolism and pharmacokinetics.

We determine the above business development transactions to be significant using a range of factors. We look at the specific circumstances of the individual arrangement and apply several quantitative and qualitative criteria. Because we consider business development transactions to be an extension of our R&D strategy, the expected total value of development payments under the transaction and its proportion of our annual R&D spend, both of which are proxies for overall R&D effort and cost, are important elements of the determination of the significance. Other quantitative criteria we apply include, without limitation, expected levels of future sales, the possible value of milestone payments and the resources used for commercialisation activities (for example, the number of staff). Qualitative factors we consider include, without limitation, new market developments, new territories, new areas of research and strategic implications.

Capitalisation and shareholder return

Capitalisation

The total number of shares in issue at 31 December 2019 was 1,312 million (2018: 1,267 million). In April 2019, AstraZeneca completed an issuance of 44,386,214 new Ordinary Shares of $0.25 each at a price of £60.50 per share, resulting in an increase in share capital of $11 million and an increase in share premium of $3,479 million, net of transaction costs of $22 million. In addition, 0.7 million Ordinary Shares were issued upon share option exercises for total proceeds of $32 million. Shareholders' equity increased by $659 million to $13,127 million at the year end. Non-controlling interests were $1,469 million (2018: $1,576 million), with the decrease in the year as a result of the losses attributable to shareholders of the non-controlling interest in Acerta Pharma.

Dividend and share repurchases

The Board has recommended a second interim dividend of $1.90 (146.4 pence, 18.32 SEK) to be paid on 30 March 2020. This brings the full-year dividend to $2.80 (218.3 pence, 26.81 SEK). Against Reported Earnings per share, the Group had a dividend cover ratio of 0.4:1 in 2019 (2018: 0.6:1). Against Core Earnings per share, the Group had a dividend cover ratio of 1.25:1 in 2019 (2018: 1.2:1). This dividend is consistent with the progressive dividend policy, by which the Board intends to maintain or grow the dividend each year.

The Board regularly reviews its distribution policy and its overall financial strategy to continue to strike a balance between the interests of the business, our financial creditors and our shareholders. Having regard for business investment, funding the progressive dividend policy and meeting our debt service obligations, the Board currently believes it is appropriate to continue the suspension of the share repurchase programme which was announced in 2012.

The Board reviews the level of distributable reserves of the Parent Company annually and aims to maintain distributable reserves that provide adequate cover for dividend payments. As at 31 December 2019, the overwhelming majority of the profit and loss reserve of the Parent Company (2019: $11,998 million, 2018: $11,602 million) was available for distribution subject to the filing of these Financial Statements with the UK Companies House, details are included in the Parent Company's Statement of Changes in Equity on page 232.

The distributable reserves are sufficient to pay dividends for a number of years, as, when required, the Company can receive dividends from its subsidiaries to increase distributable reserves.

Future prospects

As outlined earlier in this Annual Report, our strategy is focused on innovation, returning to growth and building a sustainable, durable and more profitable business.

In support of this, we made certain choices around our three strategic priorities:

> Deliver Growth and Therapy Area Leadership
> Accelerate Innovative Science
> Be a Great Place to Work.

For more information, see Our strategic priorities from page 18.

Full year 2020: additional commentary

The Group has conducted an assessment of the impact of the recent novel coronavirus (Covid-19) outbreak in China. All guidance and indications take account of scenario analyses that assume an unfavourable impact in China on Total Revenue and Core EPS lasting up to a few months. Depending on the impact of the epidemic, Total Revenue in 2020 is expected to increase by a high single-digit to a low double-digit percentage and Core EPS is expected to increase by a mid- to high-teens percentage. The Group is focused on improving operating leverage in 2020. Capital Expenditure is expected to be broadly stable versus 2019 and a Core Tax Rate of 18% to 22% is expected for 2020.

These targets represent management's current estimates and are subject to change. Please see the Cautionary statement regarding forward-looking statements on page 272.

Financial risk management

Financial risk management policies

Insurance

Our risk management processes are described in Risk Overview from page 74. These processes enable us to identify risks that can be partly or entirely mitigated through the use of insurance. We negotiate the best available premium rates with insurance providers on the basis of our extensive risk management procedures. We focus our insurance resources on the most critical areas, or where there is a legal requirement, and where we can get best value for money. We purchase an external multi-line insurance programme to mitigate against significant financial loss arising from business risks, including liability, business interruption, property damage, and directors' and officers' liability. In order to contain insurance costs, as of February 2006, we adjusted our product liability coverage profile, accepting uninsured exposure above $100 million.

Taxation

Our approach to managing tax risk is integrated with our broader business risk management and compliance framework. Our approach is to manage tax risks and tax costs in a manner consistent with applicable regulatory requirements and with shareholders' best long-term interests, taking into account operational, economic and reputational factors. We manage tax risks in the context of substantive business transactions.

Treasury

The principal financial risks to which we are exposed are those arising from liquidity, interest rate, foreign currency and credit. We have a centralised treasury function to manage these risks in accordance with Board-approved policies. Specifically, liquidity risk is managed through maintaining access to a number of sources of funding to meet anticipated funding requirements, including committed bank facilities, cash resources and use of debt factoring. We also use supply chain financing. For further information on our supply chain financing arrangements, please refer to the Business Review on page 37.

Interest rate risk is managed through maintaining a debt portfolio that is weighted towards fixed rates of interest. Accordingly, our net interest charge is not significantly affected by movements in floating rates of interest. We monitor the impact of currency on a portfolio basis (to recognise correlation effect), and may hedge to protect against significant adverse impacts on cash flow over the short to medium term. We aim to hedge the currency exposure that arises between the booking and settlement dates on material non-local currency purchases and sales by subsidiaries and the external dividend. Significant intra-Group loans that give rise to foreign exchange movements are also hedged.

Credit risk is managed through setting and monitoring credit limits appropriate for the assessed risk of the counterparty. The Group utilises factoring arrangements for selected trade receivables. These factoring arrangements qualify for full derecognition of the associated trade receivables under IFRS 9 'Financial Instruments'.

Our capital and risk management objectives and policies are described in further detail in Note 27 to the Financial Statements from page 212 and in Risk Overview from page 74. Sensitivity analysis of the Group's exposure to exchange rate and interest rate movements is also detailed in Note 27 to the Financial Statements from page 215.

Critical accounting policies and estimates

Our Financial Statements are prepared in accordance with IFRS as issued by the IASB and as adopted by the EU (adopted IFRS), and the accounting policies employed are set out in the Group Accounting Policies section in the Financial Statements from page 172. In applying these policies, we make estimates and assumptions that affect the Reported amounts of assets and liabilities and disclosure of contingent assets and liabilities. The actual outcome could differ from those estimates. Some of these policies require a high level of judgement because the areas are especially subjective or complex. We believe that the most critical accounting policies and significant areas of judgement and estimation are in the following areas and align with the accounting policies containing our key accounting judgements and significant accounting estimates as disclosed in the Financial Statements on page 173: KJ SE

> revenue recognition – see Revenue Accounting Policy on page 174 KJ and Note 1 on page 180 SE.
> expensing of internal development expenses – see Research and Development Policy on page 174 KJ.
> impairment review of Intangible assets – see Note 10 on page 191 SE.
> useful economic life of Intangible assets – see Research and Development Policy on page 175 KJ and Note 10 on page 192 SE.
> business combinations and Goodwill (and Contingent Consideration arising from business combinations) – see Business Combinations and Goodwill Policy on page 177 KJ and Note 20 on page 200 SE.
> litigation liabilities – see Litigation and Environmental liabilities within Note 29 on page 221 KJ.
> operating segments – see Note 6 on page 186 KJ.
> employee benefits – see Note 22 on page 207 SE.
> taxation – see Taxation Accounting Policies on page 175, Note 29 on page 225 KJ and Note 29 on page 224 SE.

Revenue recognition

Product Sales are recorded at the invoiced amount (excluding inter-company sales and value-added taxes) less movements in estimated accruals for rebates and chargebacks given to managed-care and other customers and product returns, which are a particular feature in the US and are considered to be key estimates. It is the Group's policy to offer a credit note for all returns and to destroy all returned stock in all markets. Cash discounts for prompt payments are also discounted from sales. Sales are recognised when the control of the goods has been transferred to a third party, which is usually when title passes to the customer, either on shipment or on the receipt of goods by the customer, depending on local trading terms.

Rebates, chargebacks and returns in the US

When invoicing Product Sales in the US, we estimate the rebates and chargebacks that we expect to pay, which are considered to be estimates. These rebates typically arise from sales contracts with third-party managed-care organisations, hospitals, long-term care facilities, group purchasing organisations and various federal or state programmes (Medicaid contracts, supplemental rebates, etc.). They can be classified as follows:

- Chargebacks, where we enter into arrangements under which certain parties, typically hospitals, long-term care facilities, group purchasing organisations, the Department of Veterans Affairs, Public Health Service Covered Entities and the Department of Defense, are able to buy products from wholesalers at the lower prices we have contracted with them. The chargeback is the difference between the price we invoice to the wholesaler and the contracted price charged by the wholesaler to the other party. Chargebacks are credited directly to the wholesalers.
- Regulatory, including Medicaid and other federal and state programmes, where we pay rebates based on the specific terms of agreements with the US Department of Health and Human Services and with individual states, which include product usage and information on best prices and average market prices benchmarks.
- Contractual, under which entities such as third-party managed-care organisations are entitled to rebates depending on specified performance provisions, which vary from contract to contract.

The effects of these deductions on our US pharmaceuticals revenue and the movements on US pharmaceuticals revenue provisions are set out to the right.

Accrual assumptions are built up on a product-by-product and customer-by-customer basis, taking into account specific contract provisions coupled with expected performance, and are then aggregated into a weighted average rebate accrual rate for each of our products. Accrual rates are reviewed and adjusted on an as needed basis. There may be further adjustments when actual rebates are invoiced based on utilisation information submitted to us (in the case of contractual rebates) and claims/invoices are received (in the case of regulatory rebates and chargebacks). We believe that we have made reasonable estimates for future rebates using a similar methodology to that of previous years. Inevitably, however, such estimates involve judgements on aggregate future sales levels, segment mix and the customers' contractual performance.

Gross to Net Product Sales
US pharmaceuticals

	2019 $m	2018 $m	2017 $m
Gross Product Sales	**18,354**	16,538	14,637
Chargebacks	**(2,429)**	(2,224)	(2,299)
Regulatory – Medicaid and state programmes	**(1,380)**	(1,304)	(1,462)
Contractual – Managed-care and Medicare	**(5,467)**	(4,600)	(3,598)
Cash and other discounts	**(303)**	(286)	(30)
Customer returns	**(44)**	(119)	(37)
US Branded Pharmaceutical Fee	**(105)**	(140)	3
Other	**(879)**	(989)	(1,045)
Net Product Sales	**7,747**	6,876	6,169

Movements in accruals
US pharmaceuticals

	Brought forward at 1 January 2019 $m	**Provision for current year $m**	**Adjustment in respect of prior years $m**	**Returns and payments $m**	**Carried forward at 31 December 2019 $m**
Chargebacks	**271**	**2,458**	**(29)**	**(2,455)**	**245**
Regulatory – Medicaid and state programmes	**892**	**1,477**	**(97)**	**(1,541)**	**731**
Contractual – Managed-care and Medicare	**1,542**	**5,613**	**(146)**	**(5,070)**	**1,939**
Cash and other discounts	**4**	**303**	**–**	**(288)**	**19**
Customer returns	**361**	**44**	**–**	**(225)**	**180**
US Branded Pharmaceutical Fee	**52**	**111**	**(6)**	**(31)**	**126**
Other	**144**	**879**	**–**	**(878)**	**145**
Total	**3,266**	**10,885**	**(278)**	**(10,488)**	**3,385**

	Brought forward at 1 January 2018 $m	Provision for current year $m	Adjustment in respect of prior years $m	Returns and payments $m	Carried forward at 31 December 2018 $m
Chargebacks	206	2,220	4	(2,159)	271
Regulatory – Medicaid and state programmes	749	1,482	(178)	(1,161)	892
Contractual – Managed-care and Medicare	1,267	4,685	(85)	(4,325)	1,542
Cash and other discounts	4	286	–	(286)	4
Customer returns	386	119	–	(144)	361
US Branded Pharmaceutical Fee	63	99	41	(151)	52
Other	151	989	–	(996)	144
Total	2,826	9,880	(218)	(9,222)	3,266

	Brought forward at 1 January 2017 $m	Provision for current year $m	Adjustment in respect of prior years $m	Returns and payments $m	Carried forward at 31 December 2017 $m
Chargebacks	562	2,432	(133)	(2,655)	206
Regulatory – Medicaid and state programmes	807	1,568	(106)	(1,520)	749
Contractual – Managed-care and Medicare	1,443	3,815	(217)	(3,774)	1,267
Cash and other discounts	6	29	1	(32)	4
Customer returns	473	36	1	(124)	386
US Branded Pharmaceutical Fee	260	105	(108)	(194)	63
Other	161	1,030	15	(1,055)	151
Total	3,712	9,015	(547)	(9,354)	2,826

Overall adjustments between gross and net US Product Sales amounted to $10,374 million in 2019 (2018: $9,662 million) with the increase driven by an overall increase in our US Product Sales and changes in product mix.

Cash discounts are offered to customers to encourage prompt payment. Accruals are calculated based on historical experience and are adjusted to reflect actual experience. Our revenue recognition policy is described within Group Accounting Policies from page 173.

Industry practice in the US allows wholesalers and pharmacies to return unused stocks within six months of, and up to 12 months after, shelf-life expiry. The customer is credited for the returned product by the issuance of a credit note. Returned products are not exchanged for products from inventory and once a return claim has been determined to be valid and a credit note has been issued to the customer, the returned products are destroyed. At the point of sale in the US, we estimate the quantity and value of products which may ultimately be returned. Our returns accruals in the US are based on actual experience. Our estimate is based on the historical sales and returns information for established products together with market-related information, such as estimated shelf life, product recalls, and estimated stock levels at wholesalers, which we receive via third-party information services. For newly launched products, we use rates based on our experience with similar products or a pre-determined percentage.

Business combinations and goodwill (and contingent consideration arising from business combinations)

Our business model includes investment in targeted business developments to strengthen our portfolio, pipeline and capabilities. These business development transactions include collaborations, asset in-licences and business acquisitions.

Each transaction is considered to establish whether it qualifies as a business combination by applying the criteria assessment detailed in IFRS 3 'Business Combinations'. The determination of a transaction being a business combination or asset acquisition is considered to be a key judgement as detailed in the accounting policy on page 177.

On the acquisition of a business, fair values are attributed to the identifiable assets and liabilities and contingent liabilities unless the fair value cannot be measured reliably, in which case the value is subsumed into goodwill.

Attributing fair values is a key judgement. Goodwill is the difference between the fair value of the consideration and the fair value of net assets acquired. Fair value is the price that would be received to sell an asset or pay for a liability in an orderly transaction at the date of acquisition. The price may be directly observable but, in most cases, is estimated using valuation techniques which normally involve predicting future cash flows and applying a market participant discount rate. No business combinations were made in 2017, 2018 or 2019.

Future contingent elements of consideration, which may include development and launch milestones, revenue threshold milestones and revenue-based royalties, are fair valued at the date of acquisition using decision-tree analysis with key inputs including probability of success, consideration of potential delays and revenue projections based on the Group's internal forecasts. Unsettled amounts of consideration are held at fair value within payables with changes in fair value recognised immediately in profit. Several of our business combinations have included significant amounts of contingent consideration. Details of the movements in the fair value of the contingent consideration in the year, and the range of possible contingent consideration amounts that may eventually become payable are contained in Note 20 to the Financial Statements from page 199. Where not all the equity of a subsidiary is acquired, the non-controlling interest is recognised either at fair value or at the non-controlling interest's proportionate share of the net assets of the subsidiary, on a case-by-case basis. Put options over non-controlling interests are recognised as a financial liability measured at amortised cost, with a corresponding entry in either retained earnings or against non-controlling interest reserves on a case-by-case basis.

As detailed above, we have significant investments in goodwill and intangible assets as a result of acquisitions of businesses and purchases of assets, such as product development and marketing rights.

Details of the estimates and assumptions we make in our annual impairment testing of goodwill are included in Note 9 to the Financial Statements on page 190. The Group, including acquisitions, is considered a single operating segment for impairment purposes. No impairment of Goodwill was identified. A significant portion of our investments in Intangible assets and Goodwill arose from the restructuring of the joint venture with MSD which commenced in 1998, the acquisition of MedImmune in 2007 and our 2014 acquisition of BMS's interest in the Group's Diabetes Alliance. We are satisfied that the carrying values of our Intangible assets as at 31 December 2019 are fully justified by estimated future cash flows. The accounting for our Intangible assets is fully explained in Note 10 to the Financial Statements from page 190, including details of the estimates and assumptions we make in impairment testing of Intangible assets.

Litigation and environmental liabilities

In the normal course of business, contingent liabilities may arise from product-specific and general legal proceedings, from guarantees or from environmental liabilities connected with our current or former sites. Where we believe that potential liabilities have a less than 50% probability of crystallising, or where we are unable to make a reasonable estimate of the liability, we treat them as contingent liabilities. These are not provided for, but are disclosed in Note 29 to the Financial Statements from page 220.

In cases that have been settled or adjudicated, or where quantifiable fines and penalties have been assessed and which are not subject to appeal (or other similar forms of relief), or where a loss is probable (more than 50% assessed probability) and we are able to make a reasonable estimate of the loss, we indicate the loss absorbed or the amount of the provision accrued.

Where it is considered that the Group is more likely than not to prevail, or in the rare circumstances where the amount of the legal liability cannot be estimated reliably, legal costs involved in defending the claim are charged to profit as they are incurred. Where it is considered that we have a valid contract which provides the right to reimbursement (from insurance or otherwise) of legal costs and/or all or part of any loss incurred or for which a provision has been established and we consider recovery to be virtually certain, then the best estimate of the amount expected to be received is recognised as an asset.

Assessments as to whether or not to recognise provisions or assets and of the amounts concerned usually involve a series of complex judgements about future events and can rely heavily on estimates and assumptions. We believe that the provisions recorded are adequate based on currently available information and that the insurance recoveries recorded will be received.

However, given the inherent uncertainties involved in assessing the outcomes of these cases and in estimating the amount of the potential losses and the associated insurance recoveries, we could in future periods incur judgments or insurance settlements that could have a material adverse effect on our results in any particular period.

The position could change over time, and there can, therefore, be no assurance that any losses that result from the outcome of any legal proceedings will not exceed the amount of the provisions that have been booked in the accounts.

Although there can be no assurance regarding the outcome of legal proceedings, we do not currently expect them to have a material adverse effect on our financial position, but they could significantly affect our financial results in any particular period.

Sarbanes-Oxley Act Section 404

As a consequence of our NYSE listing, we are required to comply with those provisions of the Sarbanes-Oxley Act applicable to foreign issuers. Section 404 of the Sarbanes-Oxley Act requires companies annually to assess and make public statements about the quality and effectiveness of their internal control over financial reporting. As regards Sarbanes-Oxley Act Section 404, our approach is based on the Committee of Sponsoring Organizations (COSO) 2013 framework.

Our approach to the assessment has been to select key transaction and financial reporting processes in our largest operating units and a number of specialist areas (e.g. financial consolidation and reporting, treasury operations and taxation etc.), so that, in aggregate, we have covered a significant proportion of the key lines in our Financial Statements. Each of these operating units and specialist areas has ensured that its relevant processes and controls are documented to appropriate standards, taking into account, in particular, the guidance provided by the SEC. We have also reviewed the structure and operation of our 'entity level' control environment. This refers to the overarching control environment, including structure of reviews, checks and balances that are essential to the management of a well-controlled business.

Section 172(1) statement

When making decisions, the Directors of AstraZeneca PLC must act in the way they consider, in good faith, is most likely to promote the success of the Company for the benefit of its members as a whole, while also considering the broad range of stakeholders who interact with and are impacted by our business. Throughout the year, while discharging their duties, section 172(1) (s.172(1)) requires a director to have regard, amongst other matters, to the:

- likely consequences of any decisions in the long term
- interests of the company's employees
- need to foster the company's business relationships with suppliers, customers and others
- impact of the company's operations on the community and environment
- desirability of the company maintaining a reputation for high standards of business conduct and
- need to act fairly as between members of the company.

In discharging their s.172(1) duties the Directors have had regard to the factors set out above, as well as other factors relevant to the decision being made. The Board acknowledges that every decision made will not necessarily result in a positive outcome for all stakeholders. By considering our Purpose and Values, together with our strategic priorities, the Board aims to ensure that the decisions made are consistent and intended to promote the Company's long-term success.

The Group engaged with key stakeholders throughout the year to understand the issues and factors that are significant for these stakeholders, and a number of actions were taken as a result of this engagement. The interaction with stakeholders, and the impact of these interactions, is set out in the Connecting with our stakeholders section from page 104 and throughout the Strategic Report. The consideration and impact of the Group's operations on the environment are contained throughout the Strategic Report, including on pages 38-39 and Ambition Zero Carbon on page 53. Information on how the Group has considered other factors, such as Communities, are also set out in Contributing to society, from page 49 and Connecting with our stakeholders on page 104.

Details of how the Board operates and matters considered by the Board are set out in the Corporate Governance Report from page 102. Examples of how Directors discharged their s.172(1) duties when making Principal Decisions during 2019 are set out on page 106. Principal Decisions are decisions and discussions which are material or strategic to the Group, but also those that are significant to any of our stakeholder groups.

Strategic Report

The following sections make up the Strategic Report, which has been prepared in accordance with the requirements of the Companies Act 2006:

- AstraZeneca at a glance
- Chairman's Statement
- Chief Executive Officer's Review
- Business model and life-cycle of a medicine
- Healthcare in a changing world
- Strategy
- Key Performance Indicators
- Business Review
- Therapy Area Review
- Risk Overview
- Financial Review

and has been approved and signed on behalf of the Board.

A C N Kemp
Company Secretary
14 February 2020

Corporate Governance

Chairman's Introduction

Good corporate governance is a prerequisite for a well-run company and this Corporate Governance Report reflects the new regulations which encourage transparency in governance reporting and enhance understanding of how AstraZeneca is managed.

"Transparency is another essential element in any well-run company. It is integral to the way AstraZeneca operates."

An engaged Board

If good corporate governance is at the heart of a well-run company, it requires talented and committed Directors, like those we have at AstraZeneca, to bring it to life in the way they carry out their responsibilities. We were therefore delighted when Michel Demaré joined the Board as a Director in September. He has a great deal of industrial, financial and board-level experience across a range of sectors, including science and technology, that is enabling him to contribute well to the work of our Board and Audit Committee.

Earlier in the year, Rudy Markham retired at our AGM after ten years on the Board. He had been an exceptional Director, latterly acting as our senior independent Non-Executive Director and chairing the Audit Committee. Graham Chipchase took over as senior independent Non-Executive Director at the start of 2019, while Philip Broadley succeeded Rudy as Chairman of the Audit Committee. I am grateful to them both, and to Nazneen Rahman who chairs the Science Committee, for taking on and discharging so ably these important additional responsibilities.

Greater transparency

Transparency is another essential element in any well-run company. It is integral to the way AstraZeneca operates – including the operation of the Board and its sub-committees. I would therefore urge you to explore the sections in this Corporate Governance Report that describe how the Board operates in a manner that encourages open and frank discussion, as well as how we engage with and consider the views of stakeholders and, in particular, how we engage with our talented workforce.

Collaboration with Daiichi Sankyo and share placing

In March 2019, we announced that we had entered into a global development and commercialisation collaboration agreement with Daiichi Sankyo for *Enhertu*. *Enhertu* is a proprietary antibody-drug conjugate which, in December, received accelerated approval in the US for the treatment of adult patients with HER2-positive breast cancer. We believe it could become a transformative new medicine in a number of other cancers.

In April 2019, to fund the upfront payment and near-term milestone payments under the transaction, repay a bond that was falling due, as well as for other corporate purposes, we raised approximately $3.5 billion through a placing of new Ordinary Shares in the Company. Our decision to fund the transaction with equity is in line with our capital allocation priorities which are to invest in the business, maintain a progressive dividend and retain a strong investment grade credit rating. It is also in line with our strategy of investing in assets with growth potential.

Appreciation

In closing, I would like to thank all the Directors for their contribution to the Board's deliberations and, more broadly, thank Pascal, Marc and the entire AstraZeneca team for their efforts which resulted in a year of innovation for patients in 2019, with the promise of more to come.

Leif Johansson
Chairman

Corporate Governance Overview

Delivery

How our governance supports the delivery of our strategy

All Directors are collectively responsible for the success of the Group. The Non-Executive Directors exercise independent, objective judgement in respect of Board decisions, and scrutinise and challenge management. They also have various responsibilities concerning the integrity of financial information, internal controls and risk management.

The Board is responsible for setting our strategy and policies, overseeing risk and corporate governance, and monitoring progress towards meeting our objectives and annual plans. It is accountable to our shareholders for the proper conduct of the business and our long-term success, and seeks to represent the interests of all stakeholders. The Board conducts an annual review of the Group's overall strategy. The CEO, CFO and Senior Executive Team (SET) take the lead in developing our strategy, which is then reviewed, constructively challenged and approved by the Board.

Governance structure

The Board has delegated some of its powers to the CEO and operates with the assistance of four Committees:

Board
Corporate Governance Report from page 102

- **Audit Committee** – Report from page 116
- **Remuneration Committee** – Report from page 125
- **Nomination and Governance Committee** – Report from page 114
- **Science Committee** – Report from page 113

In addition to the SET, we have two senior-level governance bodies:

Senior Executive Team (SET)
Details of our SET on pages 100 and 101

- **Early Stage Portfolio Committee** – Page 100
- **Late Stage Portfolio Committee** – Page 100

Attendance in 2019

● Board or Committee Chairman

The Board held seven meetings in 2019, including its usual annual strategy review. Five took place in London, UK; one was held at AstraZeneca's facilities in Shanghai and Wuxi, China; and one was held as a teleconference/ videoconference call.

The Board is currently scheduled to meet six times in 2020 and will meet at such other times as may be required to conduct business.

Board Committee membership and meeting attendance in 2019

Name	Board	Audit	Remuneration	Nomination and Governance	Science
Geneviève Berger	5(7)				2(2)
Philip Broadley	7(7)	● 6(6)	5(5)	4(4)	
Graham Chipchase	7(7)		● 5(5)	5(5)	
Michel Demaré – *appointed 1 September 2019*	3(3)	2(2)			
Deborah DiSanzo	7(7)	6(6)			
Marc Dunoyer	7(7)				
Leif Johansson	● 7(7)		5(5)	● 5(5)	
Rudy Markham – *retired 26 April 2019*	3(3)	● 3(3)	1(1)	3(3)	
Sheri McCoy	7(7)	6(6)	5(5)		
Tony Mok	7(7)				2(2)
Nazneen Rahman	7(7)			5(5)	● 2(2)
Pascal Soriot	7(7)				
Marcus Wallenberg	6(7)				2(2)

Note: number in brackets denotes number of meetings during the year that Board members were entitled to attend.

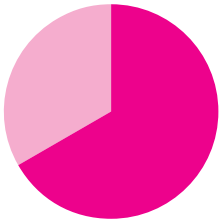
For more information, see Changes to the composition of the Board and its Committees for the year ended 31 December 2019 on page 98.

For more information on attendance at Board and Committee meetings, see Role of Non-Executive Directors on page 110.

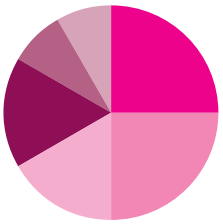
Board of Directors
as at 31 December 2019

Board composition
as at 31 December 2019

Gender split of Directors



Directors' nationalities



Length of tenure of Non-Executive Directors

<3 years
6
Philip Broadley
Michel Demaré
Deborah DiSanzo
Sheri McCoy
Tony Mok
Nazneen Rahman

6-9 years
3
Leif Johansson
Geneviève Berger
Graham Chipchase

3-6 years
0

>9 years
1
Marcus Wallenberg

Changes to the composition of the Board and its Committees for the year ended 31 December 2019

Philip Broadley
Appointed as Chairman of the Audit Committee and became a member of the Nomination and Governance Committee on 1 March 2019.

Graham Chipchase
Became senior independent Non-Executive Director on 1 January 2019.

Michel Demaré
Appointed as a Non-Executive Director and became a member of the Audit Committee on 1 September 2019.

Tony Mok
Appointed as a Non-Executive Director and became a member of the Science Committee on 1 January 2019.

Rudy Markham
Stepped down as Chairman of the Audit Committee on 1 March 2019 and as senior independent Non-Executive Director on 1 January 2019. Retired from the Board on 26 April 2019 after 10 years of service.

Committee membership key

- Committee Chairman
- (A) Audit
- (R) Remuneration
- (NG) Nomination and Governance
- (S) Science

* Date of first appointment or election to the Board.

Leif Johansson (NG) (R)
Non-Executive Chairman of the Board (April 2012*)

Skills and experience: From 1997 to 2011, Leif was Chief Executive Officer of AB Volvo. Prior to that, he served at AB Electrolux, latterly as Chief Executive Officer from 1994 to 1997. He was a Non-Executive Director of BMS from 1998 to September 2011, serving on the Board's Audit Committee, and Compensation and Management Development Committee. Leif was Chairman of global telecommunications company, LM Ericsson, from 2011 to 2018. He holds an MSc in engineering from Chalmers University of Technology, Gothenburg.

Other appointments: Leif holds board positions at Autoliv, Inc. and Ecolean AB. He has been a member of the Royal Swedish Academy of Engineering Sciences since 1994 (Chairman 2012 to 2017). Leif is also a member of the European Round Table of Industrialists (Chairman 2009 to 2014) and a Member of the Council of Advisors, Boao Forum for Asia.

Pascal Soriot
Executive Director and CEO (October 2012*)

Skills and experience: Pascal brings a passion for science and medicine as well as significant experience in established and emerging markets, strength of strategic thinking, a successful track record of managing change and executing strategy, and the ability to lead a diverse organisation. He served as Chief Operating Officer of Roche's pharmaceuticals division from 2010 to September 2012 and, prior to that, Chief Executive Officer of Genentech, a biologics business, where he led its successful merger with Roche. Pascal joined the pharmaceutical industry in 1986 and has worked in senior management roles in numerous major companies around the world. He is a doctor of veterinary medicine (École Nationale Vétérinaire d'Alfort, Maisons-Alfort) and holds an MBA from HEC Paris.

Other appointments: Pascal is a Director of Viela Bio, Inc.

Marc Dunoyer
Executive Director and CFO (November 2013*)

Skills and experience: Marc's career in pharmaceuticals, which has included periods with Roussel Uclaf, Hoechst Marion Roussel and GSK, has given him extensive industry experience, including finance and accounting; corporate strategy and planning; research and development; sales and marketing; business reorganisation; and business development. Marc is a qualified accountant and joined AstraZeneca in 2013, serving as Executive Vice-President, Global Product and Portfolio Strategy (GPPS) from June to October 2013. Prior to that, he served as Global Head of Rare Diseases at GSK and (concurrently) Chairman, GSK Japan. He holds an MBA from HEC Paris and a Bachelor of Law degree from Paris University.

Other appointments: Marc is a Director of Orchard Therapeutics Plc.

Graham Chipchase (R) (NG)
Senior independent Non-Executive Director (April 2012*)

Skills and experience: Graham is Chief Executive Officer and a Director of Brambles Limited, the global supply-chain logistics company listed on the Australian Securities Exchange. Brambles operates in over 60 countries, primarily through the CHEP brand. Graham served as Chief Executive Officer of global consumer packaging company Rexam PLC from 2010 to 2016 after serving at Rexam as Group Director, Plastic Packaging and Group Finance Director. Previously, he was Finance Director of Aerospace Services at the global engineering group GKN PLC from 2001 to 2003. After starting his career with Coopers & Lybrand Deloitte, he held various finance roles in the industrial gases company The BOC Group PLC (now part of The Linde Group). He is a Fellow of the Institute of Chartered Accountants in England and Wales and holds an MA (Hons) in chemistry from Oriel College, Oxford.

Other appointments: Chief Executive Officer of Brambles Limited.

Geneviève Berger S

Non-Executive Director
(April 2012*)

Skills and experience: Geneviève was Chief Science Officer at Unilever PLC & NV, and a member of the Unilever Leadership Executive from 2008 to April 2014. She holds three doctorates – in physics, human biology and medicine – and was appointed Professor of Medicine at Université Pierre & Marie Curie, Paris in 1995. Her previous positions include Professor and Hospital Practitioner at Hôpital de la Pitié-Salpêtrière in Paris; Director General at the Centre National de la Recherche Scientifique; Chairman of the Health Advisory Board of the EU Commission; and Non-Executive Director of Smith & Nephew plc. Geneviève oversees sustainability matters on behalf of the Board.

Other appointments: In May 2015, Geneviève was appointed as a Director of Air Liquide SA for an initial term of four years. This appointment was renewed for a further four-year term in May 2019. She is currently Chief Research Officer at Firmenich SA, Geneva, Switzerland.

Philip Broadley A R NG

Non-Executive Director
(April 2017*)

Skills and experience: Philip has significant financial and international business experience, having previously been Group Finance Director of Prudential plc for eight years and Old Mutual plc for six years. He started his career at Arthur Andersen where he was a partner for seven years. He is a past Chairman of the 100 Group of Finance Directors in the UK. Philip was also previously a board member and Chairman of the Audit Committee of Stallergenes Greer plc. He is a Fellow of the Institute of Chartered Accountants in England and Wales. Philip graduated in Philosophy, Politics and Economics from St Edmund Hall, Oxford, where he is now a St Edmund Fellow and holds an MSc in Behavioural Science from the London School of Economics. Until March 2019, Philip was a member of the Oxford University Audit Committee.

Other appointments: Philip chairs the Audit Committee of Legal & General Group plc. He is Treasurer of the London Library and Chairman of the Board of Governors of Eastbourne College.

Michel Demaré A

Non-Executive Director
(September 2019*)

Skills and experience: Michel was previously Vice-Chairman of UBS Group AG (2010 to 2019), Chairman of Syngenta and the Syngenta Foundation for Sustainable Agriculture (2013 to 2017) and Chairman of SwissHoldings (2013 to 2015). Between 2005 and 2013, Michel was CFO of ABB Ltd and also acting interim CEO during 2008. He joined ABB from Baxter International Inc., where he was CFO Europe from 2002 to 2005. Prior to that, he spent 18 years at The Dow Chemical Company, in several international finance functions, including the CFO of Dow's Global Polyolefins and Elastomers division between 1997 and 2002. He began his career as a banking officer at Continental Illinois' Belgian subsidiary. Michel graduated with an MBA from the Katholieke Universiteit Leuven, Belgium, and holds a degree in applied economics from the Université Catholique de Louvain, Belgium.

Other appointments: Michel is a Non-Executive Director of Vodafone Group Plc, Chairman of IMD Business School in Lausanne and Deputy Chairman of Louis Dreyfus Company Holdings BV. He is also a member of the University of Zurich's Advisory Board of the Department of Banking and Finance.

Deborah DiSanzo A

Non-Executive Director
(December 2017*)

Skills and experience: Deborah previously served as General Manager for IBM Watson Health, the business unit founded to advance AI in health. Prior to joining IBM, she was CEO of Philips Healthcare, having previously held management roles at Agilent and Hewlett-Packard. Deborah has a distinguished career working at the intersection of healthcare and technology, and is a sought-after speaker on topics ranging from the future of healthcare to women in technology. A dedicated community leader, Deborah is focused on domestic and global programmes with organisations including Aspen Health Strategy Group, Project Hope and the American Heart Association. Deborah has been honoured by multiple organisations as a top health influencer including Health Data Management, Modern Healthcare and Xconomy. Babson College recognised Deborah's impact as one of the institution's leading entrepreneurial alumni leaders. Deborah earned an MBA from Babson College and a BS from Merrimack College.

Other appointments: Deborah is a Harvard University Advanced Leadership Fellow and a Director of Novanta, Inc.

Sheri McCoy A R

Non-Executive Director
(October 2017*)

Skills and experience: Until February 2018, Sheri was Chief Executive Officer and a Director of Avon Products, Inc. Prior to joining them in 2012, she had a distinguished 30-year career at Johnson & Johnson, latterly serving as Vice Chairman of the Executive Committee, responsible for the Pharmaceuticals and Consumer business segments. Sheri joined Johnson & Johnson as an R&D scientist and subsequently managed businesses in every major product sector, holding positions including Worldwide Chairman, Surgical Care Group and Division President, Consumer. She holds a Bachelor of Science degree in textile chemistry from the University of Massachusetts Dartmouth, a Master's degree in chemical engineering from Princeton University and an MBA from Rutgers University, both in New Jersey, US.

Other appointments: Sheri serves on the boards of Stryker, Kimberly-Clark, and Novocure. She is also an industrial adviser for EQT, in connection with which she chairs Certara, and serves on the boards of Aldevron and Galderma. Sheri is a trustee for Stonehill College, Easton, Massachusetts.

Tony Mok S

Non-Executive Director
(January 2019*)

Skills and experience: Tony is the Li Shu Fan Medical Foundation endowed Professor and Chairman of the Department of Clinical Oncology at the Chinese University of Hong Kong. His work includes multiple aspects of lung cancer research, with his main focus on biomarker and molecular targeted therapy in lung cancer. He has led and co-led multiple international Phase III trials, including as the principal investigator and first author on the landmark *Iressa* Pan-Asia Study, which confirmed the application of precision medicine for advanced lung cancer. He has also contributed to the development of clinical research infrastructure in China and Asia. Tony is currently the Treasurer of the International Association for the Study of Lung Cancer, having previously served as President, and is on the Board of Directors of the American Society of Clinical Oncology. His work has been recognised by numerous awards including the ESMO Lifetime Achievement Award in 2018.

Other appointments: Tony is a Non-Executive Director of Hutchison China MediTech Limited and a co-founder and the Chairman of Sanomics Limited.

Nazneen Rahman S NG

Non-Executive Director
(June 2017*)

Skills and experience: Nazneen has significant scientific, medical and data analysis experience. Her research has a strong focus on cancer predisposition genes, in which she is an internationally recognised expert. She was Head of the Division of Genetics and Epidemiology at the Institute of Cancer Research (ICR), London, and Head of Cancer Genetics at the Royal Marsden NHS Foundation Trust for 10 years to 2018. Nazneen was also the founder and Director of the TGLclinical Genetic Testing Laboratory, which used new sequencing technologies to deliver fast, affordable, cancer gene testing to the NHS. Nazneen qualified in medicine from Oxford University in 1991, gained her Certificate of Completion of Specialist Training in medical genetics in 2001 and completed a PhD in molecular genetics in 1999. She has a strong commitment to open science and science communication and has garnered numerous awards, including a CBE in recognition of her contribution to medical sciences.

Other appointments: Nazneen is an adviser in the field of genetics to US venture capital company, Foresite Capital.

Marcus Wallenberg S

Non-Executive Director
(April 1999*)

Skills and experience: Marcus has international business experience across various industry sectors, including the pharmaceutical industry from his directorship with Astra prior to 1999.

Other appointments: Marcus is Chairman of Skandinaviska Enskilda Banken AB, Saab AB and FAM AB. He is a member of the boards of Investor AB, Temasek Holdings Limited, and the Knut and Alice Wallenberg Foundation.

Senior Executive Team (SET)
as at 31 December 2019

Pascal Soriot
CEO

See page 98.

Marc Dunoyer
CFO

See page 98.

In addition to the SET, we have two senior-level governance bodies accountable for making key decisions regarding our portfolio and pipeline.

Early Stage Portfolio Committee (ESPC)
The ESPC is a senior-level, cross-functional governance body with accountability for oversight of our early-stage small molecule and biologics portfolio across all therapy areas, from candidate drug investment decisions to Phase IIb. It is co-chaired by the EVP, Oncology R&D and the EVP, BioPharmaceuticals R&D.

The ESPC seeks to deliver a flow of products for Phase III development through to launch. The ESPC also seeks to maximise the value of our internal and external R&D investments through robust, transparent and well-informed decision making that drives business performance and accountability.

Specifically, the ESPC has responsibility for the following:

- approving early-stage investment decisions
- prioritising the early-stage portfolio
- licensing activity for products in Phase I and earlier
- delivering internal and external opportunities
- reviewing allocation of R&D resources

Late Stage Portfolio Committee (LSPC)
The LSPC is also a senior-level governance body, accountable for the quality of the portfolio post-Phase III investment decision. It is chaired by the CEO and co-chaired by the EVP, Oncology R&D and the EVP, Oncology Business Unit, and by the EVP, BioPharmaceuticals R&D and the EVP, BioPharmaceuticals Business Unit.

The LSPC seeks to maximise the value of our investments in the late-stage portfolio, also ensuring well-informed and robust decision making. Specific accountabilities include:

- approval of the criteria supporting Proof of Concept
- decisions to invest in Phase III development based on commercial opportunity and our plans to develop the medicine
- evaluations of the outcomes of development programmes and decisions to proceed to regulatory filing
- decisions to invest in life-cycle management activities for the late-stage assets
- decisions to invest in late-stage business development opportunities

Katarina Ageborg
Executive Vice-President, Sustainability and Chief Compliance Officer

Katarina was appointed Executive Vice-President, Sustainability in 2017 and has been a member of SET since 2011. She has overall responsibility for the delivery, design and implementation of the Company's sustainability programme, covering three priority areas: access to healthcare; environmental protection; and ethics and transparency. She leads the Global Sustainability function, including teams focusing on Compliance, and Safety, Health and Environment. Katarina was also appointed President of AstraZeneca AB (Sweden) in 2018, and her role is focused on strengthening corporate reputation and relations by actively representing the Company in the Swedish business and academic community. Prior to her current roles, Katarina led the Global Intellectual Property function from 2008 to 2011, during which time she streamlined the organisation and launched a new patent filing strategy before taking the role as Chief Compliance Officer. Katarina holds a Master of Law Degree from Uppsala University School of Law in Sweden and ran her own law firm before joining AstraZeneca in 1998.

José Baselga
Executive Vice-President, Oncology R&D

José joined AstraZeneca in January 2019 as Executive Vice-President, Oncology R&D and is responsible for the oncology portfolio from discovery through to late-stage development. He was formerly Physician-in-Chief at Memorial Sloan Kettering Cancer Center and Professor of Medicine at Weill Cornell Medical College. Previously, he led the Division of Oncology at the Massachusetts General Hospital and was Professor of Medicine at Harvard Medical School, as well as the founding Director of the Vall d'Hebron Institute of Oncology. José is an international thought leader on innovation in cancer care and research. His work has led to the approval of life-saving cancer therapies and the creation of several biopharmaceutical companies. He is a past President of ESMO and AACR, an elected member of the National Academy of Medicine, the American Society of Clinical Investigation, the Association of American Physicians, and an elected Fellow of the AACR Academy. He has received multiple awards including the ESMO Lifetime Achievement Award, the Sergio Lombresso Award, the Rey Jaime I Award and the AACR Rosenthal Award.

Pam Cheng
Executive Vice-President, Operations & Information Technology

Pam joined AstraZeneca in June 2015 after having spent 18 years with Merck/MSD in Global Manufacturing and Supply Chain and Commercial roles. Pam was the Head of Global Supply Chain Management & Logistics for Merck from 2006 to 2011 and led the transformation of Merck supply chains across the global supply network. More recently, Pam was President of MSD China, responsible for MSD's entire business in China. Prior to joining Merck, Pam held various engineering and project management positions at Universal Oil Products, Union Carbide Corporation and GAF Chemicals. Pam holds Bachelor's and Master's degrees in chemical engineering from Stevens Institute of Technology in New Jersey and an MBA in marketing from Pace University in New York. In addition to her role at AstraZeneca, Pam serves as a Non-Executive Director of the Codexis, Inc. Board. Pam also serves as an Advisor to the International Society of Pharmaceutical Engineering (ISPE) Board of Directors.

Fiona Cicconi
Executive Vice-President, Human Resources

Fiona joined AstraZeneca in September 2014 as Executive Vice-President, Human Resources and is responsible for the overall design and delivery of the Company's people strategy and, in particular, making sure AstraZeneca achieves its ambition to be a Great Place to Work. Fiona's responsibilities are focused on attracting and retaining people with the right skills who share the AstraZeneca Values; stewarding a culture which is high performing, vibrant and collaborative; and providing the opportunity to AstraZeneca employees to learn and develop in an inclusive and diverse environment which nurtures creativity and innovation in order to deliver life-changing medicines to patients across the world. Fiona started her career at General Electric, where she held a number of human resources roles in GE Oil and Gas. She then joined Cisco, where she had responsibility for Southern Europe and Employee Relations for Europe, Middle East and Africa. Subsequently, she joined Roche where she had a number of human resources roles and, prior to joining AstraZeneca, was responsible for Pharma Technical Operations.

Ruud Dobber

Executive Vice-President, BioPharmaceuticals Business Unit

Ruud was appointed Executive Vice-President, BioPharmaceuticals Business Unit in January 2019 and is responsible for product strategy and commercial delivery for CVRM and Respiratory, including immunology. Prior to this, Ruud held the role of Executive Vice-President, North America and was responsible for driving growth and maximising the contribution of the commercial operations in North America. Ruud joined Astra in 1997 and has held various senior commercial and leadership roles including Executive Vice-President, Europe. Ruud was also responsible for the development of our late-stage, small molecule antibiotic pipeline as well as its global commercialisation and was Regional Vice-President for the European, Middle East and Africa region, Regional Vice-President for the Asia Pacific region and Interim Executive Vice-President, GPPS. Ruud was a member of the Board and Executive Committee of the European Federation of Pharmaceutical Industries and Associations and was previously Chairman of the Asia division of Pharmaceutical Research and Manufacturers of America. Ruud holds a doctorate in immunology from the University of Leiden, Netherlands and began his career as a research scientist in immunology and ageing.

David Fredrickson

Executive Vice-President, Oncology Business Unit

Dave was appointed Executive Vice-President, Oncology Business Unit in October 2017 and is responsible for driving growth and maximising the commercial performance of the AstraZeneca global Oncology portfolio. He has global accountability for marketing, sales, medical affairs and market access in Oncology and plays a critical leadership role in setting the Oncology portfolio and product strategy. Previously, Dave served as President of AstraZeneca K.K. in Japan, and Vice-President, Specialty Care in the US. While in Japan, Dave also served as Vice Chairman of the European Federation of Pharmaceutical Industries and Associations Japan and was a Director of the Japan Pharmaceutical Manufacturers Association. Before joining AstraZeneca, Dave worked at Roche/Genentech, where he served in several functions and leadership positions, including Oncology Business Unit Manager in Spain, and strategy, marketing and sales roles in the US. Prior to this, Dave worked at the Monitor Group, LLC (now Monitor Deloitte Group, LLC), a global strategy consultancy. Dave is a graduate of Georgetown University in Washington DC.

Menelas Pangalos

Executive Vice-President, BioPharmaceuticals R&D

Mene was appointed as Executive Vice-President, BioPharmaceuticals R&D in January 2019 and is responsible for R&D from discovery through to late-stage development across CVRM, Respiratory, neuroscience and infection. Prior to this, he served as Executive Vice-President of AstraZeneca's IMED Biotech Unit and Global Business Development. Since joining AstraZeneca in 2010, Mene has led the transformation of our R&D. Mene previously held senior R&D roles at Pfizer, Wyeth and GSK. Mene is a Fellow of the Academy of Medical Sciences, the Royal Society of Biology and Clare Hall, University of Cambridge. He sits on the Medical Research Council, co-chairs the Life Sciences Council Expert Group on Innovation, Clinical Research and Data. He is on the Boards of The Francis Crick Institute, The Judge Business School and Dizal Pharma. Mene has been awarded honorary doctorates from Glasgow University and Imperial College London, was recently awarded with a 2019 Prix Galien Medal, Greece and a knighthood from The Queen. Mene also oversees the creation of AstraZeneca's new Global R&D Centre in Cambridge.

Jeff Pott

General Counsel

Jeff was appointed General Counsel in January 2009 and has overall responsibility for all aspects of AstraZeneca's Legal and IP function. He joined AstraZeneca in 1995 and has worked in various litigation roles, where he has had responsibility for IP, anti-trust and product liability litigation. Before joining AstraZeneca, he spent five years at the US legal firm Drinker Biddle and Reath LLP, where he specialised in pharmaceutical product liability litigation and anti-trust advice and litigation. He received his Bachelor's degree in political science from Wheaton College and his Juris Doctor Degree from Villanova University School of Law.

Iskra Reic

Executive Vice-President, Europe and Canada

Iskra was appointed Executive Vice-President, Europe and Canada in February 2019 and is responsible for our BioPharmaceuticals sales, marketing and commercial operations across our businesses in 30 European countries and Canada. Iskra trained as a Doctor of dental surgery at the Medical University of Zagreb, Croatia. She joined AstraZeneca in 2001 and has held a variety of in-market, regional sales and marketing and general management roles, including in Europe as Head of Commercial Operations for Croatia and Head of Specialty Care Central & Eastern Europe. In 2012, she joined AstraZeneca Russia as Marketing Director. She was appointed General Manager in 2014 and, under her leadership, AstraZeneca achieved a leading share in its three main therapy areas and, during this period, became a top-seven prescription medicine pharmaceutical company. Iskra's responsibilities were expanded in 2016 to cover both Russia and the Eurasia Area where she drove strong performance from a 1,500-strong team in a complex and dynamic region. Iskra was appointed EVP, Europe in April 2017. Iskra has an International Executive MBA from the IEDC-Bled School of Management, Slovenia.

Leon Wang

Executive Vice-President, International and China President

Leon Wang is Executive Vice-President, International and China President. He is responsible for the overall strategy and for driving sustainable growth across the region. Leon joined AstraZeneca China in March 2013 and was promoted to President of AstraZeneca China in 2014. Under Leon's leadership, China has become AstraZeneca's third largest market worldwide, and AstraZeneca has become the second largest and the third fastest-growing multinational pharmaceutical company in China. In January 2017, Leon was promoted to Executive Vice-President, Asia Pacific Region. Prior to joining AstraZeneca, Leon held positions of increasing responsibility in marketing and business leadership at Roche, where he was a Business Unit Vice-President. In addition, Leon holds several positions in local trade associations and other prominent organisations in China. Leon holds an EMBA from China Europe International Business School, and a Bachelor of Arts from Shanghai International Studies University.

Corporate Governance Report
Activities of the Board

All Directors are collectively responsible for the success of the Company.

Principal matters considered by the Board in 2019

The Board maintains and periodically reviews a list of matters that are reserved to, and can only be approved by, the Board.

These include: the appointment, termination and remuneration of any Director; approval of the annual budget; approval of any item of fixed capital expenditure or any proposal for the acquisition or disposal of an investment or business which exceeds $150 million; the raising of capital or loans by the Company (subject to certain exceptions); the giving of any guarantee in respect of any borrowing of the Company; and allotting shares of the Company. The matters that have not been expressly reserved to the Board are delegated by the Board to its Committees or the CEO. There are four principal Board Committees. The membership and work of these Committees is described on the following pages.

In addition, there may from time to time be constituted ad hoc Board Committees for specific projects or tasks. In these cases, the scope and responsibilities of the Committee are documented. The Board provides adequate resources to enable each Committee to undertake its duties.

The principal matters considered by the Board during 2019 and the link to the Group's strategic priorities are set out in the table. As part of the business of each Board meeting, the CEO typically submits a progress report, giving details of business performance and progress against the goals the Board has approved. To ensure that the Board has good visibility of the key operating decisions of the business, members of the SET attend Board meetings regularly and Board members meet other senior executives throughout the year. The Board also receives accounting and other management information about our resources, and presentations from internal and external speakers on legal, governance and regulatory developments.

For more information on the role of the Board and the Non-Executive Directors, see Compliance with the UK Corporate Governance Code from page 108.

Key

- Deliver Growth and Therapy Area Leadership
- Accelerate Innovative Science
- Be a Great Place to Work
- Achieve Group Financial Targets

Area of focus		Strategic priority
Strategic matters	> The Group's strategy, including its long-range plan, annual budget, strategic options and the overall state of the pharmaceuticals industry	
	> The Group's capital structure, including financing needs, credit rating and capital strategy, as well as the £2.69 billion placing of new Ordinary Shares completed in April 2019	
	> Requests for approval of business development transactions of a size requiring Board approval, including the co-development and co-commercialisation agreement with Daiichi Sankyo for *Enhertu*	
	> Dividend decisions	
Operational matters	> Executive management reports, including business performance reports, R&D pipeline updates, the results of key clinical trials, a review of the formation of the dedicated Oncology R&D organisation and new BioPharmaceuticals R&D and commercial units; and a review of the Group's R&D capabilities in China	
	> Quarterly results announcements	
	> Progress with construction of the Group's new strategic R&D centre and global corporate headquarters at Cambridge Biomedical Campus in the UK	
Stakeholders	> Investor perceptions	
	> Employee gender data	
	> Sustainability and philanthropic matters	
	> Review of the Board's Inclusion and Diversity Policy	
	> Visits to Commercial and Operations sites in China and a review of the Group's Chinese business	
	> Participation in employee 'town hall' meetings and informal meetings with groups of 'high-potential' employees	
Governance, assurance and risk management	> Reports from Board Committees	
	> Routine succession planning for SET and Board-level roles	
	> Review of the Group's approach to tackling sexual harassment and bullying	
	> Review of the first workforce culture and employee engagement report	
	> Year-end governance and assurance reports	
	> The Group's viability, risk appetite and Modern Slavery Act statements	
	> The annual review of the performance of the Board, its Committees and individual Directors	
	> Private discussions between Non-Executive Directors only	

Board performance evaluation

2019 Overview

During the year, the Board conducted the annual evaluation of its own performance and that of its Committees and individual Directors. The 2019 evaluation was carried out internally, although Lintstock Ltd (Lintstock), a London-based corporate advisory firm that provides objective and independent counsel to leading European companies, provided software and services for the evaluation questionnaire. Lintstock has no other commercial relationship with the Company or any individual Directors. Based on Board members' responses to the web-based questionnaire covering a wide range of topics, Lintstock prepared a report which was discussed by the Board at its meeting in January 2020 and was also used by the Chairman as the basis for individual conversations with each Board member prior to the full Board discussion.

As part of each Director's individual discussion with the Chairman during the Board evaluation, his or her contribution to the work of the Board and personal development needs were considered. Directors' training needs are met by a combination of: internal presentations and updates and external speaker presentations as part of Board and Board Committee meetings; specific training sessions on particular topics, where required; and the opportunity for Directors to attend external courses at the Company's expense, should they wish to do so.

The Board intends to continue to comply with the UK Corporate Governance Code guidance that the evaluation should be externally facilitated at least every three years and expects to commission the next externally-facilitated review in late 2020.

As part of the Board performance evaluation, Directors are asked to consider the composition and diversity of the Board, as well as how effectively members are working together.

The Nomination and Governance Committee also reviews the composition of the Board, to ensure that it has the appropriate expertise while also recognising the importance of diversity. For more information on the Nomination and Governance Committee's work, see the Nomination and Governance Committee Report from page 114.

The outcomes of the 2019 evaluation are set out in the table.

2019 Outcomes

Main areas covered	Main conclusions and recommendations
> Board composition and dynamics > Stakeholder oversight > Board meeting management and support > Board Committees > Board oversight > Risk management and internal control > Succession planning and human resource management > Priorities for change	> The Board operates effectively and in a manner that encourages open and frank discussion where all Board members feel free to express their views. > The Board actively discussed its composition and the varied skills and experience of Directors. > The Board's relationship with management was positive with a good balance between support and challenge. > An appropriate focus on structured succession planning for the most senior Board roles was being maintained. > Areas for improvement identified included considering ways to reduce the length of Board meeting papers, such as making more use of executive summaries, while ensuring the Board received all the information it needed, and further focus in 2020 on sustainability and aspects of digital technology such as AI. > The reviews of the Board's Committees did not raise any significant problems and concluded that the Committees are operating effectively. > In respect of the 2019 annual performance evaluation, it was concluded that each Director continues to perform effectively and to demonstrate commitment to his or her role.

Chairman evaluation

Process	Overall conclusion
The 2019 evaluation also included a review of the performance of the Chairman by the other Directors, led by the senior independent Non-Executive Director and absent the Chairman.	The Chairman continued to perform very well in all aspects of his role. His leadership of the Board and management of its meetings was effective, inclusive and undertaken in a way that drove decisions. He was a good listener and facilitated open and informed debate at Board meetings. His relationship with the Executive Directors, especially the CEO, as well as other senior executive management was strong. He was visible to employees, approachable and willingly participated in internal Company meetings, such as the annual senior leaders' meeting and Gaithersburg science festival. He drew on his deep industry experience in performing the role of Chairman and invested significant time between Board meetings on the Group's affairs. His time commitment to the role included several overseas visits on behalf of the Company to represent its interests across a broad range of topics at senior government levels and with other stakeholders in numerous countries. The senior independent Non-Executive Director provided feedback to the Chairman after the review of his performance. This included a minor suggestion about how he might more effectively manage Board discussions on scientific topics.

Actions against prior year recommendations

2018 evaluation	2019 actions taken
Improve the Board's understanding of our competitors' strategies and performance	During the Board's visit to China and at two Board meetings held in London, the Board received presentations from external speakers about the state of the pharmaceutical industry and the Company's competitive position versus its peers. After the annual strategy review, the Board guided management as to additional information that might be included in future reviews relating to our competitors' strategies.
Improve management of the late stages of the recruitment process for new Non-Executive Directors	Two new Non-Executive Directors were appointed – Tony Mok and Michel Demaré. The recruitment processes ran smoothly.
Develop and refine the role of the Science Committee to ensure it meets the needs of the Board	Nazneen Rahman, Chairman of the Science Committee led a review of the Committee's overall purpose, meeting format, agendas and the way it supports the work of the Board and its Committees. Some limited changes in these areas were endorsed by the Board and implemented.
Continue to develop a deep understanding of digital technology and its application in the pharmaceutical industry	Several Board presentations and discussions during the year focused on or included topics relating to digital technology and its application to many aspects of the Company's business, including various parts of the annual strategy review, for example the digital transformation in R&D; adopting patient-centric business models; transformative technologies and science; Operations of the future; and Be a Great Place to Work. The Board also visited the Company's China Commercial Innovation Centre in Wuxi, which included insights into digital technology.

Corporate Governance Report
Connecting with our stakeholders

When making decisions, the Directors of AstraZeneca PLC act in the way they consider is most likely to promote the success of the Company, for the benefit of its members as a whole, while also considering the broad range of stakeholders who interact with the business.

How we engage as a Company

In striving to achieve our Purpose to push the boundaries of science and deliver life-saving medicines, our business touches the lives of many people. We exist in a complex and evolving regulatory and scientific environment and as a result we have a number of key stakeholder groups.

Considering the interests of our stakeholders is fundamental to the way in which the Group operates. Our Values and Code of Ethics empower employees to make the best decisions in the interest of the Group and our stakeholders, and help to ensure that these considerations are made not only at Board level, but throughout our organisation.

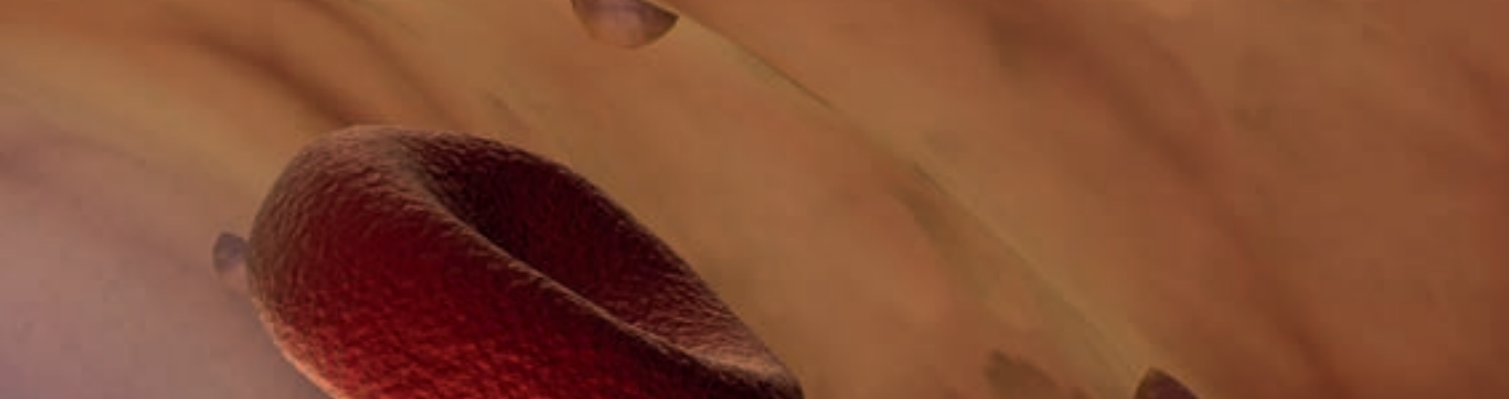
The following table identifies our key stakeholders, as well as summarising the engagement that has been undertaken across the business during 2019. In addition, the Board's engagement with our workforce is set out on page 107. How the Board understands the interests of stakeholders, and how the Board considers stakeholders' interests in decision making, including examples of principal decisions made in 2019 are summarised on page 106.

The s.172(1) statement is set out on page 94.

For more information about our Code of Ethics, see page 35.

A full list of our stakeholders can be found in our 2019 Sustainability Report at www.astrazeneca.com/sustainability.

	Shareholders, Investors & Analysts	Patients
Overview Significance of the stakeholder to the business	The Board and management maintain a regular and constructive dialogue with investors to communicate the Company's strategy and performance to promote investor confidence and ensure continued access to capital.	We see every patient as a person first and put them at the core of what we do. We do this by walking in their shoes, listening to their experiences, embedding their insights and co-creating with them. By doing this we believe we can deliver advances along the entire patient experience.
Interests Issues and factors which are most important to the stakeholder group	> Exposure to macro-economic risk > Strategy, commercial operations and financial performance > R&D productivity and successful pipeline development > Culture, values and behaviours > Climate and sustainability matters	> Customised support and their input included throughout the entire patient experience > Commitment to affordable access to our medicines > Designing clinical trials that reflect real-world clinical practice, are minimally burdensome to patients, and measure outcomes they care about > Information provided is easy to understand, accessible, reliable and transparent > Ensuring the safety and efficacy of our medicines
Engagement Examples of engagement in 2019	> Annual General Meeting in April 2019 > Directors met investors, analysts and investor bodies > Quarterly financial results webcasts > One-to-one meetings with analysts and institutional investors > Extensive investor outreach programme including regular roadshows and site visits; attending conferences and events > Topical investor science conference calls where important pipeline data are presented	> Engaged patients in our development and clinical trial programmes > Collaboration with patient advocacy groups and establishment of patient advisory boards > Established patient support and affordability programmes > Grew our Patient Partnership Programme across 11 diseases > Co-created patient-centric materials with patients > Engaged in key steps of product research and development
Outcomes Any actions which resulted	> Periodic focus on R&D productivity and pipeline development within our investor materials > Increased focus on climate and sustainability matters within our quarterly results announcements	> Expanding patient insight into work, including strategy development, digital technologies and clinical trials > Introduced Group-wide initiative to evolve, enhance and embed our commitment to patient centricity > Increased number of programmes to support patients throughout their experience > Changed corporate materials, including training, new hire and development programmes, key marketing, commercial and medical planning materials



	Healthcare Practitioners (HCPs)	Suppliers	Government and payers	Communities
Overview	HCPs positively influence our business to enhance the lives of patients. HCPs are essential partners in clinical research, as advisers and study investigators. We provide HCPs with information about our medicines to support rational prescribing, and they provide insights that improve our medicines for patients.	In 2019, we spent approximately $14 billion with suppliers on goods or services critical to the effective operation of our entire value chain – from discovery to development, manufacturing and supply of our medicines to patients. Our business-critical operations are delivered and managed with the support of our suppliers.	Government policy can impact the business operating environment. Health technology assessment agencies, national and regional healthcare insurance funds and government bodies appraise the clinical and economic value of our medicines following successful regulatory approval.	We aim to make a positive impact on the communities in which we operate, as well as those which our medicines reach. Communities expect us to support the initiatives that intersect with our business. Communities have a direct influence on the health of patients, caregivers and families.
Interests	> Development of medicines for unmet clinical needs > Education and information on advances in medical science > Accurate and balanced information on licenced medicines, including up-to-date safety data > Uninterrupted supply of quality medicines > Ethical and transparent interactions with industry	> Understanding of AstraZeneca's strategy and how the supplier can best create value through innovative and new opportunities > Creating a collaborative and trusting environment between the supplier and AstraZeneca > That AstraZeneca acts ethically, lawfully, protects the environment and benefits society and its partners	> Attracting business investment > Investment in research and scientific collaborations > Access to innovative medicines > Pricing of medicines, including breakthrough therapies, and the impact on public budgets > Containment of reimbursement expenditure > The safety and efficacy of drugs	> How our activities and plans impact on local communities > Raising awareness of healthcare > Promotion of science-based education and careers > Investment in local infrastructure and capacity-building initiatives > Support for programmes, platforms and policies that make healthcare accessible
Engagement	> Established HCP advisory boards > Engaged HCPs in clinical trials and supported HCP-led externally sponsored research studies > Responded to more than 80,000 HCP enquiries and processed 18,000 adverse event reports from HCPs > Provided and supported HCP educational events including independent events and congresses	> Engaged with suppliers via summits and workshops, to partner on procuring sustainable goods and services > Enabled 1st- and 2nd-tier small and diverse suppliers access to business opportunities through our participation in outreach events, collaborations, and memberships with various industry groups and diversity councils > Prioritised supplier collaboration and innovation activities with key suppliers	> Discussions with governments and policy makers to increase understanding of supporting investment in life sciences, regulation of the pharmaceutical industry and improve access to new medicines > Engaged in discussions on evolving the current reimbursement system for medicines in the US > Hosted site visits and tours at our manufacturing and R&D facilities for international and local politicians	> Reached nearly one million young people through the Young Health Programme > AstraZeneca HealthCare Foundation provided $775,000 in continuation grants to prevent and reduce CV disease > Donated more than $801 million of medicines to patient assistance programmes globally > Delivered $151,000 in grants via Step Up! Young Health Global Grants Programme to support early innovation work
Outcomes	> Advisory boards helped shape our clinical research, products and services > Clinical study data has driven new product licences, providing new treatment alternatives for patients > Exchange of information and safety data with HCPs and HCP education all to improve patient care > HCP feedback is used to improve standards for our interactions with HCPs	> Expanded our supply base bringing innovative solutions to deliver more medicines to more patients, through extending the supplier diversity programme to more countries, establishing a distributor alliance programme, and enriching our supply base with smaller, niche vendors > Collaborated with suppliers to establish a robust disaster recovery plan for high-risk regions to mitigate force majeure risks and enable sustainable operation (e.g. Puerto Rico and Maihara, Japan)	> Established working relationships with key government stakeholders > Regular meetings, roundtables and events have been organised to increase understanding about how governments can support life sciences investment and improve patient access to new medicines	> Expansion of disease prevention programming in connection with government and NGO partnerships in Asia and Latin America > Increased investment in public-private partnerships as a mechanism to address global and local health issues > Recognition as UK Business of the Year for our Philanthropic activities by Third Sector Business Charity Awards

How our Board understands the interests of our stakeholders

To promote and facilitate Directors' understanding of the interests of our stakeholders, the Board is able to review the stakeholder matrix, which sets out management's engagement with stakeholders and highlights the most significant issues to each group. This provides assurance to the Board that management has engaged with stakeholders and allows the Board to consider stakeholder impact, as well as other factors, when making decisions. The stakeholder matrix is refreshed annually to ensure that stakeholders and methods of engagement remain relevant to the business.

In addition, during 2019, the Board periodically received updates on sustainability matters, including access to healthcare programmes. These updates provided the Directors with an understanding of the various initiatives that the Group leads, and the relationship between the Group and the communities in which it operates.

Throughout 2019, Directors also had direct engagement with various stakeholders, including the workforce, to understand the issues that concern and impact them most. Examples of workforce engagement are set out on page 107. The CEO, CFO, Chairman and Remuneration Committee Chairman all met with investors throughout the year to understand their views on a range of issues.

Understanding in action

In October 2019, Board members met a group of Young Health Programme (YHP) peer educators visiting London from Kenya and Indonesia, and participated in a peer education session. The peer educators took the Board through a typical education session on the importance of physical activity, using the same approach and questions they would use in their home country. How can you exercise when there are no open spaces or the environment is not safe? What can you do to be more physically active and live a healthier life? Together, the young peer educators brought YHP to life for the Board.

For more information on the Young Health Programme, see page 50.

How our Board considers stakeholders' interests in decision making

Throughout the year, Directors recognised their responsibility to act in good faith to promote the success of the Company for the benefit of shareholders, while also considering the impact of their decisions on wider stakeholders and other factors relevant to the decision being made. Clear communication and proactive engagement to understand the issues and factors which are most important to stakeholders is fundamental to this.

The Board acknowledges that every decision made will not necessarily result in a positive outcome for all stakeholders. By considering our Purpose and Values, together with our strategic priorities, the Board aims to ensure that the decisions made are consistent and intended to promote the Company's long-term success.

In addition to the stakeholder considerations set out on pages 104 to 107, the Board has also had regard to other factors such as environmental factors and community interests. For more information on the environmental factors considered by the business, see pages 38 and 39, Next Move Zero carbon emissions on page 53 and the CEO review from page 5. For more information on the community factors considered by the business, see from page 49.

The table to the right provides examples of how key stakeholders were considered in Principal Decisions made by the Board during 2019.

For the s.172(1) statement, see page 94.

Principal decisions in 2019

Overview

We define 'Principal Decisions' as decisions and discussions, which are material or strategic to the Group, and also those that are significant to any of our stakeholder groups. We consider the following items to be examples of Principal Decisions made by the Board during 2019.

Principal Decisions

During 2019, the Board discussed the continuing success of the relocation of the Group's global corporate headquarters to Cambridge, UK. At the end of 2019, approximately 2,800 employees were based in Cambridge and the construction of the new strategic R&D centre continued to progress. The Board considered the Group's increased presence in Cambridge and the impact on the local community, noting that the Group continued to work with local authorities and other service providers to ensure further development of the surrounding infrastructure and amenities, such as improvements to local transportation. The Board also discussed the scientific and strategic partnerships, which the Group's presence in Cambridge had facilitated. Such collaborations were focused on training the next generation of scientists and entrepreneurs; health research; and data science and digital, all of which benefited the local community while also assisting the long-term delivery of the Group's science-led innovation.

For more information on the Group's presence in Cambridge, including details of the construction and the sustainability considerations of the new R&D centre, see page 29.

During 2019, the Group entered a Commercialisation Collaboration Agreement (the Agreement) with Daiichi Sankyo for *Enhertu*, a potential new targeted medicine for cancer treatment. A number of factors were taken into account in reaching this decision. The Board discussed the opportunity *Enhertu* presented and the unmet medical need that the drug might be able to address, while also considering patient safety. It was concluded that the entry into the Agreement was most likely to promote the long-term success of the Company and, if successful, could help transform the treatment of patients. The Group's capital allocation priorities and the balance between the interests of the business, shareholders and financial creditors, as well as achieving the Group's financial targets were also considered. After careful consideration of these factors, it was decided that it was in the best interests of the Company to proceed with a share placing, which among other things helped fund entry into the Agreement.

For more information, see Business development from page 40, and the Oncology Therapy Area Review from page 54. For information on the placing, see the Directors' report from page 263.

Throughout 2019, the Board continued to consider pricing of medicines, which remains an area of focus for governments and payers globally. The Board discussed the Group's innovative value strategies (IVS), which are intended to reduce clinical or financial uncertainty for the payer, while enabling patient access. The Group continued to work with governments and payers to shape polices and promote the implementation of IVS, which link the cost of the medicine to its real-word clinical performance, creating a sustainable and fair approach to pricing. The Board was supportive of management's efforts to date and noted that efforts should continue to be progressed. In addition to addressing stakeholders' concerns, a fair and transparent approach to pricing is an important factor in maintaining the Company's reputation for high standards of business conduct.

For more information, see Pricing and delivering value on page 32 and Improving patient access on page 36.

Engaging with our workforce

AstraZeneca is committed to being a great place to work. Engagement with employees is an important element in fostering this and ensuring an environment in which all employees are respected, and where openness is valued, diversity celebrated and every voice heard. We rely on our global workforce and their commitment to uphold our Values, deliver our strategic priorities and make the changes necessary to sustain and improve short- and long-term performance. For AstraZeneca, 'global workforce' includes all AstraZeneca's full-time and part-time employees, fixed-term workers and external contractors working full- or part-time, regardless of their geographical location.

In 2019, in response to the provision in the 2018 UK Corporate Governance Code prescribing certain methods that the Board could use to engage with the workforce, the Board reviewed the various mechanisms already in place across the Group that enable and facilitate such engagement. The Directors believe that the Board as a whole should continue to take responsibility for gathering the views of the workforce. Consequently, the Board chose not to implement any of the three methods set out in the 2018 Code. Instead, the multiple, long-standing channels of engagement which already exist in the organisation are being developed and enhanced to ensure that the Board continues to understand the global workforce's views on a wide variety of topics. The methods of engagement are set out below. In addition, further information on the Audit Committee's engagement can be found from page 117.

The Board believes that this alternative approach is the best model of engagement for the Group. The channels outlined below ensure that the Board has access to the views of the workforce, regardless of their location, and provide meaningful information and data that the Board can use when considering the impact of the strategic decisions on employees. Additionally, the chosen mechanisms allow all Directors to engage directly with a wider cross-section of the global workforce and provide opportunity for meaningful dialogue. The Board considers these views and the potential impacts on the workforce when it makes key decisions.

For more information, see A great place to work: Employees, from page 44.

Investing in and rewarding our workforce

The Remuneration Committee considers remuneration arrangements for our global workforce, aiming to ensure the global total reward offering is competitive, compelling and aligned to our business performance; while supporting a culture where everyone feels valued and included.

For more information, see the Directors' Remuneration Report from page 125.

Workforce culture

During 2019 the Board reviewed a new workforce trends report, which demonstrated how our Values and behaviours are embedded throughout all levels of the workforce. Within the report, there is a summary metrics dashboard, which is divided into five categories reflecting various key aspects of AstraZeneca's culture (Performance and Development, Integrity, Engagement, Reputation and Sustainability). The dashboard is compiled from data across the global workforce including scores from the Pulse surveys and promotion and resignation rates. Directors also receive information on compliance issues and grievance cases. The Board monitors the data for trends and to ensure that a culture consistent with our Values is being fostered. The report also contains a list of approximately 10 further analyses that reference culture and workforce engagement and help the Board to judge our culture and whether it reflects our Values. This information is made available to Directors via the Board portal.

The workforce trends report is reviewed by the Board twice per annum. Where the Board has concerns that the culture does not reflect our Values, the Board seeks assurances from management that remedial action has been taken, and where necessary, requests senior management's attendance at Board meetings to discuss corrective actions.

For more information on how individual Committees monitor culture, see the Audit Committee Report from page 116.

'High potential' employees and local leadership team meetings

The Board, its Committees and individual Directors have held meetings and hosted lunches/dinners as part of visits to provide exposure to talent and leadership, and provide opportunity for dialogue.

>10

more than 10 meetings with 'high potential' employees and leadership teams

'Town hall' meetings

Both Non-Executive Directors (including the Chairman) and Executive Directors regularly participate in 'town hall' style meetings across the world – either virtually or in person. These enable direct engagement between the Board and employees, including Q&A sessions.

>10

more than 10 'town hall' meetings held

Site visits

Directors have visited various Group sites across the world including those in China, India, Brazil, Sweden, Mexico, the UK, the US and Russia. These enabled direct insights and understanding into business operations and engagement between the Board and employees.

>15

more than 15 site visits

Workforce trends report and Annual Global Remuneration Overview

The Board was provided with information outlining progress against a range of metrics related to workforce culture and engagement. This information is provided biannually to enable Directors to monitor trends and, if required, take action. The Remuneration Overview provides evidence of how the workforce is rewarded in line with our principles.

94%

of employees stated they believe strongly in AstraZeneca's future direction and key priorities in the December 2019 Pulse survey

Employee opinion surveys (Pulse)

Twice a year the workforce are invited to take part in an employee opinion survey, which seeks employees' views of the business. The results are reviewed by management and trends are monitored. The results are shared with the Board, which enables them to understand the views and sentiments of the workforce.

90%

of employees took part in the December 2019 Pulse survey

Actions and outcomes

The Board considered the workforce throughout its Principal Decisions in 2019. Directors ensured that, where required, queries raised during engagements, were fed-back to management or discussed by the wider Board. In 2019, the Board discussed the formation of a dedicated Oncology R&D organisation and the new BioPharmaceuticals R&D and commercial units. The Board received regular updates on how the workforce had been considered and supported during the reorganisation. The Board also discussed the Group's transformation in learning, which forms one pillar of the People strategy, and the use of modern technology across all aspects of learning.

Corporate Governance Report
Compliance with the UK Corporate Governance Code

How we have complied with the UK Corporate Governance Code

We have prepared this Annual Report with reference to the UK Corporate Governance Code published by the UK Financial Reporting Council (FRC) in July 2018.

Our statement of compliance (together with the wider Corporate Governance Report and other sections of this Annual Report) describes how we apply the main principles of good governance in the UK Corporate Governance Code.

We have complied throughout the accounting period with the provisions of the UK Corporate Governance Code, which is available on the FRC's website, www.frc.org.uk.

Board Leadership and Company Purpose

A. Board's role	The Board is comprised of skilled individuals from a diverse range of nationalities and professional backgrounds, as set out in their biographies on pages 98 and 99 and the skills matrix on page 115. It is this diversity of experience and ability to exercise independent and objective judgement which helps the Board to operate effectively and establish a governance framework to assist the Group in the delivery of its strategy.	The Board discharges its responsibilities as set out in the Corporate Governance Overview on page 97 through a programme of meetings that includes regular reviews of financial performance and critical business issues, review and approval of the Group's strategy and long-range plan, and the formal annual strategy review. For information on the Principal matters considered by the Board in 2019, see page 102.
B. Our Purpose, Values and culture	The Board believes that our Purpose, to push the boundaries of science to deliver life-changing medicines, positions AstraZeneca for long-term, sustainable success. Our strategy, which was refreshed in 2019, remains relevant for the current status of our business and the evolving external environment. Our Values, and the behaviours that align with these Values, support a culture in which our people are empowered and inspired to make a difference to patients, society and our company, and makes AstraZeneca a great place to work. The Board reviews a workforce culture and employee engagement report twice per year. For more information, see page 107. Individual Committees also monitor culture throughout the year.	The Audit Committee received quarterly updates from the Internal Audit Services (IA) and Compliance functions. These updates, which included reports on whistleblowing and compliance issues as well as the results of internal audits, provided insight into the culture both within the Group, and within individual areas of the business. The Committee reviewed the steps taken by senior management to address weaknesses identified. Where concerns remained, the Committee ensured further action was taken, including requesting further information monitoring, follow-up audits and, if required, management's attendance at Committee meetings. As part of its considerations, the Remuneration Committee also reviewed the Company's approach to rewarding the workforce. For more information, see page 145.
C. Resources and controls	The Board ensures that necessary resources are in place to help the Company to meet objectives and measure performance. Global Compliance provides direct assurance to the Audit Committee on compliance matters, including an analysis of compliance breaches and associated disciplinary actions, as well as commentary on the most serious breaches.	Complementing this, IA carries out a range of audits that include compliance-related audits and periodically reviews the assurance activities of other Group assurance functions. The results from these activities are reported to the Audit Committee. Global Compliance and IA work with specialist compliance functions throughout our organisation to share outcomes and to coordinate reporting on compliance matters. The Board has a formal system in place for Directors to declare a conflict, or potential conflict of interest. For more information, see Conflicts of interest on page 259.
D. Engagement	**Shareholder engagement** The Board aims to ensure that a good dialogue with our shareholders is maintained and that their issues and concerns are understood and considered. In our reporting to shareholders and other interested parties, we aim to present a balanced and understandable assessment of our strategy, financial position and prospects. Our corporate website, www.astrazeneca.com, contains a wide range of data of interest to institutional and private investors. Board members are kept informed of any issues and receive regular reports and presentations from executive management and our brokers to assist them to develop an understanding of our major shareholders' views about the Group. From time to time, we conduct perception studies with institutional shareholders and a limited number of analysts to ensure that we are communicating clearly with them and that a high-quality dialogue is being maintained. The results of these studies are reported to, and discussed by, the full Board.	All Board members ordinarily attend the AGM to answer questions raised by shareholders, including private investors. Details of proxy voting by shareholders, including votes withheld, are given at the AGM and are posted on our website following the AGM. The Company's 2019 AGM was held in London, UK on 26 April 2019. The Company's 2020 AGM will be held on 29 April 2020 in London, UK. A Notice of AGM will be sent to all registered holders of Ordinary Shares and, where requested, to the beneficial holders of shares, at least one month in advance. **Wider stakeholder engagement** The Directors recognise the fundamental importance of promoting the success of the Company for the long term. Clear communication and proactive engagement to understand the issues and factors which are most important to stakeholders are fundamental to this. A summary of our approach to stakeholder engagement and impact on decision making is set out on pages 104 and 105. Our s.172(1) statement is set out on page 94.

Board Leadership and Company Purpose *continued*

D. Engagement *continued*	Our Investor Relations team act as the main point of contact for investors throughout the year. We have frequent discussions with current and potential shareholders on a range of issues, including in response to individual ad hoc requests from shareholders and analysts. We also hold meetings to seek shareholders' views. Directors including the CEO, CFO, and the Chairman, as well as certain members of SET, also attended investor roadshows throughout the year in various locations to discuss the business performance, strategy and governance of the Group. During 2019, the Chairman of the Remuneration Committee consulted major institutional shareholders to discuss and understand their views on remuneration matters, including the updated Remuneration Policy. Details of this engagement are set out in the Remuneration Report from page 125.	**Workforce engagement** We rely on our global workforce and their commitment to uphold our Values, deliver our strategic priorities and make the changes necessary to sustain and improve short- and long-term performance. Engagement with the workforce is key to ensuring that the Board understands the employee voice. The Board chose not to implement one of the three methods set out in the UK Corporate Governance Code and has instead adopted a different approach, choosing to gather the views of the workforce through a series of formal and informal channels. For more information see page 107.
E. Our workforce policies	Our Code of Ethics (the Code) is based on our Values, expected behaviours and key policy principles. The Board is given access to the Code training undertaken by employees. The Code recommends that employees report possible violations to their line managers or to their local Human Resources, Legal, or Compliance partners.	The Code also contains information on how to report possible violations through our helpline, which includes the AZethics telephone lines, the AZethics website, and the Global Compliance email and postal addresses. For more information, see Code of Ethics on page 112.

Division of responsibilities

F. The role of the Chairman	Leif Johansson, our Non-Executive Chairman, is responsible for leadership of the Board and promoting a culture of openness and constructive debate.	He was considered to be independent upon his appointment as Chairman.
G. Composition of the Board	The Board comprises 10 Non-Executive Directors, including the Chairman, and two Executive Directors – the CEO, Pascal Soriot, and the CFO, Marc Dunoyer. Its responsibilities are set out in the Corporate Governance Overview on page 97. The roles of the Board, Board Committees, Chairman and CEO are documented, as are the Board's reserved powers and delegated authorities. The CEO is responsible to the Board for the management, development and performance of our business for those matters for which he has been delegated authority from the Board. Although the CEO retains full responsibility for the authority delegated to him by the Board, he has established, and chairs, the SET, which is the vehicle through which he exercises that authority in respect of our business. During 2019, the Board considered the independence of each Non-Executive Director for the purposes of the UK Corporate Governance Code and the corporate governance listing standards of the NYSE (Listing Standards). Except for Marcus Wallenberg, the Board considers that all the Non-Executive Directors are independent.	Marcus Wallenberg was appointed as a Director of Astra in May 1989 and subsequently became a Director of the Company in 1999. He is a Non-Executive Director of Investor AB, which has a 3.93% interest in the issued share capital of the Company as at 14 February 2020. For these reasons, the Board does not believe that he can be determined independent under the UK Corporate Governance Code. However, the Board believes that he has brought, and continues to bring, considerable business experience and makes a valuable contribution to the work of the Board. In April 2010, he was appointed as a member of the Science Committee, reflecting his interest in innovation and R&D, knowledge of the history of the Company and its scientific heritage and culture, and his broad experience of other industries and businesses in which innovation and R&D are important determinants of success. The membership of the Board as at 31 December 2019 and information about individual Directors is contained in Board of Directors on pages 98 and 99.

Corporate Governance Report
Compliance with the UK Corporate Governance Code *continued*

Division of responsibilities *continued*

H. Role of the Non-Executive Directors

The role of the Non-Executive Directors is to provide constructive challenge, strategic guidance, offer specialist advice and hold management to account. At the end of Board meetings, the Non-Executive Directors meet without the Executive Directors present to review and discuss any matters that have arisen during the meeting and/or such other matters as may appear to the Non-Executive Directors to be relevant in properly discharging their duty to act independently.

Time commitment

Our expectation is that Non-Executive Directors should be prepared to commit 15 days a year, as an absolute minimum, to the Group's business. In practice, Board members' time commitment exceeds this minimum expectation when all the work that they undertake for the Group is considered, particularly in the case of the Chairman of the Board and the Chairs of the Board Committees. As well as their work in relation to formal Board and Board Committee meetings, the Non-Executive Directors also commit time throughout the year to meetings and telephone calls with various levels of executive management, visits to AstraZeneca's sites throughout the world and, for new Non-Executive Directors, induction sessions and site visits.

On occasions when a Director is unavoidably absent from a Board or Board Committee meeting, they still receive and review the papers for the meeting and typically provide verbal or written input ahead of the meeting, usually through the Chairman of the Board or the Chair of the relevant Board Committee, so that their views are made known and considered at the meeting.

Given the nature of the business to be conducted, some Board meetings are convened at short notice, which can make it difficult for some Directors to attend due to prior commitments.

Subject to specific Board approval, Executive Directors and other SET members may accept external appointments as non-executive directors of other companies, and retain any related fees paid to them, provided that such appointments are not considered by the Board to prevent or reduce the ability of the executive to perform his or her role within the Group to the required standard.

Senior independent Non-Executive Director

Graham Chipchase, who joined the Board as a Non-Executive Director in April 2012, was appointed senior independent Non-Executive Director with effect from 1 January 2019. The role of the senior independent Non-Executive Director is to serve as a sounding board for the Chairman and as an intermediary for the other Directors when necessary. The senior independent Non-Executive Director is also available to shareholders if they have concerns that contact through the normal channels of Chairman or Executive Directors has failed to resolve, or for which such contact is inappropriate.

For more information, see Board Committee membership and meeting attendance in 2019 on page 97.

I. The Company Secretary

The Company Secretary is responsible to the Chairman for ensuring that all Board and Board Committee meetings are properly conducted, that the Directors receive appropriate information prior to meetings to enable them to make an effective contribution, and that governance requirements are considered and implemented.

Composition, Succession and Evaluation

J. Appointments to the Board and succession planning

The Nomination and Governance Committee and, where appropriate, the full Board, regularly review the composition of the Board and the status of succession to both senior executive management and Board-level positions. Directors have regular contact with and access to succession candidates for senior executive management positions.

The Nomination and Governance Committee's role is to recommend to the Board any new Board appointments and to consider, more broadly, succession plans to both senior executive management and Board-level positions. As part of their consideration, the Nomination and Governance Committee evaluates the balance of skills, knowledge, experience and diversity on the Board. Any decisions relating to the appointment of Directors are made by the entire Board based on the merits of the candidates and the relevance of their background and experience, measured against objective criteria, with care taken to ensure that appointees have enough time to devote to our business.

During 2019, the Board appointed two new Non-Executive Directors, Tony Mok and Michel Demaré. During 2019, the Committee engaged search firms MWM Consulting and Spencer Stuart. For information on the appointments and Director inductions, please see the Nomination and Governance Committee Report from page 114.

Re-election of Directors

In accordance with Article 66 of the Articles, all Directors retire at each AGM and may offer themselves for re-election by shareholders. Accordingly, all the Directors will retire at the AGM in April 2020. The Notice of AGM will give details of those Directors seeking election or re-election.

For more information, see the Nomination and Governance Report from page 114.

K. Skills, experience and knowledge of the Board

As part of its role, the Nomination and Governance Committee is responsible for reviewing the composition of the Board, to ensure that it has the appropriate expertise while also recognising the importance of diversity.

The Committee reviews the composition of the Board using a matrix that records the skills and experience of current Board members, comparing this with the skills and experience it believes are appropriate to the Company's overall business and strategic needs, both now and in the future.

L. Board evaluation

In 2019, the Board undertook an internal evaluation. The Board expects to commission the next externally-facilitated review in late 2020, in line with the UK Corporate Governance Code guidance that the evaluation should be externally facilitated at least every three years.

For more information, see Board performance evaluation on page 103.

Audit, Risk and Internal Control

M. Internal and external audit	The Audit Committee reviews the Company's relationship with its external auditors, PricewaterhouseCoopers LLP (PwC), including the independence of the external auditors. The Committee maintains a policy (the Audit and Non-Audit Services Policy) for the pre-approval of all audit services and permitted non-audit services undertaken by the external auditor. The principal purpose is to ensure that the independence of the auditor is not impaired.	The Audit Committee also reviews the independence and effectiveness of Internal Audit Services. For more information, see Risk Management and Controls on page 112.
N. Fair, balanced and understandable assessment	The Board as a whole takes a keen interest in the Company's financial and business reporting including, in particular, reviewing the Company's quarterly financial results announcements and through its oversight of the Company's Disclosure Committee. For more information about the Disclosure Committee, see page 112.	The Board considers this Annual Report, taken as a whole, to be fair, balanced and understandable, and provides the information necessary for shareholders to assess AstraZeneca's position and performance, business model and strategy.
O. Risk management and internal controls	The Board has overall responsibility for our system of internal controls and risk management policies and has an ongoing responsibility for reviewing their effectiveness. During 2019, the Directors continued to review the effectiveness of our system of controls, risk management (including a robust assessment of the emerging and principal risks) and high-level internal control processes. These reviews included an assessment of internal controls and, in particular, financial, operational and compliance controls, and risk management and their effectiveness. These were supported by management assurance of the maintenance of controls reports from IA, as well as the external auditor on matters identified in the course of its statutory audit work.	The system of controls is designed to manage rather than eliminate the risk of failure to achieve business objectives and can only provide reasonable (not necessarily absolute) assurance of effective operation and compliance with laws and regulations. The Directors believe that the Group maintains an effective, embedded system of internal controls and complies with the FRC's guidance entitled 'Guidance on Risk Management, Internal Control and Related Financial and Business Reporting'. For more information about the ways in which we manage our business risks, our procedures for identifying our emerging risks, how we describe our principal risks and uncertainties and our Viability statement, see the Risk Overview from page 74 and Risk from page 246.

Remuneration

P. Policies and practices	The Remuneration Committee is responsible for determining, approving and reviewing the Company's global remuneration principles and frameworks, to ensure they support the strategy of the Company and are designed to promote long-term success.	For more information on the Remuneration Committee's work during 2019, see the Director's Remuneration Report from page 125.
Q. Procedure for developing remuneration policy	During 2019, the Remuneration Committee reviewed the Directors' Remuneration Policy to ensure it continues to: align with corporate governance best practice; support the Company's ability to recruit and retain executive talent to deliver against its strategy; and promote the delivery of long-term strategy. As part of the process for developing the Directors' Remuneration Policy, the Chairman of the Remuneration Committee consulted major institutional shareholders on the Committee's proposals. Details of this engagement are set out in the Directors' Remuneration Report from page 125.	The Directors' Remuneration Policy, which is to be put to shareholders for approval at the 2020 AGM, can be found from page 149.
R. Exercising independent judgement	The Remuneration Committee exercises independent judgement when determining remuneration outcomes. The Committee takes into account factors such as wider business and individual performance during the year, including achievements across the enterprise, such as advancing our Great Place to Work priorities and environmental, social and governance (ESG) goals.	For more information on 2019 Remuneration Outcomes, see the Directors' Remuneration Report from page 125.

Corporate Governance Report
Other Governance information

Risk Management and Controls

Disclosure Committee

Our disclosure policy provides a framework for the handling and disclosure of inside information and other information of interest to shareholders and the investment community. It also defines the role of the Disclosure Committee. The core members of the Disclosure Committee in 2019 were: the CFO, who chaired the Disclosure Committee; the General Counsel; the Vice-President, Corporate Affairs; the Head of Investor Relations; and the Vice-President Finance, Group Controller. The EVP, BioPharmaceuticals R&D and the EVP, BioPharmaceuticals were members of the Disclosure Committee for BioPharmaceuticals-related matters. The EVP, Oncology R&D and the EVP, Oncology were members of the Disclosure Committee for Oncology-related matters. Other personnel attend its meetings on an agenda-driven basis. The Deputy Company Secretary acted as secretary to the Disclosure Committee.

The Disclosure Committee meets regularly to assist and inform the decisions of the CEO concerning inside information and its disclosure. Periodically, it reviews our disclosure controls and procedures and its own operation as part of work carried out to enable management and the Board to assure themselves that appropriate processes are operating for both our planned disclosures, such as our quarterly results announcements and scheduled investor relations events, and our unplanned disclosures in response to unforeseen events or circumstances.

Global Compliance and Internal Audit Services (IA)

The role of the Global Compliance function is to help the Group achieve its strategic priorities by doing business the right way – with integrity and high ethical standards. Global Compliance continues to focus on ensuring the delivery of a globally-aligned approach to compliance that addresses key risk areas across the business, including risks relating to third parties and anti-bribery/anti-corruption. Our priorities include reinforcing and strengthening compliant behaviours through effective policies, training, advice and communications; monitoring adherence to our Code of Ethics and supporting requirements; providing assurance that we are conducting appropriate risk assessments and due diligence on third parties whom we engage for services; and ensuring that employees and external parties can raise any concerns.

We take all alleged compliance breaches and concerns extremely seriously, including appropriate investigation, as well as disciplinary action, and other remediation to address misconduct and prevent reoccurrence. Internal investigations are undertaken by staff from our Global Compliance, Human Resources and/or Legal functions. When necessary, external advisers are engaged to conduct and/or advise on investigations. Where a significant breach has occurred, management, in consultation with our Legal function, will consider whether the Group needs to disclose and/or report the findings to a regulatory or governmental authority.

Global Compliance provides direct assurance to the Audit Committee on compliance matters, including an analysis of compliance breaches and associated disciplinary actions, as well as commentary on the most serious breaches. Complementing this, IA carries out a range of audits that include compliance-related audits and periodically reviews the assurance activities of other Group assurance functions.

The results from these activities are reported to the Audit Committee. Global Compliance and IA work with specialist compliance functions throughout our organisation to share outcomes and to coordinate reporting on compliance matters.

IA is established by the Audit Committee on behalf of the Board and acts as an independent and objective assurance function guided by a philosophy of adding value to improve the operations of the Group. The scope of IA's responsibilities encompasses, but is not limited to, the examination and evaluation of the adequacy and effectiveness of the Group's governance, risk management, and internal control processes in relation to the Group's defined goals and objectives.

Among others, internal control objectives considered by IA include:

- compliance with significant policies, plans, procedures, laws and regulations
- consistency of operations or programmes with established objectives and goals and effective performance
- safeguarding of assets.

Based on its activity, IA is responsible for reporting significant risk exposures and control issues identified to the Board and to senior management, including fraud risks, governance issues, and other matters needed or requested by the Audit Committee. It may also evaluate specific operations at the request of the Audit Committee or management, as appropriate.

Code of Ethics

Our Code of Ethics (the Code) is based on our values, expected behaviours and key policy principles. The Code recommends that employees report possible violations to their line managers or to their local Human Resources, Legal, or Compliance partners. The Code also contains information on how to report possible violations through our helpline, which includes the AZethics telephone lines, the AZethics website, and the Global Compliance email and postal addresses.
The externally-operated website is available in approximately 40 languages to facilitate reporting. While telephone lines are listed for 123 countries, local carriers may impose in-country dialling restrictions, potentially resulting in disruptions to connectivity. AstraZeneca has updated the AZethics webpages in all languages to provide enhanced dialling information and to highlight the alternate use of online reporting should telephone connectivity be limited.

The helpline is available to both employees and to external parties to report any concerns or make enquiries. Reports can be made anonymously where desired and where permitted by local law. Anyone who raises a potential breach in good faith is fully supported by management.

The majority of cases come to our attention through management and self-reporting, which can be seen as an indication that employees are comfortable in raising their concerns with line managers or local Human Resources, Legal or Compliance, as recommended in the Code and reinforced in the 2019 Code training. In addition, in 2019, 556 reports of alleged compliance breaches or other ethical concerns were made through the helpline, including reports made by any anonymous route that could be considered whistleblowing; in 2018 there were 428 reports.

External auditor

A resolution will be proposed at the AGM on 29 April 2020 for the reappointment of PricewaterhouseCoopers LLP (PwC) as auditor of the Company. During 2019, PwC undertook various non-audit services. More information about this work and the audit and non-audit fees that we have paid are set out in Note 30 to the Financial Statements on page 225. The external auditor is not engaged by AstraZeneca to carry out any non-audit work in respect of which it might, in the future, be required to express an audit opinion. As explained more fully in the Audit Committee Report from page 124, the Audit Committee has established pre-approval policies and procedures for audit and non-audit work permitted to be carried out by the external auditor and has carefully monitored the objectivity and independence of the external auditor throughout 2019.

Electronic communications with shareholders

The Company has been authorised by shareholders to place shareholder communications (such as the Notice of AGM and this Annual Report) on the corporate website in lieu of sending paper copies to shareholders (unless specifically requested). While recognising and respecting that some shareholders may have different preferences about how they receive information from us, we will continue to promote the benefits of electronic communication given the advantages that this has over traditional paper-based communications, both in terms of the configurability and accessibility of the information provided and the consequent cost savings and reduction in environmental impact.

Science Committee Report

"The Science Committee's core role is to provide assurance to the Board regarding the quality, competitiveness and integrity of the Group's R&D activities."

Our focus during 2019

- R&D new structure and organisation
- Cambridge R&D centre progress
- Gothenburg scientific leadership through strategic collaborations and partnerships
- Corporate scorecard achievements and targets

Role of the Committee

The Science Committee's core role is to provide assurance to the Board regarding the quality, competitiveness and integrity of the Group's R&D activities. This is done by way of meetings and dialogue with our R&D leaders and other scientist employees, visits to our R&D sites throughout the world, and review and assessment of:

- the approaches we adopt in respect of our chosen therapy areas
- the scientific technology and R&D capabilities we deploy
- the decision-making processes for R&D projects and programmes
- the quality of our scientists and their career opportunities and talent development
- benchmarking against industry and scientific best practice, where appropriate.

The Science Committee periodically reviews important bioethical issues that we face and assists in the formulation of, and agrees on behalf of the Board, appropriate policies in relation to such issues. It may also consider, from time to time, future trends in medical science and technology. The Science Committee does not review individual R&D projects but does review, on behalf of the Board, the R&D aspects of specific business development or acquisition proposals and advises the Board on its conclusions.

Membership of the Committee

During 2019, the members of the Science Committee, all of whom have a knowledge of, or an interest in, life sciences, were Nazneen Rahman (Chair), Geneviève Berger, Marcus Wallenberg and the newest member Tony Mok. As usual, the EVP, Oncology R&D and the EVP, BioPharmaceuticals R&D participated in meetings of the Science Committee as co-opted members in 2019. The Vice-President, Chief Operating Officer acts as secretary to the Science Committee.

Activities during 2019

The Science Committee met twice in person in 2019, in London, UK and Cambridge, UK.

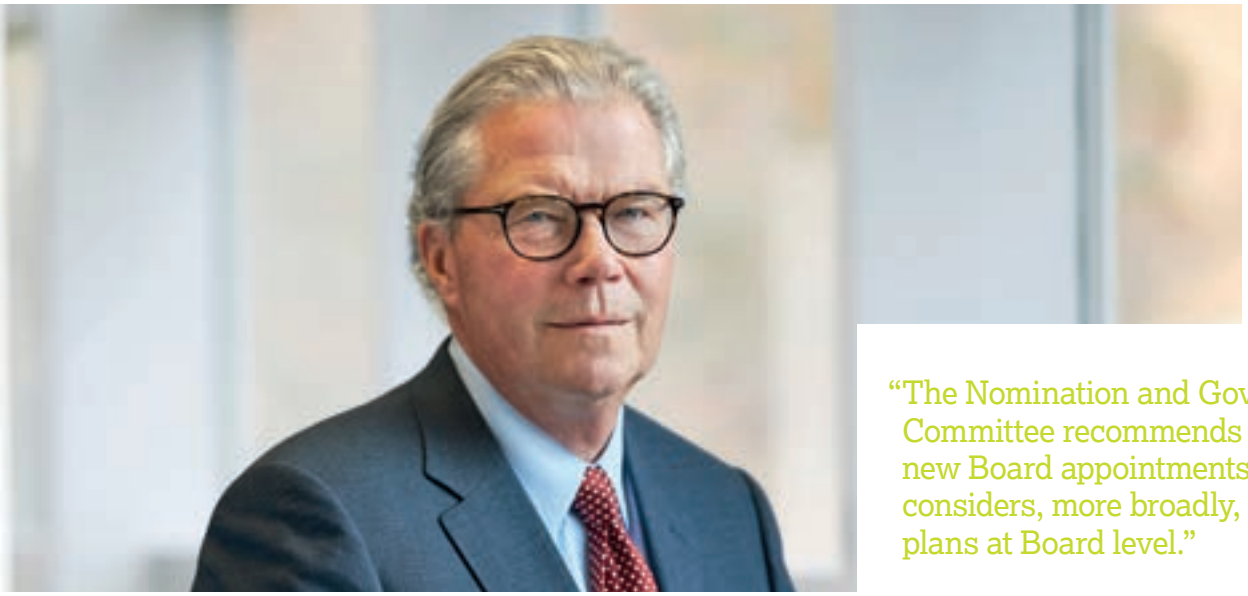
Key areas of focus for the Science Committee in 2019 included:

- **R&D Structure & Strategy reviews:** the new AstraZeneca R&D organisational structure, leadership, operating model, key pipeline assets and strategy.
- **AstraZeneca Gothenburg:** how AstraZeneca Gothenburg is leading in science and impacting the R&D pipeline through creation of a thriving ecosystem of collaborations and partnerships and transformation to a 'Health Innovation' campus.
- **AstraZeneca Cambridge:** how the new R&D centre is progressing and its potential impact on science and collaboration.
- **Biologics device differentiation:** how the current market and technology landscape is influencing our product portfolio and development strategies.
- **Corporate scorecard outturn and goal setting:** providing insight and feedback to the Remuneration Committee in support of 2019 achievements and 2020 goal setting.
- **Daiichi Sankyo collaboration:** providing a review to the Board of the scientific case supporting the development and commercialisation agreement with Daiichi Sankyo for *Enhertu*.

Nazneen Rahman
Chairman of the Science Committee

The Science Committee's terms of reference are available on our website, www.astrazeneca.com.

Nomination and Governance Committee Report



"The Nomination and Governance Committee recommends to the Board new Board appointments and considers, more broadly, succession plans at Board level."

Our focus during 2019

- > Composition of the Board
- > Inclusion and Diversity
- > Inductions and training
- > Succession planning for the Board
- > Developments in Corporate Governance

Composition of the Board

As part of its role, the Nomination and Governance Committee is responsible for reviewing the composition of the Board, to ensure that it has the appropriate expertise while also recognising the importance of diversity. The Committee reviews the composition of the Board using a matrix that records the skills and experience of current Board members, comparing this with the skills and experience it believes are appropriate to the Company's overall business and strategic needs, both now and in the future. The matrix is set out opposite. Any decisions relating to the appointment of Directors are made by the entire Board based on the merits of the candidates and the relevance of their background and experience, measured against objective criteria, with care taken to ensure that appointees have enough time to devote to our business.

Inclusion and Diversity

Diversity is integrated across our Code of Ethics and associated workforce policy, and we promote a culture of diversity, respect and equal opportunity, where individual success depends only on personal ability and contribution. We strive to treat our employees with fairness, integrity, honesty, courtesy, consideration, respect and dignity, regardless of gender, race, nationality, age, sexual orientation or other forms of diversity. The Board is provided each year with a comprehensive overview of the AstraZeneca workforce, covering a wide range of metrics and measures (including trends around gender diversity, leadership ethnic diversity and age profile). In November 2019, the Hampton-Alexander Review named AstraZeneca PLC as one of the top ten best performers in the FTSE 100 for representation of women on the combined executive committee and their direct reports. For the year ended 31 December 2019, women represented 39.2% of senior management and their direct reports.

The Board views gender, nationality and cultural diversity among Board members as important considerations when reviewing its composition. Considering diversity in a wider sense, the Board aims to maintain a balance in terms of the range of experience and skills of individual Board members, which includes relevant international business, pharmaceutical industry and financial experience, as well as appropriate scientific and regulatory knowledge. The biographies of Board members set out on pages 98 and 99 give more information about current Directors in this respect.

The Board has adopted an Inclusion and Diversity policy (the Policy), which is applicable to the Board and its Committees. The Policy reinforces the Board's ongoing commitment to all aspects of diversity and to fostering an inclusive environment in which each Director feels valued and respected. While the Board appoints candidates based on merit and assesses Directors against measurable, objective criteria, the Board recognises that an effective Board with a broad strategic perspective requires diversity.

The Policy sets out the Board's aim to maintain a composition of at least 33% female Directors and a commitment to use at least one professional search firm which has signed up to the 'Voluntary Code of Conduct for Executive Search Firms', to help recruit Directors from a broad, qualified group of candidates to increase diversity of thinking and perspective. The Board's approach to inclusion and diversity continues to yield successful results. Currently, 40% of the Company's Non-Executive Directors are women and women make up 33% of the full Board.

Non-Executive Directors' experience, as at 31 December 2019

	Business					Geographic			Industry-specific				
Name	Commercial	Financial	Managerial	Sales & Marketing	Tech & Digital	US	Europe	Asia	Science	Regulatory	Pre-AZ Pharma	Biologics	Medical Doctor/ Physician
Leif Johansson	●		●		●		●	●			●		
Geneviève Berger	●		●				●	●	●				●
Philip Broadley	●	●	●			●	●						
Graham Chipchase	●	●	●			●	●	●					
Michel Demaré	●	●	●			●	●				●		
Deborah DiSanzo	●		●	●	●	●	●		●		●		
Sheri McCoy	●		●	●		●			●		●		
Tony Mok	●					●		●	●			●	●
Nazneen Rahman					●		●		●			●	●
Marcus Wallenberg	●	●	●				●	●			●		

This meets the Policy's aim of 33% female representation on the Board, the same target as set out in the report from Lord Davies published in October 2015.

The Board's Inclusion and Diversity policy can be found on our website, www.astrazeneca.com.

Information about our approach to diversity in the organisation below Board level can be found in Employees from page 46.

Inductions and training

Newly appointed Directors are provided with comprehensive information about the Group and their role as Non-Executive Directors. They also typically participate in tailored induction programmes that take account of their individual skills and experience. During 2019, two independent Non-Executive Directors, Tony Mok and Michel Demaré, were appointed and provided with ongoing induction programmes intended to quickly provide an understanding of the Group, as well as their duties as a Director of a listed company. While elements of their inductions were adjusted for their existing expertise and Committee membership, key areas of their inductions during 2019 included:

- meetings with members of the Board, SET and other senior management
- meeting with external legal advisers
- meeting with the external auditors
- visits to various sites including R&D centres, commercial sites and operations facilities in China, Sweden, the UK and the US
- access to a reading room which provides information on the Group, including financial performance, pipeline information, policies including the AstraZeneca Securities Dealing Code and rules relating to inside information, investor and analyst reports, and media updates. In addition, the reading room contains guidance on directors' duties and listed company requirements.

Ongoing training and development

AstraZeneca is committed to developing a culture of lifelong learning, including for Directors. As part of each Director's individual discussion with the Chairman, his or her contribution to the work of the Board and personal development needs were considered. Directors' training needs are met by a combination of internal presentations and updates and external speaker presentations as part of Board and Board Committee meetings; specific training sessions on particular topics, where required; and the opportunity for Directors to attend external courses at the Company's expense, should they wish to do so. In addition, Directors are encouraged to attend site visits during the year. During these visits, Directors meet with local management and have tours of both AstraZeneca sites and facilities, as well as those of our strategic partners. These site visits further Directors' understanding of the Group's business and operations, as well as providing an insight into the particular challenges faced in those regions. Additionally, such visits provide Directors with an opportunity to engage with key stakeholders.

Succession planning

The Nomination and Governance Committee considers both planned and unplanned (unanticipated) succession scenarios and met five times in 2019. The Committee split the majority of its time between succession planning for Non-Executive Directors and continued routine succession planning for the roles of Chairman, CEO and CFO. The search firms MWM Consulting and Spencer Stuart were engaged to assist the Committee with its work. Spencer Stuart periodically undertakes executive search assignments for the Company.

Corporate governance

The Nomination and Governance Committee also advises the Board periodically on significant developments in corporate governance and the Company's compliance with the UK Corporate Governance Code.

During the year, the Committee received regular updates on corporate governance requirements and how these would impact AstraZeneca. These included updates on the revised UK Corporate Governance Code, which was updated in July 2018 and was applicable to AstraZeneca for the financial year beginning 1 January 2019. As part of its considerations, the Committee reviewed the methods used by the Board to monitor the culture of the Group and how this was embedded throughout the organisation. The Committee also reviewed the Board's channels of engagement with the workforce.

Membership of the Committee

During 2019, the members of the Nomination and Governance Committee were Leif Johansson (Chairman of the Committee), Graham Chipchase and Nazneen Rahman. Philip Broadley joined the Committee on 1 March 2019. Rudy Markham was a member of the Committee until he retired from the Board at the Company's AGM in April 2019. Each member is a Non-Executive Director and considered independent by the Board; all other members are considered independent by the Board. The Company Secretary acts as secretary to the Nomination and Governance Committee.

The attendance record of the Nomination and Governance Committee's members is set out on page 97. Typically, the Chairman of the Committee extends an invitation to any Board member to attend Committee meetings if they wish and several Directors take advantage of this.

Leif Johansson
Chairman

The Nomination and Governance Committee's terms of reference are available on our website, www.astrazeneca.com.

Audit Committee Report

"The integrity of AstraZeneca's financial reporting is underpinned by effective internal controls, appropriate accounting practices and policies, and the exercise of experienced judgement by the Committee and the Board."

Our focus during 2019

- Financial reporting, internal controls, and the quality and effectiveness of the external audit
- Risk management, including the identification, mitigation, monitoring and reporting of risks, and lines of management accountability
- Compliance matters, including continued work on fostering a 'Speak Up' culture, and on anti-bullying and anti-harassment
- Cybersecurity and information governance
- Business continuity planning and resilience

This Report describes the work of the Audit Committee (the Committee) and the significant issues it considered in 2019. Our priorities were to receive assurance over the soundness of our financial reporting and internal controls, risk identification and management, compliance with the Code of Ethics and relevant legislation, cybersecurity and information governance, and business resilience.

Financial reporting

The integrity of AstraZeneca's financial reporting is underpinned by effective internal controls, appropriate accounting practices and policies, and the exercise of experienced judgement by the Committee and the Board. At least once per quarter, the Committee reviewed the Group's significant accounting matters, including contingent liabilities and provisions, revenue recognition, impairment triggers for intangible assets, and deferred tax. Where appropriate, the Committee challenged management's decisions before approving the proposed accounting treatment. During 2019, the Committee reviewed the Group's significant restructuring programmes initiated from 2013 onwards, including accounting for restructuring charges, and control over capital expenditure and their projection for completion. The Committee reviewed the Group's approach to operating segment accounting. The Committee also reviewed the renaming and redefinition of Externalisation Revenue to Collaboration Revenue in AstraZeneca's Consolidated Statement of Comprehensive Income. For more information on Collaboration Revenue, please refer to the Financial Review from page 82.

The Committee also looked closely at intangible asset impairment reviews, legal provisions and other related charges, to ensure that items are appropriately accounted for in 'Reported' and 'Core' results.

PwC were reappointed as the Company's external auditor by its shareholders at the Company's AGM held in April 2019, serving for the third successive year. The Committee continued to oversee the conduct, performance and quality of the external audit, in particular through its review and challenge of the coverage of the external auditor's audit plan and subsequent monitoring of their progress against it. The Committee maintained regular contact with PwC through formal and informal reporting and discussion throughout the year.

In August 2019, the Company received a letter from the Corporate Reporting Review Team (the CRRT) of the Financial Reporting Council (the FRC), as part of its regular review and assessment of the quality of corporate reporting in the UK, requesting further information in relation to the Company's 2018 Annual Report and Accounts[1]. The letter focused on the clarity of disclosures of Critical Accounting Judgements and Significant Estimates. The CRRT sought information regarding how the Company's description of these matters satisfied the disclosure requirements of IAS 1 'Presentation of Financial Statements' in respect of a key judgement or a significant estimate. The letter also asked about the Group-specific nature of the judgements that were made and how they were concluded on.

We responded to the CRRT's questions providing clarifying information and proposing specific enhancements to AstraZeneca's 2019 Annual Report and Accounts. On this basis, the CRRT subsequently confirmed in writing that it had closed its enquiries.

All the proposed specific enhancements to the 2019 Annual Report and Accounts have been applied in this Annual Report and 20-F Information.

Risk identification and management

During the year, the Committee continued its regular reviews of the Group's approach to risk management, the operation of its risk reporting framework and risk mitigation. The Committee has further strengthened its links with the Company's Science Committee, with Nazneen Rahman (Science Committee Chair) attending three meetings of the Committee, allowing it to deepen its understanding of the clinical compliance risk facing the Group.

When identifying risks, the Committee considers the total landscape of risks which are long-standing and business-as-usual in nature: enduring risks. We then consider more specific and current risks which are challenging our business presently: key active risks. Finally, we scan the horizon and identify risks which may challenge us in the future: emerging risks. This framework provided the context for the Committee's consideration of the Directors' viability statement. The Directors' viability statement is underpinned by the assurance provided through a 'stress test' analysis under which key profitability, liquidity and funding metrics are tested against severe downside scenarios.

Each of these scenarios assumes that the significant risks modelled in the planning process will crystallise and that management will take mitigating actions against those risks. The Committee considered in detail the validity of each scenario. This included obtaining additional analysis from management as to the indirect or unintended consequences of its proposed mitigating actions, including, for example, assessing the likely response of a broader range of stakeholders. The Committee also assessed whether the proposed mitigations were viable.

For more information on the Viability statement, see Risk Overview from page 74.

The Committee's consideration of risk management was supported by regular information security and information technology updates and 'deep dive' reviews of key activities, including:

- manufacturing and supply activities, including product security, capacity management, inventory management, and technology trends
- the implementation, and impact, of the reorganisation of the business into Oncology and BioPharmaceuticals R&D and Business Units announced in January 2019
- material litigation matters
- Good practice (GxP) risk management, including regulatory inspection and quality assurance audit.

Further information on the deep dive reviews can be found in the Business updates section on page 120.

As discussed below, members of the Committee also visited a number of the Group's sites and engaged with Group personnel to enhance their understanding of risks arising in key markets and internal controls.

For more information on the Group's Principal Risks, see Risk Overview from page 74.

Compliance with the Code of Ethics

The Committee's priorities continue to include overseeing compliance with AstraZeneca's Code of Ethics, and ensuring high ethical standards, and that we operate within the law in all countries where we operate. The Code of Ethics is written in simple and accessible language to empower decision making that reflects AstraZeneca's Values, expected behaviours and key policy principles. During the year, the Committee continued to monitor and review the effectiveness of our anti-bribery and anti-corruption controls across the Group, prioritising its focus on countries/regions where we have significant operations and countries in which doing business is generally considered to pose higher compliance risks. The Committee also monitored and reviewed the impact of the implementation of our new Global Standards of behaviour on sexual harassment and bullying. AstraZeneca is committed to ensuring that its people feel respected through promoting a culture of inclusion and diversity and fostering a working environment in which its employees feel able and safe to speak up.

For more information on our Code of Ethics, see the Business Review on page 35 and the Corporate Governance Report on page 112.

Engagement with employees and other stakeholders

The Committee regularly interacts with members of management below the SET and seeks wider engagement with the Group's employees and other stakeholders. Over the course of 2019, members of the Committee visited a wide range of the Group's sites, including:

- in April, Rudy Markham visited the Group's marketing company headquarters in Shanghai, China and I visited the Group's offices in Cambridge, UK
- in August, members of the Committee visited the Group's sites in Mexico: its marketing company headquarters in Mexico City, its operations site in Lomas Verdes and its global technology centre in Guadalajara. We also visited the National Institute of Respiratory Diseases and met physicians involved in the treatment of COPD and other respiratory conditions
- in September, I visited the Group's offices in Wilmington, DE, Gaithersburg, MD and Washington, DC and our Biologics Manufacturing Center in Frederick, MD
- in October, I visited the Group's marketing company headquarters in Moscow, Russia, its manufacturing site in Vorsino, Russia, and its marketing and global hub site in Warsaw, Poland.

These visits provided the Committee with valuable insights from local management about the key local and global issues and challenges relating to, and current and emerging risks associated with, our activities in these countries. They also enabled AstraZeneca personnel from all parts of the business to meet Committee members and share their perspectives on the Group and the work they do. In Mexico, Moscow and Warsaw, I took part in town hall events with employees at which I described the work of the Board and the Committee and participated in question and answer sessions with the audiences.

Members of the Committee also met informally with employees from the Finance, Operations and Legal teams.

During 2019, the Committee monitored the Group's engagements with external stakeholders relevant to the Committee's areas of oversight, including the following UK-based stakeholders: the Competition and Markets Authority; HMRC; the FRC; and the Department for Business, Energy & Industrial Strategy.

Audit Committee Report *continued*

Changes to the membership of the Committee

I succeeded Rudy Markham as Chair of the Committee following Rudy's retirement from the Board at the Company's AGM in April 2019. I had the benefit of working with Rudy as a member of the Committee for two years before becoming Chair, and I thank him for his leadership, wise counsel and significant contribution to the Committee's work. In preparation for chairing the Committee, I also had the benefit of an extensive induction programme.

We welcomed Michel Demaré as a member of the Committee in September 2019. Michel brings significant international business and financial experience from his senior executive, chief financial officer and non-executive director roles at large international businesses to assist the Committee with its work.

There have been no other changes to the Committee's membership during the year. We hope that you find this information helpful in understanding the work of the Committee.

Our dialogue with our shareholders and other stakeholders is valued greatly and we welcome your feedback on this Report.

Philip Broadley
Chairman of the Audit Committee

[1] When reviewing the Company's 2018 Annual Report and Accounts, the FRC made clear to the Company the limitations of its review as follows:
> Its review is based on the 2018 Annual Report and Accounts only and does not benefit from a detailed knowledge of the Group's business or an understanding of the underlying transactions entered into.
> Communications from the FRC provide no assurance that the Company's 2018 Annual Report and Accounts are correct in all material respects and are made on the basis that the FRC (and its officers, employees and agents) accepts no liability for reliance on them by the Company or any third party, including but not limited to investors and shareholders.
> The FRC's role is not to verify information provided but to consider compliance with reporting requirements.

The role of the Committee and how we have complied

Committee membership and attendance

All Committee members are Non-Executive Directors and considered by the Board to be independent under the UK Corporate Governance Code. The Committee's members are Philip Broadley (Committee Chairman), Michel Demaré, Deborah DiSanzo and Sheri McCoy.

In December 2019, the Board determined that, for the purposes of the UK Corporate Governance Code, at least one member of the Committee had recent and relevant financial experience, and Philip Broadley and Michel Demaré were determined to be financial experts for the purposes of the Sarbanes-Oxley Act. The Board also determined that the members of the Committee as a whole had competence relevant to the sector in which the Company operates, as Philip Broadley has served as a Non-Executive Director of the Company since April 2017, Michel Demaré has experience of working in an innovation and science-driven environment from his role as Chairman of Syngenta, Deborah DiSanzo has healthcare sector experience from her role at IBM Watson Health, and Sheri McCoy has had a 30-year career in the pharmaceutical industry. The Board of Directors' biographies on pages 98 and 99 contain details of each Committee member's skills and experience.

The Committee held six meetings in 2019 and the Committee members' attendance is set out in the table on page 97.

Role and operation of the Committee

The Committee's terms of reference are available on our website, www.astrazeneca.com.

The Committee regularly reports to the Board on how it discharges its main responsibilities, which include the following standing items:

> monitoring the integrity of the Company's financial reporting and formal announcements relating to its financial performance, and reviewing significant financial reporting judgements and estimates contained within them
> monitoring the work of the Disclosure Committee which manages the Company's other public disclosures
> ensuring the Company's Annual Report and Accounts presents a fair, balanced and understandable assessment of the Company's position and prospects by carrying out a formal review of the documentation and receiving a year-end report from management on the internal controls, governance, compliance, assurance and risk management activities that support the assessment
> reviewing the effectiveness of the Company's internal financial controls, internal non-financial controls, risk management systems (including whistleblowing procedures) and compliance with laws and the AstraZeneca Code of Ethics
> monitoring and reviewing the role, resources and effectiveness of the Group's IA function and its Compliance function
> reviewing the effectiveness of the external audit process and overseeing the Group's relationship with its external auditor
> monitoring and reviewing the external auditor's independence and objectivity
> ensuring the provision of non-audit services by the external auditor are appropriate and in accordance with the policy approved by the Committee
> making recommendations to the Board for seeking shareholder approval relating to the appointment, reappointment and removal of the external auditor, and to approve the remuneration and terms of engagement of the external auditor
> monitoring the Company's response to any external enquiries and investigations regarding matters within the Committee's area of responsibility.

Following each Committee meeting, the Committee Chairman informs the Board of the principal matters the Committee considered and of any significant concerns it has or that have been reported by the external auditor, the IA function or the Group Compliance function. The Committee identifies matters that require action or improvement and makes recommendations on the steps to be taken. The Committee's meeting minutes are circulated to the Board.

The Committee's work is supported by valuable insight gained from its interactions with other Board Committees, senior executives, managers and external experts. The Committee meetings are routinely attended by: the CFO; the General Counsel; the Vice-President Global Sustainability and Deputy Chief Compliance Officer; the Vice-President, IA; the Vice-President Finance, Group Controller; and the Company's external auditor. The CEO attends when required by the Committee.

In addition, the Committee, and separately the Committee Chair, meet privately with: the CFO; the Vice-President Global Sustainability and the Deputy Chief Compliance Officer; the General Counsel; the Vice-President, IA; and the Company's external auditor on an individual basis to ensure the effective flow of material information between the Committee and management.

Regulation

The Committee considers that the Company has complied with the Competition and Markets Authority's Statutory Audit Services for Large Companies Market Investigation (Mandatory Use of Competitive Tender Processes and Audit Committee Responsibilities) Order 2014 in respect of its financial year commencing 1 January 2019.

Principal activities focused on by the Committee in 2019

During 2019 and in January 2020, the Committee considered and discussed the following items:

Financial reporting

- Key elements of the Financial Statements and the estimates and judgements contained in the Group's financial disclosures. Accounting matters considered included the areas described in the Financial Review under 'Critical accounting policies, judgements and estimates' (with a focus on accounting issues relevant to revenue recognition, litigation and taxation matters, goodwill and intangible asset impairment) from page 91.
- Monitoring the accounting for Collaboration Revenue in the Group's Consolidated Statement of Comprehensive Income arising from externalisation and/or collaboration activities, including the collaboration with Daiichi Sankyo announced in March 2019.
- The Company's issue of additional shares in April 2019.
- The appropriateness of management's and the external auditor's analysis and conclusions on judgemental accounting matters.
- The completeness and accuracy of the Group's financial performance against its internal and external key performance indicators.
- The going concern assessment and adoption of the going concern basis in preparing this Annual Report and the Financial Statements. More information on the basis of preparation of Financial Statements on a going concern basis is set out in the Financial Statements on page 173.
- The preparation of the Directors' viability statement and the adequacy of the analysis supporting the assurance provided by that statement.
- Adoption of IFRS 16 'Leases' in the Group's 2019 Financial Statements; adoption of IFRIC 23 'Uncertainty over Income Tax Treatments'; the anticipated amendment to IFRS 3 on the definition of business combinations; iXBRL tagging requirements; and developments in payment practice reports.
- The external auditor's reports on its audit of the Group Financial Statements, and reports from management, IA, Global Compliance and the external auditor on the effectiveness of our system of internal controls and, in particular, our internal control over financial reporting.
- Compliance with applicable provisions of the Sarbanes-Oxley Act. In particular, the status of compliance with the programme of internal controls over financial reporting implemented pursuant to Section 404 of that Act.

For more information, see Sarbanes-Oxley Act Section 404 in the Financial Review on page 94.

Risk and compliance

- The Group's principal, enduring and emerging risks, including the Group's risk management approach, risk reporting framework and risk mitigation. The Committee also considered how the risk management process was embedded in the Group and assured itself that management's accountability for risks was clear and functioning.
- Quarterly reports from the General Counsel on the status of significant litigation matters and governmental investigations.
- Quarterly reports of work carried out by IA and Finance, including the status of follow-up actions with management.
- The geographic presence, reach and capabilities of the IA and Compliance functions and the appropriateness of the Group's resource allocation for these vital assurance functions.
- Quarterly reports from Global Compliance regarding key compliance incidents (both substantiated and unsubstantiated), trends arising and the dispersion of incidents across the Group's business functions and management hierarchy, including any corrective actions taken so that the Committee could assess the effectiveness of controls, and monitor and ensure the timeliness of remediation.
- Data from reports made by employees via the AZethics helpline, online facilities and other routes regarding potential breaches of the Code of Ethics, together with the results of enquiries into those matters.
- The monitoring, review, education and improvements made to support assurance that the risk of modern slavery and human trafficking is eliminated, to the fullest extent practicable, from AstraZeneca's supply chain.

Further information about the Principal Risks faced by the Group is set out in the Risk Overview section from page 74.

Principal activities focused on by the Committee in 2019 *continued*

External audit	> Monitoring the effectiveness and quality of the external audit process through: examination and review of the coverage provided by the external auditor's audit plan, and their performance against it; management's feedback on the conduct of the audit; and considering the level of and extent to which the auditors challenged management's assumptions.	> Reviewing quarterly reports from the external auditor over key audit and accounting matters, and business processes, internal controls and IT systems. > Audit and non-audit fees of the external auditor during the year, including the objectivity and independence of the external auditor through the application of the Audit and Non-Audit Services Pre-Approval Policy as described further on page 124. Further information about the audit and non-audit fees for 2019 is disclosed in Note 30 to the Financial Statements on page 225.
Performance assessment	> An effectiveness review of IA by considering its performance against the internal audit plan and key activities. IA provided assurance over compliance with significant policies, plans, procedures, laws and regulations, as well as risk-based audits across a broad range of key business activities, strengthened its thematic reporting to the business, and adapted the audit plan to respond to new or arising risks. The Committee noted IA's continued contributions in supporting and delivering value to the business and the Committee during the year. The Committee supports IA's continued efforts to deploy its resources in line with the shape and size of the overall organisation.	> The Committee conducted the annual evaluation of its own performance, with each Committee member responding to a web-based questionnaire prepared by an external third party. The effectiveness of the Committee was rated highly overall. The amount of time devoted by the Committee to its responsibilities was noteworthy. It was thought that the Committee had achieved a good balance of time devoted to controls, risk and accounting. It was recommended that there continued to be more targeted deep dives on specific areas of focus. It was felt that there continued to be opportunities to enhance working with the Science Committee on risk and governance matters with respect to medical or R&D activities outside of financial controls.
Business updates	> An overview of the Group's manufacturing and supply activities, including product security, capacity management, inventory management, and technology trends. > Assessing the implementation impact of the Group's organisational changes announced in January 2019 on the Group and its financial systems. > An overview of the Group's approach to managing material intellectual property and product liability litigation matters.	> An overview of the Group's GxP risk management, including outcomes of regulatory inspections, GxP risk management processes and oversight, key active and emerging risk areas, the Quality Assurance (QA) Audit programme, and the evolution of the role of QA. > Regular updates from the IS/IT team on matters including: the alignment of critical systems and information assets to the Group's cyber defence capability; enhancing segregated networks; and the Group's framework for identifying, mitigating and remediating cyber-risk and data breach exposure arising from its use of third-party vendors, including potential legal and regulatory liability.

Significant financial reporting issues considered by the Committee in 2019

Reporting issue	Rationale	Committee response	Committee conclusion/ actions taken
Revenue recognition Financial Review from page 78 and Note 1 to the Financial Statements from page 180.	The US is our largest single market and sales accounted for 33% of our Product Sales in 2019. Revenue recognition, particularly in the US, is affected by rebates, chargebacks, returns, other revenue accruals and cash discounts.	The Committee pays attention to management's estimates of these items, its analysis of any unusual movements and their impact on revenue recognition informed by commentary from the external auditor.	The Committee receives regular reports from management and the external auditor on this complex area. The US market remains highly competitive with diverse marketing and pricing strategies adopted by the Group and its peers. The Committee recognised the close monitoring and control by management to maintain the accuracy in forecasting for managed market rebates and excise fees and the stabilisation of the overall gross-to-net deductions.
Collaboration Revenue Financial Review from page 78 and Note 1 to the Financial Statements from page 180.	As a result of the growing importance of collaborations to AstraZeneca, an update to the presentation of Total Revenue within its Statement of Comprehensive Income was announced in March 2019. Effective from 1 January 2019, Total Revenue includes the updated category of Collaboration Revenue, which replaces the category of Externalisation Revenue. Collaboration Revenue comprises upfronts, milestone receipts and royalties and other income arising from transactions involving AstraZeneca's medicines or transactions where AstraZeneca has acquired an interest in a medicine and entered into an active collaboration with the seller. Externalisation Revenue only included income arising from transactions involving AstraZeneca's medicines.	The Committee considered the proposed new presentation of revenue and discussed the proposed changes in detail with management. The Committee noted the presentation of equivalent income by AstraZeneca's peer organisations.	The Committee was satisfied with the accounting and reporting assessment performed by management and was satisfied with the adoption of this new policy.
Daiichi Sankyo collaboration accounting	The Daiichi Sankyo collaboration required a judgement on whether the collaboration resulted in a business combination or whether it should be accounted for as an asset acquisition. Management had concluded that the collaboration was an asset acquisition.	The Committee discussed the components that would constitute a business, and therefore a business combination under IFRS 3.	The Committee considered and supported the conclusion reached by management that the collaboration was an asset acquisition rather than a business combination, and accounted for accordingly.
Operating Segments Financial Review from page 78 and Note 6 to the Financial Statements from page 185.	In January 2019 the Group announced key changes to the way the commercial and R&D organisations were structured driving a reassessment of the Group's Operating Segment reporting requirements. Management concluded that the business continued to operate as one Operating Segment.	The Committee discussed and understood the key changes to the Group structure along with the resulting changes made to internal reporting used by the Chief Operating Decision Maker on which to base key strategic and resource allocation decisions.	The Committee considered the factors presented and was satisfied that they supported the conclusion that there should be no change to management's determination that the business continued to operate as one Operating Segment following the reorganisation.

Significant financial reporting issues considered by the Committee in 2019 *continued*

Reporting issue	Rationale	Committee response	Committee conclusion/ actions taken
Valuation of intangible assets Financial Review from page 78 and Note 10 to the Financial Statements from page 190.	The Group carries significant intangible assets on its balance sheet arising from the acquisition of businesses and IP rights to medicines in development and on the market. Each quarter, the CFO reports on the carrying value of the Group's intangible assets and, in respect of those intangible assets that are identified as at risk of impairment, the difference between the carrying value and management's current estimate of discounted future cash flows for 'at risk' products (the headroom). Products will be identified as 'at risk' because the headroom is small or, for example, in the case of a medicine in development, there is a significant development milestone such as the publication of clinical trial results which could significantly alter management's forecasts for the product.	The Committee considered the impairment reviews of the Group's intangible assets. Significant reviews included the full impairment of the value of *Epanova* following the decision to close the Phase III STRENGTH trial, and the partial impairments of *Bydureon*, *Qtern*, *Eklira*/*Tudorza* and *Flumist*.	The Committee assured itself of the integrity of the Group's accounting policy and models for its assessment and valuation of its intangible assets, and related headroom, including by reviewing the internal and external estimates and forecasts for the Group's cost of capital relative to the broader industry. The Committee was satisfied that the Group had appropriately accounted for the identified impairments.
Litigation and contingent liabilities Note 29 to the Financial Statements from page 220.	AstraZeneca is involved in various legal proceedings considered typical to its business and the pharmaceutical industry as a whole, including litigation and investigations relating to product liability, commercial disputes, infringement of IP rights, the validity of certain patents, anti-trust law, and sales and marketing practices.	The Committee was regularly informed by the General Counsel of, and considered management and the external auditor's assessments about, IP litigation, actions, governmental investigations, and claims that might result in fines or damages against the Group, to assess whether provisions should be taken and, if so, when and in what amount.	Of the matters the Committee considered in 2019, the more significant included: the favourable resolution of the *Calquence* IP litigation and the continued defence of the *Nexium* and *Prilosec* product liability litigation in the US. The Group continues to defend the allegations arising from the *Seroquel* Antitrust, Iraq DOJ, Array, and Amplimmune litigations, and to manage patent challenges to *Symbicort*, *Tagrisso* and *Farxiga* in the US, *Faslodex* in Europe and *Brilinta* in China. The Committee was satisfied that the Group was effectively managing its litigation risks including seeking appropriate remedies and continuing to vigorously defend its IP rights.
Tax charges and liabilities AstraZeneca's 'Approach to Taxation', which was published in December 2019 and covers its approach to governance, risk management and compliance, tax planning, dealing with tax authorities and the level of tax risk the Company is prepared to accept, can be found on our website, www.astrazeneca.com. Note 4 to the Financial Statements from page 183.	The Group has business activities around the world and incurs a substantial amount and variety of business taxes. AstraZeneca pays corporate income taxes, customs duties, excise taxes, stamp duties, employment and many other business taxes in all jurisdictions where due. In addition, we collect and pay employee taxes and indirect taxes such as Value Added Tax (VAT). The taxes the Group pays and collects represent a significant contribution to the countries and societies in which we operate. Tax risk can arise from unclear laws and regulations as well as differences in their interpretation.	The Committee reviews the Group's approach to tax, including governance, risk management and compliance, tax planning, dealings with tax authorities and the level of tax risk the Group is prepared to accept.	The Committee was satisfied with the Group's practices regarding tax liabilities, including, most notably, the tax accounting impact of collaboration and divestment activity.

Significant financial reporting issues considered by the Committee in 2019 *continued*

Reporting issue	Rationale	Committee response	Committee conclusion/ actions taken
Retirement benefits Financial Review from page 78 and Note 22 to the Financial Statements from page 201.	Accounting for defined benefit pension and other retirement benefits is an important area of focus, recognising both the present value of the Group's pension fund liabilities and the sensitivity of this amount to small changes in interest rates, and the wider regulatory environment.	The Committee monitors, on a quarterly basis, the Group's funding position for its principal defined benefit pension obligations in Sweden, the UK and the US and the funding requirements in each case. The Committee reviews the Group's global funding objective and principles on an annual basis, the level of engagement with local fiduciary bodies, and comparisons of funding solvency relative to the wider market. In addition, the Committee reviews the reasonableness of the key actuarial assumptions used to determine the value of the Group's liabilities.	The Committee was reassured by the sustained improvement in the US pension scheme funding position, and the Group's engaged and balanced approach to managing the risks associated with the funding of the UK and Swedish pension funds. The Committee is cognisant of the need to adhere to local funding regulations and best practice and to the security provided by the Group which underwrites obligations to members. The Committee was satisfied that the Group's contribution policy and actuarial assumptions used were appropriate during the year.

Fair, balanced and understandable assessment

As in previous years, at the instruction of the Board, the Committee undertook an assessment of this Annual Report to ensure that, taken as a whole, it is fair, balanced and understandable and provides the information necessary for shareholders to assess the Company's position and performance, business model and strategy. The Committee reviewed the Company's governance structure and assurance mechanisms for the preparation of the Annual Report and, in particular, the contributor and SET member verification process. The Committee received an early draft of the Annual Report to review its proposed content and the structural changes from the prior year and to undertake a review of the reporting for the year, following which the Committee members provided their individual and collective feedback. In addition, in accordance with its terms of reference, the Committee (alongside the Board) took an active part in reviewing the Company's quarterly announcements and considered the Company's other public disclosures which are managed through its Disclosure Committee. To further aid their review, the Committee also received a summary of the final Annual Report's content, including the Company's successes and setbacks during the year and an indication of where they were disclosed within the document.

The processes described above allowed the Committee to provide assurance to the Board to assist it in making the statement required of it under the UK Corporate Governance Code, which is set out on page 111.

Audit Committee Report *continued*

Internal controls

The Committee receives a report of the matters considered by the Disclosure Committee during each quarter. At the January 2020 meeting, the CFO presented to the Committee the conclusions of the CEO and the CFO following the evaluation of the effectiveness of our disclosure controls and procedures required by Item 15(a) of Form 20-F at 31 December 2019. Based on their evaluation, the CEO and the CFO concluded that, as at that date, the Company maintained an effective system of disclosure controls and procedures.

There was no change in our internal control over financial reporting that occurred during the period covered by this Annual Report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

For further information on the Company's internal controls, please refer to the Audit, Risk and Internal Control section in the Corporate Governance Report on page 111.

External auditor

Following a competitive tender carried out in 2015, PwC were appointed as the Company's external auditor for the financial year ending 31 December 2017. In April 2019, PwC were reappointed as the Company's auditor for the financial year ending 31 December 2019. Richard Hughes continues to be the lead audit partner at PwC.

Non-audit services and safeguards

The Committee maintains a policy (the Audit and Non-Audit Services Pre-Approval Policy) for the pre-approval of all audit services and permitted non-audit services undertaken by the external auditor, the principal purpose of which is to ensure that the independence of the external auditor is not impaired. The policy covers three categories of work: audit services; audit-related services; and tax services. The policy is significantly restricted such that no tax services are pre-approved under the policy, and no tax services were performed for the year ended 31 December 2019, with the exception of tax audits and tax regulatory certificates issued by the external auditor. The policy defines the type of work that falls within each of these categories and the non-audit services that the external auditor is prohibited from performing under the rules of the SEC and other relevant UK and US professional and regulatory requirements.

The pre-approval procedures permit certain audit and audit-related services to be performed by the external auditor during the year, subject to annual fee limits agreed with the Committee in advance. Pre-approved audit and audit-related services below the clearly trivial threshold (within the overall annual fee limit) are subject to case-by-case approval by the Vice-President Finance, Group Controller.

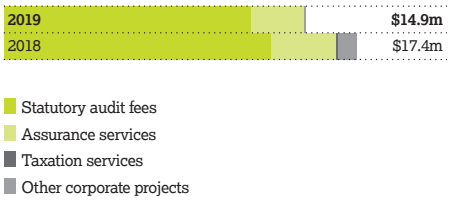
The pre-approved audit services included services in respect of the annual financial statement audit (including quarterly and half-year reviews), attestation opinions under section 404 of the Sarbanes-Oxley Act, statutory audits for subsidiary entities, and other procedures to be performed by the independent auditor to be able to form an opinion on the Group's consolidated Financial Statements. The pre-approved audit-related services, which the Committee believes are services reasonably related to the performance of the audit or review of the Company's Financial Statements, included certain services related to acquisitions and disposals, financial statement audits of employee benefit plans, and review of internal controls. The Committee is mindful of the 70% non-audit services fee cap under EU regulation, together with the overall proportion of fees for audit and non-audit services in determining whether to pre-approve such services.

The CFO (supported by the Vice-President Finance, Group Controller), monitors the status of all services being provided by the external auditor. Authority to approve work exceeding the pre-agreed annual fee limits and for any individual service above the clearly trivial threshold is delegated to the Chairman of the Committee together with one other Committee member in the first instance. A standing agenda item at Committee meetings covers the operation of the pre-approval procedures and regular reports are provided to the full Committee.

All non-audit services other than the pre-approved audit and audit-related services, require approval by the Committee on a case-by-case basis. Given the nature of the Group's non-audit services, no services required approval by the Committee. In 2019, PwC provided non-audit services including an interim review of the results of the Group for the six months ended 30 June 2019, and audit-related assurance services in respect of the Group's debt issuance activities, including its US shelf registration prospectus renewal.

Fees for non-audit services amounted to 7% of the fees paid to PwC for audit, audit-related and other services in 2019 (2018: 13%).

Audit/non-audit services



PwC were considered better-placed than any alternative audit firm to provide these services in terms of their familiarity with the Company's business, skills, capability and efficiency. All such services were either within the scope of the pre-approved services set out in the Audit and Non-Audit Services Pre-Approval Policy or were presented to Committee members for pre-approval.

Further information on the fees paid to PwC for audit, audit-related and other services is provided in Note 30 to the Financial Statements on page 225.

Assessing external audit effectiveness

In accordance with its normal practice, the Committee considered the performance of PwC and its compliance with the independence criteria under the relevant statutory, regulatory and ethical standards applicable to auditors.

The Committee assessed PwC's effectiveness principally against four key factors, namely: judgement; mindset and culture; skills, character and knowledge; and quality control. As part of that assessment, it also took account of the views of senior management within the Finance function and regular Committee attendees.

The Committee concluded that the PwC audit was effective for the financial year ended 31 December 2019.

In January 2020, the Committee recommended to the Board the reappointment of PwC as the Company's auditor for the financial year ending 31 December 2020. Accordingly, a resolution to reappoint PwC as auditors will be put to shareholders at the Company's AGM in April 2020.

Directors' Remuneration Report

"We have sought to be clear and transparent in how we link remuneration of our executives to successful delivery of our strategy and shareholder returns."

"The stretching targets set in 2019 incentivised strong performance, resulting in total shareholder return over the year of 26%."

Changes to our Remuneration Reporting

We have made a number of changes to the Directors' Remuneration Report this year to enhance transparency. We are also proposing a new Directors' Remuneration Policy for shareholder approval at our 2020 AGM.

The Directors' Remuneration Report now contains the following sections:

> Chairman's letter, page 125
> Remuneration at a glance, page 129
> How our performance measures for 2020 support the delivery of our strategy, page 130
> How the Remuneration Committee ensures targets are stretching, page 131
> Annual Report on Remuneration, page 132
> Directors' Remuneration Policy, page 149

As Chairman of the Remuneration Committee (the Committee), I am pleased to present AstraZeneca's Directors' Remuneration Report for the year ended 31 December 2019. 2019 has been another very successful year.

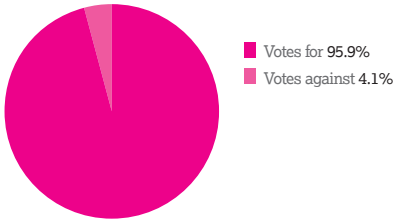
Our focus on our pipeline has resulted in continued positive growth in Product Sales. Our Revenue has created sufficient cash flow to fund future research and innovation, ensuring sustainable results for our patients, our employees and our shareholders.

For executive remuneration, the Committee focuses on a balanced delivery of financial growth, research innovation and shareholder return. We are confident that this approach has been instrumental in focusing our leaders to deliver the results we have achieved. We have sought to be clear and transparent in how we link remuneration of our executives to successful delivery of our strategy and shareholder returns.

In response to feedback from shareholders, we provided more details in our 2018 Remuneration Report to explain the context in which the Committee makes decisions. Our shareholders appreciated this improvement in disclosure and we were pleased to receive a vote of 95.9% in favour of our 2018 Remuneration Report at the 2019 AGM.

2019 AGM voting outcome

Directors' Remuneration Report



At the 2020 AGM, we will be seeking shareholder approval for a renewed Directors' Remuneration Policy (the Policy). The current Policy expires at the 2020 AGM and, although we believe it has served us well, we have taken this opportunity to review all elements of the Policy. This has enabled us to consider the new requirements of the 2018 UK Corporate Governance Code and practice in the global pharmaceutical talent market.

We have also taken into account the perspectives of shareholders, gathered from an extensive consultation undertaken during 2019. I met 16 of AstraZeneca's top shareholders over the course of three months to discuss our proposals and was pleased with the level of engagement, feedback and support received. I have summarised the new proposals later in this letter, and our new Policy can be found on pages 149 to 159.

Alongside considering the Policy, during 2019, as has been our practice for several years, the Committee reviewed broader workforce trends and analyses to assess the effectiveness of rewarding for performance in line with our principles. This included assessing an annual workforce remuneration review, demonstrating how variable pay is differentiated to reward performance and potential, the increasing representation of women at senior levels within the organisation (as at 31 December 2019, 45.4% of our employees at senior career levels are female), retention and higher promotion rates of high performers, the CEO pay ratio analysis and our gender pay gap analysis. Our approach to reward for the wider workforce is covered in more detail on page 145.

2019 performance highlights

2019 was a year of strong performance, with Product Sales growing by 12%. New Medicines delivered $9,906 million of sales in 2019, a growth of 59% representing 42% of Product Sales. Core earnings per share increased to $3.50 ($3.46 at budget exchange rates) with net cash flow from operating activities improving by $351 million compared to the prior year.

I would like to take this opportunity to highlight how our executives and employees have delivered against the 2019 Group scorecard. The stretching targets set in 2019 incentivised strong performance resulting in total shareholder return over the year of 26%. This was significantly ahead of the vast majority of our competitors and the broader FTSE 100 index in 2019, and higher than the value returned to shareholders in 2018 (24%).

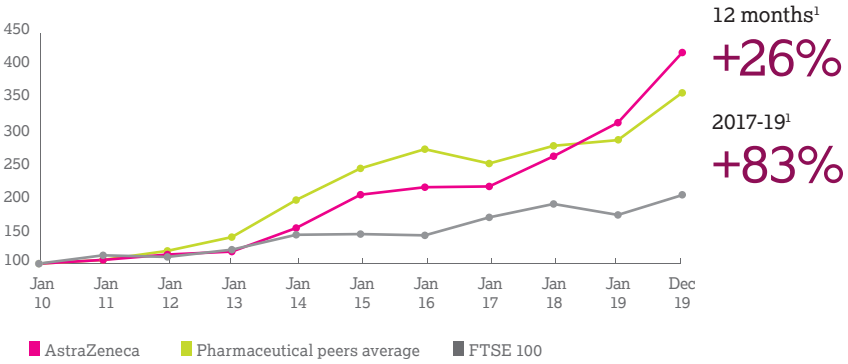
AstraZeneca's delivery of Phase III investment decisions, regulatory submissions and approvals has also been consistently strong relative to our peers and our investment. To assist the Committee in this consideration of performance, the Science Committee considers a range of data to assess AstraZeneca's performance relative to peers and then informs the Committee.

While the Committee has taken into account some disappointments, such as the impact on 2019 Core earnings and the intangible impairment charge arising from the decision to close the Phase III STRENGTH trial for *Epanova* in early 2020, on balance the positives have far outweighed the negatives. As outlined from page 54, our commercial and scientific progress in 2019 has been strong across all our therapy areas, but I would like to highlight some key achievements.

Oncology: 114,000 new patients in 70 countries have been treated with a new AstraZeneca oncology medicine in 2019, with *Imfinzi* and *Lynparza* achieving blockbuster status, with each now generating more than $1 billion in sales in the year.

How we have performed in 2019

Total shareholder return (TSR)



12 months[1]
+26%

2017-19[1]
+83%

[1] 12 month TSR and 36 month TSR have been calculated using three-month calendar averages, from 1 October to 31 December, prior to the start and at the end of the relevant periods.

Delivery against strategy – 2019 Group scorecard performance[2]

	Target	2019 outcome
Deliver Growth and Therapy Area Leadership		
Product Sales from growth platforms	$20,232m	**$21,004m**
Accelerate Innovative Science		
Pipeline progression events	17	**17**
Regulatory events	28	**37**
Achieve Group Financial Targets		
Cash flow	$3.9bn	**$4.2bn**
Core EPS	$3.50	**$3.46**
Total Product Sales	$22.8bn	**$23.8bn**

[2] For reconciliation with KPIs disclosed from page 20 of this Annual Report and a description of performance measures, see page 135.

We also made a strong start to our collaboration with Daiichi Sankyo on *Enhertu*, achieving a regulatory approval in the US in December.

BioPharmaceuticals: in Respiratory, launches of *Fasenra* continued, now having benefitted some 50,000 patients with severe asthma. In CVRM, the positive outcome of the DAPA-HF trial meant that *Farxiga* became the first in its class to demonstrate efficacy and safety data for the treatment of patients with heart failure, with and without type-2 diabetes, on top of standard of care.

We have sustained our strong growth trajectory across Emerging Markets, most notably in China, delivering approvals and launches for our New Medicines and accelerating our performance in all therapy areas in this important market. This progress has been supported by another year of excellent execution by our Operations team. Their work led to the successful outcome of 31 regulatory inspections with zero critical observations last year. Our inspection record builds trust amongst regulatory authorities globally and enhances our already high reputation in this space. Further detail can be found in the Strategic Report from page 37.

2019 remuneration outcomes

The Committee always seeks to ensure that the remuneration of our Executive Directors reflects the underlying performance of the business. When approving outcomes, we therefore considered the Group scorecard along with wider business and individual performance over 2019, including other achievements across the enterprise, such as advancing our Great Place to Work priorities and environmental, social and governance (ESG) goals. In that context, we believe that the payments outlined below fairly reflect performance.

Annual bonus – 83.3% of maximum

When determining bonus outturns, the Committee considered the formulaic outcome from the Group scorecard along with wider business and individual impact and performance in 2019, including ESG achievements. The Committee exercised its judgement and awarded annual bonuses equivalent to 83.3% of maximum (150% of salary) and 83.3% of maximum (125% of salary) to Mr Soriot and Mr Dunoyer respectively. Details of the factors considered to determine the bonuses are provided on pages 134 to 136.

One third of each Executive Director's bonus for 2019 will be deferred into AstraZeneca shares for three years to ensure further alignment with shareholders. This will increase to 50% deferral for the 2020 performance year under the new Policy.

Long-term incentives

2017 PSP – 97% of maximum

The three-year performance period for Performance Share Plan (PSP) awards granted to Executive Directors in 2017 ended on 31 December 2019. Awards will vest at 97% of maximum, as shown on page 138. This is in part driven by our strong TSR performance of 83% over the performance period, ranking second (upper quartile) in our comparator group of pharmaceutical peers.

2016 AZIP – 50% of maximum

The final award under the AstraZeneca Investment Plan (AZIP) was granted in 2016. The two performance tests (progressive dividend and 1.5 times dividend cover) attached to this award were both met in two of the four years in the performance period ended 31 December 2019. This will result in 50% of this AZIP award vesting. The shares are subject to a further four-year holding period.

Policy review and remuneration in 2020

The Directors' Remuneration Policy is due for renewal and shareholders are being asked to approve a new version of the Policy at the Company's AGM on 29 April 2020. The new Policy is intended to remain in effect for three years from the date of the AGM. During 2019, the Committee reviewed the Policy to ensure that it continues to:

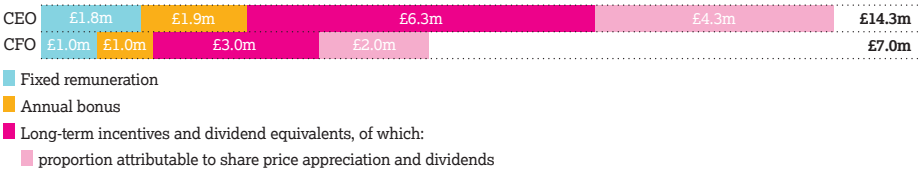
- be aligned with corporate governance best practice
- support the Company's ability to recruit and retain executive talent to deliver against its strategy; and
- promote the delivery of long-term shareholder value.

The Committee took shareholders' feedback into account on the proposed changes to the Policy, and we would like to take this opportunity to thank all those who took part for their constructive engagement.

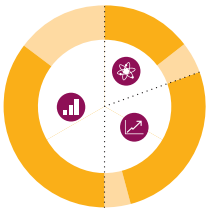
Our consultation focused on a number of key areas: simplification and alignment to strategy, ensuring flexibility to meet the challenges of a highly competitive global talent market, and improved shareholder alignment. In developing our proposals, the Committee has been mindful of the broader context and the need to create an environment where orderly succession of key individuals over the coming years can be planned.

2019 remuneration outcomes

Single total figure of remuneration



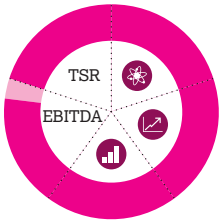
2019 Annual bonus scorecard performance



	Achieved	Lapsed
Accelerate Innovative Science	75%	25%
Deliver Growth and Therapy Area Leadership	88%	12%
Achieve Group Financial Targets	71%	29%

Achieved Lapsed

2017 PSP performance



	Achieved	Lapsed
Achieve Scientific Leadership	100%	0%
Return to Growth	100%	0%
Achieve Group Financial Targets – Cash flow	100%	0%
EBITDA	85%	15%
Relative TSR	100%	0%

Achieved Lapsed

The Committee's considerations included the market positioning of our CEO's remuneration opportunity against our FTSE 30 and global pharmaceutical comparator groups and we recognise that our CEO's total compensation opportunity has fallen behind that of his peers in the global pharmaceutical talent market. This is illustrated in the chart on the following page, showing Mr Soriot's on-target opportunity relative to these comparator groups. The importance of retaining our talented and successful CEO has been a key theme in consultation discussions with our shareholders.

Changes to the Policy and how it will be implemented are summarised on the following page and in more detail on page 149. The Policy is set out from page 150.

There will be no base salary increase for the two Executive Directors, effective 1 January 2020. The UK all-employee salary increase budget for 2020 is 3%.

Target annual bonus opportunity for Mr Soriot and Mr Dunoyer in 2020 remains unchanged at 100% and 90% of base salary respectively. We have sought to bring the approach for the Executive Directors in line with the wider workforce, such that maximum bonus equals 200% of target. Therefore, the maximum bonus opportunity has been changed to 200% of salary for Mr Soriot and to 180% of salary for Mr Dunoyer. Half (previously one third) of any earned bonus will be deferred into shares.

Awards under the PSP will be unchanged for Mr Dunoyer at 400% of base salary, and increased to 550% of base salary (from 500%) for Mr Soriot, subject to shareholder approval of our revised Policy and amended rules of the PSP at the AGM.

Directors' Remuneration Report *continued*

The Committee is mindful of the spectrum of views amongst investors in terms of timescale to reduce executive directors' contractual pension contributions to the average of the wider workforce. Our approach, making a very significant reduction to our CEO's pension now, and capping the contribution going forward, was supported by the vast majority of our shareholders during consultation. We will continue to listen to our shareholders' views on this subject as we consider implementation of the Policy over the coming years.

ESG metrics

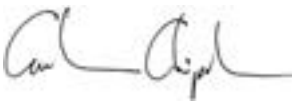
AstraZeneca recognises the importance of ESG factors in operating a sustainable business, and has made a number of clear commitments in this area – for example, Ambition Zero Carbon, our strategy to eliminate emissions by 2025 and be carbon negative by 2030.

Currently, the Committee considers ESG achievements when determining bonus outturns in the round, beyond the formulaic scorecard. Looking ahead, the Committee will be seeking to include one or more ESG metrics into executive incentive arrangements for the 2021 performance year, to underline the importance we place on these issues.

Next steps

I hope that you find this Remuneration Report clear in explaining the implementation of our Remuneration Policy during 2019. We trust that we have provided the information you need to be able to support the resolution to be put to shareholders on the new Policy and this Remuneration Report at the Company's AGM in April 2020.

Our ongoing dialogue with shareholders and other stakeholders is valued greatly and, as always, we welcome your feedback on this Directors' Remuneration Report.



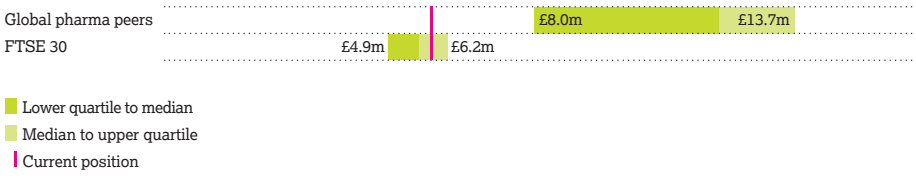
Graham Chipchase
Chairman of the Remuneration Committee

2020 Remuneration Policy

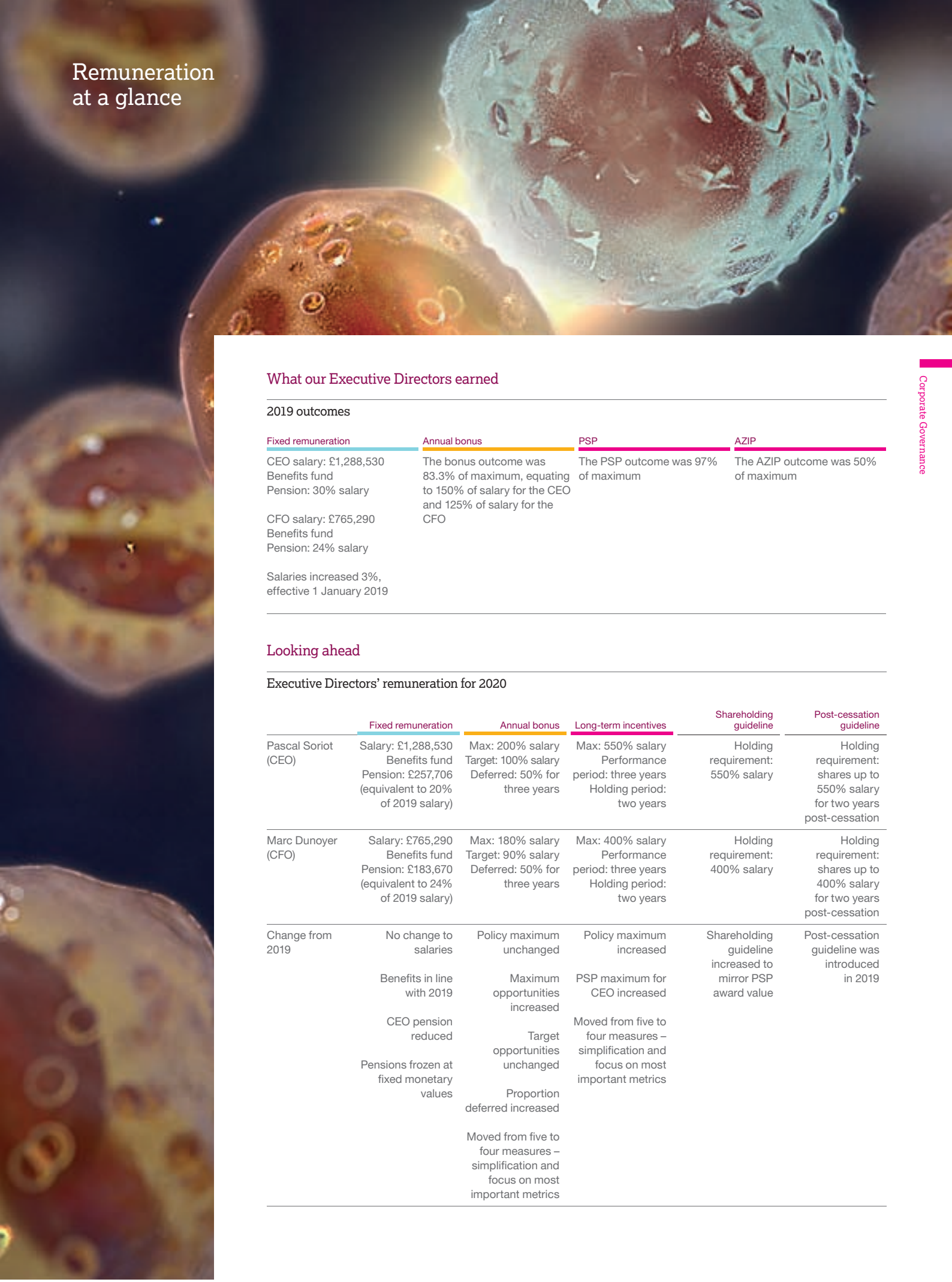
Pension alignment with wider workforce	> Pension level for CEO has been significantly reduced from 30% of salary to 20% > Monetary values of current Executive Directors' pensions have been fixed, so that they reduce further as a percentage of salary overtime towards wider workforce level > Pension for any newly appointed Executive Directors will be in line with the applicable wider workforce level
Simplified and strengthened link to strategy, with stretching targets	> We conducted a thorough review of the performance measures to ensure continued alignment with strategy > The annual bonus and PSP have been simplified by reducing the number of performance measures from five to four in each and moving our focus from growth platforms to Total Revenue > The Committee has, and will continue to, rigorously assess performance targets under each measure to ensure goals are sufficiently stretching
Responding to competitive pressure of global pharmaceutical talent market	We recognise that our CEO's total compensation opportunity has fallen behind that of his peers in the global pharmaceutical talent market. Given the importance of retaining our talented and successful CEO, while recognising the need to align pay to performance and investor experience, the renewed Policy and its implementation for 2020 will be as follows: > No change to annual bonus Policy maximum > For 2020, CEO maximum bonus opportunity will be below the Policy maximum at 200% of salary (2019: 180%) and the proportion of bonus deferred will be increased (see below) > Increased maximum limit under PSP from 500% to 550% of salary. The PSP awards will be subject to appropriately stretching targets > In the context of the above changes, we are proposing no salary increase for 2020
Improved shareholder alignment	> Increased mandatory bonus deferral into shares from 33% to 50% of any bonus earned from performance year 2020 onwards > Increased shareholding guidelines to align with the respective Executive Director's annual PSP opportunity

Market positioning of CEO on-target remuneration for 2019

CEO



Remuneration includes base salary, target annual bonus and the expected value of Long-term Incentives (LTI) awards. For Mr Soriot in 2019, target annual bonus was 100% of base salary and the expected value of LTI awards was 250% of base salary. Benchmarking data has been provided by the Committee's independent adviser.



Remuneration at a glance

What our Executive Directors earned

2019 outcomes

Fixed remuneration	Annual bonus	PSP	AZIP
CEO salary: £1,288,530 Benefits fund Pension: 30% salary CFO salary: £765,290 Benefits fund Pension: 24% salary Salaries increased 3%, effective 1 January 2019	The bonus outcome was 83.3% of maximum, equating to 150% of salary for the CEO and 125% of salary for the CFO	The PSP outcome was 97% of maximum	The AZIP outcome was 50% of maximum

Looking ahead

Executive Directors' remuneration for 2020

	Fixed remuneration	Annual bonus	Long-term incentives	Shareholding guideline	Post-cessation guideline
Pascal Soriot (CEO)	Salary: £1,288,530 Benefits fund Pension: £257,706 (equivalent to 20% of 2019 salary)	Max: 200% salary Target: 100% salary Deferred: 50% for three years	Max: 550% salary Performance period: three years Holding period: two years	Holding requirement: 550% salary	Holding requirement: shares up to 550% salary for two years post-cessation
Marc Dunoyer (CFO)	Salary: £765,290 Benefits fund Pension: £183,670 (equivalent to 24% of 2019 salary)	Max: 180% salary Target: 90% salary Deferred: 50% for three years	Max: 400% salary Performance period: three years Holding period: two years	Holding requirement: 400% salary	Holding requirement: shares up to 400% salary for two years post-cessation
Change from 2019	No change to salaries Benefits in line with 2019 CEO pension reduced Pensions frozen at fixed monetary values	Policy maximum unchanged Maximum opportunities increased Target opportunities unchanged Proportion deferred increased Moved from five to four measures – simplification and focus on most important metrics	Policy maximum increased PSP maximum for CEO increased Moved from five to four measures – simplification and focus on most important metrics	Shareholding guideline increased to mirror PSP award value	Post-cessation guideline was introduced in 2019

How our performance measures for 2020 support the delivery of our strategy

As part of our consultations with major shareholders during 2019, we discussed which performance measures should be used for the annual bonus and PSP awards in 2020.

AstraZeneca aims to continue to deliver great medicines to patients while maintaining cost discipline and a flexible cost base, driving operating leverage and increased cash generation. To incentivise and reward delivery of great performance over the short and longer term, the Committee carefully considered the balance of science and financial measures between the annual bonus and PSP. Our focus on incentivising innovative science aligns with our patient-centric culture, as we strive to push the boundaries of science to deliver life-changing medicines to patients. This is reflected in a greater weighting for science measures across both plans in 2020. The mix of financial measures between the annual bonus scorecard and PSP reflects the focus required on near-term cost discipline and longer-term cash generation and creation of sustainable value for our shareholders. The 2020 performance measures are closely aligned with our strategic priorities, as shown below.

Read more about our strategic priorities from page 17.

Read more about the 2020 performance measures on pages 137 and 141.

Key

- Annual bonus
- PSP
- KPI

Strategic pillar

Accelerate Innovative Science

Remuneration performance measures

Science indices ● ● ○

Our science measures incentivise the development of new molecular entities (NMEs) and the maximisation of the potential of existing medicines.

Bonus performance is assessed on pipeline progressions through Phase II and Phase III clinical trials. These reflect the outcome of nearer-term strategic investment decisions, whereas in contrast PSP performance is assessed on the volume of NMEs in Phase III and the registration stage which reflects the outcome of longer-term strategic investment decisions.

Additionally, we measure regulatory submissions and approvals for bonus and regulatory approvals for PSP to drive the conversion of scientific progress into commercial revenue over the short term (bonus) and the longer term (PSP).

Together, these science measures incentivise innovation and sustainable success along the length and breadth of the pipeline, leading to commercial growth.

Strategic pillar

Deliver Growth and Therapy Area Leadership

Remuneration performance measure

Total Revenue ● ● ○

In 2020, a Total Revenue measure is included in the bonus and the PSP, reflecting the importance of incentivising focus on both the short and longer term for our growth to be sustainable. These measures incentivise revenue performance in line with the 2023 trajectory described at the time of the Pfizer bid in 2014.

Financial targets

Achieve Group Financial Targets

Remuneration performance measures

Cash flow ● ● ○

Extremely important for the phase of strategy our business has now entered, as we aim to sustain investment in our pipeline and therapy areas while at the same time meeting our capital allocation priorities. Cash flow is included in both the bonus and the PSP, so as to motivate a focus on the importance of both short and longer term cash flow generation and balance sheet strength.

Core EPS ● ○

Incentivises operational efficiency and cost discipline, remains a key measure of our profitability and is a key focus of our investors.

Total shareholder return (TSR) ●

Assessed relative to our peer group of companies, the measure rewards positive performance that our shareholders also directly benefit from. This measure incentivises outperformance versus our peer group, and promotes the delivery of long-term sustainable returns for our shareholders.

Strategic pillar

Be a Great Place to Work ●

Being a Great Place to Work is critical to delivering our ambition. Assessment of performance against this pillar is captured through a holistic review of each Executive Director's individual performance as part of the final determination of annual bonus, including consideration of our progress against our ESG aspirations through:

> Contribution to the enterprise – their achievement of embedding a culture of life-long learning and development, and performing as an enterprise team, as well as advancement of our inclusion and diversity strategy; and

> Contribution to society – their delivery across access to healthcare, environmental protection, ethics and transparency to lead in sustainability.

During 2020, the Committee intends to develop one or more ESG metrics to be introduced into executive remuneration arrangements in the 2021 performance year, to assess AstraZeneca's performance against its sustainability goals.

How the Remuneration Committee ensures targets are stretching

We set stretching targets which incentivise our leaders to deliver exceptional performance, to drive sustainable results for our patients, our employees and our shareholders. We take the following robust process to setting annual bonus and PSP targets:

Stage 1 – Target setting	Science targets are based on a cohort of scientific opportunities specified at the start of the performance period. Opportunities represent potential achievements through the pipeline, from early stage where our scientists work to discover new molecules, through to ultimately obtaining approvals and getting new medicines to patients. Rewarding success at each stage recognises the importance of creating and maintaining a long-term sustainable pipeline. Stretch of proposed targets is reviewed by the Science Committee taking into account factors such as past performance, the external regulatory environment and internal resourcing and efficiencies. Targets for realisation of these opportunities are ambitious.	Deliver Growth and Therapy Area Leadership and Achieve Group Financial Targets metrics align with the business's Long Range Plan (LRP), which sets out the financial framework for delivering our ambitious strategy over the short, medium and long term. The LRP process includes detailed business reviews during which plans and efficiencies of each unit are challenged, leading to a proposed LRP for the Board to review and challenge. The Committee sets targets based on the Board-approved LRP, considering consensus expectations, independent analytics and anticipated challenges and opportunities. This range of data is used by the Committee to ensure the stretching nature of performance targets is robustly tested. Additionally, the PSP TSR measure is designed to reward strong performance relative to our peers.
Stage 2 – Committee review and approval of targets	The Committee thoroughly reviews and challenges initial targets proposed by management, before final targets are agreed and approved. Draft targets are reviewed in December, with final target setting and approval in January, once the prior year's final results are available to inform decisions. The Committee is provided with considerable supporting material for each metric. For science measures, the Committee reviews and approves the full cohort of opportunities and receives briefings from senior science leaders within the business. These targets are set with oversight of the Science Committee.	Committee members participate in the full Board discussions on the strategy, LRP and budget which form the basis for the targets. The Committee considers how proposed financial targets align with the LRP and budget; prior years' outcomes (in absolute terms and against target); how the ambition has changed from the prior LRP and budget; external guidance the business has provided or plans to give; consensus from external financial analysts and factors it may be impacted by; and the underlying assumptions. Statistical analysis conducted by the Committee's independent adviser is also used to assess the proposals. This includes an assessment of historic levels of performance volatility.
Stage 3 – Performance assessment	The Committee tracks projected outcomes throughout the performance period. At the end of the period, final performance against each metric is assessed. Outcomes are calculated based on performance against each weighted metric. Each performance measure is assessed on a standalone basis, so that underperformance against one measure cannot be compensated for by overperformance against another.	The Science Committee independently considers and informs the Committee whether science achievements represent a fair and balanced outcome, reflecting genuine achievements and pipeline progression. Apart from Cash flow, which is set at actual rates of exchange, financial metrics are set at budget rates of exchange and evaluated at those rates at year end, which means they are not directly comparable year-on-year. The Committee is, however, provided with data to allow it to conduct year-on-year analyses.
Stage 4 – Determination of Executive Directors' bonuses	For annual bonus, the fairness of the formulaic Group scorecard outcome is considered in the context of overall business performance and the experience of shareholders. Such considerations include TSR performance and each Executive Director's personal impact on the delivery of the strategy, ESG performance and other organisational achievements, such as inclusion and diversity targets and the realisation of technology-based milestones. Each year there are important individual deliverables beyond the scorecard metrics which are taken into account when determining individual bonuses.	Having considered the Group scorecard outcome, overall business performance, the experience of shareholders and individual performance, the Committee will exercise its judgement carefully to determine a final bonus outcome for each Executive Director which is considered fair and appropriate for the year's performance and is in the best interests of shareholders.

"We set stretching targets which incentivise our leaders to deliver exceptional performance, to drive sustainable results for our patients, our employees and our shareholders."

2020 targets

- The 2020 Group scorecard and PSP targets require growth above prior year outturns
- Financial performance goals would require growth in excess of the average expected of the industry
- The Committee has reviewed the proposed targets against internal and external forecasts including market consensus and is comfortable that the level of stretch promotes exceptional performance

Annual Report on Remuneration

Key:

Audited

Audited information
Content contained within the Audited panel indicates that all the information within has been subject to audit.

Planned implementation for 2020
Content contained within a grey box indicates planned implementation for 2020.

Executive Directors' remuneration

This section of the Remuneration Report sets out the Executive Directors' remuneration for the year ended 31 December 2019 alongside the remuneration that will be paid to Executive Directors during 2020.

Executive Directors' single total figure of remuneration for 2019

Audited

The single total figure table sets out all elements of remuneration receivable by the Executive Directors in respect of the year ended 31 December 2019, alongside comparator figures from the prior year.

£'000		Base salary	Taxable benefits	Pension	**Total fixed**	Annual bonus	Long-term incentives[1]	**Total variable**	Other	**Single total figure**
Pascal Soriot	**2019**	1,289	124	387	1,800	1,933	10,487	12,420	110	14,330
	2018	1,251	122	375	1,748	1,858	9,180	11,038	82	12,868
Marc Dunoyer	**2019**	765	63	184	1,012	957	4,935	5,892	56	6,960
	2018	743	74	178	995	919	3,851	4,770	59	5,824

[1] Long-term incentive values disclosed in 2018 have been recalculated using the average closing share price for the three months ended 31 December 2019, see page 138.

£3,283,450 of Pascal Soriot's 2019 single total figure of remuneration is attributable to share price appreciation on Long-term incentive awards during the relevant performance periods. £1,539,949 of Marc Dunoyer's 2019 single total figure of remuneration is attributable to share price appreciation on Long-term incentive awards during the relevant performance periods. The Committee did not exercise any discretion in relation to the Long-term incentive outcomes.

The following sections provide further detail on the figures in the above table, including the underlying calculations and assumptions and the Committee's performance assessments for variable remuneration. The Annual bonus section is set out from page 133 and the Long-term incentives section from page 138. Information about the Executive Directors' remuneration arrangements for the coming year, ending 31 December 2020, is highlighted in grey boxes.

Fixed remuneration

Base salary

When awarding salary increases, the Committee considers, among other factors, salary increases applied across the UK employee population. The Executive Directors' salaries for 2020 remain the same as their 2019 salaries. The UK all-employee salary increase budget for 2020 is 3%.

Audited

		2019		**2020**
£'000	Increase from 2018	Base salary	Change from 2019	Base salary
Pascal Soriot	3%	1,289	0%	1,289
Marc Dunoyer	3%	765	0%	765

Taxable benefits

The Executive Directors may select benefits within AstraZeneca's UK Flexible Benefits Programme and may choose to take their allowance, or any proportion remaining after the selection of benefits, in cash. In 2019, the Executive Directors selected benefits including healthcare insurance, death-in-service provision and advice in relation to tax, and took their remaining allowances in cash.

Audited

			2019	**2020**
£'000	Taken in benefits	Taken as cash	Total taxable benefits	Taxable benefits
Pascal Soriot	15	109	124	in line with 2019
Marc Dunoyer	6	57	63	in line with 2019

Fixed remuneration *continued*

Audited

Pension

The Executive Directors receive a pension allowance calculated as a percentage of base salary. During 2019, both Executive Directors took their pension allowance as a cash alternative to participation in a defined contribution pension scheme. Neither Executive Director has a prospective entitlement to a defined benefit pension by reason of qualifying service. Pension arrangements for 2020 are described on page 151.

	2019			2020
£'000	Pensionable salary	Pension allowance	Cash in lieu of pension	Fixed pension allowance
Pascal Soriot	1,289	30% salary	387	258
Marc Dunoyer	765	24% salary	184	184

Other remuneration

Audited

Other items in the nature of remuneration

Deferred shares granted to the Executive Directors under the Deferred Bonus Plan (DBP) (in respect of the withheld proportion of their annual bonuses awarded for performance during the year ended 31 December 2015) were released during 2019 on completion of the three-year deferral period. The dividend equivalents accrued on the deferred shares during the deferral period and paid to the Executive Directors at the time of release are included in the Other column.

£'000	Dividend equivalents received on DBP awards released in year	Total Other items in the nature of remuneration
Pascal Soriot	110	110
Marc Dunoyer	56	56

Annual bonus

Audited

2019 Annual bonus

Annual bonuses earned in respect of performance during 2019 are included in the single total figure table. Detailed information on the Committee's approach to target setting and assessment of performance is set out on page 131.

Under the DBP a proportion of each Executive Director's pre-tax bonus is compulsorily deferred into Ordinary Shares which are released three years from the date of deferral, ordinarily subject to continued employment. The proportion of the 2019 bonus deferred is one third. Under the Directors' Remuneration Policy proposed for approval at the 2020 AGM, one half of any bonus awarded in respect of performance during 2020 will be deferred. Bonuses are not pensionable.

	Annual bonus in respect of performance during 2019				
	Bonus potential as % of salary		Bonus payable in cash[1]	Bonus deferred into shares	Total bonus awarded
£'000	Target	Maximum			
Pascal Soriot	100%	180%	1,289	644	1,933 83.3% max
Marc Dunoyer	90%	150%	638	319	957 83.3% max

[1] Mr Soriot elected to waive £7,984 of the cash portion of his bonus in order to make a personal contribution to pension. Mr Dunoyer elected to waive £17,201 of the cash portion of his bonus in order to make a personal contribution to pension.

Annual bonus *continued*

Audited

2019 Group scorecard assessment

Performance against the 2019 Group scorecard is set out below. As explained on page 130, a majority of our performance measures are based on Group KPIs (as indicated by ○), which directly relate to strategy. A reconciliation between measures used for the bonus assessment and the KPIs set out from page 20 can be found on the following page.

The Group scorecard is used in the determination of bonus payouts for all AstraZeneca employees. Each metric within the scorecard is assessed on a standalone basis and has a defined pay out range. Performance below the specified threshold level for a metric will result in 0% payout for that metric. 100% of target bonus will payout for on-target performance. For employees, 200% of target bonus will payout for the maximum level of performance. Maximum bonus payouts for the CEO and CFO for 2019 were capped at 180% and 150% of salary respectively (equivalent to 180% and 167% of target bonus respectively). The pay out range for each metric is capped in line with each Executive Director's maximum bonus opportunity to ensure underperformance against one metric cannot be compensated for by overachievement against another. The table below shows the scorecard formulaic outcomes for the CEO and CFO as a percentage of target bonus, taking into account their respective target and maximum profiles.

Science measures						Formulaic outcomes (% of target bonus)	
2019 Group scorecard performance measures and metrics	Weighting	Threshold for payout	Target	Maximum	Outcome[1]	CEO	CFO
Accelerate Innovative Science							
○ Pipeline progression events	10%	8	17	26	17	10%	10%
○ Regulatory events	10%	20	28	37	37	18%	17%
Subtotal – Science measures	20%					28%	27%
Financial measures							
Deliver Growth and Therapy Area Leadership							
○ Product Sales from growth platforms ($m)	30%	19,221	20,232	21,244	21,004	48%	45%
Achieve Group Financial Targets							
○ Cash flow ($bn)	20%	3.5	3.9	4.2	4.2	35%	33%
○ Core EPS ($)	20%	3.40	3.50	3.60	3.46	12%	12%
○ Total Product Sales ($bn)	10%	22.1	22.8	23.5	23.8	18%	17%
Subtotal – Financial measures	80%					114%	107%
Total[2]	100%					142%	133%

Key: Bar charts are indicative of 2019 performance; scales do not start from zero.

[1] Reconciliation with KPI outcomes disclosed from page 20 of this Annual Report and a description of performance measures is shown on the following page.

[2] Due to rounding, the total formulaic outcome differs from the arithmetic total of the individual metric outcomes disclosed above.

Pipeline progression events include Phase II starts and progressions and NME and life-cycle management positive Phase III investment decisions. Regulatory events include NME and major life-cycle management regional submissions and approvals. Further detail on our Accelerate Innovative Science performance and these events is included from page 25 of this Annual Report.

A number of further scientific achievements during 2019 have not been taken into account in the formulaic Group scorecard outcome, as they were additional to the cohort set at the start of the year. These have instead been considered and reflected in the Committee's final bonus determination.

Annual bonus *continued*

In 2019, Deliver Growth and Therapy Area Leadership measured Product Sales from the Oncology, New CVRM, Respiratory, Japan and Emerging Markets sales platforms, previously referred to as growth platforms. This target was set and evaluated at budget exchange rates at the beginning of the year and evaluated at those rates at the end of the performance period, so that any beneficial or adverse movements in currency, which are outside the Company's control, do not impact reward outcomes. The Deliver Growth and Therapy Area Leadership scorecard measure excludes certain medicines that are included in Product Sales reported elsewhere in this Annual Report, due to differences in definitions. The difference for 2019 primarily arose as the scorecard measure included only New Medicines within the Oncology sales platform. The Cash flow measure is set and evaluated at the actual exchange rate and is evaluated by reference to net cash flow from operating activities less capital expenditure adding back proceeds from disposal of intangible assets, to be fully transparent with all elements easily derived from the Group IFRS cash flow statement. The Core EPS and Total Product Sales measures are evaluated by reference to budget exchange rates, again so that any beneficial or adverse movements in currency, which are outside the Company's control, do not impact reward outcomes. The financial metrics reconcile with other disclosures in this Annual Report as follows:

	Group scorecard outcome	KPI disclosed from page 20	Exchange rate impact	Product Sales excluded	Capital expenditure	Movement in profit-participation liability	Proceeds from disposal of intangible assets
Deliver Growth and Therapy Area Leadership	$21,004m	$21,894m	$134m	$(1,024m)			
Cash flow	$4.2bn	$3.0bn			$(1.0bn)	$0.2bn	$2.0bn
Core EPS	$3.46	$3.50	$(0.04)				
Total Product Sales	$23.8bn	$23.6bn	$0.2bn				

Overall assessment

During 2019, the Executive Directors' individual performance was assessed in the following key areas which align with the Company's objectives.

Pascal Soriot

2019 was a transformative and remarkable year for AstraZeneca under Mr Soriot's leadership. We are proud of Mr Soriot's inclusion on the Harvard Business Review 2019 CEO 100 List, reflecting a measure of external recognition for his work. In addition to delivery of the financial and scientific performance described from page 20, including scientific achievements beyond the Group scorecard, the Committee considered Mr Soriot's strong performance against his personal objectives.

Leading in Environmental, Social and Governance (ESG) performance	Under Mr Soriot's leadership, throughout 2019, AstraZeneca received external recognition as one of the leading companies demonstrating ESG practice. Highlights include: maintaining our score in the Dow Jones Sustainability Indices; receiving 56th ranking in the Corporate Knights Global 100 (an overview of the global 100 most sustainable corporations in the world); and being one of three companies worldwide to achieve double "A" listing for Climate Change and Water Security for four consecutive years in the Carbon Disclosure Project (CDP) rankings as well as being ranked in the top 3% on the CDP Leader Board for Supplier Engagement. Further evidence of Mr Soriot's commitment to building a sustainable future was reflected through signing up to the United Nations (UN) Global Compact 'Our Only Future' campaign; continued investment in Healthy Heart Africa, with the extension into a fourth country (Ghana) where we will continue to conduct blood pressure screenings; and a new five-year funding plan to drive the Young Health Programme further which, in 2019, saw continued expansion, including a launch in Mexico.
Demonstrating leadership to support developments in the global life sciences industry	Throughout 2019, Mr Soriot continued to extend his influence with senior external stakeholders on the key issues in healthcare. He attended more than 60 meetings with senior-level Government officials around the world including in China, Russia, Australia, Brazil, France, Germany, Japan and the US. These interactions continue to shape the external environment and materially contribute to AstraZeneca's continued success around the world.
Successful delivery of the organisational transformation	In 2019, the enterprise transitioned to a strategy of growth through innovation and our new, therapy area aligned, organisational structure. The new organisation was announced on 7 January 2019 and the reorganisation completed within four months, without impacting continued scientific delivery and commercial growth.
Launch and embed our refreshed growth through innovation strategy	While some core components of our growth through innovation strategy translated directly into AstraZeneca's performance in 2019, several aspects of progress in 2019 laid the foundations for success in future years. These encompass, among other things, the development of our patient-centricity plans, investment in future science, value-based reimbursement, and our work in the digital, data science and artificial intelligence space.
Making AstraZeneca a Great Place to Work – achieve demonstrable advances in inclusion, diversity and employee engagement	In 2019 our Global Inclusion and Diversity (I&D) Council was established. As Chair of the Council, Mr Soriot has continued to oversee and drive accountability for our I&D strategy throughout the organisation. In 2019, Mr Soriot personally sponsored AstraZeneca becoming a signatory to the UN Empowerment Principles for Women and the UN Free & Equal Standards of Conduct for Business (supporting LGBT+ individuals). By the end of 2019, our internal KPIs were exceeded with 45.4% of senior roles held by women. We were also pleased that AstraZeneca was included in the 2019 Hampton-Alexander Review (sixth for women in executive committee roles and their direct reports) and as the only major pharmaceutical company listed in Bloomberg's Gender-Equality Index. Employee engagement is high, with internal surveys showing 94% of the 61,000 respondents stated they believe strongly in AstraZeneca's future direction and strategic priorities and 86% would recommend AstraZeneca as a great place to work (compared with the global pharmaceutical norms of 87% and 80% respectively).

Annual bonus *continued*

Marc Dunoyer

Leading in Environmental, Social and Governance (ESG) performance	In 2019, Mr Dunoyer continued to act as Champion and Executive Sponsor of our award-winning, global philanthropy initiative the Young Health Programme (YHP). Mr Dunoyer continued to act as a visible champion internally and externally for this programme, visiting the community-based team and spending time with the young peer educators. YHP reached almost one million young people with health information in 2019, with 18 countries across six continents delivering this programme.
Launch and embed our refreshed growth through innovation strategy	Throughout 2019, Mr Dunoyer has driven the enterprise focus on operating leverage, enabled by his focus on balancing capital allocation priorities with investment in innovative science. Mr Dunoyer also delivered the successful completion of the acquisition of *Enhertu* (a medicine with great potential for the treatment of HER2-positive cancers) through a capital increase, the first in 20 years. This transaction was handled exceptionally smoothly in the context of the anticipated Brexit timetable and the accompanying challenge of increased volatility in currency exchange rates.
Deliver simplification	Under Mr Dunoyer's leadership in 2019, significant simplification has been introduced to the Group's finance systems and processes. In the context of the 2019 organisational transformation, the creation of one source of trusted financial data and a streamlined master data structure to deliver improved financial insights enabled immediate re-alignment of all underlying finance and reporting systems to the new organisation within two months.
Japan	Mr Dunoyer's additional responsibilities include leading AstraZeneca in Japan, which delivered a strong performance in 2019, exceeding its performance target overall. Mr Dunoyer continues to play a critical leadership role in Japan, playing an active part in a range of engagements, from Government officials through to national wholesalers, in support of delivering our strategy. Significant approvals were obtained in the year for *Lynparza* in BRCA-mutated ovarian cancer, *Bevespi Aerosphere* to relieve symptoms of chronic obstructive pulmonary disease (COPD) and, notably, the first ever global approval for *Breztri Aerosphere*, a triple-combination therapy, also for COPD patients.
Creating an enterprise-wide impact through Global Business Services (GBS)	In addition to his responsibilities as CFO, Mr Dunoyer continues to lead the GBS function. GBS is a key enabler of our strategic performance, leveraging digital technology, data analytics and artificial intelligence to create capacity, to simplify and improve processes, and to provide greater automation and smart analytics. Under Mr Dunoyer's leadership, in 2019, GBS's content centre and production has delivered efficiencies of $26 million with services expanding across 50 markets. Adoption of robotic process automation resulted in the annualised value of over 100 bots increasing by 500%. A focus on artificial intelligence is delivering significant value opportunities across predictive modelling, automated reporting using natural language generation and process mining.

Final determination of Executive Directors' bonuses

Having taken into account the Executive Directors' personal leadership and achievements during the year and considered the formulaic Group scorecard outcome in the context of overall business performance and shareholder experience, the Committee considered, in its judgement, that the bonus outturn for each of the Executive Directors should be 83.3% of maximum. This payout is slightly above the Group scorecard outcome as a percentage of maximum but below the scorecard as a percentage of target, due to the cap on maximum payment for each Executive Director.

Annual bonus *continued*

Deferred Bonus Plan

A proportion of each Executive Director's pre-tax annual bonus is compulsorily deferred under the Deferred Bonus Plan (DBP). In respect of the bonus deferred, the Executive Director is granted a conditional award over shares. No further performance conditions apply to DBP shares, but release at the end of the three-year deferral period is ordinarily subject to continued employment. One third of the bonus earned in respect of performance during 2018 was deferred and details of the consequent DBP awards granted in 2019 are shown below. One third of the bonus earned in respect of performance during 2019 has been deferred and the consequent DBP awards are expected to be granted in March 2020. Under the Directors' Remuneration Policy proposed for approval at the 2020 AGM, one half of any bonus awarded in respect of performance during 2020 will be deferred.

Audited

	2019 Grant				2020 Grant
	Ordinary Shares granted	Grant date	Grant price (pence per share)[1]	Face value £'000	2019 Bonus deferred £'000
Pascal Soriot	9,849	8 March 2019	6287	619	644
Marc Dunoyer	4,874	8 March 2019	6287	306	319

[1] The grant price is the average closing share price over the three dealing days preceding grant.

2020 Annual bonus performance measures and operation

The Group scorecard measures and weightings for 2020 differ from the 2019 Group scorecard as follows:

- To reflect the importance of continuing to build and maintain a long-term sustainable pipeline the weighting of the Accelerate Innovative Science indices has been increased from 20% to 30%.
- Given the proportion of Product Sales now represented by the Oncology, New CVRM, Respiratory, Japan and Emerging Markets sales platforms (previously known as growth platforms), the 'Deliver Growth and Therapy Area Leadership' metric will instead measure Total Revenue, as reported in our accounts. This also ensures that this metric reflects the economics of deals entered into with collaboration partners.
- Under Achieve Group Financial Targets, with the consolidation of all sales under Total Revenue within Deliver Growth and Therapy Area Leadership, the Total Product Sales measure has been removed. The Cash flow and Core EPS measures and weightings remain unchanged.

2020 Group scorecard performance measures and metrics

	Measure weighting	Underlying metrics (if applicable)	Metric weighting	2020 target	
Accelerate Innovative Science	30%	Pipeline progression events	15%	↑	C
		Regulatory events	15%	↑	C
Deliver Growth and Therapy Area Leadership (Total Revenue)	30%			N	C
Achieve Group Financial Targets	40%	Cash flow	20%	↑	C
		Core EPS	20%	↑	C

Key: ↑ Target increased vs 2019 target; ↓ Target decreased vs 2019 target; ⇔ Target constant; N New measure; C Commercially sensitive

We intend to disclose the 2020 Group scorecard outcome, and details of the performance hurdles and targets, in the 2020 Directors' Remuneration Report following the end of the performance period. The performance targets are currently considered to be commercially sensitive as prospective disclosure may prejudice the Company's commercial interests. Executive Directors' individual performance will be assessed by reference to individual objectives in line with the Company's objectives for the year.

Long-term incentives

Audited

Long-term incentives included in single total figure: 2017 PSP and 2016 AZIP

The Executive Directors' 2019 single total figures of remuneration include the values of Performance Share Plan (PSP) awards and AstraZeneca Investment Plan (AZIP) awards with performance periods ended 31 December 2019. These shares will not be released and the dividend equivalents will not be paid out to the Directors until the awards vest at the end of their respective holding periods.

The values of the shares due to vest have been calculated using the average closing share price over the three-month period ended 31 December 2019 (7287.88 pence). The table below provides a breakdown showing the face value of these shares at the time they were granted, the value that is attributable to share price appreciation since grant and the value of dividend equivalents accrued on these shares over the relevant performance period. Further information about the individual awards and performance assessments follows the table.

Long-term incentive awards with performance periods ended 31 December 2019

				Value of shares due to vest				
		Ordinary Shares granted	Performance outcome	Face value at time of grant[1] £'000	Value due to share price appreciation[2] £'000	Dividend equivalent accrued over performance period £'000	Total £'000	Long-term incentives total £'000
Pascal Soriot	2017 PSP	125,009	97%	5,917	2,920	771	9,608	10,487
	2016 AZIP	21,618	50%	424	364	91	878	
Marc Dunoyer	2017 PSP	59,439	97%	2,814	1,388	367	4,569	4,935
	2016 AZIP	9,016	50%	177	152	38	366	

[1] Calculated using the grant price of 4880 pence for 2017 PSP awards and the grant price of 3923 pence for 2016 AZIP awards.
[2] Calculated using the difference between the grant price and the average closing share price over the three-month period ended 31 December 2019.

The 2017 PSP awards granted on 24 March 2017 are due to vest and be released on 24 March 2022 on completion of a further two-year holding period. Performance over the period from 1 January 2017 to 31 December 2019 will result in 97% of the award vesting, based on the following assessment of performance.

The Return to Growth target (measuring aggregate revenue of the Oncology, New CVRM, Respiratory, Japan and Emerging Markets sales platforms, previously referred to as growth platforms) and EBITDA target are set at budget exchange rates at the beginning of the performance period and evaluated at those rates at the end of the performance period, so that any beneficial or adverse movements in currency, which are outside the Company's control, do not impact reward outcomes.

The EBITDA measure is assessed using cumulative Reported EBITDA, excluding non-cash movements on fair value of contingent consideration on business combinations and gains on disposals of intangible assets.

The Cash flow measure is assessed using cumulative net cash flow from operating activities less capital expenditure adding back proceeds from disposal of intangible assets.

AstraZeneca ranked second within the TSR peer group, in the upper quartile.

For more information about the TSR performance of the Company and the TSR comparator group, see page 147.

2017 PSP performance measures and metrics	Weighting	Threshold (20% vesting)	Maximum (100% vesting)	Outcome	Payout
Achieve Scientific Leadership					
NME approvals	6.7%	2	6	8	100%
Major life-cycle management approvals	6.7%	6	12	22	100%
NME Phase III/registrational volume	6.7%	4	8	11	100%
Subtotal – Achieve Scientific Leadership[1]	20%				100%
Return to Growth (aggregate revenue of growth platforms) ($bn)	20%	16.5	19.5	21.5	100%
Cash flow ($bn)	20%	8.5	12.0	12.0	100%
EBITDA ($bn)	20%	12.0	18.0	16.5	85%
Total shareholder return	20%	Median	UQ[2]	2nd	100%
Total[1]	100%				97%

Key: Bar charts are indicative of 2017 PSP performance; scales do not start from zero.
[1] The subtotal and total reflect the weightings of the individual metrics.
[2] UQ = Upper Quartile.

Audited

The AZIP is a legacy plan. The last award under this plan was granted in 2016.

The 2016 AZIP awards granted on 24 March 2016 are due to vest and be released on 1 January 2024 on completion of a further four-year holding period. In 2016, the Committee replaced the original cliff vesting approach for outstanding AZIP awards with a sliding scale, whereby 25% of an award will lapse in respect of any year in the performance period in which either of the performance targets are not achieved.

Performance over the period from 1 January 2016 to 31 December 2019 will result in 50% of the 2016 AZIP vesting, as the dividend cover target was not met in 2018 and 2019.

2016 AZIP performance measures	2016	2017	2018	2019
Annual dividend per share at or above $2.80	$2.80	$2.80	$2.80	$2.80
Dividend cover of 1.5 calculated on the basis of Core EPS	1.54	1.53	1.24	1.25

PSP and AZIP award values included in the 2018 single total figure of remuneration have been recalculated using the average closing share price over the three-month period ended 31 December 2019 (7287.88 pence). In the 2018 Directors' Remuneration Report these figures were calculated using the average closing share price over the three-month period ended 31 December 2018 (5980.11 pence).

PSP awards granted during 2019

During 2019 conditional awards of shares were granted to Mr Soriot and Mr Dunoyer with face values equivalent to 500% of base salary and 400% of base salary respectively under the PSP. Face value is calculated using the grant price, being the average closing share price over the three dealing days preceding grant.

Performance will be assessed over the period from 1 January 2019 to 31 December 2021 against the measures outlined below, to determine the proportion of the award that vests. A further two-year holding period will then apply before vesting, which is scheduled to occur on the fifth anniversary of grant.

	Ordinary Shares granted	Grant date	Grant price (pence per share)	Face value £'000	End of performance period	End of holding period
Pascal Soriot	102,475	8 March 2019	6287	6,443	31 December 2021	8 March 2024
Marc Dunoyer	48,690	8 March 2019	6287	3,061	31 December 2021	8 March 2024

The 2019 PSP performance measures focus on scientific, commercial and financial performance over the three-year performance period. The five performance measures attached to the 2019 PSP awards are detailed below. Twenty percent of the award will vest if the threshold level of performance is achieved; the maximum level of performance must be achieved under each measure for 100% of the award to vest.

Relative total shareholder return (TSR) (20% of award)

TSR performance is assessed against a predetermined peer group of global pharmaceutical companies. The rank which the Company's TSR achieves over the performance period will determine how many shares will vest under this measure. The peer group set at grant was the same as that attached to PSP awards granted in 2017, as set out on page 147.

TSR ranking of the Company	% of award that vests
Median	20% (threshold for payout)
Between median and upper quartile	Pro rata
Upper quartile	100%

Long-term incentives *continued*

Audited

EBITDA (20% of award)

Vesting under this measure is based on the achievement of threshold performance against a target of cumulative Reported EBITDA excluding non-cash movements on fair value of contingent consideration on business combinations and gains on disposals of intangible assets. The level of award vesting under this measure is based on a scale between a threshold target and an upper target.

EBITDA	% of award that vests
$17.5bn	20% (threshold for payout)
Between $17.5bn and $20.5bn	Pro rata
$20.5bn	75%
Between $20.5bn and $22.5bn	Pro rata
$22.5bn	100%

Cash flow (20% of award)

The Cash flow measure is assessed using cumulative net cash flow from operating activities less capital expenditure adding back proceeds from disposal of intangible assets. The level of vesting under this measure is based on a scale between a threshold target and an upper target.

Cash flow	% of award that vests
$10bn	20% (threshold for payout)
Between $10bn and $12bn	Pro rata
$12bn	75%
Between $12bn and $14bn	Pro rata
$14bn and above	100%

Deliver Growth and Therapy Area Leadership (20% of award)

For PSP awards granted in 2019 Deliver Growth and Therapy Area Leadership measured Total Product Sales from the Oncology, New CVRM, Respiratory, Japan and Emerging Markets sales platforms (previously referred to as growth platforms). Given the proportion of AstraZeneca's revenue that is now represented by these sales platforms, disclosing the threshold and maximum hurdles for this measure could be construed to constitute financial guidance, which is not the Company's intention. The Deliver Growth and Therapy Area Leadership measure is thus considered to be commercially sensitive and will be disclosed following the end of the performance period. This measure is evaluated by reference to budget exchange rates.

Accelerate Innovative Science (20% of award)

Performance is assessed using dual indices which measure regulatory and pipeline progression events, allowing disclosure of targets at the beginning of the performance period.

Regulatory events index score (12% of award)	% of award that vests
10	20% (threshold for payout)
Between 10 and 15	Pro rata
15	75%
Between 15 and 19	Pro rata
19	100%

Pipeline progression events index score (8% of award)	% of award that vests
5	20% (threshold for payout)
Between 5 and 8	Pro rata
8	75%
Between 8 and 10	Pro rata
10	100%

PSP performance measures for 2020 grant

The 2020 PSP measures differ from the 2019 PSP measures as follows:

- The weighting of the Accelerate Innovative Science indices has been increased from 20% to 30%, to reflect the importance of continuing to build and maintain a long-term sustainable pipeline.
- Given the proportion of Product Sales now represented by the Oncology, New CVRM, Respiratory, Japan and Emerging Markets sales platforms (previously known as growth platforms), the Deliver Growth and Therapy Area Leadership metric will instead measure Total Revenue, as reported in our accounts. This also ensures that this metric reflects the economics of deals entered into with collaboration partners. The weighting for this measure has been increased from 20% to 25%.
- To further reduce the number of measures, the EBITDA measure has been removed and the weighting for the Cash flow measure has been increased to 25%.
- The Relative TSR measure and weighting remains unchanged.

PSP performance measure	Measure weighting	Underlying metrics (if applicable)	Metric weighting	Threshold (20% vesting)	Maximum (100% vesting)
Accelerate Innovative Science	30%	NME Phase III/registrational volume	12%	8	15
		Regulatory events	18%	11	22
Deliver Growth and Therapy Area Leadership (Total Revenue)	25%			Commercially sensitive until end of performance period	
Cash flow	25%			$12.5bn	$17.5bn
Relative TSR	20%			Median	Upper quartile

Regulatory events measure NME and major life-cycle management approvals (taking into account the first approval over the performance period). NME Phase III/registrational volume measures the total NME pipeline volume at the end of the performance period. These two items ensure that management are assessed on both R&D late-stage delivery (approvals) and also future pipeline sustainability (volume).

Disclosing the threshold and maximum hurdles for the Deliver Growth and Therapy Area Leadership (Total Revenue) measure could be construed to constitute financial guidance, which is not the Company's intention. The Total Revenue measure is thus considered to be commercially sensitive and will be disclosed following the end of the performance period.

The Total Revenue measure is evaluated by reference to budget exchange rates such that beneficial or adverse movements in currency, which are outside the Company's control, do not impact reward outcomes. The Cash flow measure is evaluated using net cumulative cash flow from operating activities less capital expenditure adding back proceeds from disposal of intangible assets. The companies in the TSR comparator group are shown on page 147.

As described on page 131, the Committee takes into account a wide range of data to ensure that the stretching nature of PSP hurdles is robustly tested and that financial targets are aligned with the business's Long Range Plan. The Committee will take consensus into account when determining the appropriate level of stretch.

PSP awards are expected to be granted to the Executive Directors in March 2020. The PSP award to be granted to Mr Soriot will be equivalent to 500% of base salary. Subject to the approval of the Directors' Remuneration Policy and amended rules of the PSP at the Company's AGM on 29 April 2020, a further PSP award will be granted to Mr Soriot equivalent to 50% of base salary, bringing Mr Soriot's total PSP award for 2020 in line with the maximum opportunity under the Policy.

Annual Report on Remuneration *continued*

Non-Executive Directors' remuneration

Non-Executive Directors' single total figure of remuneration for 2019

Audited

The single total figure table sets out all elements of remuneration receivable by the Non-Executive Directors in respect of the year ended 31 December 2019, alongside comparative figures for the prior year.

	2019 Fees £'000	2018 Fees £'000	**2019 Other £'000**	2018 Other £'000	**2019 Total £'000**	2018 Total £'000
Leif Johansson	**625**	625	**72**	65	**697**	690
Geneviève Berger	**110**	110	**–**	–	**110**	110
Philip Broadley	**144**	108	**–**	–	**144**	108
Graham Chipchase	**158**	128	**–**	–	**158**	128
Michel Demaré – *appointed 1 September 2019*	**36**	–	**–**	–	**36**	–
Deborah DiSanzo	**108**	73	**–**	–	**108**	73
Sheri McCoy	**123**	96	**–**	–	**123**	96
Tony Mok – *appointed 1 January 2019*	**103**	–	**–**	–	**103**	–
Nazneen Rahman	**118**	110	**–**	–	**118**	110
Marcus Wallenberg	**103**	103	**–**	–	**103**	103
Former Non-Executive Directors						
Rudy Markham – *retired 26 April 2019*	**44**	178	**–**	–	**44**	178
Shriti Vadera – *retired 31 December 2018*	**–**	113	**–**	–	**–**	113
Total	**1,672**	1,644	**72**	65	**1,744**	1,709

The Chairman's single total figure includes office costs (invoiced in Swedish krona) of £72,000 for 2019 and £65,000 for 2018.

Payments to former Directors

During 2019, no payments were made to former Directors.

Payments for loss of office

During 2019, no payments were made to Directors for loss of office.

Non-Executive Directors' fee structure

The Non-Executive Directors' fee structure that applied during 2019 is set out below, alongside the structure that will be in place during 2020. No changes have been made to fees for 2020. Further information on the Non-Executive Directors' fee structure can be found within the Remuneration Policy on page 159.

Non-Executive Director fees	2020 £'000	2019 £'000
Chairman's fee[1]	625	625
Basic Non-Executive Director's fee	88	88
Senior independent Non-Executive Director	30	30
Member of the Audit Committee	20	20
Member of the Remuneration Committee	15	15
Chairman of the Audit Committee or the Remuneration Committee[2]	25	25
Member of the Science Committee	15	15
Chairman of the Science Committee[2]	15	15
Non-Executive Director responsible for overseeing sustainability matters on behalf of the Board	7.5	7.5

[1] The Chairman does not receive any additional fees for chairing, or being a member of, a committee.
[2] This fee is in addition to the fee for membership of the relevant committee.

Fees in respect of Executive Directors' external appointments

Marc Dunoyer is a non-executive director of Orchard Therapeutics. During 2019, Mr Dunoyer received a gross fee of £36,000 from Orchard Therapeutics, which he retained in full.

Directors' shareholdings

Minimum shareholding requirements

Audited

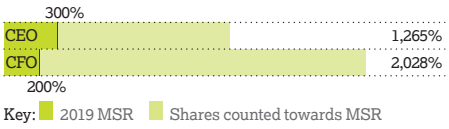
The CEO and CFO are each required to build a shareholding to satisfy their respective minimum shareholding requirements, each within five years of their dates of appointment. During 2019, the minimum shareholding requirements for the CEO and CFO were set at 300% and 200% of base salary respectively. Shares that count towards these minimum shareholding requirements are shares beneficially held by the Executive Director and their connected persons and share awards that are not subject to further performance conditions. Share awards included are DBP shares in deferral periods and PSP and AZIP shares in holding periods, on a net of tax basis. On this basis, as at 31 December 2019, Mr Soriot and Mr Dunoyer held shares worth 1,265% and 2,028% of base salary respectively and had fulfilled their minimum shareholding requirements.

A further post-employment shareholding requirement applies to Executive Directors. For two years following cessation of employment, Executive Directors are required to hold shares to the value of the shareholding guideline that applied at the cessation of their employment; or, in cases where the individual has not had sufficient time to build up shares to meet their guideline, the actual level of shareholding at cessation.

Position against minimum shareholding requirement (MSR) as a percentage of base salary

	Held beneficially	Shares subject to deferral and holding periods	Shares subject to performance conditions	Value of shares counted towards MSR as a % of base salary[1]
Pascal Soriot	45,353	337,847	377,991	1,265%
Marc Dunoyer	145,581	116,858	178,385	2,028%

[1] Value of shares held beneficially and shares subject to deferral and holding periods, calculated net of a theoretical 50% tax rate, as at 31 December 2019.



It is proposed that the minimum shareholding requirements for the CEO and CFO be increased to 550% and 400% of base salary respectively on approval of the proposed Directors' Remuneration Policy at the 2020 AGM.

Non-Executive Directors are encouraged to build up, over a period of three years, a shareholding in the Company with a value approximately equivalent to the basic annual fee for a Non-Executive Director (£88,000 during 2019) or, in the case of the Chairman, approximately equivalent to his basic annual fee (£625,000 during 2019). All Non-Executive Directors who had served for a period of three years or more as at 31 December 2019 held sufficient shares to fulfil this expectation.

Directors' interests as at 31 December 2019

The following table shows the beneficial interests of the Directors (including the interests of their connected persons) in Ordinary Shares as at 31 December 2019.

Executive Directors	**Beneficial interest in Ordinary Shares at 31 December 2019**	Beneficial interest in Ordinary Shares at 31 December 2018
Pascal Soriot	**45,353**	12,498
Marc Dunoyer	**145,581**	132,243
Non-Executive Directors		
Leif Johansson	**39,009**	39,009
Geneviève Berger	**2,090**	2,090
Philip Broadley	**5,735**	5,215
Graham Chipchase	**3,000**	3,000
Michel Demaré[1]	**–**	n/a
Deborah DiSanzo	**1,000**	500
Sheri McCoy	**1,736**	500
Tony Mok[2]	**–**	n/a
Nazneen Rahman	**500**	500
Marcus Wallenberg[3]	**60,028**	63,646

[1] Michel Demaré was appointed on 1 September 2019.
[2] Tony Mok was appointed on 1 January 2019
[3] Marcus Wallenberg's shareholding at 31 December 2019 is lower than the holding at 31 December 2018 due to the disaggregation of a connected person's holding during the year.

Directors' shareholdings *continued*

Audited

Executive Directors' share plan interests

The following tables set out the Executive Directors' interests in Ordinary Shares under the Company's share plans.

Pascal Soriot

Share scheme interests	Grant date	Shares outstanding at 1 January 2019	Grant price (pence)	Shares granted in year	Shares released in year	Shares lapsed in year	Shares outstanding at 31 December 2019: Shares subject to performance	Shares outstanding at 31 December 2019: Shares in holding period	Performance period end	Vesting and release date
DBP	24/03/2016	17,352	3923	–	17,352	–	**n/a**	**–**	n/a	24/03/2019[1]
	24/03/2017	7,968	4880	–	–	–	**n/a**	**7,968**	n/a	24/03/2020
	23/03/2018	13,157	4853	–	–	–	**n/a**	**13,157**	n/a	23/03/2021
	08/03/2019	–	6287	9,849	–	–	**n/a**	**9,849**	n/a	08/03/2022[2]
PSP	27/03/2015	80,668	4762	–	–	–	**–**	**80,668**	31/12/2017	27/03/2020
	24/03/2016	129,713	3923	–	–	27,240	**–**	**102,473**	31/12/2018	24/03/2021[3]
	24/03/2017	125,009	4880	–	–	–	**125,009**	**–**	31/12/2019	24/03/2022
	23/03/2018	128,889	4853	–	–	–	**128,889**	**–**	31/12/2020	23/03/2023
	08/03/2019	–	6287	102,475	–	–	**102,475**	**–**	31/12/2021	08/03/2024[4]
AZIP	11/06/2013	89,960	3297	–	–	–	**–**	**89,960**	31/12/2016	01/01/2021
	28/03/2014	20,677	3904	–	–	–	**–**	**20,677**	31/12/2017	01/01/2022
	27/03/2015	17,460	4762	–	–	4,365	**–**	**13,095**	31/12/2018	01/01/2023[5]
	24/03/2016	21,618	3923	–	–	–	**21,618**	**–**	31/12/2019	01/01/2024
Total		**652,471**		**112,324**	**17,352**	**31,605**	**377,991**	**337,847**		

Marc Dunoyer

Share scheme interests	Grant date	Shares outstanding at 1 January 2019	Grant price (pence)	Shares granted in year	Shares released in year	Shares lapsed in year	Shares outstanding at 31 December 2019: Shares subject to performance	Shares outstanding at 31 December 2019: Shares in holding period	Performance period end	Vesting and release date
DBP	24/03/2016	8,798	3923	–	8,798	–	**n/a**	**–**	n/a	24/03/2019[1]
	24/03/2017	4,262	4880	–	–	–	**n/a**	**4,262**	n/a	24/03/2020
	23/03/2018	7,037	4853	–	–	–	**n/a**	**7,037**	n/a	23/03/2021
	08/03/2019	–	6287	4,874	–	–	**n/a**	**4,874**	n/a	08/03/2022[2]
PSP	27/03/2015	35,327	4762	–	–	–	**–**	**35,327**	31/12/2017	27/03/2020
	24/03/2016	54,101	3923	–	–	11,362	**–**	**42,739**	31/12/2018	24/03/2021[3]
	24/03/2017	59,439	4880	–	–	–	**59,439**	**–**	31/12/2019	24/03/2022
	23/03/2018	61,240	4853	–	–	–	**61,240**	**–**	31/12/2020	23/03/2023
	08/03/2019	–	6287	48,690	–	–	**48,690**	**–**	31/12/2021	08/03/2024[4]
AZIP	01/08/2013	8,176	3302	–	–	–	**–**	**8,176**	31/12/2016	01/01/2021
	28/03/2014	8,709	3904	–	–	–	**–**	**8,709**	31/12/2017	01/01/2022
	27/03/2015	7,646	4762	–	–	1,912	**–**	**5,734**	31/12/2018	01/01/2023[5]
	24/03/2016	9,016	3923	–	–	–	**9,016**	**–**	31/12/2019	01/01/2024
Total		**263,751**		**53,564**	**8,798**	**13,274**	**178,385**	**116,858**		

[1] Market price on 29 March 2019, the actual date of release was 6135 pence.
[2] Award granted following deferral of one third of the annual bonus earned in respect of performance during 2018, further detail on page 137.
[3] 79% of the shares entered the holding period, following assessment of performance over the period to 31 December 2018. The remaining shares lapsed.
[4] Details of PSP awards granted during 2019 are shown from page 139.
[5] 75% of the shares entered the holding period, following assessment of performance over the period to 31 December 2018.

No Director or senior executive beneficially owns, or has options over, 1% or more of the issued share capital of the Company, nor do they have different voting rights from other shareholders. None of the Directors has a beneficial interest in the shares of any of the Company's subsidiaries. Between 31 December 2019 and 14 February 2020, there was no change in the interests in Ordinary Shares shown in the tables on pages 143 and 144.

Remuneration in the wider context

In our Corporate Governance Report on page 107, we explain in detail how the Board has chosen to engage with AstraZeneca's workforce, and how important engagement with our employees is if we are to be a great place to work and continue to deliver outstanding performance. The Directors believe that the Board as a whole should continue to take responsibility for gathering the views of the workforce. Consequently, instead of implementing one of the three methods for workforce engagement prescribed in the 2018 UK Corporate Governance Code, the Board has chosen to further enhance and develop the long-standing channels of engagement which already exist in the organisation to ensure that the Board continues to understand the global workforce's views on a wide variety of topics, including matters relating to remuneration.

For example, Directors (including members of the Remuneration Committee) have participated in hosting 'town hall' style meetings for employees and visiting AstraZeneca sites across the world during 2019, enabling direct engagement with employees. Remuneration Committee members review wide ranging data focusing on employee reward, as well as broader information on workforce trends and culture which is provided to the full Board. Decisions of the Remuneration Committee affecting employees, such as annual Group scorecard outcomes, are communicated to employees through internal communications as well as through the Remuneration Report. In the event that more significant changes to remuneration are proposed, active engagement with employee representative groups provides feedback to help the Committee understand the impact upon the broader workforce.

When considering executive remuneration and setting the Directors' Remuneration Policy, the Committee takes into consideration our global workforce, looking to ensure the global total reward offering is competitive, compelling and aligned to our business performance; while supporting a culture where everyone feels valued and included, as outlined in the table below. Being a great place to work is one of our three strategic priorities. We explain in our Business Review from page 44 the role that reward plays in developing a diverse culture that encourages and rewards innovation, entrepreneurship and high performance.

Summary of remuneration structure for employees below the Board

Element	Policy features for the wider workforce	Comparison with Executive Director and Senior Executive Team (SET) remuneration
Salary	Our salary is the basis for a competitive total reward package for all employees, and we review base pay annually. This review takes account of relevant market comparators, the skills, capabilities, knowledge and experience of each individual, relative to peers within the Company and individual performance. In setting the budget each year, we consider affordability as well as assessing how employee pay is currently positioned relative to market rates, forecasts of any further market increases and turnover.	The salaries of our Executive Directors and SET form the basis of their total remuneration, and we review their base pay annually. The primary purpose of the review is to ensure salary remains competitive and reflects the value of the individual to the organisation.
Pensions and benefits	We offer market-aligned benefit packages reflecting market practice in each country in which we operate. Where appropriate, we offer elements of personal benefit choice to our employees.	The benefit packages of our Executive Directors and SET are broadly aligned with the wider workforce of the country in which they are employed. Pension contributions for our Executive Directors will be reduced under our new Directors' Remuneration Policy.
Annual bonus	With the exception of our sales representatives receiving sales related incentives, our global workforce participates in the same annual cash bonus plan as the Executive Directors and SET, with the same Group scorecard performance measures outlined on pages 130 and 134. Achievement against the scorecard creates a bonus pool from which all awards are made. For employees within our commercial organisation, the country-level share of the global bonus pool also takes into account country performance against KPIs. Individual outcomes are based on manager assessment of performance against individual objectives and peers. Awards are based on a 0-200% target range.	The bonus ranges for our Executive Directors are described on page 149. The ranges for the SET align with the wider workforce at 0-200% of target. One third of any award to an Executive Director under the plan is subject to a three-year holding period (changing to 50% deferral for the 2020 performance year onwards). One sixth of any award to SET under the plan is subject to a three-year holding period.
Long-term incentives	The PSP is operated with a three-year performance period for employees at Vice-President and Senior Vice-President level, with the same performance measures that apply to Executive Director and SET PSP awards (outlined on pages 130 and 138). A proportion of our workforce below Vice-President level are eligible to be considered for other long-term incentive awards, such as restricted stock awards.	PSP awards to Executive Directors and SET are granted under the same plan as PSP awards granted to employees. PSP awards to Executive Directors and SET are subject to a two-year holding period following the three-year performance period.

Remuneration in the wider context *continued*

Change in CEO remuneration compared to other employees

In the table below, changes to the CEO's salary, taxable benefits and annual bonus are compared to a group of employees over the same period (2018 to 2019). The comparator group includes employees in the UK, US and Sweden who represent approximately 29% of our total employee population – we consider that this group is representative of the Group's major science, business and enabling units. These employee populations are also well balanced in terms of seniority and demographics. We have used a consistent employee comparator group, so the same individuals appear in both the 2018 and 2019 figures, allowing a meaningful comparison of salary increases.

	Percentage change for CEO against 2018	Average percentage change for employees against 2018
Salary	3.0%	5.5%
Taxable benefits	2.6%	5.5%
Annual bonus	4.0%	4.3%

CEO and employee pay ratios

The table below sets out the ratios of the CEO single total figure of remuneration to the equivalent pay for the lower quartile, median and upper quartile UK employees (calculated on a fulltime equivalent basis). The ratios have been calculated in accordance with the Companies (Miscellaneous Reporting) Requirements 2018 (the Regulations).

Year	Method	25th percentile pay ratio	50th percentile pay ratio	75th percentile pay ratio
2019	**Option A**	**280:1**	**190:1**	**123:1**
2018[1]	Option A	230:1	160:1	103:1

	CEO		UK employees					
			25th percentile		50th percentile		75th percentile	
Pay data (£'000)	Base salary	Total pay	Base salary	Total pay	Base salary	Total pay	Base salary	Total pay
2019	**1,289**	**14,330**	**38**	**51**	**53**	**75**	**71**	**117**
2018[1]	1,251	11,356	36	49	50	71	70	110

[1] 2018 figures are those disclosed in our 2018 Annual Report and have not been restated for subsequent share price changes (as shown in the CEO single total figure of remuneration table on page 132).

The comparison with UK employees is specified by the Regulations. This group represents approximately 10% of our total employee population. The Regulations provide flexibility to adopt one of three methods of calculation; we have chosen Option A which is a calculation based on all UK employees on a full-time equivalent basis. The ratios are based on total pay which includes base salary, benefits, bonus and long-term incentives (LTI). The CEO pay is as shown in the single total figure of remuneration table, on page 132. For UK employees, quartile data has been determined as at 31 December 2019, with calculations based on actual pay data for January to November 2019. Estimates have been used for December 2019 pay, annual bonus outcomes and LTI dividend equivalent payments, based on forecast December 2019 pay, the 2019 bonus budget and anticipated dividend equivalent payments on LTI awards, respectively.

The 2019 CEO pay ratio is higher than the 2018 CEO pay ratio, increasing from 160:1 to 190:1 at the 50th percentile. The Committee reviewed extensive analysis to explore the reasons behind the change, which was driven by a significant increase in AstraZeneca's share price during 2019, alongside a higher level of LTI vesting for Mr Soriot in the 2019 single total figure of remuneration. Given varied annual bonus and PSP outcomes and share price movements, the ratios may vary significantly year-on-year. When removing LTI, the ratio of CEO pay versus the median UK employee pay is 51:1, which remains unchanged from 2018. Assuming the implementation of the proposed change to the Directors' Remuneration Policy, the Committee expects the ratio excluding LTI to fall in 2020.

The Committee is mindful of debate on executive pay and seeks to ensure that when determining the remuneration of the CEO it finds the right balance between rewarding performance in a highly competitive global executive talent market, and pay across the Group. The stability of the ratio at the 50th percentile in 2018 and 2019, when calculated to exclude the variability of LTIs, is consistent with the pay and progression policies for UK employees.

Relative importance of spend on pay

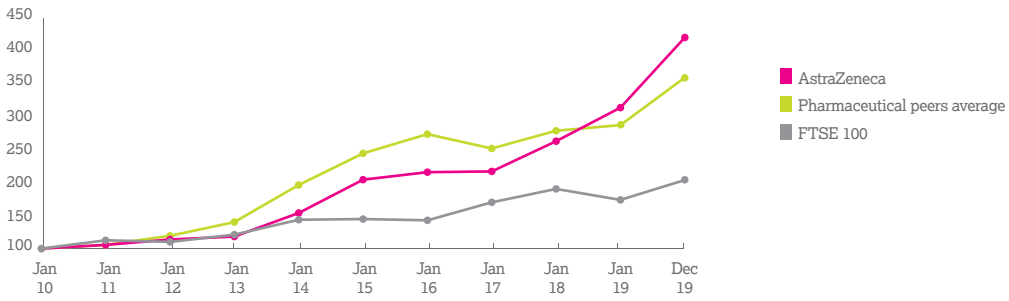
The table below shows the remuneration paid to all employees in the Group, including the Executive Directors, and expenditure on shareholder distributions through dividends. The figures have been calculated in accordance with the Group Accounting Policies and drawn from either the Company's Consolidated Statement of Comprehensive Income on page 168, or its Consolidated Statement of Cash Flows on page 171. Further information on the Group's Accounting Policies can be found from page 172.

	2019 $m	2018 $m	Difference in spend between years $m	Difference in spend between years %
Total employee remuneration	**7,568**	6,970	598	8.6
Distributions to shareholders: dividends paid	**3,592**	3,484	108	3.1

Total shareholder return (TSR)

The graph below compares the TSR performance of the Company over the past ten years with the TSR of the FTSE 100 Index. This graph is re-based to 100 at the start of the relevant period. As a constituent of the FTSE 100, this index represents an appropriate reference point for the Company. To provide shareholders with additional context we have also included a 'Pharmaceutical peers average', reflecting the TSR of the comparator group adopted in 2017 which is used to assess relative TSR performance for PSP awards granted in 2017. It consists of AbbVie, Amgen, Astellas, BMS, Celgene, Daiichi Sankyo, Gilead, GSK, Johnson & Johnson, Lilly, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi, Shire and Takeda. Where a comparator company delisted during the 2017 PSP performance period, as the result of an acquisition, TSR performance has been assessed up unto the point of de-listing. The TSR comparator group for PSP awards to be granted in 2020 consists of AbbVie, Amgen, Astellas, BMS, Daiichi Sankyo, Gilead, GSK, Johnson & Johnson, Lilly, MSD, Novartis, Novo Nordisk, Pfizer, Roche, Sanofi and Takeda. CEO remuneration over the same ten-year period is shown after the TSR graph.

TSR over a ten-year period



CEO total remuneration table

Year	CEO	CEO single total figure of remuneration £'000	Annual bonus payout against maximum opportunity %	LTI vesting rates against maximum opportunity %
2019	Pascal Soriot	14,330[1]	83	90
2018	Pascal Soriot	12,868[2]	83	79
2017	Pascal Soriot	10,429	87	81
2016	Pascal Soriot	14,342[3]	54	95
2015	Pascal Soriot	7,963	97	78
2014	Pascal Soriot	3,507	94	–
2013	Pascal Soriot	3,344	94	–
2012	Pascal Soriot – *appointed with effect from 1 October 2012*	3,693[4]	68	–
2012	Simon Lowth – *acted as interim CEO from June to September 2012 inclusive*	3,289	86	38[5]
2012	David Brennan – *ceased to be a Director on 1 June 2012*	4,147[6]	[7]	38
2011	David Brennan	7,863	74	62
2010	David Brennan	9,690	90	100

[1] The 2019 single total figure of remuneration table is shown on page 132.
[2] This figure has been revised using the average closing share price over the three-month period to 31 December 2019, as explained on page 139.
[3] This figure includes shares awarded to Mr Soriot in 2013 under the AZIP to compensate him for LTIs from previous employment forfeited on his recruitment as the Company's CEO.
[4] This figure includes £991,000 paid to compensate Mr Soriot in respect of his forfeited bonus opportunity for 2012 and an award of £2,000,000 to compensate him for his loss of LTI awards, both in respect of his previous employment.
[5] Mr Lowth's LTI awards which vested during 2012 were not awarded or received in respect of his performance as Interim CEO.
[6] This figure includes Mr Brennan's pay in lieu of notice of £914,000.
[7] Mr Brennan informed the Committee that he did not wish to be considered for a bonus in respect of that part of 2012 in which he was CEO. The Committee determined that no such bonus would be awarded and also that there should be no bonus award relating to his contractual notice period.

Governance

Committee membership

During 2019, the Committee members were Graham Chipchase (Chairman of the Committee), Leif Johansson, Sheri McCoy, Philip Broadley and Rudy Markham. Rudy Markham retired as a Director of AstraZeneca on 26 April 2019. The Deputy Company Secretary acts as secretary to the Committee. The Committee met five times in 2019 and members' attendance records are set out on page 97. During the year, the Committee was materially assisted, except in relation to their own remuneration, by: the CEO; the CFO; the VP Finance Group Controller; the EVP, GMD; the EVP, Human Resources; the SVP, Reward and Inclusion; the Senior Director Executive Reward; the Company Secretary; the Deputy Company Secretary and the Non-Executive Directors forming the Science Committee. The Committee's independent adviser attended all Committee meetings.

Terms of reference

A copy of the Committee's terms of reference is available on our website, www.astrazeneca.com. The Committee reviewed its terms of reference during 2019 and did not recommend any changes, having recommended certain changes in 2018 to reflect the 2018 UK Corporate Governance Code. Those changes were approved by the Board.

Annual Report on Remuneration *continued*

Independent adviser to the Committee

In 2018, the Committee carried out a tender process to select an independent adviser. The process involved submission of written proposals followed by shortlisted candidates being interviewed by both Committee members and members of the Company's management. The Committee selected and appointed Willis Towers Watson (WTW) as its independent adviser with effect from September 2018. WTW's service to the Committee during 2019 was provided on a time-spend basis at a cost to the Company of £184,325, excluding VAT. During 2019, WTW also provided pensions advice and administration, and advice and support to management including market data to assist in the annual employee pay review and global pay survey data. WTW have no other connection with the Company or individual Directors. The Committee reviewed the potential for conflicts of interest and judged that there were no conflicts. WTW is a member of the Remuneration Consultants' Group, which is responsible for the stewardship and development of the voluntary code of conduct in relation to executive remuneration consulting in the UK. The principles on which the code is based are transparency, integrity, objectivity, competence, due care and confidentiality. WTW adheres to the code.

Principal activities focused on by the Committee during 2019

Shareholder consultation and Policy renewal	Review of Directors' Remuneration Policy approved at 2017 AGM Consultation meetings with investors and proxy voting advisory bodies on proposed changes to Policy Drafting and approval of updated Policy to be presented for shareholder approval at 2020 AGM
Annual bonus	Approval of the 2018 Group scorecard outcome and determination of Executive Directors' annual bonus awards for 2018 Review of bonuses granted to executives below SET level Approval of Group scorecard targets used to assess 2019 annual bonus performance
Share plans	Approval of 2016 PSP and 2015 AZIP performance outcomes Approval of LTI grants Approval of performance measures to be attached to PSP awards granted in 2019 Review of projected outcomes for outstanding PSP and AZIP awards Updates to rules of the PSP to align with Policy, to be presented for shareholder approval at 2020 AGM
Other matters	Review of an in-depth report setting out pay policies and practices for employees across the wider Group Approval of compensation arrangements for Executive Directors and SET members for 2019 Review of AstraZeneca's compensation strategy Consideration of AstraZeneca's UK gender pay gap data Review of CEO pay ratios vs lower, median and upper quartile UK employees Discussion of remuneration trends and shareholder views Review of the Committee's performance, including comments arising from the annual Board evaluation Review of the Committee's terms of reference Review of remuneration adviser's independence Consideration of methods of engagement by the Committee with employees

Shareholder voting at the AGM

At the Company's AGM on 26 April 2019, shareholders voted in favour of a resolution to approve the Annual Report on Remuneration for the year ended 31 December 2018. The Directors' Remuneration Policy was approved by shareholders at the Company's AGM on 27 April 2017.

Resolution	Votes for	% for	Votes against	% against	Total votes cast	% of Issued Share Capital voted	Withheld votes
Ordinary Resolution to approve the Directors' Remuneration Policy (2017 AGM)	877,620,302	96.08	35,804,933	3.92	913,425,235	72.17	15,539,511
Ordinary Resolution to approve the Annual Report on Remuneration for the year ended 31 December 2018 (2019 AGM)	947,606,599	95.86	40,895,170	4.14	988,501,769	75.36	16,392,056

Directors' service contracts and letters of appointment

The notice periods and unexpired terms of Executive Directors' service contracts at 31 December 2019 are shown in the table below. AstraZeneca or the Executive Director may terminate the service contract on 12 months' notice.

Executive Director	Date of service contract	Unexpired term at 31 December 2019	Notice period
Pascal Soriot	15 December 2016	12 months	12 months
Marc Dunoyer	6 December 2016	12 months	12 months

None of the Non-Executive Directors has a service contract but each has a letter of appointment. In accordance with the Company's Articles, following their appointment, all Directors must retire at each AGM and may present themselves for re-election. The Company is mindful of the director independence provisions of the 2018 UK Corporate Governance Code and, in this regard, a Non-Executive Director's overall tenure will not normally exceed nine years. The Chairman of the Company may terminate his appointment at any time, on three months' notice. None of the other Non-Executive Directors has a notice period or any provision in their letters of appointment giving them a right to compensation upon early termination of appointment.

Basis of preparation of this Directors' Remuneration Report

This Directors' Remuneration Report has been prepared in accordance with the Large and Medium-sized Companies and Groups (Accounts and Reports) (Amendment) Regulations 2013 (as amended) (the Regulations). As required by the Regulations, a resolution to approve the Annual Report on Remuneration will be proposed at the AGM on 29 April 2020.

On behalf of the Board

A C N Kemp
Company Secretary
14 February 2020

Remuneration Policy

Changes to Remuneration Policy and its implementation

The table below summarises the main proposed changes to the Directors' Remuneration Policy (the Policy), the intended changes to implementation of the Policy in 2020 and the rationale for each change.

The full Policy that shareholders will be asked to approve is set out from page 150.

2020 Remuneration Policy Summary

Element	Proposed change to Policy	Implementation in 2020	Rationale for change
Base salary	No change	No increase for CEO or CFO	
Pension	Pension for new Executive Directors will be in line with applicable wider workforce levels **Reduce current CEO pension from 30% of base salary to 20% of 2019 base salary** Thereafter, current CEO and CFO pensions to be capped at specified monetary values	Current CEO and CFO pensions capped and reduced to bring levels in line with the applicable wider workforce over time: > CEO capped at 20% of 2019 salary (£257,706) > CFO capped at 24% of 2019 salary (£183,670)	Significant reduction to pension for incumbent CEO in response to investor feedback and 2018 UK Corporate Governance Code Aligns Executive Director pension contributions with those of applicable wider workforce over time
Annual bonus	Increase mandatory deferral into shares from 33% to 50% of total bonus earned **No change to Policy maximum of 250% of base salary**	Bonus will be below Policy maximum for 2020, as follows: CEO bonus: > Target: 100% of base salary > Max: 200% of base salary (2019: 180%) CFO bonus: > Target: 90% of base salary > Max: 180% of base salary (2019: 150%) Simplify from five performance measures to four	0 – 200% range brings the calculation of bonus for CEO in line with the scorecard for our wider workforce Deferral reduces annual cash compensation and strengthens alignment with long-term interests of shareholders Reduced number of performance measures simplifies performance assessment. Performance measures continue to be rigorously tested to ensure stretching performance targets are set for each measure
Performance Share Plan (PSP)	Increase maximum opportunity from 500% to 550% of base salary	Increase CEO PSP award from 500% to 550% of base salary CFO PSP award of 400% of base salary Simplify from five performance measures to four	Closing the gap to market pay levels within the competitive global pharmaceutical talent pool Increase weighting on long-term performance Reduced number of performance measures simplifies performance assessment. Performance measures continue to be rigorously tested to ensure stretching performance targets are set for each measure
Shareholding requirements		Increase shareholding requirements to mirror annual PSP opportunity: > Shareholding requirement for CEO increases from 300% to 550% of base salary > Shareholding requirement for CFO increases from 200% to 400% of base salary Executive Directors required to hold up to 100% of their shareholding requirement for two years after leaving office	Ensures further alignment with shareholders during and post-employment and complies with the 2018 UK Corporate Governance Code

Remuneration Policy

This section sets out the Directors' Remuneration Policy (the Policy) proposed for approval by shareholders at the Company's AGM on 29 April 2020. Subject to shareholder approval, the Policy is intended to remain in effect for three years from the 2020 AGM. The previous page summarises how the Policy differs from the policy which was approved by shareholders at the 2017 AGM.

Setting the Policy

The Remuneration Committee (the Committee) is responsible for setting overall remuneration policy and makes decisions about specific remuneration arrangements in the broader context of employee remuneration throughout the Group. The Committee reviews Group remuneration data annually, including ratios of average pay to senior executive pay; bonus data; and gender and geographical data in relation to base salaries and variable compensation. This includes a workforce remuneration review to understand the ways in which reward is differentiated by performance across the population.

Remuneration for all roles within the organisation is benchmarked against that for comparable roles in similar organisations and in the employee's local market. Executive Directors' remuneration is benchmarked against a global pharmaceutical peer group and the FTSE30. In reviewing the base salaries of Executive Directors, the Committee considers the overall level of any salary increases being awarded to employees in the Executive Director's local market in the relevant year. In setting, reviewing and implementing the Policy, the Committee seeks independent advice and ensures that no Director makes decisions relating to their own remuneration. The Committee connects with the Audit Committee to ensure that the Group's remuneration policies and practices achieve the right balance between appropriate incentives to reward good performance, management of risk, and the pursuit of the Company's business objectives.

The Board as a whole takes responsibility for gathering the views of AstraZeneca's workforce, and does so through multiple channels of engagement. While the Committee does not consult employees specifically when setting the Executive Directors' remuneration policy, the Company engages with employees, either on a Group-wide basis or in the context of smaller focus groups, to solicit feedback generally on a wide range of matters, including pay. Many employees are also shareholders in the Company and therefore have the opportunity to vote on the Policy at the 2020 AGM.

In all aspects of its work, the Committee considers both the external environment in which the Company operates and the guidance issued by organisations representing institutional shareholders. It consults the Company's major investors on general and specific remuneration matters and provides opportunities for representatives of those investors to meet the Chairman of the Committee and other Committee and Board members. It is the Company's policy to seek input from major shareholders on an *ad hoc* basis when significant changes to remuneration arrangements are proposed. A thorough consultation process was undertaken as this Policy was developed, with investors' feedback on the Committee's proposals influencing the final Policy. The Company's shareholders are encouraged to attend the AGM and any views expressed will be considered by Committee members.

Legacy arrangements

The Committee may approve remuneration payments and payments for loss of office on terms that differ to the terms in the Policy where the terms of the payment were agreed before the Policy came into effect or were agreed at a time when the relevant individual was not a Director of the Company (provided that, in the opinion of the Committee, the agreement was not entered into in consideration for the individual becoming a Director of the Company). This includes the exercise of any discretion available to the Committee in connection with such payments. For these purposes, payments include the Committee satisfying awards of variable remuneration, including share awards, in line with the terms agreed at the time the award was granted.

Minor amendments

The Committee may make minor amendments to the arrangements for Directors described in the Policy without shareholder approval for regulatory, exchange control, tax or administrative purposes or to take account of a change in legislation.

Remuneration Policy for Executive Directors

Fixed elements of remuneration: base salary, benefits and pension

Base salary

Purpose and link to strategy	Operation	Maximum opportunity
Intended to be sufficient to attract, retain and develop high-calibre individuals.	When setting base salary, the Committee gives consideration to a number of factors, including (but not limited to): > recognition of the value of an individual's personal performance and contribution to the business > the individual's skills and experience > internal relativities > conditions in the relevant external market Base salaries are normally reviewed annually with any change usually taking effect from 1 January.	While there is no formal maximum, any increases in base salary will normally be in line with the percentage increases awarded to the employee population within the individual's country location. Higher increases may be made if the Committee considers it appropriate, for example to reflect: > an increase in the scope and/or responsibility of the individual's role; or > development of the individual within the role.

Benefits

Purpose and link to strategy	Operation	Maximum opportunity
Intended to provide a market competitive benefits package sufficient to attract, retain and develop high-calibre individuals.	UK Executive Directors are provided with a fund, the value of which is based on a range of benefits, including private medical provision for partner and children; life assurance; permanent health provision; company car; additional holidays and other additional benefits made available by the Company from time to time that the Committee considers appropriate based on the Executive Director's circumstances. A Director may choose to take a proportion of, or the entire, fund as cash. Non-UK-based Executive Directors will receive a range of benefits (or a fund of equivalent value) comparable to those typically offered in their local market. Depending on local market practices, they may be able to elect to take the fund as cash or elect to take one or more of these benefits and take the balance as cash. At its discretion, the Committee may consider support towards reasonable costs associated with relocation and/or provide an allowance towards reasonable fees for professional services such as legal, tax, property and financial advice. The Company may also fund the cost of a driver and car for Executive Directors and any expenses deemed to be taxable which are reasonably incurred in the course of the Company's business, together with any taxes thereon. The Company provides directors' and officers' liability insurance and an indemnity to the fullest extent permitted by law and the Company's Articles.	The maximum value of the benefits available will be equivalent to the cost to the Company of the suite of benefits available in the local market at the time. The value of the support towards the costs of relocation, professional fees and other costs will be the reasonable costs associated with the Executive Director's particular circumstances. The maximum value of the directors' and officers' liability insurance and third-party indemnity insurance is the cost at the relevant time. While the Committee has not set an overall level of benefit provision, the Committee keeps the benefit policy and benefit levels under review.

Pension

Purpose and link to strategy	Operation	Maximum opportunity
Provision of retirement benefits to attract, retain and develop high-calibre individuals.	UK-based Executive Directors receive a pension allowance based on a percentage of base salary, which the Director may elect to pay into a pension scheme (or an equivalent arrangement) or take as cash. Non-UK-based Executive Directors will receive an allowance for the purpose of providing retirement benefits in line with local market practice. A non-UK-based Executive Director may be offered the opportunity to elect to take some or all of the allowance as cash.	The maximum pension allowance that may be provided to UK-based Executive Directors appointed after 1 January 2019 shall be capped at a level in line with the pension arrangements of other UK employees. The maximum value that may be provided to non-UK-based Executive Directors will be aligned with employees in the relevant local market. Pension arrangements for Pascal Soriot and Marc Dunoyer have been frozen at fixed monetary values. These are equivalent to 20% of 2019 base salary for Pascal Soriot (£257,706) and equivalent to 24% of 2019 base salary for Marc Dunoyer (£183,670).

Remuneration Policy for Executive Directors *continued*

Variable elements of remuneration: annual bonus and long-term incentive

Annual bonus and Deferred Bonus Plan (DBP)

Purpose and link to strategy	Operation	Maximum opportunity
The annual bonus incentivises and rewards short-term performance against Group targets and individual objectives that are closely aligned to the Company's strategy. **The deferred share element of the annual bonus is designed to align Executive Directors' interests with those of shareholders.**	Annual bonus awards are conditional on performance. Performance is measured over one year and the bonus, if awarded, is paid after the year end. Normally half of the bonus is delivered in cash and half is delivered in shares, which are deferred for three years under the DBP. DBP awards may consist of Ordinary Shares or American Depositary Shares (ADSs) depending on the country in which the Director is based. In line with the approach for other employees, a Director may be offered the opportunity to elect to defer part of their cash bonus into pension. Stretching Group targets are set annually by the Committee based on the key strategic priorities for the year. The performance targets form a Group scorecard, which is closely aligned to the Company's strategy, and are designed to reward scientific, commercial and financial success. Performance is assessed in relation to each performance target on a standalone basis. A threshold level of performance is specified; if performance falls below this level, there will be no payout for that proportion of the award. Payout levels are determined by the Committee after the year end, based on performance against the Group scorecard targets as well as each Executive Director's individual performance. The Committee may use its discretion to ensure that a fair and balanced outcome is achieved, taking into account the overall performance of the Company and the experience of shareholders. On vesting of the deferred shares, shares equivalent in value to the dividends that would have been paid during the deferral period will be awarded to the Director. The Committee has discretion to claw-back from individuals some or all of the cash bonus award in certain circumstances including (i) serious misconduct by the individual (for up to six years from the payment date); (ii) material misstatement or restatement of the results of the Group (for up to two years from the payment date); or (iii) significant reputational damage to the Group (for up to two years from the payment date). For shares under the DBP, the Committee has discretion to reduce or cancel any portion of an unvested deferred bonus share award in certain circumstances (malus) including (i) serious misconduct by the individual; (ii) material misstatement or restatement of the results of the Group; or (iii) significant reputational damage to the Group. The Committee also has discretion to claw-back from individuals some or all of the deferred bonus share award in certain circumstances, including (i) serious misconduct by the individual (for up to six years from the vesting date); (ii) material misstatement or restatement of the results of the Group (for up to two years from the vesting date); or (iii) significant reputational damage to the Group (for up to two years from the vesting date).	The maximum annual bonus amount that can be awarded is equivalent to 250% of base salary. If the Committee believed it to be in the interests of shareholders to award an annual bonus exceeding the equivalent of 200% of base salary, it would consult major shareholders in advance.

Long-term incentive (LTI): Performance Share Plan (PSP)

Purpose and link to strategy	Operation	Maximum opportunity
The PSP is designed to align the variable pay of Executive Directors with the successful execution of the Company's strategy.	PSP awards are conditional awards and may be granted over Ordinary Shares or American Depositary Shares (ADSs) depending on the country in which the Director is based. Vesting is dependent on the achievement of stretching performance targets and continued employment, as further described in the Treatment of LTI and Deferred Bonus Plan awards on cessation of employment section on page 158. Stretching performance targets are set by the Committee at the beginning of the relevant performance period. Performance measures are closely aligned to the Company's strategy and are designed to reward scientific, commercial and financial success. The Committee will consult with major shareholders in advance if it proposes any material changes to the PSP performance measures. When selecting the performance measures for each award, the Committee weights the performance measures as it considers appropriate, taking into account strategic priorities. The Committee's intention is to exercise appropriate judgement both when setting performance targets and assessing outcomes, in particular so that the experience of shareholders over time is taken into account. Performance is normally assessed over a three-year period commencing on 1 January in the year of grant. Shares are subject to a two-year holding period following the performance period, so vesting takes place on the fifth anniversary of grant. During the holding period, no further performance measures apply. Typically, 20% of the proportion of a PSP award linked to a performance measure will vest on achievement of the threshold level of performance and 100% will vest if the maximum level of performance is achieved in full. For relative measures (such as relative total shareholder return (TSR)) the threshold performance will be performance at or above median, and maximum performance will usually be set as achievement of performance at the upper quartile level of the peer group. Where a performance measure permits, there will be further vesting points between threshold and maximum vesting levels. The Committee may (acting fairly and reasonably) adjust or waive a performance target if an event occurs that causes it to believe that the performance target is no longer appropriate. On vesting, shares equivalent in value to the dividends that would have been paid on the vesting shares during the performance and holding periods will be awarded to the Director. The Committee has discretion to reduce or cancel any portion of an unvested award in certain circumstances (malus), including (i) serious misconduct by the individual; (ii) material misstatement or restatement of the results of the Group; or (iii) significant reputational damage to the Group. The Committee also has discretion to claw-back from individuals some or all of the award in certain circumstances, including (i) serious misconduct by the individual (for up to six years from the third anniversary of the date of grant); (ii) material misstatement or restatement of the results of the Group (for up to two years from the third anniversary of the date of grant); and (iii) significant reputational damage to the Group (for up to two years from the third anniversary of the date of grant).	The maximum market value of shares that may be awarded under the PSP in any year is equivalent to 550% of the participant's annual base salary at the date of grant.

Remuneration Policy for Executive Directors *continued*

UK Employee Share Plans

Share Incentive Plan (SIP)

Purpose and link to strategy	Operation	Maximum opportunity
Encouraging employee share ownership	The Company operates an HM Revenue & Customs (HMRC)-approved SIP whereby UK employees, including Executive Directors, may elect to save a regular amount to be used to purchase shares. The Company currently grants one matching share in respect of every four shares purchased by the participant.	Participants may contribute up to £150 per month from pre-tax pay or such other maximum amount as determined by the Company within the parameters of applicable legislation.

Save As You Earn Share Option Scheme (SAYE)

Purpose and link to strategy	Operation	Maximum opportunity
Encouraging employee share ownership	The Company operates an HMRC-approved SAYE whereby UK employees, including Executive Directors, may save a regular amount over three or five years and are granted options to purchase shares at the end of the saving period. A maximum discount of 20% to the market price prevailing at the date of the commencement of the scheme applies to the option price.	Participants may save up to £500 per month from post-tax pay or such other maximum amount as determined by the Company within the parameters of applicable legislation. The maximum opportunity available to participants in a non-UK-based all-employee share scheme will be determined by the Company within the parameters of applicable legislation.

Historical LTI: AstraZeneca Investment Plan (AZIP)

The final grant under the AZIP took place in 2016. All extant AZIP awards have completed the relevant performance period and are now subject to a holding period before vesting. The AZIP holding period lasts for four years following the performance period, so that vesting takes place on the eighth anniversary of the start of the performance period. The holding period attached to the 2016 AZIP award will end on 31 December 2023. During the holding period, no further performance measures apply. Payout of an award is subject to continued employment as further described in the Treatment of LTI and Deferred Bonus Plan awards on cessation of employment section on page 158. On vesting, the shares equivalent in value to the dividends that would have been paid on the vesting shares during the performance and holding periods will be awarded to the Director.

The Committee has discretion to reduce or cancel any portion of an unvested award in certain circumstances (malus), including (i) material misstatement or restatement of the results of the Group; (ii) significant reputational damage to the Group; or (iii) serious misconduct by the individual. The Committee has discretion to claw-back from individuals some or all of the award in certain circumstances, including (i) serious misconduct by the individual (for up to six years from the end of the performance period); (ii) material misstatement or restatement of the results of the Group (for up to two years from the end of the performance period); or (iii) significant reputational damage to the Group (for up to two years from the end of the performance period).

Differences in remuneration policy for other employees

The Company's approach to determining and reviewing the salaries of the Executive Directors and the employee population as a whole is the same. On an annual basis the salaries for individual roles are reviewed in the context of the external market. AstraZeneca participates in annual global compensation surveys, which provide benchmarking data for all roles within the organisation, ensuring a robust salary review process for all roles. Employee salaries are reviewed through our annual review process. The Company seeks to provide an appropriate range of competitive benefits, including healthcare and pension, to all employees (including Executive Directors) in the context of their local market.

Employees globally may be eligible for LTI awards in the form of the PSP and/or restricted stock units depending on their level and market. The occupants of senior roles in the Company are currently eligible for PSP awards – these are the leaders who have the ability to directly influence the execution of the Company's strategic goals. A proportion of each Senior Executive Team (SET) member's annual bonus is deferred into shares under the DBP. An LTI award may be used for the same purpose as described above on the recruitment of employees, or, for employees other than Directors, for retention.

Remuneration scenarios for Executive Directors

The charts below illustrate how much the current Executive Directors could receive under different performance scenarios in 2020. To compile the charts, the following assumptions have been made. Dividend equivalents payable in respect of PSP awards are not included in the scenarios.

Minimum remuneration

> base salary is that applicable in 2020
> taxable benefits are those included in the Executive Directors' single total figure of remuneration for 2019, as set out in the table on page 132
> pension values are fixed at monetary values equivalent to 20% of 2019 base salary for Pascal Soriot and equivalent to 24% of 2019 base salary for Marc Dunoyer

	Base salary £'000	Taxable benefits £'000	Pension £'000	Total £'000
Pascal Soriot (CEO)	1,289	124	258	1,671
Marc Dunoyer (CFO)	765	63	184	1,012

Remuneration for performance in line with the Company's expectations

> annual bonus payout is equivalent to 100% of 2020 base salary for Pascal Soriot and 90% of 2020 base salary for Marc Dunoyer
> PSP share award vesting at 275% of 2020 base salary for Pascal Soriot and 200% of 2020 base salary for Marc Dunoyer (representing 50% of the face value of the PSP award)

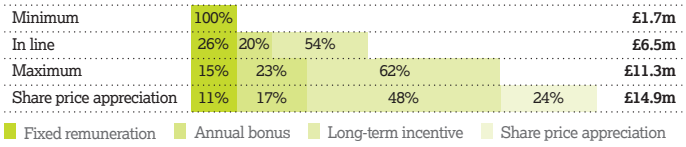
Maximum remuneration

> annual bonus payout equivalent to 200% of 2020 base salary for Pascal Soriot and 180% of 2020 base salary for Marc Dunoyer
> PSP share award vesting at 550% of 2020 base salary for Pascal Soriot and 400% of 2020 base salary for Marc Dunoyer (representing 100% of the face value of the PSP award)

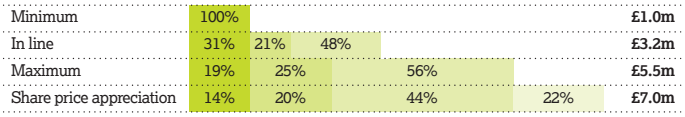
Share price appreciation

> the potential impact of share price appreciation on PSP award values in the maximum remuneration scenario is illustrated, assuming a 50% increase on the share price at grant

Pascal Soriot



Marc Dunoyer



Fixed remuneration | Annual bonus | Long-term incentive | Share price appreciation

Approach to recruitment remuneration for Executive Directors

On the recruitment of a new Executive Director, the Committee seeks to pay no more than is necessary to attract and retain the best candidate available, within the limits of our approved Remuneration Policy. The Committee will offer a remuneration package that it considers appropriate in the particular circumstances of the recruitment, giving due regard to the interests of the Company's shareholders and taking into account factors such as typical market practice, existing arrangements for the other Executive Directors, internal relativities and market positioning.

The pharmaceutical industry is global and future Executive Directors might be recruited from organisations with pay structures and practices that differ from AstraZeneca's usual remuneration policy. The Committee believes that it is in the interests of shareholders for it to retain an element of flexibility in its approach to recruitment to enable it to attract the best candidates; however, this flexibility is limited.

The Committee may find it necessary to compensate a new recruit for forfeiture of entitlements as a consequence of the recruit leaving his or her previous employment to join AstraZeneca. There is no limit to the value of such buy-out award, however the Committee will rigorously consider the appropriate value so as not to pay more than the compensation being forfeited. The Committee will seek to offer a package weighted towards equity in the Company, and will usually seek to use the PSP as the primary vehicle for buy-out awards where possible; however, the precise nature of the compensation arrangement will depend on the type of entitlement being forfeited. The arrangement might therefore comprise a combination of cash, share awards granted under the PSP (subject to the Policy maximum), and other restricted shares. The Committee may introduce a one-off arrangement as permitted under Listing Rule 9.4.2 in order to deliver a restricted share award. Malus and claw-back provisions would normally apply to buy-out awards, for the same reasons as detailed under the DBP and PSP.

Restricted share awards will only be granted as part of recruitment arrangements to compensate for loss of remuneration opportunities suffered on leaving previous employment.

The Committee considers whether the lost incentives were subject to performance targets and their probability of vesting. The normal approach is to seek broadly to mirror the timing of vesting and application of performance targets of the compensation being forfeited. For example, a buy-out award may be granted without performance conditions where the foregone compensation was not subject to performance testing, however the Committee may apply appropriate performance measures if it considers it appropriate.

The Committee may allow a restricted share award to vest in tranches at different points. If no performance targets are attached to a compensatory award, it will vest in full if the individual remains in employment on the vesting date. On vesting, shares equivalent in value to the dividends that would have been paid during the vesting period will be awarded to the Director.

Remuneration Policy for Executive Directors *continued*

All other aspects of a new recruit's compensation opportunity will be subject to the maxima stated in the Policy. In the case of Group employees who are promoted internally to the position of Executive Director, the Committee intends to honour all remuneration arrangements entered into before the promotion.

The Company may reimburse the costs of financial planning, legal and tax advice and reasonable costs incurred on recruitment, including relocation support.

Service contracts for Executive Directors

Save as noted below, it is not intended that service contracts for new Executive Directors will contain terms that are materially different from those summarised below or contained in the Policy as set out in this Remuneration Policy Report. The contractual obligations below are applicable to each of the current Executive Directors unless stated otherwise. Copies of the Executive Directors' service contracts can be inspected at the Company's Registered Office.

Notice period	The service contracts of Executive Directors do not have a fixed term but the Company may terminate employment by giving not less than 12 months' written notice. The Company may agree on appointment that any notice given by the Company will not expire prior to the second anniversary of the commencement date of the Executive Director's appointment. Executive Directors may terminate their employment on 12 months' written notice.
Payments in lieu of notice	The Company may terminate an Executive Director's contract at any time with immediate effect and pay a sum in lieu of notice. This sum will consist of (i) the base salary that they would have been entitled to receive during the notice period and (ii) the cost to the Company of funding the benefit arrangements for this period, including the Company's contribution in respect of pension.
Garden leave	The Company has the right to place the Executive Director on 'garden leave'.
Summary termination	The Company may terminate employment summarily in particular defined circumstances such as gross misconduct, with no further payment.
Payments in lieu of holiday	If, on termination, the Executive Director has exceeded their accrued holiday entitlement, the value of this excess may be deducted by the Company from any sums payable. If the Executive Director has unused holiday entitlement, the Committee has discretion to require the Executive Director to take such unused holiday during any notice period or make a payment in lieu of it calculated in the same way as the value of any excess holiday.
Directors' and officers' liability insurance	Directors' and officers' liability insurance and an indemnity to the fullest extent permitted by law and the Company's Articles is provided for the duration of an Executive Director's employment and for a minimum of five years following termination.
Deemed treatment under AZIP	In respect of awards made to compensate Mr Soriot for loss of remuneration opportunity at his previous employer, if Mr Soriot gives notice of termination of his employment after the end of the performance period under the AZIP but before the end of the holding period, the award under the AZIP will vest on the earlier of the end of the holding period and the end of the period of 24 months from the date of cessation of employment, unless the Committee determines otherwise.

Principles of payment for loss of office for Executive Directors

The Company does not make additional payments for loss of office, other than, as appropriate, payments in lieu of notice as described above or payments in respect of damages if the Company terminates an Executive Director's service contract in breach of contract (taking into account, as appropriate, the Director's responsibility to mitigate any losses). The Committee has discretion to award payments in certain circumstances, as set out on the following page, depending on the nature of the termination and the Executive Director's performance. The LTI plans are governed by plan rules, which define how individual awards under those plans should be treated upon termination of employment and corporate activity, including sale of a business outside the Group. The treatment of awards in these circumstances will be determined according to the rules and subject to Committee discretion. Aside from the reasons relating to corporate activity, generally, awards under LTI plans will only be allowed to vest for those Executive Directors who leave the Company in circumstances such as ill-health, injury, disability, redundancy or retirement, or any other reason the Committee considers appropriate, or where employment terminates by reason of the Executive Director's death (see the table on page 158 for further information). Awards that are allowed to vest will typically be pro-rated for time, subject to the Committee's discretion. In addition to any payment in lieu of notice, the individual components of remuneration and other payments which may be payable on loss of office are set out on the following pages, subject to the terms of any applicable bonus rules or share plan rules. No awards will vest where an individual has been dismissed for cause.

Annual bonus
At the discretion of the Committee, an Executive Director may receive a bonus for the performance year in which they leave the Company. Typically, this sum will reflect a bonus pro-rated for the part of the year in which they worked. This will depend on the circumstances, including an assessment of performance against the scorecard and the Executive Director's performance in the relevant period and the circumstances of their departure, and may be in such proportion of cash and/or shares as the Committee will determine. The deferred share element of previous bonuses granted, and any deferred share element of the bonus awarded in respect of the departing year, may still vest for the benefit of the departing Executive Director at the end of the period of deferral. The Committee has the discretion to accelerate and/or retain the deferral period and allow shares to vest for the benefit of the Executive Director on their departure and/or in accordance with the vesting schedule as the case may be.

LTI plans
The LTI plan rules envisage circumstances under which some, all or none of the shares held under LTI plans will vest in connection with departure. The exact timing and number of shares vesting will depend on the circumstances, including the reason for leaving (as set out in the table on page 158) and may be subject to Committee discretion, depending on what it considers to be fair and reasonable in the circumstances.

Restricted share awards
The treatment on termination will depend upon the terms of the individual Executive Director's awards on recruitment. The Committee has discretion to determine the treatment at the time of departure based on what it considers to be fair and reasonable in the circumstances.

Non-statutory redundancy payment
Executive Directors are not entitled to non-statutory redundancy payments.

Pension contributions and other benefits
Pension contributions and other benefits for Executive Directors will be payable up to the termination date or as part of a payment in lieu of notice as described on page 156.

Payments in relation to statutory rights
The amount considered reasonable to pay by the Committee in respect of statutory rights may be included in the overall termination payment.

Payments required by law
The Committee reserves the right to make any other payments in connection with an Executive Director's cessation of office or employment where the payments are made in good faith in discharge of an existing legal obligation (or by way of damages for breach of such an obligation) or by way of settlement of any claim arising in connection with the cessation of an Executive Director's office or employment.

Mitigation
The departing Executive Director will be required to mitigate their loss by using reasonable efforts to secure new employment.

Professional fees
The Company may pay an amount considered reasonable by the Committee in respect of fees for legal and tax advice, and outplacement support for the departing Executive Director.

Remuneration Policy for Executive Directors *continued*

Treatment of LTI and Deferred Bonus Plan awards on cessation of employment

Plan	Termination by mutual agreement (broadly in circumstances of ill-health, injury, disability, redundancy or retirement and in the case of death and certain corporate events e.g. sale of a business outside the Group)	Other leaver scenarios
Deferred Bonus Plan (Annual bonus)	Awards will vest at the end of the relevant deferral period, unless the Committee decides otherwise.	Ordinarily awards will lapse unless the Committee exercises its discretion to apply the treatment for leavers by mutual agreement.
PSP	Where cessation of employment occurs within three years of the date of grant, awards will vest, pro rata, to the time elapsed between the date of grant of the award and the date of cessation of employment, after the end of the performance period, to the extent that the performance target(s) measured over the performance period has been met. However, the Committee has discretion to permit the award to vest immediately on cessation of employment to the extent that the performance target(s) has, in the opinion of the Committee, been satisfied from the date of grant to the date of cessation of employment. However, if the Committee believes that exceptional circumstances warrant this, it may exercise its discretion to vest the award on another basis. Where cessation of employment occurs during any holding period, the award will vest in respect of all the shares that continue to be subject to the award as soon as practicable following the cessation of employment. However, the Committee has discretion to require the award to vest only at the end of the holding period.	Other than during a holding period, ordinarily awards will lapse unless the Committee exercises its discretion to preserve all or part of an award and apply the default treatment for leavers by mutual agreement as described in this table. This discretion will not be exercised in the case of dismissal for gross misconduct.
AZIP	The final grant under the AZIP took place in 2016. All extant AZIP awards have completed the relevant performance period and are now subject to a holding period before vesting. Death, ill-health, injury or disability: > in the holding period: the award will vest in respect of all the shares that continue to be subject to the award as soon as practicable following the cessation of employment. Redundancy, retirement or certain corporate events (e.g. sale of a business outside the Group): > in the holding period: the award will vest in respect of all shares that continue to be subject to the award at the earlier of the end of the holding period and the end of the period of 24 months from the date of cessation of employment. Where the Committee terminates an Executive Director's employment (other than for gross misconduct) during the holding period, the awards will vest on the same basis. In each case described above, the Committee has discretion to vest the award or part of the award on a different basis.	Ordinarily awards will lapse unless the Committee exercises its discretion to apply the default treatment for leavers by reason of redundancy or retirement described in this table.
Restricted shares	In relation to awards granted at the time of the Executive Director's recruitment to the Company in compensation for any awards or bonuses forfeited at his or her previous employer, the award will vest on the date his or her employment ceases. The Committee will, in its discretion, determine the proportion of shares which vests, and (unless exceptional circumstances apply) take into account the period elapsed between the date of grant and the date of cessation of employment.	Ordinarily awards will lapse unless the Committee exercises its discretion to preserve all or part of an award.

Remuneration Policy for Non-Executive Directors

Non-Executive Directors, including the Chairman, receive annual Board fees. With the exception of the Chairman, Non-Executive Directors receive additional fees for membership and chairmanship of Board Committees and for holding the position of senior independent Non-Executive Director. Non-Executive Directors are not eligible for performance-related bonuses or to participate in any of the Company's share-based incentive plans. No pension contributions are made on their behalf. The annual Board fees applicable to Non-Executive Directors are set out in the Annual Report on Remuneration. Changes to these fees in future years will be set out in the corresponding year's Annual Report on Remuneration. The remuneration of Non-Executive Directors (excluding the Chairman) is determined by the Chairman and the Executive Directors. The remuneration of the Chairman is determined by the other members of the Committee and the senior independent Non-Executive Director.

Annual Board fees

Purpose and link to strategy	Operation	Maximum opportunity
The annual fees are intended to be sufficient to attract, retain and develop high-calibre individuals.	Board fees for Non-Executive Directors are subject to periodic review and may be increased in the future to ensure that they remain sufficient to attract high-calibre individuals while remaining fair and proportionate. Although Non-Executive Directors currently receive their fees in cash, the Company may pay part or all of their fees in the form of shares. Non-Executive Directors are eligible to receive a base fee and additional fees where appropriate to reflect any additional time commitment or duties (e.g. being the chairman of a committee). The fee structure is set out in the Annual Report on Remuneration.	The aggregate ordinary remuneration of the Non-Executive Directors shall not exceed the maximum specified in Articles 88 and 89 of the Company's Articles, as approved by the Company's shareholders. As at the date of this Policy, the maximum aggregate remuneration is £2,250,000 per annum and any Non-Executive Director who serves on any Board committee may be paid such extra remuneration as the Board may determine.

Benefits

Purpose and link to strategy	Operation	Maximum opportunity
Intended to attract and retain high-calibre individuals.	The Company also provides directors' and officers' liability insurance and an indemnity to the fullest extent permitted by law and the Company's Articles and may also reimburse the costs of financial planning and tax advice.	The maximum amount payable in respect of these costs and cost of insurance will be the reimbursement of the Directors' benefits grossed up for any tax payable by the individual.

Other costs and expenses

Purpose and link to strategy	Operation	Maximum opportunity
Intended to reimburse individuals for legitimately incurred costs and expenses.	In addition to the Chairman's fee, the office costs of the Chairman may be reimbursed. In 2019, this amounted to £72,000. The amount of office costs to be reimbursed each year will be determined at the discretion of the Committee, based on an assessment of the reasonable requirements of the Chairman. The Committee has the discretion to approve contributions by the Company to office costs of other Non-Executive Directors in circumstances where such payments are deemed proportionate and reasonable. The Company will pay for all travel (including travel to the Company's offices), hotel and other expenses reasonably incurred by Non-Executive Directors (and any associated tax thereon) in the course of the Company's business, for example, professional fees such as secretarial support, and reimbursement for domestic security arrangements such as lights and alarms following a security assessment. There are no contractual provisions for claw-back or malus of other costs and expenses.	The maximum amounts payable in respect of these costs and expenses will be the reimbursement of the Directors' costs and expenses grossed up for any tax payable by the individual.

Letters of appointment

None of the Non-Executive Directors has a service contract but each has a letter of appointment. The terms and conditions of appointment of Non-Executive Directors may be viewed on the Governance page of the AstraZeneca website, at www.astrazeneca.com. In accordance with the Company's Articles, following their appointment, all Directors must retire at each AGM and may present themselves for re-election. The Company is mindful of the director independence provisions of the 2018 UK Corporate Governance Code and, in this regard, a Non-Executive Director's overall tenure will not normally exceed nine years. The Chairman may terminate his appointment at any time, on three months' notice. None of the other Non-Executive Directors has a notice period or any provision in their letter of appointment giving them a right to compensation upon early termination of appointment.

On behalf of the Board

A C N Kemp
Company Secretary
14 February 2020

Financial Statements

Key

KJ Key Judgement

SE Significant Estimates

Preparation of the Financial Statements and Directors' Responsibilities

The Directors are responsible for preparing this Annual Report and Form 20-F Information and the Group and Parent Company Financial Statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare Group and Parent Company Financial Statements for each financial year. Under that law they are required to prepare the Group Financial Statements in accordance with IFRSs as issued by the IASB and adopted by the EU, and applicable law, and have elected to prepare the Parent Company Financial Statements in accordance with UK Accounting Standards, including FRS 101 'Reduced Disclosure Framework' and applicable law.

Under company law, the Directors must not approve the Financial Statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and Parent Company and of their profit or loss for that period. In preparing each of the Group and Parent Company Financial Statements, the Directors are required to:

- select suitable accounting policies and then apply them consistently
- make judgements and estimates that are reasonable and prudent
- for the Group Financial Statements, state whether they have been prepared in accordance with IFRSs as adopted by the EU
- for the Parent Company Financial Statements, state whether FRS 101 has been followed, subject to any material departures disclosed and explained in the Parent Company Financial Statements
- prepare the Financial Statements on the going concern basis unless it is inappropriate to presume that the Group and the Parent Company will continue in business.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the Parent Company's transactions and disclose with reasonable accuracy at any time the financial position of the Parent Company and enable them to ensure that its Financial Statements comply with the Companies Act 2006. They have general responsibility for taking such steps as are reasonably open to them to safeguard the assets of the Group and to prevent and detect fraud and other irregularities.

Under applicable law and regulations, the Directors are also responsible for preparing a Directors' Report, Strategic Report, Directors' Remuneration Report, Corporate Governance Report and Audit Committee Report that comply with that law and those regulations.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on our website. Legislation in the UK governing the preparation and dissemination of Financial Statements may differ from legislation in other jurisdictions.

Directors' responsibility statement pursuant to DTR 4

The Directors confirm that to the best of our knowledge:

- the Financial Statements, prepared in accordance with the applicable set of accounting standards, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Company and the undertakings included in the consolidation taken as a whole
- the Directors' Report includes a fair review of the development and performance of the business and the position of the issuer and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face.

On behalf of the Board of Directors on
14 February 2020
Pascal Soriot
Director

Directors' Annual Report on Internal Controls over Financial Reporting

The Directors are responsible for establishing and maintaining adequate internal control over financial reporting. AstraZeneca's internal control over financial reporting is designed to provide reasonable assurance over the reliability of financial reporting and the preparation of consolidated Financial Statements in accordance with generally accepted accounting principles.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

The Directors assessed the effectiveness of AstraZeneca's internal control over financial reporting as at 31 December 2019 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control-Integrated Framework (2013). Based on this assessment, the Directors believe that, as at 31 December 2019, the internal control over financial reporting is effective based on those criteria.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the effectiveness of internal control over financial reporting as at 31 December 2019 and has issued an unqualified report thereon.

Independent Auditors' Report to the Members of AstraZeneca PLC

Report on the audit of the financial statements

Opinion

In our opinion:

- AstraZeneca PLC's Group Financial Statements and Parent Company Financial Statements (the "financial statements") give a true and fair view of the state of the Group's and of the Parent Company's affairs as at 31 December 2019 and of the Group's profit and cash flows for the year then ended;
- the Group Financial Statements have been properly prepared in accordance with International Financial Reporting Standards (IFRSs) as adopted by the European Union;
- the Parent Company Financial Statements have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 101 "Reduced Disclosure Framework", and applicable law); and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards the Group Financial Statements, Article 4 of the IAS Regulation.

We have audited the financial statements, included within the Annual Report and Form 20-F Information 2019 (the "Annual Report"), which comprise: the Consolidated Statement of Financial Position as at 31 December 2019, the Consolidated Statement of Comprehensive Income for the year ended 31 December 2019, the Consolidated Statement of Cash Flows for the year ended 31 December 2019, the Consolidated Statement of Changes in Equity for the year ended 31 December 2019, the Group Accounting Policies and the Notes to the Group Financial Statements, the Company Balance Sheet as at 31 December 2019, the Company Statement of Changes in Equity for the year ended 31 December 2019, the Company Accounting Policies and the Notes to the Company Financial Statements.

Our opinion is consistent with our reporting to the Audit Committee.

Separate opinion in relation to IFRSs as issued by the IASB

As explained in the Group Accounting Policies, the Group, in addition to applying IFRSs as adopted by the European Union, has also applied IFRSs as issued by the International Accounting Standards Board (IASB).

In our opinion, the Group Financial Statements have been properly prepared in accordance with IFRSs as issued by the IASB.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) ("ISAs (UK)") and applicable law. Our responsibilities under ISAs (UK) are further described in the Auditors' responsibilities for the audit of the financial statements section of our report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Independence

We remained independent of the Group in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, which includes the FRC's Ethical Standard, as applicable to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

To the best of our knowledge and belief, we declare that non-audit services prohibited by the FRC's Ethical Standard were not provided to the Group or the Parent Company.

Other than those disclosed in note 30 to the Group Financial Statements, we have provided no non-audit services to the Group or the Parent Company in the period from 1 January 2019 to 31 December 2019.

Our audit approach

Overview

Materiality

- Overall Group materiality: $140m (2018: $130m), based on approximately 5% of profit before tax after adding back intangible asset impairment charges (note 10), fair value movements and discount unwind on contingent consideration and the Acerta Pharma put option liability (note 20), and material legal settlements (note 21).
- Overall Parent Company materiality: $50m (2018: $100m), representing 0.2% of net assets as constrained by the allocation of overall Group materiality.

Audit scope

- We identified ten reporting components which required a full scope audit of their complete financial information, either due to their size or risk characteristics. These components are the principal operating units in the US, UK, Sweden, China, Japan, France, Germany and Brazil as well as the Parent Company and AstraZeneca Treasury Limited.
- We also identified a further nine reporting components which had one or more individual balances that were considered significant to the Group's Financial Statements. For these components our work was solely focussed on revenue, accounts receivable, inventory, research and development expense or property, plant and equipment, as appropriate.
- Audit procedures were performed centrally over certain shared service functions for transaction processing, IT and in relation to various Group functions, including taxation, pensions, goodwill, intangible assets (excluding software), other investments, and litigation matters, as well as the consolidation.
- Taken together, the above procedures accounted for 88% of the Group's revenue and over 77% of the Group's absolute profit before tax.

Key audit matters

- Recognition and measurement of accruals for certain rebates and returns in the US
- Assessment of the recoverability of the carrying value of intangible assets (product, marketing and distribution rights and other intangible assets)
- Recognition and measurement of litigation provisions and contingent liabilities
- Recognition and measurement of uncertain tax positions
- Valuation of the Group's defined benefit obligations

In 2019, accounting for externalisation and collaboration arrangements was not considered to be a key audit matter due to the nature of the arrangements entered into in 2019.

The scope of our audit

As part of designing our audit, we determined materiality and assessed the risks of material misstatement in the financial statements.

Capability of the audit in detecting irregularities, including fraud

Based on our understanding of the Group and the industry in which it operates, we identified that the principal risks of non-compliance with laws and regulations related to patent protection, product safety, competition law and environmental matters (see note 29), and we considered the extent to which non-compliance might have a material effect on the Group Financial Statements. We also considered those laws and regulations that have a direct impact on the preparation of the financial statements such as the Companies Act 2006 and tax legislation. We evaluated management's incentives and opportunities for fraudulent manipulation of the financial statements (including the risk of override of controls), and determined that the principal risks were related to posting inappropriate journal entries to manipulate financial results and potential management bias in accounting estimates. The Group engagement team shared this risk assessment with the component auditors so that they could include appropriate audit procedures in response to such risks in their work. Audit procedures performed by the Group engagement team and/or component auditors included:

- Discussions with management, internal audit, the Deputy Chief Compliance Officer and the Group's General Counsel and Deputy General Counsels, including consideration of known or suspected instances of non-compliance with laws and regulations and fraud;
- Evaluation and testing of the operating effectiveness of management's controls designed to prevent and detect irregularities;
- Assessment of matters reported on the Group's whistleblowing helpline and the results of management's investigation of such matters;
- Challenging assumptions made by management in their significant accounting estimates, in particular in relation to the recognition and measurement of certain rebate and return accruals, the impairment of intangible assets (excluding goodwill and software assets), the recognition and measurement of litigation provisions and contingent liabilities, the recognition and measurement of uncertain tax positions, and the valuation of the defined benefit obligations (see related key audit matters below); and
- Identifying and testing journal entries, in particular any journal entries posted with unusual account combinations, journals posted by senior management and consolidation journals.

There are inherent limitations in the audit procedures described above, and the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely we would become aware of it. Also, the risk of not detecting a material misstatement due to fraud is higher than the risk of not detecting one resulting from error, as fraud may involve deliberate concealment by, for example, forgery or intentional misrepresentations, or through collusion.

Key audit matters

Key audit matters are those matters that, in the auditors' professional judgement, were of most significance in the audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by the auditors, including those which had the greatest effect on: the overall audit strategy; the allocation of resources in the audit; and directing the efforts of the engagement team. These matters, and any comments we make on the results of our procedures thereon, were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. This is not a complete list of all risks identified by our audit.

Key audit matter	How our audit addressed the key audit matter
Recognition and measurement of accruals for certain rebates and returns in the US Refer to page 121 (Audit Committee Report), page 173 (Accounting Policies) and page 180 and 199 (note 1 and 20) in the Group Financial Statements. In the US the Group sells to customers under various commercial and government mandated contracts and reimbursement arrangements that include rebates for certain products, of which the most significant are Medicare Part D, Managed Care and Medicaid (and similar state programmes). In addition, sales arrangements provide a right of return. Rebates and returns provided to customers under these arrangements are accounted for as variable consideration, estimated at the time of sale using the expected value method, and recognised as a reduction in revenue, for which unsettled amounts are accrued. Management has determined an accrual of $3,383m to be necessary at 31 December 2019. Estimating future rebates and return arrangements is complex and establishing an appropriate accrual requires significant management estimation with respect to the application of the contractual and mandated terms with customers, historical experience and projected market conditions in the US. Changes in these estimates (individually or in combination) can have a significant financial impact.	We evaluated the design and tested the operating effectiveness of controls relating to the rebates and returns accrual and over the assumptions used to estimate the accruals for the Medicare Part D, Managed Care and Medicaid (and similar state programmes) rebate arrangements and the returns accruals. We determined that we could rely on these controls for the purposes of our audit. We obtained management's calculations for accruals under applicable schemes and assessed management's calculations by reference to the Group's stated commercial policies, the terms of the applicable contracts, third party data related to patient enrolment in US government funded benefit schemes and historical levels of product returns. We: - developed an independent expectation of these accruals using third party information on price and market conditions in the US, the terms of the specific rebate programs and returns policies, and the historical trend of actual rebate claims paid and returns made; - compared the independent estimate to management's estimates recorded by the Group; - considered the historical accuracy of the Group's estimates in previous years and the effect of any adjustments to prior years' accruals in the current year's results; and - tested a sample of rebate claims and returns processed by the Group, including evaluating those claims for consistency with the contractual and mandated terms of the Group's arrangements. Based on the procedures performed, we did not identify any material misstatements in the accruals. We also evaluated the appropriateness of the disclosures in Note 1 and Note 20 which we considered appropriate.

Key audit matter	How our audit addressed the key audit matter
Assessment of the recoverability of the carrying value of intangible assets (product, marketing and distribution rights and other intangible assets) Refer to page 122 (Audit Committee Report), page 175 (Accounting Policies) and page 190 (note 10) in the Group Financial Statements. The Group has product, marketing and distribution rights and other intangible assets (hereafter the intangible assets) totalling $20,601m at 31 December 2019. Those assets under development and not available for use are tested annually for impairment and other intangible assets are tested when there is an indication of impairment. The recoverability of the carrying values of intangible assets is contingent on future cash flows and/or the outcome of research and development (R&D) activities. There is a risk that the assets will be impaired if those cash flows or R&D outcomes are not in line with expectations. The projections in management's impairment models contain a number of significant estimates including the outcome of R&D activities, the probability of technical and regulatory success, and the amount and timing of projected future cash flows (in particular peak year sales and sales erosion curves). Changes in these assumptions could have an impact on the recoverable amount of intangible assets.	We evaluated the design and tested the operating effectiveness of controls over management's assessment of the impairment of intangible assets. We determined that we could rely on these controls for the purposes of our audit. For those assets or cash generating units which we selected based on our risk assessment to be in scope for our audit, we: > tested management's process for determining the recoverable amount; > evaluated the appropriateness of the methodology used in the impairment models; > tested the completeness and accuracy of the models as well as the underlying data used in the models, including ensuring that the cash flows reconcile to the Board approved Long Range Plan; and > evaluated the significant assumptions used by management in determining future cash flows, including the probability of technical and regulatory success, peak year sales and sales erosion curves. In evaluating the reasonableness of management's assumptions we: > compared significant assumptions (including management's probability of technical and regulatory success, peak year sales assumptions and sales erosion curves) to external data and benchmarks; > performed a retrospective comparison of forecasted revenue to actual past performance; and > performed sensitivity analyses. We utilised our in-house valuation experts to assess the valuation techniques used and to assist with the evaluation of other key assumptions for higher risk assets (primarily probability of technical and regulatory success). As a result of our work, we determined that the impairment charge of $1,031m recorded for intangible assets was reasonable. We considered the disclosures in note 10 of the Group Financial Statements, including sensitivity analysis based on reasonably possible downsides. We are satisfied that these disclosures are appropriate.
Recognition and measurement of litigation provisions and contingent liabilities Refer to page 122 (Audit Committee Report), page 178 (Accounting Policies) and page 200 and 220 (note 21 and 29) in the Group Financial Statements The Group is engaged in a number of legal actions, including patent litigation, product liability, anti-trust and related litigation. At 31 December 2019 the Group held provisions of $642m in respect of legal claims and disclosed the more significant legal matters in note 29. Determining the likelihood and magnitude of an unfavourable outcome in these matters involves significant management judgement. Accordingly, unexpected adverse outcomes could significantly impact the Group's reported profit and balance sheet position.	We evaluated the design and tested the operating effectiveness of controls in respect of the recognition and measurement of litigation matters and related disclosures. We determined that we could rely on these controls for the purposes of our audit. We obtained and evaluated letters of audit inquiry with internal and external legal counsel. We evaluated the reasonableness of management's assessment regarding whether (a) it is probable that a liability exists and (b) a reliable estimate can be made of the likely outcome. We considered management's judgements on the level of provisioning to be reasonable. We also evaluated the disclosures in Note 21 and Note 29, which we considered appropriate.
Recognition and measurement of uncertain tax positions Refer to page 122 (Audit Committee Report), page 175 (Accounting Policies) and page 224 (note 29) in the Group Financial Statements The Group operates in a complex multinational tax environment and is subject to a range of tax risks, leading to uncertain tax positions which arise in the normal course of business, including transaction related tax matters, transfer pricing arrangements and a number of audits and discussions with tax authorities. At 31 December 2019 the Group recorded provisions of $1,027m in respect of these uncertain tax positions. As disclosed in Note 29, accruals can be built up over a long period of time but the ultimate resolution of tax exposures usually occurs at a point in time, and given the inherent uncertainties in management's assessments of the outcomes of these exposures there could, in future periods, be adjustments to these provisions that have a material positive or negative effect on the results in any particular period.	We evaluated the design and tested the operating effectiveness of controls in respect of the recognition and measurement of uncertain tax positions. We determined that we could rely on these controls for the purposes of our audit. With the assistance of our local and international tax specialists, we tested the information used in the determination of whether uncertain tax positions arise and the calculation of the liability for those uncertain tax positions by jurisdiction, including management's assessment of the technical merits of tax positions (including where relevant evaluating any advice received from the Group's external advisors) and estimates of the amount of tax benefit expected to be sustained. We assessed the completeness of management's assessment of both the identification of uncertain tax positions and possible outcomes of each uncertain tax position. We also evaluated the status and results of tax audits and enquiries from the relevant tax authorities. We noted that the assumptions and judgements that are required to formulate the provisions mean that there is a range of possible outcomes. However, from the evidence obtained, we considered the level of provisioning to be acceptable in the context of the Group Financial Statements taken as a whole. We considered the disclosures in note 29 of the Group Financial Statements. We are satisfied that these disclosures are appropriate.

Key audit matter	How our audit addressed the key audit matter
Valuation of the Group's defined benefit obligations Refer to page 123 (Audit Committee Report), page 175 (Accounting Policies) and page 201 (note 22) in the Group Financial Statements The Group has defined benefit obligations of $12,412m at 31 December 2019, which is significant in the context of the overall balance sheet. The Group's most significant plans are in the UK, the US and Sweden. The valuation of pension plan liabilities requires estimation in determining appropriate assumptions such as salary increases, mortality rates, discount rates and inflation levels. Movements in these assumptions can have a material impact on the determination of the liability. Management uses external actuaries to assist in determining these assumptions.	We evaluated the design and tested the operating effectiveness of controls in respect of the determination of the main schemes' defined benefit obligations. We determined that we could rely on these controls for the purposes of our audit. We used our actuarial experts to assess whether the assumptions used in calculating the defined benefit liabilities for the UK, the US and Sweden were reasonable. We assessed whether salary increases and mortality rate assumptions were consistent with the specifics of each plan and, where applicable, with relevant national benchmarks. We verified that the discount and inflation rates used were consistent with our internally developed ranges and in line with other companies' recent external reporting. We assessed the reasonableness of the calculations prepared by the external actuaries including testing the standing data provided to the external actuary for a sample of active members. Based on our procedures, we noted no exceptions and considered management's key assumptions to be within reasonable ranges. We assessed the appropriateness of the related disclosures in note 22 of the Group Financial Statements and considered them to be reasonable.

We determined that there were no key audit matters applicable to the Parent Company to communicate in our report.

How we tailored the audit scope

We tailored the scope of our audit to ensure that we performed enough work to be able to give an opinion on the financial statements as a whole, taking into account the structure of the Group and the Parent Company, the accounting processes and controls, and the industry in which they operate.

In establishing the overall approach to the Group audit, we determined the type of work that needed to be performed by us, as the Group engagement team, or component auditors within PwC UK and other PwC network firms operating under our instruction. Where the work was performed by component auditors, we determined the level of involvement we needed to have in the audit work in these territories to be able to conclude whether sufficient appropriate audit evidence had been obtained as a basis for our opinion on the Group Financial Statements as a whole.

The Group operates in over 100 countries and the size of operations within each territory varies. We identified ten reporting components which, in our view, required a full scope audit of their complete financial information, due to their size or risk characteristics. These are the principal operating units in the US, UK, Sweden, China, Japan, France, Germany and Brazil as well as the Parent Company and AstraZeneca Treasury Limited.

We also identified a further nine reporting components which had one or more individual balances that were considered significant to the Group's Financial Statements. For these components our work was solely focussed on revenue (Canada, Australia, Italy, Spain, Russia and a further China and UK entity), research and development expense (a further UK and a further US entity), inventory (Australia and a further China entity), accounts receivables (Russia) or property, plant and equipment (a further US entity), as appropriate. Audit procedures were performed centrally over certain shared service functions for transaction processing, IT and in relation to various Group functions, including taxation, pensions, goodwill, intangible assets (excluding software), other investments, and litigation matters, as well as the consolidation. Taken together, the above procedures accounted for 88% of the Group's revenue and over 77% of the Group's absolute profit before tax.

Materiality

The scope of our audit was influenced by our application of materiality. We set certain quantitative thresholds for materiality. These, together with qualitative considerations, helped us to determine the scope of our audit and the nature, timing and extent of our audit procedures on the individual financial statement line items and disclosures and in evaluating the effect of misstatements, both individually and in aggregate on the financial statements as a whole.

Based on our professional judgement, we determined materiality for the financial statements as a whole as follows:

	Group Financial Statements	Parent Company Financial Statements
Overall materiality	$140m (2018: $130m).	$50m (2018: $100m).
How we determined it	Approximately 5% of profit before tax after adding back intangible asset impairment charges (note 10), fair value movements and discount unwind on contingent consideration and the Acerta Pharma put option liability (note 20), and material legal settlements (note 21).	0.2% of net assets as constrained by allocation of overall Group materiality.
Rationale for benchmark applied	The reported profit of the Group can fluctuate due to intangible asset impairment charges, fair value and discount unwind movements on contingent consideration and the Acerta Pharma put option liability, and material legal settlements. These amounts are prone to year on year volatility and are not necessarily reflective of the operating performance of the Group and as such they have been excluded from the benchmark amount.	We have considered the nature of the business of AstraZeneca PLC (being holding company investment activities) and have determined that net assets is an appropriate basis for the calculation of the overall materiality level.

For each component in the scope of our Group audit we allocated a materiality that is less than our overall Group materiality. The range of materiality allocated across components was between $10m and $105m.

We agreed with the Audit Committee that we would report to them misstatements identified during our audit above $7m for both the Group Financial Statements and the Parent Company Financial Statements (2018: $7m) as well as misstatements below those amounts that, in our view, warranted reporting for qualitative reasons.

Going concern

In accordance with ISAs (UK) we report as follows:

Reporting obligation	Outcome
We are required to report if we have anything material to add or draw attention to in respect of the directors' statement in the financial statements about whether the directors considered it appropriate to adopt the going concern basis of accounting in preparing the financial statements and the directors' identification of any material uncertainties to the Group's and the Parent Company's ability to continue as a going concern over a period of at least twelve months from the date of approval of the financial statements.	We have nothing material to add or to draw attention to. As not all future events or conditions can be predicted, this statement is not a guarantee as to the Group's and Parent Company's ability to continue as a going concern. For example, the terms of the United Kingdom's withdrawal from the European Union are not clear, and it is difficult to evaluate all of the potential implications.
We are required to report if the directors' statement relating to Going Concern in accordance with Listing Rule 9.8.6R(3) is materially inconsistent with our knowledge obtained in the audit.	We have nothing to report.

Reporting on other information

The other information comprises all of the information in the Annual Report other than the financial statements and our auditors' report thereon. The directors are responsible for the other information. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except to the extent otherwise explicitly stated in this report, any form of assurance thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If we identify an apparent material inconsistency or material misstatement, we are required to perform procedures to conclude whether there is a material misstatement of the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report based on these responsibilities.

With respect to the Strategic Report and Directors' Report, we also considered whether the disclosures required by the UK Companies Act 2006 have been included.

Based on the responsibilities described above and our work undertaken in the course of the audit, the Companies Act 2006 (CA06), ISAs (UK) and the Listing Rules of the Financial Conduct Authority (FCA) require us also to report certain opinions and matters as described on the following page (required by ISAs (UK) unless otherwise stated).

Strategic Report and Directors' Report

In our opinion, based on the work undertaken in the course of the audit, the information given in the Strategic Report and Directors' Report for the year ended 31 December 2019 is consistent with the financial statements and has been prepared in accordance with applicable legal requirements. (CA06)

In light of the knowledge and understanding of the Group and Parent Company and their environment obtained in the course of the audit, we did not identify any material misstatements in the Strategic Report and Directors' Report. (CA06)

The directors' assessment of the prospects of the Group and of the principal risks that would threaten the solvency or liquidity of the Group

We have nothing material to add or draw attention to regarding:

- The directors' confirmation on page 74 of the Annual Report that they have carried out a robust assessment of the principal risks facing the Group, including those that would threaten its business model, future performance, solvency or liquidity.
- The disclosures in the Annual Report that describe those risks and explain how they are being managed or mitigated.
- The directors' explanation on page 75 of the Annual Report as to how they have assessed the prospects of the Group, over what period they have done so and why they consider that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We have nothing to report having performed a review of the directors' statement that they have carried out a robust assessment of the principal risks facing the Group and statement in relation to the longer-term viability of the Group. Our review was substantially less in scope than an audit and only consisted of making inquiries and considering the directors' process supporting their statements; checking that the statements are in alignment with the relevant provisions of the UK Corporate Governance Code (the "Code"); and considering whether the statements are consistent with the knowledge and understanding of the Group and Parent Company and their environment obtained in the course of the audit. (Listing Rules)

Other Code Provisions

We have nothing to report in respect of our responsibility to report when:

- The statement given by the directors, on page 161, that they consider the Annual Report taken as a whole to be fair, balanced and understandable, and provides the information necessary for the members to assess the Group's and Parent Company's position and performance, business model and strategy is materially inconsistent with our knowledge of the Group and Parent Company obtained in the course of performing our audit.
- The section of the Annual Report on pages 116 to 124 describing the work of the Audit Committee does not appropriately address matters communicated by us to the Audit Committee.
- The directors' statement relating to the Parent Company's compliance with the Code does not properly disclose a departure from a relevant provision of the Code specified, under the Listing Rules, for review by the auditors.

Directors' Remuneration

In our opinion, the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006. (CA06)

Responsibilities for the financial statements and the audit

Responsibilities of the directors for the financial statements

As explained more fully in the Preparation of the Financial Statements and Directors' Responsibilities set out on page 161, the directors are responsible for the preparation of the financial statements in accordance with the applicable framework and for being satisfied that they give a true and fair view. The directors are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the Group's and the Parent Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group or the Parent Company or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the FRC's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditors' report.

Use of this report

This report, including the opinions, has been prepared for and only for the Parent Company's members as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and for no other purpose. We do not, in giving these opinions, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Other required reporting

Companies Act 2006 exception reporting

Under the Companies Act 2006 we are required to report to you if, in our opinion:

- we have not received all the information and explanations we require for our audit; or
- adequate accounting records have not been kept by the Parent Company, or returns adequate for our audit have not been received from branches not visited by us; or
- certain disclosures of directors' remuneration specified by law are not made; or
- the Parent Company Financial Statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns.

We have no exceptions to report arising from this responsibility.

Appointment

Following the recommendation of the Audit Committee, we were appointed by the members on 27 April 2017 to audit the financial statements for the year ended 31 December 2017 and subsequent financial periods. The period of total uninterrupted engagement is 3 years, covering the years ended 31 December 2017 to 31 December 2019.

Richard Hughes (Senior Statutory Auditor)
for and on behalf of
PricewaterhouseCoopers LLP
Chartered Accountants and Statutory Auditors
London
14 February 2020

Consolidated Statement of Comprehensive Income
for the year ended 31 December

	Notes	2019 $m	2018 $m	2017 $m
Product Sales	1	**23,565**	21,049	20,152
Collaboration Revenue	1	**819**	1,041	2,313
Total Revenue		**24,384**	22,090	22,465
Cost of sales		**(4,921)**	(4,936)	(4,318)
Gross profit		**19,463**	17,154	18,147
Distribution costs		**(339)**	(331)	(310)
Research and development expense	2	**(6,059)**	(5,932)	(5,757)
Selling, general and administrative costs	2	**(11,682)**	(10,031)	(10,233)
Other operating income and expense	2	**1,541**	2,527	1,830
Operating profit		**2,924**	3,387	3,677
Finance income	3	**172**	138	113
Finance expense	3	**(1,432)**	(1,419)	(1,508)
Share of after tax losses in associates and joint ventures	11	**(116)**	(113)	(55)
Profit before tax		**1,548**	1,993	2,227
Taxation	4	**(321)**	57	641
Profit for the period		**1,227**	2,050	2,868
Other comprehensive income:				
Items that will not be reclassified to profit or loss:				
Remeasurement of the defined benefit pension liability	22	**(364)**	(46)	(242)
Net losses on equity investments measured at fair value through other comprehensive income		**(28)**	(171)	–
Fair value movements related to own credit risk on bonds designated as fair value through profit and loss		**(5)**	8	(9)
Tax on items that will not be reclassified to profit or loss	4	**21**	56	16
		(376)	(153)	(235)
Items that may be reclassified subsequently to profit or loss:				
Foreign exchange arising on consolidation	23	**40**	(450)	536
Foreign exchange arising on designating borrowings in net investment hedges	23	**(252)**	(520)	505
Fair value movements on cash flow hedges		**(101)**	(37)	311
Fair value movements on cash flow hedges transferred to profit and loss		**52**	111	(315)
Fair value movements on derivatives designated in net investment hedges	23	**35**	(8)	(48)
Costs of hedging		**(47)**	(54)	–
Amortisation of loss on cash flow hedge		**–**	1	1
Net available for sale (losses) taken to equity		**–**	–	(83)
Tax on items that may be reclassified subsequently to profit or loss	4	**38**	51	(33)
		(235)	(906)	874
Other comprehensive (loss)/income for the period, net of tax		**(611)**	(1,059)	639
Total comprehensive income for the period		**616**	991	3,507
Profit attributable to:				
Owners of the Parent		**1,335**	2,155	3,001
Non-controlling interests	26	**(108)**	(105)	(133)
Total comprehensive income attributable to:				
Owners of the Parent		**723**	1,097	3,640
Non-controlling interests	26	**(107)**	(106)	(133)
Basic earnings per $0.25 Ordinary Share	5	**$1.03**	$1.70	$2.37
Diluted earnings per $0.25 Ordinary Share	5	**$1.03**	$1.70	$2.37
Weighted average number of Ordinary Shares in issue (millions)	5	**1,301**	1,267	1,266
Diluted weighted average number of Ordinary Shares in issue (millions)	5	**1,301**	1,267	1,267
Dividends declared and paid in the period	25	**3,579**	3,539	3,543

All activities were in respect of continuing operations.

$m means millions of US dollars.

Consolidated Statement of Financial Position
at 31 December

	Notes	2019 $m	2018 $m	2017 $m
Assets				
Non-current assets				
Property, plant and equipment	7	**7,688**	7,421	7,615
Right-of-use assets	8	**647**	–	–
Goodwill	9	**11,668**	11,707	11,825
Intangible assets	10	**20,833**	21,959	26,188
Investments in associates and joint ventures	11	**58**	89	103
Other investments	12	**1,401**	833	933
Derivative financial instruments	13	**61**	157	504
Other receivables	14	**740**	515	847
Deferred tax assets	4	**2,718**	2,379	2,189
		45,814	45,060	50,204
Current assets				
Inventories	15	**3,193**	2,890	3,035
Trade and other receivables	16	**5,761**	5,574	5,009
Other investments	12	**849**	849	1,230
Derivative financial instruments	13	**36**	258	28
Income tax receivable		**285**	207	524
Cash and cash equivalents	17	**5,369**	4,831	3,324
Assets held for sale	18	**70**	982	–
		15,563	15,591	13,150
Total assets		**61,377**	60,651	63,354
Liabilities				
Current liabilities				
Interest-bearing loans and borrowings	19	**(1,822)**	(1,754)	(2,247)
Lease liabilities	8	**(188)**	–	–
Trade and other payables	20	**(13,987)**	(12,841)	(11,641)
Derivative financial instruments	13	**(36)**	(27)	(24)
Provisions	21	**(723)**	(506)	(1,121)
Income tax payable		**(1,361)**	(1,164)	(1,350)
		(18,117)	(16,292)	(16,383)
Non-current liabilities				
Interest-bearing loans and borrowings	19	**(15,730)**	(17,359)	(15,560)
Lease liabilities	8	**(487)**	–	–
Derivative financial instruments	13	**(18)**	(4)	(4)
Deferred tax liabilities	4	**(2,490)**	(3,286)	(3,995)
Retirement benefit obligations	22	**(2,807)**	(2,511)	(2,583)
Provisions	21	**(841)**	(385)	(347)
Other payables	20	**(6,291)**	(6,770)	(7,840)
		(28,664)	(30,315)	(30,329)
Total liabilities		**(46,781)**	(46,607)	(46,712)
Net assets		**14,596**	14,044	16,642
Equity				
Capital and reserves attributable to equity holders of the Company				
Share capital	24	**328**	317	317
Share premium account		**7,941**	4,427	4,393
Capital redemption reserve		**153**	153	153
Merger reserve		**448**	448	448
Other reserves	23	**1,445**	1,440	1,428
Retained earnings	23	**2,812**	5,683	8,221
		13,127	12,468	14,960
Non-controlling interests	26	**1,469**	1,576	1,682
Total equity		**14,596**	14,044	16,642

The Financial Statements from pages 168 to 230 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director
14 February 2020

Marc Dunoyer
Director

Consolidated Statement of Changes in Equity
for the year ended 31 December

	Share capital $m	Share premium account $m	Capital redemption reserve $m	Merger reserve $m	Other reserves $m	Retained earnings $m	Total attributable to owners $m	Non-controlling interests $m	Total equity $m
At 1 January 2017	316	4,351	153	448	1,446	8,140	14,854	1,815	16,669
Profit for the period	–	–	–	–	–	3,001	3,001	(133)	2,868
Other comprehensive income	–	–	–	–	–	639	639	–	639
Transfer to other reserves[1]	–	–	–	–	(18)	18	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,543)	(3,543)	–	(3,543)
Issue of Ordinary Shares	1	42	–	–	–	–	43	–	43
Share-based payments charge for the period (Note 28)	–	–	–	–	–	220	220	–	220
Settlement of share plan awards	–	–	–	–	–	(254)	(254)	–	(254)
Net movement	1	42	–	–	(18)	81	106	(133)	(27)
At 31 December 2017	317	4,393	153	448	1,428	8,221	14,960	1,682	16,642
Adoption of new accounting standards[2]	–	–	–	–	–	(91)	(91)	–	(91)
Profit for the period	–	–	–	–	–	2,155	2,155	(105)	2,050
Other comprehensive loss	–	–	–	–	–	(1,058)	(1,058)	(1)	(1,059)
Transfer to other reserves[1]	–	–	–	–	12	(12)	–	–	–
Transactions with owners									
Dividends	–	–	–	–	–	(3,539)	(3,539)	–	(3,539)
Issue of Ordinary Shares	–	34	–	–	–	–	34	–	34
Share-based payments charge for the period (Note 28)	–	–	–	–	–	219	219	–	219
Settlement of share plan awards	–	–	–	–	–	(212)	(212)	–	(212)
Net movement	–	34	–	–	12	(2,538)	(2,492)	(106)	(2,598)
At 31 December 2018	317	4,427	153	448	1,440	5,683	12,468	1,576	14,044
Adoption of new accounting standards[3]	**–**	**–**	**–**	**–**	**–**	**54**	**54**	**–**	**54**
Profit for the period	**–**	**–**	**–**	**–**	**–**	**1,335**	**1,335**	**(108)**	**1,227**
Other comprehensive loss[4]	**–**	**–**	**–**	**–**	**–**	**(612)**	**(612)**	**1**	**(611)**
Transfer to other reserves[1]	**–**	**–**	**–**	**–**	**5**	**(5)**	**–**	**–**	**–**
Transactions with owners									
Dividends	**–**	**–**	**–**	**–**	**–**	**(3,579)**	**(3,579)**	**–**	**(3,579)**
Issue of Ordinary Shares	**11**	**3,514**	**–**	**–**	**–**	**–**	**3,525**	**–**	**3,525**
Share-based payments charge for the period (Note 28)	**–**	**–**	**–**	**–**	**–**	**259**	**259**	**–**	**259**
Settlement of share plan awards	**–**	**–**	**–**	**–**	**–**	**(323)**	**(323)**	**–**	**(323)**
Net movement	**11**	**3,514**	**–**	**–**	**5**	**(2,871)**	**659**	**(107)**	**552**
At 31 December 2019	**328**	**7,941**	**153**	**448**	**1,445**	**2,812**	**13,127**	**1,469**	**14,596**

[1] Amounts charged or credited to other reserves relate to exchange adjustments arising on goodwill.
[2] The Group adopted IFRS 15 'Revenue from Customers' from 1 January 2018.
[3] The Group adopted IFRIC 23 'Uncertainty over Income Tax Treatments' from 1 January 2019. See page 172.
[4] Included within Other comprehensive loss of $611m is a charge of $47m relating to Costs of hedging.

Consolidated Statement of Cash Flows
for the year ended 31 December

	Notes	2019 $m	2018 $m	2017 $m
Cash flows from operating activities				
Profit before tax		**1,548**	1,993	2,227
Finance income and expense	3	**1,260**	1,281	1,395
Share of after tax losses of associates and joint ventures	11	**116**	113	55
Depreciation, amortisation and impairment		**3,762**	3,753	3,036
(Increase)/decrease in trade and other receivables		**(898)**	(523)	83
Increase in inventories		**(316)**	(13)	(548)
Increase/(decrease) in trade and other payables and provisions		**868**	(103)	415
Gains on disposal of intangible assets	2	**(1,243)**	(1,885)	(1,518)
Fair value movements on contingent consideration arising from business combinations	20	**(614)**	(495)	109
Non-cash and other movements	17	**378**	(290)	(524)
Cash generated from operations		**4,861**	3,831	4,730
Interest paid		**(774)**	(676)	(698)
Tax paid		**(1,118)**	(537)	(454)
Net cash inflow from operating activities		**2,969**	2,618	3,578
Cash flows from investing activities				
Non-contingent payments on business combinations		**–**	–	(1,450)
Payment of contingent consideration from business combinations	20	**(709)**	(349)	(434)
Purchase of property, plant and equipment		**(979)**	(1,043)	(1,326)
Disposal of property, plant and equipment		**37**	12	83
Purchase of intangible assets		**(1,481)**	(328)	(294)
Disposal of intangible assets		**2,076**	2,338	1,376
Movement in profit-participation liability		**150**	–	–
Purchase of non-current asset investments		**(13)**	(102)	(96)
Disposal of non-current asset investments		**18**	24	70
Movement in short-term investments, fixed deposits and other investing instruments		**194**	405	(345)
Payments to joint ventures	11	**(74)**	(187)	(76)
Interest received		**124**	193	164
Net cash (outflow)/inflow from investing activities		**(657)**	963	(2,328)
Net cash inflow before financing activities		**2,312**	3,581	1,250
Cash flows from financing activities				
Proceeds from issue of share capital		**3,525**	34	43
Issue of loans		**500**	2,971	1,988
Repayment of loans		**(1,500)**	(1,400)	(1,750)
Dividends paid		**(3,592)**	(3,484)	(3,519)
Hedge contracts relating to dividend payments		**4**	(67)	(20)
Repayment of obligations under leases		**(186)**	–	(14)
Movement in short-term borrowings		**(516)**	(98)	336
Net cash outflow from financing activities		**(1,765)**	(2,044)	(2,936)
Net increase/(decrease) in Cash and cash equivalents in the period		547	1,537	(1,686)
Cash and cash equivalents at the beginning of the period		**4,671**	3,172	4,924
Exchange rate effects		**5**	(38)	(66)
Cash and cash equivalents at the end of the period	17	**5,223**	4,671	3,172

Group Accounting Policies

Basis of accounting and preparation of financial information

The Consolidated Financial Statements have been prepared under the historical cost convention, modified to include revaluation to fair value of certain financial instruments as described below, in accordance with the Companies Act 2006 and International Financial Reporting Standards (IFRSs) as adopted by the EU (adopted IFRSs) in response to the IAS regulation (EC 1606/2002). The Consolidated Financial Statements also comply fully with IFRSs as issued by the International Accounting Standards Board (IASB).

IFRS 3

AstraZeneca had proposed to adopt the October 2018 update to IFRS 3, which changed the definition of a business, from 1 January 2019, and has previously published interim financial statements on this basis. This was done on the basis that it was considered highly probable that the amendment would be endorsed by the European Commission during 2019 before its effective date of 1 January 2020 with early adoption permitted, following a recommendation from the European Financial Reporting Advisory Group (EFRAG), the association set up to provide advice to the European Commission on whether newly issued or revised IFRSs meet the criteria for endorsement for use in the EU.

The change in definition of a business within IFRS 3 introduces an optional concentration test to perform a simplified assessment of whether an acquired set of activities and assets is or is not a business on a transaction by transaction basis. This change was expected to provide more reliable and comparable information about certain transactions as it provides more consistency in accounting in the pharmaceutical industry for substantially similar transactions that under the previous definition may have been accounted for in different ways despite limited differences in substance.

During the year, the EFRAG amended its guidance on the expected date of endorsement, and the European Commission is expected to endorse the change during 2020, with application required for accounting periods beginning on or after 1 January 2020. Accordingly this amendment has not been applied in the Consolidated Financial Statements, however this has not resulted in a different accounting treatment for any transactions undertaken during the year when compared with the amended version of IFRS 3, pending endorsement.

IFRS 16

IFRS 16 'Leases' is effective for accounting periods beginning on or after 1 January 2019 and replaces IAS 17 'Leases'. It eliminates the classification of leases as either operating leases or finance leases and, instead, introduces a single lessee accounting model. The adoption of IFRS 16 resulted in the Group recognising lease liabilities, and corresponding 'right-of-use' assets for arrangements that were previously classified as operating leases.

The Group's principal lease arrangements are for property, most notably a portfolio of office premises, and for a global car fleet, utilised primarily by our sales and marketing teams. The Group has adopted IFRS 16 using a modified retrospective approach with the cumulative effect of initially applying the standard as an adjustment to the opening balance of retained earnings at 1 January 2019. The standard permits a choice on initial adoption, on a lease-by-lease basis, to measure the right-of-use asset at either its carrying amount as if IFRS 16 had been applied since the commencement of the lease, or an amount equal to the lease liability, adjusted for accruals or prepayments. The Group has elected to measure the right-of-use asset equal to the lease liability, with the result of no net impact on opening retained earnings and no restatement of prior period comparatives.

Initial adoption resulted in the recognition of right-of-use assets of $722m and lease liabilities of $720m. The weighted average incremental borrowing rate applied to the lease liabilities on 1 January 2019 was 3%.

The Group is using one or more practical expedients on transition to leases previously classified as operating leases, including electing to not apply the retrospective treatment to leases for which the term ends within 12 months of initial application, electing to apply a single discount rate to portfolios of leases with similar characteristics, reliance on previous assessments on whether arrangements contain a lease and whether leases are onerous, excluding initial direct costs from the initial measurement of the right-of-use asset, and using hindsight in determining the lease term where the contract contains options to extend or terminate the lease.

Judgements made in calculating the initial impact of adoption include determining the lease term where extension or termination options exist. In such instances, all facts and circumstances that may create an economic incentive to exercise an extension option, or not exercise a termination option, have been considered to determine the lease term. Extension periods (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated). Estimates include calculating the discount rate which is based on the incremental borrowing rate.

The Group is applying IFRS 16's low-value and short-term exemptions. While the IFRS 16 opening lease liability is calculated differently from the previous operating lease commitment calculated under the previous standard, there are no material differences between the positions. The adoption of IFRS 16 has had no impact on the Group's net cash flows, although a presentation change has been reflected whereby cash outflows of $186m are now presented as financing, instead of operating. There is an immaterial benefit to Operating profit and a corresponding increase in Finance expense from the presentation of a portion of lease costs as interest costs. Profit before tax, taxation and EPS have not been materially impacted.

IFRIC 23

IFRIC 23 'Uncertainty Over Income Tax Treatments' is effective for accounting periods beginning on or after 1 January 2019 and provides further clarification on how to apply the recognition and measurement requirements in IAS 12 'Income Taxes'. It is applicable where there is uncertainty over income tax treatments. The EU endorsed IFRIC 23 on 24 October 2018. The adoption of IFRIC 23 has principally resulted in an adjustment in the value of tax liabilities because IFRIC 23 requires the Group to measure the effect of uncertainty on income tax positions using either the most likely amount or the expected value amount depending on which method is expected to better reflect the resolution of the uncertainty.

The Group has retrospectively applied IFRIC 23 from 1 January 2019 recognising the cumulative effect of initially applying the interpretation as decreases to income tax payable of $51m and to trade and other payables of $3m, and a corresponding adjustment to the opening balance of retained earnings of $54m. There is no restatement of the comparative information as permitted in the interpretation.

IFRS 9, IAS 39, IFRS 7

The Group has early adopted the amendments to IFRS 9 'Financial Instruments', IAS 39 'Financial Instruments: Recognition and Measurement' and IFRS 7 'Financial Instruments: Disclosures'. These relate to interbank offered rates (IBORs) reform and were endorsed by the EU on 6 January 2020. The replacement of benchmark interest rates such as LIBOR and other IBORs is a priority for global regulators. The amendments provide relief from applying specific hedge accounting requirements to hedge relationships directly affected by IBOR reform and have the effect that IBOR reform should generally not cause hedge accounting to terminate. There is no financial impact from the early adoption of these amendments.

The Group has one IFRS 9 designated hedge relationship that is potentially impacted by IBOR reform: our euro 300m cross currency interest rate swap in a fair value hedge relationship with euro 300m of our euro 750m 0.875% 2021 non-callable bond. This swap references three month USD LIBOR and uncertainty arising from the Group's exposure to IBOR reform will cease when the swap matures in 2021. The implications on the wider business of IBOR reform will be assessed during 2020.

Collaboration Revenue

Effective from 1 January 2019, the Group updated the presentation of an element of Total Revenue within the Statement of Comprehensive Income and changed the classification of some income to reflect the increasing importance of collaborations to AstraZeneca. Historically, Externalisation Revenue formed part of Total Revenue and only included income arising from collaborative transactions involving AstraZeneca's medicines, whether internally developed or previously acquired. Such income included upfront consideration, milestone receipts, profit share income and royalties, as well as other income from collaborations. The updated category of Collaboration Revenue includes all income previously included within Externalisation Revenue, as well as income of a similar nature arising from transactions where AstraZeneca has acquired an interest in a medicine and as part of the acquisition entered into an active collaboration with the seller. This change is a result of the growing importance of collaborations to AstraZeneca. Income arising from all collaborations, other than product sales, will be recognised within the Collaboration Revenue element of Total Revenue. Historically there has been no collaboration income arising from such acquisitions, and therefore no prior year restatement of financial results is required as a result of this change.

Income from disposals of assets and businesses including royalties and milestones, where the Group does not retain a significant continued interest, continue to be recorded in Other Operating Income and Expense.

The Consolidated Financial Statements are presented in US dollars, which is the Company's functional currency.

In preparing their individual financial statements, the accounting policies of some overseas subsidiaries do not conform with IASB issued IFRSs. Therefore, where appropriate, adjustments are made in order to present the Consolidated Financial Statements on a consistent basis.

Basis for preparation of Financial Statements on a going concern basis

The Group has considerable financial resources available. As at 31 December 2019, the Group has $10.4bn in financial resources (cash and cash equivalent balances of $5.4bn, $0.9bn of liquid fixed income securities and undrawn committed bank facilities of $4.1bn, of which $3.4bn is available until April 2022, $0.5bn is available until November 2020 (extendable to November 2021) and $0.2bn is available until December 2020, with only $2.0bn of borrowings due within one year). The Group's revenues are largely derived from sales of products which are covered by patents which provide a relatively high level of resilience and predictability to cash inflows, although government price interventions in response to budgetary constraints are expected to continue to adversely affect revenues in many of our mature markets. However, we anticipate new revenue streams from both recently launched medicines and products in development, and the Group has a wide diversity of customers and suppliers across different geographic areas. Consequently, the Directors believe that, overall, the Group is well placed to manage its business risks successfully. Accordingly, they continue to adopt the going concern basis in preparing the Annual Report and Financial Statements.

Estimates and judgements

The preparation of the Financial Statements in conformity with generally accepted accounting principles requires management to make estimates and judgements that affect the reported amounts of assets and liabilities at the date of the Financial Statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

The accounting policy descriptions set out the areas where judgements and estimates need exercising, the most significant of which include the following Key Judgements KJ and Significant Estimates SE:

- revenue recognition – see Revenue Accounting Policy on page 174 KJ and Note 1 on page 180 SE
- expensing of internal development expenses – see Research and Development Policy on page 174 KJ
- impairment reviews of Intangible assets – see Note 10 on page 191 SE
- useful economic life of Intangibles assets – see Research and Development Policy on page 175 KJ and Note 10 on page 192 SE
- business combinations and Goodwill (and Contingent consideration arising from business combinations) – see Business Combinations and Goodwill Policy on page 177 KJ and Note 20 on page 200 SE
- litigation liabilities – see Litigation and Environmental Liabilities within Note 29 on page 221 KJ
- operating segments – see Note 6 on page 186 KJ
- employee benefits – see Note 22 on page 207 SE
- taxation – see Taxation Policy on page 175, Note 29 on page 225 KJ and Note 29 on page 224 SE

Financial risk management policies are detailed in Note 27 to the Financial Statements from page 210.

AstraZeneca's management considers the following to be the most important accounting policies in the context of the Group's operations.

Revenue

Revenues comprise Product Sales and Collaboration Revenue.

Product Sales are revenues arising from contracts with customers. Collaboration Revenue arises from other contracts, however, the recognition and measurement principles of IFRS 15 'Revenue from Contracts with Customers' are applied as set out below.

Prior to 1 January 2018, the Group applied IAS 18 'Revenue'. On adoption of IFRS 15 on 1 January 2018, there was no material impact on the revenue streams from the supply of goods and associated rebates and returns provisions or Collaboration Revenue. The timing of the recognition of Product Sales and the basis for the estimates of sales deductions under IFRS 15 are consistent with those adopted under IAS 18.

Revenues exclude inter-company revenues and value-added taxes.

Product Sales

Product Sales represent net invoice value less estimated rebates, returns and chargebacks, which are considered to be variable consideration and include significant estimates. Sales are recognised when the control of the goods has been transferred to a third party. This is usually when title passes to the customer, either on shipment or on receipt of goods by the customer, depending on local trading terms. In markets where returns are significant, estimates of returns are accounted for at the point revenue is recognised. Revenue is not recognised in full until it is highly probable that a significant reversal in the amount of cumulative revenue recognised will occur.

Rebates are amounts payable or credited to a customer, usually based on the quantity or value of Product Sales to the customer for specific products in a certain period. Product sales rebates, which relate to Product Sales that occur over a period of time, are normally issued retrospectively.

At the time Product Sales are invoiced, rebates and deductions that the Group expects to pay, are estimated. These rebates typically arise from sales contracts with government payers, third party managed care organisations, hospitals, long-term care facilities, group purchasing organisations and various state programmes.

For the markets where returns are significant, we estimate the quantity and value of goods which may ultimately be returned at the point of sale. Our returns accruals are based on actual experience over the preceding 12 months for established products together with market-related information such as estimated stock levels at wholesalers and competitor activity which we receive via third-party information services. For newly launched products, we use rates based on our experience with similar products or a predetermined percentage.

When a product faces generic competition, particular attention is given to the possible levels of returns and, in cases where the circumstances are such that the level of Product Sales are considered highly probable to reverse, revenues are only recognised when the right of return expires, which is generally on ultimate prescription of the product to patients.

The methodology and assumptions used to estimate rebates and returns are monitored and adjusted regularly in the light of contractual and legal obligations, historical trends, past experience and projected market conditions. Once the uncertainty associated with returns is resolved, revenue is adjusted accordingly.

Under certain collaboration agreements which include a profit sharing mechanism, our recognition of Product Sales depends on which party acts as principal in sales to the end customer. In the cases where AstraZeneca acts as principal, we record 100% of sales to the end customer.

Collaboration Revenue

Collaboration Revenue includes income from collaborative arrangements where either the Group has sold certain rights associated with those products, but retains a significant ongoing economic interest or has acquired a significant interest from a third party. Significant interest can include ongoing supply of finished goods, participation in profit share arrangements or direct interest from sales of medicines.

These arrangements may include development arrangements, commercialisation arrangements and collaborations. Income may take the form of upfront fees, milestones, profit sharing and royalties and includes profit share income arising from sales made as principal by a collaboration partner.

KJ Timing of recognition of clinical and regulatory milestones is considered to be a key judgement. There can be significant uncertainty over whether it is highly probable that there would not be a significant reversal of revenue in respect of specific milestones if these are recognised before they are triggered due to them being subject to the actions of third parties. In general, where the triggering of a milestone is subject to the decisions of third parties (e.g. the acceptance or approval of a filing by a regulatory authority), the Group does not consider that the threshold for recognition is met until that decision is made.

Where Collaboration Revenue arises from the licensing of the Group's own intellectual property, the licences we grant are typically rights to use intellectual property which do not change during the period of the licence and therefore related non-conditional revenue is recognised at the point the license is granted and variable consideration as soon as recognition criteria are met. Those licences are generally unique and therefore when there are other performance obligations in the contract, the basis of allocation of the consideration makes use of the residual approach as permitted by IFRS 15.

These arrangements typically involve the receipt of an upfront payment, which the contract attributes to the license of the intangible assets, and ongoing receipts, which the contract attributes to the sale of the product we manufacture. In cases where the transaction has two or more components, we account for the delivered item (for example, the transfer of title to the intangible asset) as a separate unit of accounting and record revenue on delivery of that component, provided that we can make a reasonable estimate of the fair value of the undelivered component.

Where non-contingent amounts are payable over one year from the effective date of a contract, an assessment is made as to whether a significant financing component exists, and if so, the fair value of this component is deferred and recognised over the period to the expected date of receipt.

Where control of a right to use an intangible asset passes at the outset of an arrangement, revenue is recognised at the point in time control is transferred. Where the substance of an arrangement is that of a right to access rights attributable to an intangible asset, revenue is recognised over time, normally on a straight-line basis over the life of the contract.

Where the fair market value of the undelivered component (for example, a manufacturing agreement) exceeds the contracted price for that component, we defer an appropriate element of the upfront consideration and amortise this over the performance period. However, where the fair market value of the undelivered component is equal to or lower than the contracted price for that component, we treat the whole of the upfront amount as being attributable to the delivered intangible assets and recognise that part of the revenue upon delivery. No element of the contracted revenue related to the undelivered component is ordinarily allocated to the sale of the intangible asset. This is because the contracted revenue relating to the undelivered component is contingent on future events (such as sales) and cannot be recognised until either receipt of the amount is highly probable or where the consideration is received for a licence of intellectual property, on the occurrence of the related sales.

Where the Group provides ongoing services, revenue in respect of this element is recognised over the duration of those services. Where the arrangement meets the definition of a licence agreement, sales milestones and sales royalties are recognised when achieved by applying the royalty exemption under IFRS 15. All other milestones and sales royalties are recognised when considered it is highly probable there will not be a significant reversal of income. The determination requires estimates to be made in relation to future Product Sales.

Where Collaboration Revenue is recorded and there is a related Intangible asset, an appropriate amount of that intangible asset is charged to Cost of sales based on an allocation of cost or value to the rights that have been sold.

Cost of sales

Cost of sales are recognised as the associated revenue is recognised. Cost of sales include manufacturing costs, royalties payable on revenues recognised, movements in provisions for inventories, inventory write-offs and impairment charges in relation to manufacturing assets. Cost of sales also includes partner profit shares arising from collaborations, and foreign exchange gains and losses arising from business trading activities.

Research and development

Research expenditure is recognised in profit in the year in which it is incurred.

KJ Internal development expenditure is capitalised only if it meets the recognition criteria of IAS 38 'Intangible Assets'. This is considered a key judgement. Where regulatory and other uncertainties are such that the criteria are not met, the expenditure is charged to profit and loss and this is almost invariably the case prior to approval of the drug by the relevant regulatory authority. Where, however, recognition criteria are met, Intangible assets are capitalised and amortised on a straight-line basis over their useful economic lives from product launch. At 31 December 2019, no amounts have met the recognition criteria.

Payments to in-license products and compounds from third parties for new research and development projects (in process research and development) generally take the form of upfront payments, milestones and royalty payments. Where payments made to third parties represent consideration for future research and development activities, an evaluation is made as to the nature of the payments. Such payments are expensed if they represent compensation for sub-contracted research and development services not resulting in a transfer of intellectual property. By contrast, payments are capitalised if they represent compensation for the transfer of identifiable intellectual property developed at the risk of the third party. Development milestone payments relating to identifiable intellectual property are capitalised as the milestone is triggered. Any upfront or milestone payments for research activities where there is no associated identifiable intellectual property are expensed. Assets capitalised are amortised, on a straight-line basis, over their useful economic lives from product launch.

KJ The determination of useful economic life is considered to be a key judgement. On product launch, the Group makes a judgement as to the expected useful economic life using our detailed long-term risk-adjusted sales projections compiled annually across the Group and approved by the Board, and for assets where the useful economic life extends beyond this period, appropriately reviewed, risk-adjusted sales projections.

The useful economic life can extend beyond patent expiry as dependent upon the nature of the product and the complexity of the development and manufacturing process. Significant sales can often be achieved post patent expiration.

Intangible assets

Intangible assets are stated at cost less provision for amortisation and impairments. Intangible assets relating to products in development are subject to impairment testing annually. All Intangible assets are tested for impairment when there are indications that the carrying value may not be recoverable. The determination of the recoverable amounts include key estimates which are highly sensitive to, and depend upon, key assumptions as detailed in Note 10 to the Financial Statements from page 190.

Impairment reviews have been carried out on all Intangible assets that are in development (and not being amortised), all major intangible assets acquired during the year and all other intangible assets that have had indications of impairment during the year. Recoverable amount is determined as the higher of value in use or fair value less costs to sell using a discounted cash flow calculation, where the products' expected cash flows are risk-adjusted over their estimated remaining useful economic life. The determination of the recoverable amounts include significant estimates which are highly sensitive and depend upon key assumptions as detailed in Note 10 to the Financial Statements from page 190. Sales forecasts and specific allocated costs (which have both been subject to appropriate senior management review and approval) are risk-adjusted and discounted using appropriate rates based on our post-tax weighted average cost of capital or for fair value less costs to sell, an impairment rate for a market participant. Our weighted average cost of capital reflects factors such as our capital structure and our costs of debt and equity.

Any impairment losses are recognised immediately in profit. Intangible assets relating to products which fail during development (or for which development ceases for other reasons) are also tested for impairment and are written down to their recoverable amount (which is usually nil).

If, subsequent to an impairment loss being recognised, development restarts or other facts and circumstances change indicating that the impairment is less or no longer exists, the value of the asset is re-estimated and its carrying value is increased to the recoverable amount, but not exceeding the original value, by recognising an impairment reversal in profit.

Joint arrangements and associates

The Group has arrangements over which it has joint control and which qualify as joint operations or joint ventures under IFRS 11 'Joint Arrangements'. For joint operations, the Group recognises its share of revenue that it earns from the joint operations and its share of expenses incurred. The Group also recognises the assets associated with the joint operations that it controls and the liabilities it incurs under the joint arrangement. For joint ventures and associates, the Group recognises its interest in the joint venture or associate as an investment and uses the equity method of accounting.

Employee benefits

The Group accounts for pensions and other employee benefits (principally healthcare) under IAS 19 'Employee Benefits' and recognises all actuarial gains and losses immediately through Other comprehensive income. In respect of defined benefit plans, obligations are measured at discounted present value while plan assets are measured at fair value. Given the extent of the assumptions used to determine these values, these are considered to be significant estimates. The operating and financing costs of such plans are recognised separately in profit, current service costs are spread systematically over the lives of employees and financing costs are recognised in full in the periods in which they arise. Remeasurements of the net defined benefit pension liability, including actuarial gains and losses, are recognised immediately in Other comprehensive income. Where the calculation results in a surplus to the Group, the recognised asset is limited to the present value of any available future refunds from the plan or reductions in future contributions to the plan. Payments to defined contribution plans are recognised in profit as they fall due.

Taxation

The current tax payable is based on taxable profit for the year. Taxable profit differs from reported profit because taxable profit excludes items that are either never taxable or tax deductible or items that are taxable or tax deductible in a different period. The Group's current tax assets and liabilities are calculated using tax rates that have been enacted or substantively enacted by the reporting date.

KJ Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax assets are recognised to the extent that it is probable that future taxable profit will be available against which the asset can be utilised. This requires judgements to be made in respect of the availability of future taxable income.

No deferred tax asset or liability is recognised in respect of temporary differences associated with investments in subsidiaries and branches where the Group is able to control the timing of reversal of the temporary differences and it is probable that the temporary differences will not reverse in the foreseeable future.

The Group's Deferred tax assets and liabilities are calculated using tax rates that are expected to apply in the period when the liability is settled or the asset realised based on tax rates that have been enacted or substantively enacted by the reporting date.

Accruals for tax contingencies require management to make judgements of potential exposures in relation to tax audit issues. Tax benefits are not recognised unless the tax positions will probably be accepted by the tax authorities. This is based upon management's interpretation of applicable laws and regulations and the expectation of how the tax authority will resolve the matter. Once considered probable of not being accepted, management reviews each material tax benefit and reflects the effect of the uncertainty in determining the related taxable result.

Accruals for tax contingencies are measured using either the most likely amount or the expected value amount depending on which method the entity expects to better predict the resolution of the uncertainty.

Group Accounting Policies
continued

Further details of the estimates and assumptions made in determining our recorded liability for transfer pricing contingencies and other tax contingencies are included in Note 29 to the Financial Statements on page 225.

Share-based payments

All plans are assessed and have been classified as equity settled. The grant date fair value of employee share plan awards is calculated using a Monte Carlo model. In accordance with IFRS 2 'Share-based Payment', the resulting cost is recognised in profit over the vesting period of the awards, being the period in which the services are received. The value of the charge is adjusted to reflect expected and actual levels of awards vesting, except where the failure to vest is as a result of not meeting a market condition. Cancellations of equity instruments are treated as an acceleration of the vesting period and any outstanding charge is recognised in profit immediately.

Property, plant and equipment

The Group's policy is to write off the difference between the cost of each item of Property, plant and equipment and its residual value over its estimated useful life on a straight-line basis. Assets under construction are not depreciated.

Reviews are made annually of the estimated remaining lives and residual values of individual productive assets, taking account of commercial and technological obsolescence as well as normal wear and tear. It is impractical to calculate average asset lives exactly. However, the total lives range from approximately 10 to 50 years for buildings, and three to 15 years for plant and equipment. All items of Property, plant and equipment are tested for impairment when there are indications that the carrying value may not be recoverable. Any impairment losses are recognised immediately in profit.

Borrowing costs

The Group has no borrowing costs with respect to the acquisition or construction of qualifying assets. All other borrowing costs are recognised in profit as incurred and in accordance with the effective interest rate method.

Leases

Accounting policy applied until 1 January 2019 (IAS 17)

Leases are classified as finance leases if they transfer substantively all the risks and rewards incidental to ownership, otherwise they are classified as operating leases. Assets and liabilities arising on finance leases are initially recognised at fair value or, if lower, the present value of the minimum lease payments. The discount rate used in calculating the present value of the minimum lease payments is the interest rate implicit in the lease. Finance charges under finance leases are allocated to each reporting period so as to produce a constant periodic rate of interest on the remaining balance of the finance liability. Rentals under operating leases are charged to profit and loss on a straight-line basis.

Accounting policy applied from 1 January 2019 (IFRS 16)

The Group's lease arrangements are principally for property, most notably a portfolio of office premises and employee accommodation, and for a global car fleet, utilised primarily by our sales and marketing teams.

The lease liability and corresponding right-of-use asset arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- fixed payments, less any lease incentives receivable
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date
- the exercise price of a purchase option if the Group is reasonably certain to exercise that option
- payments of penalties for terminating the lease, if the lease term reflects the Group exercising that option, and
- amounts expected to be payable by the Group under residual value guarantees.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability
- any lease payments made at or before the commencement date less any lease incentives received
- any initial direct costs, and
- restoration costs.

Judgements made in calculating the lease liability include assessing whether arrangements contain a lease and determining the lease term. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. Property leases will often include an early termination or extension option to the lease term. Fleet management policies vary by jurisdiction and may include renewal of a lease until a measurement threshold, such as mileage, is reached. Extension and termination options have been considered when determining the lease term, along with all facts and circumstances that may create an economic incentive to exercise an extension option, or not exercise a termination option. Extension periods (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

The lease payments are discounted using incremental borrowing rates, as in the majority of leases held by the Group the interest rate implicit in the lease is not readily identifiable. Calculating the discount rate is an estimate made in calculating the lease liability. This rate is the rate that the Group would have to pay to borrow the funds necessary to obtain an asset of similar value to the right-of-use asset in a similar economic environment with similar terms, security and conditions. To determine the incremental borrowing rate, the Group uses a risk-free interest rate adjusted for credit risk, adjusting for terms specific to the lease including term, country and currency.

The Group is exposed to potential future increases in variable lease payments that are based on an index or rate, which are initially measured as at the commencement date, with any future changes in the index or rate excluded from the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

Lease payments are allocated between principal and finance cost. The finance cost is charged to the Consolidated Statement of Comprehensive Income over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Payments associated with short-term leases of Property, plant and equipment and all leases of low-value assets are recognised on a straight-line basis as an expense in the Consolidated Statement of Comprehensive Income. Short-term leases are leases with a lease term of 12 months or less. Low-value leases are those where the underlying asset value, when new, is $5,000 or less and includes IT equipment and small items of office furniture.

Contracts may contain both lease and non-lease components. The Group allocates the consideration in the contract to the lease and non-lease components based on their relative stand-alone prices.

Right-of-use assets are generally depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If the Group is reasonably certain to exercise a purchase option, the right-of-use asset is depreciated over the underlying asset's useful life. It is impractical to calculate average asset lives exactly. However, the total lives range from approximately 10 to 50 years for buildings, and three to 15 years for motor vehicles and other assets.

There are no material lease agreements under which the Group is a lessor.

Business combinations and goodwill

KJ The determination of whether an acquired set of assets and activities is a business or an asset can be judgemental. Management uses a number of factors to make this determination, which are primarily focused on whether the acquired set of assets and activities are capable of being managed for the purpose of providing a return. Key determining factors include the stage of development of any assets acquired, the readiness and ability of the acquired set to produce outputs and the presence of key experienced employees capable of conducting activities required to develop or manufacture the assets. Typically, the specialised nature of many pharmaceutical assets and processes is such that until assets are substantively ready for production and promotion, there are not the required processes for a set of assets and activities to meet the definition of a business in IFRS 3.

On the acquisition of a business, fair values are attributed to the identifiable assets and liabilities. Attributing fair values is a judgement. Contingent liabilities are also recorded at fair value unless the fair value cannot be measured reliably, in which case the value is subsumed into goodwill. Where the Group fully acquires, through a business combination, assets that were previously held in joint operations, the Group has elected not to uplift the book value of the existing interest in the asset held in the joint operation to fair value at the date full control is taken. Where fair values of acquired contingent liabilities cannot be measured reliably, the assumed contingent liability is not recognised but is disclosed in the same manner as other contingent liabilities.

Where not all of the equity of a subsidiary is acquired, the non-controlling interest is recognised either at fair value or at the non-controlling interest's proportionate share of the net assets of the subsidiary, on a case-by-case basis. Put options over non-controlling interests are recognised as a financial liability, with a corresponding entry in either retained earnings or against non-controlling interest reserves on a case-by-case basis.

The timing and amount of future contingent elements of consideration is considered a key estimate. Contingent consideration, which may include development and launch milestones, revenue threshold milestones and revenue-based royalties, is fair valued at the date of acquisition using decision-tree analysis with key inputs including probability of success, consideration of potential delays and revenue projections based on the Group's internal forecasts. Unsettled amounts of consideration are held at fair value within payables with changes in fair value recognised immediately in profit.

Goodwill is the difference between the fair value of the consideration and the fair value of net assets acquired.

Goodwill arising on acquisitions is capitalised and subject to an impairment review, both annually and when there is an indication that the carrying value may not be recoverable.

The Group's policy up to and including 1997 was to eliminate Goodwill arising upon acquisitions against reserves. Under IFRS 1 'First-time Adoption of International Financial Reporting Standards' and IFRS 3 'Business Combinations', such Goodwill will remain eliminated against reserves.

Subsidiaries

A subsidiary is an entity controlled, directly or indirectly, by AstraZeneca PLC. Control is regarded as the exposure or rights to the variable returns of the entity when combined with the power to affect those returns.

The financial results of subsidiaries are consolidated from the date control is obtained until the date that control ceases.

Inventories

Inventories are stated at the lower of cost and net realisable value. The first in, first out or an average method of valuation is used. For finished goods and work in progress, cost includes directly attributable costs and certain overhead expenses (including depreciation). Selling expenses and certain other overhead expenses (principally central administration costs) are excluded. Net realisable value is determined as estimated selling price less all estimated costs of completion and costs to be incurred in selling and distribution.

Write-downs of inventory occur in the general course of business and are recognised in cost of sales for launched or approved products and research and development costs for products in development.

Assets held for sale

Non-current assets are classified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction and a sale is considered highly probable. A sale is usually considered highly probable only when an appropriate level of management has committed to the sale.

Assets held for sale are stated at the lower of carrying amount and fair value less costs to sell. Where there is a partial transfer of a non-current asset to held for sale, an allocation of value is made between the current and non-current portions of the asset based on the relative value of the two portions, unless there is a methodology that better reflects the asset to be disposed of.

Assets held for sale are not depreciated or amortised.

Trade and other receivables

Financial assets included in Trade and other receivables are recognised initially at fair value. The Group holds the Trade receivables with the objective to collect the contractual cash flows and therefore measures them subsequently at amortised cost using the effective interest rate method, less any impairment losses.

Trade receivables that are subject to debt factoring arrangements are derecognised if they meet the conditions for derecognition detailed in IFRS 9 'Financial Instruments'.

Trade and other payables

Financial liabilities included in Trade and other payables are recognised initially at fair value. Subsequent to initial recognition they are measured at amortised cost using the effective interest rate method. Contingent consideration payables are held at fair value within level 3 of the fair value hierarchy as defined in Note 12.

Financial instruments

The Group's financial instruments include lease liabilities, Trade and other receivables and payables, liabilities for contingent consideration and put options under business combinations, and rights and obligations under employee benefit plans which are dealt with in specific accounting policies.

The Group's other financial instruments include:

- Cash and cash equivalents
- Fixed deposits
- Other investments
- Bank and other borrowings
- Derivatives

Cash and cash equivalents

Cash and cash equivalents comprise cash in hand, current balances with banks and similar institutions, and highly liquid investments with maturities of three months or less when acquired. They are readily convertible into known amounts of cash and are held at amortised cost under the hold to collect classification, where they meet the hold to collect 'solely payments of principal and interest' test criteria under IFRS 9. Those not meeting these criteria are held at fair value through profit and loss.

Fixed deposits

Fixed deposits, principally comprising funds held with banks and other financial institutions, are initially measured at fair value, plus direct transaction costs, and are subsequently measured at amortised cost using the effective interest rate method at each reporting date. Changes in carrying value are recognised in profit.

Group Accounting Policies
continued

Other investments

Accounting policy applied until 31 December 2017 (IAS 39)

Until 31 December 2017, the investments were classified as available for sale, initially measured at fair value (including direct transaction costs) and subsequently remeasured to fair value at each reporting date. Changes in carrying value due to changes in exchange rates on monetary available for sale investments or impairments were recognised in profit within Other operating income and expense. All other changes in fair value were recognised in Other comprehensive income.

Accounting policy applied from 1 January 2018 (IFRS 9)

On adoption of IFRS 9 on 1 January 2018 the available for sale classification category was eliminated. Investments previously classified as available for sale are now classified as fair value through profit or loss, unless the Group makes an irrevocable election at initial recognition for certain non-current equity investments to present changes in fair value in Other comprehensive income. If this election is made, there is no subsequent reclassification of fair value gains and losses to profit and loss following the derecognition of the investment. The following reclassifications were made on 1 January 2018:

Reclassification from available for sale to at fair value through Other comprehensive income

These investments were reclassified from available for sale to assets at fair value through Other comprehensive income. The investments primarily relate to biotech companies and are held to access science rather than to liquidate and realise gains.

Reclassification from available for sale to at fair value through profit or loss

These investments were reclassified from available to sale to assets at fair value through profit and loss. The investments primarily relate to short-term assets invested as part of our cash management strategy to maximise gains on our liquid resources.

Bank and other borrowings

The Group uses derivatives, principally interest rate swaps, to hedge the interest rate exposure inherent in a portion of its fixed interest rate debt. In such cases the Group will either designate the debt as fair value through profit or loss when certain criteria are met or as the hedged item under a fair value hedge.

If the debt instrument is designated as fair value through profit or loss, the debt is initially measured at fair value (with direct transaction costs being included in profit as an expense) and is remeasured to fair value at each reporting date with changes in carrying value being recognised in profit (along with changes in the fair value of the related derivative), with the exception of changes in the fair value of the debt instrument relating to own credit risk which are recorded in Other comprehensive income in accordance with IFRS 9. Such a designation has been made where this significantly reduces an accounting mismatch which would result from recognising gains and losses on different bases.

If the debt is designated as the hedged item under a fair value hedge, the debt is initially measured at fair value (with direct transaction costs being amortised over the life of the debt) and is remeasured for fair value changes in respect of the hedged risk at each reporting date with changes in carrying value being recognised in profit (along with changes in the fair value of the related derivative).

If the debt is designated in a cash flow hedge, the debt is measured at amortised cost (with gains or losses taken to profit and direct transaction costs being amortised over the life of the debt). The related derivative is remeasured for fair value changes at each reporting date with the portion of the gain or loss on the derivative that is determined to be an effective hedge recognised in Other comprehensive income. The amounts that have been recognised in Other comprehensive income are reclassified to profit in the same period that the hedged forecast cash flows affect profit. The reclassification adjustment is included in Finance expense in the Consolidated Statement of Comprehensive Income.

Other interest-bearing loans are initially measured at fair value (with direct transaction costs being amortised over the life of the loan) and are subsequently measured at amortised cost using the effective interest rate method at each reporting date. Changes in carrying value are recognised in profit.

Derivatives

Derivatives are initially measured at fair value (with direct transaction costs being included in profit as an expense) and are subsequently remeasured to fair value at each reporting date. Changes in carrying value are recognised in profit.

Foreign currencies

Foreign currency transactions, being transactions denominated in a currency other than an individual Group entity's functional currency, are translated into the relevant functional currencies of individual Group entities at average rates for the relevant monthly accounting periods, which approximate to actual rates.

Monetary assets and liabilities arising from foreign currency transactions are retranslated at exchange rates prevailing at the reporting date. Exchange gains and losses on loans and on short-term foreign currency borrowings and deposits are included within Finance expense. Exchange differences on all other foreign currency transactions are recognised in Operating profit in the individual Group entity's accounting records.

Non-monetary items arising from foreign currency transactions are not retranslated in the individual Group entity's accounting records.

In the Consolidated Financial Statements, income and expense items for Group entities with a functional currency other than US dollars are translated into US dollars at average exchange rates, which approximate to actual rates, for the relevant accounting periods. Assets and liabilities are translated at the US dollar exchange rates prevailing at the reporting date. Exchange differences arising on consolidation are recognised in Other comprehensive income.

If certain criteria are met, non-US dollar denominated loans or derivatives are designated as net investment hedges of foreign operations. Exchange differences arising on retranslation of net investments, and of foreign currency loans which are designated in an effective net investment hedge relationship, are recognised in Other comprehensive income in the Consolidated Financial Statements. Foreign exchange derivatives hedging net investments in foreign operations are carried at fair value. Effective fair value movements are recognised in Other comprehensive income, with any ineffectiveness taken to profit. Gains and losses accumulated in the translation reserve will be recycled to profit when the foreign operation is sold.

Litigation and environmental liabilities

AstraZeneca is involved in legal disputes, the settlement of which may involve cost to the Group. Provision is made where an adverse outcome is probable and associated costs, including related legal costs, can be estimated reliably. In other cases, appropriate disclosures are included. Determining the timing of recognition of when an adverse outcome is probable is considered a key judgement, refer to Note 29 to the Financial Statements on page 221.

Where it is considered that the Group is more likely than not to prevail, or in the rare circumstances where the amount of the legal liability cannot be estimated reliably, legal costs involved in defending the claim are charged to profit as they are incurred.

Where it is considered that the Group has a valid contract which provides the right to reimbursement (from insurance or otherwise) of legal costs and/or all or part of any loss incurred or for which a provision has been established, the best estimate of the amount expected to be received is recognised as an asset only when it is virtually certain.

AstraZeneca is exposed to environmental liabilities relating to its past operations, principally in respect of soil and groundwater remediation costs. Provisions for these costs are made when there is a present obligation and where it is probable that expenditure on remedial work will be required and a reliable estimate can be made of the cost. Provisions are discounted where the effect is material.

Impairment

The carrying values of non-financial assets, other than Inventories and Deferred tax assets, are reviewed at least annually to determine whether there is any indication of impairment. For Goodwill, Intangible assets under development and for any other assets where such indication exists, the asset's recoverable amount is estimated based on the greater of its value in use and its fair value less cost to sell. In assessing the recoverable amount, the estimated future cash flows, adjusted for the risks specific to each asset, are discounted to their present value using a discount rate that reflects current market assessments of the time value of money, the general risks affecting the pharmaceutical industry and other risks specific to each asset. For the purpose of impairment testing, assets are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash flows of other assets. Impairment losses are recognised immediately in profit.

International accounting transition

On transition to using adopted IFRSs in the year ended 31 December 2005, the Group took advantage of several optional exemptions available in IFRS 1 'First-time Adoption of International Financial Reporting Standards'. The major impacts which are of continuing importance are detailed below:

- Business combinations – IFRS 3 'Business Combinations' has been applied from 1 January 2003, the date of transition, rather than being applied fully retrospectively. As a result, the combination of Astra and Zeneca is still accounted for as a merger, rather than through purchase accounting. If purchase accounting had been adopted, Zeneca would have been deemed to have acquired Astra.
- Cumulative exchange differences – the Group chose to set the cumulative exchange difference reserve at 1 January 2003 to nil.

Applicable accounting standards and interpretations issued but not yet adopted

At the date of authorisation of these financial statements, the following amendments were in issue but not yet adopted by the Group:

- amendments to IAS 1 'Presentation of Financial Statements' and IAS 8 'Accounting Policies, Changes in Accounting Estimates and Errors' – endorsed by the EU on 29 November 2019
- amendments to IFRS 3 'Business Combinations', effective for periods beginning on or after 1 January 2020 – not amended by the EU.

The above amendments and interpretations are not expected to have a significant impact on the Group's net results.

1 Revenue

Product Sales

	2019					2018					2017				
	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m	Emerging Markets $m	US $m	Europe $m	Rest of World $m	Total $m
Oncology:															
Tagrisso	**762**	**1,268**	**474**	**685**	**3,189**	347	869	314	330	1,860	135	405	187	228	955
Imfinzi	**30**	**1,041**	**179**	**219**	**1,469**	6	564	27	36	633	–	19	–	–	19
Lynparza	**133**	**626**	**287**	**152**	**1,198**	51	345	190	61	647	18	141	130	8	297
Calquence	**2**	**162**	**–**	**–**	**164**	–	62	–	–	62	–	3	–	–	3
Faslodex	**198**	**328**	**229**	**137**	**892**	154	537	221	116	1,028	115	492	256	78	941
Zoladex	**492**	**7**	**135**	**179**	**813**	409	8	133	202	752	353	15	141	226	735
Iressa	**286**	**17**	**70**	**50**	**423**	286	26	109	97	518	251	39	112	126	528
Arimidex	**152**	**–**	**28**	**45**	**225**	132	–	31	49	212	118	7	34	58	217
Casodex	**127**	**–**	**16**	**57**	**200**	113	1	20	67	201	108	(1)	22	86	215
Others	**29**	**–**	**5**	**60**	**94**	30	–	8	77	115	28	–	3	83	114
	2,211	**3,449**	**1,423**	**1,584**	**8,667**	1,528	2,412	1,053	1,035	6,028	1,126	1,120	885	893	4,024
Cardiovascular, Renal and Metabolism:															
Farxiga	**471**	**537**	**373**	**162**	**1,543**	336	591	315	149	1,391	232	489	242	111	1,074
Brilinta	**462**	**710**	**351**	**58**	**1,581**	326	588	348	59	1,321	224	509	295	51	1,079
Bydureon	**11**	**459**	**66**	**13**	**549**	8	475	81	20	584	9	458	88	19	574
Onglyza	**176**	**230**	**70**	**51**	**527**	172	223	89	59	543	130	320	104	57	611
Byetta	**12**	**68**	**19**	**11**	**110**	8	74	29	15	126	12	114	34	16	176
Other Diabetes	**1**	**40**	**9**	**2**	**52**	(1)	34	5	1	39	1	52	–	–	53
Lokelma	**–**	**13**	**1**	**–**	**14**	–	–	–	–	–	–	–	–	–	–
Crestor	**806**	**104**	**148**	**220**	**1,278**	841	170	203	219	1,433	784	373	666	542	2,365
Seloken/Toprol-XL	**686**	**37**	**25**	**12**	**760**	641	39	19	13	712	593	37	52	13	695
Atacand	**160**	**12**	**30**	**19**	**221**	157	13	70	20	260	178	19	86	17	300
Others	**193**	**(1)**	**59**	**20**	**271**	207	(1)	71	24	301	204	–	92	43	339
	2,978	**2,209**	**1,151**	**568**	**6,906**	2,695	2,206	1,230	579	6,710	2,367	2,371	1,659	869	7,266
Respiratory:															
Symbicort	**547**	**829**	**678**	**441**	**2,495**	495	862	773	431	2,561	439	1,099	819	446	2,803
Pulmicort	**1,190**	**110**	**81**	**85**	**1,466**	995	116	90	85	1,286	840	156	92	88	1,176
Fasenra	**5**	**482**	**118**	**99**	**704**	1	218	32	46	297	–	1	–	–	1
Daliresp/Daxas	**4**	**184**	**26**	**1**	**215**	5	155	28	1	189	4	167	26	1	198
Duaklir	**1**	**3**	**71**	**2**	**77**	1	–	91	3	95	–	–	77	2	79
Bevespi	**–**	**42**	**–**	**–**	**42**	–	33	–	–	33	–	16	–	–	16
Breztri	**–**	**–**	**–**	**2**	**2**	–	–	–	–	–	–	–	–	–	–
Others	**240**	**3**	**133**	**14**	**390**	147	32	215	56	450	105	70	202	56	433
	1,987	**1,653**	**1,107**	**644**	**5,391**	1,644	1,416	1,229	622	4,911	1,388	1,509	1,216	593	4,706
Other:															
Nexium	**748**	**218**	**63**	**454**	**1,483**	690	306	235	471	1,702	684	499	248	521	1,952
Synagis	**–**	**46**	**312**	**–**	**358**	1	287	377	–	665	–	317	370	–	687
Losec/Prilosec	**179**	**10**	**49**	**25**	**263**	161	7	70	34	272	140	11	77	43	271
Seroquel XR/IR	**50**	**34**	**88**	**19**	**191**	118	108	107	28	361	151	193	127	37	508
Others	**12**	**128**	**157**	**9**	**306**	54	134	158	54	400	293	149	171	125	738
	989	**436**	**669**	**507**	**2,601**	1,024	842	947	587	3,400	1,268	1,169	993	726	4,156
Product Sales	**8,165**	**7,747**	**4,350**	**3,303**	**23,565**	6,891	6,876	4,459	2,823	21,049	6,149	6,169	4,753	3,081	20,152

SE Rebates, chargebacks and returns in the US

The major market where estimates are seen as significant is the US and when invoicing Product Sales in the US, we estimate the rebates and chargebacks we expect to pay. The adjustment in respect of prior year net US Product Sales revenue in 2019 was 3.6% (2018: 3.2%; 2017: 8.9%). The most significant of these relate to the Medicaid and state programmes with an adjustment in respect of prior year net US Product Sales revenue in 2019 was 1.3% (2018: 2.6%; 2017: 1.7%) and Managed Care and Medicare was 1.9% (2018: 1.2%; 2017: 3.5%).

This demonstrates the level of sensitivity, further meaningful sensitivity is not able to be provided due to the large volume of variables that contribute to the overall rebates, chargebacks, returns and other revenue accruals.

Collaboration Revenue

	2019 $m	2018 $m	2017 $m
Royalty income	**62**	49	108
Global co-development and commercialisation of *Lynparza* and selumetinib with MSD	**610**	790	1,247
Licence agreement for *Crestor* in Spain with Almirall	**39**	61	–
Co-development and commercialisation of MEDI8897 with Sanofi	**34**	–	127
Grant of authorised generic rights to various medicines in Japan	**19**	41	45
Transfer of rights to *Zoladex* in the US and Canada to TerSera	**–**	35	250
Licence of rights to brodalumab to Valeant and LEO Pharma	**–**	–	150
Transfer of rights to anaesthetics medicines to Aspen	**–**	–	150
Other collaboration milestones	**5**	4	87
Other collaboration upfronts	**–**	10	114
Other collaboration revenue	**50**	51	35
	819	1,041	2,313

Substantially all Collaboration Revenue relates to performance obligations satisfied in prior periods.

2 Operating profit

Operating profit includes the following significant items:

Selling, general and administrative costs

In 2019, Selling, general and administrative costs includes a credit of $516m (2018: credit of $482m; 2017: charge of $208m) resulting from changes in the fair value of Contingent consideration arising from the acquisition of the diabetes alliance from BMS. These adjustments reflect revised estimates for future sales performance for the products acquired and, as a result, revised estimates for future royalties payable.

In 2019, Selling, general and administrative costs also includes a charge of $172m (2018: credit of $113m; 2017: credit of $209m) resulting from changes in estimates of the cash flows arising from the put option over the non-controlling interest in Acerta Pharma.

In 2019, Selling, general and administrative costs also includes a charge of $610m (2018: credit of $219m; 2017: charge of $241m) of legal provisions relating to a number of legal proceedings including settlements in various jurisdictions in relation to several marketed products.

Further details of impairment charges for 2019, 2018 and 2017 are included in Notes 7 and 10.

Other operating income and expense

	2019 $m	2018 $m	2017 $m
Royalties			
Income	**146**	96	132
Amortisation	**(4)**	(4)	(45)
Gains on disposal of intangible assets	**1,243**	1,885	1,518
Gains on disposal of short-term investments	**–**	–	161
Net (losses)/gains on disposal of other non-current assets	**(21)**	(8)	24
Impairment of property, plant and equipment	**–**	–	(78)
Legal settlements[1]	**–**	374	–
Other income	**285**	277	286
Other expense	**(108)**	(93)	(168)
Other operating income and expense	**1,541**	2,527	1,830

[1] Primarily driven by a $352m settlement of legal action in Canada in relation to a patent infringement of *Losec/Prilosec*.

Royalty amortisation relates to intangible assets recorded in respect of income streams acquired with MedImmune, and upon the restructuring of a historical joint venture with MSD.

Gains on disposal of intangible assets in 2019 includes $515m on disposal of US rights to *Synagis* to Sobi, $243m on disposal of rights to *Losec* globally excluding China, Japan, the US and Mexico to Cheplapharm, $181m on disposal of rights to *Arimidex* and *Casodex* in Europe and certain additional countries to Juvisé Pharmaceuticals and $213m on disposal of commercialisation rights to *Seroquel* and *Seroquel XR* in Europe, Russia, US and Canada to Cheplapharm.

As part of the total consideration received in respect of the agreement to sell US rights to *Synagis*, $150m related to the rights to participate in the future cash flows from the US profits or losses for nirsevimab. This was recognised as a financial liability as the Group has not fully transferred the risks and rewards of the underlying cash flows arising from nirsevimab to Sobi. This liability is presented in Other Payables within Non-current Liabilities. The associated cash flow is presented within Investing Activities as the Group has received the cash in exchange for agreeing to transfer future cash flows relating to an intangible asset.

2 Operating profit *continued*

Gains on disposal of intangible assets in 2018 includes $695m on the disposal of Europe rights to *Nexium*, $527m on the disposal of rights to *Seroquel* in the UK, China and other international markets, $210m from the sale of rights to *Atacand* in Europe to Cheplapharm, milestone receipts of $172m from the disposal of the anaesthetics portfolio outside the US to Aspen and $139m from the sale of the global rights to *Alvesco*, *Omnaris* and *Zetonna* to Covis.

Gains on disposal of intangible assets in 2017 includes $555m on the disposal of the remaining rights to the global anaesthetics portfolio, $301m on disposal of the Europe rights to *Seloken* and $193m on disposal of the global rights to *Zomig*.

Restructuring costs

The tables below show the costs that have been charged in respect of restructuring programmes by cost category and type. Severance provisions are detailed in Note 21.

	2019 $m	2018 $m	2017 $m
Cost of sales	**73**	432	181
Research and development expense	**101**	94	201
Selling, general and administrative costs	**173**	181	347
Other operating income and expense	**–**	(10)	78
Total charge	**347**	697	807

	2019 $m	2018 $m	2017 $m
Severance costs	**137**	41	176
Accelerated depreciation and impairment[1]	**(67)**	259	141
Other	**277**	397	490
Total charge	**347**	697	807

[1] See Note 7 on page 188.

Other costs are those incurred in designing and implementing the Group's various restructuring initiatives, including costs of decommissioning sites impacted by changes to our global footprint, temporary lease costs during relocation, internal project costs, and external consultancy fees.

Included within accelerated depreciation and impairment is a credit relating to the impairment reversal of two manufacturing sites in Colorado, US. Refer to Note 7 for further details.

Financial instruments

Included within Operating profit are the following net gains and losses on financial instruments:

	2019 $m	2018 $m	2017 $m
Losses on forward foreign exchange contracts	**(112)**	(100)	(6)
Gains/(losses) on receivables and payables	**66**	43	(30)
Gains on disposal of short-term investments	**–**	–	161
Gains on other available for sale investments	**–**	–	34
Total	**(46)**	(57)	159

3 Finance income and expense

	2019 $m	2018 $m	2017 $m
Finance income			
Returns on fixed deposits and equity securities	**1**	10	8
Returns on short-term deposits	**122**	86	62
Fair value gains on debt and interest rate swaps	**7**	–	4
Discount unwind on other long-term assets	**20**	6	10
Interest on tax receivables	**22**	36	29
Total	**172**	138	113
Finance expense			
Interest on debt and commercial paper	**(698)**	(673)	(612)
Interest on overdrafts, lease liabilities and other financing costs[1]	**(74)**	(68)	(52)
Net interest on post-employment defined benefit plan net liabilities (Note 22)	**(53)**	(52)	(49)
Net exchange losses	**(30)**	(51)	(148)
Discount unwind on contingent consideration arising from business combinations (Note 20)	**(356)**	(416)	(402)
Discount unwind on other long-term liabilities	**(213)**	(154)	(245)
Fair value losses on debt and interest rate swaps	**–**	(2)	–
Interest on tax payables	**(8)**	(3)	–
Total	**(1,432)**	(1,419)	(1,508)
Net finance expense	**(1,260)**	(1,281)	(1,395)

[1] Comparative figures related to finance leases recognised under IAS 17.

Financial instruments

Included within finance income and expense are the following net gains and losses on financial instruments:

	2019 $m	2018 $m	2017 $m
Interest and fair value adjustments in respect of debt designated at fair value through profit or loss, net of derivatives	**(12)**	(11)	8
Interest and changes in carrying values of debt designated as hedged items in fair value hedges, net of derivatives	**(10)**	(28)	(35)
Interest and fair value changes on fixed and short-term deposits, equity securities, other derivatives and tax balances	**110**	96	52
Interest on debt, overdrafts, lease liabilities and commercial paper held at amortised cost	**(662)**	(619)	(559)

Fair value losses of $5m (2018: $13m; 2017: $9m) on interest rate fair value hedging instruments and $8m fair value gains (2018: $10m; 2017: $9m) on the related hedged items have been included within interest and changes in carrying values of debt designated as hedged items, net of derivatives. All fair value hedge relationships were effective during the year.

Fair value gain of $4m (2018: loss of $13m; 2017: loss of $10m) on derivatives related to debt instruments designated at fair value through profit or loss and $4m fair value loss (2018: gain of $13m; 2017: gain of $3m) on debt instruments designated at fair value through profit or loss have been included within interest and fair value adjustments in respect of debt designated at fair value through profit or loss, net of derivatives.

4 Taxation

Taxation recognised in the Consolidated Statement of Comprehensive Income is as follows:

	2019 $m	2018 $m	2017 $m
Current tax expense			
Current year	**1,243**	711	665
Adjustment to prior years	**66**	38	(287)
Total	**1,309**	749	378
Deferred tax expense			
Origination and reversal of temporary differences	**(875)**	(644)	(1,113)
Adjustment to prior years	**(113)**	(162)	94
Total	**(988)**	(806)	(1,019)
Taxation recognised in the profit for the period	**321**	(57)	(641)

Taxation relating to components of Other comprehensive income is as follows:

	2019 $m	2018 $m	2017 $m
Current and deferred tax			
Items that will not be reclassified to profit or loss:			
Remeasurement of the defined benefit liability	**81**	37	24
Share-based payments	**–**	–	9
Net (gains)/losses on equity investments measured at fair value through other comprehensive income	**(60)**	30	–
Deferred tax (credit)/charge relating to change of tax rates	**–**	(11)	(17)
Total	**21**	56	16
Items that may be reclassified subsequently to profit or loss:			
Foreign exchange arising on consolidation	**34**	69	(79)
Foreign exchange arising on designating borrowings in net investment hedges	**4**	–	14
Net available for sale losses/(gains) recognised in other comprehensive income	**–**	–	2
Deferred tax (credit)/charge relating to change of tax rates	**–**	(18)	30
Total	**38**	51	(33)
Taxation relating to components of other comprehensive income	**59**	107	(17)

The reported tax rate in the year was 21%.

The income tax paid for the year was $1,118m which was 72% of Profit before Tax.

Taxation has been provided at current rates on the profits earned for the periods covered by the Group Financial Statements. The 2019 prior period current tax adjustment relates mainly to net increases in provisions for tax contingencies and tax accrual to tax return adjustments. The 2018 and 2017 prior period current tax adjustments relate mainly to net reductions in provisions for tax contingencies and tax accrual to tax return adjustments.

The 2019, 2018 and 2017 prior period deferred tax adjustments relate mainly to tax accrual to return adjustments.

To the extent that dividends remitted from overseas subsidiaries, joint ventures and associates are expected to result in additional taxes, appropriate amounts have been provided for. No deferred tax has been provided for unremitted earnings of Group companies overseas as these are considered permanently employed in the business of these companies. Unremitted earnings may be liable to overseas taxes and/or UK taxation (after allowing for double tax relief) if distributed as dividends. The aggregate amount of temporary differences associated with investments in subsidiaries and branches for which Deferred tax liabilities have not been recognised totalled approximately $4,902m at 31 December 2019 (2018: $8,144m; 2017: $8,359m).

4 Taxation *continued*

Factors affecting future tax charges

As a group with worldwide operations, AstraZeneca is subject to several factors that may affect future tax charges, principally the levels and mix of profitability in different jurisdictions, transfer pricing regulations, tax rates imposed and tax regime reforms.

Details of the material tax exposures and items currently under audit, negotiation and review are set out in Note 29.

Tax reconciliation to UK statutory rate

The table below reconciles the UK statutory tax charge to the Group's total tax charge/(credit):

	2019 $m	2018 $m	2017 $m
Profit before tax	**1,548**	1,993	2,227
Notional taxation charge at UK corporation tax rate of 19% (2018: 19%; 2017: 19.25%)	**294**	379	429
Differences in effective overseas tax rates	**(49)**	18	(212)
Deferred tax charge/(credit)relating to change in tax rates[1]	**39**	(334)	(616)
Unrecognised deferred tax asset[2]	**(16)**	7	(105)
Items not deductible for tax purposes	**92**	167	203
Items not chargeable for tax purposes	**(13)**	(6)	(14)
Other items[3]	**21**	(164)	(133)
Adjustments in respect of prior periods[4]	**(47)**	(124)	(193)
Total tax charge/(credit) for the year	**321**	(57)	(641)

[1] The 2019 item relates to the increase in the 2019 substantively enacted Dutch Corporate Income Tax rate (debit of $66m) and other (credit of $27m). In 2019, it was substantively enacted that the Dutch Corporate Income Tax rate for the year ended 31 December 2020 increases from 22.55% to 25% and effective 1 January 2021 increases from 20.5% to 21.7%. The 2018 item relates to the 2018 reduction in the Dutch and Swedish Corporate Income Tax rates (credit of $297m) and other (credit of $37m). The 2017 item relates to the reduction in the US Federal Income Tax rate from 35% to 21% effective from 1 January 2018 (credit of $617m) and other (charge of $1m).
[2] The 2019 item includes a $27m credit arising on recognition of previously unrecognised deferred tax assets and the 2017 item relates to recognition of previously unrecognised net deferred tax assets.
[3] Other items in 2019 relate to a charge of $309m relating to collaboration and divestment activity, a credit of $70m relating to internal transfers of intellectual property and a net credit of $218m relating to the release of tax contingencies following the expiry of the relevant statute of limitations and on the conclusion of tax authority review partially offset by a provision build for transfer pricing and other contingencies. Other items in 2018 relate to a credit of $188m relating to the release of tax contingencies following the expiry of the relevant statute of limitations and on the conclusion of tax authority review partially offset by a provision build for transfer pricing and other contingencies (charge $24m). Other items in 2017 relate to the release of tax contingencies following the expiry of the relevant statute of limitations (credit $178m) partially offset by a provision build for transfer pricing contingencies (charge $45m).
[4] Further details explaining the adjustments in respect of prior periods is set out on page 183.

AstraZeneca is domiciled in the UK but operates in other countries where the tax rates and laws are different from those in the UK. The impact on differences in effective overseas tax rates on the Group's overall tax charge is noted above. Profits arising from our manufacturing operation in Puerto Rico are granted special status and are taxed at a reduced rate compared with the normal rate of tax in that territory under a tax incentive grant continuing until 2031.

Deferred tax

The total movement in the net deferred tax balance in the year was $1,135m. The movements are as follows:

	Intangibles, property, plant & equipment[1] $m	Pension and post-retirement benefits $m	Elimination of unrealised profit on inventory $m	Untaxed reserves[2] $m	Losses and tax credits carried forward $m	Accrued expenses and other $m	Total $m
Net deferred tax balance at 1 January 2017	(5,149)	465	1,014	(697)	1,004	509	(2,854)
Income statement	1,393	(8)	(231)	159	(128)	(166)	1,019
Other comprehensive income	(84)	9	–	–	–	35	(40)
Exchange	(12)	43	48	(62)	30	22	69
Net deferred tax balance at 31 December 2017	(3,852)	509	831	(600)	906	400	(1,806)
Net adjustment to the opening balance of Retained earnings	–	–	–	–	–	12	12
Income statement	401	(15)	179	(4)	129	116	806
Other comprehensive income	56	26	–	–	–	31	113
Equity	–	–	–	–	–	12	12
Exchange	27	(25)	(30)	47	(27)	(36)	(44)
Net deferred tax balance at 31 December 2018	(3,368)	495	980	(557)	1,008	535	(907)
Income statement	**1,055**	**(9)**	**312**	**(63)**	**(480)**	**173**	**988**
Other comprehensive income	**34**	**79**	**–**	**–**	**–**	**(30)**	**83**
Equity[3]	**–**	**–**	**–**	**–**	**–**	**12**	**12**
Exchange	**14**	**(4)**	**1**	**22**	**18**	**1**	**52**
Net deferred tax balance at 31 December 2019[4]	**(2,265)**	**561**	**1,293**	**(598)**	**546**	**691**	**228**

[1] Includes deferred tax on contingent liabilities in respect of intangibles.
[2] Untaxed reserves relate to taxable profits where the tax liability is deferred to later periods.
[3] Deferred tax movement on share-based payments recorded through equity.
[4] The UK had a net deferred tax asset of $629m as at 31 December 2019, which has been recognised on the basis of sufficient forecast future taxable profits against which the deductible temporary differences can be utilised. The US includes a net deferred tax asset of $136m as at 31 December 2019, which has been recognised on the basis of sufficient forecast future taxable profits against which the deductible temporary differences can be utilised.

The net deferred tax balance, before the offset of balances within countries, consists of:

	Intangibles, property, plant & equipment $m	Pension and post-retirement benefits $m	Elimination of unrealised profit on inventory $m	Untaxed reserves $m	Losses and tax credits carried forward $m	Accrued expenses and other $m	Total $m
Deferred tax assets at 31 December 2017	1,226	559	1,011	–	957	885	4,638
Deferred tax liabilities at 31 December 2017	(5,078)	(50)	(180)	(600)	(51)	(485)	(6,444)
Net deferred tax balance at 31 December 2017	(3,852)	509	831	(600)	906	400	(1,806)
Deferred tax assets at 31 December 2018	1,071	521	1,287	–	1,103	913	4,895
Deferred tax liabilities at 31 December 2018	(4,439)	(26)	(307)	(557)	(95)	(378)	(5,802)
Net deferred tax balance at 31 December 2018	(3,368)	495	980	(557)	1,008	535	(907)
Deferred tax assets at 31 December 2019	**1,091**	**591**	**1,543**	**–**	**608**	**959**	**4,792**
Deferred tax liabilities at 31 December 2019	**(3,356)**	**(30)**	**(250)**	**(598)**	**(62)**	**(268)**	**(4,564)**
Net deferred tax balance at 31 December 2019	**(2,265)**	**561**	**1,293**	**(598)**	**546**	**691**	**228**

Analysed in the Consolidated Statement of Financial Position, after offset of balances within countries, as:

	2019 $m	2018 $m	2017 $m
Deferred tax assets	**2,718**	2,379	2,189
Deferred tax liabilities	**(2,490)**	(3,286)	(3,995)
Net deferred tax balance	**228**	(907)	(1,806)

Unrecognised deferred tax assets

Deferred tax assets (DTA) of $441m (2018: $444m; 2017: $420m) have not been recognised in respect of deductible temporary differences because it is not probable that future taxable profit will be available against which the Group can utilise the benefits therefrom.

	2019 Temporary differences $m	**2019 Unrecognised DTA $m**	2018 Temporary differences $m	2018 Unrecognised DTA $m	2017 Temporary differences $m	2017 Unrecognised DTA $m
Trading and capital losses expiring:						
Within 10 years	**33**	**9**	4	1	105	25
More than 10 years	**1**	**–**	4	1	4	1
Indefinite	**218**	**62**	175	51	88	24
	252	**71**	183	53	197	50
Tax credits and State tax losses expiring:						
Within 10 years		**44**		40		32
More than 10 years		**259**		281		273
Indefinite		**67**		70		65
		370		391		370
Total		**441**		444		420

5 Earnings per $0.25 Ordinary Share

	2019	2018	2017
Profit for the year attributable to equity holders ($m)	**1,335**	2,155	3,001
Basic earnings per Ordinary Share	**$1.03**	$1.70	$2.37
Diluted earnings per Ordinary Share	**$1.03**	$1.70	$2.37
Weighted average number of Ordinary Shares in issue for basic earnings (millions)	**1,301**	1,267	1,266
Dilutive impact of share options outstanding (millions)	**–**	–	1
Diluted weighted average number of Ordinary Shares in issue (millions)	**1,301**	1,267	1,267

The earnings figures used in the calculations above are post-tax.

6 Segment information

During 2019 a reorganisation of the Group's R&D units responsible for discovery through to late-stage development was completed, resulting in an R&D unit for BioPharmaceuticals (CVRM and Respiratory) and one for Oncology.

Additionally, there was a change in the structure of the Group's commercial units, creating a new BioPharmaceutical unit to add to the existing Oncology Unit. These units align product strategy and commercial delivery across the US, Europe and Canada (EUCAN) and sharpened focus on these main therapy areas. The structure of our international commercial organisation remained unchanged, with separate units for Japan and International including China, covering all Therapy Areas.

As a result of the reorganisation completed during 2019, the Group has reviewed its assessment of reportable segments under IFRS 8 'Operating Segments' and concluded that the Group continues to have one reportable segment.

KJ This determination is considered to be a Key Judgement, and this judgement has been taken with reference to the following factors:

1 The level of integration across the different functions of the Group's pharmaceutical business:
AstraZeneca is engaged in a single business activity of pharmaceuticals and the Group does not have multiple discrete operating components. AstraZeneca's pharmaceuticals business consists of the discovery and development of new products, which are then manufactured, marketed and sold. All of these functional activities take place (and are managed) globally on a highly integrated basis. These individual functional areas are not managed separately.

2 The identification of the Chief Operating Decision Maker (CODM) and the nature and extent of the financial information reviewed by the CODM:
The SET, established and chaired by the CEO, is the vehicle through which he exercises the authority delegated to him from the Board for the management, development and performance of our business. It is considered that the SET is AstraZeneca's chief operating decision making body (as defined in IFRS 8). The operation of the SET is principally driven by the management of the Commercial operations, R&D, manufacturing and supply. All significant operating decisions are taken by the SET. While members of the SET have responsibility for implementation of decisions in their respective areas, operating decision making is at SET level as a whole. Where necessary, these are implemented through cross-functional sub-committees that consider the Group-wide impact of a new decision. For example, product launch decisions would be initially considered by the SET and, on approval, passed to an appropriate sub team for implementation. The impacts of being able to develop, produce, deliver and commercialise a wide range of pharmaceutical products drive the SET decision making process.

In assessing performance, the SET reviews financial information on an integrated basis for the Group as a whole, substantially in the form of, and on the same basis as, the Group's IFRS Financial Statements. The high upfront cost of discovering and developing new products coupled with the relatively insignificant and stable unit cost of production means that there is not the clear link that exists in many manufacturing businesses between the revenue generated on an individual product sale and the associated cost and hence margin generated on a product. Consequently, the profitability of individual drugs or classes of drugs is not considered a key measure of performance for the business and is not monitored by the SET. The focus of additional financial information reviewed is at brand sales level within specific geographies. Expenditure analysis is completed for the science units, operations and enabling functions, there is no allocation of these centrally managed group costs to the individual product brands. SET members' variable remuneration continues to be derived from the Group scorecard outcome.

3 How resources are allocated:
Resources are allocated on a Group-wide basis according to need. In particular, capital expenditure, in-licensing, and R&D resources are allocated between activities on merit, based on overall therapeutic considerations and strategy under the aegis of the Group's Early Stage Portfolio Committee and Late Stage Portfolio Committee.

Geographic areas

The following table shows information for Total Revenue by geographic area and material countries. The additional tables show the Operating profit and Profit before tax made by companies located in that area, together with segment assets, segment assets acquired, net operating assets, and Property, plant and equipment owned by the same companies; export sales and the related profit are included in the area/country where the legal entity resides and from which those sales were made.

	Total Revenue		
	2019 $m	2018 $m	2017 $m
UK	**1,822**	2,390	3,240
Continental Europe			
France	**578**	617	701
Germany	**704**	592	541
Italy	**396**	426	514
Spain	**359**	396	447
Sweden	**834**	477	842
Others	**1,291**	1,312	1,512
	4,162	3,820	4,557
The Americas			
Canada	**466**	483	482
US	**8,047**	7,240	6,666
Others	**814**	806	809
	9,327	8,529	7,957
Asia, Africa & Australasia			
Australia	**266**	313	377
China	**4,867**	3,778	2,955
Japan	**2,522**	1,952	2,172
Others	**1,418**	1,308	1,207
	9,073	7,351	6,711
Total Revenue	**24,384**	22,090	22,465

Total Revenue outside of the UK totalled $22,562m for the year ended 31 December 2019 (2018: $19,700m; 2017: $19,225m).

	Operating profit/(loss)			Profit/(loss) before tax		
	2019 $m	2018 $m	2017 $m	**2019 $m**	2018 $m	2017 $m
UK	**466**	(66)	(694)	**93**	(514)	(1,146)
Continental Europe	**1,502**	3,671	2,482	**1,006**	3,179	1,918
The Americas	**(8)**	(757)	1,242	**(474)**	(1,171)	822
Asia, Africa & Australasia	**964**	539	647	**923**	499	633
Continuing operations	**2,924**	3,387	3,677	**1,548**	1,993	2,227

	Non-current assets[1]			Total assets		
	2019 $m	2018 $m	2017 $m	**2019 $m**	2018 $m	2017 $m
UK	**6,778**	4,828	5,371	**15,302**	13,573	12,842
Continental Europe	**15,220**	14,529	16,305	**18,182**	17,119	18,962
The Americas	**19,513**	22,191	24,811	**23,380**	26,381	28,180
Asia, Africa & Australasia	**1,235**	976	1,024	**4,513**	3,578	3,370
Continuing operations	**42,746**	42,524	47,511	**61,377**	60,651	63,354

	Assets acquired[2]			Net operating assets[3]		
	2019 $m	2018 $m	2017 $m	**2019 $m**	2018 $m	2017 $m
UK	**2,255**	556	400	**4,206**	3,471	3,351
Continental Europe	**386**	530	629	**9,201**	8,913	10,228
The Americas	**236**	356	585	**15,929**	18,598	20,339
Asia, Africa & Australasia	**120**	105	138	**1,432**	1,037	1,198
Continuing operations	**2,997**	1,547	1,752	**30,768**	32,019	35,116

[1] Non-current assets exclude Deferred tax assets and Derivative financial instruments.
[2] Included in Assets acquired are those assets that are expected to be used during more than one period (Property, plant and equipment, Goodwill and Intangible assets).
[3] Net operating assets exclude short-term investments, cash, short-term borrowings, loans, Derivative financial instruments, retirement benefit obligations and non-operating receivables and payables.

	Property, plant and equipment		
	2019 $m	2018 $m	2017 $m
UK	**1,920**	1,605	1,455
Sweden	**1,488**	1,456	1,508
US	**2,758**	2,844	3,055
Rest of the world	**1,522**	1,516	1,597
Continuing operations	**7,688**	7,421	7,615

Geographic markets

The table below shows Product Sales in each geographic market in which customers are located.

	2019 $m	2018 $m	2017 $m
UK	**458**	469	489
Continental Europe	**3,891**	4,388	4,712
The Americas	**9,032**	8,177	7,467
Asia, Africa & Australasia	**10,184**	8,015	7,484
Continuing operations	**23,565**	21,049	20,152

Product Sales are recognised when control of the goods has been transferred to a third party. In general this is upon delivery of the products to wholesalers. One wholesaler (2018: one; 2017: zero) individually represented greater than 10% of Product Sales. The value of these transactions recorded as Product Sales were $3,078m (2018: $2,704m; 2017: n/a).

7 Property, plant and equipment

	Land and buildings $m	Plant and equipment $m	Assets in course of construction $m	Total property, plant and equipment $m
Cost				
At 1 January 2017	4,616	6,543	2,292	13,451
Capital expenditure	39	198	1,074	1,311
Transfer of assets into use	525	567	(1,092)	–
Disposals and other movements	(367)	(577)	–	(944)
Exchange adjustments	210	452	159	821
At 31 December 2017	5,023	7,183	2,433	14,639
Capital expenditure	25	99	910	1,034
Transfer of assets into use	429	594	(1,023)	–
Disposals and other movements	50	(427)	(14)	(391)
Exchange adjustments	(161)	(353)	(129)	(643)
At 31 December 2018	5,366	7,096	2,177	14,639
Capital expenditure	**8**	**48**	**940**	**996**
Transfer of assets into use	**403**	**620**	**(1,023)**	**–**
Disposals and other movements	**(236)**	**(324)**	**(11)**	**(571)**
Exchange adjustments	**(9)**	**(57)**	**3**	**(63)**
At 31 December 2019	**5,532**	**7,383**	**2,086**	**15,001**
Depreciation				
At 1 January 2017	2,092	4,511	–	6,603
Charge for year	182	442	–	624
Impairment	78	–	–	78
Disposals and other movements	(249)	(501)	–	(750)
Exchange adjustments	128	341	–	469
At 31 December 2017	2,231	4,793	–	7,024
Charge for year	202	412	–	614
Impairment	150	98	43	291
Disposals and other movements	10	(336)	(43)	(369)
Exchange adjustments	(89)	(253)	–	(342)
At 31 December 2018	2,504	4,714	–	7,218
Charge for year	**209**	**438**	**–**	**647**
Impairment	**(67)**	**14**	**–**	**(53)**
Disposals and other movements	**(120)**	**(313)**	**–**	**(433)**
Exchange adjustments	**(21)**	**(45)**	**–**	**(66)**
At 31 December 2019	**2,505**	**4,808**	**–**	**7,313**
Net book value				
At 31 December 2017	2,792	2,390	2,433	7,615
At 31 December 2018	2,862	2,382	2,177	7,421
At 31 December 2019	**3,027**	**2,575**	**2,086**	**7,688**

Impairment charges in 2019 were recognised for Land and buildings and Plant and equipment as a result of the announcement of the closure of the Wedel manufacturing site and the cessation of specific operations in Algeria. These charges have been recognised in Cost of sales. An impairment reversal recognised of $23m in relation to the Longmont, Colorado manufacturing site (sold in March 2019) and the Boulder, Colorado manufacturing site of $70m (offer accepted in November 2019, subject to completion of due diligence and other closing conditions), which more than offset the impairment charges of $26m.

Included within other movements in 2019 is a transfer of $70m from Land and buildings to Assets held for sale in relation to the Boulder manufacturing site.

	2019 $m	2018 $m	2017 $m
The net book value of land and buildings comprised:			
Freeholds	**2,657**	2,567	2,514
Leaseholds	**370**	295	278

8 Leases

Right-of-use assets

	Land and buildings $m	Motor vehicles $m	Other $m	Total right-of-use assets $m
Cost				
At 1 January 2019	–	–	–	–
Opening balance	580	124	18	722
Additions	85	85	3	173
Disposals and other movements	(44)	(7)	1	(50)
Exchange adjustments	6	–	–	6
At 31 December 2019	627	202	22	851
Depreciation				
At 1 January 2019	–	–	–	–
Charge for year	130	70	7	207
Impairment	4	–	–	4
Disposals and other movements	(3)	(6)	1	(8)
Exchange adjustments	1	–	–	1
At 31 December 2019	132	64	8	204
Net book value				
At 31 December 2019	495	138	14	647

Lease Liability

	2019 $m	2018 $m	2017 $m
The present value of lease liabilities is as follows:			
Within one year	188	–	–
Later than one year and not later than five years	368	–	–
Later than five years	119	–	–
Total lease liabilities	675	–	–

In prior periods, the Group only recognised lease assets and lease liabilities in relation to leases that were classified as 'finance leases' under IAS 17 'Leases'. The assets were presented within property, plant and equipment and the liabilities within interest bearing loans and borrowings. For adjustments recognised on adoption of IFRS 16 on 1 January 2019, please refer to the Group Accounting Policies section.

The interest expense on lease liabilities included within finance costs was $22m. The expense relating to short-term leases was $1m. The expense relating to leases of low-value assets that are not shown above as short-term leases was $1m. The expense relating to variable lease payments not included in lease liabilities was $nil. Income recognised from subleasing was $4m.

The total cash outflow for leases in 2019 was $208m.

Prior to adoption of IFRS 16 on 1 January 2019, total rentals under operating leases charged to profit were as follows:

	2018 $m	2017 $m
Operating leases	188	175

In 2018, the Group revised the presentation of operating leases from 2017 to include operating leases identified during the transition to IFRS 16 as having previously been omitted from this disclosure. This resulted in an increase in 2017 from $137m to $175m.

Prior to adoption of IFRS 16 on 1 January 2019, the future minimum lease payments under operating leases that had an initial or remaining term in excess of one year at 31 December 2019 were as follows:

	2018 $m	2017 $m
Not later than one year	188	151
Later than one year and not later than five years	360	345
Later than five years	136	118
Total future minimum lease payments	684	614

In 2018, the Group revised the presentation of operating leases from 2017 to include operating leases identified during the transitions to IFRS 16 as having previously been omitted from this disclosure. This resulted in an increase in 2017 from $523m to $614m.

9 Goodwill

	2019 $m	2018 $m	2017 $m
Cost			
At 1 January	**12,022**	12,143	11,969
Additions through business combinations	**–**	–	–
Exchange and other adjustments	**(40)**	(121)	174
At 31 December	**11,982**	12,022	12,143
Amortisation and impairment losses			
At 1 January	**315**	318	311
Exchange and other adjustments	**(1)**	(3)	7
At 31 December	**314**	315	318
Net book value			
At 31 December	**11,668**	11,707	11,825

Goodwill is tested for impairment at the operating segment level, this being the level at which goodwill is monitored for internal management purposes. As detailed in Note 6, the Group does not have multiple operating segments and is engaged in a single business activity of pharmaceuticals.

Recoverable amount is determined on a fair value less costs to sell basis using the market value of the Company's outstanding Ordinary Shares. Our market capitalisation is compared to the book value of the Group's net assets and this indicates a significant surplus at 31 December 2019 (and 31 December 2018 and 31 December 2017). No goodwill impairment was identified.

10 Intangible assets

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Cost				
At 1 January 2017	41,603	2,580	1,828	46,011
Additions – separately acquired	397	7	37	441
Disposals	(249)	(67)	(62)	(378)
Exchange and other adjustments	1,162	116	108	1,386
At 31 December 2017	42,913	2,636	1,911	47,460
Additions – separately acquired	476	–	37	513
Transferred to assets held for sale (Note 18)	(2,486)	–	–	(2,486)
Disposals	(630)	–	(16)	(646)
Exchange and other adjustments	(1,137)	(110)	(93)	(1,340)
At 31 December 2018	39,136	2,526	1,839	43,501
Additions – separately acquired	**1,835**	**99**	**67**	**2,001**
Disposals	**(35)**	**–**	**(151)**	**(186)**
Exchange and other adjustments	**(282)**	**24**	**26**	**(232)**
At 31 December 2019	**40,654**	**2,649**	**1,781**	**45,084**
Amortisation and impairment losses				
At 1 January 2017	15,095	1,836	1,494	18,425
Amortisation for year	1,627	118	84	1,829
Impairment	488	–	3	491
Disposals	(19)	–	(52)	(71)
Exchange and other adjustments	467	50	81	598
At 31 December 2017	17,658	2,004	1,610	21,272
Amortisation for year	2,016	69	80	2,165
Impairment	683	–	–	683
Transferred to assets held for sale (Note 18)	(1,504)	–	–	(1,504)
Disposals	(294)	–	(13)	(307)
Exchange and other adjustments	(652)	(38)	(77)	(767)
At 31 December 2018	17,907	2,035	1,600	21,542
Amortisation for year	**1,808**	**52**	**68**	**1,928**
Impairment	**1,031**	**–**	**2**	**1,033**
Disposals	**(29)**	**–**	**(147)**	**(176)**
Exchange and other adjustments	**(112)**	**10**	**26**	**(76)**
At 31 December 2019	**20,605**	**2,097**	**1,549**	**24,251**
Net book value				
At 31 December 2017	25,255	632	301	26,188
At 31 December 2018	21,229	491	239	21,959
At 31 December 2019	**20,049**	**552**	**232**	**20,833**

Other intangibles consist mainly of research and device technologies.

Amortisation charges are recognised in profit as follows:

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Year ended 31 December 2017				
Cost of sales	149	–	–	149
Research and development expense	–	43	–	43
Selling, general and administrative costs	1,478	30	84	1,592
Other operating income and expense	–	45	–	45
Total	1,627	118	84	1,829
Year ended 31 December 2018				
Cost of sales	187	–	–	187
Research and development expense	–	33	–	33
Selling, general and administrative costs	1,829	32	80	1,941
Other operating income and expense	–	4	–	4
Total	2,016	69	80	2,165
Year ended 31 December 2019				
Cost of sales	**87**	**–**	**–**	**87**
Research and development expense	**–**	**29**	**–**	**29**
Selling, general and administrative costs	**1,721**	**19**	**68**	**1,808**
Other operating income and expense	**–**	**4**	**–**	**4**
Total	**1,808**	**52**	**68**	**1,928**

Impairment charges are recognised in profit as follows:

	Product, marketing and distribution rights $m	Other intangibles $m	Software development costs $m	Total $m
Year ended 31 December 2017				
Research and development expense	101	–	–	101
Selling, general and administrative costs	387	–	3	390
Total	488	–	3	491
Year ended 31 December 2018				
Research and development expense	539	–	–	539
Selling, general and administrative costs	144	–	–	144
Total	683	–	–	683
Year ended 31 December 2019				
Research and development expense	**609**	**–**	**–**	**609**
Selling, general and administrative costs	**425**	**–**	**2**	**427**
Other operating income and expense	**(3)**	**–**	**–**	**(3)**
Total	**1,031**	**–**	**2**	**1,033**

Impairment charges and reversals

Intangible assets under development and not available for use are tested annually for impairment and other intangible assets are tested when there is an indication of impairment. If such indication exists, the recoverable amount of the assets is estimated in order to determine the extent of the impairment loss. Where it is not possible to estimate the recoverable amount of an individual asset, the Group estimates the recoverable amount of the CGU to which it belongs. The Group considers that as the intangible assets are linked to individual products and that product cash flows are considered to be largely independent of other product cash flows, that this results in the CGU for intangibles being at the product level.

An asset's recoverable amount is determined as the higher of an asset's or CGU's fair value less costs to sell or value in use, in both cases using discounted cash flow calculations where the products' expected post-tax cash flows are risk-adjusted over their estimated remaining useful economic life. The projections are covered by internal budgets and forecasts. The risk-adjusted cash flows are discounted using AstraZeneca's post-tax weighted average cost of capital (7% for 2019, 2018 and 2017). This has been assessed to be an appropriate rate for a market participant under the fair value less cost to sell model. There is no material difference in the approach taken to using pre-tax cashflows and a pre-tax rate compared to post-tax cashflows and a post-tax rate, as required by IAS 36. We also use 7% as the discount rate in determining the fair value less costs to sell.

SE The estimates used in calculating the recoverable amount are considered significant estimates, highly sensitive and depend on assumptions specific to the nature of the Group's activities including:

- outcome of R&D activities
- probability of technical and regulatory success
- market volume, share and pricing (to derive peak year sales)
- amount and timing of projected future cash flows
- sales erosion curves following patent expiry.

For assets held at fair value less costs to sell, we make appropriate adjustments to reflect market participant assessments.

10 Intangible assets *continued*

In 2019, the Group recorded impairment charges of $425m in respect of launched products *Bydureon* ($154m, revised carrying amount of $747m) under value in use model, *Qtern* ($89m, revised carrying amount of $233m) under value in use model, *Eklira*/*Tudorza* ($84m, revised carrying amount of $192m) under value in use model, *FluMist* ($52m, revised carrying amount of $172m) under fair value less costs to sell (Level 3 in fair value hierarchy, the recoverable value of the assets is sensitive to patient demand and access, ultimately translating to sales from key markets such as the US and Europe) and $46m relating to other launched products. As these assets have been impaired in the current year, there is no headroom in the recoverable amount calculation and they are inherently sensitive to any variations in assumptions, which could give rise to future impairments. If revenue projections for *Bydureon* were to fall by 10% over the forecast period, this would result in a further impairment charge of $102m.

Impairment charges recorded against products in development related to *Epanova* ($533m) and other intangible assets ($76m)

In 2018, the Group recorded impairment charges of $144m in respect of launched products *Eklira*/*Tudorza* ($114m, revised carrying value of $396m) and *Movantik* ($30m, revised carrying value of $59m). Impairment charges recorded against products in development related to MEDI0680 ($470m) and other intangible assets ($95m).

In 2017, the Group recorded an impairment charge of $491m in respect of launched products *Byetta* ($92m, revised carrying value of $407m), *FluMist* ($121m, revised carrying value of $267m) and *Movantik* ($174m, revised carrying value of $106m). Impairment charges recorded against products in development related to tralokinumab ($53m) and other intangible assets ($51m).

The impairments recorded on launched products were a consequence of revised market volume, share and price assumptions. Impairments recorded on products in development were a consequence of failed or poor performing trials, with the individual assets being fully impaired.

When launched products, such as the ones detailed above, are partially impaired, the carrying values of these assets in future periods are particularly sensitive to changes in forecast assumptions, including those assumptions set out above, as the asset is impaired down to its recoverable amount.

Assets that are particularly sensitive to variations in valuation assumptions include Ardea (carrying value of $1,172m). The Ardea valuation is particularly sensitive to variations in the probability of technical and regulatory success (PTRS) assumptions. Sensitivities performed at the year end on the Ardea asset included reducing the PTRS by five percentage points. Applying this sensitivity would result in an impairment charge against the Ardea intangible asset of approximately $70m.

The Group has performed an assessment on assets which have had impairments recorded in previous periods to determine if any reversals of impairments were required and no material reversals were identified.

SE Were the useful economic lives to be adjusted to reduce them all by one year the net book value would be reduced by $303m, if useful economic lives to be extended by one year the net book value would increase by $201m.

Significant assets

	Carrying value $m	Remaining amortisation period
Intangible assets arising from the acquisition of Acerta Pharma	6,263	13 years
Intangible assets arising from the acquisition of ZS Pharma	2,794	13 years
Farxiga/*Forxiga* intangible assets acquired from BMS	980	7 years
Intangible assets arising from the acquisition of Ardea[1]	1,172	Not amortised
Intangible assets arising from the restructuring of a historical joint venture with MSD	928	2 to 11 years
RSV franchise assets arising from the acquisition of MedImmune	917	6 years
Bydureon intangible assets acquired from BMS	747	11 years
Intangible assets arising from the acquisition of Pearl Therapeutics	748	9 to 11 years
Other diabetes intangible assets acquired from BMS	507	3 to 6 years
Onglyza intangible assets acquired from BMS	566	4 years
Respiratory intangible assets acquired from Almirall and Actavis	706	7 to 19 years
Intangible assets acquired from Daiichi Sankyo[1]	1,709	Not amortised
Roxadustat intangible assets acquired from FibroGen[1]	340	Not amortised

[1] Assets in development are not amortised but are tested annually for impairment.

In assessing whether the intangible assets and associated processes acquired from Daiichi Sankyo were a business, we determined that they were not at a stage of readiness to be able to obtain regulatory approval and manufacture and commercialise at scale, the transaction was treated as an asset acquisition.

11 Investments in associates and joint ventures

	2019 $m	2018 $m	2017 $m
At 1 January	**89**	103	99
Additions	**74**	187	76
Share of after tax losses	**(116)**	(113)	(55)
Unrecognised profit on transactions with joint ventures	**–**	(64)	(27)
Exchange and other adjustments	**11**	(24)	10
At 31 December	**58**	89	103

On 23 February 2018, AstraZeneca entered into an agreement with a consortium of investors to form a new, US domiciled standalone company called Viela Bio. This agreement was to divest a number of assets in MedImmune's non-core inflammation and autoimmunity portfolio to Viela, including MEDI-551, which is an advanced Phase IIb/III asset, and a number of other clinical and pre-clinical assets. AstraZeneca contributed $142m in initial funds and held an initial 45% interest in the joint venture. Consideration was $142m and a restricted disposal gain of $63m was recognised in Other operating income in 2018. Viela Bio completed an IPO on 7 October 2019 with AstraZeneca investing $8m. After the IPO, AstraZeneca's holding was reduced to 29% with two members on a board size of eight. Given the shareholding and board representation, the investment continues to be treated as an associate. During the year the Group provided transitional research and development services to Viela Bio, comprising $13m (2018: $9m) of services provided directly by the Group and $24m (2018: $20m) of passed through third party costs incurred by the Group on behalf of Viela Bio. At the end of the year the Group had an outstanding unsecured receivable of $6m (2018: $6m) settleable in cases on customary terms against which no credit loss provision has been made.

On 27 November 2017, AstraZeneca entered into a joint venture agreement with Chinese Future Industry Investment Fund (FIIF), to discover, develop and commercialise potential new medicines to help meet unmet medical needs globally, and to bring innovative new medicines to patients in China faster. The agreement resulted in the formation of a joint venture entity based in China, Dizal (Jiangsu) Pharmaceutical Co., Limited. AstraZeneca contributed $55m in initial funds and has a 48% interest in the joint venture. The joint venture entity purchased exclusive rights from AstraZeneca in 2017 to develop and commercialise three potential medicines currently in pre-clinical development in the areas of oncology, cardiovascular and metabolic diseases, and respiratory, resulting in a disposal gain of $28m for AstraZeneca recognised in Other operating income. An additional contribution of $25m was made in 2019.

On 1 December 2015, AstraZeneca entered into a joint venture agreement with Fujifilm Kyowa Kirin Biologics Co., Ltd. to develop a biosimilar using the combined capabilities of the two parties. The agreement resulted in the formation of a joint venture entity based in the UK, Centus Biotherapeutics Limited. AstraZeneca contributed $45m in cash to the joint venture entity and has a 50% interest in the joint venture. Additional contributions were made of $10m in 2016, $20m in 2017, $27m in 2018 and a further $20m in 2019.

On 30 April 2014, AstraZeneca entered into a joint venture agreement with Samsung Biologics Co., Ltd. to develop a biosimilar using the combined capabilities of the two parties. The agreement resulted in the formation of a joint venture entity based in the UK, Archigen Biotech Limited, with a branch in South Korea. AstraZeneca contributed $70m in cash to the joint venture entity and has a 50% interest in the joint venture. An additional contribution of $30m was made in 2016, $15m in 2018 and a further $16m in 2019. At the end of the year Archigen had net assets of $5m, of which AstraZeneca's share is $2m, and the investment is held at $nil value.

All investments are accounted for using the equity method.

Aggregated summarised financial information for the associate and joint venture entities is set out below:

	2019 $m	2018 $m	2017 $m
Non-current assets	**298**	260	207
Current assets	**447**	233	158
Total liabilities	**(89)**	(71)	(41)
Net assets	**656**	422	324
Amount attributable to AstraZeneca	**64**	104	117
Exchange adjustments	**(6)**	(15)	(14)
Carrying value of investments in associate and joint ventures	**58**	89	103

12 Other investments

	2019 $m	2018 $m	2017 $m
Non-current investments			
Equity securities at fair value through Other comprehensive income	**1,339**	833	–
Equity securities available for sale	**–**	–	933
Fixed income securities at fair value through profit and loss	**62**	–	–
Total	**1,401**	833	933
Current investments			
Fixed income securities at fair value through profit and loss	**811**	809	–
Fixed income securities available for sale	**–**	–	1,150
Fixed deposits	**38**	40	80
Total	**849**	849	1,230

Investments classified as available for sale in 2017 under IAS 39 have been reclassified in 2018 on adoption of IFRS 9 on 1 January 2018, as either at fair value through Other comprehensive income or at fair value through profit and loss.

Other investments classified as at fair value through Other comprehensive income and at fair value through profit and loss (IFRS 9)

Other investments held at fair value through Other comprehensive income include equity securities which are not held for trading and which the Group has irrevocably elected at initial recognition to recognise in this category. Other investments held at fair value through profit and loss comprise fixed income securities that the Group holds to sell.

The fair value of listed investments is based on year end quoted market prices. Fixed deposits are held at amortised cost with carrying value being a reasonable approximation of fair value given their short-term nature.

Other investments previously classified as available for sale in 2017 (IAS 39)

Impairment charges of $14m in respect of available for sale equity securities were included in Other operating income and expense in 2017. Equity and fixed income securities available for sale were held at fair value until reclassification.

Fair value hierarchy

The table below analyses equity securities and bonds, contained within Other investments and carried at fair value, by valuation method. The different levels have been defined as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2: inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices)
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

	2019 FVPL $m	2019 FVOCI $m	2018 FVPL $m	2018 FVOCI $m	2017 AFS $m
Level 1	**873**	**1,112**	809	667	1,408
Level 2	**–**	**–**	–	–	–
Level 3	**–**	**227**	–	166	675
Total	**873**	**1,339**	809	833	2,083

Equity securities that are analysed at Level 3 include investments in private biotech companies. In the absence of specific market data, these unlisted investments are held at fair value calculated by taking costs and adjusting as necessary for impairments and revaluations on new funding rounds, which approximates to fair value. Movements in Level 3 investments are detailed below:

	2019 FVOCI $m	2018 FVOCI $m	2017 AFS $m
At 1 January	**166**	675	641
Additions	**5**	79	53
Revaluations	**56**	(147)	(1)
Transfers out	**2**	(434)	(12)
Disposals	**(5)**	(6)	(15)
Impairments and exchange adjustments	**3**	(1)	9
At 31 December	**227**	166	675

Assets are transferred in or out of Level 3 on the date of the event or change in circumstances that caused the transfer.

13 Derivative financial instruments

	Non-current assets $m	Current assets $m	Current liabilities $m	Non-current liabilities $m	Total $m
Interest rate swaps designated in a fair value hedge	–	–	(3)	–	(3)
Interest rate swaps related to instruments designated at fair value through profit and loss	53	–	–	–	53
Cross currency swaps designated in a net investment hedge	223	12	–	(4)	231
Cross currency swaps designated in a cash flow hedge	197	–	–	–	197
Cross currency swaps designated in a fair value hedge[1]	31	–	–	–	31
Other derivatives	–	16	(21)	–	(5)
31 December 2017	504	28	(24)	(4)	504

	Non-current assets $m	Current assets $m	Current liabilities $m	Non-current liabilities $m	Total $m
Interest rate swaps related to instruments designated at fair value through profit and loss	40	–	–	–	40
Cross currency swaps designated in a net investment hedge	–	213	–	(4)	209
Cross currency swaps designated in a cash flow hedge	101	–	–	–	101
Cross currency swaps designated in a fair value hedge[1]	16	–	–	–	16
Other derivatives	–	45	(27)	–	18
31 December 2018	157	258	(27)	(4)	384

	Non-current assets $m	**Current assets $m**	**Current liabilities $m**	**Non-current liabilities $m**	**Total $m**
Interest rate swaps related to instruments designated at fair value through profit and loss	**43**	**–**	**–**	**–**	**43**
Cross currency swaps designated in a net investment hedge	**4**	**–**	**–**	**(1)**	**3**
Cross currency swaps designated in a cash flow hedge	**4**	**–**	**–**	**(17)**	**(13)**
Cross currency swaps designated in a fair value hedge[1]	**10**	**–**	**–**	**–**	**10**
Other derivatives	**–**	**36**	**(36)**	**–**	**–**
31 December 2019	**61**	**36**	**(36)**	**(18)**	**43**

[1] Cross currency swaps designated in a fair value hedge refers to a cross currency interest rate swap that hedges a designated euro 300m portion of our euro 750m 0.875% 2021 non-callable bond against exposure to movements in the euro:US dollar exchange rate.

All derivatives are held at fair value and fall within Level 2 of the fair value hierarchy as defined in Note 12. None of the derivatives have been reclassified in the year.

The fair value of interest rate swaps and cross currency swaps is estimated using appropriate zero coupon curve valuation techniques to discount future contractual cash flows based on rates at the current year end.

The fair value of forward foreign exchange contracts and currency options are estimated by cash flow accounting models using appropriate yield curves based on market forward foreign exchange rates at the year end. The majority of forward foreign exchange contracts for existing transactions had maturities of less than one month from year end.

The interest rates used to discount future cash flows for fair value adjustments, where applicable, are based on market swap curves at the reporting date, and were as follows:

	2019	2018	2017
Derivatives	**(0.5)% to 2.7%**	(0.4)% to 3.2%	1.7% to 2.2%

14 Non-current other receivables

	2019 $m	2018 $m	2017 $m
Prepayments	**392**	461	702
Accrued income	**10**	–	–
Other receivables	**338**	54	145
Non-current other receivables	**740**	515	847

Non-current other receivables include $125m (2018: $146m; 2017: $178m) of prepayments in relation to our research collaboration with Moderna, $118m (2018: $nil; 2017: $nil) of outstanding receivables relating to the out-licence of *Duaklir* and *Tudorza* to Circassia in 2017 and $53m (2018: $nil; 2017: $nil) owed by FibroGen for promotion activity in China pursuant to the roxadustat collaboration.

The previous year balance included a prepayment of $114m (2017: $181m) which represented the long-term element of minimum contractual royalties payable to Shionogi under the global licence agreement for *Crestor*, which was renegotiated in December 2013. The resulting modified royalty structure, which included fixed minimum and maximum payments in years until 2020, resulted in the Group recognising liabilities, and corresponding prepayments, for the discounted value of total minimum payments. At 31 December 2019 the prepayment is reported in amounts due within one year (see Note 16).

15 Inventories

	2019 $m	2018 $m	2017 $m
Raw materials and consumables	**830**	794	1,024
Inventories in process	**1,272**	1,450	1,208
Finished goods and goods for resale	**1,091**	646	803
Inventories	**3,193**	2,890	3,035

The Group recognised $2,708m (2018: $2,659m; 2017: $2,493m) of inventories as an expense within cost of sales during the year.

Inventory write-offs in the year amounted to $231m (2018: $208m; 2017: $109m).

16 Current trade and other receivables

	2019 $m	2018 $m	2017 $m
Amounts due within one year			
Trade receivables	**3,606**	3,033	2,818
Less: Amounts provided for doubtful debts (Note 27)	**(21)**	(38)	(16)
	3,585	2,995	2,802
Other receivables	**1,083**	1,143	793
Prepayments	**865**	871	971
Accrued income	**228**	492	177
	5,761	5,501	4,743
Amounts due after more than one year			
Other receivables	**–**	–	156
Prepayments	**–**	73	110
	–	73	266
Trade and other receivables	**5,761**	5,574	5,009

Trade receivables includes $892m (2018: $724m; 2017: $327m) measured at FVOCI classified 'hold to collect and sell' as they are due from customers that the Group has the option to factor.

All financial assets included within current Trade and other receivables are held at amortised cost with carrying value being a reasonable approximation of fair value.

17 Cash and cash equivalents

	2019 $m	2018 $m	2017 $m
Cash at bank and in hand	**755**	893	784
Short-term deposits	**4,614**	3,938	2,540
Cash and cash equivalents	**5,369**	4,831	3,324
Unsecured bank overdrafts	**(146)**	(160)	(152)
Cash and cash equivalents in the cash flow statement	**5,223**	4,671	3,172

The Group holds $1m (2018: $86m; 2017: $93m) of Cash and cash equivalents which is required to meet insurance solvency, capital and security requirements.

Under IAS 39 all cash and cash equivalents were held at amortised cost with fair value approximating to carrying value. Following the adoption of IFRS 9 'Financial Instruments' on 1 January 2018 US Dollar liquidity balances included in Cash and cash equivalents were reclassified from amortised cost to fair value through profit and loss. During 2018 AstraZeneca was invested in constant net asset value funds with same day access for subscription and redemption. These investments fail the 'solely payments of principal and interest' test criteria under IFRS 9. They are therefore measured at fair value through profit and loss, although the fair value will be materially the same as amortised cost. The balances reclassified on 1 January 2018 was $1,150m, at 31 December 2019 $4,186m (2018: $3,498m) was measured at fair value through profit and loss.

Non-cash and other movements, within operating activities in the Consolidated Statement of Cash Flows, includes:

	2019 $m	2018 $m	2017 $m
Gains on disposal of short-term investments	**–**	–	(161)
Net gains/(losses) on disposal of non-current assets	**21**	8	(24)
Changes in fair value of put option (Acerta Pharma)	**172**	(113)	(209)
Share-based payments charge for period	**259**	219	220
Settlement of share plan awards	**(323)**	(212)	(254)
Pension contributions	**(175)**	(174)	(157)
Pension charges recorded in operating profit	**59**	128	74
Long-term provision charges recorded in operating profit	**506**	63	36
Foreign exchange and other	**(141)**	(209)	(49)
Total operating activities non-cash and other movements	**378**	(290)	(524)

18 Assets held for sale

Assets held for sale of $70m (2018: $982m; 2017: $nil) comprising tangible assets relating to the Boulder Manufacturing Centre. AstraZeneca signed a letter of intent on 27 November 2019 to sell the facility to AGC Bio, with both parties agreeing to close the transaction before the end of the first quarter 2020, subject to the completion of due diligence.

In 2018, Assets held for sale of $982m comprised intangible assets relating to the US rights to RSV franchise assets (specifically *Synagis*) arising from the acquisition of MedImmune and to US rights to certain respiratory assets acquired from Almirall and Actavis (including *Tudorza*). In both cases, a partial transfer was made from the respective intangible assets based on the relative values of the portion being disposed of and the portion retained. AstraZeneca agreed to dispose of the US rights to *Synagis* to Sobi on 13 November 2018 with completion of the transaction subject to certain contingencies. The transaction closed and control of the assets transferred on 23 January 2019. In December 2018, Circassia exercised an option right to acquire the remaining rights to *Tudorza* in the US, which was previously part of a strategic collaboration between the two companies. The transaction closed on 1 January 2019.

19 Interest-bearing loans and borrowings

		Repayment dates	**2019 $m**	2018 $m	2017 $m
Current liabilities					
Bank overdrafts		On demand	**146**	160	152
Other short-term borrowings excluding overdrafts			**8**	–	–
Bank collateral[1]			**71**	384	513
Lease liabilities[2]			**188**	–	5
Floating rate notes	US dollars	2018	**–**	–	399
1.75% Callable bond	US dollars	2018	**–**	–	998
1.95% Callable bond	US dollars	2019	**–**	999	–
2.375% Callable bond	US dollars	2020	**1,597**	–	–
Other loans (Commercial paper)		Within one year	**–**	211	180
Total			**2,010**	1,754	2,247
Non-current liabilities					
Lease liabilities[2]			**487**	–	–
1.95% Callable bond	US dollars	2019	**–**	–	999
2.375% Callable bond	US dollars	2020	**–**	1,594	1,591
0.875% Non-callable bond	euros	2021	**837**	854	890
0.25% Callable bond	euros	2021	**559**	570	594
Floating rate notes	US dollars	2022	**250**	250	249
2.375% Callable bond	US dollars	2022	**996**	994	992
7% Guaranteed debentures	US dollars	2023	**335**	325	347
Floating rate notes	US dollars	2023	**400**	400	–
3.5% Callable bond	US dollars	2023	**846**	845	–
0.75% Callable bond	euros	2024	**1,003**	1,022	1,067
3.375% Callable bond	US dollars	2025	**1,983**	1,980	1,978
3.125% Callable bond	US dollars	2027	**743**	743	742
1.25% Callable bond	euros	2028	**885**	903	941
4% Callable bond	US dollars	2029	**992**	992	–
5.75% Non-callable bond	pounds sterling	2031	**457**	443	468
6.45% Callable bond	US dollars	2037	**2,721**	2,721	2,720
4% Callable bond	US dollars	2042	**987**	987	987
4.375% Callable bond	US dollars	2045	**980**	979	979
4.375% Callable bond	US dollars	2048	**737**	736	–
Other loans	US dollars		**19**	21	16
Total			**16,217**	17,359	15,560
Total interest-bearing loans and borrowings[3, 4]			**18,227**	19,113	17,807

[1] In 2017, the Group changed its accounting policy such that collateral receipts were included in interest-bearing loans and borrowings. Previously, these were included in short-term deposits.
[2] Comparative figures related to finance leases recognised under IAS 17.
[3] All loans and borrowings above are unsecured.
[4] The floating rate bonds which will be repaid beyond 2021 will be impacted by the change in Libor reference rates.

19 Interest-bearing loans and borrowings *continued*

	Total loans and borrowings 2019 $m	Total loans and borrowings 2018 $m
At 1 January	**19,113**	17,807
Adoption of new accounting standards – Lease liabilities	**720**	–
Changes from financing cash flows		
Issue of loans	**500**	2,971
Repayment of loans	**(1,500)**	(1,400)
Movement in short-term borrowings	**(516)**	(98)
Repayment of lease liabilities	**(186)**	–
Total changes in cashflows arising on financing activities	**(1,702)**	1,473
Movement in overdrafts	**(13)**	8
New lease liabilities	**173**	–
Exchange	**(62)**	(177)
Other movements	**(2)**	2
At 31 December	**18,227**	19,113

Set out below is a comparison by category of carrying values and fair values of all the Group's interest-bearing loans and borrowings:

	Instruments in a fair value hedge relationship[1] $m	Instruments designated at fair value[2] $m	Instruments designated in cash flow hedge $m	Amortised cost $m	Total carrying value $m	Fair value $m
2017						
Overdrafts	–	–	–	152	152	152
Finance leases due within one year[3]	–	–	–	5	5	5
Loans due within one year	596	–	–	1,494	2,090	2,092
Loans due after more than one year	304	347	2,602	12,307	15,560	17,031
Total at 31 December 2017	900	347	2,602	13,958	17,807	19,280
2018						
Overdrafts	–	–	–	160	160	160
Finance leases due within one year[3]	–	–	–	–	–	–
Loans due within one year	–	–	–	1,594	1,594	1,587
Loans due after more than one year	346	325	2,495	14,193	17,359	17,841
Total at 31 December 2018	346	325	2,495	15,947	19,113	19,588
2019						
Overdrafts	**–**	**–**	**–**	**146**	**146**	**146**
Lease liabilities due within one year	**–**	**–**	**–**	**188**	**188**	**188**
Lease liabilities due after more than one year	**–**	**–**	**–**	**487**	**487**	**487**
Loans due within one year	**–**	**–**	**–**	**1,676**	**1,676**	**1,684**
Loans due after more than one year	**339**	**335**	**2,447**	**12,609**	**15,730**	**18,044**
Total at 31 December 2019	**339**	**335**	**2,447**	**15,106**	**18,227**	**20,549**

[1] Instruments designated as hedged items in a fair value hedge relationship relate to a designated euro 300m portion of our euro 750m 0.875% 2021 non-callable bond. The accumulated amount of fair value hedge adjustments to the bond is a loss of $11m.
[2] Instruments designated at fair value through profit or loss include the US dollar 7% guaranteed debentures repayable in 2023.
[3] Comparative figures relate to finance leases recognised under IAS 17.

The fair value of fixed-rate publicly traded debt is based on year end quoted market prices; the fair value of floating rate debt is nominal value, as mark to market differences would be minimal given the frequency of resets. The carrying value of loans designated at fair value through profit or loss is the fair value; this falls within the Level 1 valuation method as defined in Note 12. For loans designated in a fair value hedge relationship, carrying value is initially measured at fair value and remeasured for fair value changes in respect of the hedged risk at each reporting date. All other loans are held at amortised cost. Fair values, as disclosed in the table above, are all determined using the Level 1 valuation method as defined in Note 12, with the exception of overdrafts and lease liabilities, where fair value approximates to carrying values.

A loss of $5m was made during the year on the fair value of bonds designated at fair value through profit or loss, due to decreased credit risk. A gain of $30m has been made on these bonds since designation due to increased credit risk. Under IFRS 9, the Group records the component of fair value changes relating to the component of own credit risk through Other comprehensive income. Changes in credit risk had no material effect on any other financial assets and liabilities recognised at fair value in the Group Financial Statements. The change in fair value attributable to changes in credit risk is calculated as the change in fair value not attributable to market risk. The amount payable at maturity on bonds designated at fair value through profit or loss is $287m.

The interest rates used to discount future cash flows for fair value adjustments, where applicable, are based on market swap curves at the reporting date, and were as follows:

	2019	2018	2017
Loans and borrowings	**(0.5)% to 1.6%**	(0.4)% to 2.4%	(0.4)% to 2.0%

20 Trade and other payables

	2019 $m	2018 $m	2017 $m
Current liabilities			
Trade payables	**1,774**	1,720	2,285
Value-added and payroll taxes and social security	**323**	204	243
Rebates, chargebacks, returns and other revenue accruals	**4,410**	4,043	3,264
Clinical trial accruals	**736**	993	922
Other accruals	**4,026**	3,951	3,324
Collaboration revenue contract liabilities	**28**	92	–
Contingent consideration	**897**	867	555
Other payables	**1,793**	971	1,048
Total	**13,987**	12,841	11,641
Non-current liabilities			
Accruals	**34**	7	143
Collaboration revenue contract liabilities	**50**	78	–
Contingent consideration	**3,242**	4,239	4,979
Acerta Pharma put option liability (Note 26)	**2,146**	1,838	1,823
Other payables	**819**	608	895
Total	**6,291**	6,770	7,840

The Group revised the presentation of Trade and other payables in 2018 to separately present clinical trial accruals, returns and other revenue accruals that have historically been presented within Trade payables (see the Group Accounting policies section from page 172). The Group has also separately presented the Acerta put option that has historically been presented within Other payables.

Included within Rebates, chargebacks, returns and other revenue accruals are contract liabilities of $97m (2018: $126m; 1 January 2018: $138m). The revenue recognised in the year for contract liabilities is $123m, comprising $95m relating to other revenue accruals and $28m Collaboration Revenue contract liabilities. The most significant of these markets where these are seen relates to the US where the provision at 31 December 2019 amounted to $3,383m (2018: $3,266m; 2017: $2,826m).

Trade payables includes $492m (2018: $166m; 2017: $64m) due to suppliers that have signed up to a supply chain financing programme, under which the suppliers can elect on an invoice-by-invoice basis to receive a discounted early payment from the partner bank rather than being paid in line with the agreed payment terms. If the option is taken the Group's liability is assigned by the supplier to be due to the partner bank rather than the supplier. The value of the liability payable by the Group remains unchanged. The Group assesses the arrangement against indicators to assess if debts which vendors have sold to the funder under the supplier financing scheme continue to meet the definition of trade payables or should be classified as borrowings. At 31 December 2019 the payables met the criteria of Trade payables.

Included within Other payables due in under one year are liabilities to Daiichi Sankyo totalling $795m (2018: $nil; 2017: $nil) resulting from the collaboration agreement in relation to *Enhertu* entered into in March 2019. Additionally, included within Other payable due in greater than one year are liabilities totalling $241m (2018: $nil; 2017: $nil) as a result of this collaboration agreement.

The terms of the Acerta Pharma put option were modified during 2019 and the carrying value of the associated liability has been remeasured based on the latest assessment of the expected timing and amount of redemption, with the remeasurement taken to Selling, general and administrative costs (see Note 2). Interest arising from amortising the liability is included within Finance Expense (see Note 3). Under the modified terms, the redemption amount is fixed, however, there is uncertainty as to timing of exercise, which may vary dependent on the regulatory outcomes of *Calquence*. The remeasurement of this liability has resulted in an increase (2018: decrease; 2017: decrease) in the liability for the year before the effect of interest costs. On exercise of the put option, the associated cash flows will be disclosed as financing activities with the Consolidated Statement of Cash Flows.

The Group adopted IFRS 15 'Revenue from Contracts with Customers' from 1 January 2018 under the modified retrospective method. Consequently, the Group has presented Collaboration revenue contract liabilities prospectively from that date.

With the exception of Contingent consideration payables of $4,139m (2018: $5,106m; 2017: $5,534m) which are held at fair value within Level 3 of the fair value hierarchy as defined in Note 12, all other financial liabilities are held at amortised cost with carrying value being a reasonable approximation of fair value.

Contingent consideration

	2019 $m	2018 $m	2017 $m
At 1 January	**5,106**	5,534	5,457
Settlements	**(709)**	(349)	(434)
Revaluations	**(614)**	(495)	109
Discount unwind (Note 3)	**356**	416	402
At 31 December	**4,139**	5,106	5,534

Contingent consideration arising from business combinations is fair valued using decision-tree analysis, with key inputs including the probability of success, consideration of potential delays and the expected levels of future revenues.

20 Trade and other payables *continued*

Revaluations of Contingent consideration are recognised in Selling, general and administrative costs and include a decrease of $516m in 2019 (2018: a decrease of $482m; 2017: an increase of $208m) based on revised milestone probabilities, and revenue and royalty forecasts, relating to the acquisition of BMS's share of the Global Diabetes Alliance. Discount unwind on the liability is included within Finance expense (see Note 3).

The discount rate used for the Contingent consideration balances range from 7% to 9%. The most significant Contingent consideration balance is the Global Diabetes Alliance and this is discounted at 8%.

Management has identified that reasonably possible changes in certain key assumptions, including the likelihood of achieving successful trial results, obtaining regulatory approval, the projected market share of the therapy area and expected pricing for launched products, may cause the calculated fair value of the above contingent consideration to vary materially in future years.

SE The contingent consideration balance relating to BMS's share of Global Diabetes Alliance of $3,300m (2018: $3,983m; 2017: $4,477m) would increase/decrease by $330m with an increase/decrease in sales of 10% as compared with the current estimates.

The maximum development and sales milestones payable under outstanding contingent consideration arrangements arising on business combinations are as follows:

Acquisitions	Year	Nature of contingent consideration	Maximum future milestones $m
Spirogen	2013	Milestones	198
Amplimmune	2013	Milestones	200
Omthera	2013	Milestones	120
Pearl Therapeutics	2013	Milestones	290
BMS's share of Global Diabetes Alliance[1]	2014	Milestones and royalties	600
Almirall[1]	2014	Milestones and royalties	450
Definiens[1]	2014	Milestones	150

[1] These contingent consideration liabilities have been designated as the hedge instrument in a net investment hedge of foreign currency risk arising on the Group's underlying US dollar net investments held in non-US dollar denominated subsidiaries. Exchange differences on the retranslation of the contingent consideration liability are recognised in Other comprehensive income to the extent that the hedge is effective. Any ineffectiveness is taken to profit.

The amount of royalties payable under the arrangements is inherently uncertain and difficult to predict, given the direct link to future sales and the range of outcomes. The maximum amount of royalties payable in each year is with reference to net sales.

21 Provisions

	Severance $m	Environmental $m	Employee benefits $m	Legal $m	Other provisions $m	Total $m
At 1 January 2017	487	59	143	438	291	1,418
Charge for year	225	11	30	281	55	602
Cash paid	(324)	(20)	(43)	(48)	(37)	(472)
Reversals	(75)	–	(10)	(40)	(44)	(169)
Exchange and other movements	45	9	6	23	6	89
At 31 December 2017	358	59	126	654	271	1,468
Charge for year	94	65	1	11	30	201
Cash paid	(152)	(24)	(9)	(232)	(28)	(445)
Reversals	(58)	–	–	(230)	(28)	(316)
Exchange and other movements	(16)	(3)	1	(5)	6	(17)
At 31 December 2018	226	97	119	198	251	891
Charge for year	**158**	**31**	**18**	**618**	**236**	**1,061**
Cash paid	**(115)**	**(39)**	**(13)**	**(147)**	**(24)**	**(338)**
Reversals	**(30)**	**(1)**	**–**	**(28)**	**(17)**	**(76)**
Exchange and other movements	**2**	**8**	**6**	**1**	**9**	**26**
At 31 December 2019	**241**	**96**	**130**	**642**	**455**	**1,564**

	2019 $m	2018 $m	2017 $m
Due within one year	**723**	506	1,121
Due after more than one year	**841**	385	347
Total	**1,564**	891	1,468

AstraZeneca is undergoing a global restructuring initiative which involves rationalisation of the global supply chain, the sales and marketing organisation, IT and business support infrastructure, and R&D. Employee costs in connection with the initiatives are recognised in severance provisions. Final severance costs are often subject to the completion of the requisite consultations on the areas impacted. AstraZeneca endeavours to support employees affected by restructuring initiatives to seek alternative roles within the organisation. Where the employee is successful any severance provisions will be released.

Details of the environmental and legal provisions are provided in Note 29. The legal issues are often subject to substantial uncertainties with regard to the timing and final amounts of any payments, as such, once established these provisions remain in provisions until settlement is reached and uncertainty resolved, with no transfer to Trade and other payables prior to payment. A significant proportion of the total legal provision relates to matters settled in either the current or previous periods. These uncertainties can also cause reversal in previously established provisions once final settlement is reached.

Employee benefit provisions include the Deferred Bonus Plan. Further details are included in Note 28.

Other provisions comprise amounts relating to specific contractual or constructive obligations and disputes, the majority of other provisions relates to amounts associated with long-standing product liability settlements that arose prior to the merger of Astra and Zeneca, given the nature of the provision the amounts are expected to be settled over many years.

No provision has been released or applied for any purpose other than that for which it was established.

22 Post-retirement benefits

Background

The Company and most of its subsidiaries offer retirement plans which cover the majority of employees in the Group. The Group's policy is to provide defined contribution (DC) orientated pension provision to its employees unless otherwise compelled by local regulation. As a result, many of these retirement plans are DC, where the Group contribution and resulting charge is fixed at a set level or is a set percentage of employees' pay.

However, several plans, mainly in the UK, the US and Sweden, are defined benefit (DB), where benefits are based on employees' length of service and linked to their salary. The major defined benefit plans are now largely legacy arrangements as they have been closed to new entrants since 2000, apart from the collectively bargained Swedish plan (which is still open to employees born before 1979). During 2010, following consultation with its UK employees' representatives, the Group introduced a freeze on pensionable pay at 30 June 2010 levels for defined benefit members of the UK Pension Fund. The number of active members in the Fund continues to decline and is now 643 employees. In November 2017, the Group closed the qualified and non-qualified US defined benefit pension plans to future accrual (and removed any salary link) from 31 December 2017.

The major defined benefit plans are funded through separate, fiduciary-administered assets. The cash funding of the plans, which may from time to time involve special Group payments, is designed, in consultation with independent qualified actuaries, to ensure that the assets are sufficient to meet future obligations as and when they fall due. The funding level is monitored rigorously by the Group and local fiduciaries, taking into account: the Group's credit rating; local regulation; cash flows; and the solvency and maturity of the relevant pension scheme.

Financing principles

Ninety one per cent of the Group's total defined benefit obligations (or eighty per cent of net obligations) at 31 December 2019 are in schemes within the UK, the US and Sweden. In these countries, the pension obligations are funded in line with the Group's financing principles. There were no fundamental changes to these principles during 2019. The Group believes:

- in funding the benefits it promises to employees and meeting its obligations
- that the pension arrangements should be considered in the context of its broader capital structure. In general, it does not believe in committing excessive capital for funding when the Group might use the capital elsewhere to reinvest in the wider business, nor does it wish to generate surpluses.
- in taking some measured and rewarded risks with the investments underlying the funding, subject to a long-term plan to reduce those risks when opportunities arise
- that holding certain investments may cause volatility in the funding position. However, the Group would not wish to amend its contribution level for relatively small deviations in funding level, because it is expected that there will be short-term volatility, but it is prepared to react appropriately to more significant deviations
- that proactive engagement with local Fiduciary Bodies is necessary and helpful to provide robust oversight and input in relation to funding and investment strategy and to facilitate liability management exercises appropriate to each pension plan
- in considering the use of alternative methods of providing security that do not require immediate cash funding but help mitigate exposure of the pension arrangement to the credit risk of the Group.

These principles are appropriate at the present date but they are kept under ongoing review and should circumstances change, these principles may also be subject to change.

The Group has developed a long-term funding framework to implement these principles, which targets full funding on a low-risk funding measure over the long term as the pension funds mature, with affordable long-term de-risking of investment strategy. Unless local regulation dictates otherwise, this framework determines the cash contributions payable to the pension funds. A key element of this funding framework is the investment strategy used to grow existing assets and hedge against changes in liability values. The Group provides regular input to local fiduciary boards with the aim of ensuring that an appropriate investment return is targeted over the long term in a risk-controlled manner.

UK

The UK defined benefit pension fund represents approximately 61% of the Group's defined benefit obligations at 31 December 2019. The financing principles are modified in light of the UK regulatory requirements (summarised below) and resulting discussions with the Pension Fund Trustee.

Role of Trustees and Regulation

The UK Pension Fund is governed and administered by a corporate Trustee which is legally separate from the Group. The Trustee Directors are comprised of representatives appointed by both the employer and employees and include an independent professional Trustee Director. The Trustee Directors are required by law to act in the interest of all relevant beneficiaries and are responsible in particular for the asset investment policy and the day-to-day administration of the benefits. They are also responsible for jointly agreeing with the employer the level of contributions due to the UK Pension Fund (see below).

22 Post-retirement benefits *continued*

The UK pensions market is regulated by The Pensions Regulator whose statutory objectives and regulatory powers are described on its website, www.thepensionsregulator.gov.uk.

Funding requirements

UK legislation requires that pension schemes are funded prudently. On a triennial basis, the Trustee and the Group must agree the contributions required (if any) to ensure the Fund is fully funded over an appropriate time-period and on a suitably prudent measure. The actuarial valuation as at 31 March 2019 is currently in progress with a likely timescale for completion in early to mid-2020.

Certain aspects of the actuarial valuation discussions are governed by a long-term funding agreement, signed in October 2016 with the Trustee and which sets out a path to full funding on a low-risk measure. Furthermore, under this agreement, if a deficit exists, the Group will grant a charge in favour of the Trustee over certain land and buildings on the Cambridge Biomedical Campus, effective upon practical completion of the site, or from 2021 (whichever is earlier). This charge would crystallise only in the event of the Group's insolvency. This charge will provide long term security in respect of future UK Pension Fund contributions and will be worth up to £350m.

In relation to deficit recovery contributions, a lump sum contribution of £51m ($65m) was made in March 2019, with a further £51m contribution due before 31 March 2020. In addition, a contribution of £27m ($35m) was made in March 2019, with a further contribution of £28m due before 31 March 2020, in relation to part payment of the deferred contribution explained below.

During 2017, the Group provided a letter of credit to the Trustee, to underwrite the deferral of an additional deficit recovery contribution of approximately £126m which was due in 2017. This contribution will be paid in five instalments (with interest added each year) from March 2018 to March 2022 and to date, two instalments have been paid. The letter of credit underwriting these payments will reduce in value as each annual payment is made.

Under the funding assumptions used to set the statutory funding target, the key assumptions from the actuarial valuation as at 31 March 2016 were as follows: long-term UK price inflation set at 2.6% per annum; salary increases at 0% per annum (as a result of pensionable pay levels being frozen in 2010); pension increases at 2.85% per annum; and discount rate at 3.71% per annum. The resulting valuation of the Fund's liabilities on that basis were £5,265m ($6,915m) compared to a market value of assets at 31 March 2016 of £4,492m ($5,899m).

Under the governing documentation of the UK Pension Fund, any future surplus in the Fund would be returnable to the Group by refund assuming gradual settlement of the liabilities over the lifetime of the Fund. As such, there are no adjustments required in respect of IFRIC 14 'IAS 19 – The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction'.

Changes to GMP

A UK High Court judgment was issued on 26 October 2018 relating to an element of pension benefits known as Guaranteed Minimum Pensions (GMP). The ruling requires the equalisation of member benefits earned between 1990 and 1997 to address gender inequality in instances where GMP benefits are currently unequal. While there remains some uncertainty, the Group made a provision in 2018 for the estimated financial impact of this ruling on the UK Pension Fund, based on a comparison of the cumulative value of members' benefits with the benefits of a notional member of the opposite gender (method C2 under the terminology of the High Court judgment). The estimated impact is based on the broad profile of the Fund (i.e. age profile, service profile and GMP proportion) and a past service cost of £17m ($23m) was recognised in the year ended 31 December 2018. Discussions between the Trustee and the Company are ongoing to determine the exact impact. Any subsequent adjustments to the original impact provision will be taken to Other comprehensive income.

Separate to this, following a review of the UK Pension Fund's administrative practice and Fund Rules, a decision was made in July 2019 to change the way in which GMP is calculated. This change applies to all future pension payments from November 2019. A past service net credit of £38m ($49m) has been recognised in respect of these changes for the year ended 31 December 2019.

United States and Sweden

The IAS 19 positions for the US and Sweden as at 31 December 2019 are shown below. Note that for the post-retirement benefit disclosure for 2019 and for the 2018 comparatives, we have split out the table disclosure for the United States and Sweden from Rest of Group, to provide further information on the larger Group schemes. The US plan and the Sweden plan account for 13% and 17% respectively of the Group's defined benefit obligations. The US and Sweden pension funds are governed by Fiduciary Bodies with responsibility for the investment policies of those funds. These plans are funded in line with the Group's financing principles and contributions are paid as prescribed by the long-term funding framework (subject to local regulations being met).

The US defined benefit pension plans were actuarially revalued at 31 December 2019, when plan obligations were $1,592m and plan assets were $1,506m. This includes obligations in respect of the non-qualified plan which is unfunded. The qualified US pension plan remains close to full funding on an IAS 19 basis and has a positive funding balance on the local statutory measure. As such, no contributions are required, and the investment strategy is largely de-risked.

The Swedish defined benefit pension plans were actuarially valued at 31 December 2019, when plan obligations were estimated to amount to $2,160m and plan assets were $1,123m. It should be noted that the Swedish plans have a funding surplus on the local GAAP accounting basis and this influences contribution policy.

On current bases, it is expected that ongoing contributions (excluding those in respect of past service deficit contributions) during the year ending 31 December 2020 for the three main countries will be approximately $31m.

Post-retirement benefits other than pensions

In the US, and to a lesser extent in certain other countries, the Group's employment practices include the provision of healthcare and life assurance benefits for retired employees. As at 31 December 2019, some 3,087 retired employees and covered dependants currently benefit from these provisions and some 2,007 current employees will be eligible on their retirement. The Group accrues for the present value of such retiree obligations over the working life of the employee. In practice, these benefits will be funded with reference to the financing principles.

The cost of post-retirement benefits other than pensions for the Group in 2019 was $3m (2018: $5m; 2017: $14m). Plan assets were $252m and plan obligations were $252m at 31 December 2019. These benefit plans have been included in the disclosure of post-retirement benefits under IAS 19.

Financial assumptions

Qualified independent actuaries have updated the actuarial valuations under IAS 19 for the major defined benefit schemes operated by the Group to 31 December 2019. The assumptions used may not necessarily be borne out in practice, due to the inherent financial and demographic uncertainty associated with making long-term projections. These assumptions reflect the changes which have the most material impact on the results of the Group and were as follows:

				2018
	UK	US	Sweden	Rest of Group[4]
Inflation assumption	3.2%	–	1.9%	1.7%
Rate of increase in salaries	–[1]	–	3.4%	2.5%
Rate of increase in pensions in payment	3.0%	–	1.9%	1.7%
Discount rate – defined benefit obligation	2.8%	4.3%	2.4%	1.8%
Discount rate – interest cost	2.4%	3.3%	2.2%	1.5%
Discount rate – service cost	2.5%	3.3%	2.8%	1.9%

				2019
	UK	**US**	**Sweden**	**Rest of Group[4]**
Inflation assumption	**3.0%**	**–**	**1.8%**	**1.5%**
Rate of increase in salaries	**–[1]**	**–**	**3.3%**	**2.3%**
Rate of increase in pensions in payment	**2.8%**	**–**	**1.8%**	**1.5%**
Discount rate – defined benefit obligation	**2.0%[2]**	**3.2%**	**1.5%**	**1.3%**
Discount rate – interest cost	**2.7%[3]**	**3.9%**	**2.0%**	**1.6%**
Discount rate – service cost	**2.8%[3]**	**4.0%**	**2.5%**	**1.9%**

[1] Pensionable pay frozen at 30 June 2010 levels following UK fund changes.
[2] Group defined benefit obligation as at 31 December 2019 calculated using discount rates based on market conditions as at 31 December 2019.
[3] 2019 interest costs and service costs calculated using discount rates based on market conditions as at 31 December 2018.
[4] Rest of Group reflects the assumptions in Germany as these have the most material impact on the Group.

The weighted average duration of the post-retirement scheme obligations is 16 years in the UK, 9 years in the US, 20 years in Sweden and 20 years for the rest of the Group.

Demographic assumptions

The mortality assumptions are based on country-specific mortality tables. These are compared to actual experience and adjusted where sufficient data are available. Additional allowance for future improvements in life expectancy is included for all major schemes where there is credible data to support a continuing trend.

The table below illustrates life expectancy assumptions at age 65 for male and female members retiring in 2019 and male and female members expected to retire in 2039 (2018: 2018 and 2038 respectively).

	Life expectancy assumption for a male member retiring at age 65				Life expectancy assumption for a female member retiring at age 65			
Country	**2019**	**2039**	2018	2038	**2019**	**2039**	2018	2038
UK	**22.4**	**23.7**	23.2	24.7	**23.7**	**25.0**	24.0	25.5
US	**22.0**	**24.9**	22.2	22.8	**23.4**	**26.6**	23.7	26.8
Sweden	**21.9**	**23.6**	21.9	23.6	**24.5**	**25.6**	24.5	25.6

In the UK, the Group adopted the CMI 2018 Mortality Projections Model with a 1% long-term improvement rate in 2019 and also updated the early retirement assumption to reflect experience observed as part of the 31 March 2019 triennial valuation. The Group has continued to assume that 30% of members (2018: 30%) will transfer out of the defined benefit section of the AstraZeneca Pension Fund at the point of retirement.

The assumption used for the US plans was updated in 2019 to use the mortality tables (Pri-2012 and MP-2019) that were published during the year.

22 Post-retirement benefits *continued*

Risks associated with the Group's defined benefit pensions

The UK defined benefit plan accounts for 61% of the Group's defined benefit obligations and exposes the Group to a number of risks, the most significant of which are:

Risk	Description	Mitigation
Volatile asset returns	The Defined Benefit Obligation (DBO) is calculated using a discount rate set with reference to AA-rated corporate bond yields; asset returns that differ from the discount rate will create an element of volatility in the solvency ratio. The UK Pension Fund holds a significant proportion of assets (around 72.5%) in a growth portfolio. Although these growth assets are expected to outperform AA-rated corporate bonds in the long term, they can lead to volatility and mismatching risk in the short term. The allocation to growth assets is monitored to ensure it remains appropriate given the UK Pension Fund's long-term objectives.	In order to mitigate investment risk, the Trustee invests in a suitably diversified range of asset classes, return drivers and investment managers. The investment strategy will continue to evolve to further improve the expected risk/return profile as opportunities arise. The Trustee has hedged approximately 80% of unintended non-sterling, overseas currency risk within the UK Pension Fund assets.
Changes in bond yields	A decrease in corporate bond yields will increase the present value placed on the DBO for accounting purposes.	The interest rate hedge of the UK Pension Fund is implemented via holding gilts and swaps of appropriate duration and set at approximately 85% of total assets and protects to some degree against falls in long-term interest rates (approximately 85% hedged at the end of 2018). There is a framework in place to gradually increase the level of interest rate hedging to 100% of assets over time, via a combination of liability management exercises and additional market-based hedging. There are some differences in the bonds and instruments held by the UK Pension Fund to hedge interest rate risk on the statutory and long-term funding basis (gilts and swaps) and the bonds analysed to set the DBO discount rate on an accounting basis (AA corporate bonds). As such, there remains some mismatching risk on an accounting basis should yields on gilts and swaps diverge compared to AA corporate bonds.
Inflation risk	The majority of the DBO is indexed in line with price inflation (mainly inflation as measured by the UK Retail Price Index (RPI) but also for some members a component of pensions is indexed by the UK Consumer Price Index (CPI)) and higher inflation will lead to higher liabilities (although, in most cases, this is capped at an annual increase of 5%). Should changes be made to align RPI with CPI in the future, then other things being equal, this will lead to lower liability valuations.	The UK Pension Fund holds RPI index-linked gilts and derivative instruments such as swaps. The inflation hedge of the UK Pension Fund is set at approximately 85% of total assets and protects to some degree against higher-than-expected inflation increases on the DBO (approximately 88% hedged at the end of 2018). There is a framework in place to gradually increase the level of inflation hedging to 100% of assets over time, via a combination of liability management exercises and additional market-based hedging.
Life expectancy	The majority of the UK Pension Fund's obligations are to provide benefits for the life of the member, so increases in life expectancy will result in an increase in the liabilities.	The UK Pension Fund entered into a longevity swap during 2013 which provides hedging against the longevity risk of increasing life expectancy over the next 75 years for around 10,000 of the UK Pension Fund's current pensioners and covers $3.1bn of the UK Pension Fund's liabilities. A one-year increase in life expectancy will result in a $210m increase in pension fund assets.

Other risks

There are a number of other risks of running the UK Pension Fund including counterparty risks from using derivatives (mitigated by using a diversified range of counterparties of high standing and ensuring positions are collateralised daily). Furthermore, there are operational risks (such as paying out the wrong benefits) and legislative risks (such as the government increasing the burden on companies through new legislation). These are mitigated so far as possible via the governance structure in place which oversees and administers the pension funds.

The Group's pension plans in the US and Sweden also manage these key risks, where they are relevant, in a similar manner, with the local fiduciary bodies investing in a diversified growth portfolio and employing a framework to hedge interest rate risk.

Post-retirement scheme deficit

The assets and obligations of the defined benefit schemes operated by the Group at 31 December 2019, as calculated in accordance with IAS 19, are shown below. The fair values of the schemes' assets are not intended to be realised in the short term and may be subject to significant change before they are realised. The present value of the schemes' obligations is derived from cash flow projections over long periods and is therefore inherently uncertain.

Scheme assets

	UK		US		Sweden		Rest of Group		Total		2018
	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Total $m
Government bonds[1]	1,725	–	157	–	–	–	42	–	1,924	–	1,924
Corporate bonds[2]	–	–	767	–	–	–	103	–	870	–	870
Derivatives[3]	–	(189)	–	(2)	–	147	3	–	3	(44)	(41)
Investment funds: Listed Equities	–	1,197	137	52	–	124	64	14	201	1,387	1,588
Investment funds: Global Macro Hedge[4]	–	733	–	72	–	208	–	–	–	1,013	1,013
Investment funds: Diversified growth/Multi Strategy[4]	–	1,712	–	69	–	380	–	–	–	2,161	2,161
Investment funds: Multi-asset credit[4]	–	596	–	38	–	153	–	–	–	787	787
Cash and cash equivalents	39	176	81	–	–	5	–	–	120	181	301
Other	–	–	–	8	–	–	1	242	1	250	251
Total fair value of scheme assets[5]	1,764	4,225	1,142	237	–	1,017	213	256	3,119	5,735	8,854

	UK		US		Sweden		Rest of Group		Total		2019
	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Quoted $m	Unquoted $m	Total $m
Government bonds[1]	**1,749**	**–**	**274**	**–**	**–**	**–**	**74**	**–**	**2,097**	**–**	**2,097**
Corporate bonds[2]	**–**	**–**	**727**	**–**	**–**	**–**	**55**	**–**	**782**	**–**	**782**
Derivatives[3]	**–**	**(354)**	**3**	**–**	**–**	**244**	**(1)**	**–**	**2**	**(110)**	**(108)**
Investment funds: Listed Equities	**–**	**1,474**	**164**	**64**	**–**	**122**	**61**	**–**	**225**	**1,660**	**1,885**
Investment funds: Global Macro Hedge[4]	**–**	**827**	**–**	**73**	**–**	**211**	**–**	**–**	**–**	**1,111**	**1,111**
Investment funds: Diversified growth/Multi Strategy[4]	**–**	**1,861**	**–**	**72**	**–**	**381**	**10**	**–**	**10**	**2,314**	**2,324**
Investment funds: Multi-asset credit[4]	**–**	**683**	**–**	**39**	**–**	**162**	**–**	**–**	**–**	**884**	**884**
Cash and cash equivalents	**55**	**169**	**40**	**44**	**–**	**3**	**–**	**5**	**95**	**221**	**316**
Other	**–**	**–**	**–**	**6**	**–**	**–**	**(1)**	**309**	**(1)**	**315**	**314**
Total fair value of scheme assets[5]	**1,804**	**4,660**	**1,208**	**298**	**–**	**1,123**	**198**	**314**	**3,210**	**6,395**	**9,605**

[1] Predominantly developed markets in nature.
[2] Predominantly developed markets in nature and investment grade (AAA–BBB).
[3] Includes interest rate swaps, inflation swaps, longevity swap, equity total return swaps and other contracts. More detail is given in the section Risks associated with the Group's defined benefit pensions on page 204. Valuations are determined by independent third parties.
[4] Investment Funds are pooled, commingled vehicles, whereby the pension scheme owns units in the fund, alongside other investors. The pension schemes invest in a number of Investment Funds, including Listed Equities (primarily developed markets with some emerging markets), Multi-asset credit (a range of investment grade and non-investment grade credit), Diversified growth/Multi Strategy (multi-asset exposure both across and within traditional and alternative asset classes), and Global Macro Hedge funds (Discretionary/Fundamental Macro and managed futures). The price of the funds is set by independent administrators/custodians employed by the investment managers and based on the value of the underlying assets held in the fund. Details of pricing methodology is set out within internal control reports provided for each fund. Prices are updated daily, weekly or monthly depending upon the frequency of the fund's dealing.
[5] Included in scheme assets is $nil (2018: $nil) of the Group's own assets.

Scheme obligations

	UK $m	US $m	Sweden $m	Rest of Group $m	2018 Total $m
Present value of scheme obligations in respect of:					
Active membership	(751)	(460)	(638)	(370)	(2,219)
Deferred membership	(1,665)	(273)	(603)	(339)	(2,880)
Pensioners	(4,636)	(730)	(631)	(269)	(6,266)
Total value of scheme obligations	(7,052)	(1,463)	(1,872)	(978)	(11,365)

	UK $m	US $m	Sweden $m	Rest of Group $m	2019 Total $m
Present value of scheme obligations in respect of:					
Active membership	**(502)**	**(114)**	**(770)**	**(406)**	**(1,792)**
Deferred membership	**(1,760)**	**(715)**	**(704)**	**(381)**	**(3,560)**
Pensioners	**(5,318)**	**(763)**	**(686)**	**(293)**	**(7,060)**
Total value of scheme obligations	**(7,580)**	**(1,592)**	**(2,160)**	**(1,080)**	**(12,412)**

22 Post-retirement benefits *continued*

Net deficit in the scheme

	2018				
	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Total fair value of scheme assets	5,989	1,379	1,017	469	8,854
Total value of scheme obligations	(7,052)	(1,463)	(1,872)	(978)	(11,365)
Deficit in the scheme as recognised in the Consolidated Statement of Financial Position	(1,063)	(84)	(855)	(509)	(2,511)

	2019				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**
Total fair value of scheme assets	**6,464**	**1,506**	**1,123**	**512**	**9,605**
Total value of scheme obligations	**(7,580)**	**(1,592)**	**(2,160)**	**(1,080)**	**(12,412)**
Deficit in the scheme as recognised in the Consolidated Statement of Financial Position	**(1,116)**	**(86)**	**(1,037)**	**(568)**	**(2,807)**

Fair value of scheme assets

	2019					2018				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
At beginning of year	**5,989**	**1,379**	**1,017**	**469**	**8,854**	6,749	1,603	1,147	423	9,922
Interest income on scheme assets	**159**	**51**	**19**	**7**	**236**	156	50	24	5	235
Expenses	**(5)**	**–**	**–**	**(1)**	**(6)**	(5)	(1)	(10)	2	(14)
Actuarial gains/(losses)	**294**	**183**	**172**	**47**	**696**	(351)	(106)	(18)	1	(474)
Exchange and other adjustments	**207**	**–**	**(43)**	**(4)**	**160**	(349)	(2)	(85)	64	(372)
Employer contributions	**133**	**14**	**5**	**23**	**175**	143	14	10	7	174
Participant contributions	**2**	**–**	**–**	**–**	**2**	2	–	–	1	3
Benefits paid	**(315)**	**(121)**	**(47)**	**(29)**	**(512)**	(356)	(179)	(51)	(34)	(620)
Scheme assets' fair value at end of year	**6,464**	**1,506**	**1,123**	**512**	**9,605**	5,989	1,379	1,017	469	8,854

The actual return on the plan assets was a gain of $932m (2018: loss of $239m).

Movement in post-retirement scheme obligations

	2019					2018				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Present value of obligations in scheme at beginning of year	**(7,052)**	**(1,463)**	**(1,872)**	**(978)**	**(11,365)**	(8,032)	(1,707)	(1,811)	(955)	(12,505)
Current service cost	**(18)**	**(4)**	**(44)**	**(21)**	**(87)**	(23)	(4)	(32)	(15)	(74)
Past service credit/(cost)	**34**	**–**	**(3)**	**3**	**34**	(34)	–	(6)	–	(40)
Participant contributions	**(2)**	**–**	**–**	**–**	**(2)**	(2)	–	–	(1)	(3)
Benefits paid	**315**	**121**	**47**	**29**	**512**	356	179	51	34	620
Interest expense on post-retirement scheme obligations	**(186)**	**(55)**	**(33)**	**(15)**	**(289)**	(185)	(53)	(36)	(13)	(287)
Actuarial (losses)/gains	**(435)**	**(191)**	**(328)**	**(106)**	**(1,060)**	472	121	(177)	12	428
Exchange and other adjustments	**(236)**	**–**	**73**	**8**	**(155)**	396	1	139	(40)	496
Present value of obligations in scheme at end of year	**(7,580)**	**(1,592)**	**(2,160)**	**(1,080)**	**(12,412)**	(7,052)	(1,463)	(1,872)	(978)	(11,365)

The obligations arise from the following plans:

	2019					2018				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Funded – pension schemes	**(7,561)**	**(1,280)**	**(2,160)**	**(531)**	**(11,532)**	(7,034)	(1,139)	(1,872)	(479)	(10,524)
Funded – post-retirement healthcare	**–**	**(216)**	**–**	**–**	**(216)**	–	(230)	–	–	(230)
Unfunded – pension schemes	**–**	**(96)**	**–**	**(532)**	**(628)**	–	(94)	–	(483)	(577)
Unfunded – post-retirement healthcare	**(19)**	**–**	**–**	**(17)**	**(36)**	(18)	–	–	(16)	(34)
Total	**(7,580)**	**(1,592)**	**(2,160)**	**(1,080)**	**(12,412)**	(7,052)	(1,463)	(1,872)	(978)	(11,365)

Consolidated Statement of Comprehensive Income disclosures

The amounts that have been charged to the Consolidated Statement of Comprehensive Income, in respect of defined benefit schemes for the year ended 31 December 2019, are set out below.

	2019					2018				
	UK $m	**US $m**	**Sweden $m**	**Rest of Group $m**	**Total $m**	UK $m	US $m	Sweden $m	Rest of Group $m	Total $m
Operating profit										
Current service cost	**(18)**	**(4)**	**(44)**	**(21)**	**(87)**	(23)	(4)	(32)	(15)	(74)
Past service credit/(cost)	**34**	**–**	**(3)**	**3**	**34**	(34)	–	(6)	–	(40)
Expenses	**(5)**	**–**	**–**	**(1)**	**(6)**	(5)	(1)	(10)	2	(14)
Total charge to Operating profit	**11**	**(4)**	**(47)**	**(19)**	**(59)**	(62)	(5)	(48)	(13)	(128)
Finance expense										
Interest income on scheme assets	**159**	**51**	**19**	**7**	**236**	156	50	24	5	235
Interest expense on post-retirement scheme obligations	**(186)**	**(55)**	**(33)**	**(15)**	**(289)**	(185)	(53)	(36)	(13)	(287)
Net interest on post-employment defined benefit plan liabilities	**(27)**	**(4)**	**(14)**	**(8)**	**(53)**	(29)	(3)	(12)	(8)	(52)
Charge before taxation	**(16)**	**(8)**	**(61)**	**(27)**	**(112)**	(91)	(8)	(60)	(21)	(180)
Other comprehensive income										
Difference between the actual return and the expected return on the post-retirement scheme assets	**294**	**183**	**172**	**47**	**696**	(351)	(106)	(18)	1	(474)
Experience gains/(losses) arising on the post-retirement scheme obligations	**39**	**(30)**	**(10)**	**(5)**	**(6)**	(26)	(35)	(17)	6	(72)
Changes in financial assumptions underlying the present value of the post-retirement scheme obligations	**(771)**	**(182)**	**(318)**	**(104)**	**(1,375)**	389	151	(160)	13	393
Changes in demographic assumptions	**297**	**21**	**–**	**3**	**321**	109	5	–	(7)	107
Remeasurement of the defined benefit liability	**(141)**	**(8)**	**(156)**	**(59)**	**(364)**	121	15	(195)	13	(46)

Past service cost in 2019 includes a credit to Operating profit of $49m arising from changes to the payment of GMP benefits from the UK Pension Fund as referred to on page 202. The past service cost in 2019 also includes costs predominantly related to enhanced pensions in early retirement in the UK and Sweden.

Total Group pension costs in respect of defined contribution and defined benefit schemes during the year are set out below (see Note 28).

	2019 $m	2018 $m
Defined contribution schemes	**432**	341
Defined benefit schemes – current service costs and expenses	**93**	88
Defined benefit schemes – past service costs	**(34)**	40
Pension costs	**491**	469

SE Rate sensitivities

The following table shows the US dollar effect of a change in the significant actuarial assumptions used to determine the retirement benefits obligations in our three main defined benefit pension obligation countries.

	2019		2018	
	+0.5%	**–0.5%**	+0.5%	–0.5%
Discount rate				
UK ($m)	**559**	**(628)**	520	(586)
US ($m)	**91**	**(97)**	78	(83)
Sweden ($m)	**183**	**(211)**	152	(174)
Total ($m)	**833**	**(936)**	750	(843)

	2019		2018	
	+0.5%	**–0.5%**	+0.5%	–0.5%
Inflation rate[1]				
UK ($m)	**(374)**	**349**	(444)	421
US ($m)	**–**	**–**	–	–
Sweden ($m)	**(203)**	**176**	(171)	151
Total ($m)	**(577)**	**525**	(615)	572

	2019		2018	
	+0.5%	**–0.5%**	+0.5%	–0.5%
Rate of increase in salaries				
UK ($m)	**–**	**–**	–	–
US ($m)	**–**	**–**	–	–
Sweden ($m)	**(68)**	**63**	(52)	48
Total ($m)	**(68)**	**63**	(52)	48

22 Post-retirement benefits *continued*

	2019		2018	
	+1 year	**–1 year**	+1 year	–1 year
Mortality rate				
UK ($m)	**(328)**[2]	**326**[3]	(301)	302
US ($m)	**(30)**	**30**	(24)	24
Sweden ($m)	**(85)**	**84**	(68)	68
Total ($m)	**(443)**	**440**	(393)	394

[1] Rate of increase in pensions in payment follows inflation.
[2] Of the $328m increase, $210m is covered by the longevity swap.
[3] Of the $326m decrease, $210m is covered by the longevity swap.

The sensitivity to the financial assumptions shown above has been estimated taking into account the approximate duration of the liabilities and the overall profile of the plan membership. The sensitivity to the life expectancy assumption has been estimated based on the distribution of the plan cash flows.

23 Reserves

Retained earnings

The cumulative amount of goodwill written off directly to reserves resulting from acquisitions, net of disposals, amounted to $614m (2018: $619m; 2017: $631m) using year-end rates of exchange.

At 31 December 2019, 907,239 shares, at a cost of $37m, have been deducted from retained earnings (2018: 456,792 shares, at a cost of $22m; 2017: 476,504 shares, at a cost of $22m) to satisfy future vesting of employee share plans.

There are no significant statutory or contractual restrictions on the distribution of current profits of subsidiaries; undistributed profits of prior years are, in the main, permanently employed in the businesses of these companies. The undistributed income of AstraZeneca companies overseas might be liable to overseas taxes and/or UK taxation (after allowing for double taxation relief) if they were to be distributed as dividends (see Note 4).

	2019 $m	2018 $m	2017 $m
Cumulative translation differences included within retained earnings			
At 1 January	**(2,007)**	(1,017)	(2,028)
Foreign exchange arising on consolidation	**40**	(450)	536
Exchange adjustments on goodwill (recorded against other reserves)	**(5)**	(12)	18
Foreign exchange arising on designating borrowings in net investment hedges[1]	**(252)**	(520)	505
Fair value movement on derivatives designated in net investment hedges	**35**	(8)	(48)
Net exchange movement in retained earnings	**(182)**	(990)	1,011
At 31 December	**(2,189)**	(2,007)	(1,017)

[1] Foreign exchange arising on designated borrowings in net investment hedges includes $(5)m in respect of designated bonds and $(247)m in respect of designated contingent consideration liabilities. The change in value of designated contingent consideration liabilities relates to $(174)m in respect of BMS' share of Global Diabetes Alliance, $11m in respect of Almirall, $(1)m in respect of Definiens and $(83)m in relation to the put option liability in Acerta Pharma.

With effect from 1 January 2018, the Company has disclosed separately the costs of hedging of cross currency interest rate swaps in cash flow hedges and net investment hedges. The cumulative gain with respect to costs of hedging is $nil and the loss during the year was $47m.

The balance remaining in the foreign currency translation reserve from net investment hedging relationships for which hedge accounting no longer applied is a gain of $565m.

Other reserves

The other reserves arose from the cancellation of £1,255m of share premium account by the Company in 1993 and the redenomination of share capital $157m in 1999. The reserves are available for writing off goodwill arising on consolidation and, subject to guarantees given to preserve creditors at the date of the court order, are available for distribution.

24 Share capital of the Company

	Allotted, called-up and fully paid		
	2019 $m	2018 $m	2017 $m
Issued Ordinary Shares ($0.25 each)	**328**	317	317
Redeemable Preference Shares (£1 each – £50,000)	**–**	–	–
At 31 December	**328**	317	317

The Redeemable Preference Shares carry limited class voting rights and no dividend rights. This class of shares is capable of redemption at par at the option of the Company on the giving of seven days' written notice to the registered holder of the shares.

The Company does not have a limited amount of authorised share capital.

The movements in the number of Ordinary Shares during the year can be summarised as follows:

	No. of shares		
	2019	2018	2017
At 1 January	**1,267,039,436**	1,266,221,605	1,265,229,424
Issue of shares (share placing)	**44,386,214**	–	–
Issue of shares (share schemes)	**712,326**	817,831	992,181
At 31 December	**1,312,137,976**	1,267,039,436	1,266,221,605

Share issue
On 2 April 2019, the Company issued 44,386,214 Ordinary Shares resulting in an increase in share capital of $11m and share premium of $3,479m.

Share forfeiture
The Group has a share forfeiture programme following the completion of a tracing and notification exercise to any shareholders who have not had contact with the Company over the past 12 years, in accordance with the provisions set out in the Company's Articles of Association. Under the share forfeiture programme, the shares and dividends associated with shares of untraced members are forfeited, with the resulting proceeds transferred to the Group to use for good causes in line with the Group's corporate responsibility strategy. During the financial year, the Group received $10m (2018: nil; 2017: nil) proceeds from sale of untraced shares and $4m (2018: $2m; 2017: nil) write-back of unclaimed dividends on those shares, which are reflected in share premium and retained earnings respectively.

Share repurchases
No Ordinary Shares were repurchased by the Company in 2019 (2018: nil; 2017: nil).

Shares held by subsidiaries
No shares in the Company were held by subsidiaries in any year.

25 Dividends to shareholders

	2019 Per share	2018 Per share	2017 Per share	**2019 $m**	2018 $m	2017 $m
Second interim (March 2019)	**$1.90**	$1.90	$1.90	**2,403**	2,402	2,404
First interim (September 2019)	**$0.90**	$0.90	$0.90	**1,180**	1,139	1,139
Total	**$2.80**	$2.80	$2.80	**3,583**	3,541	3,543

The Company has exercised its authority in accordance with the provisions set out in the Company's Articles of Association that the balance of unclaimed dividends over past 12 years be forfeited. $4m (2018: $2m; 2017: nil) of unclaimed dividends have been adjusted for in retained earnings in 2019.

The 2018 second interim dividend of $1.90 per share was paid on 27 March 2019.

Reconciliation of dividend charged to equity to cash flow statement:

	2019 $m	2018 $m	2017 $m
Dividends charged to equity	**3,583**	3,541	3,543
Exchange losses/(gains) on payment of dividend	**5**	10	(4)
Hedge contracts relating to payment of dividends (cash flow statement)	**4**	(67)	(20)
Dividends paid (cash flow statement)	**3,592**	3,484	3,519

26 Non-controlling interests

Following the acquisition of a majority stake in Acerta Pharma on 2 February 2016, the Group Financial Statements at 31 December 2019 reflect equity of $1,456m (2018: $1,567m; 2017: $1,676m) and total comprehensive losses of $111m (2018: losses of $109m; 2017: losses of $132m) attributable to the non-controlling interest, held by other parties, in Acerta Pharma. The following summarised financial information, for Acerta Pharma and its subsidiaries, is presented on a stand alone basis since the acquisition date, and before the impact of Group-related adjustments, some of which are incorporated into this calculation of the loss attributable to the non-controlling interests:

	2019 $m	2018 $m	2017 $m
Total Revenue	**–**	–	–
(Loss)/profit after tax	**(422)**	(9)	412
Other comprehensive income	**–**	–	–
Total comprehensive (loss)/income	**(422)**	(9)	412

	2019 $m	2018 $m	2017 $m
Non-current assets	**157**	16	3
Current assets	**475**	526	904
Total assets	**632**	542	907
Current liabilities	**(310)**	(63)	(417)
Non-current liabilities	**(267)**	–	–
Total liabilities	**(577)**	(63)	(417)
Net assets/(liabilities)	**55**	479	490

	2019 $m	2018 $m	2017 $m
Net cash (outflow)/inflow from operating activities	**(13)**	7	5
Net cash inflow/(outflow) from investing activities	**7**	(4)	–
Net cash inflow from financing activities	**7**	–	–
Increase/(decrease) in cash and cash equivalents in the year	**1**	3	5

The total reported total comprehensive losses of $107m (2018: losses of $106m; 2017: losses of $133m) and equity of $1,469m (2018: $1,576m; 2017: $1,682m) attributable to non-controlling interests held by other parties, comprises the Acerta Pharma results and immaterial amounts in AstraZeneca Pharma India Limited and P.T. AstraZeneca Indonesia.

The non-controlling interest in Acerta Pharma is subject to a put option, exercisable by the minority shareholders at certain points in the future, dependent on regulatory outcomes of *Calquence* (acalabrutinib) in Europe. This put option gives rise to a liability (see Note 20).

27 Financial risk management objectives and policies

The Group's principal financial instruments, other than derivatives, comprise bank overdrafts, lease liabilities, loans, current and non-current investments, cash and short-term deposits. The main purpose of these financial instruments is to manage the Group's funding and liquidity requirements. The Group has other financial assets and liabilities such as trade receivables and trade payables, which arise directly from its operations.

The principal financial risks to which the Group is exposed are those of liquidity, interest rate, foreign currency and credit. Each of these is managed in accordance with Board-approved policies. These policies are set out below.

Hedge accounting

The Group uses foreign currency borrowings, foreign currency forwards and swaps, currency options, interest rate swaps and cross-currency interest rate swaps for the purpose of hedging its foreign currency and interest rate risks. The Group may designate certain financial instruments as fair value hedges, cash flow hedges or net investment hedges in accordance with IFRS 9. Hedge effectiveness is determined at the inception of the hedge relationship, and through periodic prospective effectiveness assessments to ensure that an economic relationship exists between the hedged item and hedging instrument. Sources of hedge effectiveness will depend on the hedge relationship designation but may include:

> a significant change in the credit risk of either party to the hedging relationship
> a timing mismatch between the hedging instrument and the hedged item
> movements in foreign currency basis spread for derivatives in a fair value hedge
> a significant change in the value of the foreign currency denominated net assets of the Group in a net investment hedge.

The hedge ratio for each designation will be established by comparing the quantity of the hedging instrument and the quantity of the hedged item to determine their relative weighting; for all of the Group's existing hedge relationships the hedge ratio has been determined as 1:1. Designated hedges are expected to be effective and therefore the impact of ineffectiveness on profit is not expected to be material. The accounting treatment for fair value hedges and debt designated as fair value through profit or loss is disclosed in the Group Accounting Policies section from page 172.

The following table represents the Group's continuing designated hedge relationships under IFRS 9.

2017

			Other comprehensive income						
	Nominal amounts in local currency	Carrying value $m	Opening balance 1 January 2017 $m	Fair value (gain)/loss deferred to OCI $m	Fair value loss recycled to the income statement $m	Closing balance 31 December 2017 $m	Average maturity year	Average USD FX rate	Average pay interest rate
Fair value hedge – foreign currency and interest rate risk									
Cross currency interest rate swap – Euro bond	EUR 300m	31	–	–	–	–	2021	1.09	USD LIBOR + 1.27%
Cash flow hedges – foreign currency and interest rate risk									
Cross currency interest rate swaps – Euro bonds	EUR 2,200m	197	(80)	(311)	315	(76)	2025	1.14	USD 2.69%
Net investment hedge – foreign exchange risk									
Transactions matured pre 2017		–	(338)	–	–	(338)	–	–	–
Cross currency interest rate swap – JPY investment	JPY 58.5bn	223	(242)	19	–	(223)	2019	78.01	JPY 0.35%
Cross currency interest rate swap – CNY investment	CNY 458m	(4)	(7)	11	–	4	2026	6.68	CNY 4.80%
Cross currency interest rate swap – CNY investment	CNY 919m	12	(29)	17	–	(12)	2018	6.09	CNY 3.12%
Foreign currency borrowing – GBP investment	GBP 350m	(468)	(281)	41	–	(240)	2031	n/a	GBP 5.75%
Foreign currency borrowing – EUR investment	EUR 450m	(586)	–	65	–	65	2021	n/a	EUR 0.88%
Contingent consideration liabilities – AZUK and AZAB USD investments	USD 6,379m	(6,379)	1,850	(611)	–	1,239	–	–	–

2018

			Other comprehensive income						
	Nominal amounts in local currency	Carrying value $m	Opening balance 1 January 2018 $m	Fair value loss/(gain) deferred to OCI $m	Fair value (gain) recycled to the income statement $m	Closing balance 31 December 2018 $m	Average maturity year	Average USD FX rate	Average pay interest rate
Fair value hedge – foreign currency and interest rate risk[1]									
Cross currency interest rate swap – Euro bond	EUR 300m	16	–	–	–	–	2021	1.09	USD LIBOR + 1.27%
Cash flow hedges – foreign currency and interest rate risk[2, 4]									
Cross currency interest rate swaps – Euro bonds	EUR 2,200m	101	(76)	95	(111)	(92)	2025	1.14	USD 2.69%
Net investment hedge – foreign exchange risk[3, 4]									
Transactions matured pre 2018		–	(338)	–	–	(338)	–	–	–
Cross currency interest rate swap – JPY investment	JPY 58.5bn	213	(223)	10	–	(213)	2019	78.01	JPY 0.35%
Cross currency interest rate swap – CNY investment	CNY 458m	(4)	4	–	–	4	2026	6.68	CNY 4.80%
Cross currency interest rate swap – CNY investment	CNY 919m	–	(12)	(6)	–	(18)	2018	6.09	CNY 3.12%
Foreign currency borrowing – GBP investment	GBP 350m	(443)	(240)	(25)	–	(265)	2031	n/a	GBP 5.75%
Foreign currency borrowing – EUR investment	EUR 450m	(508)	65	(21)	–	44	2021	n/a	EUR 0.88%
Contingent consideration liabilities – AZUK and AZAB USD investments	USD 6,015m	(6,015)	1,239	566	–	1,805	–	–	–

27 Financial risk management objectives and policies *continued*

2019

			Other comprehensive income							
	Nominal amounts in local currency	Carrying value $m	Opening balance 1 January 2019 $m	Fair value loss/(gain) deferred to OCI $m	Fair value (gain) recycled to the income statement $m	Closing balance 31 December 2019 $m	Average maturity year	Average USD FX rate		Average pay interest rate
Fair value hedge – foreign currency and interest rate risk[1]										
Cross currency interest rate swap – Euro bond	**EUR 300m**	**10**	**–**	**–**	**–**	**–**	**2021**	**1.09**	**USD LIBOR + 1.27%**	
Cash flow hedges – foreign currency and interest rate risk[2, 4]										
Cross currency interest rate swaps – Euro bonds	**EUR 2,200m**	**(13)**	**(92)**	**114**	**(52)**	**(30)**	**2025**	**1.14**	**USD 2.69%**	
Net investment hedge – foreign exchange risk[3, 4]										
Transactions matured pre 2019		**–**	**(356)**	**–**	**–**	**(356)**	**–**	**–**	**–**	
Cross currency interest rate swap – JPY investment[5]	**JPY 58.5bn**	**–**	**(213)**	**4**	**–**	**(209)**	**2019**	**78.01**	**JPY 0.35%**	
Cross currency interest rate swap – JPY investment	**JPY 58.3bn**	**4**	**–**	**(4)**	**–**	**(4)**	**2029**	**108.03**	**JPY 1.53%**	
Cross currency interest rate swap – CNY investment	**CNY 458m**	**(1)**	**4**	**(3)**	**–**	**1**	**2026**	**6.68**	**CNY 4.80%**	
Foreign currency borrowing – GBP investment	**GBP 350m**	**(457)**	**(265)**	**14**	**–**	**(251)**	**2031**	**n/a**	**GBP 5.75%**	
Foreign currency borrowing – EUR investment	**EUR 450m**	**(498)**	**44**	**(10)**	**–**	**34**	**2021**	**n/a**	**EUR 0.88%**	
Contingent consideration liabilities – AZUK and AZAB USD investments	**USD 5,583m**	**(5,583)**	**1,805**	**248**	**–**	**2,053**	**–**	**–**	**–**	

[1] Hedge ineffectiveness recognised on swaps designated in a fair value hedge during the period was a gain of $3m (2018: loss of $3m).
[2] Hedge ineffectiveness recognised on swaps designated in a cash flow hedge during the period was $nil (2018: $nil).
[3] Hedge ineffectiveness recognised on swaps designated in a net investment hedge during the period was $nil (2018: $nil).
[4] Fair value movements on cross currency interest rate swaps in cash flow hedge and net investment hedge relationships are shown inclusive of the impact of costs of hedging.
[5] In September 2019, the maturity of our JPY 58.5bn cross currency interest rate swap resulted in a net cash inflow of $209m. The cash flow associated with the settlement has been reflected in cash flows from investing activities within the Consolidated Statement of Cash Flows on page 171, as its primary purpose was to hedge the translation foreign exchange risk arising on the consolidation of the Group's net investment in Japan.

Key controls applied to transactions in derivative financial instruments are: to use only instruments where good market liquidity exists, to revalue all financial instruments regularly using current market rates and to sell options only to offset previously purchased options or as part of a risk management strategy. The Group is not a net seller of options, and does not use derivative financial instruments for speculative purposes.

Capital management

The capital structure of the Group consists of shareholders' equity (Note 24), debt (Note 19), other current investments (Note 12) and cash (Note 17). For the foreseeable future, the Board will maintain a capital structure that supports the Group's strategic objectives through:

- managing funding and liquidity risk
- optimising shareholder return
- maintaining a strong, investment-grade credit rating.

The Group utilises factoring arrangements for selected trade receivables. These factoring arrangements qualify for full derecognition of the associated trade receivables under IFRS 9. Amounts due, on invoices that have not been factored at year end, from customers that are subject to factoring arrangements are disclosed in Note 16.

Funding and liquidity risk are reviewed regularly by the Board and managed in accordance with policies described below.

The Board's distribution policy comprises a regular cash dividend and, subject to business needs, a share repurchase component. The Board regularly reviews its shareholders' return strategy, and, in 2012, decided to suspend share repurchases in order to retain strategic flexibility.

The Group's net debt position (loans and borrowings net of Cash and cash equivalents, other investments and derivative financial instruments) has decreased from a net debt position of $13,003m at the beginning of the year to a net debt position of $11,904m at 31 December 2019.

Liquidity risk

The Board reviews the Group's ongoing liquidity risks annually as part of the planning process and on an ad hoc basis. The Board considers short-term requirements against available sources of funding, taking into account forecast cash flows. The Group manages liquidity risk by maintaining access to a number of sources of funding which are sufficient to meet anticipated funding requirements. Specifically, the Group uses US commercial paper, bank loans, committed bank facilities and cash resources to manage short-term liquidity and manages long-term liquidity by raising funds through the capital markets. The Group is assigned short-term credit ratings of P-2 by Moody's and A-2 by Standard and Poor's. The Group's long-term credit rating is A3 stable outlook by Moody's and BBB+ stable outlook by Standard and Poor's.

In addition to Cash and cash equivalents of $5,369m, short-term fixed income investments of $811m, fixed deposits of $38m, less overdrafts of $146m at 31 December 2019, the Group has committed bank facilities of $4,125m available to manage liquidity. Of the total $4,125m of committed facilities, $3,375m mature in April 2022, $250m mature in December 2020 and $500m mature in November 2020 but have a one-year extension option, exercisable by the Group. All were undrawn at 31 December 2019. The Group regularly monitors the credit standing of the banking group and currently does not anticipate any issue with drawing on the committed facilities should this be necessary. Advances under these facilities bear an interest rate per annum based on LIBOR (or other relevant benchmark rate) plus a margin. The facility agreements contain no financial covenants. On 10 January 2019, the Company entered into a floating rate $500m committed bank loan agreement, which was drawn in full on 4 February 2019. The loan was fully repaid in April, following the Group's $3,490m equity issuance.

At 31 December 2019, the Group has issued $3,741m under a Euro Medium Term Note programme and $13,568m under a SEC-registered programme. The funds made available under these facility agreements may be used for the general corporate purposes of the Group.

The maturity profile of the anticipated future contractual cash flows including interest in relation to the Group's financial liabilities, on an undiscounted basis and which, therefore, differs from both the carrying value and fair value, is as follows:

	Bank overdrafts and other loans $m	Bonds $m	Finance leases[1] $m	Trade and other payables $m	Total non-derivative financial instruments $m	Derivative financial instruments receivable[2] $m	Derivative financial instruments payable[2] $m	Total derivative financial instruments[2] $m	Total $m
Within one year	859	1,985	5	11,840	14,689	(6,996)	7,020	24	14,713
In one to two years	–	1,564	–	1,976	3,540	(803)	601	(202)	3,338
In two to three years	–	2,144	–	1,586	3,730	(39)	80	41	3,771
In three to four years	16	2,000	–	3,240	5,256	(994)	971	(23)	5,233
In four to five years	–	1,736	–	1,112	2,848	(34)	59	25	2,873
In more than five years	–	15,575	–	2,808	18,383	(2,198)	2,217	19	18,402
	875	25,004	5	22,562	48,446	(11,064)	10,948	(116)	48,330
Effect of interest	(14)	(7,969)	–	–	(7,983)	286	(720)	(434)	(8,417)
Effect of discounting, fair values and issue costs	–	(94)	–	(3,081)	(3,175)	9	37	46	(3,129)
31 December 2017	861	16,941	5	19,481	37,288	(10,769)	10,265	(504)	36,784

	Bank overdrafts and other loans $m	Bonds $m	Finance leases[1] $m	Trade and other payables $m	Total non-derivative financial instruments $m	Derivative financial instruments receivable[2] $m	Derivative financial instruments payable[2] $m	Total derivative financial instruments[2] $m	Total $m
Within one year	774	1,629	–	13,029	15,432	(10,368)	10,171	(197)	15,235
In one to two years	7	2,210	–	1,688	3,905	(35)	82	47	3,952
In two to three years	14	2,002	–	833	2,849	(950)	974	24	2,873
In three to four years	–	1,813	–	3,340	5,153	(30)	58	28	5,181
In four to five years	–	2,069	–	776	2,845	(30)	58	28	2,873
In more than five years	–	17,405	–	2,084	19,489	(2,084)	2,154	70	19,559
	795	27,128	–	21,750	49,673	(13,497)	13,497	–	49,673
Effect of interest	(2)	(8,669)	–	–	(8,671)	251	(509)	(258)	(8,929)
Effect of discounting, fair values and issue costs	(17)	(122)	–	(2,139)	(2,278)	(9)	(117)	(126)	(2,404)
31 December 2018	776	18,337	–	19,611	38,724	(13,255)	12,871	(384)	38,340

	Bank overdrafts and other loans $m	**Bonds $m**	**Lease liability[1] $m**	**Trade and other payables $m**	**Total non-derivative financial instruments $m**	**Derivative financial instruments receivable $m**	**Derivative financial instruments payable[2] $m**	**Total derivative financial instruments $m**	**Total $m**
Within one year	**234**	**2,207**	**205**	**14,054**	**16,700**	**(11,956)**	**11,985**	**29**	**16,729**
In one to two years	**14**	**1,970**	**158**	**1,769**	**3,911**	**(955)**	**976**	**21**	**3,932**
In two to three years	**–**	**1,810**	**117**	**1,811**	**3,738**	**(54)**	**67**	**13**	**3,751**
In three to four years	**–**	**2,068**	**79**	**1,592**	**3,739**	**(54)**	**67**	**13**	**3,752**
In four to five years	**–**	**1,479**	**50**	**1,652**	**3,181**	**(1,051)**	**1,079**	**28**	**3,209**
In more than five years	**–**	**15,906**	**128**	**1,052**	**17,086**	**(1,648)**	**1,654**	**6**	**17,092**
	248	**25,440**	**737**	**21,930**	**48,355**	**(15,718)**	**15,828**	**110**	**48,465**
Effect of interest	**(1)**	**(8,038)**	**–**	**–**	**(8,039)**	**409**	**(488)**	**(79)**	**(8,118)**
Effect of discounting, fair values and issue costs	**(3)**	**(94)**	**(62)**	**(1,619)**	**(1,778)**	**(20)**	**(54)**	**(74)**	**(1,852)**
31 December 2019	**244**	**17,308**	**675**	**20,311**	**38,538**	**(15,329)**	**15,286**	**(43)**	**38,495**

[1] Comparative figures relate to Finance leases recognised under IAS 17.
[2] The maturity profile table has been amended in 2019 to show gross derivative flows and to include all derivatives shown in Note 13 on page 195. In previous periods the table separately disclosed the net cash flows on interest rate swaps and cross-currency swaps. Other derivative instruments amounting to $18m in 2018 and $5m in 2017 were not included in the table.

Where interest payments are on a floating rate basis, it is assumed that rates will remain unchanged from the last business day of each year ended 31 December.

It is not expected that the cash flows in the maturity profile could occur significantly earlier or at significantly different amounts, with the exception of $4,139m of contingent consideration held within Trade and other payables (see Note 20).

Market risk

Interest rate risk

The Group maintains a mix of fixed and floating rate debt. The portion of fixed rate debt was approved by the Board and any variation requires Board approval.

A significant portion of the long-term debt is held at fixed rates of interest. The Group uses interest rate swaps and forward rate agreements to manage this mix.

27 Financial risk management objectives and policies *continued*

At 31 December 2019, the Group held interest rate swaps with a notional value of $288m, converting the 7% guaranteed debentures payable in 2023 to floating rates. No new interest rate swaps were entered into during 2019. At 31 December 2019, swaps with a notional value of $288m related to debt designated as fair value through profit or loss.

The majority of surplus cash is currently invested in US dollar liquidity funds, fully collateralised repurchase arrangements and investment-grade fixed income securities.

The interest rate profile of the Group's interest-bearing financial instruments are set out below. In the case of current and non-current financial liabilities, the classification includes the impact of interest rate swaps which convert the debt to floating rate.

	2019			2018			2017		
	Fixed rate $m	**Floating rate $m**	**Total $m**	Fixed rate $m	Floating rate $m	Total $m	Fixed rate $m	Floating rate $m	Total $m
Financial liabilities									
Interest-bearing loans and borrowings									
Current	**1,785**	**225**	**2,010**	999	755	1,754	404	1,843	2,247
Non-current	**14,893**	**1,324**	**16,217**	16,038	1,321	17,359	14,608	952	15,560
Total	**16,678**	**1,549**	**18,227**	17,037	2,076	19,113	15,012	2,795	17,807
Financial assets									
Fixed deposits	**38**	**–**	**38**	40	–	40	–	80	80
Cash and cash equivalents	**–**	**5,369**	**5,369**	–	4,831	4,831	–	3,324	3,324
Total	**38**	**5,369**	**5,407**	40	4,831	4,871	–	3,404	3,404

In addition to the financial assets above, there are $6,765m (2018: $6,195m; 2017: $6,366m) of other current and non-current asset investments and other financial assets. Of these, $111m receive floating rate interest (2018: $nil; 2017: $nil). No interest is charged on the remaining $6,654m.

The Group is also exposed to market risk on equity securities, which represent non-controlling interests in third-party biotech companies.

	2019 $m	2018 $m	2017 $m
Equity securities at fair value through Other comprehensive income (Note 12)	**1,339**	833	–
Equity securities available for sale (Note 12)	**–**	–	933
Total	**1,339**	833	933

Foreign currency risk

The US dollar is the Group's most significant currency. As a consequence, the Group results are presented in US dollars and exposures are managed against US dollars accordingly.

Translational

Approximately 67% of Group external sales in 2019 were denominated in currencies other than the US dollar, while a significant proportion of manufacturing, and research and development costs were denominated in pounds sterling and Swedish krona. Surplus cash generated by business units is substantially converted to, and held centrally in, US dollars. As a result, operating profit and total cash flow in US dollars will be affected by movements in exchange rates.

This currency exposure is managed centrally, based on forecast cash flows. The impact of movements in exchange rates is mitigated significantly by the correlations which exist between the major currencies to which the Group is exposed and the US dollar. Monitoring of currency exposures and correlations is undertaken on a regular basis and hedging is subject to pre-execution approval.

As at 31 December 2019, before impact of derivatives, 3% of interest-bearing loans and borrowings were denominated in pounds sterling and 18% were denominated in euros. Where there is non-US dollar debt and an underlying net investment of that amount in the same currency, the Group applies net investment hedging. Exchange differences on the retranslation of debt designated as net investment hedges are recognised in Other comprehensive income to the extent that the hedge is effective. Any ineffectiveness is taken to profit.

The Group holds cross-currency swaps to hedge against the impact of fluctuations in foreign exchange rates. Fair value movements on the revaluation of the cross-currency swaps are recognised in Other comprehensive income to the extent that the hedge is effective, with any ineffectiveness taken to profit.

Foreign currency risk arises when the Group has inter-company funding and investments in certain subsidiaries operating in countries with exchange controls or where there is risk of significant future currency devaluation. One indicator of potential foreign currency risk is where a country is officially designated as hyperinflationary. As at 31 December 2019, the Group operates in two countries designated as hyperinflationary, being Argentina and Venezuela.

The foreign exchange risk to the Group from Argentina and Venezuela has been assessed and deemed to be immaterial.

Transactional

The Group aims to hedge all its forecast major transactional currency exposures on working capital balances, which typically extend for up to three months. Where practicable, these are hedged using forward foreign exchange. In addition, the Group's external dividend, which is paid principally in pounds sterling and Swedish krona, is fully hedged from announcement to payment date. Foreign exchange gains and losses on forward contracts transacted for transactional hedging are taken to profit.

Sensitivity analysis

The sensitivity analysis set out overleaf summarises the sensitivity of the market value of our financial instruments to hypothetical changes in market rates and prices. The range of variables chosen for the sensitivity analysis reflects our view of changes which are reasonably possible over a one-year period. Market values are the present value of future cash flows based on market rates and prices at the valuation date. For long-term debt, an increase in interest rates results in a decline in the fair value of debt.

The sensitivity analysis assumes an instantaneous 100 basis point change in interest rates in all currencies from their levels at 31 December 2019, with all other variables held constant. Based on the composition of our long-term debt portfolio as at 31 December 2019, a 1% increase in interest rates would result in an additional $15m in interest expense being incurred per year. The exchange rate sensitivity analysis assumes an instantaneous 10% change in foreign currency exchange rates from their levels at 31 December 2019, with all other variables held constant. The +10% case assumes a 10% strengthening of the US dollar against all other currencies and the -10% case assumes a 10% weakening of the US dollar.

Each incremental 10% movement in foreign currency exchange rates would have approximately the same effect as the initial 10% detailed in the table below and each incremental 1% change in interest rates would have approximately the same effect as the 1% detailed in the table below.

	Interest rates		Exchange rates	
31 December 2017	+1%	–1%	+10%	–10%
Increase/(decrease) in fair value of financial instruments ($m)	1,329	(1,293)	198	(198)
Impact on profit: (loss)/gain ($m)	–	–	(123)	123
Impact on equity: gain/(loss) ($m)	–	–	321	(321)

	Interest rates		Exchange rates	
31 December 2018	+1%	–1%	+10%	–10%
Increase/(decrease) in fair value of financial instruments ($m)	1,130	(1,267)	(146)	161
Impact on profit: (loss)/gain ($m)	–	–	(299)	348
Impact on equity: gain/(loss) ($m)	–	–	153	(187)

	Interest rates		**Exchange rates**	
31 December 2019	**+1%**	**–1%**	**+10%**	**–10%**
Increase/(decrease) in fair value of financial instruments ($m)	**1,417**	**(1,521)**	**(4)**	**(36)**
Impact on profit: (loss)/gain ($m)	**–**	**–**	**(174)**	**172**
Impact on equity: gain/(loss) ($m)	**–**	**–**	**170**	**(208)**

In 2018 the Group changed the method for assessing a 10% change in foreign currency exchange rates. In 2017 the sensitivity was calculated as 10% of year end exposure. The sensitivity is now calculated by dividing the non-USD balances by adjusted foreign rates. This does not have a material impact on results but has resulted in the weakening and strengthening values no longer being symmetrical. There have been no other changes in the methods and assumptions used in preparing the sensitivity analysis.

Credit risk

The Group is exposed to credit risk on financial assets, such as cash investments, derivative instruments, and Trade and other receivables. The Group is also exposed in its Net asset position to its own credit risk in respect of the 2023 debentures which are accounted for at fair value through profit or loss. Under IFRS 9, the Group records the effect of the losses and gains, arising from own credit risk, on the fair value of bonds designated at fair value through profit or loss in Other comprehensive income.

Financial counterparty credit risk

The majority of the AstraZeneca Group's cash is centralised within the Group treasury entity and is subject to counterparty risk on the principal invested. The level of the Group's cash investments and hence credit risk will depend on the cash flow generated by the Group and the timing of the use of that cash. The credit risk is mitigated through a policy of prioritising security and liquidity over return, and, as such, cash is only invested in high credit quality investments. Counterparty limits are set according to the assessed risk of each counterparty and exposures are monitored against these limits on a regular basis.

The Group's principal financial counterparty credit risks at 31 December 2019 were as follows:

Current assets	**2019 $m**	2018 $m	2017 $m
Cash at bank and in hand	**755**	893	784
Money market liquidity fund	**4,110**	3,435	1,150
Collateralised repurchase agreement	**400**	400	1,150
Other short-term cash equivalents	**104**	103	240
Total Cash and cash equivalents (Note 17)	**5,369**	4,831	3,324
Fixed income securities at fair value through profit and loss (Note 12)	**811**	809	–
Fixed income securities available for sale (Note 12)	**–**	–	1,150
Fixed deposits (Note 12)	**38**	40	80
Total derivative financial instruments (Note 13)	**36**	258	28
Current assets subject to credit risk	**6,254**	5,938	4,582

27 Financial risk management objectives and policies *continued*

Non-current assets

	2019 $m	2018 $m	2017 $m
Fixed income securities at fair value through profit and loss (Note 12)	**62**	–	–
Derivative financial instruments (Note 13)	**61**	157	504
Non-current assets subject to credit risk	**123**	157	504

The Group may hold significant cash balances as part of its normal operations, with the amount of cash held at any point reflecting the level of cash flow generated by the business and the timing of the use of that cash. The majority of excess cash is centralised within the Group treasury entity and is subject to counterparty risk on the principal invested. This risk is mitigated through a policy of prioritising security and liquidity over return, and, as such, cash is only invested in high credit-quality investments. Counterparty limits are set according to the assessed risk of each counterparty and exposures are monitored against these limits on a regular basis. The majority of the Group's cash is invested in US dollar AAA-rated liquidity funds, fully collateralised repurchase agreements and short-term bank deposits.

The money market liquidity fund portfolios are managed by five external third-party fund managers to maintain an AAA rating. The Group's investments represent no more than 10% of each overall fund value. There were no other significant concentrations of financial credit risk at the reporting date.

The short-term repurchase agreements are fully collateralised investments. The collateral is fixed income in nature and is held by a third-party custodian and represents approximately 106% of the value of the cash deposited. The minimum long-term credit rating of the collateral is BBB minus. In the event of any default, ownership of the collateral would revert to the Group, and would be readily convertible to cash. The value of the cash deposited in repurchase agreements at 31 December 2019 was $401m (2018: $403m; 2017: $1,151m).

The fixed income securities are managed by four external third-party fund managers. The long-term rating of these securities was BBB minus or better.

All financial derivatives are transacted with commercial banks, in line with standard market practice. The Group has agreements with some bank counterparties whereby the parties agree to post cash collateral, for the benefit of the other, equivalent to the market valuation of the derivative positions above a predetermined threshold. The carrying value of such cash collateral held by the Group at 31 December 2019 was $71m (2018: $384m; 2017: $513m) and the carrying value of such cash collateral posted by the Group at 31 December 2019 was $10m (2018: $14m; 2017: $nil).

The impairment provision for other financial assets at 31 December 2019 was immaterial.

Trade receivables

Trade receivable exposures are managed locally in the operating units where they arise and credit limits are set as deemed appropriate for the customer. The Group is exposed to customers ranging from government-backed agencies and large private wholesalers to privately owned pharmacies, and the underlying local economic and sovereign risks vary throughout the world. Where appropriate, the Group endeavours to minimise risks by the use of trade finance instruments such as letters of credit and insurance. Following the adoption of IFRS 9 on 1 January 2018 the Group introduced the expected credit loss approach to establish an allowance for impairment that represents its estimate of expected losses in respect of Trade receivables. Given the general quality and short-term nature of our trade receivables, there was no material impact assessed arising from the introduction of this method.

The Group applies the IFRS 9 simplified approach to measuring expected credit losses which uses a lifetime expected loss allowance for all trade receivables. To measure expected credit losses, trade receivables have been grouped based on shared credit characteristics and the days past due.

The expected loss rates are based on payment profiles over a period of 36 months before 31 December 2019, 31 December 2018 or 1 January 2018 respectively and the corresponding historical credit losses experienced within this period. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customer to settle the receivables.

On that basis, the loss allowance was determined as follows:

1 January 2018	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.05%	0.75%	5%	33%	
Gross carrying amount ($m)	2,490	262	31	35	2,818
Loss allowance ($m)	1	2	1	12	16

31 December 2018	Current	0-90 days past due	90-180 days past due	Over 180 days past due	Total
Expected loss rate	0.05%	0.75%	10%	47%	
Gross carrying amount ($m)	2,854	82	27	70	3,033
Loss allowance ($m)	1	1	3	33	38

31 December 2019	**Current**	**0-90 days past due**	**90-180 days past due**	**Over 180 days past due**	**Total**
Expected loss rate	**0.05%**	**0.75%**	**2%**	**44%**	
Gross carrying amount ($m)	**3,178**	**312**	**82**	**34**	**3,606**
Loss allowance ($m)	**2**	**2**	**2**	**15**	**21**

Trade receivables are written off where there is no reasonable expectation of recovery.

Impairment losses on trade receivables are presented as net impairment losses within Operating profit, any subsequent recoveries are credited against the same line.

In the US, sales to three wholesalers accounted for approximately 94% of US sales (2018: three wholesalers accounted for approximately 88%; 2017: three wholesalers accounted for approximately 60%).

The ageing of trade receivables at the reporting date was:

	2019 $m	2018 $m	2017 $m
Not past due	**3,176**	2,853	2,488
Past due 0–90 days	**310**	81	260
Past due 90–180 days	**80**	24	31
Past due > 180 days	**19**	37	23
	3,585	2,995	2,802

	2019 $m	2018 $m	2017 $m
Movements in provisions for trade receivables			
At 1 January	**38**	16	42
Income statement	**(13)**	22	(26)
Amounts utilised, exchange and other movements	**(4)**	–	–
At 31 December	**21**	38	16

Given the profile of our customers, including large wholesalers and government-backed agencies, no further credit risk has been identified with the trade receivables not past due other than those balances for which an allowance has been made. The income statement credit or charge is recorded in Selling, general and administrative costs.

28 Employee costs and share plans for employees

Employee costs

The average number of people, to the nearest hundred, employed by the Group is set out in the table below. In accordance with the Companies Act 2006, this includes part-time employees.

	2019	2018	2017
Employees			
UK	**7,400**	7,200	6,900
Continental Europe	**15,500**	14,800	14,500
The Americas	**16,600**	16,700	16,300
Asia, Africa & Australasia	**27,800**	24,500	22,300
Continuing operations	**67,300**	63,200	60,000

Geographical distribution described in the table above is by location of legal entity employing staff. Certain staff will undertake some or all of their activity in a different location.

The number of people employed by the Group at the end of 2019 was 70,600 (2018: 64,600; 2017: 61,100).

The costs incurred during the year in respect of these employees were:

	2019 $m	2018 $m	2017 $m
Salaries	**5,648**	5,370	5,004
Social security costs	**658**	626	570
Pension costs	**491**	469	378
Other employment costs	**771**	505	534
Total	**7,568**	6,970	6,486

Severance costs of $158m are not included above (2018: $94m; 2017: $225m).

The Directors believe that, together with the basic salary system, the Group's employee incentive schemes provide competitive and market-related packages to motivate employees. They should also align the interests of employees with those of shareholders, as a whole, through long-term share ownership in the Company. The Group's current UK, Swedish and US schemes are described below; other arrangements apply elsewhere.

28 Employee costs and share plans for employees *continued*

Bonus plans

The AstraZeneca UK Performance Bonus Plan

Employees of participating AstraZeneca UK companies are invited to participate in this bonus plan, which rewards strong individual performance. Bonuses are paid in cash.

The AstraZeneca Executive Annual Bonus Scheme

This scheme is a performance bonus scheme for Directors and senior employees who do not participate in the AstraZeneca UK Performance Bonus Plan. Annual bonuses are paid in cash and reflect both corporate and individual performance measures. The Remuneration Committee has discretion to reduce or withhold bonuses if business performance falls sufficiently short of expectations in any year such as to make the payment of bonuses inappropriate.

The AstraZeneca Deferred Bonus Plan

This plan was introduced in 2006 and is used to defer a portion of the bonus earned under the AstraZeneca Executive Annual Bonus Scheme into Ordinary Shares in the Company for a period of three years. The plan currently operates only in respect of Executive Directors and members of the SET. Awards of shares under this plan are typically made in March each year, the first award having been made in February 2006.

Sweden

In Sweden, an all-employee performance bonus plan is in operation, which rewards strong individual performance. Bonuses are paid 50% into a fund investing in AstraZeneca equities and 50% in cash. The AstraZeneca Executive Annual Bonus Scheme, the AstraZeneca Performance Share Plan and the AstraZeneca Global Restricted Stock Plan all operate in respect of relevant AstraZeneca employees in Sweden.

US

In the US, there are two all-employee short-term or annual performance bonus plans in operation to differentiate and reward strong individual performance. Annual bonuses are paid in cash. There is also one senior staff long-term incentive scheme, under which 123 participants may be eligible for awards granted as AstraZeneca ADSs. AstraZeneca ADSs necessary to satisfy the awards are purchased in the market or funded via a share trust. The AstraZeneca Performance Share Plan and the AstraZeneca Global Restricted Stock Plan operate in respect of relevant employees in the US.

Share plans

The charge for share-based payments in respect of share plans is $259m (2018: $219m; 2017: $220m). The plans are equity settled.

The AstraZeneca UK All-Employee Share Plan

The Company offers UK employees the opportunity to buy Partnership Shares (Ordinary Shares). Employees may invest up to £150 a month to purchase Partnership Shares in the Company at the current market value. In 2010, the Company introduced a Matching Share element, the first award of which was made in 2011. Currently one Matching Share is awarded for every four Partnership Shares purchased. Partnership Shares and Matching Shares are held in the HM Revenue & Customs (HMRC)-approved All-Employee Share Plan. At the Company's AGM in 2002, shareholders approved the issue of new shares for the purposes of the All-Employee Share Plan.

The AstraZeneca 2014 Performance Share Plan (PSP)

This plan was approved by shareholders in 2014 for a period of 10 years and replaces the AstraZeneca Performance Share Plan. Generally, awards can be granted at any time, but not during a closed period of the Company. The first grant of awards was made in May 2014. Awards granted under the plan vest after three years, or in the case of Executive Directors and members of the SET, after an additional two-year holding period, and can be subject to the achievement of performance conditions. For awards granted to all participants in 2019, vesting is subject to a combination of measures focused on scientific leadership, revenue growth and financial performance. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated, including agreeing performance targets and which employees should be invited to participate. The main grant of awards in 2019 under the plan took place in March with further grants in May, August and November.

	Shares '000	WAFV[1] pence	WAFV[1] $
Shares awarded in March 2017	2,359	2440	30.88
Shares awarded in May 2017	10	2607	34.20
Shares awarded in August 2017	44	2234	29.11
Shares awarded in March 2018	3,400	2427	34.62
Shares awarded in May 2018	18	2651	36.42
Shares awarded in August 2018	92	2982	38.46
Shares awarded in March 2019	**2,899**	**3144**	**42.00**
Shares awarded in May 2019	**5**	**2918**	**37.77**
Shares awarded in August 2019	**79**	**3640**	**44.28**
Shares awarded in November 2019	**13**	**3663**	**47.42**

[1] Weighted average fair value.

The AstraZeneca Investment Plan (AZIP)

This plan was introduced in 2010 and approved by shareholders at the 2010 AGM. The final grant of awards under this plan took place in March 2016. Awards granted under the plan vest after eight years and are subject to performance conditions measured over a period of four years.

The AstraZeneca Global Restricted Stock Plan

This plan was introduced in 2010. The main grant of awards in 2019 under the plan was in March, with further, smaller grants in May, August and November. This plan provides for the grant of restricted stock unit (RSU) awards to selected below SET-level employees and is used in conjunction with the AstraZeneca Performance Share Plan to provide a mix of RSUs and performance shares. Awards typically vest on the third anniversary of the date of grant and are contingent on continued employment with the Company. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated.

	Shares '000	WAFV pence	WAFV $
Shares awarded in March 2017	2,502	4880	61.76
Shares awarded in May 2017	78	5214	68.40
Shares awarded in August 2017	31	4468	58.22
Shares awarded in November 2017	77	4942	66.24
Shares awarded in March 2018	4,474	4853	69.24
Shares awarded in August 2018	40	5964	76.92
Shares awarded in November 2018	3	6300	82.86
Shares awarded in March 2019	**4,527**	**6287**	**84.00**
Shares awarded in May 2019	**1**	**5835**	**75.54**
Shares awarded in August 2019	**114**	**7280**	**88.56**
Shares awarded in November 2019	**2**	**7326**	**94.84**

The AstraZeneca Restricted Share Plan

This plan was introduced in 2008 and provides for the grant of restricted share awards to key employees, excluding Executive Directors. Awards are made on an ad hoc basis with variable vesting dates. The plan has been used four times in 2019 to make awards to 87 employees. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated.

	Shares '000	WAFV pence	WAFV $
Shares awarded in February 2017	205	4293	55.50
Shares awarded in March 2017	134	4880	61.76
Shares awarded in May 2017	8	5214	68.40
Shares awarded in August 2017	26	4468	58.22
Shares awarded in September 2017	31	4765	65.60
Shares awarded in November 2017	23	4942	66.24
Shares awarded in March 2018	148	4853	69.24
Shares awarded in May 2018	45	5301	72.84
Shares awarded in August 2018	37	5964	76.92
Shares awarded in November 2018	38	6300	82.86
Shares awarded in March 2019	**95**	**6287**	**84.00**
Shares awarded in May 2019	**25**	**5835**	**75.54**
Shares awarded in August 2019	**56**	**7280**	**88.56**
Shares awarded in November 2019	**105**	**7326**	**94.84**

The AstraZeneca Extended Incentive Plan

This plan was introduced in 2018 and provides for the grant of awards to key employees, excluding Executive Directors. Awards are made on an ad hoc basis and 50% of the award will normally vest on the fifth anniversary of grant, with the balance vesting on the tenth anniversary of grant. The award can be subject to the achievement of performance conditions. The Remuneration Committee has responsibility for agreeing any awards under the plan and for setting the policy for the way in which the plan should be operated, including agreeing performance targets (if any) and which employees should be invited to participate.

	Shares '000	WAFV pence	WAFV $
Shares awarded in August 2019	**24**	**7280**	**88.56**
Shares awarded in November 2019	**20**	**7326**	**94.84**

The fair values were determined using a modified version of the Monte Carlo model. This method incorporated expected dividends but no other features into the measurements of fair value. The grant date fair values of share awards disclosed in this section do not take account of service and non-market related performance conditions.

29 Commitments and contingent liabilities

Commitments	2019 $m	2018 $m	2017 $m
Contracts placed for future capital expenditure on Property, plant and equipment and software development costs not provided for in these accounts	**396**	586	570

Guarantees and contingencies arising in the ordinary course of business, for which no security has been given, are not expected to result in any material financial loss.

Research and development collaboration payments

The Group has various ongoing collaborations, including in-licensing and similar arrangements with development partners. Such collaborations may require the Group to make payments on achievement of stages of development, launch or revenue milestones, although the Group generally has the right to terminate these agreements at no cost. The Group recognises research and development milestones as intangible assets once it is committed to payment, which is generally when the Group reaches set trigger points in the development cycle. Revenue-related milestones are recognised as intangible assets on product launch at a value based on the Group's long-term revenue forecasts for the related product. The table below indicates potential development and revenue-related payments that the Group may be required to make under such collaborations.

	Total $m	Under 1 year $m	Years 1 and 2 $m	Years 3 and 4 $m	Years 5 and greater $m
Future potential research and development milestone payments	**9,956**	**438**	**1,479**	**1,581**	**6,458**
Future potential revenue milestone payments	**6,654**	**59**	**138**	**818**	**5,639**

The table includes all potential payments for achievement of milestones under ongoing research and development arrangements. Revenue-related milestone payments represent the maximum possible amount payable on achievement of specified levels of revenue as set out in individual contract agreements, but exclude variable payments that are based on unit sales (e.g. royalty-type payments) which are expensed as the associated sale is recognised. The table excludes any payments already capitalised in the Financial Statements for the year ended 31 December 2019.

The future payments we disclose represent contracted payments and, as such, are not discounted and are not risk adjusted. As detailed in the Risk section from page 246, the development of any pharmaceutical product candidate is a complex and risky process that may fail at any stage in the development process due to a number of factors (including items such as failure to obtain regulatory approval, unfavourable data from key studies, adverse reactions to the product candidate or indications of other safety concerns). The timing of the payments is based on the Group's current best estimate of achievement of the relevant milestone.

Environmental costs and liabilities

The Group's expenditure on environmental protection, including both capital and revenue items, relates to costs that are necessary for implementing internal systems and programmes, and meeting legal and regulatory requirements for processes and products. This includes investment to conserve natural resources and otherwise minimise the impact of our activities on the environment.

They are an integral part of normal ongoing expenditure for carrying out the Group's research, manufacturing and commercial operations and are not separated from overall operating and development costs. There are no known changes in legal, regulatory or other requirements resulting in material changes to the levels of expenditure for 2017, 2018 or 2019.

In addition to expenditure for meeting current and foreseen environmental protection requirements, the Group incurs costs in investigating and cleaning up land and groundwater contamination. In particular, AstraZeneca has environmental liabilities at some currently or formerly owned, leased and third-party sites.

In the US, Zeneca Inc., and/or its indemnitees, have been named as potentially responsible parties (PRPs) or defendants at approximately 13 sites where Zeneca Inc. is likely to incur future environmental investigation, remediation, operation and maintenance costs under federal, state, statutory or common law environmental liability allocation schemes (together, US Environmental Consequences). Similarly, Stauffer Management Company LLC (SMC), which was established in 1987 to own and manage certain assets of Stauffer Chemical Company acquired that year, and/or its indemnitees, have been named as PRPs or defendants at a number of sites where SMC is likely to incur US Environmental Consequences.

AstraZeneca has also given indemnities to third parties for a number of sites outside the US. These environmental liabilities arise from legacy operations that are not currently part of the Group's business and, at most of these sites, remediation, where required, is either completed or in progress. AstraZeneca has made provisions for the estimated costs of future environmental investigation, remediation, operation and maintenance activity beyond normal ongoing expenditure for maintaining the Group's R&D and manufacturing capacity and product ranges, where a present obligation exists, it is probable that such costs will be incurred and they can be estimated reliably. With respect to such estimated future costs, there were provisions at 31 December 2019 in the aggregate of $96m (2018: $97m; 2017: $59m), mainly relating to the US. Where we are jointly liable or otherwise have cost-sharing agreements with third parties, we reflect only our share of the obligation. Where the liability is insured in part or in whole by insurance or other arrangements for reimbursement, an asset is recognised to the extent that this recovery is virtually certain.

It is possible that AstraZeneca could incur future environmental costs beyond the extent of our current provisions. The extent of such possible additional costs is inherently difficult to estimate due to a number of factors, including: (i) the nature and extent of claims that may be asserted in the future; (ii) whether AstraZeneca has or will have any legal obligation with respect to asserted or unasserted claims; (iii) the type of remedial action, if any, that may be selected at sites where the remedy is presently not known; (iv) the potential for recoveries from or allocation of liability to third parties; and (v) the length of time that the environmental investigation, remediation and liability allocation process can take. As per our accounting policy on page 178, provisions for these costs are made when there is a present obligation and where it is probable that expenditure on remedial work will be required and a reliable estimate can be made of the cost. Notwithstanding and subject to the foregoing, we estimate the potential additional loss for future environmental investigation, remediation, remedial operation and maintenance activity above and beyond our provisions to be, in aggregate, between $86m and $143m (2018: $71m and $118m; 2017: $87m and $144m), which relates mainly to the US.

Legal proceedings

AstraZeneca is involved in various legal proceedings considered typical to its business, including actual or threatened litigation and/or actual or potential government investigations relating to employment matters, product liability, commercial disputes, pricing, sales and marketing practices, infringement of IP rights, and the validity of certain patents and competition laws. The more significant matters are discussed below.

Most of the claims involve highly complex issues. Often these issues are subject to substantial uncertainties and, therefore, the probability of a loss, if any, being sustained and an estimate of the amount of any loss is difficult to ascertain. Consequently, for a majority of these claims, it is not possible to make a reasonable estimate of the expected financial effect, if any, that will result from ultimate resolution of the proceedings. In these cases, AstraZeneca discloses information with respect to the nature and facts of the cases.

With respect to each of the legal proceedings described below, other than those for which provision has been made, we are unable to make estimates of the possible loss or range of possible losses at this stage, other than as set forth in this section. We also do not believe that disclosure of the amount sought by plaintiffs, if known, would be meaningful with respect to those legal proceedings. This is due to a number of factors, including (i) the stage of the proceedings (in many cases trial dates have not been set) and the overall length and extent of pre-trial discovery; (ii) the entitlement of the parties to an action to appeal a decision; (iii) clarity as to theories of liability, damages and governing law; (iv) uncertainties in timing of litigation; and (v) the possible need for further legal proceedings to establish the appropriate amount of damages, if any.

While there can be no assurance regarding the outcome of any of the legal proceedings referred to in this Note 29, based on management's current and considered view of each situation, we do not currently expect them to have a material adverse effect on our financial position. This position could of course change over time, not least because of the factors referred to above.

In cases that have been settled or adjudicated, or where quantifiable fines and penalties have been assessed and which are not subject to appeal (or other similar forms of relief), or where a loss is probable and we are able to make a reasonable estimate of the loss, we generally indicate the loss absorbed or make a provision for our best estimate of the expected loss.

Where it is considered that the Group is more likely than not to prevail, legal costs involved in defending the claim are charged to profit as they are incurred.

Where it is considered that the Group has a valid contract which provides the right to reimbursement (from insurance or otherwise) of legal costs and/or all or part of any loss incurred or for which a provision has been established, and we consider recovery to be virtually certain, the best estimate of the amount expected to be received is recognised as an asset.

KJ Assessments as to whether or not to recognise provisions or assets, and of the amounts concerned, usually involve a series of complex judgements about future events and can rely heavily on estimates and assumptions. AstraZeneca believes that the provisions recorded are adequate based on currently available information and that the insurance recoveries recorded will be received. However, given the inherent uncertainties involved in assessing the outcomes of these cases, and in estimating the amount of the potential losses and the associated insurance recoveries, we could in the future incur judgments or insurance settlements that could have a material adverse effect on our results in any particular period.

IP claims include challenges to the Group's patents on various products or processes and assertions of non-infringement of patents. A loss in any of these cases could result in loss of patent protection on the related product. The consequences of any such loss could be a significant decrease in Product Sales, which could have a material adverse effect on our results. The lawsuits filed by AstraZeneca for patent infringement against companies that have filed ANDAs in the US, seeking to market generic forms of products sold by the Group prior to the expiry of the applicable patents covering these products, typically also involve allegations of non-infringement, invalidity and unenforceability of these patents by the ANDA filers. In the event that the Group is unsuccessful in these actions or the statutory 30-month stay expires before a ruling is obtained, the ANDA filers involved will also have the ability, subject to FDA approval, to introduce generic versions of the product concerned.

AstraZeneca has full confidence in, and will vigorously defend and enforce, its IP.

Over the course of the past several years, including in 2019, a significant number of commercial litigation claims in which AstraZeneca is involved have been resolved, particularly in the US, thereby reducing potential contingent liability exposure arising from such litigation. Similarly, in part due to patent litigation and settlement developments, greater certainty has been achieved regarding possible generic entry dates with respect to some of our patented products. At the same time, like other companies in the pharmaceutical sector and other industries, AstraZeneca continues to be subject to government investigations around the world.

Patent litigation

Brilinta (ticagrelor)

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from ANDA filers, AstraZeneca filed patent infringement lawsuits in the US District Court for the District of Delaware (the District Court) relating to patents listed in the FDA Orange Book with reference to *Brilinta*. In 2019, AstraZeneca entered into several separate settlements and the District Court entered consent judgments to dismiss several of the litigations. Additional proceedings are ongoing in the District Court. No trial date has been set.

Patent proceedings outside the US

In Canada, in September 2017, Apotex Inc. (Apotex) challenged the patents listed on the Canadian Patent Register with reference to *Brilinta*. AstraZeneca discontinued the proceeding against Apotex in February 2019 after Apotex withdrew its challenge.

In Canada, in October 2018, Taro Pharmaceuticals Inc. (Taro) challenged the patents listed on the Canadian Patent Register with reference to *Brilinta*. AstraZeneca commenced an infringement action against Taro. The action was discontinued in September 2019 after Taro withdrew its challenge.

Calquence (acalabrutinib)

US patent proceedings

In November 2017, Pharmacyclics LLC (Pharmacyclics, a company in the AbbVie group) filed a patent infringement lawsuit in the US District Court for the District of Delaware (the District Court) against Acerta Pharma and AstraZeneca relating to *Calquence*.

In April 2018, AstraZeneca and Acerta Pharma filed a complaint in the District Court against Pharmacyclics and AbbVie, Inc. alleging that their drug, *Imbruvica*, infringes a US patent owned by Acerta Pharma. In November 2018, Janssen Biotech, Inc. (Janssen) intervened as a defendant.

In October 2019, AstraZeneca entered into settlement agreements with Pharmacyclics and Janssen resolving all patent litigation between the parties relating to *Calquence* and *Imbruvica*. A provision has been taken.

In October 2019, an amendment to the share purchase and option agreement (SPOA) with the sellers of Acerta Pharma (originally entered into in December 2015) came into effect, changing certain terms of the SPOA on both the timing and also reducing the maximum consideration that would be required to be made to acquire the remaining outstanding shares of Acerta Pharma if the options are exercised. The payments would be made in similar annual instalments commencing at the earliest from 2022 through to 2024, subject to the options being exercised. The changes to the terms have been reflected

29 Commitments and contingent liabilities *continued*

in the assumptions used to calculate the amortised cost of the option liability as at 31 December 2019 of $2,146m (2018: $1,838m; 2017: $1,823m).

Daliresp (roflumilast)

US patent proceedings

In 2015 and subsequently, in response to Paragraph IV notices from ANDA filers, AstraZeneca filed patent infringement lawsuits in the US District Court for the District of New Jersey (the District Court) relating to patents listed in the FDA Orange Book with reference to *Daliresp*. In 2019, AstraZeneca entered into several separate settlements and the District Court entered consent judgments to dismiss several of the litigations. Additional proceedings are ongoing in the District Court. No trial date has been set.

Farxiga (dapagliflozin)

US patent proceedings

In 2018, in response to Paragraph IV notices, AstraZeneca initiated ANDA litigation against Zydus Pharmaceuticals (USA) Inc. (Zydus) in the US District Court for the District of Delaware. In its complaint, AstraZeneca alleged that Zydus' generic version of *Farxiga*, if approved and marketed, would infringe AstraZeneca's US Patent Nos. 6,414,126 and 6,515,117. Zydus has counterclaimed for non-infringement of AstraZeneca's US Patent Nos. 7,851,502; 7,919,598; 8,221,786; 8,361,972; 8,501,698; 8,685,934; and 8,716,251. Proceedings are ongoing and trial is scheduled for February 2021.

Faslodex (fulvestrant)

US patent proceedings

AstraZeneca has filed patent infringement lawsuits in the US District Court for the District of New Jersey (the District Court) relating to four patents listed in the FDA Orange Book with reference to *Faslodex* after receiving a number of Paragraph IV notices relating to multiple ANDAs or NDAs submitted pursuant to 21 U.S.C. § 355(b)(2) seeking FDA approval to market generic versions of *Faslodex* prior to the expiration of AstraZeneca's patents. In July 2016, AstraZeneca settled one of these, the lawsuit brought against Sandoz, Inc. (Sandoz), and the District Court entered a consent judgment, which included an injunction preventing Sandoz from launching a generic fulvestrant product until March 2019, or earlier in certain circumstances. Between 2016 and 2019, AstraZeneca resolved all of the remaining lawsuits, and the District Court also entered consent judgments ending those lawsuits. In October 2019, AstraZeneca filed a new patent infringement lawsuit in the District Court relating to all four listed patents after receiving a new Paragraph IV notice relating to an ANDA seeking FDA approval to market generic versions of *Faslodex* prior to the expiration of AstraZeneca's patents.

Patent proceedings outside the US

In Spain, in January 2016 and July 2017, the Barcelona Commercial Court ordered preliminary injunctions based on the Spanish part of European Patent Nos. EP 1,250,138 and EP 2,266,573, respectively preventing Sandoz Farmacéutica, S.A. (Sandoz) and Teva Pharm S.L.U. (Teva) from launching generic *Faslodex* in Spain. Sandoz appealed and, in December 2017, the Barcelona Court of Appeals revoked and lifted the preliminary injunction against Sandoz. Patent infringement and patent invalidity proceedings are ongoing against various parties.

In France, in June 2018, the Commercial Court of Nanterre denied AstraZeneca's request for a preliminary injunction against Sandoz SAS (Sandoz) to prevent a potential launch of its generic *Faslodex* in France. Additionally, in June 2018, Sandoz served AstraZeneca with an invalidation writ against European Patent Nos. EP 2,266,573; EP 1,250,138; and EP 1,272,195. Patent infringement and patent invalidity proceedings are ongoing with Sandoz.

In Germany, in January 2017, the German Federal Patent Court declared the German part of European Patent No. EP 1,250,138 (the '138 patent) invalid. In April 2019, the German Federal Court of Justice upheld the January 2017 decision and determined the '138 patent to be invalid. In November 2019, the German Federal Patent Court declared the German part of European Patent No. EP 1,272,195 invalid.

In Italy, Actavis Group Ptc ehf and Actavis Italy S.p.A. filed actions alleging that the Italian part of the '138 patent and European Patent No. EP 2,266,573 (the '573 patent) are invalid. In July 2018, the Court of Turin determined that the '138 patent is invalid. In July 2019, the Court of Milan determined that the '573 patent is invalid. Patent infringement and patent invalidity proceedings are ongoing against various parties.

Imfinzi (durvalumab)

US patent proceedings

In July 2017, Bristol-Myers Squibb, E.R. Squibb & Sons LLC, Ono Pharmaceutical Co and Tasuku Honjo filed a patent infringement action in the US District Court for the District of Delaware relating to AstraZeneca's commercialisation of *Imfinzi*. The case was dismissed without prejudice on 14 June 2019.

Movantik (naloxegol)

US patent proceedings

In December 2018, AstraZeneca initiated ANDA litigation against Apotex, Inc. and Apotex Corp. (together Apotex) and against MSN Laboratories (MSN) in the US District Court for the District of Delaware. In its complaint, AstraZeneca alleges that the generic companies' versions of *Movantik*, if approved and marketed, would infringe US Patent No. 9,012,469 (the '469 patent). A trial has been scheduled for March 2021.

In November 2019, AstraZeneca initiated ANDA litigation against Aurobindo Pharma U.S.A. in the US District Court for the District of Delaware. In its complaint, AstraZeneca alleges that the generic company's versions of *Movantik*, if approved and marketed, would infringe the '469 patent.

Onglyza (saxagliptin)

Patent proceedings outside the US

In Canada, in November 2019, Sandoz Canada Inc. sent a Notice of Allegation to AstraZeneca challenging the validity of Canadian substance Patent No. 2402894 (expiry March 2021) and formulation Patent No. 2568391 (expiry May 2025) related to *Onglyza*. AstraZeneca commenced an action in response in January 2020.

Roxadustat

Patent proceedings outside the US

In Canada, in May 2018, Akebia Therapeutics, Inc. filed an impeachment action in the Federal Court of Canada alleging invalidity of several of FibroGen, Inc.'s (FibroGen) method of use patents (Canadian Patent Nos. 2467689; 2468083; and 2526496) related to HIF prolyl hydroxylase inhibitors. AstraZeneca is the exclusive licensee of FibroGen in Canada. AstraZeneca and FibroGen are defending the action.

Symbicort (budesonide/formoterol fumarate dihydrate)

US patent proceedings

Beginning in October 2018, AstraZeneca initiated ANDA litigation against Mylan Pharmaceuticals Inc. (Mylan), Mylan Laboratories Limited, Mylan Inc., and Mylan N.V. (collectively, the Mylan Entities) and 3M Company (3M) and, separately, ANDA litigation against Teva Pharmaceuticals USA, Inc. (Teva) and Catalent Pharma Solutions, LLC (Catalent) in the US District Court for the District of Delaware (Delaware District Court). AstraZeneca also filed a similar action against the Mylan Entities in the US District Court for the Northern District of West Virginia (West Virginia District Court). In its complaints, AstraZeneca alleges that the defendants' generic versions of *Symbicort*, if approved and marketed, would infringe AstraZeneca's US Patent Nos. 7,759,328; 8,143,239; 8,575,137; and 7,967,011. In March 2019, following stipulations filed by the parties, the Delaware and West Virginia District Courts dismissed without prejudice Mylan Laboratories Limited, Mylan Inc., and Mylan N.V. from those actions. In May 2019, AstraZeneca filed a Second Amended Complaint in each of the Delaware District Court actions adding allegations that the defendants' proposed generic versions of *Symbicort*, if approved and marketed, would infringe AstraZeneca's US Patent No. 10,166,247 (the '247 patent). In June 2019, Teva and Catalent responded to the Second Amended Complaint and alleged that their proposed generic product does not infringe the '247 patent and/or that the '247 patent is invalid

and/or unenforceable. AstraZeneca decided to no longer assert patent infringement of US Patent No. 7,967,011 against Teva and Catalent.

In October 2019, the Delaware District Court transferred the Delaware action with Mylan and 3M to the West Virginia District Court. In November 2019, AstraZeneca filed an Amended Complaint in the West Virginia District Court against Mylan and 3M adding allegations that their proposed generic version of *Symbicort*, if approved and marketed, would infringe the '247 patent and removing allegations of infringement of US Patent No. 7,967,011. In November 2019, Mylan and 3M responded to the Amended Complaint and alleged that their proposed generic product does not infringe the asserted patents and/or that the asserted patents are invalid and/or unenforceable. In December 2019, AstraZeneca settled its ANDA action with Teva and Catalent and that matter is now closed. The trial of the Mylan and 3M matter is scheduled for July 2020.

Tagrisso (osimertinib)

US patent proceedings

In February 2020, in response to Paragraph IV notices from multiple ANDA filers, AstraZeneca filed patent infringement lawsuits in the US District Court for the District of Delaware. In its complaint, AstraZeneca alleged that a generic vision of *Tagrisso*, if approved and marketed would infringe AstraZeneca's US Patent No. 10,183,020. No trial has been set.

Product liability litigation

Byetta/Bydureon (exenatide)

In the US, Amylin Pharmaceuticals, LLC, a wholly owned subsidiary of AstraZeneca, and/or AstraZeneca are among multiple defendants in various lawsuits filed in federal and state courts involving claims of physical injury from treatment with *Byetta* and/or *Bydureon*. The lawsuits allege several types of injuries including pancreatitis, pancreatic cancer, thyroid cancer, and kidney cancer. A multidistrict litigation was established in the US District Court for the Southern District of California (the District Court) in regard to the alleged pancreatic cancer cases in federal courts. Further, a coordinated proceeding has been established in Los Angeles, California in regard to the various lawsuits in California state courts. In November 2015, the District Court granted the defendants' motion for summary judgment and dismissed all claims alleging pancreatic cancer that accrued prior to 11 September 2015. In November 2017, the US Court of Appeals for the Ninth Circuit vacated the District Court's order and remanded for further discovery. In November 2018, the Court of Appeal for the State of California annulled the judgment from the California state coordinated proceeding and remanded for further discovery.

Farxiga (dapagliflozin) and *Xigduo* (dapagliflozin/metformin HCl)

In several jurisdictions in the US, AstraZeneca has been named as a defendant in lawsuits involving plaintiffs claiming physical injury, including diabetic ketoacidosis and kidney failure, from treatment with *Farxiga* and/or *Xigduo XR*.

In April 2017, the Judicial Panel on Multidistrict Litigation ordered transfer of any currently pending cases as well as of any similar, subsequently filed cases to a coordinated and consolidated pre-trial multidistrict litigation (MDL) proceeding in the US District Court for the Southern District of New York. A majority of these claims have been resolved or dismissed, and the MDL has been administratively closed.

In two jurisdictions in the US, AstraZeneca has been named as a defendant in lawsuits involving plaintiffs claiming physical injury, including Fournier's Gangrene and necrotizing fasciitis, from treatment with *Farxiga* and/or *Xigduo XR*.

Nexium (esomeprazole magnesium) and *Losec*/*Prilosec* (omeprazole)

US proceedings

In the US, AstraZeneca is defending various lawsuits brought in federal and state courts involving multiple plaintiffs claiming that they have been diagnosed with various injuries following treatment with proton pump inhibitors, including *Nexium* and *Prilosec*. In May 2017, counsel for a group of such plaintiffs claiming that they have been diagnosed with kidney injuries filed a motion with the Judicial Panel on Multidistrict Litigation (JPML) seeking the transfer of any currently pending federal court cases as well as any similar, subsequently filed cases to a coordinated and consolidated pre-trial multidistrict litigation (MDL) proceeding. In August 2017, the JPML granted the motion and consolidated the pending federal court cases in an MDL proceeding in federal court in New Jersey for pre-trial purposes. A trial in the MDL is scheduled for November 2021.

In July 2019, counsel for a similarly defined group of plaintiffs with claims pending in New Jersey state courts petitioned the New Jersey State Administrative Director of the Courts to centralise judicial management of all plaintiffs' claims alleging kidney injuries pending in that State in a coordinated multicounty litigation (MCL) proceeding. The MCL has been centralised in Atlantic County.

Canada proceedings

In Canada, in July and August 2017, AstraZeneca was served with three putative class action lawsuits. Two of the lawsuits seek authorisation to represent individual residents in Canada who allegedly suffered kidney injuries from the use of proton pump inhibitors, including *Nexium* and *Losec*. In August 2019, the third lawsuit, filed in Quebec, was dismissed.

Onglyza (saxagliptin) and *Kombiglyze* (saxagliptin and metformin)

In the US, AstraZeneca is defending various lawsuits alleging heart failure, cardiac injuries, and/or death from treatment with *Onglyza* or *Kombiglyze*. In February 2018, the Judicial Panel on Multidistrict Litigation ordered the transfer of various pending federal actions to the US District Court for the Eastern District of Kentucky (District Court) for consolidated pre-trial proceedings with the federal actions pending in the District Court. The previously disclosed California State Court coordinated proceeding remains pending in California.

Commercial litigation

Amplimmune

In the US, in June 2017, AstraZeneca was served with a lawsuit filed by the stockholders' agents for Amplimmune, Inc. (Amplimmune) in Delaware State Court that alleged, among other things, breaches of contractual obligations relating to a 2013 merger agreement between AstraZeneca and Amplimmune. Trial is scheduled for February 2020.

Array BioPharma

In the US, in December 2017, AstraZeneca was served with a complaint filed in New York State Court by Array BioPharma, Inc. (Array) that alleged, among other things, breaches of contractual obligations relating to a 2003 collaboration agreement between AstraZeneca and Array.

Ocimum lawsuit

In December 2015, AstraZeneca was served with a complaint filed by Ocimum Biosciences, Ltd. (Ocimum) in the Superior Court for the State of Delaware that alleges, among other things, breaches of contractual obligations and misappropriation of trade secrets, relating to a now terminated 2001 licensing agreement between AstraZeneca and Gene Logic, Inc. (Gene Logic), the rights to which Ocimum purports to have acquired from Gene Logic. In December 2019, the court granted AstraZeneca's motion for summary judgment and dismissed the case.

Seroquel XR Antitrust Litigation

In the US in 2019, AstraZeneca was named in several related complaints brought in the US District Court for the Southern District of New York, including several putative class action lawsuits that were purportedly brought on behalf of classes of direct purchasers or end payors of *Seroquel XR*, that allege AstraZeneca and generic drug manufacturers violated antitrust laws when settling patent litigation related to *Seroquel XR*.

Toprol-XL (metoprolol succinate)

In the US, in October 2016, AstraZeneca completed its sale of certain assets related to the US rights to *Toprol-XL* and AstraZeneca's authorised generic metoprolol succinate product to Aralez Pharmaceuticals Trading DAC (Aralez). In August 2018, Aralez commenced voluntary insolvency proceedings and

29 Commitments and contingent liabilities *continued*

AstraZeneca filed a proof of claim in those proceedings asserting its unsecured claims. In October 2018, Aralez filed a motion in the Bankruptcy Court seeking to sell the US rights to *Toprol-XL* and its authorised generic and AstraZeneca filed an objection to the proposed sale. In March 2019, AstraZeneca entered into an agreement with the senior secured creditor and the settlement has now been approved by the Bankruptcy Court, bringing this matter to a close.

Other commercial litigation

Anti-Terrorism Act Civil Lawsuit

In the US, in October 2017, AstraZeneca and certain other pharmaceutical and/or medical device companies were named as defendants in a complaint filed in the US District Court for the District of Columbia by US nationals (or their estates, survivors, or heirs) who were killed or wounded in Iraq between 2005 and 2011. The plaintiffs allege that the defendants violated the US Anti-Terrorism Act and various state laws by selling pharmaceuticals and medical supplies to the Iraqi Ministry of Health.

Government investigations/proceedings

Crestor (rosuvastatin calcium)

Qui tam litigation

In the US, in January and February 2014, AstraZeneca was served with lawsuits filed in the US District Court for the District of Delaware under the qui tam (whistleblower) provisions of the federal False Claims Act and related state statutes, alleging that AstraZeneca directed certain employees to promote *Crestor* off-label and provided unlawful remuneration to physicians in connection with the promotion of *Crestor*. The DOJ and all US states have declined to intervene in the lawsuits. In March 2019, AstraZeneca filed a motion to dismiss the complaint. Oral argument on the motion to dismiss is scheduled for February 2020.

Iraqi Ministry of Health Anti-Corruption Probe

In July 2018, AstraZeneca, along with other companies, received an inquiry from the DOJ pursuant to the Foreign Corrupt Practices Act in connection with an anti-corruption investigation relating to activities in Iraq, including interactions with the Iraqi government. AstraZeneca is cooperating with the inquiry.

Synagis (palivizumab)

Litigation in New York

In the US, in June 2011, MedImmune received a demand from the US Attorney's Office for the Southern District of New York requesting certain documents related to the sales and marketing activities of *Synagis*. In July 2011, MedImmune received a similar court order to produce documents from the Office of the Attorney General for the State of New York Medicaid and Fraud Control Unit pursuant to what the government attorneys advised was a joint investigation. MedImmune has cooperated with these inquiries. In March 2017, MedImmune was served with a lawsuit filed in the US District Court for the Southern District of New York (District Court) by the Attorney General for the State of New York alleging that MedImmune inappropriately provided assistance to a single specialty care pharmacy. In September 2018, the District Court denied MedImmune's motion to dismiss the lawsuit brought by the Attorney General for the State of New York.

In June 2017, MedImmune was served with a lawsuit in the District Court by a relator under the qui tam (whistleblower) provisions of the federal and certain state False Claims Acts. The lawsuit was originally filed under seal in April 2009 and alleges that MedImmune made false claims about *Synagis*. In November 2017, MedImmune was served with an amended complaint in which the relator set forth additional false claims allegations relating to *Synagis*. In September 2018, the District Court dismissed the relator's lawsuit. In January 2019, the relator appealed the District Court's decision to the US Court of Appeals for the Second Circuit. Oral arguments relating to the appeal are scheduled for February 2020.

Florida Attorney General investigation

In May 2012, MedImmune received a subpoena duces tecum from the Office of Attorney General for the State of Florida Medicaid and Fraud Control Unit requesting certain documents related to the sales and marketing activities of *Synagis*. MedImmune accepted receipt of the request and has coordinated with the Florida government to provide the appropriate responses and cooperate with any related investigation. AstraZeneca is unaware of the nature or focus of the investigation; however, based on the requests, it appears to be similar to the inquiry from the State of New York (described above).

Toprol-XL (metoprolol succinate)

Louisiana Attorney General Litigation

In the US, in March 2015, AstraZeneca was served with a state court complaint filed by the Attorney General for the State of Louisiana (the State) alleging that, in connection with enforcement of its patents for *Toprol-XL*, it had engaged in unlawful monopolisation and unfair trade practices, causing the State government to pay increased prices for *Toprol-XL*.

In April 2019, a Louisiana state court (State Court) granted AstraZeneca's motion for summary judgment dismissing the State's lawsuit and entered judgment in AstraZeneca's favour. The State is appealing the State Court's ruling.

Multi-product litigation

Litigation in Washington State

In the US, in September 2018, a lawsuit against AstraZeneca and several other defendants was unsealed in the US District Court for the Western District of Washington (District Court). The complaint alleged that the defendants violated various laws, including state and federal false claims acts, by offering clinical educator and reimbursement support programmes. In September 2018, the government moved to dismiss the lawsuit against AstraZeneca and similar lawsuits filed against other companies by relator Health Choice Alliance. In November 2019, the District Court granted the government's motion to dismiss.

Other government investigations/proceedings

US Congressional Inquiry

In January 2019, AstraZeneca received a letter from the US House of Representatives Committee on Oversight and Reform seeking information related to pricing practices for *Crestor*. Similar letters were sent to 11 other pharmaceutical manufacturers. We continue to cooperate with the inquiry and have produced certain responsive information.

Additional government inquiries

As is true for most, if not all, major prescription pharmaceutical companies, AstraZeneca is currently involved in multiple inquiries into drug marketing and pricing practices. In addition to the investigations described above, various law enforcement offices have, from time to time, requested information from the Group. There have been no material developments in those matters.

Tax

SE AstraZeneca considers whether it is probable that a taxation authority will accept an uncertain tax treatment. If it is concluded that it is not probable that the taxation authority will accept an uncertain tax treatment, where tax exposures can be quantified, an accrual is made based on either the most likely amount method or the expected value method depending on which method management expects to better predict the resolution of the uncertainty. Accruals can be built up over a long period of time but the ultimate resolution of tax exposures usually occurs at a point in time, and given the inherent uncertainties in assessing the outcomes of these exposures (which sometimes can be binary in nature), we could, in future periods, experience adjustments to these accruals that have a material positive or negative effect on our results in any particular period. Details of the movements in relation to material tax exposures are discussed below.

KJ AstraZeneca faces a number of audits and reviews in jurisdictions around the world and, in some cases, is in dispute with the tax authorities. The issues under discussion are often complex and can require many years to resolve. Accruals for tax contingencies require management to make key judgements with respect to the ultimate outcome of current and potential future tax audits, and actual results could vary from these estimates.

Transfer pricing and other international tax contingencies

The total net accrual included in the Group Financial Statements to cover the worldwide exposure to transfer pricing audits is $140m, a decrease of $72m compared with 2018 mainly as a result of the conclusion of tax authority review.

In addition to these tax exposures, the European Commission (EC) issued its decision on the state aid review of UK Controlled Foreign Company Group Financing Exemption. The EC concluded that part of the UK measures was unlawful and have instructed recovery of the state aid. The UK Government and the Group have appealed the decision. Despite the nature of the complexities of the ruling in relation to the Group's position, the complex tax legislation and taking into account the ongoing appeal, the Group does not expect any additional liability would be material.

Management continues to believe that AstraZeneca's positions on all its transfer pricing and other international tax audits and disputes are robust, and that AstraZeneca is appropriately provided, including consideration of whether corresponding relief will be available under Mutal Agreement procedures or unilaterally. For transfer pricing audits where AstraZeneca and the tax authorities are in dispute, and the state aid matter, AstraZeneca estimates the potential for reasonably possible additional liabilities above and beyond the amount provided to be up to $76m (2018: $357m; 2017: $30m) including associated interest. However, management believes that it is unlikely that these additional liabilities will arise. It is possible that some of these contingencies may reduce in the future to the extent that any tax authority challenge is concluded, or matters lapse following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

Other tax contingencies

Included in the tax accrual is $887m relating to a number of other tax contingencies, an increase of $157m mainly due to the impact of an additional year of transactions relating to contingencies for which accruals had already been established, new tax contingencies in the period partially offset by the transitional adjustments on adoption of IFRIC 23 'Uncertainty over Income Tax Treatments' and exchange rate effects.

For these tax exposures, AstraZeneca estimates the potential for reasonably possible additional losses above and beyond the amount provided to be up to $327m (2018: $253m; 2017: $nil) including associated interest. It is, however, possible that some of these contingencies may reduce in the future if any tax authority challenge is concluded or matters lapse following expiry of the relevant statutes of limitation resulting in a reduction in the tax charge in future periods.

Timing of cash flows and interest

It is not possible to estimate the timing of tax cash flows in relation to each outcome. However, it is anticipated that a number of significant disputes may be resolved over the next one to two years.

Included within other receivables and payables is a net amount of interest arising on tax contingencies of $90m.

30 Statutory and other information

	2019 $m	2018 $m	2017 $m
Fees payable to PricewaterhouseCoopers LLP and its associates:			
Group audit fee	**3.9**	3.8	3.0
Fees payable to PricewaterhouseCoopers LLP and its associates for other services:			
The audit of subsidiaries pursuant to legislation	**8.3**	9.4	5.7
Attestation under s404 of Sarbanes-Oxley Act 2002	**2.0**	2.0	2.0
Audit-related assurance services	**0.3**	0.8	0.4
Tax compliance services	**–**	0.1	–
Other assurance services	**0.1**	0.9	–
Fees payable to PricewaterhouseCoopers Associates in respect of the Group's pension schemes:			
The audit of subsidiaries' pension schemes	**0.3**	0.4	–
	14.9	17.4	11.1

$0.7m of fees payable in 2019 are in respect of the 2018 Group audit and audit of subsidiaries (2018: $3.2m in respect of the 2017 audit).

Related party transactions

The Group had no material related party transactions which might reasonably be expected to influence decisions made by the users of these Financial Statements.

Key management personnel compensation

Key management personnel are defined for the purpose of disclosure under IAS 24 'Related Party Disclosures' as the members of the Board and the members of the SET.

	2019 $'000	2018 $'000	2017 $'000
Short-term employee benefits	**31,329**	32,523	28,274
Post-employment benefits	**1,766**	2,387	2,469
Share-based payments	**19,210**	23,605	16,452
	52,305	58,515	47,195

Total remuneration is included within employee costs (see Note 28).

31 Subsequent events

Following the recommendation from an independent Data Monitoring Committee, AstraZeneca decided in January 2020 to terminate the Phase III STRENGTH trial for *Epanova*, due to its low likelihood of demonstrating a benefit to patients with MDS who are at increased risk of CV disease. This was considered to be an adjusting event after the reporting period, resulting in a full impairment of the *Epanova* intangible asset of $533m recorded in Research and development expense in FY 2019, and a provision for inventory and supply-related costs of $115m recorded in Cost of sales, also in FY 2019.

In January 2020, the Company announced that it had agreed to divest the global commercial rights to a number of established hypertension medicines, including *Inderal*, *Tenormin* and *Zestril* to Atnahs Pharma. Atnahs Pharma will make an upfront payment of $350m to AstraZeneca. AstraZeneca may also receive future sales-contingent payments of up to $40m between 2020 and 2022. Income arising from the upfront and future payments will be reported in AstraZeneca's financial statements within Other operating income and expense. The divestment is expected to complete in the first quarter of 2020.

In January 2020, the Company announced that it will recover the global rights to brazikumab (formerly MEDI2070), a monoclonal antibody targeting IL23, from Allergan. Brazikumab is currently in a Phase IIb/III programme in Crohn's disease and a Phase IIb trial in ulcerative colitis. AstraZeneca and Allergan will terminate their existing license agreement and all rights to brazikumab will revert to AstraZeneca. The transaction is expected to complete in the first quarter of 2020, subject to regulatory approvals associated with AbbVie's proposed acquisition of Allergan and its timely completion. Under the termination agreement, Allergan will fund up to an agreed amount, estimated to be the total costs expected to be incurred by AstraZeneca until completion of development for brazikumab in Crohn's disease and ulcerative colitis, including the development of a companion diagnostic.

Pursuant to the 2012 collaboration between Amgen and AstraZeneca to jointly develop and commercialise a clinical-stage inflammation portfolio, Amgen is entitled to receive a high single-digit to low double-digit royalty on sales of brazikumab if approved and launched. This includes the original inventor royalty. Other than this, AstraZeneca will own all rights and benefits arising from the medicine with no other payments due to Amgen.

In January 2020, AstraZeneca sold a proportion of its equity portfolio receiving consideration of $184m.

Group Subsidiaries and Holdings

In accordance with section 409 of the Companies Act 2006 a full list of subsidiaries, partnerships, associates, joint ventures and joint arrangements, the country of incorporation, registered office address, and the effective percentage of equity owned as at 31 December 2019 are disclosed below. Unless otherwise stated the share capital disclosed comprises ordinary shares which are indirectly held by AstraZeneca PLC.

Unless otherwise stated the accounting year ends of subsidiaries are 31 December. The Group Financial Statements consolidate the Financial Statements of the Company and its subsidiaries at 31 December 2019.

At 31 December 2019	Group Interest
Wholly owned subsidiaries	
Algeria	
AAPM Sarl	100%
20 Zone Macro-Economique, Hydra, Dar El Medina, Algiers, Algeria	
Argentina	
AstraZeneca S.A.	100%
Nicolas de Vedia 3616, Piso 8, Ciudad Autónoma de Buenos Aires, Argentina	
Australia	
AstraZeneca Holdings Pty Limited	100%
AstraZeneca PTY Limited	100%
Pharmaceutical Manufacturing Company Pty Limited	100%
Pharmaceutical Manufacturing Division Pty Limited	100%
66 Talavera Road, Macquarie Park, NSW 2113, Australia	
Austria	
AstraZeneca Österreich GmbH	100%
A-1030 Wien, Landstraßer Hauptstraße 1A, Austria	
Belgium	
AstraZeneca S.A. / N.V.	100%
Alfons Gossetlaan 40 bus 201 at 1702 Groot-Bijgaarden, Belgium	
Brazil	
AstraZeneca do Brasil Limitada	100%
Rod. Raposo Tavares, KM 26, 9, Cotia, Brazil	
Bulgaria	
AstraZeneca Bulgaria EOOD	100%
36 Dragan Tzankov Blvd., District Izgrev, Sofia, 1057, Bulgaria	
Canada	
AstraZeneca Canada Inc.[1]	100%
Suite 5000, 1004 Middlegate Road, Ontario, L4Y 1M4, Canada	
Cayman Islands	
AZ Reinsurance Limited	100%
18 Forum Lane, 2nd Floor, Camana Bay, Grand Cayman, P.O. BOX 69, Cayman Islands	
Chile	
AstraZeneca S.A.	100%
AstraZeneca Farmaceutica Chile Limitada	100%
Av. Isidora Goyenechea 3477, 2nd Floor, Las Condes, Santiago, Chile	
China	
AstraZeneca Pharmaceuticals Co., Limited	100%
No. 2, Huangshan Road, Wuxi New District, China	
AstraZeneca (Wuxi) Trading Co. Ltd	100%
Building E (Building No. 5), Huirong Commercial Plaza, East Jinghui Road, Xinwu District, Wuxi, China	
AstraZeneca Investment (China) Co., Ltd	100%
No. 199 Liangjing Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, China	
AstraZeneca Pharmaceutical (China) Co. Ltd	100%
No. 88 Yaocheng Avenue, Taizhou, Jiangsu Province, China	
AstraZeneca Pharmaceuticals Technologies (Beijing) Co., Ltd	100%
Unit 2203, 22F, No 8, Jianguomenwai Avenue, Chaoyang District, Beijing, China	
Colombia	
AstraZeneca Colombia S.A.S.	100%
Carrera 7 No. 71-21, Torre A, Piso 19, Bogota, D.C., Colombia	
Costa Rica	
AstraZeneca CAMCAR Costa Rica, S.A.	100%
Escazu, Guachipelin, Centro Corporativo Plaza Roble, Edificio Los Balcones, Segundo Nivel, San Jose, Costa Rica	
Croatia	
AstraZeneca d.o.o.	100%
Radnicka cesta 80, 10000 Zagreb, Croatia	
Czech Republic	
AstraZeneca Czech Republic, s.r.o.	100%
U Trezorky 921/2, 158 00 Prague 5, Czech Republic	
Denmark	
AstraZeneca A/S	100%
World Trade Center Ballerup, Borupvang 3, DK- 2750 Ballerup, Denmark	
Egypt	
AstraZeneca Egypt for Pharmaceutical Industries JSC	100%
Villa 133, Road 90 North, New Cairo, Egypt	
AstraZeneca Egypt for Trading LLC	100%
14C Ahmed Kamel Street, New Maadi, Cairo, Egypt	
Drimex LLC	100%
Villa 47, Road 270, New Maadi, Cairo 11435, Egypt	
Estonia	
AstraZeneca Eesti OÜ	100%
Valukoja 8, Ülemiste City, Tallinn 11415, Estonia	
Finland	
AstraZeneca OY.	100%
Itsehallintokuja 4, Espoo, 02600, Finland	
France	
AstraZeneca S.A.S.	100%
AstraZeneca Finance S.A.S.	100%
AstraZeneca Holding France S.A.S.	100%
Tour Carpe Diem-31, Place des Corolles, 92400 Courbevoie, France	
AstraZeneca Dunkerque Production SCS	100%
224 Avenue de la Dordogne, 59640 Dunkerque, France	
Germany	
AstraZeneca Holding GmbH	100%
AstraZeneca GmbH	100%
Tinsdaler Weg 183, Wedel, D-22880, Germany	
Sofotec GmbH	100%
Benzstrasse 1-3, 61352, Bad Homburg v.d. Hohe, Germany	
Definiens GmbH[2]	100%
Bernhard-Wicki-Straße 5, 80636, Munich, Germany	
Greece	
AstraZeneca S.A.	100%
Agisilaou 6-8 str., Marousi-Athens, 15123, Greece	
Hong Kong	
AstraZeneca Hong Kong Limited	100%
Unit 1 – 3, 11/F., 18 King Wah Road, North Point, Hong Kong	
Hungary	
AstraZeneca Kft	100%
1st floor, 4 building B, Alíz str., Budapest, 1117, Hungary	
India	
AstraZeneca India Private Limited[3]	100%
Block A, Neville Tower, 11th Floor, Ramanujan IT SEZ, Taramani, Chennai, Tamil Nadu, PIN 600113, India	
Iran	
AstraZeneca Pars Company	100%
Suite 1, 1st Floor No. 39, Alvand Ave., Argantin Sq., Tehran 1516673114, Iran	

Group Subsidiaries and Holdings
continued

At 31 December 2019	Group Interest
Ireland	
AstraZeneca Pharmaceuticals (Ireland) Designated Activity Company	100%
4th Floor, South Bank House, Barrow Street, Dublin, 4, Republic of Ireland	
Israel	
AstraZeneca (Israel) Ltd	100%
6 Hacharash St., Hod Hasharon, 4524075, Israel	
Italy	
Simesa SpA	100%
AstraZeneca SpA	100%
Palazzo Ferraris, via Ludovico il Moro 6/c 20080, Basiglio (Milan), Italy	
Japan	
AstraZeneca K.K.	100%
3-1, Ofuka-cho, Kita-ku, Osaka, 530-0011, Japan	
Kenya	
AstraZeneca Pharmaceuticals Limited	100%
L.R. No.1/1327, Avenue 5, 1st Floor, Rose Avenue, Nairobi, Kenya	
Latvia	
AstraZeneca Latvija SIA	100%
Skanstes iela 50, Riga, LV-1013, Latvia	
Lithuania	
AstraZeneca Lietuva UAB	100%
Spaudos g., Vilnius, LT-05132, Lithuania	
Luxembourg	
AstraZeneca Luxembourg S.A.	100%
Am Brill 7 B – L-3961 Ehlange – Grand Duchy du Luxembourg, Luxembourg	
Malaysia	
AstraZeneca Asia-Pacific Business Services Sdn Bhd	100%
Lot 6.05, Level 6, KPMG Tower, 8 First Avenue, Bandar Utama, 47800 Petaling Jaya, Selangor Darul Ehsan, Malaysia	
AstraZeneca Sdn Bhd	100%
Nucleus Tower, Level 11 & 12, No. 10 Jalan PJU 7/6, Mutiara Damansara, 47800 Petaling Jaya, Selangor Darul Ehsan, Malaysia	
Mexico	
AstraZeneca Health Care Division, S.A. de C.V.	100%
AstraZeneca, S.A. de C.V.	100%
Av. Periferico Sur 4305 interior 5, Colonia Jardines en la Montaña, Mexico City, Tlalpan Distrito Federal, CP 14210, Mexico	
Morocco	
AstraZeneca Maroc SARLAU	100%
92 Boulevard Anfa ETG 2, Casablanca 20000, Morocco	

At 31 December 2019	Group Interest
The Netherlands	
AstraZeneca B.V.	100%
AstraZeneca Continent B.V.	100%
AstraZeneca Gamma B.V.	100%
AstraZeneca Holdings B.V.	100%
AstraZeneca Jota B.V.	100%
AstraZeneca Rho B.V.	100%
AstraZeneca Sigma B.V.	100%
AstraZeneca Treasury B.V.	100%
AstraZeneca Zeta B.V.	100%
Prinses Beatrixlaan 582, 2595BM, The Hague, The Netherlands	
MedImmune Pharma B.V.	100%
Lagelandseweg 78, 6545 CG Nijmegen, The Netherlands	
New Zealand	
AstraZeneca Limited	100%
Pharmacy Retailing (NZ) Limited t/a Healthcare Logistics, 58 Richard Pearse Drive, Mangere, Auckland, 1142, New Zealand	
Nigeria	
AstraZeneca Nigeria Limited	100%
11A, Alfred Olaiya Street, Awuse Estate, Off Salvation Street, Opebi, Ikeja, Lagos, Nigeria	
Norway	
AstraZeneca AS	100%
Fredrik Selmers vei 6 NO-0663 Oslo, Norway	
Pakistan	
AstraZeneca Pharmaceuticals Pakistan (Private) Limited[4]	100%
Office No 1, 2nd Floor, Sasi Arcade, Block 7, Main Clifton Road, Karachi, Pakistan	
Panama	
AstraZeneca CAMCAR, S.A.	100%
Bodega #1, Parque Logistico MIT, Carretera Hacia Coco Solo, Colon, Panama	
Peru	
AstraZeneca Peru S.A.	100%
Calle Las Orquídeas N° 675, Int. 802, Edificio Pacific Tower, San Isidro, Lima, Peru	
Philippines	
AstraZeneca Pharmaceuticals (Phils.) Inc.	100%
16th Floor, Inoza Tower, 40th Street, Bonifacio Global City, Taguig 1634, Philippines	
Poland	
AstraZeneca Pharma Poland Sp.z.o.o.	100%
Postepu 14, 02-676, Warszawa, Poland	

At 31 December 2019	Group Interest
Portugal	
Astra Alpha Produtos Farmaceuticos Lda	100%
AstraZeneca Produtos Farmaceuticos Lda	100%
Novastra Promoção e Comércio Farmacêutico Lda	100%
Novastuart Produtos Farmaceuticos Lda	100%
Stuart-Produtos Farmacêuticos Lda	100%
Zeneca Epsilon – Produtos Farmacêuticos Lda	100%
Zenecapharma Produtos Farmaceuticos, Unipessoal Lda	100%
Rua Humberto Madeira, No 7, Queluz de Baixo, 2730-097, Barcarena, Portugal	
Puerto Rico	
IPR Pharmaceuticals, Inc.	100%
Road 188, San Isidro Industrial Park, Canóvanas, Puerto Rico 00729	
Romania	
AstraZeneca Pharma S.R.L.	100%
12 Menuetului Street, Bucharest Business Park, Building D, West Wing, 1st Floor, Sector 1, Bucharest, 013713, Romania	
Russia	
AstraZeneca Industries, LLC	100%
249006, 1st Vostochny passage, 8, Dobrino village, Borovskiy, Russian Federation	
AstraZeneca Pharmaceuticals, LLC	100%
Building 1, 21 First Krasnogvardeyskiy lane, Floor 30, Rooms 13 and 14, 123100, Moscow, Russian Federation	
Singapore	
AstraZeneca Singapore Pte Limited	100%
10 Kallang Avenue #12-10, Aperia Tower 2, 339510, Singapore	
South Africa	
AstraZeneca Pharmaceuticals (Pty) Limited	100%
17 Georgian Crescent West, Northdowns Office Park, Bryanston, 2191, South Africa	
South Korea	
AstraZeneca Korea Co. Ltd	100%
21st Floor, Asem Tower, 517, Yeongdong-daero, Gangnam-gu, Seoul, 06164, Republic of Korea	
Spain	
AstraZeneca Farmaceutica Holding Spain, S.A.	100%
AstraZeneca Farmaceutica Spain S.A.	100%
Laboratorio Beta, S.A.	100%
Laboratorio Lailan, S.A.	100%
Laboratorio Odin, S.A.	100%
Laboratorio Tau S.A.	100%
Parque Norte, Edificio Álamo, C/Serrano Galvache no 56., 28033 Madrid, Spain	

At 31 December 2019	Group Interest
Sweden	
Astra Export & Trading Aktiebolag	100%
Astra Lakemedel Aktiebolag	100%
AstraZeneca AB	100%
AstraZeneca Biotech AB	100%
AstraZeneca BioVentureHub AB	100%
AstraZeneca Holding Aktiebolag[5]	100%
AstraZeneca International Holdings Aktiebolag[6]	100%
AstraZeneca Nordic AB	100%
AstraZeneca Pharmaceuticals Aktiebolag	100%
AstraZeneca Södertälje 2 AB	100%
Stuart Pharma Aktiebolag	100%
Tika Lakemedel Aktiebolag	100%
SE-151 85 Södertälje, Sweden	
Aktiebolaget Hassle	100%
Symbicom Aktiebolag[6]	100%
431 83 Molndal, Sweden	
Astra Tech International Aktiebolag	100%
Box 14, 431 21 Molndal, Sweden	
Switzerland	
AstraZeneca AG	100%
Neuhofstrasse 34, 6340 Baar, Switzerland	
Spirogen Sarl[6]	100%
Rue du Grand-Chêne 5, CH-1003 Lausanne, Switzerland	
Taiwan	
AstraZeneca Taiwan Limited	100%
21st Floor, Taipei Metro Building 207, Tun Hwa South Road, SEC 2 Taipei, Taiwan, Republic of China	
Thailand	
AstraZeneca (Thailand) Limited	100%
Asia Centre 19th floor, 173/20, South Sathorn Rd, Khwaeng Thungmahamek, Khet Sathorn, Bangkok, 10120, Thailand	
Tunisia	
AstraZeneca Tunisie SaRL	100%
Lot n°1.5.5 les jardins du lac, bloc B les berges du lac Tunis, Tunisia	
Turkey	
AstraZeneca Ilac Sanayi ve Ticaret Limited Sirketi	100%
YKB Plaza, B Blok, Kat:3-4, Levent/ Beşiktaş, Istanbul, Turkey	
Zeneca Ilac Sanayi Ve Ticaret Anonim Sirketi	100%
Büyükdere Cad., Y.K.B. Plaza, B Blok, Kat:4, Levent/Beşiktaş, Istanbul, Turkey	

At 31 December 2019	Group Interest
Ukraine	
AstraZeneca Ukraina LLC	100%
54 Simi Prakhovykh street, Kiev, 01033, Ukraine	
United Arab Emirates	
AstraZeneca FZ-LLC	100%
P.O. Box 505070, Block D, Dubai Healthcare City, Oud Mehta Road, Dubai, United Arab Emirates	
United Kingdom	
Ardea Biosciences Limited	100%
Arrow Therapeutics Limited	100%
Astra Pharmaceuticals Limited	100%
AstraPharm[6]	100%
AstraZeneca China UK Limited	100%
AstraZeneca Death In Service Trustee Limited	100%
AstraZeneca Employee Share Trust Limited	100%
AstraZeneca Finance Limited	100%
AstraZeneca Intermediate Holdings Limited[5]	100%
AstraZeneca Investments Limited	100%
AstraZeneca Japan Limited	100%
AstraZeneca Nominees Limited	100%
AstraZeneca Quest Limited	100%
AstraZeneca Share Trust Limited	100%
AstraZeneca Sweden Investments Limited	100%
AstraZeneca Treasury Limited[6]	100%
AstraZeneca UK Limited	100%
AstraZeneca US Investments Limited[5]	100%
AZENCO2 Limited	100%
AZENCO4 Limited	100%
Cambridge Antibody Technology Group Limited	100%
KuDOS Horsham Limited	100%
KuDOS Pharmaceuticals Limited	100%
Zenco (No. 8) Limited	100%
Zeneca Finance (Netherlands) Company	100%
1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge, CB2 0AA, United Kingdom	
MedImmune Limited	100%
Milstein Building, Granta Park, Cambridge, CB21 6GH, United Kingdom	
MedImmune U.K. Limited	100%
Plot 6, Renaissance Way, Boulevard Industry Park, Liverpool, L24 9JW, United Kingdom	

At 31 December 2019	Group Interest
United States	
Amylin Ohio LLC[7]	100%
Amylin Pharmaceuticals, LLC[7]	100%
AstraZeneca Collaboration Ventures, LLC[7]	100%
AstraZeneca Pharmaceuticals LP[8]	100%
Atkemix Nine Inc.	100%
Atkemix Ten Inc.	100%
BMS Holdco, Inc.	100%
Corpus Christi Holdings Inc.	100%
Omthera Pharmaceuticals, Inc.	100%
Optein, Inc.	100%
Stauffer Management Company LLC[7]	100%
Zeneca Holdings Inc.	100%
Zeneca Inc.	100%
Zeneca Wilmington Inc.[5]	100%
1800 Concord Pike, Wilmington, DE 19803, United States	
ZS Pharma Inc.	100%
1100 Park Place, Suite 300, San Mateo, CA 94403, United States	
AlphaCore Pharma, LLC[7]	100%
333 Parkland Plaza, Suite 5, Ann Arbor, MI 48103, United States	
AZ-Mont Insurance Company	100%
76 St Paul Street, Suite 500, Burlington, VT 05401, United States	
Definiens Inc.	100%
1808 Aston Avenue, Suite 190, Carlsbad, CA 92008, United States	
MedImmune, LLC[7]	100%
MedImmune Ventures, Inc.	100%
One MedImmune Way, Gaithersburg, MD 20878, United States	
Pearl Therapeutics, Inc.	100%
200 Cardinal Way, Redwood City, CA 94063, United States	
Uruguay	
AstraZeneca S.A.	100%
Yaguarón 1407 of 1205, 11.100, Montevideo, Uruguay	
Venezuela	
AstraZeneca Venezuela S.A.	100%
Gotland Pharma S.A.	100%
Av. La Castellana, Torre La Castellana, Piso 5, Oficina 5-G, 5-H, 5-I, Urbanización La Castellana, Municipio Chacao, Estado Bolivariano de Miranda, Venezuela	
Vietnam	
AstraZeneca Vietnam Company Limited	100%
18th Floor, A&B Tower, 76 Le Lai, Ben Thanh Ward, District 1, Ho Chi Minh City, Vietnam	

Group Subsidiaries and Holdings
continued

At 31 December 2019	Group Interest
Subsidiaries where the effective interest is less than 100%	
Algeria	
SPA AstraZeneca Al Djazair[9]	65.77%
No 20 Zone Macro Economique, dar El Medina-Hydra, Alger, Algeria	
India	
AstraZeneca Pharma India Limited[3]	75%
Block N1, 12th Floor, Manyata Embassy Business Park, Rachenahalli, Outer Ring Road, Bangalore-560 045, India	
Indonesia	
P.T. AstraZeneca Indonesia	95%
Perkantoran Hijau Arkadia Tower F, 3rd Floor, Jl. T.B. Simatupang Kav. 88, Jakarta, 12520, Indonesia	
The Netherlands	
Acerta Pharma B.V.	55%
Aspire Therapeutics B.V.	55%
Kloosterstraat 9, 5349 AB, Oss, The Netherlands	
United States	
Acerta Pharma LLC[7]	55%
121 Oyster Point Boulevard, South San Francisco, CA 94080, United States	
Joint Ventures	
Hong Kong	
WuXi MedImmune Biopharmaceutical Co., Limited	50%
Room 1902, 19/F, Lee Garden One, 33 Hysan Avenue, Causeway Bay, Hong Kong	
United Kingdom	
Archigen Biotech Limited[9]	50%
Centus Biotherapeutics Limited[9]	50%
1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge, CB2 0AA, United Kingdom	
United States	
Montrose Chemical Corporation of California	50%
Suite 380, 600 Ericksen Ave N/E, Bainbridge Island, United States	

At 31 December 2019	Group Interest
Significant Holdings	
Australia	
Armaron Bio Ltd[10]	22.07%
MPR Group, HWT Tower, Level 19, 40 City Rd, Southbank, VIC 3006, Australia	
China	
Dizal (Jiangsu) Pharmaceutical Co., Ltd.[11]	43.6%
Suite 4105, Building E (Building No.5) of Huirong Plaza, East Jinghui Road, Xinwu District, Wuxi, Jiangsu Province, China	
United Kingdom	
Apollo Therapeutics LLP[7]	25%
Stevenage Biosciences Catalyst, Gunnels Wood Road, Stevenage, Hertfordshire, SG1 2FX, United Kingdom	
United States	
C.C. Global Chemicals Company[8]	37.5%
PO Box 7, MS2901, Texas, TX76101-0007, United States	
Viela Bio, Inc.	28.75%
One MedImmune Way, First Floor, Area Two, Gaithersburg, MD 20878, United States	

At 31 December 2019	Group Interest
Associated Holdings	
Sweden	
Sweden Orphan Biovitrum AB	8.06%
Tomtebodavägen 23A, Stockholm, Sweden	
Switzerland	
ADC Therapeutics Sàrl[12]	6.66%
Biopôle, Route de la Corniche 3B, 1066 Epalinges, Switzerland	
United Kingdom	
Circassia Pharmaceuticals PLC	18.9%
The Magdalen Centre, Robert Robinson Avenue, Oxford Science Park, Oxford, Oxfordshire, OX4 4GA, United Kingdom	
United States	
AbMed Corporation[13]	18%
68 Cummings Park Drive, Woburn, MA 01801, United States	
Aevi Genomic Medicine, Inc.	16.7%
435 Devon Park Drive, Suite 715, Wayne, PA 19087, United States	
Affinita Biotech, Inc.[14]	16.23%
329 Oyster Point Blvd., 3rd Floor, South San Francisco, CA 94080, United States	
Aristea Therapeutics, Inc.[15]	15%
122770 High Bluff Drive, #380, San Diego, CA 92130, United States	
Baergic Bio, Inc.	19.95%
2 Gansevoort Street, 9th Floor, New York, NY 10014, United States	
Corvidia Corporation[16]	12%
35 Gatehouse Drive, Waltham, MA 02451, United States	
Entasis Therapeutics Holdings Inc.	16.29%
35 Gatehouse Drive, Waltham, MA 02451, United States	
Moderna Therapeutics, Inc.	7.65%
200 Technology Square, Cambridge, MA 02139, United States	
PhaseBio Pharmaceuticals, Inc.	10.44%
One Great Valley, Parkway, Suite 30, Malvern, PA 19355, United States	
Employee Benefit Trust	
The AstraZeneca Employee Benefit Trust	

[1] Ownership held in ordinary and class B special shares.
[2] Ownership held in common shares, preferred shares 2003, preferred shares 2003 ex (A), preferred shares 2003 ex (B), preferred shares Series D, preferred shares Series E and preferred shares Series F.
[3] Accounting year end is 31 March.
[4] Accounting year end is 30 June.
[5] Directly held by AstraZeneca PLC.
[6] Ownership held in Ordinary A shares and Ordinary B shares.
[7] Ownership held as membership interest.
[8] Ownership held as partnership interest.
[9] Ownership held in class A shares.
[10] Ownership held in class B preference shares.
[11] Voting rights and percentages vary depending on the subject matter and business to be voted on.
[12] Ownership held in class B preference shares, class C preference shares, class D preference shares and class E preference shares.
[13] Ownership held in common shares and series A preferred shares.
[14] Ownership held in Class A voting and Class A non-voting shares.
[15] Ownership held in series A-1 preferred stock.
[16] Ownership held in series A preferred stock and series B preferred stock.

Company Balance Sheet
at 31 December

AstraZeneca PLC

	Notes	2019 $m	2018 $m
Fixed assets			
Fixed asset investments	1	**31,525**	33,244
Current assets			
Debtors – other		**1**	–
Debtors – amounts owed by Group undertakings		**8,755**	4,466
		8,756	4,466
Creditors: Amounts falling due within one year			
Non-trade creditors	2	**(164)**	(383)
Interest-bearing loans and borrowings	3	**(1,597)**	(999)
		(1,761)	(1,382)
Net current assets		**6,995**	3,084
Total assets less current liabilities		**38,520**	36,328
Creditors: Amounts falling due after more than one year			
Amounts owed to Group undertakings	3	**(283)**	(283)
Interest-bearing loans and borrowings	3	**(15,376)**	(17,013)
		(15,659)	(17,296)
Net assets		**22,861**	19,032
Capital and reserves			
Called-up share capital	4	**328**	317
Share premium account		**7,941**	4,427
Capital redemption reserve		**153**	153
Other reserves		**2,441**	2,533
Profit and loss account		**11,998**	11,602
Shareholders' funds		**22,861**	19,032

$m means millions of US dollars.

The Company's profit for the year was $3,975m (2018: $266m).

The Company Financial Statements from page 231 to 235 were approved by the Board and were signed on its behalf by

Pascal Soriot
Director

Marc Dunoyer
Director

14 February 2020

Company's registered number 02723534

Company Statement of Changes in Equity
for the year ended 31 December

	Share capital $m	Share premium account $m	Capital redemption reserve $m	Other reserves $m	Profit and loss account $m	Total equity $m
At 1 January 2018	317	4,393	153	2,549	14,874	22,286
Total comprehensive income for the period						
Profit for the period	–	–	–	–	266	266
Amortisation of loss on cash flow hedge	–	–	–	–	1	1
Total comprehensive income for the period	–	–	–	–	267	267
Transactions with owners, recorded directly in equity						
Dividends	–	–	–	–	(3,539)	(3,539)
Capital contributions for share-based payments	–	–	–	(16)	–	(16)
Issue of Ordinary Shares	–	34	–	–	–	34
Total contributions by and distributions to owners	–	34	–	(16)	(3,539)	(3,521)
At 31 December 2018	317	4,427	153	2,533	11,602	19,032
Total comprehensive income for the period						
Profit for the period	**–**	**–**	**–**	**–**	**3,975**	**3,975**
Amortisation of loss on cash flow hedge	**–**	**–**	**–**	**–**	**–**	**–**
Total comprehensive income for the period	**–**	**–**	**–**	**–**	**3,975**	**3,975**
Transactions with owners, recorded directly in equity						
Dividends	**–**	**–**	**–**	**–**	**(3,579)**	**(3,579)**
Capital contributions for share-based payments	**–**	**–**	**–**	**(92)**	**–**	**(92)**
Issue of Ordinary Shares	**11**	**3,514**	**–**	**–**	**–**	**3,525**
Total contributions by and distributions to owners	**11**	**3,514**	**–**	**(92)**	**(3,579)**	**(146)**
At 31 December 2019	**328**	**7,941**	**153**	**2,441**	**11,998**	**22,861**

At 31 December 2019, the overwhelming majority of the Profit and loss account reserve of $11,998m was available for distribution, subject to filing these Financial Statements with Companies House. The Other reserves arose from the cancellation of £1,255m share premium by the Company in 1993 and the redenomination of share capital of $157m in 1999.

Also included within Other reserves at 31 December 2019 is $600m (31 December 2018: $692m) in respect of cumulative share-based payment awards. These amounts are not available for distribution.

Company Accounting Policies

Basis of presentation of financial information

These financial statements were prepared in accordance with FRS 101 'Reduced Disclosure Framework'.

In preparing these financial statements, the Company applied the recognition, measurement and disclosure requirements of International Financial Reporting Standards as adopted by the EU (Adopted IFRSs), but makes amendments where necessary in order to comply with the Companies Act 2006 and has set out below where advantage of the FRS 101 disclosure exemptions has been taken.

In these financial statements, the Company has applied the exemptions available under FRS 101 in respect of the following disclosures:

- Statement of Cash Flows and related notes
- disclosures in respect of transactions with wholly owned subsidiaries
- disclosures in respect of capital management
- the effects of new but not yet effective IFRSs
- disclosures in respect of the compensation of Key Management Personnel.

As the Group Financial Statements (presented on pages 168 to 230) include the equivalent disclosures, the Company has also taken the exemptions under FRS 101 available in respect of the following disclosures:

- IFRS 2 'Share-based Payment' in respect of Group settled share-based payments
- certain disclosures required by IFRS 13 'Fair Value Measurement' and the disclosures required by IFRS 7 'Financial Instrument Disclosures'.

No individual profit and loss account is prepared as provided by section 408 of the Companies Act 2006.

The accounting policies set out below have, unless otherwise stated, been applied consistently to all periods presented in these financial statements.

Basis of accounting

The Company Financial Statements are prepared under the historical cost convention, in accordance with the Companies Act 2006.

The following paragraphs describe the main accounting policies, which have been applied consistently.

Foreign currencies

Profit and loss account items in foreign currencies are translated into US dollars at average rates for the relevant accounting periods. Monetary assets and liabilities are translated at exchange rates prevailing at the date of the Company Balance Sheet. Exchange gains and losses on loans and on short-term foreign currency borrowings and deposits are included within Finance expense. Exchange differences on all other foreign currency transactions are recognised in Operating profit.

Taxation

The current tax payable is based on taxable profit for the year. Taxable profit differs from reported profit because taxable profit excludes items that are either never taxable or tax deductible or items that are taxable or tax deductible in a different period. The Company's current tax assets and liabilities are calculated using tax rates that have been enacted or substantively enacted by the reporting date.

Deferred tax is provided using the balance sheet liability method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. Deferred tax assets are recognised to the extent that it is probable that taxable profit will be available against which the asset can be utilised. This requires judgements to be made in respect of the availability of future taxable income.

No deferred tax asset or liability is recognised in respect of temporary differences associated with investments in subsidiaries and branches where the Company is able to control the timing of reversal of the temporary differences and it is probable that the temporary differences will not reverse in the foreseeable future.

The Company's deferred tax assets and liabilities are calculated using tax rates that are expected to apply in the period when the liability is settled or the asset realised based on tax rates that have been enacted or substantively enacted by the reporting date.

Accruals for tax contingencies require management to make judgements of potential exposures in relation to tax audit issues. Tax benefits are not recognised unless the tax positions will probably be accepted by the authorities. This is based upon management interpretation of applicable laws and regulations and the expectation of how the tax authority will resolve the matter. Once considered probable of not being sustained, management reviews each material tax benefit to assess whether a provision should be taken against full recognition of the benefit on the basis of potential settlement through negotiation and/or litigation.

Accruals for tax contingencies are measured using either the most likely amount or the expected value amount depending on which method the Company expect to better predict the resolution of the uncertainty.

Investments

Fixed asset investments, including investments in subsidiaries, are stated at cost and reviewed for impairment if there are indications that the carrying value may not be recoverable.

Share-based payments

The issuance by the Company to employees of its subsidiaries of a grant of awards over the Company's shares, represents additional capital contributions by the Company to its subsidiaries. An additional investment in subsidiaries results in a corresponding increase in shareholders' equity. The additional capital contribution is based on the fair value of the grant issued, allocated over the underlying grant's vesting period, less the market cost of shares charged to subsidiaries in settlement of such share awards.

Financial instruments

Interest-bearing loans are initially measured at fair value (with direct transaction costs being amortised over the life of the loan) and are subsequently measured at amortised cost using the effective rate method at each reporting date. Changes in carrying value are recognised in profit.

Litigation

Through the normal course of business, the AstraZeneca Group is involved in legal disputes, the settlement of which may involve cost to the Company. Provision is made where an adverse outcome is probable and associated costs can be estimated reliably. In other cases, appropriate descriptions are included.

Notes to the Company Financial Statements

1 Fixed asset investments

	Investments in subsidiaries		
	Shares $m	**Loans $m**	**Total $m**
At 1 January 2019	**15,942**	**17,302**	**33,244**
Transfer to current assets	**–**	**(1,595)**	**(1,595)**
Capital reimbursement	**(81)**	**–**	**(81)**
Exchange	**–**	**(55)**	**(55)**
Amortisation	**–**	**12**	**12**
At 31 December 2019	**15,861**	**15,664**	**31,525**

A list of subsidiaries is included on pages 227 to 230.

2 Non-trade creditors

	2019 $m	2018 $m
Amounts due within one year		
Short-term borrowings	**–**	211
Other creditors	**157**	165
Amounts owed to Group undertakings	**7**	7
	164	383

3 Loans

		Repayment dates	**2019 $m**	2018 $m
Amounts due within one year				
Interest-bearing loans and borrowings (unsecured)				
1.95% Callable bond	US dollars	2019	**–**	999
2.375% Callable bond	US dollars	2020	**1,597**	–
			1,597	999
Amounts due after more than one year				
Amounts owed to Group undertakings (unsecured)				
7.2% Loan	US dollars	2023	**283**	283
Interest-bearing loans and borrowings (unsecured)				
2.375% Callable bond	US dollars	2020	**–**	1,594
0.875% Non-callable bond	euros	2021	**837**	854
0.25% Callable bond	euros	2021	**559**	570
Floating rate note	US dollars	2022	**250**	250
2.375% Callable bond	US dollars	2022	**996**	994
Floating rate note	US dollars	2023	**400**	400
3.5% Callable bond	US dollars	2023	**846**	845
0.75% Callable bond	euros	2024	**1,003**	1,022
3.375% Callable bond	US dollars	2025	**1,983**	1,980
3.125% Callable bond	US dollars	2027	**743**	743
1.25% Callable bond	euros	2028	**885**	903
4% Callable bond	US dollars	2029	**992**	992
5.75% Non-callable bond	Pounds sterling	2031	**457**	443
6.45% Callable bond	US dollars	2037	**2,721**	2,721
4% Callable bond	US dollars	2042	**987**	987
4.375% Callable bond	US dollars	2045	**980**	979
4.375% Callable bond	US dollars	2048	**737**	736
Total amounts due after more than one year			**15,659**	17,296
Total loans			**17,256**	18,295

	2019 $m	2018 $m
Loans are repayable:		
After five years from balance sheet date	**10,485**	11,506
From two to five years	**3,778**	4,196
From one to two years	**1,396**	1,594
Within one year	**1,597**	999
Total unsecured	**17,256**	18,295

All bonds are issued with fixed interest rates with an exception of two bonds, the 2022 and the 2023 floating rate notes. This might impact the fair values of loans as they will change according to changes in the market rate. Since the loans are held at amortised cost, changes in interest rates and the credit rating of the Company do not have an effect on the Company's net assets. IFRS 9 has been adopted from January 2018 onwards. The recoverability of all inter company loans has been assessed in accordance with IFRS 9 and no impairment was identified and thus, no provision was required. The inter company balances are considered to have low credit risk due to timely payment of interest and settlement of principal amount on agreed due dates. Hence, the loss allowance is therefore limited to 12 month expected credit losses. In 2019, there have been no credit losses (2018: nil).

4 Share capital

Details of share capital movements in the year are included in Note 24 to the Group Financial Statements.

5 Contingent liabilities

The Company has guaranteed the external borrowing of a subsidiary in the amount of $286m (2018: $286m).

6 Statutory and other information

The Directors of the Company were paid by another Group company in 2019 and 2018.

7 Subsequent events

No subsequent events having material impact on the financial statements were identified after the balance sheet date.

Group Financial Record

For the year ended 31 December	2015 $m	2016 $m	2017 $m	2018 $m	**2019 $m**
Revenue and profits					
Product Sales	23,641	21,319	20,152	21,049	**23,565**
Collaboration Revenue	1,067	1,683	2,313	1,041	**819**
Cost of sales	(4,646)	(4,126)	(4,318)	(4,936)	**(4,921)**
Distribution costs	(339)	(326)	(310)	(331)	**(339)**
Research and development expense	(5,997)	(5,890)	(5,757)	(5,932)	**(6,059)**
Selling, general and administrative costs	(11,112)	(9,413)	(10,233)	(10,031)	**(11,682)**
Other operating income and expense	1,500	1,655	1,830	2,527	**1,541**
Operating profit	4,114	4,902	3,677	3,387	**2,924**
Finance income	46	67	113	138	**172**
Finance expense	(1,075)	(1,384)	(1,508)	(1,419)	**(1,432)**
Share of after tax losses in associates and joint ventures	(16)	(33)	(55)	(113)	**(116)**
Profit before tax	3,069	3,552	2,227	1,993	**1,548**
Taxation	(243)	(146)	641	57	**(321)**
Profit for the period	2,826	3,406	2,868	2,050	**1,227**
Other comprehensive income for the period, net of tax	(338)	(1,778)	639	(1,059)	**(611)**
Total comprehensive income for the period	2,488	1,628	3,507	991	**616**
Profit attributable to:					
Owners of the Parent	2,825	3,499	3,001	2,155	**1,335**
Non-controlling interests	1	(93)	(133)	(105)	**(108)**
Earnings per share					
Basic earnings per $0.25 Ordinary Share	$2.23	$2.77	$2.37	$1.70	**$1.03**
Diluted earnings per $0.25 Ordinary Share	$2.23	$2.76	$2.37	$1.70	**$1.03**
Dividends	$2.80	$2.80	$2.80	$2.80	**$2.80**
Return on revenues					
Operating profit as a percentage of Total Revenue	16.7%	21.3%	16.4%	15.3%	**12.0%**
Ratio of earnings to fixed charges	11.3	8.9	4.4	3.7	**3.0**

At 31 December	2015 $m	2016 $m	2017 $m	2018 $m	**2019 $m**
Statement of Financial Position					
Property, plant and equipment, right-of-use assets, goodwill and intangible assets	40,859	46,092	45,628	41,087	**40,836**
Other non-current assets	1,896	2,070	2,387	1,594	**2,260**
Deferred tax assets	1,294	1,102	2,189	2,379	**2,718**
Current assets	16,007	13,262	13,150	15,591	**15,563**
Total assets	60,056	62,526	63,354	60,651	**61,377**
Current liabilities	(14,869)	(15,256)	(16,383)	(16,292)	**(18,133)**
Deferred tax liabilities	(2,665)	(3,956)	(3,995)	(3,286)	**(2,490)**
Other non-current liabilities	(24,013)	(26,645)	(26,334)	(27,029)	**(26,174)**
Net assets	18,509	16,669	16,642	14,044	**14,596**
Share capital	316	316	317	317	**328**
Reserves attributable to equity holders of the Company	18,174	14,538	14,643	12,151	**12,799**
Non-controlling interests	19	1,815	1,682	1,576	**1,469**
Total equity and reserves	18,509	16,669	16,642	14,044	**14,596**

For the year ended 31 December	2015 $m	2016 $m	2017 $m	2018 $m	**2019 $m**
Cash flows					
Net cash inflow/(outflow) from:					
Operating activities	3,324	4,145	3,578	2,618	**2,969**
Investing activities	(4,239)	(3,969)	(2,328)	963	**(657)**
Financing activities	878	(1,324)	(2,936)	(2,044)	**(1,765)**
	(37)	(1,148)	(1,686)	1,537	**547**

For the purpose of computing the ratio of earnings to fixed charges, earnings consist of the income from continuing ordinary activities before taxation of Group companies and income received from companies owned 50% or less, plus fixed charges. Fixed charges consist of interest on all indebtedness, amortisation of debt discount and expense, and that portion of rental expense representative of the interest factor.

Additional Information

Development Pipeline as at 31 December 2019

AstraZeneca-sponsored or -directed trial

PP Partnered product

New Molecular Entities (NMEs) and significant indications

Regulatory submission dates shown for assets in Phase III and beyond. As disclosure of compound information is balanced by the business need to maintain confidentiality, information in relation to some compounds listed here has not been disclosed at this time.

Phase I

Compound	Mechanism		Area Under Investigation
Oncology			
AZD0466	BCL2/xL		haematological and solid tumours
AZD1390	ATM inhibitor		glioblastoma
AZD4573	CDK9 inhibitor		haematological malignancies
AZD5153	BRD4 inhibitor		solid tumours, haematological malignancies
AZD5991	MCL1 inhibitor		haematological malignancies
AZD9496	selective oestrogen receptor degrader		oestrogen receptor +ve breast cancer
Calquence + ceralasertib	BTK inhibitor + ATR inhibitor		haematological malignancies
Calquence + danvatirsen	BTK inhibitor + STAT3 inhibitor		haematological malignancies
Imfinzi + adavosertib	PD-L1 mAb + Wee1 inhibitor	PP	solid tumours
Imfinzi + RT (platform) CLOVER	PD-L1 mAb + RT	PP	locally-advanced head and neck squamous cell carcinoma, non-small cell lung cancer (NSCLC), small cell lung cancer
Imfinzi + selumetinib	PD-L1 + MEK inhibitor	PP	solid tumours
Imfinzi + tremelimumab	PD-L1 mAb + CTLA-4 mAb	PP	solid tumours
Imfinzi + tremelimumab + CTx	PD-L1 mAb + CTLA-4 mAb + CTx	PP	1st-line pancreatic ductal adenocarcinoma, oesophageal and small cell lung cancer
MEDI1191	IL-12 mRNA		solid tumours
MEDI2228	BCMA antibody drug conjugate		multiple myeloma
MEDI5083	CD40 ligand fusion protein		solid tumours
MEDI5395	rNDV GMCSF		solid tumours
oleclumab + *Tagrisso*	CD73 mAb + EGFR inhibitor		EGFRm NSCLC
CVRM			
AZD2693	NASH resolution		NASH
AZD6615	hypercholesterolemia		CV disease
AZD8233	hypercholesterolemia		CV disease
AZD9977	MCR		CV disease
MEDI6570	LOX-1 mAb		CV disease
MEDI7219	anti-diabetic		type-2 diabetes
Respiratory			
AZD0449	inhaled JAK inhibitor		asthma
AZD1402	inhaled IL-4Ra	PP	asthma
AZD5634	inhaled ENaC		cystic fibrosis
AZD8154	inhaled PI3Kgd		asthma
Other			
AZD0284	RORg		psoriasis/respiratory
AZD4041	orexin 1 receptor antagonist	PP	opioid use disorder
MEDI0618	PAR2 antagonist mAb		osteoarthritis pain
MEDI1341	alpha synuclein mAb	PP	Parkinson's disease
MEDI1814	amyloid beta mAb	PP	Alzheimer's disease
MEDI5117 China	IL-6 mAb-YTE	PP	rheumatoid arthritis

Phase II

Compound	Mechanism		Area Under Investigation
Oncology			
(oleclumab + CTx) or (*Imfinzi* + oleclumab + CTx)	(CD73 mAb + CTx) or (PD-L1 mAb + CD73 mAb + CTx)		metastatic pancreatic cancer
adavosertib	Wee1 inhibitor	PP	ovarian cancer, solid tumours
AZD2811	Aurora B inhibitor		solid tumours, haematological malignancies
AZD4635	A2aR inhibitor		prostate cancer
AZD9833	selective oestrogen receptor degrader		oestrogen receptor +ve breast cancer
capivasertib	AKT inhibitor	PP	breast cancer
capivasertib	AKT inhibitor	PP	prostate cancer
Enhertu	HER2 targeting antibody drug conjugate	PP	HER2-expressing advanced colorectal cancer
Enhertu	HER2 targeting antibody drug conjugate	PP	HER2-over-expressing or -mutated, unresectable and/or metastatic NSCLC
Imfinzi (platform) COAST	PD-L1 mAb + multiple novel oncology therapies	PP	NSCLC
Imfinzi (platform) NeoCOAST	PD-L1 mAb + multiple novel oncology therapies	PP	NSCLC
Imfinzi + AZD4635	PD-L1 mAb + A2aR inhibitor		prostate cancer

Phase II *continued*

Compound	Mechanism		Area Under Investigation
Imfinzi + AZD5069 or *Imfinzi* + danvatirsen	PD-L1 mAb + CXCR2 antagonist or PD-L1 mAb + STAT3 inhibitor	PP	head and neck squamous cell carcinoma, bladder and NSCLC
Imfinzi + FOLFOX + bevacizumab (COLUMBIA 1)	PD-L1 mAb + CTx + VEGF		1st-line metastatic microsatellite-stable colorectal cancer
Imfinzi + *Lynparza* (BAYOU)	PD-L1 mAb + PARP inhibitor	PP	1st-line unresectable stage IV bladder cancer
Imfinzi + *Lynparza* (ORION)	PD-L1 mAb + PARP inhibitor	PP	1st-line metastatic NSCLC
Imfinzi + MEDI0457	PD-L1 mAb + DNA HPV vaccine	PP	head and neck squamous cell carcinoma
Imfinzi + monalizumab	PD-L1 mAb + NKG2a mAb	PP	solid tumours
Imfinzi + oleclumab	PD-L1 mAb + CD73 mAb	PP	solid tumours
Imfinzi + tremelimumab	PD-L1 mAb + CTLA-4 mAb	PP	biliary tract, oesophageal
Imfinzi + tremelimumab	PD-L1 mAb + CTLA-4 mAb	PP	gastric cancer
Lynparza + adavosertib	PARP inhibitor + Wee1 inhibitor	PP	solid tumours
Lynparza + ceralasertib (AZD6738) (VIOLETTE)	PARP inhibitor + ATR inhibitor	PP	breast cancer
Lynparza + *Imfinzi* (MEDIOLA)	PARP inhibitor + PD-L1 mAb	PP	ovarian cancer, breast cancer, gastric cancer and small cell lung cancer
MEDI5752	PD-1/CTLA-4 bispecific mAb		solid tumours
oleclumab + AZD4635	CD73 mAb + A2aR inhibitor		prostate cancer
Tagrisso + selumetinib or savolitinib (TATTON)	EGFR inhibitor + (MEK inhibitor or MET inhibitor)	PP	advanced EGFRm NSCLC
Tagrisso + savolitinib (SAVANNAH)	EGFR inhibitor + MET inhibitor	PP	advanced EGFRm NSCLC
CVRM			
AZD4831	myeloperoxidase		heart failure with a preserved ejection fraction
AZD5718	FLAP		coronary artery disease
AZD8601	VEGF-A		CV disease
cotadutide	GLP-1/glucagon dual agonist		type-2 diabetes, obesity and NASH
MEDI3506	IL-33 mAb		diabetic kidney disease
MEDI5884	cholesterol modulation		CV disease
MEDI6012	LCAT		CV disease
roxadustat	hypoxia-inducible factor prolyl hydroxylase inhibitor		chemotherapy induced anaemia
verinurad	URAT1 inhibitor		chronic kidney disease (CKD)
Respiratory			
abediterol	LABA	PP	asthma/chronic obstructive pulmonary disease (COPD)
AZD7594	inhaled SGRM		asthma/COPD
AZD7986	DPP1	PP	COPD
AZD8871	MABA	PP	COPD
AZD9567	oral SGRM		rheumatoid arthritis/respiratory
MEDI3506	IL-33 mAb		COPD and atopic dermatitis
tezepelumab	TSLP mAb	PP	atopic dermatitis
tezepelumab	TSLP mAb	PP	COPD
Other			
anifrolumab	Type I IFN receptor mAb	PP	lupus nephritis
anifrolumab	Type I IFN receptor mAb	PP	systemic lupus erythematosus (subcutaneous)
MEDI3902[1]	Psl/PcrV bispecific mAb		prevention of nosocomial Pseudomonas aeruginosa pneumonia
MEDI7352	NGF/TNF bispecific mAb		osteoarthritis pain and painful diabetic neuropathy
suvratoxumab[1]	mAb binding to S. aureus toxin		prevention of nosocomial Staphylococcus aureus pneumonia

Phase III/Pivotal Phase II/Registration (listed until launched in all applicable major regions)

				Estimated Filing Acceptance			
Compound	Mechanism	Area Under Investigation		US	EU	Japan	China
Oncology							
capivasertib + CTx CAPItello-290	AKT inhibitor + CTx	1st-line metastatic triple negative breast cancer	PP	2021+	2021+	2021+	2021+
Enhertu (trastuzumab deruxtecan) (DESTINY-Breast01)[2]	HER2 targeting antibody drug conjugate	HER2-Positive, unresectable and/or metastatic breast cancer subjects previously treated with T-DM1	PP	Approved	H2 2020		
Enhertu (trastuzumab deruxtecan) (DESTINY-Breast04)	HER2 targeting antibody drug conjugate	HER2-low, unresectable and/or metastatic breast cancer subjects	PP	2021+			
Enhertu (trastuzumab deruxtecan) (DESTINY-Breast02)	HER2 targeting antibody drug conjugate	HER2-positive, unresectable and/or metastatic breast cancer pretreated with prior standard of care HER2 therapies, including T-DM1	PP	2021			

Development Pipeline
continued

Phase III/Pivotal Phase II/Registration (listed until launched in all applicable major regions) *continued*

Compound	Mechanism	Area Under Investigation		Estimated Filing Acceptance			
				US	EU	Japan	China
Enhertu (trastuzumab deruxtecan) (DESTINY-Gastric01)[2]	HER2 targeting antibody drug conjugate	HER2-overexpressing advanced gastric or gastro-esophageal junction adenocarcinoma patients who have progressed on two prior treatment regimens	PP	N/A	N/A		N/A
Enhertu (trastuzumab deruxtecan) (DESTINY-Breast03)	HER2 targeting antibody drug conjugate	HER2-positive, unresectable and/or metastatic breast cancer subjects previously treated with trastuzumab and taxane	PP	2021+			
Imfinzi + tremelimumab + SoC (NILE)	PL-L1 mAb + CTLA-4 mAb + SoC	1st-line urothelial cancer	PP	2021+	2021+	2021+	
Imfinzi + tremelimumab (DANUBE)	PD-L1 mAb + CTLA-4 mAb	1st-line bladder cancer	PP	H1 2020	H1 2020	H1 2020	H2 2020
Imfinzi + tremelimumab (HIMALAYA)	PD-L1 mAb + CTLA-4 mAb	1st-line hepatocellular carcinoma	PP	2021 (Orphan Drug Designation)	2021	2021	2021+
Imfinzi + tremelimumab (KESTREL)	PD-L1 mAb + CTLA-4 mAb	1st-line head and neck squamous cell carcinoma	PP	H1 2020	H1 2020	H1 2020	
Imfinzi +/- tremelimumab + CRT (ADRIATIC)	PD-L1 mAb +/- CTLA-4 mAb + CRT	1st-line limited-stage small cell lung cancer	PP	2021+	2021+	2021+	2021+
Imfinzi +/- tremelimumab + CTx (POSEIDON)	PD-L1 mAb +/- CTLA-4 mAb + CTx	1st-line NSCLC	PP	2021	2021	2021	
Imfinzi +/- tremelimumab + SoC (CASPIAN)	PD-L1 mAb +/- CTLA-4 mAb + SoC	1st-line extensive-stage small cell lung cancer	PP	Accepted (Orphan Drug Designation)	Accepted	Accepted	H2 2020
Lumoxiti	anti-CD22 recombinant immunotoxin	3rd-line hairy cell leukaemia	PP	Launched (Orphan Drug, Priority Review)	Accepted (Orphan designation)		
Lynparza + *Imfinzi* + bevacizumab (DUO-O)	PARP inhibitor + PD-L1 mAb + VEGF inhibitor	1st-line ovarian cancer	PP	2021+	2021+	2021+	
selumetinib (SPRINT)[3]	MEK inhibitor	paediatric neurofibromatosis type-1	PP	Accepted (Orphan Drug, Breakthrough Designation, Priority Review)	H1 2020 (Orphan designation, Breakthrough Designation)	2020+	H2 2020
CVRM							
Epanova	omega-3 carboxylic acids	severe hypertriglyceridaemia		Approved			
Lokelma	potassium binder	hyperkalaemia		Launched	Launched	Accepted	Approved (Priority Review)
roxadustat	hypoxia-inducible factor prolyl hydroxylase inhibitor	anaemia in myelodysplastic syndrome	PP	2021+			2021+
roxadustat (OLYMPUS ROCKIES)[4]	hypoxia-inducible factor prolyl hydroxylase inhibitor	anaemia in CKD/end-stage renal disease	PP	Accepted			Approved
Respiratory							
Bevespi Aerosphere (PT003)	LABA/LAMA	COPD		Launched	Launched	Launched	Accepted
Breztri Aerosphere (PT010)	LABA/LAMA/ ICS	COPD		Under review	Accepted	Launched	Approved (Priority Review)
Fasenra (CALIMA, SIROCCO, ZONDA, BISE BORA, GREGALE, MIRACLE)	IL-5R mAb	severe uncontrolled asthma	PP	Launched	Launched	Launched	2021+
PT027	ICS/SABA	asthma		2021			
tezepelumab (NAVIGATOR, SOURCE)	TSLP mAb	severe uncontrolled asthma	PP	2021	2021	2021	
Other							
anifrolumab (TULIP)	Type I IFN receptor mAb	systemic lupus erythematosus	PP	H2 2020 (Fast Track Designation)	H2 2020	H2 2020	
nirsevimab	RSV mAb-YTE	passive RSV immunisation	PP	2021+ (Fast Track Designation, Breakthrough Therapy Designation)	2021+ (PRIME eligibility)	2021+	

Phase III/Pivotal Phase II/Registration (listed until launched in all applicable major regions) *continued*

Significant Life-cycle Management

Compound	Mechanism	Area Under Investigation		Estimated Filing Acceptance US	EU	Japan	China
Oncology							
Calquence (ASCEND)	BTK inhibitor	relapsed/refractory chronic lymphocytic leukaemia	PP	Approved (Orphan Drug, Designation Breakthrough Therapy Designation)	Accepted (Orphan designation)	Accepted	
Calquence (ELEVATE-RR)	BTK inhibitor	relapsed/refractory chronic lymphocytic leukaemia, high risk	PP	2021 (Orphan Drug Designation)	2021+ (Orphan designation)		
Calquence (ELEVATE-TN)	BTK inhibitor	1st-line chronic lymphocytic leukaemia	PP	Approved (Orphan Drug Designation, Breakthrough Therapy Designation)	Accepted (Orphan designation)		2021+
Calquence + venetoclax + obinutuzumab	BTK inhibitor + BCL-2 inhibitor + anti-CD20 mAb	1st-line chronic lymphocytic leukaemia	PP	2021+	2021+		2021+
Calquence (ECHO)	BTK inhibitor	1st-line mantle cell lymphoma	PP	2021+ (Orphan Drug Designation)	2021+	2021+	2021+
Imfinzi[5]	PD-L1 mAb	solid tumours	PP				
Imfinzi (PEARL)	PD-L1 mAb	1st-line metastatic NSCLC	PP	2021	2021	2021	2021
Imfinzi (PACIFIC)	PD-L1 mAb	locally advanced (Stage III) NSCLC	PP	Approved (Breakthrough Therapy Designation, Priority Review)	Approved	Approved	Approved
Imfinzi (platform) (BEGONIA)[5]	PD-L1 mAb with paclitaxel and multiple novel oncology therapies	1st-line metastatic triple negative breast cancer	PP				
Imfinzi (platform) (MAGELLAN)[5]	PD-L1 mAb + multiple novel oncology therapies +/- CTx	1st-line metastatic NSCLC	PP				
Imfinzi + azacitidine[6]	PD-L1 mAb + azacitidine	myelodysplastic syndrome	PP				
Imfinzi + CRT (PACIFIC-5, China)	PD-L1 mAb + CRT	locally-advanced (Stage III) NSCLC	PP				2021+
Imfinzi + CRT (PACIFIC-2)	PD-L1 mAb + CRT	locally-advanced (Stage III) NSCLC	PP	2021	2021	2021	
Imfinzi + CTx neoadjuvant (AEGEAN)	PD-L1 mAb + CTx	locally-advanced (Stage I-III) NSCLC	PP	2021	2021	2021	
Imfinzi + CTx (NIAGARA)	PD-L1 mAb + CTx	muscle invasive bladder cancer	PP	2021+	2021+	2021+	
Imfinzi + CTx (TOPAZ-1)	PD-L1 mAb + CTx	1st-line biliary tract cancer	PP	2021+	2021+	2021+	2021+
Imfinzi + VEGF + TACE (EMERALD-1)	PD-L1 mAb + VEGF + TACE	locoregional hepatocellular carcinoma	PP	2021	2021	2021	2021+
Imfinzi + VEGF (EMERALD-2)	PD-L1 mAb + VEGF	adjuvant hepatocellular carcinoma	PP	2021+	2021+	2021+	2021+
Imfinzi post-SBRT (PACIFIC-4)	PD-L1 mAb post-SBRT	Stage I/II NSCLC	PP	2021+	2021+	2021+	2021+
Imfinzi (CALLA)	PD-L1 mAb	locally-advanced cervical cancer	PP	2021+	2021+	2021+	2021+
Imfinzi (POTOMAC)	PD-L1 mAb	non-muscle invasive bladder cancer	PP	2021+	2021+	2021+	N/A
Lynparza (OlympiA)	PARP inhibitor	gBRCA adjuvant breast cancer	PP	2021	2021	2021	
Lynparza (OlympiAD)	PARP inhibitor	gBRCA metastatic breast cancer	PP	Approved (Priority Review)	Approved	Approved (Orphan designation, Priority Review)	Accepted
Lynparza (POLO)	PARP inhibitor	pancreatic cancer	PP	Approved (Orphan Drug Designation, Priority Review)	Accepted		
Lynparza (SOLO-3)	PARP inhibitor	gBRCA PSR ovarian cancer	PP	H2 2020			

Development Pipeline
continued

Significant Life-cycle Management *continued*

Compound	Mechanism	Area Under Investigation		Estimated Filing Acceptance US	EU	Japan	China
Lynparza (basket) MK-7339-002/ LYNK002[5]	PARP inhibitor	HRRm cancer	PP				
Lynparza + abiraterone (PROpel)	PARP inhibitor + NHA	prostate cancer	PP	2021	2021+	2021+	2021+
Lynparza + cediranib (CONCERTO)[5]	PARP inhibitor + VEGF inhibitor	recurrent platinum-resistant ovarian cancer	PP	H2 2020			
Lynparza (PROfound)	PARP inhibitor	prostate cancer	PP	Accepted (Breakthrough Designation, Priority Review)	Accepted	H1 2020	2021+
Lynparza (SOLO-1)	PARP inhibitor	1st-line BRCAm ovarian cancer	PP	Approved (Priority Review)	Approved	Approved	Approved (Priority Review)
Lynparza (SOLO-2)	PARP inhibitor	2nd-line or greater BRCAm PSR ovarian cancer, maintenance monotherapy	PP	Approved (Priority Review)	Approved	Approved (Orphan designation)	Approved
Tagrisso (LAURA)	EGFR inhibitor	stage 3 EGFRm NSCLC		2021+	2021+	2021+	2021+
Tagrisso + CTx (FLAURA2)	EGFR inhibitor + CTx	1st-line advanced EGFRm NSCLC		2021+	2021+		2021+
Tagrisso (ADAURA)	EGFR inhibitor	adjuvant EGFRm NSCLC		2021+	2021+	2021+	2021+
CVRM							
Brilinta/Brilique (HESTIA)	P2Y12 receptor antagonist	prevention of vaso-occlusive crises in paediatric patients with sickle cell disease		2021+	2021		
Brilinta/Brilique (THEMIS)	P2Y12 receptor antagonist	CV outcomes trial in patients with coronary artery disease and type-2 diabetes without a previous history of myocardial infarction or stroke		Accepted	Accepted	Accepted	Accepted
Brilinta/Brilique (THALES)	P2Y12 receptor antagonist	acute ischaemic stroke or transient ischaemic attack		H1 2020	H2 2020		H2 2020
Bydureon (EXSCEL)	GLP-1 receptor agonist	type-2 diabetes outcomes study		Launched	Launched	N/A	Launched
Bydureon BCise (autoinjector)	GLP-1 receptor agonist	type-2 diabetes		Launched	Approved		2021+
Farxiga/Forxiga Dapa-CKD	SGLT-2 inhibitor	renal outcomes and CV mortality in patients with CKD		2021 (Fast Track)	2021	2021	2021
Farxiga/Forxiga Dapa-HF	SGLT-2 inhibitor	worsening heart failure or CV death in patients with chronic HF (HFrEF)		Accepted (Fast Track, Priority Review)	Accepted	Accepted	H1 2020
Farxiga/Forxiga (DECLARE-TIMI 58)	SGLT-2 inhibitor	CV outcomes trial in patients with type-2 diabetes		Launched	Launched		Accepted
Farxiga/Forxiga (DELIVER)	SGLT-2 inhibitor	worsening HF or CV death in patients with chronic HF (HFpEF)		2021+ (Fast Track)	2021+	2021+	2021+
Farxiga/Forxiga (DEPICT)[7]	SGLT-2 inhibitor	type-1 diabetes		Accepted	Launched	Launched	N/A
Farxiga/Forxiga (DETERMINE-Preserved)	SGLT-2 inhibitor	HF with preserved ejection fraction (HFpEF)		2021	N/A		
Farxiga/Forxiga (DETERMINE-Reduced)	SGLT-2 inhibitor	HF with reduced ejection fraction (HFrEF)		2021	N/A		
Qternmet XR/*Qtrilmet* (saxagliptin/ dapagliflozin metformin)	DPP-4 inhibitor/ SGLT-2 inhibitor	type-2 diabetes		Approved	Approved		
Xigduo XR/*Xigduo*	SGLT-2 inhibitor/ metformin FDC	type-2 diabetes		Launched	Launched		2021+
Respiratory							
Breztri (PT010)[5]	LABA/LAMA/ ICS	asthma					
Duaklir Genuair	LABA/LAMA	COPD	PP	Launched	Launched		2021
Fasenra (RESOLUTE)	IL-5R mAb	COPD	PP	2021+	2021+	2021+	
Fasenra (OSTRO, ORCHID, Japan/ China)	IL-5R mAb	nasal polyposis	PP	2021	2021	2021+	2021+
Fasenra (MANDARA)	IL-5R mAb	eosinophilic granulomatosis with polyangiitis		2021+	2021+	2021+	
Symbicort (SYGMA)	ICS/LABA	as-needed use in mild asthma		N/A	H1 2020	N/A	Accepted
Other							
Linzess	GC-C receptor peptide agonist	irritable bowel syndrome with constipation (IBS-C)	PP				Launched
Nexium	proton pump inhibitor	stress ulcer prophylaxis					Accepted

[1] US Fast Track Designation, [2] Phase II registrational study, [3] Registrational Phase IIb study, [4] US submissions based on entire Phase III programme, [5] Phase II LCM, [6] Phase I LCM, [7] FDA complete response letter received (July 2019).

Patent Expiries of Key Marketed Products

Patents covering our products are or may be challenged by third parties. Generic products may be launched 'at risk' and our patents may be revoked, circumvented or found not to be infringed. For more information, please see Risk from page 246. Many of our products are subject to challenges by third parties. Details of material challenges by third parties can be found in Note 29 to the Financial Statements from page 219. The expiry dates shown below include granted SPC/PTE and/or Paediatric Exclusivity periods (as appropriate). In Europe, the exact SPC situation may vary by country as different Patent Offices grant SPCs at different rates. Expiry dates in red relate to new molecular entity patents, the remaining dates relate to other patents. The expiry dates of relevant regulatory data exclusivity periods are not represented in the table below. A number of our products are subject to generic competition in one or more markets.

Key marketed products	Description	US	China	EU[1]	Japan	US Product Sales ($m)			Aggregate Product Sales for China, Japan and Europe[2] ($m)		
						2019	2018	2017	**2019**	2018	2017
Oncology											
Calquence (acalabrutinib)	A selective inhibitor of Bruton's tyrosine kinase indicated for the treatment of chronic lymphocytic leukaemia (CLL) and mantle cell lymphoma (MCL) and in development for the treatment of multiple B-cell malignancies	2026-2032, 2036	2032	2032	2032	**162**	62	–	**–**	–	–
Enhertu (trastuzumab deruxtecan)	A HER2-directed antibody-drug conjugate (ADC) indicated for the treatment of adult patients with unresectable or metastatic HER2-positive breast cancer who have received two or more prior anti-HER2 based regimens in the metastatic setting	2033	2033-2035	2033-2035	2033-2035[3]	**–**	–	–	**–**	–	–
Faslodex (fulvestrant)	An injectable oestrogen receptor antagonist. Used for the treatment of hormone receptor positive advanced breast cancer that has progressed following treatment with prior endocrine therapy	2021[4]	expired	2021	2026	**328**	537	492	**449**	382	352
Imfinzi (durvalumab)	A human monoclonal antibody that blocks PD-L1 interaction with PD-1 and CD80 on T-cells, countering the tumour's immune-evading tactics and inducing an immune response. It is currently indicated for the treatment of locally advanced or metastatic urothelial carcinoma and unresectable Stage III non-small cell lung cancer (NSCLC)	2030	2030	2030	2033	**1,041**	564	19	**390**	62	–
Iressa (gefitinib)	An epidermal growth factor receptor-tyrosine kinase inhibitor (EGFR-TKI) that acts to block signals for cancer cell growth and survival in advanced NSCLC	expired[5]	2023	2019[6], 2023	2023	**17**	26	39	**302**	376	367
Lumoxiti (moxetumomab pasudotox-tdfk)	A CD22-directed cytotoxin and a first-in-class treatment in the US for adult patients with relapsed or refractory hairy cell leukaemia (HCL)	2022-2024, 2031-2032[7]	2031	2022, 2031[7]	2031	**–**	–	–	**–**	–	–
Lynparza (olaparib)	An oral poly ADP-ribose polymerase (PARP) inhibitor that blocks DNA damage response (DDR) in cells/tumours harbouring a deficiency in homologous recombination repair, such as mutations in BRCA1 and/or BRCA2. It is indicated for platinum-sensitive relapsed ovarian cancer, regardless of BRCA status; 1st-line maintenance treatment of BRCAm advanced ovarian cancer; for gBRCAm HER2-negative, metastatic breast cancer; and for gBRCAm metastatic pancreatic cancer	2022-2024, 2028*, 2024-2031	2021-2024, 2024-2029	2021-2029, 2024-2029	2021-2029, 2024-2033	**626**	345	141	**475**	250	130
Tagrisso (osimertinib)	An EGFR-TKI indicated for patients with metastatic EGFR-mutated NSCLC	2032	2032	2032	2034	**1,268**	869	405	**1,588**	808	486
Zoladex (goserelin acetate implant)	A luteinising hormone-releasing hormone (LHRH) agonist used to treat prostate cancer, breast cancer and certain benign gynaecological disorders	2022[8]	2021	2021	2021	**7**	8	15	**566**	508	483
CVRM											
Atacand[9] (candesartan cilexitil)	An angiotensin II receptor blocker (ARB) for the 1st-line treatment of hypertension and heart failure	expired	[10]	expired	[10]	**12**	13	19	**30**	62	86
Brilinta/ Brilique (ticagrelor)	An oral P2Y12 platelet inhibitor for acute coronary syndromes (ACS) (ticagrelor 90mg) or continuation therapy in high-risk patients (ticagrelor 60mg) with a history of myocardial infarction (MI)	2019-2024[11], 2021-2036	2019[12], 2021[13]	2024, 2021[14]-2027[15]	2023-2024, 2025-2030	**710**	588	509	**652**	532	402

Patent Expiries of Key Marketed Products *continued*

Key marketed products	Description	US	China	EU[1]	Japan	US Product Sales ($m)			Aggregate Product Sales for China, Japan and Europe[2] ($m)		
						2019	2018	2017	**2019**	2018	2017
Bydureon/ *Bydureon BCise* (exenatide XR injectable suspension)	A once-weekly injectable glucagon-like peptide-1 (GLP-1) receptor agonist available as a single-dose tray, a single-dose pen or autoinjector device indicated as monotherapy and as part of combination therapy adjunct to diet and exercise to improve glycaemic control in adults with type-2 diabetes	2020-2028, 2030[16]	2020-2028, 2029[16]	2020-2028, 2029[16]	2021-2028, 2029[16]	**459**	475	458	**69**	85	93
Byetta (exenatide injection)	A twice-daily injectable GLP-1 receptor agonist indicated to improve glycaemic control in adults with type-2 diabetes	2020[17]	2020	2020-2021	2020	**68**	74	114	**23**	34	39
Crestor (rosuvastatin calcium)	A statin for dyslipidaemia and hypercholesterolaemia	2021-2022[18]	2020-2021	2020	2023	**104**	170	373	**752**	825	1,528
Farxiga/ *Forxiga* (dapagliflozin)	A selective inhibitor of human sodium-glucose cotransporter 2 (SGLT-2 inhibitor) indicated as monotherapy, and as part of combination therapy, adjunct to diet and exercise to improve glycaemic control in adult patients with type-2 diabetes	2020, 2025*, 2020-2030	2020-2023, 2028	2020-2027	2024-2025, 2028	**537**	591	355	**531**	394	245
Komboglyze/ *Kombiglyze* XR[19] (saxagliptin/ metformin)	Combines saxagliptin and metformin as either *Komboglyze* – a twice-daily tablet for type-2 diabetes, or *Kombiglyze* XR – an extended release once-daily tablet for type-2 diabetes	2023, 2025	2021, 2025	2021-2026, 2025	[3]	**–**	–	111	**–**	–	–
Lokelma (sodium zirconium cyclosilicate)	An insoluble, non-absorbed sodium zirconium silicate, formulated as a powder for oral suspension, that acts as a highly selective potassium-removing agent for the treatment of hyperkalaemia	2019-2035	2033-2034	2032[20]	2032-2036	**13**	–	–	**1**	–	–
Onglyza (saxagliptin)	An oral dipeptidyl peptidase 4 (DPP-4) inhibitor for type-2 diabetes	2023, 2028	2021, 2025	2024, 2025	[3]	**127**	109	209	**63**	95	114
Roxadustat	First-in-class hypoxia-inducible factor prolyl hydroxylase inhibitor (HIF-PHI) indicated for the treatment of anaemia from chronic kidney disease	2024, 2024-2034	2024, 2024-2033	[3]	[3]	**–**	–	–	**–**	–	–
Seloken family/ *Toprol-XL* (metoprolol tartate/succinate)	A beta-blocker for treatment of hypertension, heart failure (succinate), angina and after heart attack	expired	expired	expired	expired	**37**	39	37	**550**	488	470
Qtern (dapagliflozin/ saxagliptin)	A once-daily oral treatment combination of dapagliflozin (10mg) and saxagliptin (5mg) indicated as an adjunct to diet and exercise to improve glycaemic control in adults with type-2 diabetes who have inadequate control with dapagliflozin or who are already treated with dapagliflozin and saxagliptin	2020, 2025*, 2020-2029	2020-2023	2020-2027	2024-2025	**6**	–	4	**9**	5	–
Xigduo/ *Xigduo* XR (dapagliflozin/ metformin)	Combines dapagliflozin and metformin as either *Xigduo* – a twice-daily tablet to improve glycaemic control in adult patients with type-2 diabetes who are inadequately controlled on metformin alone or *Xigduo* XR – an extended release once-daily tablet to improve glycaemic control in adult patients with type-2 diabetes who are inadequately controlled on metformin alone	2020, 2025*, 2020-2030	2020-2023	2020-2028	2024-2025, 2030	**103**	114	134	**115**	83	58
Respiratory											
Bevespi Aerosphere (glycopyrrolate/ formoterol)	A combination of a long-acting muscarinic antagonist (LAMA) and a long-acting beta2-agonist (LABA) used for the long-term maintenance treatment of airflow obstruction in COPD	2030-2031	2030	2030	2030	**41**	33	16	**–**	–	–
Breztri Aerosphere (PT010) (budesonide/ glycopyrrolate/ formoterol)	A fixed-dose triple combination of an inhaled corticosteroid (ICS), a LAMA and a LABA, used for the maintenance treatment of COPD	2030-2031	2030	2030	2030	**–**	–	–	**2**	–	–
Daliresp/ *Daxas* (roflumilast)	An oral phosphodiesterase-4 inhibitor for adults with severe COPD to decrease their number of exacerbations	2020, 2023-2024	2023	2019[21], 2023	expired	**184**	155	167	**26**	28	26

Key marketed products	Description	US	China	EU[1]	Japan	US Product Sales ($m)			Aggregate Product Sales for China, Japan and Europe[2] ($m)		
						2019	2018	2017	**2019**	2018	2017
Duaklir (aclidinium/ formoterol)	A fixed-dose combination of a LAMA and a LABA for the maintenance treatment of COPD	2020-2025, 2022-2029[22]	2020, 2022-2027	2025, 2022-2029[23]	2025, 2021-2029	**3**	–	–	**71**	91	77
Fasenra (benralizumab)	A monoclonal antibody for add-on maintenance treatment of patients with severe asthma aged 12 years and older, and with an eosinophilic phenotype, which directly targets and depletes eosinophils by recruiting natural killer cells and inducing apoptosis (programmed cell death)	2020, 2028-2034	2021, 2028	2020, 2028-2034	2025	**482**	218	–	**204**	77	–
Pulmicort (budesonide)	An inhaled corticosteroid for maintenance treatment of asthma	2019[24]	expired	expired	expired	**110**	116	156	**1,149**	975	847
Symbicort (budesonide/ formoterol)	A combination of an inhaled corticosteroid and a fast-onset LABA for maintenance treatment of asthma and COPD either as *Symbicort Turbuhaler* or *Symbicort* pMDI (pressurised metered-dose inhaler)	2019-2029[25]	expired	2019[26]	2019-2020[26]	**829**	862	1,099	**1,174**	1,220	1,201
Tudorza/Eklira/ Genuair (aclidinium)	A LAMA for the maintenance treatment of COPD	2020-2025, 2022-2029[22]	2020, 2022-2027	2025, 2022-2029[23]	2025, 2021-2029[27]	**2**	25	66	**63**	75	74
Other											
Fluenz Tetra/ *FluMist* Quadrivalent (live attenuated influenza vaccine)	A live attenuated vaccine indicated for active immunisation for the prevention of influenza disease caused by influenza A subtype viruses and type B viruses contained in the vaccine	2020-2026	2020-2025	2020-2025	2020-2025	**20**	15	–	**93**	91	76
Movantik/ Moventig (naloxegol)	A once-daily, peripherally acting mu-opioid receptor antagonist approved for the treatment of opioid-induced constipation (OIC) in adult patients. The indication varies by jurisdiction	2022-2027, 2028*, 2032	2024, 2031	2022-2024, 2029*[28], 2031	2022-2024, 2031	**96**	108	120	**2**	–	2
Nexium (esomeprazole)	A proton pump inhibitor used to treat acid-related diseases	2020[29]	2019	expired	2019	**218**	287	499	**847**	955	973
Seroquel XR (quetiapine)	Generally approved for the treatment of schizophrenia, bipolar disorder, major depressive disorder and, on a more limited basis, for generalised anxiety disorder	expired	expired	expired	expired	**–**	73	175	**60**	70	82
Synagis (palivizumab)	A humanised mAb used to prevent serious lower respiratory tract disease caused by respiratory syncytial virus (RSV) in paediatric patients at high risk of acquiring RSV disease	2023[30]	expired	2023	2023	**46**	287	317	**312**	377	370

* Date represents expiry of a pending SPC/PTE and/or Paediatric Exclusivity period.

1. Expiry in major EU markets, which includes the UK.
2. The Product Sales reflected are for Europe Region as defined in Market definitions on page 268.
3. AstraZeneca does not have commercialisation rights.
4. Settled with various generic companies for licensed entry dates of 25 March 2019 or later.
5. In the US, *Iressa* has seven years' Orphan Drug exclusivity to 13 July 2022.
6. SPCs expired 2 March 2019. There were eight years of data exclusivity and two years of market exclusivity for *Iressa* in the EU to 24 June 2019.
7. Rights licensed to Innate Pharma.
8. Rights licensed to TerSera.
9. *Atacand HCT* in US.
10. Takeda retained rights.
11. Separate settlements with ANDA challengers for a licensed entry date corresponding to the expiry of US Patent No. RE46,276, subject to regulatory approval.
12. The patent was invalidated during invalidation proceedings at the Chinese Patent Office (CNIPA). The Beijing High People's Court (the High Court) vacated the invalidation decision and remanded the case back to CNIPA for further decision in view of the High Court's decision. CNIPA has appealed the High Court decision. The patent expired in December 2019, prior to a decision in the High Court appeal or CNIPA invalidation proceedings.
13. The patent was invalidated during invalidation proceedings at the CNIPA. The patentee has appealed that decision.
14. The patent was revoked during opposition proceedings at the European Patent Office (EPO). The patentee has appealed that decision and obtained a decision from the EPO Boards of Appeal upholding the patent.
15. The patent is the subject of a pending opposition proceeding at the EPO. The patentee successfully defended the patent in that proceeding, but the opponents have appealed.
16. Patent expiry date relates to *BCise*.
17. Separate settlements with ANDA challengers for a licensed entry date of 15 October 2017, or later, subject to regulatory approval.
18. A settlement agreement in the US permitted Watson Laboratories, Inc. and Actavis, Inc. (together, Watson) to begin selling its generic version of *Crestor* and its rosuvastatin zinc product from 2 May 2016.
19. *Komboglyze/Kombiglyze* XR revenue is included in the *Onglyza* revenue figure.
20. The patent is the subject of a pending opposition proceeding at the EPO.
21. There are eight years of data exclusivity and two years of market exclusivity for *Daxas* in the EU to 5 July 2020.
22. Rights licensed to Circassia.
23. Partnered with Berlin-Chemie AG (Menarini group).
24. A licence agreement with Teva permits its ongoing sale in the US of a generic version from December 2009. The 2019 expiry relates to the formulation in the *Flexhaler* presentation and also to *Respules*.
25. Patent expiry dates relate to the *Symbicort* pMDI product, including any granted Paediatric Exclusivity term.
26. Patent expiry dates relate to the *Symbicort Turbuhaler* product.
27. Rights licensed to Kyorin Pharmaceutical Co., Ltd.
28. Rights for the EU, Iceland, Norway, Switzerland and Liechtenstein licensed to Kyowa Kirin.
29. Licence agreements have allowed generic companies to launch generic capsule versions in the US.
30. Rights sold to Sobi.

Risk

Risks and uncertainties

Operating in the pharmaceutical sector carries various inherent risks and uncertainties that may affect our business. In this section, we describe the risks and uncertainties that we consider material to our business in that they may have a significant effect on our financial condition, results of operations, and/or reputation.

These risks are not listed in any particular order of priority and have been categorised consistently with the Principal Risks detailed from page 76, which are included below along with the other risks that we face. We believe that the forward-looking statements about AstraZeneca in this Annual Report, identified by words such as 'anticipates', 'believes', 'expects' and 'intends', and that include, among other things, Future prospects in the Financial Review on page 91, are based on reasonable assumptions. However, forward-looking statements involve inherent risks and uncertainties such as those summarised below. They relate to events that may occur in the future, that may be influenced by factors beyond our control and that may have actual outcomes materially different from our expectations. Therefore, other risks, unknown or not currently considered material, could have a material adverse effect on our financial condition or results of operations.

Product pipeline and IP risks	Impact
Failure or delay in delivery of pipeline or launch of new products	
Our continued success depends on the development and successful launch of innovative new drugs. The development of pharmaceutical product candidates is a complex, risky and lengthy process involving significant financial, R&D and other resources. A project may fail at any stage of the process due to various factors, including failure to obtain the required regulatory or marketing approvals for the product candidate or for its manufacturing facilities, unfavourable clinical efficacy data, safety concerns, failure to demonstrate adequate cost-effective benefits to regulatory authorities and/or payers, and the emergence of competing products. More details of projects that have suffered setbacks or failures during 2019 can be found in the Therapy Area Review from page 54. Launch decisions and dates are primarily driven by our development programmes. Once a development programme is completed and the dossier submitted to Health Authorities, investments made in the manufacture of pre-launch product stocks, marketing materials and sales force training, may result in excess expenses if the product is not approved. Various factors, including adverse findings in pre-clinical or clinical studies, regulatory demands, price negotiation, competitor activity and technology transfer may significantly delay or prevent launch. Differing complex and stringent regulations govern the manufacturing and supply of biologics products, thus impacting the production and release schedules of such products more significantly. In addition to developing products in-house, we also expand our product portfolio and geographical presence through licensing arrangements and strategic collaborations, which are key to growing and strengthening our business. The success of such arrangements is largely dependent on the technology and other IP rights we acquire or license, and the resources, efforts and skills of our partners. Disputes or difficulties in our relationship with our collaborators or partners may arise, for example, due to conflicting priorities or conflicts of interest between parties. In many cases we make milestone payments well in advance of the commercialisation of the products, with no assurance that we will recoup these payments. We often experience strong competition from other pharmaceutical companies in our pursuit of licensing transactions, strategic collaborations and acquisition targets.	Since our business model and strategy rely on the success of relatively few compounds, the failure of any compound in our late-stage pipeline or in-line products may have a significant negative effect on our business or results of operations. Failure or delay in development of new product candidates could frustrate the achievement of development targets, adversely affect the reputation of our R&D capabilities, and is likely to materially adversely affect our business and results of operations. See also Failure to achieve strategic plans or meet targets or expectations on page 256. Significant delays to anticipated launch dates of new products could have a material adverse effect on our financial position and/or results of operations. For example, for the launch of products that are seasonal in nature, delays in regulatory approvals or manufacturing difficulties may delay launch to the next season which, in turn, may significantly reduce the return on costs incurred in preparing for the launch for that season. Furthermore, in immuno-oncology for example, speed to market is critical given the large number of clinical trials being conducted by other companies. In addition, a delayed launch may lead to increased costs if, for example, marketing and sales efforts need to be rescheduled or performed for longer than expected. Failure to complete collaborative projects in a timely, cost-effective manner may limit our ability to access a greater portfolio of products, IP, technology and shared expertise. Disputes and difficulties with our partners may erode or eliminate the benefits of our alliances and collaborations. In addition, failure to perform on the part of parties to externalisation transactions may diminish the future value of those transactions or, in some cases, allow a competitor to beat us to market with a similar or first-in-class product. Delay of launch can also erode the term of patent exclusivity. Competition from other pharmaceutical companies means that we may be unsuccessful in implementing some of our intended projects or we may have to pay a significant premium over book or market values for our acquisitions.

Product pipeline and IP risks	Impact

Failure to meet regulatory or ethical requirements for drug development or approval

We are subject to strict controls on the commercialisation processes for our pharmaceutical products, including their development, manufacture, distribution and marketing. The criteria for establishing safety, efficacy and quality, which are essential for securing marketing approvals, vary by country and by region. Regulators can refuse to grant approval or may require additional data before approval is granted or as a post-approval commitment, even though the medicine may already be approved or launched in other countries.

Factors, including advances in science and technology, evolving regulatory science, new laws and policies, and different approaches to benefit/risk tolerance by regulatory authorities, the general public, and other third-party public interest groups are known to influence the approvability of new drugs. While we seek to manage most of these risks, unanticipated and unpredictable policymaking by governments and regulators, limited regulatory authority resources or conflicting priorities often lead to delays in regulatory approvals.

We may be required to generate additional data after a drug's approval because a regulatory authority may have concerns that impact the benefit/risk profile of the drug. For our marketed drugs, new data or meta-analyses have the potential to drive changes in the approval status or labelling. In addition, recent years have seen an increase in post-marketing regulatory requirements and commitments, an increased call for third-party access to regulatory and clinical trial data packages for independent analysis and interpretation, and broader data transparency. Such transparency, while important, could lead to inappropriate or incorrect data analyses which may damage the integrity of our products and our Company's reputation.

Delays in regulatory reviews and approvals could delay our ability to market our products and may adversely affect our revenue. In addition, post-approval requirements, including additional clinical trials, could result in increased costs.

In anticipation of the UK leaving the EU on 31 January 2020, intense work has been undertaken to manage Brexit-related changes, identify scenarios for the many uncertainties still to be resolved, and determine the new UK requirements moving forward. This included transferring licences and authorisations for EU markets historically held in the UK to an EU member state and building capability to test medicines in the EU where such testing has been undertaken in the UK for all EU markets. UK licences also needed to be separated out from centrally approved products in the EU. These actions were undertaken to ensure appropriate regulatory requirements can be met both in the EU and UK following Brexit. Based on our corporate planning assumptions which applied throughout 2019 for a no deal Brexit, with no transition period, the Company has taken steps to protect product supply both in the UK and EU.

Changes in regulatory reviews and approvals, and safety surveillance will certainly have implications on resources, ways of working and costs. In light of the ratification of the Withdrawal Agreement on 24 January 2020 with a transition period running to 31 December 2020, the Group continues to take appropriate actions to manage changes which will be required after the end of the transition period based on the assumption that there will be no extension to the transition period and that no agreement on the future relationship between the UK and EU will have been agreed and ratified at that time.

Failure to obtain, defend and enforce effective IP protection and IP challenges by third parties

A pharmaceutical product may be protected from being copied for a limited period of time under certain patent rights and/or related IP rights, such as Regulatory Data Protection or Orphan Drug status. Typically, products protected by such rights generate significantly higher revenues than those not protected. Our ability to obtain, maintain, defend and enforce patents and other IP rights in relation to our products is an important element in protecting and recouping our investment in R&D and creating long-term value for the business. Some countries in which we operate do not offer robust IP protection. This may be because IP laws are still developing, the scope of those laws is limited or the political environment does not support such legislation. We also recognise increasing use of compulsory licensing in some countries in which we operate.

We may also face challenges early in the patent application process and throughout a patent's life. The grounds for these challenges could be the validity of a patent and/or its effective scope and are based on ever-evolving legal precedents. We are experiencing increased challenges in the US and elsewhere in the world and there can be no guarantee of success for either party in patent proceedings and litigation.

We also bear the risk that our products may be found to infringe patents owned or licensed by third parties, including research-based and generic pharmaceutical companies and individuals. These third parties may seek remedies for patent infringement, including injunctions (for example, preventing the marketing of one of our products) and damages.

Details of material patent proceedings and litigation matters can be found in Note 29 to the Financial Statements from page 220.

Limitations on the availability of patent protection, the ability to obtain related IP rights or the use of compulsory licensing in certain countries in which we operate, as well as our ability to defend and enforce our patents, could allow for earlier entry of generic or biosimilar competitor products. This could have a material adverse effect on the pricing and sales of our products and, consequently, could materially adversely affect our revenues.

Third parties may be awarded remedies for alleged infringement of their IP, for example injunctions and damages for alleged patent infringement. In the US, courts may order enhanced (i.e. up to treble) damages for alleged wilful infringement of patents. From time to time we may acquire licences, discontinue activities and/or modify processes to avoid claims of patent infringement. These steps could entail significant costs and our revenue and margins could be materially adversely affected.

More information about protecting our IP, the risk of patent litigation and the early loss of IP rights is contained in the Intellectual Property section from page 41, the Competitive pressures including expiry or loss of IP rights, and generic competition risk on page 248 and Note 29 to the Financial Statements from page 220.

Commercialisation risks	Impact

Competitive pressures including expiry or loss of IP rights, and generic competition

A pharmaceutical product competes with other products marketed by research-based pharmaceutical companies and with generic or biosimilar drugs marketed by generic drug manufacturers.

Generic versions of products, including biosimilars, are often sold at lower prices than branded products, as the manufacturer does not have to recoup the significant cost of R&D investment and market development. Expiry or loss of IP rights can materially adversely affect our revenues and financial condition due to the launch of cheaper generic copies of the product in the country where the rights have expired or been lost (see the table in the Patent Expiries of Key Marketed Products section from page 243).

Additionally, the expiry or loss of patents covering other innovator companies' products may also lead to increased competition and pricing pressure for our own, still-patented products in the same product class due to the availability of lower-priced generic products in that product class.

Generic manufacturers may also take advantage of the failure of certain countries to properly enforce Regulatory Data Protection or other related IP rights and may launch generics during this protected period. This is a particular risk in some Emerging Markets where appropriate patent protection or other related IP rights may be difficult to obtain or enforce.

The biosimilars market has experienced notable growth since 2017, with approval of several monoclonal antibody biosimilars in the US and Europe. This trend is expected to continue. Increased regulatory and legal activity related to the launch and approval of these therapeutics is anticipated. Regulatory authorities in other territories continue to implement or consider abbreviated approval processes for biosimilars, allowing quicker entry to market for such products and earlier than anticipated competition for patented biologics.

As well as facing generic competition upon expiry or loss of IP rights, we also face the risk that generic drug manufacturers seek to market generic versions of our products prior to expiries of our patents and/or the Regulatory Exclusivity periods. For example, we are currently facing challenges from numerous generic drug manufacturers regarding our patents relating to key products, including *Symbicort*, *Brilinta*, *Faslodex* and *Farxiga*.

IP rights protecting our products may be challenged by external parties. We expect our most valuable products to receive the greatest number of challenges. Despite our efforts to establish and defend robust patent protection for our products, we bear the risk that courts may decide that our IP rights are invalid and/or that third parties do not infringe our asserted IP rights.

Where we assert our IP rights but are ultimately unsuccessful, third parties may seek damages, alleging, for example, that they have been inappropriately restrained from entering the market. In such cases, we bear the risk that we incur liabilities to those third parties.

Details of material patent litigation matters can be found in Note 29 to the Financial Statements from page 220.

If we are not successful in obtaining, maintaining, defending or enforcing our exclusive rights to market our products, particularly in the US where we achieve our highest Product Sales, our revenue and margins could be materially adversely affected. In addition, unsuccessful assertion of our IP rights may lead to damages or other liabilities to third parties that could materially adversely affect our financial performance.

Approval of competitive products for the same or similar indication as one of our products may result in immediate and significant decreases in our revenues.

Unfavourable resolution of current and potential future patent litigation may require us to make significant provisions in our accounts relating to legal proceedings and/or could materially adversely affect our financial condition or results of operations.

Commercialisation risks	Impact

Price controls and reductions

Most of our key markets have experienced the implementation of various cost control or reimbursement mechanisms for pharmaceutical products.

In the US, there is significant pricing pressure driven by payer consolidation, restrictive reimbursement policies, and cost control tools, such as exclusionary formularies and price protection clauses. Many formularies employ 'generic first' strategies and/or require physicians to obtain prior approval for the use of a branded medicine where a generic alternative exists. These mechanisms can be used by payers to limit the use of branded products and put pressure on manufacturers to reduce net prices. In addition, patients are seeing changes in the design of their health plan benefits and may experience variation in how their plans cover their medications, including increases in the out-of-pocket payments for their branded medications. Patient out-of-pocket spending is generally in the form of a co-payment or co-insurance, but there is a growing trend towards high deductible health plans that require that patients pay the full list price of their drugs and services until they meet certain out-of-pocket thresholds. In the US, policymakers at the federal and state level continue to consider a range of legislative and regulatory proposals to address the high costs of prescription drugs in addition to reforms to the US healthcare system. Modifications to Medicare and other government programmes, price transparency requirements, policies to permit importation of drugs into the US, and policies aimed at reducing drug list prices and limiting pricing flexibility have also been included in proposed federal legislation. For more information, please see Pricing of medicines in the Healthcare in a changing world section from page 11. It is difficult to predict what specific proposals could be enacted and to determine the implications for the healthcare system and pharmaceutical industry. However, lowering drug costs remains a key bipartisan priority in Congress, the current administration and state governments. Proposals that would significantly modify existing laws and regulations, including coverage and reimbursement of drugs in government programmes and policies relating to drug pricing, could affect private health insurance, coverage and reimbursement in Medicare, Medicaid and the health insurance exchange marketplaces, and other facets of the US healthcare market, with potentially significant impacts on the pharmaceutical industry.

Ongoing scrutiny of the US pharmaceutical industry, focused largely on pricing, is placing increased emphasis on the value of medications. This scrutiny will likely continue across many stakeholders, including policymakers and legislators.

In the US, consolidation among distributors, retail pharmacy chains and other purchasing organisations, including integration across the supply chain, creates concentration of credit risk and increasing potential for large integrated entities to exert more power in negotiations with AstraZeneca, which could result in margin erosion.

In Europe, the industry continues to be exposed to various ad hoc cost-containment measures and reference pricing mechanisms which impact prices. There is a trend towards increasing transparency and comparison of prices among EU Member States which may eventually lead to a change in the overall pricing and reimbursement landscape. There is also a continued push across the EU to harmonise the Health Technology Assessment (HTA) review process. This could lead to an environment in the EU where medicines undergo duplicate HTA evaluations, both at an EU level and a country level, as it is unlikely organisations such as GBA in Germany or HAS in France would make changes to their systems.

In Emerging Markets, governments are increasingly controlling pricing and favouring locally manufactured drugs. In addition, the emergence of price referencing has been seen in some markets combined with a call from authorities to provide greater global price transparency. For example, in 2019, China expanded value-based procurement (VBP), placing downward pressure on the pricing of products that lost exclusivity in the VBP.

In Japan, the government has relied on drug budget reductions to restrict increasing social security costs associated with the rapidly ageing society, expanding the scope and degree of price discounts. In April 2018, many new rules were implemented as drug pricing system reforms. Further to that a cost-effectiveness evaluation was introduced for certain categories of drugs from April 2019. Discussions for further drug budget restrictions are underway at the health ministry.

Concurrently, many markets are adopting the use of HTA to provide a rigorous evaluation of the clinical efficacy of a product at, or post, launch. HTA evaluations are also increasingly being used to assess the clinical effect, as well as cost-effectiveness, of products in a particular health system. This comes as payers and policymakers attempt to increase efficiencies in the use and choice of pharmaceutical products.

A summary of the principal aspects of price regulation and how pricing pressures are affecting our business in our most important markets is set out in Pricing of medicines in the Healthcare in a changing world section from page 11 and on the next page in the following risk factor.

Due to these pricing pressures, there will continue to be downward pressure on prices globally that will challenge the profitability levels of products in particular markets.

Any future replacement, modification or repeal of the Affordable Care Act (ACA), or any significant spending reductions or cost controls affecting Medicare, Medicaid or other publicly funded or subsidised health programmes in the US, could adversely affect our business and financial results. The significant uncertainty about the future of the ACA, entitlement reform and healthcare laws in general in the US could have a material adverse effect on our results of operations, financial condition or business.

We expect that consolidation and integration of drug distributors, retail pharmacy chains, private insurers, managed care organisations and other purchasing organisations may continue to have an effect on pharmaceutical manufacturers, including us.

The potential duplication of HTA evaluations could result in a delay to times of reimbursement and patient access.

The continued disparities in EU and US pricing systems could lead to marked price differentials between regions, which, by way of the implementation of existing or new reference pricing mechanisms, increases the pricing pressure affecting the industry. The importation of pharmaceutical products from countries where prices are low due to government price controls, or other market dynamics, to countries where prices for those products are higher, is already prevalent and may increase. Strengthened collaboration by governments may accelerate the development of further cost-containment policies (such as joint procurement). Increased and simplified access to national and regional prices in markets and the publication of these prices in centralised databases have facilitated the uptake and efficiency of price referencing across the world.

Commercialisation risks	Impact

Economic, regulatory and political pressures

Operating in more than 100 countries, we are subject to political, socio-economic and financial factors (including foreign exchange movements) both globally and in individual countries.

A sustained global economic downturn may further exacerbate pressure from governments and other healthcare payers on medicine prices and volumes of sales in response to pressures on budgets, and may cause a slowdown or a decline in growth in some markets. Those most severely impacted by the economic downturn may seek alternative ways to settle their debts through, for example, the issuance of government bonds which might trade at a discount to the face value of the debt. Other customers may cease to trade, which may result in losses from writing off debts, or a reduction in demand for products.

In addition, escalation of the current trade disputes could lead to sanctions such as the unilateral imposition of tariffs, duties, quotas or other non-tariff barriers. While the introduction of such sanctions in relation to medicines is unlikely, it could occur if matters escalate significantly and could therefore adversely impact medicine process and volumes of sales in impacted markets.

We are highly dependent on being able to access a sustainable flow of liquid funds due to the high fixed costs of operating our business and the long and uncertain development cycles of our products. In a sustained economic downturn, financial institutions with whom we deal may cease to trade and there can be no guarantee that we will be able to access monies owed to us without a protracted, expensive and uncertain process, if at all.

The majority of our cash investments are managed centrally and are invested in AAA credit-rated institutional money market funds, collateralised bank deposits, fixed income securities in government, and financial and non-financial securities. Money market funds are backed by institutions in the US, EU or elsewhere, which, in turn, invest in other funds, including sovereign funds. This means our credit exposure is a mix of US, EU and rest of the world sovereign default risk, financial institution and non-financial institution default risk.

A number of our existing or future commercial or other agreements, such as borrowings, derivative financial instruments and commercial contracts, utilise or may utilise various London Interbank Offered Rates, known as LIBOR, or other similar rates as benchmark reference rates. LIBOR and other benchmark reference rates are the subject of ongoing national and international regulatory reform, the result of which is expected to see some or all of them partially or fully replaced by alternative reference rates, or cause LIBOR's regulator to determine that their quality has degraded to the degree that it is no longer representative of its underlying market. This may result in potential adjustments or renegotiations being necessary to our agreements in respect of the commercial terms or mechanisms to set the reference rate in the future. While different alternative reference rates are developing for different currencies, there is a risk that we fail to renegotiate or adjust our agreements. Any combination of these could have an adverse effect on the cost, cash flows, value, return on and trading market of (as appropriate) our borrowings, derivative financial instruments, commercial and other agreements, and could increase our administrative burden if the transition to alternative rates is required or necessary by regulation or market practice.

Deterioration of, or failure to improve, socio-economic conditions, and situations and/or resulting events, depending on their severity, could adversely affect our supply and/or distribution chain in the affected countries and the ability of customers or ultimate payers to purchase our medicines. This could adversely affect our business or results of operations.

While we have adopted cash management and treasury policies to manage the risk of not being able to access a sustainable flow of liquid funds (see the Financial risk management policies section of the Financial Review from page 78), we cannot be certain that these will be as effective as they are intended to be, in particular in the event of a global liquidity crisis. In addition, open positions where we are owed money and investments we have made in financial and non-financial institutions or money market funds cannot be guaranteed to be recoverable. Additionally, if we need access to external sources of financing to sustain and/or grow our business, such as the debt or equity capital financial markets, this may not be available on commercially acceptable terms, if at all, in the event of a severe and/or sustained economic downturn. This may, for instance, be the case in the event of any default by the Company on its debt obligations, which may materially adversely affect our ability to secure debt funding in the future or our financial condition in general. Further information on debt funding arrangements is contained in the Financial risk management policies section of the Financial Review from page 78.

In addition, as set out in the next section, the UK's exit from the EU which took place on 31 January 2020 could adversely impact the operation of the financial system and the ability of financial institutions to perform certain activities and services upon which we rely if the arrangements agreed between the UK and EU in the upcoming future relationship negotiations do not adequately address such matters, or if no such agreement on the future relationship is reached before the end of the transition period.

Commercialisation risks	Impact

Uncertainty and volatility in relation to the UK's planned exit from the EU

On 23 June 2016, the UK held a referendum on the UK's continuing membership of the EU, the outcome of which was a decision for the UK to leave the EU (Brexit). Following Royal Assent of the European Union (Withdrawal Agreement) Act in the UK and ratification of the Withdrawal Agreement by the European Parliament, the UK left the EU on 31 January 2020 with a transition period running to 31 December 2020.

It is still too early to judge the full impact of Brexit. While a Withdrawal Agreement has been ratified by both the UK and EU, the future relationship that will apply at the end of the transition period provided for in that agreement is still to be negotiated between the UK Government and European Commission after which it would need to be ratified by both the UK and EU parliaments. In the absence of a ratified agreement covering the future relationship, it is unclear what trading relationships the UK will have with the EU and other significant trading partners after 31 December 2020 given the range of political and legal options currently available including, for example, no deal on the future relationship at the end of the transition period, extension of the transition period or some form of free trade agreement. Brexit and implementation of the resulting changes could materially and adversely affect the tax, tax treaty, currency, operational, legal and regulatory regimes as well as the macro-economic environment in which the Group operates. Since the referendum, global markets and foreign exchange rates have experienced increased volatility, including a decline in the value of the pound sterling as compared with the euro and US dollar. At the end of the transition period provided for in the Withdrawal Agreement, among other things, the UK could lose access to the single EU market, travel between the UK and EU countries could be restricted and border checks or other regulatory constraints may impede the free movement of goods. Our workforce, and in turn our ability to recruit and retain talent, could be impacted by any restrictions on the movement of persons. We could face new and greater costs and challenges if UK regulations and policies that govern our business diverge from those of the EU, or if there is any other new or increased friction in our trading environment.

Until the negotiation process for the future relationship between the UK and EU is completed and any associated agreement or agreements have been ratified in both the UK and EU, it is difficult to anticipate the potential impact on our market share, sales, profitability and results of operations. For example, it is possible in the immediate aftermath of the end of the transition period that the capacity at major ports both in the UK and the EU is materially reduced for an indeterminate period of time due, for example, to the imposition of border checks. This could adversely affect our ability to transport medicines and raw materials/intermediates to the EU and vice versa with a consequential adverse impact.

The longer-term effects of Brexit are difficult to predict but could include further financial instability and slower economic growth or economic downturn in the UK in particular, but also in Europe and the global economy. Any restrictions on the movement of persons, deterioration in market access or trading terms, delay or restrictions to the movement of goods or increased cost and burdens in the form of new or diverging rules and regulations may have a significant adverse impact on our operations, profitability and business model. Further, uncertainty around the form and timing of any post-withdrawal trading arrangements (whether with the EU or third parties) could increase volatility and lead to adverse effects on the economy of the UK, other parts of Europe and the rest of the world, which in turn could have an adverse economic impact on our operations.

Failures or delays in the quality or execution of our commercial strategies

Commercial success of our products and markets, including the development of growth markets, is a critical factor in sustaining or increasing global Product Sales and replacing lost Product Sales due to patent expiry. The successful launch of a new pharmaceutical product involves substantial investment in sales and marketing activities, launch stocks and other items. We may ultimately be unable to achieve commercial success for various reasons, including difficulties in manufacturing sufficient quantities of the product candidate for development or commercialisation in a timely manner, the impact of price control measures imposed by governments and healthcare authorities, the outcome of negotiations with third-party payers, erosion of IP rights, including infringement by third parties, failure to show a differentiated product profile and changes in prescribing habits.

The commercialisation of biologics is often more complex than for small molecule pharmaceutical products, primarily due to differences in the mode of administration, technical aspects of the product, and rapidly changing distribution and reimbursement environments.

We face particular challenges in Emerging Markets, including:

- More volatile economic conditions and/or political environments.
- Competition from multinational and local companies with existing market presence.
- Difficulties enforcing and protecting IP.
- Inadequate protection against crime (including counterfeiting, corruption and fraud).
- Unauthorised or unregulated parallel imports.
- The need to impose developed market compliance standards.
- The need to meet a more diverse range of national regulatory, clinical, manufacturing and distribution requirements.
- Potential inadvertent breaches of local and international law and the need to manage sanctions and other restrictions that may be imposed in each jurisdiction.
- Recruitment of appropriately skilled and experienced personnel.
- Difficulty in identifying the most effective sales and marketing channels and routes to market.
- Intervention by local or national governments, or regulators, restricting market access and/or introducing adverse price controls and price referencing.
- Difficulty in managing local partnerships, such as co-promotion and co-marketing, in terms of performance and adherence to AstraZeneca's compliance standards, which are often higher than the market norm.
- Difficulties in cash repatriation due to strict foreign currency controls, risk of material currency devaluation and lack of hard currency reserves in some Emerging Markets.
- Complexity derived from direct exports to countries where we do not have a legal entity.

Failure to execute our commercial strategies could materially adversely impact our business or results of operations.

If a new product does not succeed as anticipated or its rate of sales growth is slower than anticipated, there is a risk that we may be unable to fully recoup the costs incurred in launching it, which could materially adversely affect our business or results of operations.

Due to the complexity of the commercialisation process for biologics, the methods of distributing and marketing biologics could materially adversely impact our revenues from the sales of biologic medicines, such as *Synagis* and *FluMist/Fluenz*.

The failure to exploit potential opportunities appropriately in Emerging Markets or materialisation of the risks and challenges of doing business in such markets, including inadequate protection against crime (including counterfeiting, corruption and fraud) or inadvertent breaches of local and international law may materially adversely affect our reputation, business or results of operations.

Integration processes relating to strategic transactions may also result in business disruption, diversion of management resources, the loss of key employees and other issues, such as a failure to integrate IT and other systems.

Incurrence of significant debt or liabilities due to the integration of an acquired business could cause deterioration in our credit rating and result in increased borrowing costs and interest expense. The rights of existing shareholders may be diluted if we were to issue additional shares to pay for acquired businesses.

Commercialisation risks	Impact

Failures or delays in the quality or execution of our commercial strategies *continued*

We may also seek to acquire complementary businesses or enter into other strategic transactions. The integration of an acquired business could involve incurring significant debt and unknown or contingent liabilities, as well as having a negative effect on our reported results of operations from acquisition-related charges, amortisation of expenses related to intangibles and charges for the implementation of long-term assets. The integration of new businesses with our own could result in operational complexities.

We may also experience difficulties in integrating geographically separated organisations, systems and facilities, and personnel with different organisational cultures. Disputes or difficulties in our relationship with our collaborators or partners may also arise, often due to conflicting priorities or conflicts of interest between parties.

Supply chain and business execution risks	Impact

Failure to maintain supply of compliant, quality products

We may experience difficulties, delays and interruptions in the manufacturing and supply of our products for various reasons, including:

- Demand significantly in excess of forecast demand, which may lead to supply shortages (this is particularly challenging before launch).
- Supply chain disruptions, including those due to natural or man-made disasters at one of our facilities, at a critical supplier or vendor, or during transit.
- Delays in construction of new facilities or the expansion of existing facilities to support future demand for our products, including new modalities of medicine.
- The inability to supply products due to a product quality failure or regulatory compliance action such as licence withdrawal, product recall or product seizure.
- Other manufacturing or distribution problems, including changes in manufacturing production sites, limits to manufacturing capacity due to regulatory requirements, changes in the types of products produced, or physical limitations or other business interruptions that could impact continuous and adequate supply.

As with the rest of the pharmaceutical industry, we work in a heavily regulated environment, which is subject to continued evolution. It is necessary for us to meet all regulations, including compliance with Good Manufacturing Practices (GMP) and Good Distribution Practices and comparable regulatory dossier conditions of approval in other countries in which our products are licensed, manufactured or sold. Regulatory agencies periodically inspect our manufacturing facilities to evaluate compliance with applicable requirements and may identify potential deficiencies.

We increasingly rely on third parties for the timely supply of goods, such as raw materials (for example, the API in some of our medicines and drug substances and/or finished drug products for some of our biologics medicines), equipment, formulated drugs and packaging, critical product components and services, all of which are key to our operations. Many of these goods are difficult to substitute in a timely manner or at all. We expect that external capacity for biologics drug substance production will continue to remain constrained for the next few years and, accordingly, may not be readily available for supplementary production in the event that we experience an unforeseen need for such capacity.

Difficulties with manufacturing and supply, forecasting, distribution or third-party suppliers may result in product shortages, which may lead to lost Product Sales and materially adversely affect our reputation and revenues. Even slight variations in components or any part of the manufacturing process may lead to a product that is non-compliant and does not meet quality standards. This could lead to recalls, spoilage, product shortage, regulatory action and/or reputational harm.

Failure to comply with all manufacturing regulations can result in negative regulatory inspection findings leading to manufacturing cessation, product seizure, debarment or recalls which could have a material adverse effect on our business, financial condition and results of operations.

Illegal trade in our products

The illegal trade in pharmaceutical products is widely recognised by industry, non-governmental organisations and governmental authorities to be increasing. Illegal trade includes counterfeiting, theft and illegal diversion (that is, when our products are found in a market where we did not send them and where they are not approved or not permitted/allowed to be sold). There is a risk to public health when illegally traded products enter the supply chain, as well as associated financial risk. Authorities and the public expect us to help reduce opportunities for illegal trade in our products through securing our supply chains, surveillance, investigation and supporting legal action against those found to be engaged in illegal trade.

Public loss of confidence in the integrity of pharmaceutical products as a result of illegal trade could materially adversely affect our reputation and financial performance. In addition, undue or misplaced concern about this issue may cause some patients to stop taking their medicines, with consequential risks to their health. Authorities may take action, financial or otherwise, if they believe we are liable for breaches in our own supply chains.

There is also a direct financial loss when, for example, counterfeit and/or illegally diverted products replace sales of genuine products in a market or genuine products are recalled following discovery of counterfeit products.

Supply chain and business execution risks	Impact

Reliance on third-party goods and services

AstraZeneca spends approximately $10 billion each year with trade suppliers. The spend supports the length of our value chain from discovery to manufacture and commercialisation of our medicines.

Many of our business-critical operations, including certain R&D processes, IT systems, HR, finance, tax and accounting services have been outsourced to third-party providers. We are therefore heavily reliant on these third parties, not just to deliver timely and high-quality services, but also to comply with applicable laws and regulations and adhere to our ethical business expectations of third-party providers.

The failure of outsource providers to deliver timely services, and to the required level of quality, or the failure of outsource providers to cooperate with each other, could materially adversely affect our financial condition or results of operations. Moreover, the failure of these third parties to operate in an ethical manner could adversely impact our reputation, both internally and externally, or even result in non-compliance with applicable laws and regulations.

Our business and financial results could also be materially adversely affected by disruptions caused by our failure to successfully manage either the integration of outsourced services or the transition process of insourcing services from third parties.

Failure in information technology, data protection or cybercrime

We are dependent on effective IT systems. These systems support key business functions such as our R&D, manufacturing, supply chain and sales capabilities. They provide an important means of safeguarding and communicating data, including critical or strictly confidential information, the confidentiality and integrity of which we rely on. We also rely on the effectiveness of our internal policies, controls and procedures to protect the confidentiality, integrity and availability of information held on our IT systems, as well as the effectiveness of our due diligence of, and ongoing oversight over, third-party vendors who hold or have access to our data. In addition, we must ensure that the personal data which we, or third-party vendors operating on our behalf, hold and process is protected in a manner that complies with the GDPR and other increasingly stringent privacy laws around the globe (such as the California Consumer Privacy Act of 2018, which came into effect on 1 January 2020).

Examples of strictly confidential information that we protect include clinical trial records (patient characteristics and treatments), personal information (employee bank details, salary, home address), IP related to manufacturing process and compliance, and key research science techniques.

The size and complexity of our IT systems and cloud utilisation, and those of our third-party vendors (including outsource and Software as a Service (SaaS) providers) with whom we contract, have significantly increased over the past decade. Such systems are potentially vulnerable to service interruptions and security breaches from attacks by malicious third parties, or from intentional or inadvertent actions by our employees or vendors.

Significant changes in the business footprint and the implementation of the IT strategy, including the creation and use of captive offshore Global Technology Centres, could lead to temporary loss of capability.

We increasingly use the internet, digital content, social media, mobile applications, the Internet of Things (IoT), artificial intelligence, and other forms of new technology to process our data and to communicate internally and externally. The accessibility and instantaneous nature of interactions with such media may facilitate or exacerbate the risk of unauthorised data loss from within AstraZeneca. Globalisation also means that it becomes difficult to comply with all local data protection transparency obligations for our websites and mobile apps (e.g. enhanced cookie banner rules in the EU or higher standards for obtaining valid consent for certain uses of personal data). The desire to expand the use of artificial intelligence, genomic data and biometric data poses additional risks to the rights and freedoms of individuals and consequently higher reputational and financial risks for AstraZeneca.

The GDPR and similar privacy legislation in various jurisdictions globally introduce the obligation to report data protection breaches, whether intentional or inadvertent, to regulators and affected individuals within expedited timeframes. Such expedited reporting, often before the nature and impact of a data breach can be fully understood, could potentially cause reputational damage and a loss of public trust that ultimately may be disproportionate to the extent of the breach.

Any significant disruption to these IT systems (including breaches of data security or cybersecurity, failure to integrate new and existing IT systems) or failure to comply with additional requirements under the GDPR and other applicable laws, could harm our reputation and materially adversely affect our financial condition or results of operations.

While we invest heavily in the protection of our data and IT, we may be unable to prevent breakdowns or breaches in our systems or failures of our cybersecurity policies, controls or procedures. Any such breakdown, breach or failure could result in disclosure of confidential information, damage to our reputation, regulatory penalties or sanctions, financial losses and/or other costs.

The inability to back-up and restore data effectively could lead to permanent loss of data that could in turn result in non-compliance with applicable laws and regulations, and otherwise harm our business.

We and our vendors could be susceptible to third-party or internal attacks on our information security systems. Such attacks are of ever-increasing levels of sophistication and are made by groups and individuals with a wide range of motives and expertise, including organised criminal groups, 'hacktivists', nation states, employees and others. Occasionally we experience intrusions, including as a result of computer-related malware. We may be unable to defend against such attacks which could have an adverse effect on our business.

Although we maintain cybersecurity insurance, there can be no assurance that our insurance coverage limits will protect against any future claim or that such insurance proceeds will be paid to us in a timely manner.

Inappropriate use of certain media vehicles could lead to the unauthorised or unintentional public disclosure of confidential information (such as personally identifiable information on employees, healthcare professionals or patients), which may damage our reputation, adversely affect our business or results of operations and expose us to legal risks and/or additional legal obligations. Similarly, the involuntary public disclosure of commercially sensitive information, or an information loss, could adversely affect our business or results of operations. In addition, negative posts or comments about us (or, for example, the safety of our products) on social media websites or other digital channels could harm our reputation, brand image or goodwill.

Supply chain and business execution risks	Impact

Failure of critical processes

Unexpected events and/or events beyond our control could result in the failure of critical processes within the Company or at third parties on whom we are reliant. The business faces threats to business continuity from many directions. Examples of material threats include:

> Disruption to our business or the global markets if there is instability in a particular geographic region, including as a result of war, terrorism, pandemics, armed conflicts, riots, unstable governments, civil insurrection or social unrest.
> Natural disasters in areas of the world prone to extreme weather events, which may increase in frequency or severity as a result of climate change, and earthquakes.
> Cyber threats similar to those detailed in the Failure in information technology, data protection or cybercrime section above.

Failure of critical processes may result in an inability to research, manufacture or supply products to patients. AstraZeneca has developed a Business Resilience framework which is designed to mitigate such risks. However, there is no guarantee that these measures will be sufficient to prevent business interruption. This may expose the Company to litigation and/or regulatory action which may result in fines, loss of revenue and adversely affect the Company's financial results.

Any expected gains from productivity initiatives are uncertain

We continue to implement various productivity initiatives and restructuring programmes with the aim of enhancing the long-term efficiency of the business. However, anticipated cost savings and other benefits from these programmes are based on estimates and the actual savings may vary significantly or may not be achieved at all. In particular, these cost-reduction measures are often based on current conditions and cannot always take into account any future changes to the pharmaceutical industry or our operations, including new business developments or wage or price increases.

Our failure to implement these planned cost-reduction measures successfully, either through the successful implementation of employee relations processes (including consultation, engagement, talent management, recruitment and retention), or the possibility that these efforts do not generate the level of cost savings we anticipate, could materially adversely affect our business or results of operations.

Failure to attract, develop, engage and retain a diverse, talented and capable workforce

We rely heavily on recruiting and retaining talented employees with a diverse range of skills and capabilities to meet our strategic objectives.

We face intense competition for well-qualified individuals, as the supply of people with specific skills and significant leadership potential or in specific geographic regions may be limited, and in the UK the added uncertainty created by Brexit could impact the hiring and retention of staff in some business-critical areas.

The successful delivery of our business objectives is dependent on high levels of engagement, commitment and motivation of the workforce. In January 2019, we announced organisational changes to support continued scientific innovation and commercial success as we enter the next phase in our strategic development. Such changes may increase levels of employee uncertainty leading to lower levels of engagement.

The inability to attract and retain highly-skilled personnel may weaken our succession plans for critical positions in the medium term, may materially adversely affect the implementation of our strategic objectives, and could ultimately impact our business or results of operations.

Failure to engage effectively with our employees could lead to business disruption in our day-to-day operations, reduce levels of productivity and/or increase levels of voluntary turnover, all of which could ultimately materially adversely affect our business or results of operations.

Legal, regulatory and compliance risks	Impact

Failure to adhere to applicable laws, rules and regulations

Our many business operations are subject to a wide range of laws, rules and regulations from governmental and non-governmental bodies around the world.

Any failure to comply with these applicable laws, rules and regulations may result in AstraZeneca being investigated by relevant agencies and authorities and/or in legal proceedings being filed against us. Such investigations or proceedings could result in us becoming subject to civil or criminal sanctions and/or being forced to pay fines or damages. Relevant authorities have wide-ranging administrative powers to deal with any failure to comply with continuing regulatory oversight and this could affect us, whether such failure is our own or that of our contractors or external partners. Moreover, such laws, rules and regulations are subject to change.

Material examples of statutes, rules and regulations impacting business operations include:

- Compliance with GMP.
- Local, national and international environmental and occupational health and safety laws and regulations.
- Trade control laws governing our imports and exports including nationally and internationally recognised trade agreements, embargoes, trade and economic sanctions and anti-boycott requirements.
- Competition laws.
- Rules and regulations established to promote ethical supply chain management.
- Financial regulations including, but not limited to, external financial reporting, taxation and anti-money laundering.
- Employment practices.
- Disclosure of payments to healthcare professionals under the Sunshine Act and EFPIA legislation.
- Appropriate disclosure of community support, patient organisation support and product donations.
- Compliance with human rights and appropriate environmental practices of third-party contractors around the world including with, but not limited to, the conflict minerals rule in the US, and the UK Modern Slavery Act.

We have environmental and/or occupational health and safety-related liabilities at some current, formerly owned, leased and third-party sites. For more information on the most significant of these and for details on other significant litigation matters, please refer to Note 29 to the Financial Statements from page 220.

In addition to compliance with laws, rules and regulations, companies are increasingly judged by their approach to sustainability. Assessments such as the Dow Jones Sustainability Index and Access to Medicine Index are widely publicised and of growing importance to stakeholders including investors, patients and employees. Our sustainability strategy is outlined on page 52 and in our Sustainability Report.

Failure to comply with applicable laws, rules and regulations; manage our liabilities; or to adequately anticipate or proactively manage emerging policy and legal developments could materially adversely affect our license to operate or results of operations; adversely affect our reputation; cause harm to people or the environment; and/or lead to fines or other penalties.

For example, once a product has been approved for marketing by the regulatory authorities, it is subject to continuing control and regulation, such as the manner of its manufacture, distribution, marketing and safety surveillance. If regulatory issues concerning compliance with environmental, current GMP or safety monitoring regulations for pharmaceutical products (often referred to as pharmacovigilance) arise, this could lead to product recalls, loss of product approvals and seizures, and interruption of production, which could create product shortages and delays in new product approvals, and negatively impact patient access. As another example, violation of laws, rules, regulations or policies in countries subject to trade and economic sanctions could lead to loss of import or export privileges, civil or criminal penalties for us or our employees, or potential reputational harm, which could have a material adverse effect on our results of operations, financial condition or business.

There is no guarantee that our sustainability strategy will be successful or meet the increasing expectations of our stakeholders. Failure or perceived failure may materially impact our business and adversely affect our reputation.

Safety and efficacy of marketed products is questioned

Our ability to accurately assess, prior to launch, the eventual safety or efficacy of a new product once in broader clinical use can only be based on data available at that time, which is inherently limited due to relatively short periods of product testing and relatively small clinical study patient samples.

Any unforeseen safety concerns or adverse events relating to our products or failure to comply with laws, rules and regulations relating to provision of appropriate warnings concerning the dangers and risks of our products that result in injuries could expose us to large product liability damages claims, settlements and awards, particularly in the US. Adverse publicity relating to the safety of a product or of other competing products may increase the risk of product liability claims.

Details of material product liability litigation matters can be found in Note 29 to the Financial Statements from page 220.

Serious safety concerns or adverse events relating to our products could lead to product recalls, seizures, loss of product approvals, declining sales and interruption of supply and could materially adversely impact patient access, our reputation and financial revenues.

Significant product liability claims could also arise which could be costly, divert management attention, or damage our reputation and demand for our products.

Unfavourable resolution of such current and similar future product liability claims could subject us to enhanced damages, consumer fraud and/or other claims, including civil and criminal governmental actions, require us to make significant provisions in our accounts relating to legal proceedings, and could materially adversely affect our financial condition or results of operations, particularly where such circumstances are not covered by insurance. For more information, see the limited third-party insurance coverage risk on page 257.

Legal, regulatory and compliance risks	Impact

Adverse outcome of litigation and/or governmental investigations

We may be subject to various product liability, consumer, commercial, anti-trust, environmental, employment or tax litigation or other legal proceedings and governmental investigations. Litigation, particularly in the US, is inherently unpredictable and unexpectedly high awards for damages can result from an adverse verdict. In many cases, plaintiffs may claim enhanced damages in extremely high amounts. In particular, the marketing, promotional, clinical and pricing practices of pharmaceutical manufacturers, as well as the manner in which manufacturers interact with purchasers, prescribers and patients, are subject to extensive regulation, litigation and governmental investigation. Many companies, including AstraZeneca, have been subject to claims related to these practices asserted by federal and state governmental authorities and private payers and consumers, which have resulted in substantial expense and other significant consequences. Note 29 to the Financial Statements from page 220 describes the material legal proceedings in which we are currently involved.

Governmental investigations, for example under the US Foreign Corrupt Practices Act or federal or state False Claims Acts or other types of legal proceedings, regardless of their outcome, could be costly, divert management attention, or damage our reputation and demand for our products. Unfavourable resolution of current and similar future proceedings against us could subject us to criminal liability, fines, penalties or other monetary or non-monetary remedies, including enhanced damages, require us to make significant provisions in our accounts relating to legal proceedings and could materially adversely affect our business or results of operations.

Failure to adhere to increasingly stringent anti-bribery and anti-corruption legislation

There remains an increased global focus on the implementation and enforcement of anti-bribery and anti-corruption legislation.

Two relevant pieces of legislation include the UK Bribery Act and the US Foreign Corrupt Practices Act, and many other countries where we operate are also enforcing their own laws more aggressively and/or adopting tougher new measures. There has also been an increase in cooperation and coordination between regulators across countries with respect to investigation and enforcement.

We have been the subject of anti-corruption investigations and there can be no assurance that we will not, from time to time, be subject to informal enquiries and formal investigations from governmental agencies. In the context of our business, governmental officials interact with us in various roles that are important to our operations, such as in the capacity of a regulator, partner or healthcare payer, reimburser or prescriber, among others. To the extent we are the subject of any such pending and material matters, details are included in Note 29 to the Financial Statements from page 220.

Despite taking measures to prevent breaches of applicable anti-bribery and anti-corruption laws by our personnel and associated third parties, breaches may still occur, potentially resulting in the imposition of significant penalties, such as fines, the requirement to comply with monitoring or self-reporting obligations, or debarment or exclusion from government sales or reimbursement programmes, any of which could materially adversely affect our reputation, business or results of operations.

Economic and financial risks	Impact

Failure to achieve strategic plans or meet targets or expectations

From time to time, we communicate our business strategy or our targets or expectations regarding our future financial or other performance (for example, the expectations described in Future prospects in the Financial Review on page 91). All such statements are of a forward-looking nature and are based on assumptions and judgements we make, all of which are subject to significant inherent risks and uncertainties, including those that we are unaware of and/or that are beyond our control.

There can be no guarantee that our financial targets or expectations will materialise on the expected timeline or at all. Actual results may deviate materially and adversely from any such target or expectation, including if one or more of the assumptions or judgements underlying any such target or expectation proves to be incorrect in whole or in part.

Any failure to successfully implement our business strategy, whether determined by internal or external risk factors, may frustrate the achievement of our financial or other targets or expectations and, in turn, materially damage our brand and materially adversely affect our business, financial position or results of operations.

Failure in financial control or the occurrence of fraud

Effective internal controls are necessary for us to provide reliable financial reports and are designed to prevent and detect fraud. Lapses in controls and procedures could undermine the ability to prevent fraud or provide accurate disclosure of financial information on a timely basis. Testing of our internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of Financial Statements and may not prevent or detect misstatements or fraud.

Significant resources may be required to remediate any lapse or deficiency in internal controls.

Any such deficiency may also trigger investigations by a number of organisations, for example, the SEC, the DOJ or the UK Serious Fraud Office and may result in fines being levied against Group individual directors or officers.

Serious fraud may lead to potential prosecution or even imprisonment of senior management.

Economic and financial risks	Impact

Unexpected deterioration in the Group's financial position

A wide range of financial risks could result in a material deterioration in the Group's financial position.

As a global business, currency fluctuations can significantly affect our results of operations, which are reported in US dollars. Approximately 33% and 21% of our global 2019 Product Sales were in the US and China respectively, which are expected to remain our largest two markets for the foreseeable future. Product Sales in other countries are predominantly in currencies other than the US dollar and the Chinese renminbi, including the euro, Japanese yen and pound sterling.

Our consolidated balance sheet contains significant investments in intangible assets, including goodwill. The nature of the pharmaceutical business is high risk and requires that we invest in a large number of projects in an effort to develop a successful portfolio of approved products. Our ability to realise value on these significant investments is often contingent upon, among other things, regulatory approvals, market acceptance, competition and legal developments. As such, in the course of our many acquisitions and R&D activities, we expect that some of our intangible assets will become impaired and be written off at some time in the future.

Inherent variability of biologics manufacturing increases the risk of write-offs of product batches. Due to the value of the materials used, the carrying amount of biologics products is much higher than that of small molecule products. As we continue to grow our biologics business, we also increase the risk of potential impairment charges.

The costs associated with product liability litigation have increased the cost of, and narrowed the coverage afforded by, pharmaceutical companies' product liability insurance. To contain insurance costs, as of February 2006, we adjusted our product liability coverage profile, accepting uninsured exposure above $100 million. In addition, where claims are made under insurance policies, insurers may reserve the right to deny coverage on various grounds. For example, product liability litigation cases relating to *Farxiga* and *Nexium* in the US are not covered by third-party product liability insurance. See Note 29 to the Financial Statements from page 220 for details.

The integrated nature of our worldwide operations can produce conflicting claims from revenue authorities as to the profits to be taxed in individual countries. The majority of the jurisdictions in which we operate have double tax treaties with other foreign jurisdictions, which provide a framework for mitigating the incidence of double taxation on our revenues and capital gains.

The Group's worldwide operations are taxed under laws in the jurisdictions in which they operate. International standards governing the global tax environment regularly change. The Organisation for Economic Co-operation and Development (OECD) has introduced a number of changes under the Base Erosion and Profit Shifting (BEPS) Action Plans which are now being progressively implemented by tax authorities around the world. During 2019, it has undertaken a public consultation setting out alternatives for further potential actions and is now working to seek a consensus on those that should be implemented.

Our defined benefit pension obligations are largely backed by assets invested across the broad investment market. Our most significant obligations relate to defined benefit pension funds in the UK, Sweden and the US. The largest obligation is in the UK.

Movements in the exchange rates used to translate foreign currencies into US dollars may materially adversely affect our financial condition or results of operations. Some of our subsidiaries import and export goods and services in currencies other than their own functional currency, and so the financial results of such subsidiaries could be affected by currency fluctuations arising between the transaction and settlement dates. In addition, there are foreign exchange differences arising on the translation of investments in subsidiaries.

We have significant investments in goodwill and intangible assets as a result of our acquisitions of various businesses and our purchases of certain assets, such as product development and marketing rights. Impairment losses may materially adversely affect our financial condition or results of operations. Details of the carrying values of goodwill and intangible assets, and the estimates and assumptions we make in our impairment testing, are included in Notes 8 and 9 to the Financial Statements from page 189.

Financial liabilities arising due to product liability or other litigation, in respect of which we do not have insurance coverage, or if an insurer's denial of coverage is ultimately upheld, could require us to make significant provisions relating to legal proceedings and could materially adversely affect our financial condition or results of operations.

For more information, please see the Adverse outcome of litigation and/or governmental investigations risk on page 256.

The resolution of tax disputes regarding the profits to be taxed in individual territories can result in a reallocation of profits or losses between jurisdictions and an increase or decrease in related tax costs, and has the potential to affect our cash flows, EPS and post-tax earnings. Claims, regardless of their merits or their outcome, are costly, divert management attention and may adversely affect our reputation.

If any double tax treaties are withdrawn or amended, especially in a territory where a member of the AstraZeneca Group is involved in a taxation dispute with a tax authority in relation to cross-border transactions, such withdrawal or amendment could materially adversely affect our financial condition or results of operations, as could a negative outcome of a tax dispute or a failure by tax authorities to agree to eliminate double taxation through competent authority proceedings. Changes to the application of double tax treaties, as a result of the Parent Company of the Group no longer being an EU entity following Brexit, could also result in adverse consequences such as those described above. See the Financial risk management policies section of the Financial Review on page 91 for tax risk management policies and Note 29 to the Financial Statements from page 220 for details of current tax disputes.

Changes in tax regimes, such as those relating to the US federal tax regime which were effective from 1 January 2018, could result in a material impact on the Group's cash tax liabilities and tax charge, resulting in either an increase or a reduction in financial results depending upon the nature of the change. We represent views to the OECD, governments and tax authorities through public consultations to ensure international institutions and governments understand the business implications of proposed law changes. Specific OECD BEPS recommendations that we expect to impact the Group include changes to patent box regimes, restrictions of interest deductibility and revised transfer pricing guidelines.

Sustained falls in asset values could reduce pension fund solvency levels, which may result in requirements for additional cash, restricting the cash available for our business. Changes to funding regulations for defined benefit pensions may also result in a requirement for additional cash contributions by the Group. If the present value of the liabilities increases due to a sustained low interest rate environment, an increase in expectations of future inflation, or an improvement in member longevity (above that already assumed), this could also reduce pension fund solvency ratios. The likely increase in the IAS 19 'Employee Benefits' accounting deficit generated by any of these factors may cause the credit rating agencies to review our credit rating, with the potential to negatively affect our ability to raise debt and the price of new debt issuances. See Note 22 to the Financial Statements from page 200 for further details of the Group's pension obligations.

Shareholder Information

The principal markets for trading in AstraZeneca shares are the London Stock Exchange, Nasdaq Stockholm and the New York Stock Exchange (NYSE). Ordinary Shares of $0.25 each in AstraZeneca PLC are listed on the London Stock Exchange and the shareholder register is maintained by Equiniti Limited, the Ordinary Share registrar. Shares listed on Nasdaq Stockholm are issued under the Euroclear Services Agreement by Euroclear Sweden AB, the Swedish Central Securities Depositary. Shares listed on the NYSE are in the form of American Depositary Shares (ADSs), evidenced by American Depositary Receipts (ADRs) issued by the Company's ADR depositary, Deutsche Bank Trust Company Americas (Deutsche Bank). Deutsche Bank replaced Citibank, N.A. as the Company's ADR depositary on 6 February 2020. Two ADSs are equivalent to one Ordinary Share. Before 27 July 2015, the ratio was one ADS per one Ordinary Share.

Ordinary Share registrar

Equiniti Limited
Aspect House
Spencer Road
Lancing
West Sussex
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UK
Tel (Freephone in UK): +44 (0)800 389 1580
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Swedish Central Securities Depositary

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SE-101 23 Stockholm
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ADR depositary

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6201 15th Avenue
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USA
Tel (toll free in the US): +1 (888) 697 8018
Tel (outside US): +1 718 921 8137
db@astfinancial.com

Annual general meeting (AGM)

The 2020 AGM will be held on 29 April 2020. The meeting place will be in London, UK. Shareholders holding Ordinary Shares directly are entitled to attend and vote at the meeting, or may submit a proxy voting instruction in advance by following the instructions in the notice of AGM.

If you hold shares listed in Stockholm or hold ADRs, information relating to voting and attendance, will be included in the relevant notice of AGM.

If you hold your shares through a nominee, your nominee provider will be able to advise you of their arrangements in relation to voting and attendance.

US corporate governance requirements

Our ADSs are traded on the NYSE and, accordingly, we are subject to the reporting and other requirements of the SEC applicable to foreign private issuers. Section 404 of the Sarbanes-Oxley Act requires companies to include in their annual report on Form 20-F filed with the SEC, a report by management stating its responsibility for establishing internal control over financial reporting and to assess annually the effectiveness of such internal control. We have complied with those provisions of the Sarbanes-Oxley Act applicable to foreign private issuers.

The Board continues to believe that the Group has a sound corporate governance framework, good processes for the accurate and timely reporting of its financial position and results of operations, and an effective and robust system of internal controls. We have established a Disclosure Committee, further details of which can be found in the Corporate Governance Report on page 112.

The Directors' assessment of the effectiveness of internal control over financial reporting is set out in the Directors' Annual Report on Internal Controls over Financial Reporting on page 161.

We are required to disclose any significant ways in which our corporate governance practices differ from those followed by US companies under the Listing Standards of the NYSE. In addition, we must comply fully with the provisions of the Listing Standards relating to the composition, responsibilities and operation of audit committees, applicable to foreign private issuers. These provisions incorporate the rules concerning audit committees implemented by the SEC under the Sarbanes-Oxley Act. We have reviewed the corporate governance practices required to be followed by US companies under the Listing Standards and our corporate governance practices are generally consistent with those standards.

Dividends

Dividend dates for 2020 are shown in the financial calendar on page 259. A first interim dividend is normally announced in July/August and paid in September and a second interim dividend is normally announced in January/February and paid in March. Dividends are paid in GBP, SEK and USD, depending on where the eligible shares are listed. Further information on dividends declared can be found in the Shareholder Information section of AstraZeneca's website at www.astrazeneca.com.

Shareholders holding Ordinary Shares directly may opt for dividends to be paid straight to their bank or building society account, rather than being paid by cheque. To elect for this swift and secure method of payment, contact the Ordinary Share registrar, visit www.shareview.co.uk or fill in the mandate form that will be sent to you with your next dividend cheque. If you hold shares listed in Stockholm, you should contact your personal broker or, if you hold a VP account, contact the bank that services your VP account. If you hold ADRs directly you should contact American Stock Transfer & Trust Co (the ADR transfer agent). If you hold your shares through a nominee, you should direct any queries relating to your shareholding and dividend payments to the nominee provider.

Shareholder communications

Copies of shareholder communications and annual reports are available on AstraZeneca's website at www.astrazeneca.com. If you hold Ordinary Shares directly, currently receive hard copies of shareholder communications and/or the annual report and would rather receive these documents electronically, you can manage your communication preferences at www.shareview.co.uk or by contacting the Ordinary Share registrar. If your record on the Ordinary Share register has been duplicated you may receive multiple copies of shareholder communications. If this is the case, please contact the Ordinary Share registrar so that this can be rectified.

Holders of shares listed in Stockholm should contact Computershare AB, PO Box 5267, 102 46 Stockholm, Sweden (Tel: +46 (0)8 588 04 200) and holders of ADRs should contact the ADR depositary or their personal broker with queries relating to shareholder communications.

Shareview

Holders of Ordinary Shares may create a portfolio at www.shareview.co.uk to view and manage their AstraZeneca shareholding. Shareview is a free and secure online service provided by the Ordinary Share registrar that allows users to, among other things, update personal details, manage communication preferences, view dividend information and manage direct dividend payments.

ShareGift

Shareholders that hold only a small number of shares, the value of which makes it uneconomical to sell them, may wish to consider donating them to charity through ShareGift, an independent charity share donation scheme (registered charity number 1052686). Further information about ShareGift can be found on its website at www.sharegift.org or by calling +44 (0)20 7930 3737.

Shareholder fraud warning

Shareholders of AstraZeneca and many other companies have reported receiving unsolicited calls and correspondence relating to their shareholdings and investment matters. Shareholders are advised to be very cautious of any unsolicited approaches and to note that reputable firms authorised by the Financial Conduct Authority (FCA) are very unlikely to make such approaches. Such approaches are likely to be part of a 'boiler room scam' attempting to defraud shareholders.

Shareholders are advised to familiarise themselves with the information on scams available on the FCA website, www.fca.org.uk/consumers and within the FAQs in the Investors section of AstraZeneca's website, www.astrazeneca.com.

Any suspected scams or fraudulent approaches should be reported to the FCA via its website and to AstraZeneca's Ordinary Share registrar, using the contact details on page 258.

Related party transactions

During the period 1 January 2020 to 31 January 2020, there were no transactions, loans, or proposed transactions between the Company and any related parties which were material to either the Company or the related party, or which were unusual in their nature or conditions (see also Note 31 to the Financial Statements on page 226).

Documents on display

The Articles and other documents concerning the Company which are referred to in this Annual Report may be inspected at the Company's registered office at 1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge CB2 0AA, UK.

Property

Substantially all of our properties are held freehold, free of material encumbrances and are fit for their purpose. For more information, please refer to Note 7 to the Group Financial Statements on page 188.

Investor Relations

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Financial calendar

Event	Provisional date
Second interim dividend for 2019	
Ex-dividend date	27 February 2020
Record date	28 February 2020
Payment date	30 March 2020
Announcement of first quarter results for 2020	29 April 2020
Annual general meeting (AGM)	29 April 2020
Announcement of second quarter and half-year results for 2020	30 July 2020
First interim dividend for 2020	
Ex-dividend date	13 August 2020
Record date	14 August 2020
Payment date	14 September 2020
Announcement of third quarter results for 2020	5 November 2020
Financial year end	31 December 2020

History and development of the Company

AstraZeneca PLC was incorporated in England and Wales on 17 June 1992 under the Companies Act 1985. It is a public limited company domiciled in the UK. The Company's registered number is 2723534 and its registered office is at 1 Francis Crick Avenue, Cambridge Biomedical Campus, Cambridge CB2 0AA, UK (Tel: +44 (0)20 3749 5000). From February 1993 until April 1999, the Company was called Zeneca Group PLC. On 6 April 1999, the Company changed its name to AstraZeneca PLC.

The Company was formed when the pharmaceutical, agrochemical and specialty chemical businesses of Imperial Chemical Industries PLC were demerged in 1993. In 1999, the Company sold the specialty chemical business. Also in 1999, the Company merged with Astra of Sweden. In 2000, it demerged the agrochemical business and merged it with the similar business of Novartis to form a new company called Syngenta AG. In 2007, the Group acquired MedImmune, a biologics and vaccines business based in the US.

In 1999, in connection with the merger between Astra and Zeneca, the Company's share capital was redenominated in US dollars. On 6 April 1999, Zeneca shares were cancelled and US dollar shares issued, credited as fully paid on the basis of one dollar share for each Zeneca share then held.

This was achieved by a reduction of capital under section 135 of the Companies Act 1985. Upon the reduction of capital becoming effective, all issued and unissued Zeneca shares were cancelled and the sum arising as a result of the share cancellation credited to a special reserve, which was converted into US dollars at the rate of exchange prevailing on the record date. This US dollar reserve was then applied in paying up, at par, newly created US dollar shares.

At the same time as the US dollar shares were issued, the Company issued 50,000 Redeemable Preference Shares for cash, at par. The Redeemable Preference Shares carry limited class voting rights, no dividend rights and are capable of redemption, at par, at the option of the Company on the giving of seven days' written notice to the registered holder of the Redeemable Preference Shares.

A total of 826 million Ordinary Shares were issued to Astra shareholders who accepted the merger offer before the final closing date, 21 May 1999. The Company received acceptances from Astra shareholders representing 99.6% of Astra's shares and the remaining 0.4% was acquired in 2000, for cash.

Conflicts of interest

The Articles enable the Directors to authorise any situation in which a Director has an interest that conflicts or has the potential to conflict with the Company's interests and which would otherwise be a breach of the Director's duty, under Section 175 of the Companies Act 2006. The Board has a formal system in place for Directors to declare such situations to be considered for authorisation by those Directors who have no interest in the matter being considered.

In deciding whether to authorise a situation, the non-conflicted Directors must act in the way they consider, in good faith, would be most likely to promote the success of the Company, and they may impose limits or conditions when giving the authorisation, or subsequently, if they think this is appropriate. Situations considered by the Board and authorisations given are recorded in the Board minutes and in a register of conflicts maintained by the Company Secretary and are reviewed annually by the Board. The Board believes that this system operates effectively.

Shareholder Information
continued

Issued share capital, shareholdings and share prices

At 31 December 2019, the Company had 77,752 registered holders of 1,312,137,976 Ordinary Shares. There were 111,333 holders of Ordinary Shares held under the Euroclear Services Agreement, representing 10.5% of the issued share capital of the Company and 1,786 registered holders of ADSs, representing 19.4% of the issued share capital of the Company.

Ordinary Shares in issue

	2019	2018	2017	2016	2015
Ordinary Shares in issue – millions					
At year end	**1,312**	1,267	1,266	1,265	1,264
Weighted average for year	**1,301**	1,267	1,266	1,265	1,264
Stock market price per Ordinary Share (London Stock Exchange)					
Highest (pence)	**7808.0**	6317.0	5508.0	5220.0	4863.0
Lowest (pence)	**5325.0**	4712.5	4194.0	3774.0	3903.5
At year end (pence)	**7607.0**	5873.0	5121.0	4437.5	4616.5

Analysis of shareholdings as a percentage of issued share capital at 31 December

Number of Ordinary Shares[1]	**2019 %**	2018 %	2017 %	2016 %	2015 %
1 – 250	**0.4**	0.4	0.5	0.5	0.5
251 – 500	**0.5**	0.5	0.5	0.5	0.6
501 – 1,000	**0.5**	0.5	0.6	0.6	0.7
1,001 – 5,000	**0.7**	0.8	0.8	0.8	0.9
5,001 – 10,000	**0.2**	0.2	0.2	0.2	0.2
10,001 – 50,000	**1.0**	1.0	1.0	0.9	0.9
50,001 – 1,000,000	**11.2**	12.1	11.9	12.3	13.0
Over 1,000,000	**85.5**	84.5	84.5	84.2	83.2

[1] Includes Euroclear and ADR holdings.

Reported high and low share prices during the year

		Ordinary Shares London Stock Exchange[1]		Ordinary Shares Nasdaq Stockholm[2]		ADRs New York Stock Exchange[3]	
		High (pence)	Low (pence)	High (SEK)	Low (SEK)	High (USD)	Low (USD)
2019	– December	7808.0	7217.0	956.2	902.3	50.46	47.62
	– November	7560.0	7248.0	948.3	903.7	48.77	46.80
	– October	7580.0	6729.0	947.3	842.5	49.03	42.46
	– September	7533.0	6793.0	900.7	825.0	45.47	42.51
	– August	7412.0	7076.0	885.0	831.2	45.42	43.56
	– July	7180.0	6324.0	844.9	754.3	44.39	40.12
	– Quarter 4	7808.0	6729.0	956.2	842.5	50.46	42.46
	– Quarter 3	7533.0	6324.0	900.7	754.3	45.47	40.12
	– Quarter 2	6486.0	5644.0	788.6	709.3	41.68	37.28
	– Quarter 1	6525.0	5325.0	800.9	643.3	43.02	35.49
2018	– Quarter 4	6317.0	5546.0	754.8	661.8	41.49	36.86
	– Quarter 3	6107.0	5182.0	721.8	608.2	39.72	34.76
	– Quarter 2	5478.0	4867.0	648.4	584.3	37.05	34.55
	– Quarter 1	5204.0	4712.5	587.3	531.7	36.63	32.97

[1] For shares listed on the London Stock Exchange, the reported high and low middle market closing quotations are derived from the Daily Official List.
[2] For shares listed on Nasdaq Stockholm, the high and low closing sales prices are as stated in the Official List.
[3] For ADRs listed on the New York Stock Exchange, the reported high and low sales prices are as reported by Dow Jones (ADR quotations).

US holdings

At 31 January 2020, the proportion of Ordinary Shares represented by ADSs was 19.4% of the issued share capital of the Company.
At 31 January 2020, there were 77,575 registered holders of Ordinary Shares, of which 632 were based in the US and there were 1,787 record holders of ADRs, of which 1,765 were based in the US.

Tax information for shareholders

Taxation for US persons

The following summary of material UK and US federal income tax consequences of ownership of Ordinary Shares or ADRs held as capital assets by the US holders described below is based on current UK and US federal income tax law, including the US/UK double taxation convention relating to income and capital gains, which entered into force on 31 March 2003 (the Convention). This summary does not describe all of the tax consequences that may be relevant in light of the US holders' particular circumstances and tax consequences applicable to US holders subject to special rules (such as certain financial institutions, entities treated as partnerships for US federal income tax purposes, persons whose functional currency for US federal income tax purposes is not the US dollar, tax-exempt entities, persons holding Ordinary Shares or ADRs as part of a hedge or integrated transaction, dealers or traders in securities that use a mark-to-market method of tax accounting, persons that own directly, indirectly or constructively ADRs or Ordinary Shares representing 10% or more of our voting power or value, persons subject to alternative minimum tax, persons subject to the Medicare contribution tax on 'net investment income', or persons holding Ordinary Shares or ADRs in connection with a trade or business conducted outside of the US). US holders are urged to consult their tax advisers regarding the UK and US federal income tax consequences of the ownership and disposition of Ordinary Shares or ADRs in their particular circumstances.

This summary is based in part on representations of the depositary for ADRs and assumes that each obligation in the deposit agreement among the Company and the depositary and the holders from time to time of ADRs and any related agreements will be performed in accordance with its terms. The US Treasury has expressed concerns that parties to whom American depositary shares are released before shares are delivered to the depositary (pre-release), or intermediaries in the chain of ownership between holders and the issuer of the security underlying the American depositary shares, may be taking actions that are inconsistent with the claiming, by US holders of American depositary shares, of foreign tax credits for US federal income tax purposes. Such actions would also be inconsistent with the claiming of the reduced tax rates, described below, applicable to dividends received by certain non-corporate US holders. Accordingly, the availability of the reduced tax rates for dividends received by certain non-corporate US holders could be affected by actions that may be taken by parties to whom ADRs are pre-released.

For the purposes of this summary, the term 'US holder' means a beneficial owner of Ordinary Shares or ADRs that is, for US federal income tax purposes, a citizen or resident of the US, a corporation (or other entity taxable as a corporation) created or organised in or under the laws of the US, any state in the US or the District of Columbia, or an estate or trust, the income of which is subject to US federal income taxation regardless of its source.

This summary assumes that we are not, and will not become, a passive foreign investment company, as discussed below.

UK and US income taxation of dividends

The UK does not currently impose a withholding tax on dividends paid by a UK company, such as the Company.

For US federal income tax purposes, distributions paid by the Company to a US holder are included in gross income as foreign source ordinary dividend income to the extent paid out of the Company's current or accumulated earnings and profits, calculated in accordance with US federal income tax principles. The Company does not maintain calculations of its earnings and profits under US federal income tax principles and so it is expected that distributions generally will be reported to US holders as dividends. The amount of the dividend will be the US dollar amount received by the depositary for US holders of ADRs (or, in the case of Ordinary Shares, the US dollar value of the foreign currency payment, determined at the spot rate of the relevant foreign currency on the date the dividend is received by the US holders, regardless of whether the dividend is converted into US dollars), and it will not be eligible for the dividends received deduction generally available to US corporations.

If the dividend is converted into US dollars on the date of receipt, US holders of Ordinary Shares generally should not be required to recognise foreign currency gains or losses in respect of the dividend income. They may have foreign currency gain or loss (taxable at the rates applicable to ordinary income) if the amount of such dividend is converted into US dollars after the date of its receipt.

Subject to applicable limitations and the discussion above regarding concerns expressed by the US Treasury, dividends received by certain non-corporate US holders of Ordinary Shares or ADRs may be taxable at favourable US federal income tax rates. US holders should consult their own tax advisers to determine whether they are subject to any special rules which may limit their ability to be taxed at these favourable rates.

Taxation on capital gains

Under present English law, individuals who are neither resident nor ordinarily resident in the UK, and companies which are not resident in the UK, will not be liable for UK tax on capital gains made on the disposal of their Ordinary Shares or ADRs, unless such Ordinary Shares or ADRs are held in connection with a trade, profession or vocation carried on in the UK through a branch or agency or other permanent establishment.

A US holder will generally recognise US source capital gains or losses for US federal income tax purposes on the sale or exchange of Ordinary Shares or ADRs in an amount equal to the difference between the US dollar amount realised and such holder's US dollar tax basis in the Ordinary Shares or ADRs. US holders should consult their own tax advisers about the treatment of capital gains, which may be taxed at lower rates than ordinary income for non-corporate US holders and capital losses, the deductibility of which may be subject to limitations.

Passive Foreign Investment Company (PFIC) rules

We believe that we were not a PFIC for US federal income tax purposes for the year ended 31 December 2019. However, since PFIC status depends on the composition of our income and assets, and the market value of our assets (including, among others, less than 25% owned equity investments), from time to time, there can be no assurance that we will not be considered a PFIC for any taxable year. If we were treated as a PFIC for any taxable year during which Ordinary Shares or ADRs were held, certain adverse tax consequences could apply to US holders.

Information reporting and backup withholding

Payments of dividends and sales proceeds that are made within the US or through certain US-related financial intermediaries may be subject to information reporting and backup withholding, unless: (i) the US holder is a corporation or other exempt recipient; or (ii) in the case of backup withholding, the US holder provides a correct taxpayer identification number and certifies that it is not subject to backup withholding. The amount of any backup withholding from a payment to a US holder will be allowed as a credit against the holder's US federal income tax liability and may entitle the holder to a refund, provided that the required information is timely supplied to the US Internal Revenue Service (IRS).

Certain US holders who are individuals (or certain specified entities) may be required to report information relating to securities issued by non-US persons (or foreign accounts through which the securities are held), generally on IRS Form 8938, subject to certain exceptions (including an exception for securities held in accounts maintained by US financial institutions). US holders should consult their tax advisers regarding their reporting obligations with respect to the Ordinary Shares or ADRs.

UK inheritance tax

Under the current Double Taxation (Estates) Convention (the Estate Tax Convention) between the US and the UK, Ordinary Shares or ADRs held by an individual shareholder who is domiciled for the purposes of the Estate Tax Convention in the US, and is not for the purposes of the Estate Tax Convention a national of the UK, will generally not be subject to UK inheritance tax on the individual's death or on a chargeable gift of the Ordinary Shares or ADRs during the individual's lifetime, provided that any applicable US federal gift or estate tax liability is paid, unless the Ordinary Shares or ADRs are part of the business property of a permanent establishment of the individual in the UK or, in the case of a shareholder who performs independent personal services, pertain to a fixed base situated in the UK. Where the Ordinary Shares or ADRs have been placed in trust by a settlor who, at the time of settlement, was a US-domiciled shareholder, the Ordinary Shares or ADRs will generally not be subject to UK inheritance tax unless the settlor, at the time of settlement, was a UK national, or the Ordinary Shares or ADRs are part of the business property of a permanent establishment of the individual in the UK or, in the case of a shareholder who performs independent personal services, pertain to a fixed base situated in the UK. In the exceptional case where the Ordinary Shares or ADRs are subject to both UK inheritance tax and US federal gift or estate tax, the Estate Tax Convention generally provides for double taxation to be relieved by means of credit relief.

UK stamp duty reserve tax and stamp duty

A charge to UK stamp duty or UK stamp duty reserve tax (SDRT) may arise on the deposit of Ordinary Shares in connection with the creation of ADRs. The rate of stamp duty or SDRT will generally be 1.5% of the value of the consideration or, in some circumstances, the value of the Ordinary Shares. There is no 1.5% SDRT charge on the issue of Ordinary Shares (or, where it is integral to the raising of new capital, the transfer of Ordinary Shares) into the ADR arrangement.

No UK stamp duty will be payable on the acquisition or transfer of existing ADRs provided that any instrument of transfer or written agreement to transfer is executed outside the UK and remains at all times outside the UK. An agreement for the transfer of ADRs will not give rise to a liability for SDRT.

A transfer of, or an agreement to transfer, Ordinary Shares will generally be subject to UK stamp duty or SDRT at 0.5% of the amount or value of any consideration, provided, in the case of stamp duty, it is rounded up to the nearest £5.

Transfers of Ordinary Shares into CREST will generally not be subject to stamp duty or SDRT, unless such a transfer is made for a consideration in money or money's worth, in which case a liability to SDRT will arise, usually at the rate of 0.5% of the value of the consideration. Paperless transfers of Ordinary Shares within CREST are generally liable to SDRT at the rate of 0.5% of the value of the consideration. CREST is obliged to collect SDRT from the purchaser on relevant transactions settled within the system.

Exchange controls and other limitations affecting security holders

There are no governmental laws, decrees or regulations in the UK restricting the import or export of capital or affecting the remittance of dividends, interest or other payments to non-resident holders of Ordinary Shares or ADRs.

There are no limitations under English law or the Articles on the right of non-resident or foreign owners to be the registered holders of, or to exercise voting rights in relation to, Ordinary Shares or ADRs or to be registered holders of notes or debentures of the Company or its wholly owned subsidiary, Zeneca Wilmington Inc.

Exchange rates

The following information relating to average and spot exchange rates used by AstraZeneca is provided for convenience:

	SEK/USD	USD/GBP
Average rates (statement of comprehensive income, statement of cash flows)		
2019	**9.3980**	**1.2678**
2018	8.6419	1.3405
2017	8.5835	1.2835
End of year spot rates (statement of financial position)		
2019	**9.3550**	**1.3133**
2018	8.9537	1.2743
2017	8.2467	1.3468

Directors' Report

The Directors' Report includes information required to be given in accordance with the Companies Act 2006. Relevant information as set out below, which is contained elsewhere in the Annual Report, as incorporated by cross reference herein.

Subsidiaries and principal activities

The Company is the holding company for a group of subsidiaries whose principal activities are described in this Annual Report. The Group's subsidiaries and their locations are set out in Group Subsidiaries and Holdings in the Financial Statements from page 227.

Branches and countries in which the Group conducts business

In accordance with the Companies Act 2006, we disclose below our subsidiary companies that have representative or scientific branches/offices outside the UK:

- AstraZeneca UK Limited: Algeria (scientific office), Angola, Chile, Costa Rica, Croatia, Cuba, Dubai (branch office), Georgia, Ghana (scientific office), Jordan, Kazakhstan, Lebanon, Romania, Russia, Saudi Arabia (scientific office), Serbia, Slovenia (branch office), Syria, Ukraine and Yemen (scientific office)
- AstraZeneca AB: Egypt (scientific office) and Slovakia (branch office)
- AstraZeneca Singapore Pte Limited: Vietnam
- Astra Export & Trading AB: United Arab Emirates (branch office).

Disclosure of information to auditors

The Directors who held office at the date of approval of this Annual Report confirm that, so far as they are each aware, there is no relevant audit information of which the Company's auditors are unaware; and each Director has taken all the steps that he or she ought to have taken as a Director to make himself or herself aware of any relevant audit information and to establish that the Company's auditors are aware of that information.

Going concern accounting basis

Information on the business environment in which AstraZeneca operates, including the factors underpinning the industry's future growth prospects, is included in the Strategic Report. Details of the product portfolio of the Group are contained in both the Strategic Report (in the Therapy Area Review from page 54) and the Directors' Report. Information on patent expiry dates for key marketed products is included in Patent Expiries of Key Marketed Products from page 243. Our approach to product development and our development pipeline are also covered in detail with additional information by therapy area in the Strategic Report.

The financial position of the Group, its cash flows, liquidity position and borrowing facilities are described in the Financial Review from page 78. In addition, Note 27 to the Financial Statements from page 210 includes the Group's objectives, policies and processes for managing capital; financial risk management objectives; details of its financial instruments and hedging activities; and its exposures to credit, market and liquidity risk. Further details of the Group's cash balances and borrowings are included in Notes 16 and 18 to the Financial Statements from page 195.

Having assessed the principal risks and other matters considered in connection with the viability statement on page 75, the Board considers it appropriate to adopt the going concern basis of accounting in preparing the Annual Report and Financial Statements.

Shares

For more information, see Issued share capital, shareholdings and share prices on page 260.

A shareholders' resolution was passed at the 2019 AGM authorising the Company to purchase its own shares. The Company did not purchase any of its own shares in 2019. On 31 December 2019, the Company did not hold any shares in treasury.

Rights, preferences and restrictions attaching to shares

As at 31 December 2019, the Company had 1,312,137,976 Ordinary Shares and 50,000 Redeemable Preference Shares in issue. The Ordinary Shares represent 99.98% and the Redeemable Preference Shares represent 0.02% of the Company's total share capital (these percentages have been calculated by reference to the 8am WM/Reuters USD/GBP exchange rate on 31 December 2019).

As agreed by the shareholders at the Company's AGM held on 29 April 2010, the Articles were amended with immediate effect to remove the requirement for the Company to have an authorised share capital, the concept of which was abolished under the Companies Act 2006. Each Ordinary Share carries the right to vote at general meetings of the Company. The rights and restrictions attaching to the Redeemable Preference Shares differ from those attaching to Ordinary Shares as follows:

- The Redeemable Preference Shares carry no rights to receive dividends.
- The holders of Redeemable Preference Shares have no rights to receive notices of, attend or vote at general meetings except in certain limited circumstances. They have one vote for every 50,000 Redeemable Preference Shares held.
- On a distribution of assets of the Company, on a winding-up or other return of capital (subject to certain exceptions), the holders of Redeemable Preference Shares have priority over the holders of Ordinary Shares to receive the capital paid up on those shares.
- Subject to the provisions of the Companies Act 2006, the Company has the right to redeem the Redeemable Preference Shares at any time on giving not less than seven days' written notice.

There are no specific restrictions on the transfer of shares in the Company, which is governed by the Articles and prevailing legislation.

The Company is not aware of any agreements between holders of shares that may result in restrictions on the transfer of shares or that may result in restrictions on voting rights. The Company is also not aware of any arrangements under which financial rights are held by a person other than the holder of the shares.

Action necessary to change the rights of shareholders

In order to vary the rights attached to any class of shares, the consent in writing of the holders of three quarters in nominal value of the issued shares of that class or the sanction of a special resolution passed at a general meeting of such holders is required.

Changes in share capital

In 2019, the Company completed a placing of 44,386,214 new Ordinary Shares of $0.25 each in the Company (having an aggregate nominal value of $11,096,554) with both existing and new institutional investors at a price of £60.50 per share. The placing raised gross proceeds of approximately £2.69 billion. The terms of the issue were agreed on 29 March 2019 and the placing price of £60.50 per share represented a discount of 1.5% to the middle market price on 29 March 2019. The shares were issued and admitted for trading on the main market of the London Stock Exchange on 2 April 2019. The net proceeds of the placing were used (i) to fund upfront and near-term payments in respect of the Company's global development and commercialisation collaboration agreement with Daiichi Sankyo for *Enhertu* (DS-8201); (ii) for the repayment of the Company's $1 billion, 1.95% notes due on 18 September 2019; and (iii) for general corporate purposes, to improve the Company's overall balance sheet strength and liquidity. At the date of allotment and issue, the placing shares issued represented approximately 3.5% of the issued Ordinary Share capital of the Company. Over the three years preceding the issue, there was a 3.7% increase in share capital due to the non-pre-emptive issue of shares for cash by the Company.

Changes in the Company's Ordinary Share capital during 2019, including details of the allotment of new shares under the Company's share plans, are given in Note 24 to the Financial Statements on page 209.

Major shareholdings

At 31 December 2019, the following persons had disclosed an interest in the issued Ordinary Share capital of the Company in accordance with the requirements of rules 5.1.2 or 5.1.5 of the UK Listing Authority's Disclosure Guidance and Transparency Rules:

Shareholder	Number of Ordinary Shares	Date of disclosure to Company[1]	**Number of Ordinary Shares disclosed as a percentage of issued share capital at 31 December 2019**
BlackRock, Inc.	100,885,181	4 December 2009	**7.69**
Investor AB	51,587,810	3 April 2019	**3.93**
The Capital Group Companies, Inc.	63,802,495	17 July 2018	**4.86**
Wellington Management Group LLP[2]	77,260,227	3 October 2019	**5.89**
Wellington Management Company LLP[2]	77,153,697	3 October 2019	**5.88**

[1] Since the date of disclosure to the Company, the interest of any person listed above in Ordinary Shares may have increased or decreased. No requirement to notify the Company of any increase or decrease arises unless the holding passes a notifiable threshold in accordance with rules 5.1.2 or 5.1.5 of the UK Listing Authority's Disclosure Guidance and Transparency Rules.
[2] The Company was notified at the time of the disclosure that Wellington Management Company LLP was a subsidiary of Wellington Management Group LLP and that the shareholding percentage notified by Wellington Management Company LLP was included within the aggregate shareholding percentage notified by Wellington Management Group LLP.

So far as the Company is aware, no other person held a notifiable interest in the issued Ordinary Share capital of the Company. No changes to major shareholdings were disclosed to the Company between 31 December 2019 and 31 January 2020.

Changes in the percentage ownerships disclosed by major shareholders during the past three years are set out below. Major shareholders do not have different voting rights.

Shareholder	**31 January 2020**	31 January 2019	31 January 2018	31 January 2017
BlackRock, Inc.	**7.69**	7.96	7.97	7.97
Investor AB	**3.93**	4.07	4.07	4.08
The Capital Group Companies, Inc.	**4.86**	5.04	4.98	3.00
Wellington Management Group LLP	**5.89**	–	–	–
Wellington Management Company LLP	**5.88**	–	–	–

So far as the Company is aware, it is neither directly nor indirectly owned or controlled by one or more corporations or by any government.

The Company does not know of any arrangements, the operation of which might result in a change in the control of the Company.

Directors' and officers' shareholdings

At 31 January 2020, the total amount of the Company's voting securities owned by Directors and officers of the Company was:

Title of class	Amount owned	Percentage of class
Ordinary Shares	**567,149**	**0.04**

Options to purchase securities from registrant or subsidiaries

(a) At 31 January 2020, options outstanding to subscribe for Ordinary Shares were:

Number of shares	Subscription price (pence)	Normal expiry date
1,319,968	**2881-5833**	2020-2025

The weighted average subscription price of options outstanding at 31 January 2020 was 4330 pence. All options were granted under Company employee share schemes.

(b) Included in paragraph (a) are options granted to officers of the Company as follows:

Number of shares	Subscription price (pence)	Normal expiry date
1,407	**3307-3597**	2021

(c) During 2019, no options were held by Directors.

During the period 1 January 2020 to 31 January 2020, no Director was granted or exercised any options.

Distributions to shareholders – dividends for 2019

Details of our distribution policy are set out in the Financial Review from page 78 and Notes 24 and 25 to the Financial Statements from page 209.

The Company's dividend for 2019 of $2.80 (218.3 pence, SEK 26.81) per Ordinary Share amounts to, in aggregate, a total dividend payment to shareholders of $3,583 million. Two employee share trusts, AstraZeneca Employee Benefit Trust and AstraZeneca Share Retention Trust, waived their rights to a dividend on the Ordinary Shares they hold and instead received nominal dividends.

For more information, see Financial calendar on page 259.

Articles of Association

AstraZeneca PLC's current Articles were adopted by shareholders at the Company's AGM held on 18 May 2018. Any amendment to the Articles requires the approval of shareholders by a special resolution at a general meeting of the Company.

Objects

The Company's objects are unrestricted.

Directors

The Board has the authority to manage the business of the Company, for example, through powers to allot and repurchase its shares, subject where required to shareholder resolutions. Subject to certain exceptions, Directors do not have power to vote at Board meetings on matters in which they have a material interest.

The quorum for meetings of the Board is a majority of the full Board, of whom at least four must be Non-Executive Directors. In the absence of a quorum, the Directors do not have power to determine compensation arrangements for themselves or any member of the Board.

The Board may exercise all the powers of the Company to borrow money. Variation of these borrowing powers would require the passing of a special resolution of the Company's shareholders.

All Directors must retire from office at the Company's AGM each year and may present themselves for election or re-election. Directors are not prohibited, upon reaching a particular age, from submitting themselves for election or re-election.

For more information on the Directors, see Board of Directors on pages 98 and 99.

General meetings

AGMs require 21 clear days' notice to shareholders. Subject to the Companies Act 2006, other general meetings require 14 clear days' notice.

For all general meetings, a quorum of two shareholders present in person or by proxy, and entitled to vote on the business transacted, is required unless each of the two persons present is a corporate representative of the same corporation; or each of the two persons present is a proxy of the same shareholder.

Shareholders and their duly appointed proxies and corporate representatives are entitled to be admitted to general meetings.

Limitations on the rights to own shares

There are no limitations on the rights to own shares.

Gender Diversity

	Directors of the Company's subsidiaries*
Men	191 (60%)
Women	126 (40%)
Total	**317**

	Senior Executive Team*
Men	8 (67%)
Women	4 (33%)
Total	**12**

All numbers as at 31 December 2019.

* For the purposes of section 414C(8)(c)(ii) of the Companies Act 2006, 'Senior Managers' are the Senior Executive Team (SET), the directors of all of the subsidiaries of the Company and other individuals holding named positions within those subsidiaries.

Stakeholder engagement

The discussion on stakeholder engagement and the impact of these interactions is contained in Connecting with stakeholders from page 104 and throughout the Strategic Report. This includes engagement with our employees, suppliers, and other stakeholders, as well as the impact of our operations on the community and environment.

Information on how we encourage employee involvement in the Company's performance is set out in A culture of high performance on page 45. Details of some of the employee share plans are described in the Directors' Remuneration Report from page 125, and in Note 28 to the Financial Statements from page 217.

Political donations

Neither the Company nor its subsidiaries made any EU political donations or incurred any EU political expenditure in 2019 and they do not intend to do so in the future in respect of which shareholder authority is required, or for which disclosure in this Annual Report is required, under the Companies Act 2006. However, to enable the Company and its subsidiaries to continue to support interest groups or lobbying organisations concerned with the review of government policy or law reform without inadvertently breaching the Companies Act 2006, which defines political donations and other political expenditure in broad terms, a resolution will be put to shareholders at the 2020 AGM, similar to that passed at the 2019 AGM, to authorise the Company and its subsidiaries to:

- make donations to political parties or independent election candidates
- make donations to political organisations other than political parties
- incur political expenditure, up to an aggregate limit of $250,000.

Corporate political contributions in the US are permitted in defined circumstances under the First Amendment of the US Constitution and are subject to both federal and state laws and regulations. In 2019, the Group's US legal entities made contributions amounting in aggregate to $1,120,525 (2018: $1,156,800) to national political organisations, state-level political party committees and to campaign committees of various state candidates. No corporate donations were made at the federal level and all contributions were made only where allowed by US federal and state law. We publicly disclose details of our corporate US political contributions, which can be found on our website, www.astrazeneca-us.com/sustainability/corporate-transparency.

The annual corporate contributions' budget is reviewed and approved by the US Vice-President, Corporate Affairs and the President of our US business to ensure robust governance and oversight. US citizens or individuals holding valid green cards exercised decision making over the contributions and the funds were not provided or reimbursed by any non-US legal entity. Such contributions do not constitute political donations or political expenditure for the purposes of the Companies Act 2006 and were made without any involvement of persons or entities outside the US.

Significant agreements

There are no significant agreements to which the Company is a party that take effect, alter or terminate on a change of control of the Company following a takeover bid. There are no persons with whom we have contractual or other arrangements, who are deemed by the Directors to be essential to our business.

Use of financial instruments

The Notes to the Financial Statements, including Note 27 from page 210, include further information on our use of financial instruments.

Insurance and indemnities

The Company maintained Directors' and Officers' Liability Insurance cover throughout 2019. The Directors are also able to obtain independent legal advice at the expense of the Company, as necessary, in their capacity as Directors.

The Company has entered into a deed of indemnity in favour of each Board member since 2006. These deeds of indemnity are still in force and provide that the Company shall indemnify the Directors to the fullest extent permitted by law and the Articles, in respect of all losses arising out of, or in connection with, the execution of their powers, duties and responsibilities as Directors of the Company or any of its subsidiaries. This is in line with current market practice and helps us attract and retain high-quality, skilled Directors.

Compliance requirements under Listing Rule 9.8.4

The only matters to report are the non-pre-emptive issue of shares for cash on page 263 and the shareholder waiver of dividends on page 264.

Directors' Report

The Directors' Report, which has been prepared in accordance with the requirements of the Companies Act 2006, comprises the following sections:

- Chairman's Statement
- Chief Executive Officer's Review
- Business Review
- Therapy Area Review
- Risk Overview
- Financial Review: Financial risk management
- Corporate Governance: including the Corporate Governance Overview, Corporate Governance Report, Science Committee Report, Nomination and Governance Committee Report, and Audit Committee Report
- Directors' Responsibility Statement
- Development Pipeline
- Sustainability: supplementary information
- Shareholder Information

and has been approved by the Board and signed on its behalf.

On behalf of the Board

A C N Kemp
Company Secretary
14 February 2020

Sustainability: supplementary information

External assurance

Bureau Veritas has provided independent external assurance to a limited level on the following sustainability information contained within this Annual Report:

- Key Performance Indicators – Be a Great Place to Work, page 22
- Bioethics, including Clinical trials, Patient safety, Research use of human biological samples and Animal research, pages 28 and 29
- Emerging market healthcare, page 35
- Responsible sales and marketing, page 35
- Anti-bribery and anti-corruption, page 35
- Transparency reporting, page 35
- Responsible supply chain, page 37
- Environmental protection, including Greenhouse gas emissions reduction, Energy use, Waste management, Water stewardship, Product environmental stewardship and Pharmaceuticals in the environment, pages 38 and 39
- Human rights, page 47
- Managing change, page 47
- Employee relations, page 47
- Safety, health and wellbeing, page 47
- Access to healthcare, including Healthy Lung, Healthy Heart, Young Health Programme and Responsible R&D, pages 49 and 50
- Community investment, including Product donation programmes and Health and the environment, page 50
- Sustainability, including Governance, Benchmarking and assurance, Our approach and Our Sustainability strategy, pages 51 and 52
- Greenhouse gas (GHG) reporting, page 266

BV Used throughout this Annual Report to denote the sustainability information listed above, which has been independently assured by Bureau Veritas.

Based on the evidence provided and subject to the scope, objectives and limitations defined in the full assurance statement, nothing has come to the attention of Bureau Veritas causing them to believe that the sustainability information contained within this Annual Report is materially misstated. Bureau Veritas is a professional services company that has a long history of providing independent assurance services in environmental, health, safety, social and ethical management and disclosure.

The full assurance statement, which includes Bureau Veritas's scope of work, methodology, overall opinion, and limitations and exclusions, is available on our website, www.astrazeneca.com.

Greenhouse gas (GHG) reporting BV

We have reported on all of the emission sources required under the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (SI 2008/410). These sources fall within our Consolidated Financial Statements. We do not have responsibility for any emission sources that are not included in our Consolidated Financial Statements.

We have used the GHG Protocol Corporate Accounting and Reporting Standard (revised edition). Emission factors for electricity have been derived from the International Energy Agency (IEA), USEPA eGRID, US Green-e and the Association of Issuing Bodies (AIB) databases and for all other fuels and emission sources from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Bureau Veritas has undertaken a limited assurance on the 2019 GHG emissions data. The assurance statement, including scope, methodology, overall opinion, and limitations and exclusions, is available on our website, www.astrazeneca.com.

Global greenhouse gas emissions data for the period 1 January 2019 to 31 December 2019[1]

			Tonnes CO_2e
	2019	2018	2017
Emissions from: Scope 1: Combustion of fuel and operation of facilities[2,5]	**285,798**	301,896	295,677
Scope 2 (Market-based): Electricity (net of market instruments), heat, steam and cooling purchased for own use[3,5]	**133,971**	144,863	170,851
Scope 2 (Location-based): Electricity, heat, steam and cooling purchased for own use[3,5]	**213,718**	230,697	248,263
Company's chosen intensity measurement: Scope 1 + Scope 2 (Market-based) emissions reported above normalised to million US dollar revenue	**17.2**	20.2	20.8
2016-2025 Strategy 'Operational Footprint' KPI: Scope 1 + Scope 2 (Market-based) + our Operational Footprint Scope 3 sources. Baseline year is 2015	**1,974,949**	1,852,104	1,768,071
Scope 3 Total: Emissions from all 15 Greenhouse Gas Protocol Scope 3 Categories	**7,234,606**	6,273,907	5,855,309
2016-2025 Strategy Scope 3 intensity measurement KPI: Scope 3 emissions from all 15 Greenhouse Gas Protocol Scope 3 Categories normalised to million US dollar revenue. Baseline year is 2015 (one year in arrears)	**297**	284	261
			MegaWatt hours (MWh)
Total energy consumption[4, 5]	**1,749,404**	1,863,931	1,757,895

[1] Regular review of the data is carried out to ensure accuracy and consistency. This has led to changes in the data from previous years.

[2] Included in this section are GHGs from direct fuel combustion, process and engineering emissions at our sites and from fuel use in our vehicle fleet.

[3] GHGs from imported electricity are calculated using the GHG Protocol Scope 2 Guidance (January 2015) requiring dual reporting using two emissions factors for each site – Market-based and Location-based. Our corporate emissions reporting and targets follow the Market-based approach.

[4] The aggregate of: (i) the annual quantity of energy consumed from activities for which the Company is responsible, including the combustion of fuel or the operation of any facility; and (ii) the annual quantity of energy consumed resulting from the purchase of electricity, heat, steam or cooling by the Company for its own use.

[5] Under the new Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018, the Company needs to disclose what proportion of this figure relates to energy use in the UK and offshore area. For 2019, the proportion of total global energy and emissions originating from AstraZeneca's UK and offshore area footprint were as follows: energy use 24%; Scope 1 emissions 23%; Scope 2 emissions using Market-based accounting 0%; Scope 2 emissions using Location-based accounting 10%.

Trade Marks

AstraZeneca, the AstraZeneca logotype, and the AstraZeneca symbol are all trade marks of the Group.

The following medicine names which appear in italics in this Annual Report are trade marks of the Group:

Trade mark			
Acimax[1]	*Daliresp*	*Mopral*[1]	*Seroquel*[4]
Antra[1]	*Daxas*	*Movantik*	*Seroquel XR*[4]
Arimidex	*Duzallo*	*Moventig*	*Symbicort*
Atacand[2]	*Farxiga*	*Nexium*	*Symbicort SMART*
Atacand HCT	*Fasenra*	*Omepral*[1]	*Symbicort Turbuhaler*
Atacand Plus[2]	*Fasenra Pen*	*Onglyza*	*Symlin*
BCise	*Faslodex*	*Plendil*	*Tagrisso*
Bevespi Aerosphere	*Fluenz*	*Pressair*	*Toprol-XL*
Breztri	*FluMist*	*Prilosec*	*Turbuhaler*
Breztri Aerosphere	*Forxiga*	*Provisacor*	*Vimovo*[5]
Brilinta	*Genuair*	*Pulmicort*	*Xigduo*
Brilique	*Imfinzi*	*Pulmicort Flexhaler*	*Zavicefta*[6]
Bydureon	*Iressa*	*Pulmicort Respules*	*Zoladex*
Byetta	*Kombiglyze*	*Pulmicort Turbuhaler*	*Zoltum*[1]
Calquence	*Komboglyze*	*Qtern*	*Zomig*[7]
Casodex	*Losec*[1]	*Qternmet*	*Zurampic*
Citanest[3]	*Lokelma*	*Qtrilmet*	
Cosudex	*Lynparza*	*Respules*	
Crestor	*Mepral*[1]	*Seloken*	

1 AstraZeneca divested the global rights (excluding China, Japan, US and Mexico) for these trade marks to Cheplapharm effective 30 September 2019.
2 AstraZeneca divested these trade marks in Europe to Cheplapharm effective 28 September 2018.
3 AstraZeneca divested the global rights (excluding the US) for this trade mark to Aspen group effective 1 November 2017.
4 AstraZeneca divested these trade marks in Europe and Russia to Cheplapharm effective 13 December 2019.
5 AstraZeneca divested the global rights (excluding the US and Japan) for this trade mark to Grünenthal, effective 3 December 2018.
6 AstraZeneca assigned this trade mark to Pfizer Inc. effective 23 December 2016.
7 AstraZeneca assigned the rights to this trade mark outside Japan to Grünenthal effective 7 June 2017. In Japan, AstraZeneca divested this product to Sawai Pharmaceutical effective 3 October 2017.

The following medicine names which appear in italics in this Annual Report are trade marks licensed to the Group by the entities set out below:

Trade mark	Licensor or Owner
Anticalin	Pieris AG
Duaklir	Almirall, S.A.
Eklira	Almirall, S.A.
Enhertu	Daiichi Sankyo Company, Limited
Epanova	Chrysalis Pharma AG
Linzess	Ironwood
Lumoxiti	Innate Pharma
Tudorza	Almirall, S.A.

The following medicine names which appear in italics throughout this Annual Report are not owned by or licensed to the Group and are owned by the entities set out below:

Trade mark	Owner
Avastin	Genentech, Inc.
Imbruvica	Depending on geography, the trade mark is owned by Pharmacyclics, Inc., Johnson & Johnson or Janssen Pharmaceutica NV
Keytruda	MSD
messenger RNA Therapeutics	Moderna
Synagis	Depending on geography, the trade mark is owned by Sobi or AbbVie

Glossary

Market definitions

Region	Country				
US	US				
Europe	Albania*	Czech Republic	Hungary	Luxembourg*	Serbia and Montenegro*
	Austria	Denmark	Iceland*	Malta*	Slovakia*
	Belgium	Estonia*	Ireland	Netherlands	Slovenia*
	Bosnia and Herzegovina*	Finland	Israel*	Norway	Spain
	Bulgaria	France	Italy	Poland	Sweden
	Croatia	Germany	Latvia*	Portugal*	Switzerland
	Cyprus*	Greece	Lithuania*	Romania	UK
Established ROW	Australia	Canada	Japan	New Zealand	
Emerging Markets	Algeria	Costa Rica	Iraq*	Pakistan*	Syria*
	Argentina	Cuba*	Jamaica*	Palestine*	Taiwan
	Aruba*	Dominican Republic*	Jordan*	Panama	Thailand
	Bahamas*	Ecuador*	Kazakhstan	Peru	Trinidad and Tobago*
	Bahrain*	Egypt	Kuwait*	Philippines	Tunisia*
	Barbados*	El Salvador	Lebanon*	Qatar*	Turkey
	Belarus*	Georgia*	Libya*	Russia	Ukraine*
	Belize*	Guatemala	Malaysia	Saudi Arabia	United Arab Emirates
	Bermuda*	Honduras	Mexico	Singapore	Uruguay*
	Brazil	Hong Kong	Morocco*	South Africa	Venezuela*
	Chile	India	Nicaragua	South Korea	Vietnam
	China	Indonesia	Oman*	Sri Lanka*	Yemen*
	Colombia	Iran*	Other Africa*	Sudan*	

* IQVIA, IQVIA Midas Quantum Q3 2019 data are not available or AstraZeneca does not subscribe for IQVIA quarterly data for these countries.

The above table is not an exhaustive list of all the countries in which AstraZeneca operates, and excludes countries with revenue in 2019 of less than $1 million.

Established Markets means US, Europe and Established ROW.

North America means US.

Other Established ROW means Australia and New Zealand.

Other Emerging Markets means all Emerging Markets except China.

Other Africa includes Angola, Botswana, Ethiopia, Ghana, Kenya, Mauritius, Mozambique, Namibia, Nigeria, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

Asia Area comprises India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand and Vietnam.

US equivalents

Terms used in this Annual Report	US equivalent or brief description
Accruals	Accrued expenses
Called-up share capital	Issued share capital
Creditors	Liabilities/payables
Debtors	Receivables and prepaid expenses
Earnings	Net income
Employee share schemes	Employee stock benefit plans
Fixed asset investments	Non-current investments
Freehold	Ownership with absolute rights in perpetuity
Loans	Long-term debt
Prepayments	Prepaid expenses
Profit	Income
Share premium account	Additional paid-in capital or paid-in surplus (not distributable)
Short-term investments	Redeemable securities and short-term deposits

The following abbreviations and expressions have the following meanings when used in this Annual Report:

AACR – The American Association for Cancer Research

AbbVie – AbbVie Inc.

ACA (Affordable Care Act) – the US Patient Protection and Affordable Care Act which was signed into law on 23 March 2010 as amended by the Health Care and Education Reconciliation Act which was signed into law on 30 March 2010.

Acerta Pharma – Acerta Pharma B.V.

ACS – acute coronary syndromes.

Actavis – Actavis plc.

ADR – an American Depositary Receipt evidencing title to an ADS.

ADS – an American Depositary Share representing half an underlying Ordinary Share.

AGM – an Annual General Meeting of the Company.

AI – artificial intelligence.

Almirall – Almirall, S.A.

Amgen – Amgen, Inc.

Amplimmune – Amplimmune, Inc.

ANDA – an abbreviated new drug application, which is a marketing approval application for a generic drug submitted to the FDA.

Annual Report – this Annual Report and Form 20-F Information 2019.

API – active pharmaceutical ingredient.

Aralez – Aralez Pharmaceuticals Trading DAC.

Ardea – Ardea Biosciences, Inc.

Articles – the Articles of Association of the Company.

Aspen – Aspen Global Incorporated.

Astellas – Astellas Pharma Inc.

Astra – Astra AB, being the company with whom the Company merged in 1999.

AstraZeneca – the Company and its subsidiaries.

AstraZeneca HealthCare Foundation – a Delaware, US not-for-profit corporation and a 501(c)(3) entity, separate from AstraZeneca Pharmaceuticals, organised for charitable purposes, including to promote public awareness and education of healthcare issues and support eligible non-profit organisations in alignment with its mission. The Foundation has received $30 million in contributions to date from AstraZeneca to support the *Connections for Cardiovascular Health*℠ programme.

ATM – Ataxia telangiectasia mutated.

Avillion – Avillion LLP.

AZIP – AstraZeneca Investment Plan.

biologic(s) or biologic medicine(s) – a class of drugs that are produced in living cells.

biosimilars – a copy of a biologic that is sufficiently similar to meet regulatory requirements.

BMS – Bristol-Myers Squibb Company.

Board – the Board of Directors of the Company.

Bureau Veritas – Bureau Veritas UK Limited.

CDP – a not-for-profit organisation that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.

Celgene – Celgene International Sàrl/Celgene Corporation.

CEO – the Chief Executive Officer of the Company.

CER – constant exchange rates.

CFO – the Chief Financial Officer of the Company.

Cheplapharm – Cheplapharm Arzneimittel GmbH.

CHMP – the Committee for Medicinal Products for Human Use.

Circassia – Circassia Pharmaceuticals plc.

CIS – Commonwealth of Independent States.

CKD – chronic kidney disease.

Code of Ethics – the Group's Code of Ethics, see pages 35 and 112.

Company or Parent Company – AstraZeneca PLC (formerly Zeneca Group PLC (Zeneca)).

COPD – chronic obstructive pulmonary diseases.

Covid-19 – The official WHO name for the disease caused by the 2019 novel coronavirus.

Covis – Covis Pharma B.V.

CREST – UK-based securities settlement system.

CRL – Complete Response Letter.

CROs – contract research organisations.

CRUK – Cancer Research UK.

CV – cardiovascular.

CVOT – cardiovascular outcomes trial.

CVRM – Cardiovascular, Renal & Metabolism.

Daiichi Sankyo – Daiichi Sankyo, Inc. or a company within the Daiichi Sankyo group of companies.

Definiens – Definiens AG.

Director – a director of the Company.

DJSI – Dow Jones Sustainability Index.

DOJ – the United States Department of Justice.

DTR – UK Disclosure Guidance and Transparency Rules.

earnings per share (EPS) – profit for the year after tax and non-controlling interests, divided by the weighted average number of Ordinary Shares in issue during the year.

EBITDA – Reported Profit before tax plus net finance expense, share of after tax losses of joint ventures and associates and charges for depreciation, amortisation and impairment.

EC – European Commission.

EFPIA – European Federation of Pharmaceutical Industries and Associations.

EGFR – epidermal growth factor receptor.

EMA – European Medicines Agency.

Entasis – Entasis Therapeutics Ltd and Entasis Therapeutics Inc.

EPO – European Patent Office.

ERK – extracellular signal-regulated kinases.

ESMO – European Society for Medical Oncology.

ESPC – Early Stage Portfolio Committee.

ESRD – end-stage renal disease.

EVP – Executive Vice-President.

EU – the European Union.

FDA – the US Food and Drug Administration, which is part of the US Department of Health and Human Services Agency, which is the regulatory authority for all pharmaceuticals (including biologics and vaccines) and medical devices in the US.

FDC – fixed-dose combination.

FibroGen – FibroGen, Inc.

FRC – the UK Financial Reporting Council.

Fuji Kirin Biologics – Fujifilm Kyowa Kirin Biologics Co., Ltd, a subsidiary of Kyowa Hakko Kirin Co., Ltd. and FUJIFILM Corporation.

GAAP – Generally Accepted Accounting Principles.

GDPR – General Data Protection Regulation.

GQCE – Generics Quality Consistency Evaluation.

Gilead – Gilead Sciences, Inc.

GMD – Global Medicines Development.

Glossary
continued

gross margin – the margin, as a percentage, by which sales exceed the cost of sales, calculated by dividing the difference between the two by the sales figure.

Group – AstraZeneca PLC and its subsidiaries.

Grünenthal – Grünenthal Group.

GSK – GlaxoSmithKline plc.

HF – heart failure.

HFA – hydrofluoroalkane.

HHA – Healthy Heart Africa programme.

HNSCC – head and neck squamous cell carcinoma.

HR – human resources.

HTA – health technology assessment.

IA – the Group's Internal Audit Services function.

IAS – International Accounting Standards.

IASB – International Accounting Standards Board.

ICS – inhaled corticosteroid.

IFPMA – International Federation of Pharmaceutical Manufacturers and Associations.

IFRS – International Financial Reporting Standards or International Financial Reporting Standard, as the context requires.

IMED – Innovative Medicines and Early Development.

Innate Pharma – Innate Pharma S.A.

IO – immuno-oncology.

IP – intellectual property.

IQVIA – IQVIA Solutions HQ Limited. For more information, see page 272.

Ironwood – Ironwood Pharmaceuticals, Inc.

IS – information services.

ISAs – International Standards on Auditing.

IT – information technology.

Johnson & Johnson – Johnson & Johnson.

KPI – key performance indicator.

krona or SEK – references to the currency of Sweden.

Kyowa Kirin – Kyowa Kirin International plc, a subsidiary of Kyowa Hakko Kirin Co., Ltd.

LABA – long-acting beta2-agonist.

LAMA – long-acting muscarinic antagonist.

LCM projects – significant life-cycle management projects (as determined by potential revenue generation), or line extensions.

Lean – means enhancing value for customers with fewer resources.

LEO Pharma – LEO Pharma A/S.

Lilly – Eli Lilly and Company.

LSPC – Late Stage Portfolio Committee.

LTI – Long-term incentive, in the context of share plan remuneration arrangements.

Luye Pharma – Luye Pharma Group.

MAA – a marketing authorisation application, which is an application for authorisation to place medical products on the market. This is a specific term used in the EU and European Economic Area markets.

mAb – monoclonal antibody, a biologic that is specific, that is, it binds to and attacks one particular antigen.

major market – US, Europe, Japan (JP) and China (CN).

MCL – mantle cell lymphoma.

MAT – moving annual total.

MedImmune – MedImmune, LLC (formerly MedImmune, Inc.).

MEK – part of the mitogen-activated protein kinase (MAPK) pathway.

MI – myocardial infarction.

Moderna – Moderna Therapeutics, Inc.

MSD – Merck & Co., Inc., which is known as Merck in the US and Canada and MSD in other territories.

Nasdaq Stockholm – previously the Stockholm Stock Exchange.

NCD – non-communicable disease.

NDA – a new drug application to the FDA for approval to market a new medicine in the US.

New Medicines – *Tagrisso*, *Imfinzi*, *Lynparza*, *Calquence*, *Farxiga*, *Brilinta*, *Lokelma*, *Fasenra*, *Bevespi* and *Breztri*.

New CVRM – New CVRM sales platfrom includes *Brilinta*, *Onglyza* franchise (*Onglyza* and *Kombiglyze*), *Farxiga* franchise (*Farxiga* and *Xigduo*), exentaide total (*Byetta* and *Bydureon*), *Symlin*, *Qtern*, roxadustat and *Lokelma*.

NME – new molecular entity.

NMPA – National Medical Products Administration, formerly the China Food and Drug Administration (CFDA).

Novartis – Novartis Pharma AG.

Novo Nordisk – Novo Nordisk A/S.

NSCLC – non-small cell lung cancer.

NYSE – the New York Stock Exchange.

n/m – not meaningful.

OECD – the Organisation for Economic Co-operation and Development.

OIC – opioid-induced constipation.

OMICs – refers to a field of study in biology ending in '-omics', such as genomics, proteomics or metabolomics.

Omthera – Omthera Pharmaceuticals, Inc.

operating profit – sales, less cost of sales, less operating costs, plus operating income.

Ordinary Share – an ordinary share of $0.25 each in the share capital of the Company.

Orphan Drug – a drug which has been approved for use in a relatively low-incidence indication (an orphan indication) and has been rewarded with a period of market exclusivity; the period of exclusivity and the available orphan indications vary between markets.

OS – overall survival.

OTC – over-the-counter.

Paediatric Exclusivity – in the US, a six-month period of exclusivity to market a drug which is awarded by the FDA in return for certain paediatric clinical studies using that drug. This six-month period runs from the date of relevant patent expiry. Analogous provisions are available in certain other territories (such as European Supplementary Protection Certificate (SPC) paediatric extensions).

PARP – an oral poly ADP-ribose polymerase.

PD-L1 – an anti-programmed death-ligand 1.

Pearl Therapeutics – Pearl Therapeutics, Inc.

Pfizer – Pfizer, Inc.

PFS – progression-free survival. The length of time during and after the treatment of a disease, such as cancer, that a patient lives with the disease but it does not get worse.

PhRMA – Pharmaceutical Research and Manufacturers of America.

Phase I – the phase of clinical research where a new drug or treatment is tested in small groups of people (20 to 80) to check that the drug can achieve appropriate concentrations in the body, determine a safe dosage range and identify side effects. This phase includes healthy volunteer studies.

Phase II – the phase of clinical research which includes the controlled clinical activities conducted to evaluate the effectiveness of the drug in patients with the disease under study and to begin to determine the safety profile of the drug. Phase II studies are typically conducted in small- or medium-sized groups of patients and can be divided into Phase IIa studies, which tend to be designed to assess dosing requirements, and Phase IIb studies, which tend to assess safety and efficacy.

Phase III – the phase of clinical research which is performed to gather additional information about effectiveness and safety of the drug, often in a comparative setting, to evaluate the overall benefit/risk profile of the drug. Phase III studies usually include between several hundred and several thousand patients.

Pieris Pharmaceuticals – Pieris Pharmaceuticals, Inc.

PMDA – Pharmaceuticals and Medical Devices Agency of Japan.

pMDI – pressurised metered-dose inhaler.

pound sterling, £, GBP or pence – references to the currency of the UK.

Pozen – POZEN, Inc.

primary care – general healthcare provided by physicians who ordinarily have first contact with patients and who may have continuing care for them.

Proof of Concept – data demonstrating that a candidate drug results in a clinical change on an acceptable endpoint or surrogate in patients with the disease.

ProTACs – a proteolysis targeting chimera, which is a heterobifunctional small molecule composed of two active domains and a linker capable of removing specific unwanted proteins.

PSP – AstraZeneca Performance Share Plan.

PTE – Patent Term Extension, an extension of up to five years in the term of a US patent relating to a drug which compensates for delays in marketing resulting from the need to obtain FDA approval. The analogous right in the EU is an SPC.

R&D – research and development.

Recordati – Recordati S.p.A.

Redeemable Preference Share – a redeemable preference share of £1 each in the share capital of the Company.

Regulatory Data Protection (RDP) – see Intellectual Property from page 41.

Regulatory Exclusivity – any of the IP rights arising from generation of clinical data and includes Regulatory Data Protection, Paediatric Exclusivity and Orphan Drug status.

RNA – ribonucleic acid.

Roche – F. Hoffmann-La Roche AG.

ROW – rest of world.

RSV – respiratory syncytial virus.

SABA – short-acting beta2-agonist.

Samsung Biologics – Samsung Biologics Co., Ltd.

sales platforms – previously referred to as Growth Platforms, consisting of Emerging Markets, Respiratory, New CVRM, Japan and Oncology.

Sanofi – SANOFI S.A./Sanofi Pasteur, Inc.

Sarbanes-Oxley Act – the US Sarbanes-Oxley Act of 2002.

SDRT – UK stamp duty reserve tax.

SEC – the US Securities and Exchange Commission, the governmental agency that regulates the US securities industry and stock markets.

Seroquel – *Seroquel* IR and *Seroquel XR*.

SET – Senior Executive Team.

SG&A costs – selling, general and administrative costs.

SGLT2 – sodium-glucose cotransporter 2.

SHE – Safety, Health and Environment.

Shionogi – Shionogi & Co. Ltd.

Shire – Shire plc.

sNDA – supplemental New Drug Application.

Sobi – Swedish Orphan Biovitrum AB.

SPC – supplementary protection certificate.

specialty care – specific healthcare provided by medical specialists who do not generally have first contact with patients.

Spirogen – Spirogen Sàrl.

SoC – standard of care. Treatment that is accepted by medical experts as a proper treatment for a certain type of disease and that is widely used by healthcare professionals.

Takeda – Takeda Pharmaceutical Company Limited.

TerSera – TerSera Therapeutics LLC.

Teva – Teva Pharmaceuticals USA, Inc.

Total Revenue – the sum of Product Sales and Collaboration Revenue.

TSR – total shareholder return, being the total return on a share over a period of time, including dividends reinvested.

UK – United Kingdom of Great Britain and Northern Ireland.

UK Corporate Governance Code – the UK Corporate Governance Code published by the FRC in July 2018 that sets out standards of good practice in corporate governance for the UK.

US – United States of America.

US dollar, US$, USD or $ – references to the currency of the US.

Valeant – Valeant Holdings Ireland/Valeant Pharmaceutical International, Inc.

Viela Bio – Viela Bio, Inc.

WHO – World Health Organization, the United Nations' specialised agency for health.

YHP – Young Health Programme.

Zambon – Zambon S.p.A.

ZS Pharma – ZS Pharma, Inc.

Important information for readers of this Annual Report

Cautionary statement regarding forward-looking statements

The purpose of this Annual Report is to provide information to the members of the Company. The Company and its Directors, employees, agents and advisers do not accept or assume responsibility to any other person to whom this Annual Report is shown or into whose hands it may come and any such responsibility or liability is expressly disclaimed. In order, among other things, to utilise the 'safe harbour' provisions of the US Private Securities Litigation Reform Act of 1995 and the UK Companies Act 2006, we are providing the following cautionary statement: This Annual Report contains certain forward-looking statements with respect to the operations, performance and financial condition of the Group, including, among other things, statements about expected revenues, margins, earnings per share or other financial or other measures. Forward-looking statements are statements relating to the future which are based on information available at the time such statements are made, including information relating to risks and uncertainties. Although we believe that the forward-looking statements in this Annual Report are based on reasonable assumptions, the matters discussed in the forward-looking statements may be influenced by factors that could cause actual outcomes and results to be materially different from those expressed or implied by these statements. The forward-looking statements reflect knowledge and information available at the date of the preparation of this Annual Report and the Company undertakes no obligation to update these forward-looking statements. We identify the forward-looking statements by using the words 'anticipates', 'believes', 'expects', 'intends' and similar expressions in such statements. Important factors that could cause actual results to differ materially from those contained in forward-looking statements, certain of which are beyond our control, include, among other things, those factors identified in the Risk section from page 246 of this Annual Report. Nothing in this Annual Report should be construed as a profit forecast.

Inclusion of Reported performance, Core financial measures and constant exchange rate growth rates

AstraZeneca's determination of non-GAAP measures together with our presentation of them within our financial information may differ from similarly titled non-GAAP measures of other companies.

Statements of competitive position, growth rates and sales

In this Annual Report, except as otherwise stated, market information regarding the position of our business or products relative to its or their competition is based upon published statistical sales data for the 12 months ended 30 September 2019 obtained from IQVIA, a leading supplier of statistical data to the pharmaceutical industry. Unless otherwise noted, for the US, dispensed new or total prescription data and audited sales data are taken, respectively, from IQVIA National Prescription Audit and IQVIA National Sales Perspectives for the 12 months ended 31 December 2019; such data are not adjusted for Medicaid and similar rebates. Except as otherwise stated, these market share and industry data from IQVIA have been derived by comparing our sales revenue with competitors' and total market sales revenues for that period, and except as otherwise stated, growth rates are given at CER. For the purposes of this Annual Report, unless otherwise stated, references to the world pharmaceutical market or similar phrases are to the 51 countries contained in the IQVIA database, which amounted to approximately 94% (in value) of the countries audited by IQVIA. Changes in data subscriptions, exchange rates and subscription coverage, as well as restated IQVIA data, have led to the restatement of total market values for prior years.

AstraZeneca websites

Information on or accessible through our websites, including www.astrazeneca.com, www.astrazenecaclinicaltrials.com and www.medimmune.com and on any websites referenced in this Annual Report, does not form part of and is not incorporated into this Annual Report.

External/third-party websites

Information on or accessible through any third-party or external website does not form part of and is not incorporated into this Annual Report.

Figures

Figures in parentheses in tables and in the Financial Statements are used to represent negative numbers.

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This Annual Report is also available on our website, www.astrazeneca.com/annualreport2019