



# Annual Report 2016

## PATIENTS

We recently launched four new cancer treatments, with our first cancer immunotherapy medicine Tecentriq giving new hope to people with specific types of bladder and lung cancer.

## INNOVATION

We were granted five breakthrough therapy designations by the US Food and Drug Administration for our medicines, and added nine key diagnostic instruments and tests to our rich portfolio.

## PARTNERS

Together with our partners, we made great strides in overcoming barriers to healthcare by developing 60 local access plans that are fully integrated in our local business plans.

## Who we are

*Innovation: It's in our DNA. We have always worked across disciplines and geographies to drive scientific discovery and redefine what is possible to improve patients' lives.*

We are working on understanding how diseases differ down to the molecular level. So we can develop new tests and medicines that prevent, diagnose and treat diseases, and bring them to the patients who need them. With our combined strengths in diagnostics and pharmaceuticals, our personalised healthcare strategy aims to fit the right treatment to the right patient.

As the world's largest biotech company, we develop breakthrough medicines, improving the standard of care across oncology, immunology, infectious diseases, ophthalmology and neuroscience. We are

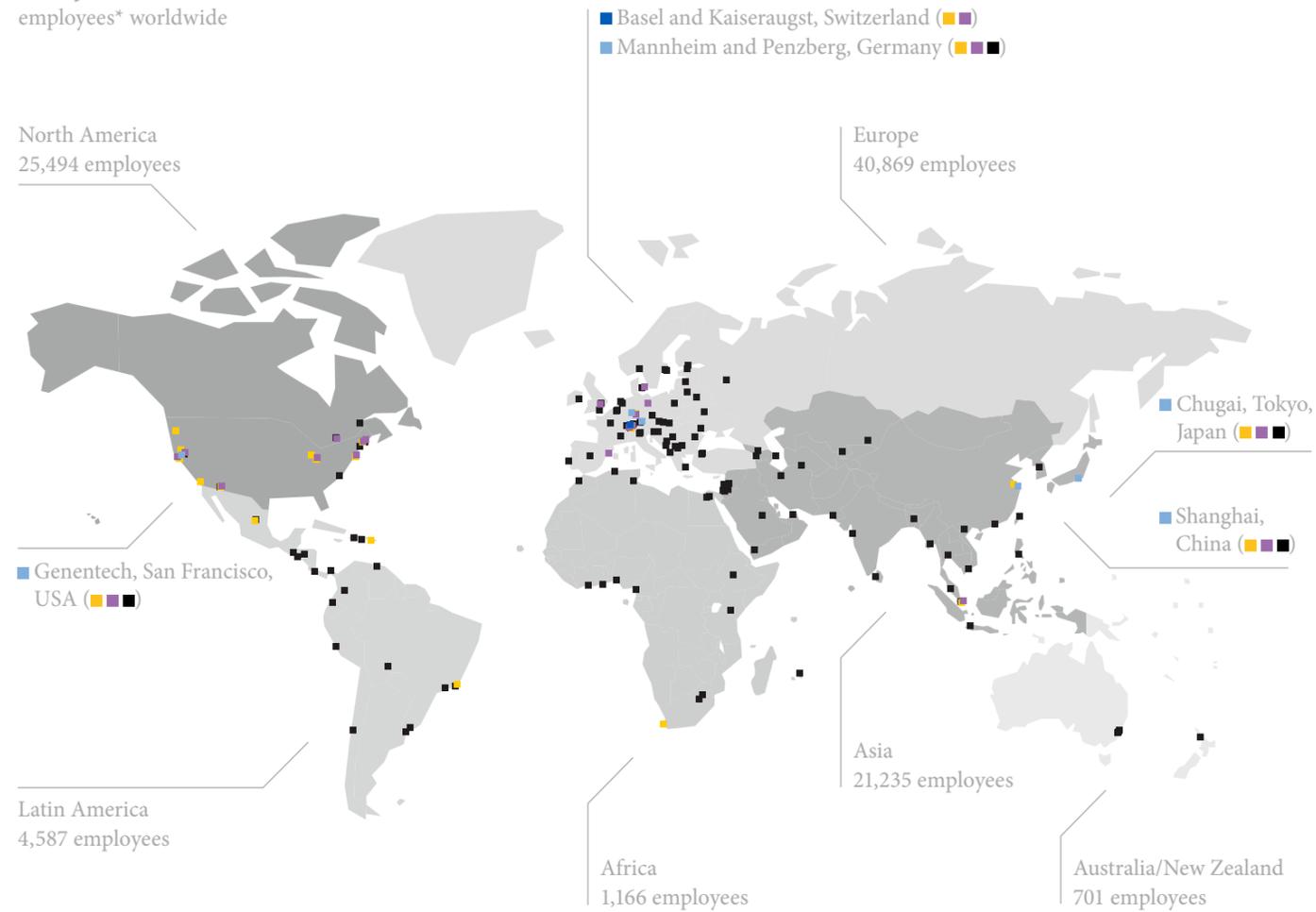
also the world leader in the *in vitro* diagnostics business. This track record allows us to build lasting and meaningful partnerships across the world with research academia and public healthcare institutions.

The founding families continue to hold the majority voting stake in the company. This stability allows for a tradition of sustainable thinking, so we can learn from setbacks and focus on lasting value for patients and society. We remain dedicated to the highest standards of quality, safety and integrity. Our legacy is based on respect for the individual as well as the communities and the world we live in.

# Roche's global presence

94,052

employees\* worldwide



22

Research and development sites in Pharmaceuticals and Diagnostics worldwide

26

Manufacturing sites in Pharmaceuticals and Diagnostics worldwide

- Roche Group headquarters
- Largest sites based on number of employees
- Research and development sites in Pharmaceuticals and Diagnostics
- Manufacturing sites in Pharmaceuticals and Diagnostics
- Sales sites in Pharmaceuticals and Diagnostics

\* Number of employees expressed in full-time equivalents

# Highlights

## Redefining treatment in oncology

Cancer immunotherapy Tecentriq available against bladder and lung cancer

⊕ Read more on page 29

## Transforming laboratory work

cobas e 801 platform launched for faster and simpler laboratory testing

⊕ Read more on page 38

## Recognised for innovation

Five breakthrough therapy designations granted by the US Food and Drug Administration

⊕ Read more on page 8

## Managing rare blood disorder

Potential new medicine emicizumab significantly reducing number of bleeds in a group of people with haemophilia A

⊕ Read more on page 50

## Partnering to improve care

Formal agreements signed with several sub-Saharan countries to improve access to healthcare

⊕ Read more on page 64

## Contributing to sustainability

Roche ranked most sustainable healthcare company in the Dow Jones Sustainability Indices for the eighth year running

⊕ Read more on page 11

# Key figures

CHF 50,576 million

Group sales +4%\*\*

CHF 9,915 million

Research and development investments +5%\*\*

CHF 8.20

Dividend

311,726 patients

participating in clinical trials

27 million patients

treated with one of our top 25 medicines

29 Roche medicines

on the WHO List of Essential Medicines

\*\* All growth rates in this report are at constant exchange rates (CER; average 2015).

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# Our reporting approach

*We are committed to transparent reporting and we endeavour to drive our economic, social and environmental performance with the same diligence as our financial performance.*



Online Annual Report 2016: [roche.com/ar16](http://roche.com/ar16)

Roche Annual Report 2016 (PDF): [roche.com/ar16e.pdf](http://roche.com/ar16e.pdf)

Roche Finance Report 2016 (PDF): [roche.com/fb16e.pdf](http://roche.com/fb16e.pdf)

GRI G4 Index: [roche.com/gri-index](http://roche.com/gri-index)

Risk management: [roche.com/risk-management](http://roche.com/risk-management)

## Reporting scope and boundaries

We provide integrated information about our financial and non-financial performance in our Annual Report, our Finance Report, as well as in our online report, which cover all regions and divisions from 1 January to 31 December 2016.

The reporting scope is defined and outlined in our Finance Report, and there have been no significant changes in scope in 2016 compared to 2015.

## Reporting in accordance with the latest GRI guidelines

Since 2014, we have followed the GRI G4 guidelines (Global Reporting Initiative), with disclosure at core application level. We also report a number of additional indicators beyond the requirements for core level which are listed in the online GRI G4 Index.

## Risk management

Our Risk Management Policy sets out our approach to identifying, managing and reporting internal and external risks and opportunities. We also identify business sustainability risks and opportunities on an annual basis and integrate these into our existing risk management process.

A consolidated Group Risk Report, which covers all material risks, is discussed annually with the Corporate Executive Committee and reviewed by the Audit Committee of the Board of Directors and by the Board of Directors itself. The effectiveness of the risk management process is regularly monitored by the Group Risk Advisory team, and the overall process is reviewed externally when appropriate.

Risk management is embedded at all levels of the Group: Our Pharmaceuticals and Diagnostics Divisions and global functions conduct a formal risk assessment process at least once a year and must develop risk plans for their most material risks. Group Risk Advisory facilitates risk discussions to support the business in many specialist areas such as digital media, IT security, as well as compliance and sustainability. Training sessions and platforms have been established to help employees manage, monitor and mitigate risks appropriately.

⊕ Read more in 'Corporate governance' on page 116

## External assurance

Our current Annual Report includes an independent assurance report on our non-financial reporting, prepared by PricewaterhouseCoopers AG.

⊕ See 'Independent assurance report' on page 152

## Materiality

In accordance with the GRI G4 guidelines, we conducted a materiality analysis at the corporate level in 2014. We gathered input and feedback through various internal and external sources, conferences, as well as regular interviews and one-on-one discussions between Roche experts and key stakeholders. This enabled us to include the topics from those stakeholder groups that we consider most important to our business and to the healthcare sector: patient organisations, employees, media, investors, payers, regulators and governments.

In a final step, we combined the various insights and identified 21 material topics that stood out as highly relevant to us and to our key stakeholders, and which have a significant impact on our long-term success.

These 21 material topics are reflected in our business priorities, in the report content (highlighted at the beginning of each chapter), as well as in aspect boundaries according to the GRI.

We build concrete actions relating to these topics into our operational activities, and measure performance through defined indicators. The process and the results of our materiality analysis have been endorsed by the Roche Corporate Sustainability Committee and by our Chief Executive Officer.

⊕ See 'Our strategy' on page 6



Materiality: [roche.com/materiality](http://roche.com/materiality)

Key performance indicators: [roche.com/performance](http://roche.com/performance)

## Our 21 material topics

- Drug efficacy, safety and counterfeiting
- Biosimilar safety
- Disease awareness and treatment education
- Patient organisation support
- Product portfolio strategy
- Patent policies
- Data transparency on clinical trials
- R&D pipeline strategy and personalised healthcare
- Sustainable healthcare
- Growth strategy in emerging and developed markets
- Pricing
- Employee engagement and talent retention
- Executive compensation
- Compensation/benefits
- Leadership commitments
- Organisational effectiveness
- Compliance
- Environmental responsibility
- Occupational accidents
- Community engagement
- Supply chain management

# Our contribution to sustainability

*We have been committed to sustainability for 120 years and contribute to a number of the 17 United Nations Sustainable Development Goals.*



Our contribution to the UN SDGs: [roche.com/un-sdgs](http://roche.com/un-sdgs)

In September 2015, the United Nations General Assembly unanimously adopted 17 Sustainable Development Goals (SDGs) to end poverty, protect the planet, and ensure prosperity for all as part of the 2030 Sustainable Development Agenda. This agreement marked an important milestone in the next phase of sustainable development, with the engagement of a wide range of stakeholders.

We are committed to supporting the SDGs in line with our business strategy; in particular SDG3, which aims at ensuring healthy lives and promoting wellbeing for all. Beyond communicable diseases such as tuberculosis and malaria, non-communicable diseases, including cancer and mental disorders, are also now universally recognised as areas of high unmet medical need.

We are at the forefront in developing effective therapies and diagnostic tools to diagnose, treat and monitor cancer and neurological disorders.

One objective of SDG3 is to achieve universal health coverage, which is a prerequisite to achieving better access to safe, effective and high-quality medicines and diagnostic tests for all. By developing innovative approaches in collaboration with international and local players, we strive to break down the access barriers for many patients around the world, supporting the universal healthcare coverage goal.

On the next page, we list selected examples of our contribution to a number of SDGs.



## Increasing access to healthcare

**Our aim is for every person who needs our medicines and diagnostic tests to be able to access and benefit from them.**

- Through our HIV Global Access Programme, we are partnering with international organisations to offer sustainable solutions for HIV viral load tests in eligible low- and middle-income countries. To date, over seven million infants have been tested.
- In 2016, we signed a Memorandum of Understanding with several countries in sub-Saharan Africa to help patients get better access to healthcare.

⊕ Read more in our 'Access to healthcare' chapter on page 58



## Fostering diversity and inclusion

**We strive to create a work environment that includes all facets of diversity.**

- We pioneered a programme providing opportunities for high-potential women to systematically acquire sponsorship for valuable feedback and further career progression.
- We support international assignments. Over one in four of those assignments are to and from developing regions.

⊕ Read more in our 'Our people chapter' on page 68



## Minimising our environmental footprint

**Our aim is to minimise our ecological footprint and to increase the use of renewable resources while continuing to expand our global business.**

- Our goal is to reduce energy consumption by 15% by 2025, compared to 2015 levels.
- We also plan to increase the proportion of sustainable energy to 20% by 2020, compared to 2015 levels.

⊕ Read more in our 'Safety, health and environment' chapter on page 78



## Supporting communities

**We support programmes that result in lasting improvements and sustainable benefits for the communities in which we operate.**

- In 2016, we started a partnership with the Maharishi Institute in South Africa to cover the university education costs of 50 students.
- With Futurelab, a Genentech science education programme developed in partnership with the South San Francisco Unified School District, we support science education from elementary school to high school.

⊕ Read more in our 'Community engagement' chapter on page 90



## Meeting high standards of business ethics

**We know that integrity is the foundation of our business. It is our 'license to operate' and key to our ability to make a lasting impact on public health.**

- Roche supports and respects human rights and has implemented the 'Protect, Respect, Remedy' approach from the UN Human Rights Council's Ruggie Framework.
- Employees complete mandatory training to ensure they understand our Group Code of Conduct, including how to voice their compliance concerns over business practices or behaviour.

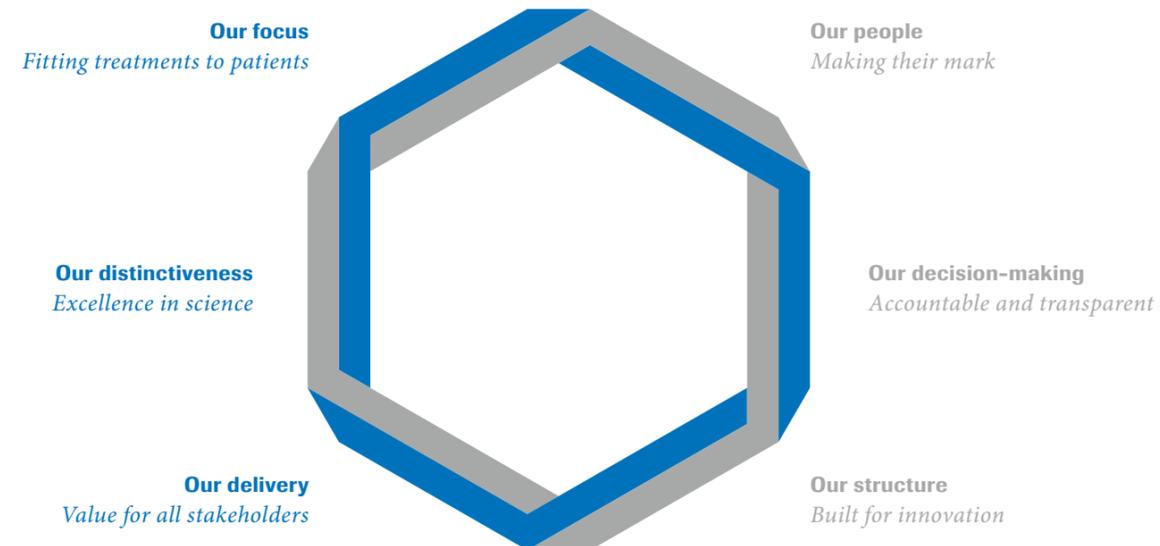


Human rights: [roche.com/human\\_rights](http://roche.com/human_rights)

⊕ Read more in our 'Integrity in business' chapter on page 98



## What we do



## How we do it

# Our strategy

*We focus on finding new medicines and diagnostics that help patients live longer, better lives and evolve the practice of medicine.*

We are guided by our purpose: *Doing now what patients need next*. Our company has a 120-year history of advancing the field of medicine and bringing novel treatments and diagnostics to patients. The patient is and will remain at the core of what we do, the reason we come to work every day.

### What we do

**Our focus** is on fitting treatments to patients: providing the right therapy for the right group of people at the right time. With our in-house combination of Pharmaceuticals and Diagnostics, we are uniquely positioned to deliver personalised healthcare. We are also developing our internal capabilities and building strategic partnerships ready for the next stage in personalised healthcare: to combine insights from multiple data sources with sophisticated analytics to drive more effective and efficient research and allow for better decisions for patients.

We will continue to concentrate our energies entirely on prescription medicines and *in vitro* diagnostics, rather than diversify into other sectors like generics, over-the-counter medicines and medical devices.

In our pursuit of excellence in science, **our distinctiveness** rests on four key elements: an exceptionally broad and deep understanding

of molecular biology, the seamless integration of our pharmaceutical and diagnostics capabilities, a diversity of approaches to maximise innovation, and a long-term orientation.

**Our delivery** is to create value for all our stakeholders: being a partner of choice; bringing significant medical benefit for patients, doctors and payers; offering a great place to work for employees; having a sustainable impact on society; and creating top-quartile total shareholder return for our investors.

### How we do it

In the end, it takes people with integrity, courage and passion to make a difference for patients. It is **our people** who are proud to say: We are Roche. We embrace the diversity of cultures and people across the Group. We are inclusive and encourage the richness of ideas and approaches this brings.

**Our decision-making** principles and processes emphasise transparent dialogue, clear accountability, and encourage a high degree of empowerment.

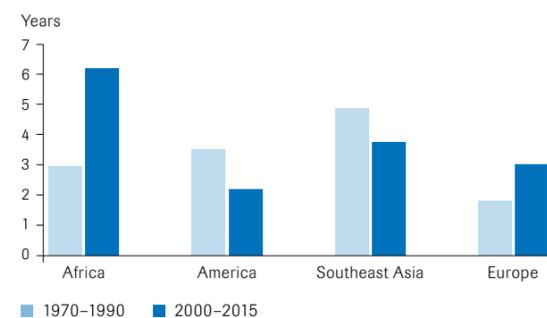
**Our structure** is built for innovation. Our autonomous research and development centres and alliances with over 200 external partners foster diversity and agility. Our global geographical scale and reach enables us to bring our diagnostics and medicines quickly to people who need them.

## Rapidly changing market environment

### *Beyond the tablet—towards digitisation*

Between 2000 and 2015, life expectancy increased globally by five years—the fastest increase since the 1960s.<sup>1</sup> However, healthcare quality is improving too slowly to cope with ageing populations and the growing number of patients with one or more chronic diseases.<sup>2</sup> In the light of demographic changes, we as a leading healthcare company can make a decisive contribution to higher-quality diagnosis and treatment. Breakthroughs in biology and technology are opening up new ways to improve and save patients' lives. Even as healthcare budgets are under increasing pressure, the changing healthcare landscape offers untold opportunities for research-focused healthcare companies with extensive know-how.

Regional gains in average life expectancy in years



Source: OECD, Health at a Glance 2015, 2015.

Regions as defined by the World Health Organization.

We have translated our know-how into a number of medicines and tests with significant benefit for patients and the healthcare system. We recently brought four

new medicines to market. At the same time, we continued to invest into the future, which yielded five breakthrough therapy designations (BTDs) granted by the US FDA for our medicines in 2016 alone. Established in 2012, the BTD accelerates the development and review of medicines that may demonstrate substantial improvement over existing therapies. All these achievements testify to the high level of innovation we are pursuing in our research and development activities, which, together with Genentech, Chugai and various external alliances, reflect a broad range of approaches to science.

As the environment is changing rapidly, so new challenges and opportunities will arise. Our diversity of approaches, our ideas and our agility will help us to turn these opportunities into successes.

#### Gaining knowledge by data management

Scientific and medical expertise is critical to identifying effective treatment options. Modern molecular diagnostic tools have helped guide appropriate therapy by identifying specific drug targets in the body, thus offering the prospect of personalised healthcare. The digital revolution has the potential to transform healthcare. Therapy outcome data from clinical practice will be increasingly digitised and analysed, in addition to existing data sets derived from clinical trials. This development enables small patient groups to be related to specific therapy outcomes, and will result in even more effective treatment approaches.



Every year, heart attacks kill seven million people<sup>2</sup>. A quick and accurate diagnosis can make the difference between life and death.

Preventive care is also gaining in importance, leading to increased focus on diagnosis, monitoring and prevention. Technological advances drive the opportunities to connect different instruments and platforms. Hospitals, for example, need to be able to connect devices and healthcare IT solutions for centralised monitoring and real-time data analysis.<sup>3</sup>

Roche is well positioned to capitalise on technological progress. Having Diagnostics and Pharmaceuticals under one roof has enabled us to leverage our molecular biology expertise. The future will see us integrating real-world data and creating insights from those data, both for research and development purposes and to support better treatment decisions and patient care. This rationale drives our collaborations with Foundation Medicine and Flatiron Health, enabling us to better leverage data and advanced analytics to improve both the development of medicines and decisions in patient care.

With our latest advances in diagnostics technology, we are working to develop a laboratory where different instruments and platforms are connected with each other: One single system will enable a vast set of

testing options across all stages of treatment. Such a laboratory system generates a wealth of data, allowing physicians to provide patients with holistic, accurate and precise diagnoses, as well as prevention and treatment solutions—all at a faster pace.

#### Addressing the needs of policy-makers and regulators

The debate on access to healthcare and pricing and reimbursement has been gaining momentum in policy discussions across the world. The arrival of highly effective hepatitis C medicines and a steady stream of targeted cancer medicines are raising concerns about affordability. Payers increasingly claim that the funding challenges induced by expensive innovative medicines will soon become insurmountable.

Governments have responded to these challenges in various ways. In many countries, for example, guidelines for the approval of biosimilars have been adopted or are under discussion. In addition, there are also a growing number of health technology assessment agencies around the world. They assess evidence regarding clinical effectiveness, safety, and cost-effectiveness.

<sup>1</sup> World Health Statistics: Monitoring Health for the SDGs, 2016. | <sup>2</sup> roche.com/valueofinnovation-step-2 |

<sup>3</sup> Frost & Sullivan, Healthcare and Medical Device Connectivity and Interoperability, 2015.

We appreciate that payers ask for more evidence about the effectiveness of a new medicine so that they can more effectively manage potential budgetary impact these treatments might have. We try to address these needs with risk-sharing agreements. By addressing the needs of payers, we aim to help patients gain access to the latest treatment options more quickly.

**Improving productivity**

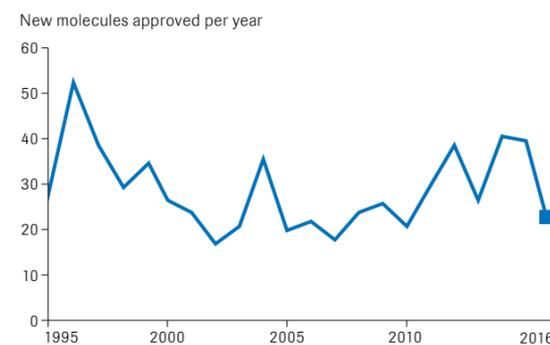
The latest figures on R&D productivity suggest that the decline since the late 1990s has levelled out. This is due largely to the stream of promising recent developments—such as new technologies, a better understanding of biology and disease, and a significant increase in data on human health. These developments have led to scientific breakthroughs in previously intractable areas, such as immunology, cardiovascular disease, and hepatitis C. However, concerns remain about the returns on drug development.<sup>4</sup>

One way to increase productivity is to find new ways to perform expensive clinical studies. The decades-old approach of using phase I, II and III clinical trials is giving way to cutting-edge study designs that change the pace of drug development and more effectively allow the evaluation of promising compounds in specific patient populations. We are forced to set the right priorities and shift resources to those products which really impact patients' lives. We also strive to be more agile in our decision-making. At Roche, teams come together to look at promising molecules from our different research organisations. They assess the best way to faster advance the medicines through the development process, so that, ultimately, patients can benefit sooner.

When it comes to improving efficiencies, we do not only consider R&D productivity, but also how we can refine our manufacturing network. An optimal

number of facilities can help to reduce operational complexity and cost while maintaining compliance. In order to more effectively meet increasing demand for our products and deliver our strong pipeline of innovative new medicines, we are expanding our global biologics manufacturing network. At the same time, due to lower capacity utilisation, we are realigning our small molecules network to reflect our changing portfolio.

**US approvals of new molecules over the past 20 years**



Source: CDER NME and BLA filings and approval FDA website, 2017

**Sustaining economic growth**

The US remain the key growth driver for the pharmaceutical industry. Despite its recent slowdown, the US market benefits from structural characteristics such as accelerated approval pathways, a large and growing population, and a stable high-quality infrastructure.

Key emerging markets may be recording lower levels of growth than expected but keep growing steadily. In China, a growing population with access to innovative medicines should sustain market growth notwithstanding geopolitical risks, and assuming continued access expansion.

**US outperformed market growth after patent cliff**



Source: IMS MIDAS

For the diagnostics business, China is in fact the key growth driver. There is a shift in business opportunities towards emerging markets, whereas most mature markets have experienced slowing growth.

Key to sustained growth, in Pharmaceuticals and Diagnostics alike, is that people have access to new medicines and tests. We have developed a broad set of initiatives to improve patient access across the world. They include working with governments on disease awareness campaigns, training lab technicians in sophisticated diagnostics, training community healthcare workers, and providing flexible pricing solutions to support payers' reimbursement decisions.

*The US remain the key growth driver for the pharmaceutical industry.*

**Building and maintaining trust with stakeholders**

The pharma industry faces challenges in earning trust, particularly with governments, regulators and society at large. To address these challenges, companies are strengthening a culture of ethics and integrity, adopting higher governance standards, and improving relationships with employees, shareholders and other stakeholders.

Twenty years ago, a company operating in isolation could achieve a great deal; now, and even more so in the future, collaboration with stakeholders within and beyond our industry is, and will remain, critical to success. From early research through to delivering our products, increased collaboration with various internal and external stakeholders will be key to harnessing scientific and technological advances, improving R&D productivity, delivering pricing and access solutions, and adapting to the evolving regulatory environment.

In recognition of our commitment to the environment and society, Roche was named Group Leader in sustainability within the Pharmaceuticals, Biotechnology & Life Sciences Industry in the Dow Jones Sustainability Indices (DJSI) for the eighth consecutive year.

<sup>4</sup> BCG Perspectives: on.bcg.com/biopharmardprod

Hon. Senator Dr Beth Mugo,  
Kenya



*“No one can tackle such a problem alone.”*

Long before I went into politics, I was fighting for the economic, social and political rights of the disadvantaged in Kenya, especially women. In 1997, I was elected as the first female Member of Parliament from Nairobi. I represented that constituency for 15 years before becoming a Senator.

After my party won the election in 2002, I joined the government as Assistant Minister for Education. I then served as Minister for Public Health and Sanitation from 2008 to 2013. One of my top priorities was improving maternal health. By establishing health centres throughout the country and training nurses, we were able to significantly reduce the death rate for women giving birth and for children under five. The current First Lady of Kenya has taken progress in maternal care even further with the Beyond Zero Campaign.

In 2011, I learned that I had breast cancer. It was a shock, and my first instinct was to keep it secret because of the stigma associated with this disease in Kenya. I was lucky that my tumour was at an early stage and could be treated successfully. It took some courage, but I decided to come forward with my story and the importance of early detection. This generated a great deal of media coverage, followed by an upsurge in women around the country getting check-ups.

**Recalibrating healthcare priorities to fight cancer**  
Working with the United Nations, development partners and other non-government organisations,

Kenya has been very successful in reducing the toll of communicable diseases such as AIDS, tuberculosis and malaria. In recent years, though, we have seen non-communicable diseases such as cancer become a major killer. My personal story has heightened my awareness of the suffering caused by cancer and the need to take action.

Public-private partnerships are essential to address healthcare issues of this complexity and scope. In Kenya, Roche is contributing by sharing its extensive knowledge of oncology and helping to improve patient access to timely diagnosis and treatment.

Everyone needs to come together to tackle this disease. That is why I have established the Beth Mugo Cancer Foundation to promote access to information, detection and treatment of breast, cervical and prostate cancer. Once again, Roche is partnering with us by providing research data, basic training on cancer, support for patient organisations, and links to like-minded international organisations.

Based on these kinds of strong partnerships, I can envision a country where healthcare is accessible and affordable to all, people are well informed about health matters, and we have a health sector that serves the public efficiently.

## Shaping the future together

*Our focus on innovative tests and medicines is enabling us to play a key role in overcoming the challenges facing global healthcare.*

Dear Shareholders,

Some 15 years after the decoding of the human genome and the adoption of the United Nations Millennium Health Goals, the opportunities and challenges in global healthcare are greater than ever. I am confident that Roche, with its strengths in Pharmaceuticals and Diagnostics, is well placed to actively help shape and advance the healthcare of tomorrow.

This is primarily due to our strong core business: In what is still a volatile environment impacted by austerity measures, we succeeded in increasing sales by 4%\* to 50.6 billion Swiss francs in 2016. Net income came to 9.7 billion francs (+7%). I am particularly proud of our many product launches, which make new treatments available for various types of cancer, and further improve and automate *in vitro* diagnostics.

The challenges facing global health remain immense—for instance the increase in chronic diseases, the emergence of new epidemics and the spread of antibiotic resistance. The only way to achieve enduring solutions is to adopt an integrated perspective and engage in international and multi-stakeholder collaboration. Roche is ready to do its part. We are committed to the United Nations Sustainable Development Goals on health and beyond. We are spurred on by the fact that Roche has been ranked the most sustainable healthcare company in the Dow Jones Sustainability Indices for the eighth year running. Developing novel products that address difficult-to-treat diseases is and remains our greatest contribution to society, as well as our way to create value. Consequently, we invest approximately one fifth of our sales in research and development. In 2016, that translated into 9.9 billion Swiss francs.

*“Innovation remains our way to create value.”*

*Dr Christoph Franz  
Chairman of the Board*

\* All growth rates in this report are at constant exchange rates (CER; average 2015).



Chairman's video:  
[roche.com/  
 ar16chair](https://roche.com/ar16chair)

New medical technologies and digitisation create huge opportunities for us. Enormous scientific and technological advances are being made in the world's major life science and technology centres. This pioneering spirit and the wealth of ideas are truly compelling.

Roche is part of this, on site, together with its many partners. In November, for instance, we set up imCORE, a network of 21 academic institutions working with Roche to advance research into cancer immunotherapies. Here, diagnostics also plays a crucial role in the search for treatments tailored to patients' individual immunobiology.

Our aim is to integrate diagnosis and treatment with digital technologies and applications to an even greater extent. As clinical pictures and treatment options become ever more numerous and diverse, we see this as a way to provide doctors and patients with more comprehensive information to aid the decision-making process. While the partnerships entered into in 2015 with Foundation Medicine and Flatiron Health give us access to data and promising analysis tools in the field of cancer, we at Roche are ourselves developing pioneering IT solutions to integrate and interpret diagnostic data from a wide variety of sources.

*“We are developing pioneering IT solutions to interpret diagnostic data from various sources.”*

Technological possibilities and the global pressure on healthcare systems nevertheless call for far more than the development of novel products for the future. It is just as vital that our treatments and tests are available to the patients who need them *today*. Regrettably, for a variety of reasons, this access is not yet guaranteed everywhere.

The major task of establishing and maintaining a functioning healthcare system is, of course, the responsibility of each individual state. In a great many countries, the latest medicines and diagnostic products are available to everyone, yet elsewhere even the most rudimentary healthcare resources are lacking. In autumn 2016, I travelled through three sub-Saharan countries—Kenya, Nigeria and Côte d'Ivoire. Despite a frequent absence of basic necessities in many places, including clean water, infrastructure and know-how about chronic illnesses, our Roche teams in the field are working passionately with local partners to provide treatments for more and more patients.

I am certain that we can achieve a great deal in collaboration with governments, patient groups and aid organisations. This is shown, for instance, by the progress made in Kenya, where new oncology centres are being set up, and where, under an agreement with the government, we are training healthcare specialists, enabling modern diagnostic tests, and co-funding free breast cancer treatment for patients in public institutions. In other regions and countries too, we are endeavouring to promote access to healthcare by means of tailored local solutions.

The imCORE network, the partnerships with Foundation Medicine and Flatiron Health, and our projects in Kenya are just three examples—albeit pivotal ones—of our wide-ranging activities with external partners. They demonstrate the way we approach opportunities and challenges—with openness, team spirit and tenacity.

I look forward to welcoming you at the 99<sup>th</sup> Annual General Meeting of Roche Holding Ltd on 14 March 2017. In light of the company's good full-year results, the Board of Directors is proposing a dividend increase to 8.20 Swiss francs per share and non-voting equity security. Subject to your approval, this will be the 30<sup>th</sup> consecutive dividend increase.

I would also like to draw your attention to changes to the Roche Board of Directors. Professor Pius Baschera has decided not to stand for re-election at the 2017 Annual General Meeting following ten years of tenure. On behalf of the Board of Directors, I would like to extend our sincerest thanks to him for his valuable contributions to Roche's success.

I am delighted to be able to propose Anita Hauser, a successful Swiss business leader, as the new member of the Board of Directors. As Vice-Chairwoman of the Board of Directors of a globally operating family business, Bucher Industries AG, Anita Hauser has a strong entrepreneurial background.

*“In light of the good full-year results, we propose to increase the dividend for the 30<sup>th</sup> consecutive year.”*

For us, *shaping the future* means continuing to develop our product offerings and markets globally with an entrepreneurial spirit and sound strategic instinct. My thanks go out to our Group's more than 94,000 employees for their dedication and to our external partners for their willingness to work with Roche towards a shared goal: patients' wellbeing.

And I would like to thank you, our shareholders, for your confidence in us.

Dr Christoph Franz  
 Chairman of the Board



## Board of Directors

From left to right

**Prof. Dr Richard P. Lifton (1953)** C, E

**Julie Brown (1962)** B\*, E

**Prof. Sir John Irving Bell (1952)** B, E

**Bernard Poussot (1952)** C, E

**Dr Christoph Franz (1960)** Chairman, C, D\*, E

**André Hoffmann (1958)** Vice-Chairman,  
Representative of the shareholder group with pooled  
voting rights, A, C\*, D, E

**Dr Andreas Oeri (1949)** Representative of the  
shareholder group with pooled voting rights, A\*, E

**Dr Claudia Süßmuth Dyckerhoff (1967)** A, B, E

**Paul Bulcke (1954)** B, E

**Peter R. Voser (1958)** C, E

**Dr Severin Schwan (1967)** F

**Prof. Dr Pius Baschera (1950)** A, E

A Corporate Governance and Sustainability Committee

B Audit Committee

C Remuneration Committee

D Presidium/Nomination Committee

E Non-executive director

F Executive director

\* Committee chairperson

Roche Board of Directors on 31 December 2016

## Achieving medical breakthroughs

*2016 saw further important advances, including regulatory approval for our first cancer immunotherapy medicine and the filing of our new treatment for multiple sclerosis. Improving patients' lives—this has always been our ambition.*

Dear Shareholders,

In 2016, we achieved all our financial targets. Pharmaceuticals sales were up 3%\*. Diagnostics sales even increased by 7%—again well above market growth. Roche's business success is reflected not least in the core earnings per share and non-voting equity security, which increased 5%.

Even more important for the future: Our product pipeline has made very good advances. Within a short period, we launched four new medicines to treat aggressive cancers—skin cancer (Cotellic), lung cancer (Alecensa; Tecentriq), leukaemia (Venclexta) and bladder cancer (Tecentriq). In other therapeutic areas, we filed marketing applications in the US and EU for a new medicine against multiple sclerosis (ocrelizumab), and achieved positive late-stage clinical trial results for a new molecule (emicizumab), which treats haemophilia A, a blood-clotting disorder. Additionally, five of our medicines have been granted breakthrough therapy designation by the US Food

and Drug Administration, something that could speed up the approval processes.

The Diagnostics Division also introduced a number of key new instruments and tests. In particular, I would like to mention the new immunochemistry platform cobas e 801. This new module for clinical laboratories can carry out up to 300 immunological tests per hour, enabling doctors to make faster and extremely reliable treatment decisions.

Such complex and highly innovative products can only be developed if people from very different disciplines and business areas work closely together. I extend my sincere thanks to our more than 94,000 employees for their outstanding achievements.

Harnessing scientific excellence to improve patients' lives and, where possible, to help them live longer, is the goal that drives us day in and day out at Roche.

\* All growth rates in this report are at constant exchange rates (CER; average 2015).



*“Our product pipeline has made very good advances.”*

*Dr Severin Schwan  
Chief Executive Officer*



CEO's video:

[roche.com/ar16ceo](https://roche.com/ar16ceo)

Our advances made in the treatment of multiple sclerosis (MS) are highly encouraging. MS is an autoimmune disorder in which the immune system attacks the body. Data from three large-scale trials have shown that our potential new medicine ocrelizumab is highly effective, even against the somewhat rarer form of the progressively deteriorating disease, for which no treatment has been found to date.

As the world leader in oncology, we strive to advance new approaches to better treat cancer. As cancer cells are resourceful, they look for ways to circumvent a treatment and, at some point in time, often begin to multiply again. The latest immunotherapeutic approaches are therefore proving very promising because they help the body's immune system to recognise and fight cancer more effectively. For the first time, there is reason to hope that we will be able to cure patients with advanced cancer, too—or transform cancer into a chronic disease. Roche is at

*“Harnessing scientific excellence to improve patients’ lives and, where possible, help them live longer, is the goal that drives us day in and day out at Roche.”*

the very forefront of cancer immunotherapy, with ten investigational candidates currently in the clinical development phase. In 2016, our first immunotherapeutic medicine Tecentriq was approved in the US for the treatment of bladder and lung cancer. Representing the first major improvement in bladder cancer treatment options in 30 years, this medicine also appreciably extends the life expectancy of people with advanced-stage lung cancer.

The fact that people respond differently to medicines remains a huge medical challenge. Because the immune system is extremely complex, we aim to keep cancer in check more effectively over the long term—or even defeat it—by using highly promising combinations of complementary preparations, for example immunotherapeutic agents with chemotherapies and targeted antibodies. We are currently testing more than 40 such combinations in clinical trials.

It is also with a view to these novel treatment approaches that we strive for more flexible pricing models. Instead of the established practice of pricing medicines based on vials or milligrammes, we want to link remuneration more closely to patient benefit. This can, for instance, vary for the same medicine, depending on which indication it is being used for and in which combination.

Working closely with payers and service providers, we have already introduced flexible pricing solutions in several European countries—including different prices for medicines used as combination therapies versus monotherapies in breast and skin cancer. In other countries we have initiated pilot projects; we collaborate on setting up the necessary IT infrastructure and—for example in the US—we actively engage in discussions with payers on new pricing models.

Overall, in working with governments and payers, our goal is to ensure the degree of patient benefit and innovation of our products is taken into account.

In 2017, we expect to witness the market launches of the first biosimilars for some of our most important medicines. We are confident that we will be able to meet this challenge by continually improving the standard of care, based on our strength in developing combination therapies of proven and new compounds. Thus, the newly launched medicines will be more important for the development of our business. Also in the current year, we expect a number of key clinical study results and product approvals, and overall we anticipate sales to grow low- to mid-single digit, at constant exchange rates. We are also aiming for core earnings per share to grow broadly in line with sales,

*“In the fight against cancer, the latest immunotherapeutic approaches and combination therapies are proving very promising.”*

at constant exchange rates. And we are planning to further increase the dividend in Swiss francs for 2017.

Roche is strongly positioned for the future. We are the world's largest biotech company, the leader in cancer therapy, equipped with one of the best product pipelines in the industry and the number 1 in laboratory diagnostics. I am confident that Roche will continue its 120-year success story.

Dr Severin Schwan  
Chief Executive Officer



## Corporate Executive Committee

From left to right

**Daniel O'Day (1964)**  
CEO Roche Pharmaceuticals

**Roland Diggelmann (1967)**  
CEO Roche Diagnostics

**Cristina A. Wilbur (1967)**  
Head Group Human Resources

**Dr Stephan Feldhaus\* (1962)**  
Head Group Communications

**Dr Gottlieb A. Keller (1954)**  
General Counsel

**Dr Severin Schwan (1967)**  
CEO Roche Group



**Dr Sophie Kornowski-Bonnet\* (1963)**  
Head Roche Partnering

**Dr Alan Hippe (1967)**  
Chief Financial and IT Officer

**Prof. Dr John C. Reed\* (1958)**  
Head Roche Pharma Research & Early Development (pRED)



**Osamu Nagayama\* (1947)**  
Chairman and CEO Chugai

**Dr Michael D. Varney\* (1958)**  
Head Genentech Research & Early Development (gRED)

\* Member of the Enlarged Corporate Executive Committee  
Roche Corporate Executive Committee on 31 December 2016

# Business performance

*We recently launched four new medicines and strengthened our leading position in the laboratory business. At the same time, we invested in the product pipeline and are among the top 10 investors in R&D across industries.*

We provide more than 100 medicines, over 140 diagnostic instruments and over 850 different tests to patients, laboratories and healthcare professionals.

## Material topics covered in this chapter

- Product portfolio strategy
- Growth strategy in emerging and developed markets

# G

## ood performance in both divisions

Group sales rose 4% to CHF 50.6 billion. Despite high investments in the launch of new products and product development, core EPS grew faster than sales (+5%). Core EPS growth reflects the good underlying business performance and an impact from changes to the Group's Swiss pension plans. IFRS net income was up 7% at constant exchange rates and in Swiss francs.

Sales in the Pharmaceuticals Division rose 3% to CHF 39.1 billion, driven by growth of Perjeta, Herceptin and Actemra/RoActemra, partially offset by lower sales of Pegasys, Tarceva and Lucentis.

In the US, Pharmaceuticals sales advanced 3%, led by the respiratory medicines Xolair and Esbriet. The recently launched medicines Tecentriq and Alecensa contributed to the growth as well. Sales of eye drug Lucentis and cancer medicines Avastin and Tarceva declined due to growing use of other therapeutic options. In Europe, sales growth of 4% was driven by

Perjeta, Actemra/RoActemra and MabThera/Rituxan. In Japan, sales grew 1% despite the biennial price cuts and a special price reduction rule for best-selling medicines. Tamiflu, Alecensa and Actemra/RoActemra were key sales contributors. In the International region, sales gained 4%, driven by the Asia-Pacific and Latin America subregions.

Diagnostics divisional sales increased 7% to CHF 11.5 billion—above market growth. Centralised and Point of Care Solutions<sup>1</sup> was the main contributor, led by its immunodiagnosics business.

In the EMEA<sup>2</sup> (+2%) and North America (+3%) regions, the division's largest markets, the sales increases were led by Centralised and Point of Care Solutions. Sales growth in North America was partially offset by a decline in Diabetes Care business, which faced continued pricing pressure. The sales increase in Asia-Pacific (+16%) was mainly driven by China.

### Key figures 2016

	CHF millions 2016	CHF millions 2015	% change CER*	% change CHF
Group sales	50,576	48,145	+4	+5
Pharmaceuticals Division	39,103	37,331	+3	+5
Diagnostics Division	11,473	10,814	+7	+6
Core operating profit	18,420	17,542	+4	+5
Core EPS – diluted (CHF)	14.53	13.49	+5	+8
IFRS net income**	9,733	9,056	+7	+7

\* All growth rates in this report are at constant exchange rates (CER; average 2015). | \*\* IFRS: International Financial Reporting Standards.

In Latin America, sales advanced 18%. Sales growth in Japan (+2%) was also led by the Centralised and Point of Care Solutions business.

### High number of launches in Pharmaceuticals

Roche recently launched four new medicines: Cotellic (advanced melanoma), Alecensa (lung cancer), Venclexta (chronic lymphocytic leukemia, jointly commercialised with AbbVie) and Tecentriq (bladder and lung cancer). In addition, five FDA breakthrough therapy designations were granted for Roche medicines in 2016. A major highlight was the US launch of Roche's cancer immunotherapy medicine Tecentriq. It is the first FDA-approved treatment for people with a specific type of bladder cancer in more than 30 years. Furthermore, the US FDA cleared Tecentriq for use in previously treated metastatic non-small cell lung cancer (NSCLC). The pivotal Oak trial showed that people with this form of lung cancer who received Tecentriq live significantly longer, regardless of their PD-L1 status, compared with those receiving chemotherapy. Additional data presented at the ECTRIMS<sup>4</sup> congress in September showed that Roche's ocrelizumab increased disease control in both relapsing and primary progressive multiple sclerosis (RMS and PPMS). Roche is seeking regulatory approval for this medicine in RMS and PPMS in the US and the EU. The FDA's action date for a decision is March 28, 2017.

Roche also presented other important clinical results in 2016. A pivotal study in a group of people with haemophilia A (Haven 1) showed that prophylaxis with emicizumab led to a significant reduction in the number of bleeds over time. A phase III study by Chugai (J-Alex) found that first-line treatment with

Alecensa significantly reduced the risk of disease worsening or death compared to crizotinib, the current standard of care, in people with ALK-positive NSCLC. While Gazyva/Gazyvaro showed positive results in a major clinical trial (Gallium) in follicular lymphoma, a separate trial (Goya) of the medicine in diffuse large B-cell lymphoma, did not reach its primary study goal.

### Further broadening the Diagnostics portfolio

During 2016, Roche added nine key instruments and tests to its comprehensive portfolio. Among the new instruments are the cobas e 801 immunoassay module, the CoaguChek INRange system to monitor vitamin K antagonist therapy, and the Accu-Chek Guide, a next-generation blood glucose monitoring system.

The FDA approved two accompanying diagnostics: The Ventana PD-L1 (SP142) test is a complementary diagnostic which determines PD-L1 status of patients with bladder and lung cancer. The cobas EGFR Mutation test v2 is a companion diagnostic for lung cancer medicine Tarceva. The FDA also granted premarket clearance and a CLIA<sup>3</sup> waiver for the cobas Liat Influenza A/B & RSV test. This is the first point-of-care test that extends molecular testing on the Liat system beyond influenza A/B and *Streptococcus A* to include respiratory syncytial virus (RSV). The FDA also approved Roche tests for the detection of Zika virus.

### Outlook for 2017

In 2017, Roche expects sales to grow low- to mid-single digit, at constant exchange rates. Core earnings per share are targeted to grow broadly in line with sales, at constant exchange rates. Roche expects to further increase its dividend in Swiss francs.

1 Formerly Roche Professional Diagnostics | 2 Europe, Middle East and Africa | 3 CLIA= Clinical Laboratory Improvement Amendments |

4 European Committee for Treatment and Research in Multiple Sclerosis

# Sales in the Pharmaceuticals Division increased 3% to CHF 39.1 billion, driven by growth of the HER2 breast cancer medicines and Actemra/RoActemra.

**Herceptin, Perjeta and Kadcyla** (combined +8%\*). For HER2-positive breast cancer and HER2-positive metastatic gastric cancer (Herceptin only). **Herceptin** sales were up 4%, helped by additional reimbursement approvals in China and continued growth in the US due to longer duration of treatment in combination with Perjeta. **Perjeta** sales (+26%) advanced particularly strongly in Europe and the US, where the medicine was approved for use before surgery in early breast cancer. **Kadcyla** sales (+7%) were fuelled by increasing demand in the International region, due mainly to expanded access.

**MabThera/Rituxan** (+3%). For common forms of blood cancer, rheumatoid arthritis and certain types of vasculitis. Sales continued to rise despite competitive pressure. Increasing demand was mainly seen in China, the US and Europe. Growth in China was supported by expanded regional access, largely in diffuse large B-cell lymphoma.

**Avastin** (0%). For advanced colorectal, breast, lung, kidney, cervical and ovarian cancer, and relapsed glioblastoma (a type of brain tumour). Sales continued to grow strongly in the International region (+18%),

especially China, following the approval of the lung cancer indication in 2015. Sales in the US, where Avastin is already broadly used in its approved indications, declined 5%, largely due to growing use of new immunotherapy agents in the lung cancer setting.

**Gazyva/Gazyvaro** (+52%). For chronic lymphocytic leukaemia (CLL) and rituximab-refractory follicular lymphoma. Sales expanded in the US and Europe despite increasing competition in CLL. Gazyva/Gazyvaro is now approved for CLL in more than 60 countries. Following US and EU approval of the medicine in previously treated follicular lymphoma in the first half of 2016, early uptake in this indication has been encouraging.

**Esbriet** (+34%). For idiopathic pulmonary fibrosis (IPF). Sales continued to expand, mostly due to

increasing use in people with moderate and progressive disease. Roche is stepping up its efforts in various markets to improve disease awareness and inform patients and caregivers of the need for early and sustained treatment of IPF.

**Actemra/RoActemra** (+16%). For rheumatoid arthritis and forms of juvenile idiopathic arthritis. Increasing use of Actemra/RoActemra as a single agent and of the subcutaneous formulation remained key growth drivers globally.

### Recently launched medicines

**Alecensa** is for people with ALK-positive advanced NSCLC. There was very good uptake in the US. Sales growth remained strong in Japan. Following FDA approval of **Tecentriq** in bladder and lung cancer, market uptake in the US has been strong.



Pharmaceuticals:  
roche.com/  
pharmaceuticals

Top-selling pharma products in 2016 (CHF millions)



\* All growth rates in this report are at constant exchange rates (CER; average 2015).

## Regional performance

### Good growth in all regions

#### US

The US market continues to be an area of significant opportunity, despite increasing complexity driven by rising competitive pressure, a dynamic regulatory environment, advances in technology, and a shift toward value-based healthcare models. To navigate these challenges, we remain focused on delivering differentiated products and working with all stakeholders in the healthcare community to differentiate our products, support physicians' choices, and ensure patients have access to our medicines.

While the FDA follows specific approval procedures for medicines, it has also created programmes to expedite the approval of promising new treatments intended for unmet medical need. One of these is the breakthrough therapy designation (BTD) programme. In 2016, we received BTDs for five indications, which means we have been awarded a total of 14 BTDs since the FDA established the programme in 2012.

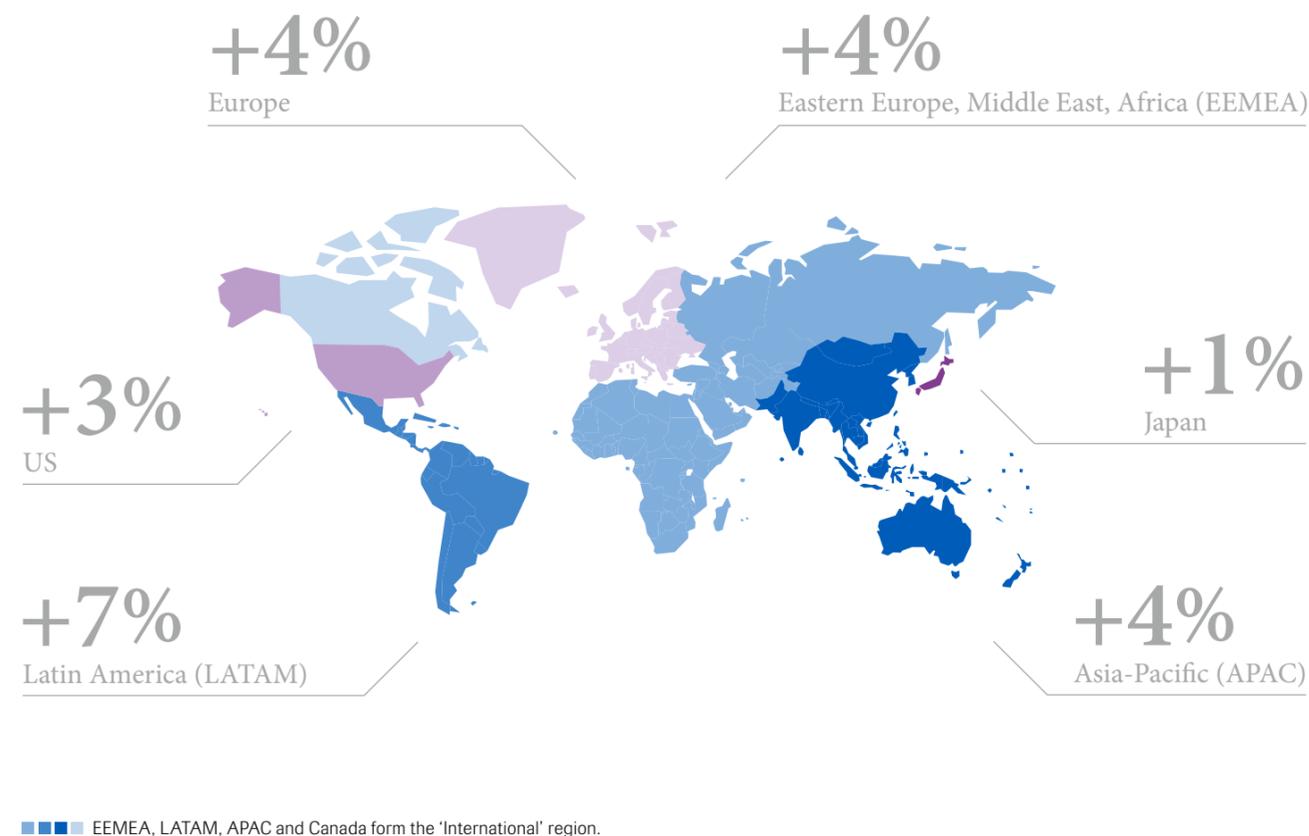
Fuelled by strong sales of both new and existing medicines, the US recorded 3%\* year-over-year growth and now accounts for 49% of the total Pharma business. More than half of total 2016 sales were attributed to oncology medicines, driven in part by the recent approvals of Tecentriq in bladder and lung cancer and Alecensa in lung cancer. We are also preparing for potential FDA approvals of medicines outside of oncology in 2017, including orelizumab for MS.

#### Europe

The European market, where healthcare is largely publicly funded, continued to face increasing demands on strained healthcare systems. Despite the European Medicines Agency's centralised approval of medicines, the time between European authorisation and reimbursement continues to vary by country, as do government spending levels on healthcare. This has created a significant disparity in access to medicines across the EU. As part of our commitment to accelerate and widen patient access to our medicines in Europe, we have developed new pricing solutions to give healthcare systems more flexibility when making reimbursement decisions. The Europe region contributed 23% to the overall Pharmaceuticals business and delivered 4% growth, driven by Perjeta, Actemra/RoActemra and MabThera/Rituxan. Germany, France and Italy were the largest contributors to sales.

#### Japan

Under its universal healthcare insurance system, Japan is facing significant pressure to reduce its overall medical costs. In 2016, in addition to the general drug-price revision which occurs every two years, a special market-expansion repricing rule was newly introduced and applied to Avastin. Given that many patients still do not receive adequate testing and treatment, Chugai makes various efforts to disseminate information on healthcare delivery in different disease areas in the country. Chugai contributed 9% to the overall Pharmaceuticals business and sales increased 1%, driven by Tamiflu, Alecensa and Actemra/RoActemra.



#### International

The **LATAM** region has experienced consistently high growth in recent years, resulting in increased healthcare spending and government attention to programmes improving access to healthcare. Despite these investments, significant challenges remain, including a lack of infrastructure and trained professionals, low levels of education and awareness, and disparities between local private and public healthcare systems across the different LATAM countries. To address these issues, Roche collaborates with various partners to help strengthen national health plans and hence increase access to tests and medicines. LATAM contributed 6% to the overall Pharmaceuticals business and grew 7%, driven by Avastin, Herceptin and Perjeta. Sales growth was driven in part by inflationary price increases in Argentina.

2016 was a challenging year for the **APAC** region due to the macroeconomic slowdown in some key markets such as China and Taiwan. Our focus on

expanding access to our medicines enabled us to achieve reimbursement in several provinces in China covering over 530 million people. The APAC region contributed 7% to the overall Pharmaceuticals business and growth of 4% was driven by Herceptin, MabThera/Rituxan and Avastin.

Despite inherent volatility and multiple barriers to quality healthcare, there are significant opportunities for growth and development in the **EEMEA** region. To drive access to our medicines, we aim to implement tailored solutions. In Middle East markets, we have worked with stakeholders to adapt regulations so that local approvals are based on regulatory submissions from other markets. This helps to accelerate product registration timelines and thus makes our innovative medicines available earlier to patients. This is one example of how patients in emerging markets can benefit from our innovative medicines. The top products contributing to regional growth were Avastin, Perjeta and Kadcyla. Overall, the EEMEA markets contributed 4% to the Pharmaceuticals business and grew 4%.

FDA BTDs:  
[focr.org/breakthrough-therapies](http://focr.org/breakthrough-therapies)

## A strong heritage

### Progress in oncology and neuroscience

#### At the forefront of finding cures for cancer

For more than 50 years, Roche has been at the forefront of developing medical solutions to fight cancer. In 1962, '5 FU' was synthesised, Roche's first anticancer drug inhibiting cell growth. In 1986, Roche's first biotech product Roferon-A was approved for the treatment of a previously fatal form of blood cancer.

Over the last 20 years, Roche has brought 14 new medicines to cancer patients. Long-term durable remissions and even cures are now possible in specific disease settings. For example, Herceptin has been shown to reduce the number of cases of metastatic HER2-positive breast cancer when used in the early setting,<sup>1</sup> and for people with an aggressive form of lymphoma, MabThera/Rituxan together with chemotherapy has been shown to cure the disease in a majority of patients.<sup>2</sup> However, there are more than 200 types of cancer and there is still significant progress needed to overcome the challenge of this disease.

Our goal is to be at the forefront of finding cures for cancer, as demonstrated by the fact that we recently

launched four new cancer medicines that significantly improve patient outcomes: Tecentriq (bladder and lung cancer), Venclexta (chronic lymphocytic leukaemia), Alecensa (lung cancer) and Cotellic (skin cancer).

A major highlight in 2016 was the US launch of our first cancer immunotherapy medicine Tecentriq. Cancer immunotherapy is revolutionising the way cancer is treated, and we are proud to be among the leaders in this field. We expect important data for as many as ten investigational cancer immunotherapy molecules, either in monotherapy or combination approaches, before the end of 2017.

Gaining regulatory approval of medicines does not mean that all patients in need are able to receive these treatments immediately. Reimbursement negotiations and healthcare infrastructure can all contribute to delays numbering years before patients have access to innovative new medicines. In many cases, this can prove to be too late.

We are making many efforts to accelerate access to our medicines around the world, one example being our personalised reimbursement models. These frameworks enable more flexible pricing solutions by allowing medicines to be priced according to the benefit they deliver across different indications and combinations. This provides more flexibility when it comes to reimbursement decisions, and ensures timely access to innovative medicines for patients.

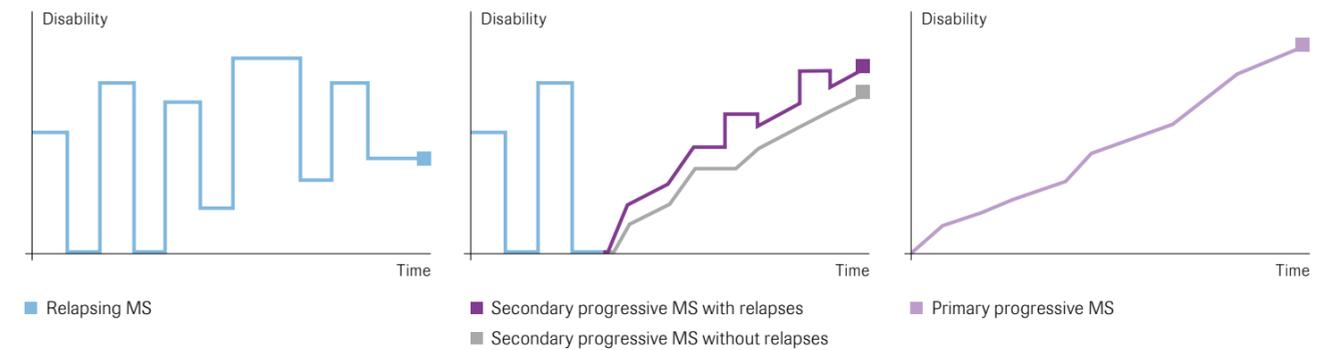


Oncology:  
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oncology

#### Key achievements in oncology

- More than 10 million cancer patients treated
- 4 new cancer medicines recently introduced
- 8 FDA breakthrough therapy designations granted for cancer medicines since 2012

#### Types of multiple sclerosis (MS)



85% of people with MS are initially diagnosed with relapsing MS (RMS). Over time, the majority of people with RMS progress to secondary progressive MS. Source: Multiple Sclerosis International Federation/Trojano M. et al. The Transition from relapsing-remitting MS to irreversible disability: clinical evaluation. *Neurol Sci*, 2003.

#### Turning the page in multiple sclerosis

Central nervous system (CNS) research has a long history at Roche. The world's first commercially available benzodiazepine medicines Librium (1960) and Valium (1963) were invented by Roche scientist Leo Sternbach. Roche's introduction of these two products was a major milestone, and the impact on medicine is still felt today.

More than 50 years later, we have reached a turning point in our understanding of the brain and the nervous system, leading to tremendous opportunities. We continue to invest in a broad research and development programme focusing on four disease areas:

- Psychiatric disorders including schizophrenia and depression
- Neurodevelopmental disorders including autism spectrum disorders, Down's syndrome and fragile X
- Neurodegenerative disorders including Parkinson's disease and Alzheimer's disease
- Neuroinflammatory disorders, including neuromyelitis optica and multiple sclerosis (MS)

In MS in particular, significant advances have been achieved in the fight against this disabling disease over the past 20 years. There are now numerous treatment options available for relapsing MS (RMS)—

the most common form of the disease. It is characterised by clearly defined relapses, which often include neurologic symptoms. The less prevalent but highly disabling form of the disease is primary progressive MS (PPMS), displaying steadily worsening symptoms from the onset. Unlike for RMS, there are no approved treatments for PPMS.

Research advances have led to an increase in the development of newer, more efficacious treatments. However, the higher efficacy treatments have typically been accompanied by higher safety risks, and, for this reason, physicians and patients have been cautious in using high-efficacy treatments.

There is a need for high-efficacy medicines that offer a favourable safety profile. We are currently seeking regulatory approval for ocrelizumab, our first MS treatment in both RMS and PPMS. For PPMS, this would be the first and only treatment for this type of the disease. In the pivotal RMS trials, the medicine showed high efficacy versus Rebif® (interferon beta-1a) over the two-year period. Ocrelizumab demonstrated a favourable safety profile in each phase III study.<sup>3</sup> These data suggest that ocrelizumab could potentially be used earlier in the treatment pathway, and since it is administered by twice-yearly infusion, offer people with MS a less frequent dosing schedule.



Neuroscience:  
roche.com/  
neuroscience

<sup>1</sup> Weisgerber-Kriegl U et al. Estimation of the epidemiological effect of trastuzumab over 10 years in 5 European countries. *J Clin Oncol*, 2008.

<sup>2</sup> Sehn L, Gascoyne R. Diffuse large B-cell lymphoma: optimizing outcome in the context of clinical and biologic heterogeneity. *Blood*, 2015.

<sup>3</sup> Hauser S.L. et al. Ocrelizumab versus Interferon Beta-1a in Relapsing Multiple Sclerosis. *NEJM online*, 2016.

**S**ales in the Diagnostics Division grew strongly (+7%) to CHF 11.5 billion. All regions reported sales growth.

**Centralised and Point of Care Solutions\*** (+9%\*\*) was the largest contributor to the division's sales performance. Its Integrated Serum Work Area solutions, comprising the immunodiagnosics (+13%) and clinical chemistry (+6%) segments, were the main drivers of this strong growth.

In **Molecular Diagnostics**, including sequencing, sales increased 7%. In virology, with its portfolio for the diagnosis and monitoring of hepatitis and HIV, sales were up 9%. HPV (human papillomavirus) screening sales advanced 8%. The blood screening

business grew 5%, supported by tender wins in many countries.

**Tissue Diagnostics** sales increased 14%. Sales in the advanced staining portfolio and in primary staining were up 9% and 21%, respectively. Companion diagnostics sales showed continued strong growth (+46%).

**Diabetes Care** sales decreased 4%, predominantly due to continued price pressure in the US.

**+3%**  
North America

**+2%**  
Europe, Middle East and Africa (EMEA)

**+18%**  
Latin America

**+2%**  
Japan

**+16%**  
Asia-Pacific

The division's sales growth was driven by the Asia-Pacific region.

**All regions contributed to growth**

Increased access to healthcare and diagnostic solutions, demographic shifts, and advances in science and technology have led to a globally growing volume of tests. As the leader in the field of *in vitro* diagnostics, Roche is well positioned to benefit from these developments. However, public funding constraints have led to a consolidation of laboratories and hospitals. The number of people with diabetes continues to grow, along with awareness about the condition and the need to manage it with adequate blood glucose monitoring systems.

The sales increase in the **EMEA** region was driven by the core laboratory business. Contributions by markets varied due to different levels of market maturity and economic developments. In Africa, major healthcare access programmes have been implemented by a number of local governments in close collaboration with international organisations such as WHO, UNAIDS and partners from industry. Roche supports several such initiatives with sustainable commercial offers. Overall, Diabetes Care sales declined within this region, however growth was seen in several markets.

In **North America**, a strong, above-market growth performance was driven by our laboratory businesses. Roche continues to gain market share in both the laboratory and decentralised coagulation monitoring segments, and important new business was won with recently launched products. In Diabetes Care, challenging market conditions continued to impact the region's overall performance.

The **Asia-Pacific** region was a major driver of the division's growth, with immunochemistry as a key contributor. China generated more than 50% of the absolute sales growth, indeed most markets within the region continued to see volume growth and expanded access to testing. Diabetes Care sales were stable.

In **Latin America**, all business segments contributed to growth, with sales expanding in Diabetes Care.

Sales growth in **Japan** was driven by Centralised and Point of Care Solutions and Tissue Diagnostics, however business in Diabetes Care declined.

**Top-selling product portfolios in 2016 (CHF millions)**



\* Formerly Roche Professional Diagnostics | \*\* All growth rates in this report are at constant exchange rates (CER; average 2015).

## Modern diagnostics—faster and simpler

### *Results more accurate than ever before*

#### The 'connected lab'

We are working to increase the efficiency and connectivity of laboratory solutions. We want our innovations to support healthcare professionals and help them to take the best patient decisions in the fastest and most efficient way. A fully connected laboratory with automated processing and integrated workflows, is our goal.

The connected lab offers a wider array of tests than ever before, and is increasingly able to deliver results across different testing disciplines from one blood sample. Thanks to automated workflows and integrated IT solutions, our customers benefit from fully interconnected instruments, an incomparable breadth of menu, and fast, highly accurate results.

As the newest member of the cobas 8000 modular analyser series, the cobas e 801 module, for immunodiagnosics, represents a major step forward in realising the connected lab. First launched in 2016, the module is designed for maximum consolidation at a high throughput with continuous operation, simultaneously reducing the amount of waste generated. The new system doubles the currently available immunochemistry testing capacity over the same floor space, only requires a low sample volume, and delivers fast, reliable and consistent, highly accurate patient results.

A fully automated system, the Ventana HE 600 system for primary staining improves workflow

in the histopathology laboratories and provides exceptional staining quality.

The new cobas m 511 integrated haematology analyser was launched in countries accepting the CE mark. Compared to current methods, this innovative, automated system offers one streamlined solution which prepares, stains and analyses microscopy blood slides. Automation and digitisation reduce the need for resource-intensive manual microscope reviews, require less blood for testing, and deliver highly accurate results faster.

The CoaguChek INRange system is the first Bluetooth-enabled PT/INR home health device that gives patients and their healthcare providers greater control over their coagulation status, and the ability to monitor vitamin K antagonist therapy.<sup>1</sup> Patient self-testing with CoaguChek INRange sets a new standard of care by enabling providers to monitor patient PT/INR data, reducing visits to the lab.

The Accu-Chek Guide, a next-generation blood glucose monitoring system, was launched in the first countries in 2016. It is designed to make everyday blood glucose monitoring easier and provides advanced accuracy for reliable diabetes management. It supports people with diabetes by reducing the time they have to spend thinking about their daily therapy routines in that it simplifies blood glucose monitoring and improves the testing experience.



A modern connected lab provides interconnected instruments, an incomparable breadth of menu and allows for fast results.

#### Further broadening our rich test menu

During 2016, a range of new tests for *in vitro* diagnosis was approved or cleared by the regulatory authorities or certified for launch. These new tests add to our comprehensive portfolios, further improving decision-making in healthcare, and supporting laboratories in their efforts to increase operational efficiency.

In June, the FDA approved the cobas EGFR Mutation test v2 for use with plasma samples, as a companion diagnostic for non-small cell lung cancer (NSCLC) therapy with Tarceva. This was the first FDA approval of a liquid biopsy test as an aid in clinical decisions, and makes this test the only FDA-approved companion diagnostic for the detection of the epidermal growth factor receptor (EGFR) gene in DNA derived from plasma or tumour tissue.

In August, the FDA granted premarket clearance (510k clearance) and a CLIA (Clinical Laboratory Improvement Amendments) waiver for the cobas Influenza A/B and RSV test for use on the cobas Liat system. This is the first point-of-care test extending molecular testing beyond influenza A/B and

*Streptococcus A* to include respiratory syncytial virus (RSV). Infection with RSV is the cause of more than 80% of acute lower respiratory tract infections in infants under one year of age.<sup>2</sup> It is essential to have a differential diagnosis for RSV and influenza to ensure appropriate treatment soon after the onset of symptoms.

The Ventana PD-L1 (SP142) test was approved by the FDA as a complementary diagnostic to provide PD-L1 status on patients with metastatic urothelial cancer who are considering treatment with the FDA-approved immunotherapy Tecentriq. The FDA also approved this test for NSCLC.

Our new menu for Zika testing enables healthcare professionals to quickly diagnose infection with the virus and helped prevent more than 300 units of blood infected with Zika virus from being released for blood transfusion to patients in Puerto Rico in 2016. The FDA granted approval for the cobas Zika assay under an Investigational New Drug application protocol, and issued an Emergency Use Authorisation for the LightMix Zika rRT-PCR test.

<sup>1</sup> The prothrombin time (PT) and the international normalised ratio (INR) are assays evaluating the extrinsic pathway of coagulation.

<sup>2</sup> Piedimonte G, et al. Respiratory syncytial virus infection and bronchiolitis. *Pediatr Rev*, 2014. | All products may not be available in all markets.

## Women's health

### Secure health, avoid disease

Our product portfolio provides women and their physicians with additional insights into critical health issues. This allows for more informed decisions and precise steps for prevention, early detection and therapy at every stage of a woman's life.

In cancer, for example, biomarkers provide vital information about a tumour's structural, cellular and genetic make-up, as well as its subtype. Together with the physical characteristics of the tumour, biomarkers facilitate decision-making and guide therapy selection.<sup>3</sup> Early intervention is also critical; upon initial diagnosis of breast cancer, the five-year relative survival rate of women with stage 1 cancer is 98.8% compared to 26.3% for stage 4.<sup>4</sup>

#### Cervical cancer screening and diagnosis

Cervical cancer has become one of the most preventable forms of cancer thanks to the implementation of screening and vaccination programmes against HPV, the known cause of more than 99% of cervical cancers.<sup>5</sup> The Roche cervical cancer portfolio advances current screening and diagnostic approaches. The medical value of HPV screening is well established globally and countries have started to adopt HPV-based primary screening approaches, leading to a dramatic increase in screening effectiveness.<sup>6</sup> Supported by data from the landmark Athena clinical study, the cobas HPV test is currently the first and only FDA-approved HPV test for use in HPV primary screening for women aged 25 and older.

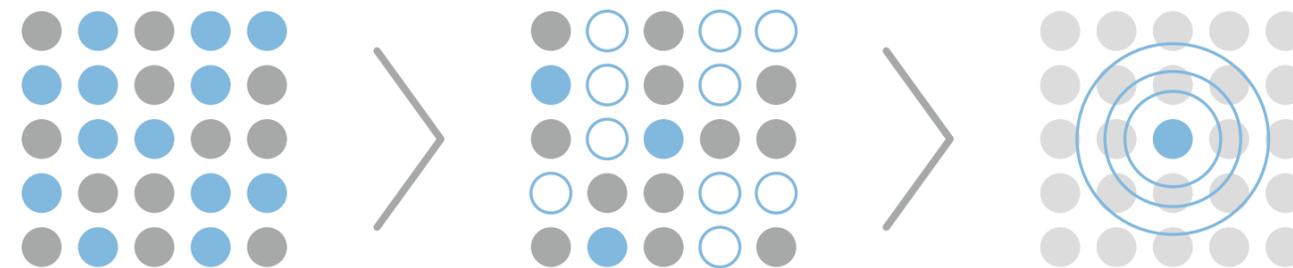
Women who test positive for genotypes HPV 16 and HPV 18 are at high risk of developing precancer or cancer. Women carrying one or more of the 12 other high-risk HPV genotypes are at lower risk of developing precancer or cancer and would require a follow-up test to prevent unnecessary treatment and costs to healthcare systems. Our CINtec PLUS Cytology test addresses this issue. Backed by landmark studies, such as Palms, it is the only test that uses dual-biomarker technology to simultaneously detect two specific biomarkers (p16 and Ki-67).<sup>7</sup> These are strong indicators of the presence of transforming HPV infection, thus identifying those women who will benefit most from immediate intervention.

The CINtec Histology test supports the confirmation if cervical disease is actually present. It is based on the p16 biomarker and guides pathologists in the identification of high-grade cervical disease in tissue biopsies that may be missed by standard morphologic interpretation alone. Moreover, this test has been recommended by medical societies and the WHO for the diagnosis of cervical disease, becoming a global standard of care.<sup>8</sup>

#### Key information for and during pregnancy

The average age of first-time mothers is rising and fertility rates are declining. Thus, there is an increasing need for information that supports family planning through natural conception or artificial reproductive technologies. The anti-Müllerian hormone (AMH) is

#### Cervical cancer screening and diagnosis



#### Screen

Identify women at risk  
cobas HPV test

#### Manage

Identify women who require intervention  
CINtec PLUS Cytology

#### Diagnose

Identify women to treat  
CINtec Histology

an important fertility marker used to assess ovarian reserve levels. Our Elecsys AMH test is a simple blood test that can be performed during any day of the menstrual cycle.

Preeclampsia is a serious pregnancy complication usually occurring after 20 weeks of pregnancy. It is one of the leading causes of death and complications for mothers and their unborn babies and cannot be treated—the only cure is delivery of the baby. The Elecsys sFlt-1/PlGF immunoassay ratio test predicts or rules out the short-term risk of developing the disease in women with suspected preeclampsia.<sup>9</sup>

Foetal genetic conditions can be identified based on foetal DNA in circulation in a pregnant woman's blood. The Harmony prenatal test is a new type of screening test that analyses the fragments of DNA in a pregnant woman's blood sample to assess the probability of several genetic conditions including trisomy 21 (Down syndrome), trisomy 18 (Edwards' syndrome) and trisomy 13 (Patau syndrome). The test is non-invasive and highly accurate, and doctors are much less likely to recommend invasive follow-up testing, such as amniocentesis, due to false positive results.

Gestational diabetes with high blood glucose (hyperglycaemia) are among the most common

health problems during pregnancy. Hyperglycaemia that is not properly managed can result in birth complications that can affect both mother and child. Our Accu-Chek diabetes management solutions offer accurate and reliable blood glucose monitoring systems, diabetes management software solutions, and education programmes. Along with a healthy diet, moderate exercise and, if necessary, insulin therapy, these tools can help keep blood glucose levels in a healthy range.

Our portfolio also comprises tests to identify infections with microorganisms including toxoplasmosis, syphilis-causing *Treponema pallidum*, hepatitis B and E, parvovirus, rubella, cytomegalovirus, *Herpes simplex* and others that represent high risks during pregnancy and for the new-born child. Early diagnosis and initiation of medical intervention are critical for mother and child.

#### Maintaining the wellbeing of women

Following menopause, disruption to the balance of bone breakdown and new bone formation can cause women to lose bone faster than it is rebuilt. The bones can then become brittle and more easily broken. Our menu of bone tests provides an earlier and more complete assessment of osteoporosis therapy efficacy than bone mineral densitometry tests alone.



Diagnostics:  
roche.com/  
diagnostics

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*Dr Thomas Wright,  
Professor Emeritus, Columbia University*

## *“We’re translating research into clinical practice.”*

I entered medical school planning to do full-time research and quickly realised that by becoming a pathologist I could combine research with clinical practice. That was a turning point in my career.

I’ve always loved the contact with patients. It helped me understand the emotional impact on women anxiously awaiting the results of their screening for cervical cancer. More importantly, it also gave me the clinical experience needed to help develop national guidelines for managing and treating this disease.

For most of my 35-year career, the standard for screening was the Pap test. It has dramatically reduced the number of deaths from cervical cancer in the US and other developed countries. Studies have shown, however, that in up to half of women with high-grade cervical cancer precursors, the Pap test misses the disease.

In the 1980s, scientists discovered that HPV causes almost all cervical cancers, and just two types are responsible for about 70% of cases. That breakthrough opened up exciting new horizons in terms of prevention, treatment and detection for both patients and clinicians.

### **A trustful partnership between academia and industry**

Advances in molecular screening technology followed, including a Roche diagnostic test that can reliably detect the DNA of the two most aggressive strains of HPV.

But how could we translate that into clinical practice? Changing FDA-approved procedures for cervical cancer screening requires clinical trials on a scale no academic institution could afford. It was the right moment for a partnership. Roche decided to conduct the Athena trial in 2009, with over 47,000 patients, and gave me the opportunity to participate. I worked with very talented people at Roche to design the study protocol, analyse the clinical findings and present the results to regulatory authorities.

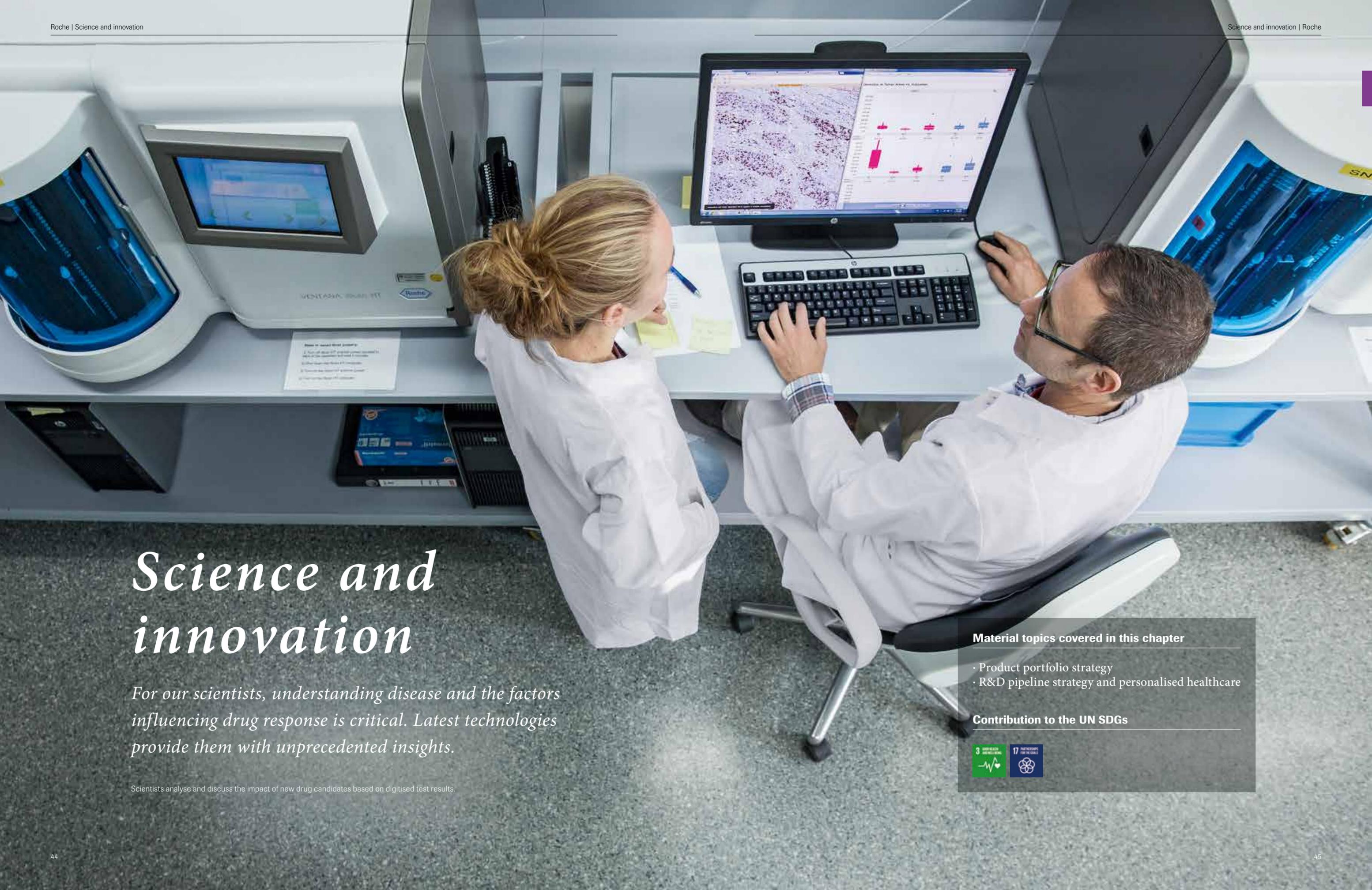
In 2014, the FDA approved the Roche HPV test for primary screening in the US. I am sure this is a paradigm shift that will save many lives.

In addition to this new screening technology, physicians now have an effective cervical cancer vaccine for young women and targeted molecular therapies. It is incredible to think that we could practically eliminate this disease over the next two decades in many countries.

During my years of collaboration with Roche, I have been very impressed with the knowledge and dedication of the people. They have welcomed input from the academic world and treated me as a trusted partner.

And our partnership continues. I am now collaborating with Roche on evaluating other biomarkers that play a role in cervical cancer. This will give us added precision in detecting and treating this disease at an early stage.





# Science and innovation

*For our scientists, understanding disease and the factors influencing drug response is critical. Latest technologies provide them with unprecedented insights.*

Scientists analyse and discuss the impact of new drug candidates based on digitised test results.

## Material topics covered in this chapter

- Product portfolio strategy
- R&D pipeline strategy and personalised healthcare

## Contribution to the UN SDGs



**W**e are embracing the best technology and partnerships that leverage the power of our unique pharmaceutical-diagnostic structure to advance science and develop new therapies.

Roche has generated breakthrough insights and developed products that have transformed medical care for people with difficult-to-treat or deadly diseases. Building on that legacy, we are embracing the best technology and partnerships to leverage the power of our pharmaceutical-diagnostic structure.

Precise diagnostic tests and combination therapies allow millions of people with, for instance, HIV infections, to live into their golden years.<sup>1</sup> Likewise, Herceptin, one of the first man-made antibodies, approved in the late 1990s, changed the treatment landscape for HER2-positive breast cancer by turning a deadly disease into one that can be eradicated when treated in its early stage.

New tests for cancer screening, early diagnosis and breakthrough therapies are leading to previously unimagined outcomes. Cervical cancer, the third most common cancer in women and a leading cause of cancer death worldwide, is a good example of the progress made in fighting cancer.<sup>2</sup> Today, cervical cancer is nearly 100% avoidable thanks to vaccination, screening, diagnosis and treatment for human papillomavirus (HPV) infection, its primary cause. Roche offers a leading portfolio of tests for screening and diagnosis for HPV.

In ophthalmology, the introduction of Lucentis in 2006 completely changed the space, restoring and improving vision for patients destined to go blind.

#### Turning today's science into tomorrow's cures

As we continue to help define the future of medicine, we have unprecedented opportunity to match the right treatments to the right patients. Non-small cell lung cancer (NSCLC), for instance, used to be considered one disease. We now know that more than a dozen genetic alterations cause NSCLC, and a range of medicines is now available that specifically target these alterations. But it is not enough to understand the underlying biology alone. In addition to variations in the genetic code, we are studying how genes get switched on and off. We are also learning how a therapy can be impacted by a patient's particular immune response and even by differences in the way an individual metabolises medication. This increasing granularity demonstrates the exponential possibilities in drug discovery and development which enable physicians to design a treatment regimen personalised to the patient's needs and optimised for efficacy and safety.

To advance the science of cancer immunotherapy (CIT), Roche launched imCORE, a global network of 21 leading cancer immunotherapy centres of excellence. The goal of imCORE is to facilitate access to new technologies and emerging data among the top researchers around the world. Within this network, basic and clinical scientists will work together with Roche scientists with the goal of developing potential cures for people with cancer.

Roche invests more than CHF 9 billion in research and development (R&D) per year to bring the next



Latest research-supporting technologies and leading-edge data science allow unprecedented insights into root causes of diseases. In parallel, digitisation of data enables experts to discuss study results on new drug candidates with colleagues across the globe in real time.

generation of targeted medicines and diagnostics to patients, as well as to answer hard questions arising on the personalised healthcare front such as: What does this paradigm mean for clinical development, for production, and for patients in their day-to-day lives?

The research may be complex and the processes challenging, but we never lose sight of the fact that the reason we come to work is to help patients. We have built strong R&D capabilities to address medical need in oncology, immunology and inflammation, infectious diseases, neuroscience and ophthalmology, and remain open to other areas including debilitating and deadly inherited genetic diseases where we can make a real difference for patients, many of whom are children. Because we focus on diseases that are complex and continually raise the bar in R&D, not all projects are successful. In fact, the majority of our efforts do not result in viable drugs. When studies do not lead to an approval, we still benefit because they represent learning opportunities that bring us closer to solving the mysteries of disease. Despite these challenges, we continue to invest heavily, take bold risks, and remain relentless in our pursuit of innovative therapies and state-of-the-art diagnostics that transform patients' lives.

#### At the forefront of finding cures for cancer

The approvals of monoclonal antibodies MabThera/Rituxan and Herceptin opened the door to a new cancer care landscape. Since then, our molecular insights have expanded exponentially. Not so long ago, cancer biopsies were tested for a single biomarker; we now have the capability to screen blood or tumour tissues for hundreds of genetic alterations and other parameters. We are seeing that mutations differ not only in patients diagnosed with the 'same' cancer, but also within an individual patient's tumour. In addition, we now know tumour development and growth are intricately intertwined with the environment in which the tumour cells reside as well as the way the immune system responds to a cancer. In short, tumours are complex structures designed to evade our natural defence mechanisms.

#### Technology advantages

We are investing heavily in our novel T-cell bispecific antibody (TCB) platform, generating in-house engineered powerful anticancer antibodies designed to physically link immune cells to cancer cells. One or two parts of the bispecifics bind to a cancer cell while another part connects to an immune cell, allowing the

<sup>1</sup> [unaids.org/en/resources/fact-sheet](https://www.unaids.org/en/resources/fact-sheet) | <sup>2</sup> [cdc.gov/cancer/international/statistics.htm](https://www.cdc.gov/cancer/international/statistics.htm) and [IARC globocan.iarc.fr/old/FactSheets/cancers/cervix-new.asp](https://www.iarc.fr/old/FactSheets/cancers/cervix-new.asp)

immune cell to move in and attack. These innovative bispecifics allow for an immediate, scalable and dose-controlled approach to harness the immune system against cancers; they are also suitable for combination therapies. Our strategy is to explore multiple bispecific formats to identify those that maximise clinical benefit for patients. The anti-CEA-CD3 TCB (RG7802) was the first T-cell bispecific developed by Roche to enter clinical trials and is being assessed in solid tumours. Two different anti-CD20-CD3 bispecifics with different formats (RG7828 and RG6026) are being studied for the treatment of B-cell malignancies, such as non-Hodgkin lymphoma (NHL).

In several types of cancer, CIT is rapidly improving the standard of care. Yet, despite years of progress, cancer remains a devastating disease. In 2015, almost 16 million people were diagnosed with cancer, while nine million people died of cancer.<sup>3</sup> Even as mortality rates are falling for many cancers, the burden of this disease is increasing around the world due to ageing populations and environmental factors. That is why we remain committed to science-driven research that will unlock biological mechanisms, enabling us to treat increasing numbers of cancers, address drug resistance, achieve long-term survival, and further the search for potential cures.

#### Hitting cancer hard

We currently have more than 40 molecules in clinical development in oncology. 50 clinical studies are currently ongoing with Tecentriq, either as a monotherapy or as part of combination therapy. These trials address a diversity of types of cancer, including lung, colon, gastric, ovarian, breast, kidney and bladder. Lung cancer claims more than 4,000 lives each day and is the leading cause of cancer death globally. We are developing Tecentriq in combination with chemotherapy to address this need for treatment. In 2016, we announced results of our Tecentriq phase III

Oak trial that showed significant improvement in overall survival compared with chemotherapy in people with recurrent non-small cell lung cancer who had failed chemotherapy. We also announced positive results from the pivotal phase III Gallium study of our anti-CD20 drug Gazyva/Gazyvaro in previously untreated follicular lymphoma, the most common form of NHL. In this study, we challenged ourselves by going head-to-head against our own revolutionary anti-CD20 drug, MabThera/Rituxan. Achieving prolonged disease control in this chronically relapsing form of lymphoma, Gazyva/Gazyvaro is a new landmark and provides hope and clinical benefit for patients around the world.

#### Combination ambush

Combination therapy is nothing new in oncology; for more than half a century, patients have been treated simultaneously with different chemotherapeutic agents and other drugs. What is new is the precision with which we are targeting combination treatments to launch a multi-pronged attack against the molecular causes of cancer. Viral diseases taught us that rational combination therapies are needed to simultaneously hit the multiple mechanisms viruses use to spread and resist treatment, and the same applies in cancer. Recent research into human immunology and tumour biology has led to innovative approaches to treating cancer by harnessing the power of the immune system. One of these exciting approaches is the ability to understand how best to characterise all known types of human cancer into just three primary immune phenotypes: 'Inflamed tumours', 'Immune-excluded tumours' or 'Immune deserts'. These phenotypes describe how T-cells of the immune system interact with the tumour. This classification system allows us to better determine appropriate treatment and combination strategies based on an individual's immune biology, ensuring the best chance for an effective antitumour immune response. For example,

in the case of 'inflamed tumours', immune cells called T-lymphocytes are found to be already present in the tumour microenvironment and so our goal is to use medicines such as checkpoint inhibitors (eg, Tecentriq) or investigational molecules such as anti-TIGIT to unleash those tumour-resident T-cells to attack and kill cancer cells. In the case of 'immune-excluded tumours', the T-cells are able to recognise tumours but are not able to infiltrate into the tumour microenvironment to exert an anticancer immune response. In this scenario, we are looking at combinations of Tecentriq with targeted medicines such as Avastin and Cotellic, as well as investigational molecules such as anti-TGFβ, to drive T-cells into the tumours.

For tumours that are found to be 'immune deserts', where no T-cells are present, the aim is to redirect or engage T-cells through the use of T-cell-directed bispecific antibodies such as our investigational drug RG7802 or our personalised cancer vaccines. Alternatively, or in addition to TCBs, we are testing molecules such as cergutuzumab amunaleukin (CEA-IL-2v) and FAP-IL-2v (RG7461), which are tumour-targeting antibodies carrying an engineered variant of the T-cell growth factor, interleukin-2 (IL-2). These antibody-cytokine fusion proteins stimulate the proliferation of T-cells in tumours. We are also studying the anti-CD40 monoclonal antibody RG7876 in order to prime and/or activate tumour antigen-specific T-cells by providing them with the help they need from other types of immune cells, called antigen-presenting cells (APCs). Our anti-OX40 antibody also 'primes' tumour-fighting T-cells, to get them started on their journey to attacking cancers, while simultaneously inhibiting immunosuppressive cells called regulatory T-cells (Tregs). Finally, with molecules such as emactuzumab, we are removing immunosuppressive cells from the tumour microenvironment—in this case, tumour-associated macrophages (TAMs).

*Patients with metastatic breast cancer survived 20 months in 2001, while it is now 56 months.<sup>4,5</sup>*

We have invested powerful resources in diagnostics, clinical trials and real-world data that work seamlessly in real time to enhance our organisation's 'learning loop', driving innovation from the laboratory to the clinic, and back. This with the ultimate goal of revolutionising the ways in which we personalise cancer treatments, providing subgroups of patients with therapies that are specifically designed to treat their cancer. With our rich pipeline, we are poised to make dramatic progress in this area over the next decade. In addition, our clinical, diagnostic and technology experts are developing an industry-leading platform that uses cutting-edge imaging science to look inside a tumour and 'see' the effect of new drugs in patients. Our teams then digitise, integrate and interpret the complex data generated to drive better decisions for drug development.

#### Extending our expertise in haematology

We have learned much about the nuances of blood cancers from studying millions of patients after we pioneered the science that led to MabThera/Rituxan. We continue to investigate Venclexta, the breakthrough therapy co-developed with AbbVie, and approved by the FDA early in 2016 and later in the year in the EU for the treatment of patients with chronic lymphocytic leukaemia (CLL). We are exploring other molecules to advance treatment of blood cancers, including T-cell bispecific antibodies (anti-CD20-CD3), an oral small molecule activator of tumour suppressor p53 (idasanutlin), antibody-drug conjugates (polatuzumab) and other agents.



Research and development:  
roche.com/research\_and\_development

<sup>3</sup> American Association for Cancer Research, AACR Cancer Progress Report 2015. Clin Cancer Res, 2015. | <sup>4</sup> Slamon D, et al. N Engl J Med, 2001. |

<sup>5</sup> Swain S, et al. N Engl J Med, 2015.

More recently, we have gone beyond blood cancers, leveraging our insights in blood cell biology (haematology) to benefit patients with non-malignant blood disorders. Active preclinical or clinical programmes are underway for haemophilia A, polycythaemia vera, paroxysmal nocturnal haemoglobinuria and beta-thalassaemia. In haemophilia A, a rare genetic disorder, for example, we unblinded a phase III study showing a statistically significant reduction in the number of bleeds over time in people treated with emicizumab prophylaxis compared to those receiving no prophylactic treatment.

#### Neuroscience

Just as the invention of the telescope opened up a previously mysterious universe, advanced imaging technology has allowed us unparalleled access to the workings of the human brain. We are at a turning point in our understanding of biologic mechanisms underlying the pathology of nervous system disorders. With one of the strongest pipelines in the industry, Roche is developing medicines for a range of serious neurological diseases, including Alzheimer's disease, Parkinson's disease (PD), Huntington's disease, autism spectrum disorders (ASD), multiple sclerosis (MS), schizophrenia and spinal muscular atrophy (SMA). We are also working with regulators and payers concerning new trial designs and new endpoints in order to support approvals of disease-modifying medicines.

For ASD, we continue to invest heavily in our novel vasopressin (V1a) receptor antagonist, which may

improve core social communication and social interaction deficits and has the potential to be the first treatment for core symptoms of ASD.

We are studying two late-stage molecules, crenezumab and gantenerumab, which are monoclonal antibodies with different modes of action designed to tackle amyloid plaque that has build up in the brain of Alzheimer's disease patients. We are using our unique expertise in diagnostics to develop new tests to assist clinicians in diagnosing Alzheimer's.

In psychiatric disorders, we are testing a selective inhibitor of a subtype of gamma-butyric acid receptors for cognitive impairment associated with schizophrenia in randomised clinical trials. We also began early-stage clinical studies with a novel compound, the trace amine-associated receptor 1 (TAAR1) partial agonist, and have a PDE10A inhibitor for the treatment of negative symptoms in schizophrenia in early clinical studies. Roche was the first company to identify and characterise the TAAR family of receptors starting back in 2002, and we are at the forefront of the development of selective TAAR1 agonist compounds.

We initiated two phase II trials in SMA with an oral molecule offering a novel mechanism of action (mRNA splicing modulator) for tackling this debilitating and eventually fatal genetic neuromuscular disorder, which is the most common of the genetically-based causes of infant death. In amyotrophic lateral sclerosis (ALS), a progressive neurodegenerative disease also known as Lou Gehrig's disease, we began an early-stage study on a novel molecule believed to inhibit a pathway leading to neuronal cell death implicated in ALS. Roche is also working to find medications for chronic pain with increased potency, improved safety, and which limit the addiction seen with current therapies. In collaboration with Xenon Pharmaceuticals, we continue to develop

novel compounds for pain targets, such as Nav1.7, that could yield non-opioid based mechanisms to treat pain.

Digital biomarkers derived from data generated by consumer devices such as smartphones and wearables have the potential to increase precision in clinical decision-making and even predict disease course. Our researchers have developed a suite of smartphone assessments that allow the continuous monitoring of symptom fluctuations across a number of neurological conditions, including Parkinson's disease and MS. These assessments will complement the conventional physician-led assessments, which are limited by the availability of expert centres, are resource-intensive, and represent only a snapshot in time.

#### Immunology, inflammation and infectious diseases

We are developing medicines in the area of immune-mediated diseases to treat a number of illnesses, including rheumatoid arthritis (RA), systemic lupus erythematosus and Sjögren's syndrome. Our novel Bruton's tyrosine kinase inhibitor (BTKi), which blocks B-cell signalling and the resulting excessive immune response seen in autoimmune diseases, is being studied in ambitious phase II trials for both RA and lupus. The RA trial is an innovative seven-arm study with head-to-head comparison against the current standard of care. We also initiated a phase II trial in RA with our cadherin-11 antibody, believed to disrupt tissue cell interactions that drive inflammation in a non-immunosuppressive manner. In addition, we began a phase II study for the treatment of Sjögren's syndrome, an illness with no approved treatment and one of the most common rheumatic autoimmune diseases. Our internally discovered cathepsin S inhibitor is designed to interfere with a specific immune pathway dysregulated in multiple autoimmune diseases. At the same time, it is leaving intact other pathways of the immune system which are involved, for example, in fighting infections. A humanised complement inhibitor C5 monoclonal

antibody, developed in collaboration with Chugai, has entered phase I. As the complement system is a key innate immune defense mechanism, we will study the potential of this enhanced antibody within a broad range of complement-mediated diseases.

In asthma, we began a phase II trial with a first-in-class antibody that inhibits binding of interleukin-33 to the ST2 receptor. This pathway is thought to be involved in a variety of lung ailments, and the ST2 antibody, in-licensed from Amgen, potentially offers a game-changing treatment for patients with severe asthma. The innovative multi-pronged study is also further exploring biomarkers associated with asthma and chronic obstructive pulmonary disease (COPD).

We have promising candidates in our rich antiviral pipeline for the treatment of hepatitis B virus (HBV) infection, including direct-acting antivirals and immunomodulatory molecules, and we consider synergistic combinations of these two cornerstone mechanisms to be a key approach to achieving functional cure. These HBV molecules include the first viral RNA-targeting compound in early development. Invented in-house, it comprises Locked Nucleic Acid (LNA) chemistry, gained through acquisition of Santaris Pharma in 2014. The novel LNA platform allows access to previously impenetrable pathways across many different diseases by attacking disease targets at the level of RNA rather than protein.

In antibacterial resistance, we are focusing on novel targets and novel approaches to developing antibiotics with the aim of curing severe multi-drug resistant bacterial infections. Our next-generation beta-lactamase inhibitor, nacubactam, has broad-spectrum antimicrobial activity when combined with beta-lactam antibiotics. It has a dual mechanism of action, effectively inhibiting a wide range of beta-lactamase enzymes (responsible for antibiotic resistance) and also inhibiting certain bacterial

*Advances in imaging technology enable us to better understand the biology of nervous system disorders.*

cell wall enzymes. This compound, which is currently in phase I development, has been granted the FDA Fast Track designation and is part of our recent collaboration agreement with the US Biomedical Advanced Research and Development Authority (BARDA).

**Ophthalmology**

Our highly innovative bispecific monoclonal anti-VEGF-Ang2 antibody (RG7716), already under investigation in wet age-related macular degeneration, entered a phase II study in diabetic macular oedema. This two-pronged drug, developed with our proprietary CrossMab technology, binds to vascular endothelial growth factor (VEGF) with one arm of the bispecific monoclonal antibody and to angiopoietin-2 (Ang 2) with the other. We also have lampalizumab in phase III studies in geographic atrophy.

**Inherited genetic ('rare') diseases**

With our diverse technologies for inventing molecules with medicinal properties, we believe we can make a difference for patients with certain inherited genetic diseases (sometimes known as 'rare diseases'). In many cases, these inherited genetic diseases manifest in infancy or childhood, leading to childhood debilitation or early death. There is an urgent need to develop therapies for these patients, who often have limited or no available treatment options. SMA and Huntington's disease are examples of inherited genetic diseases for which we are currently developing candidate therapeutics in collaborative partnerships.

**Smart, agile product development**

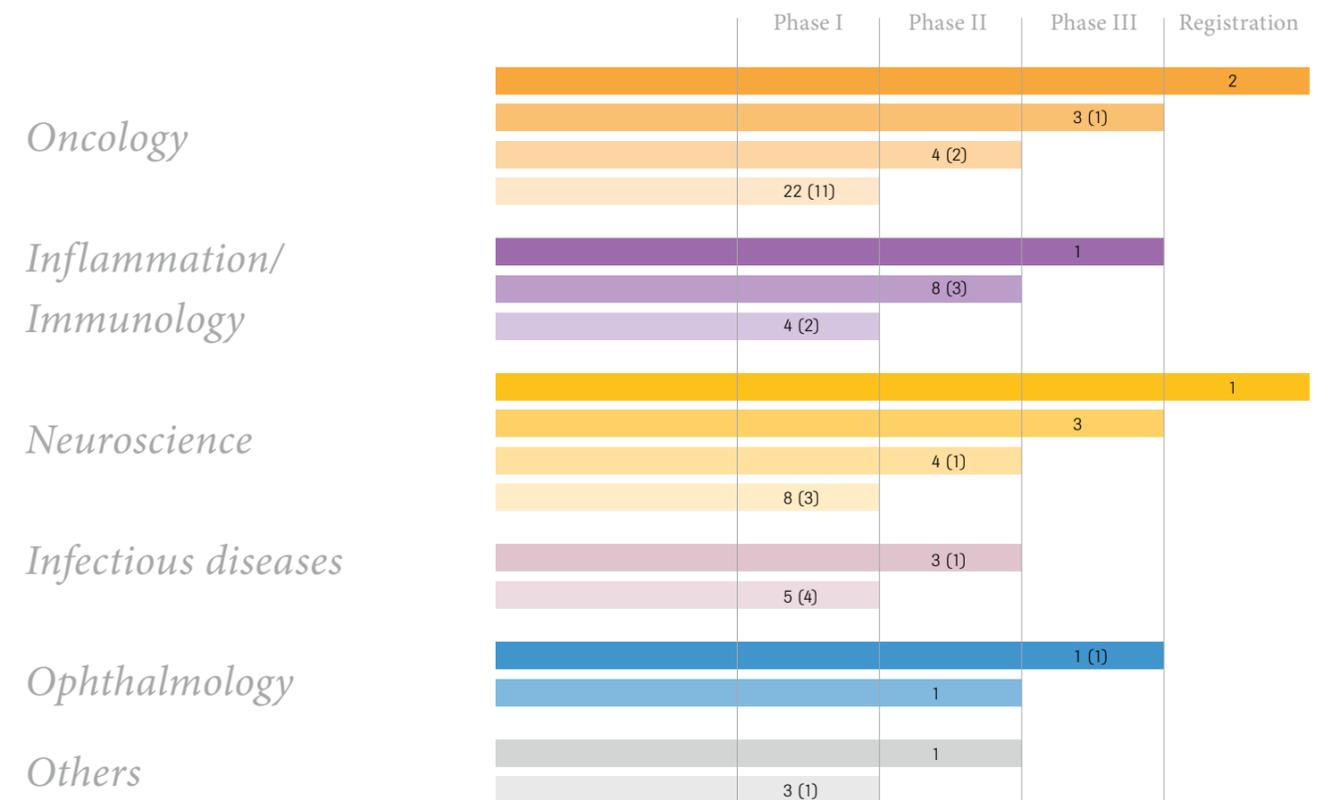
The pace of progress in medicine offers new hope for patients. But delivering the next wave of paradigm-shifting therapies is not for the faint of heart. It requires a whole new approach to developing drugs. We are breaking that new ground through novel technologies and cutting-edge analytic capabilities that leverage our combined strengths in pharmaceuticals and diagnostics.

We are learning more, moving faster, and leading the way with smarter drug development.

The very nature of personalised healthcare means patient populations are becoming smaller and treatments are growing more nuanced. It is a continuing feedback loop dependent on the confluence of science and data. We have access to more data than ever before, from research and development, clinical trials, advanced genomic sequencing and modern diagnostics testing, as well as from real-world sources like electronic medical records and patient registries. This window into the collective experience of patients around the world adds significantly to our knowledge and allows us to build on what we have been doing for decades—understanding disease at its core. We are unlocking the power in all these data and setting industry precedents in ensuring their quality, validity, and consistency.

Our internal experts and external partners are pioneering new approaches for biomarker analysis, modern safety assessment approaches, next-generation sequencing, artificial intelligence and other advanced analytics to bring us a more holistic understanding from these data, thus affording deeper and faster insights into what the science is telling us. Our approach combines our know-how in immunology and genomics to create a database of information about immune cells which is accessible to all our researchers. This is generating exciting cross-pollination and collaboration among scientists working on overlapping pathways and targets. Researchers working in cancer immunotherapy (CIT), for instance, are trying to turn on the immune system, while those studying rheumatoid arthritis or other autoimmune diseases seek to dampen immune response. Shared insights can be valuable for both teams and, in addition to these benefits, the database integrates internal data with data generated by external experts.

*Pharmaceuticals clinical pipeline*



Our pipeline of 74 new molecular entities (NMEs) covers a broad range of diseases and highly innovative technologies are applied to create and produce the active molecules. Numbers in brackets are referring to personalised healthcare projects included.

**Innovating clinical trials**

For decades, development activities were drug-centric, focused on proving clinical benefit in a one-size-fits-all medical landscape. As our science is patient-focused, we strive to move our drug development in the same direction. The precision with which we are targeting our medications and diagnostics to identify subgroups of patients, particularly in CIT, demands that we raise the bar with our clinical trial designs. We are creating studies that simultaneously test a single drug in multiple diseases, test several drugs against a single disease, and that condense the traditional three-phase clinical trials into a fluid, adaptive process. These efforts allow us to develop and bring the right and safe medicine to the right patient in the most efficient manner. In CIT, for example, we are piloting a sophisticated trial design which features continual evaluation of an array of data

that we feed back to refine the trial and better identify potential drug combinations. In immune-mediated diseases, we are using a multi-indication approach that allows us to see early signs of efficacy while we study our compounds. The cathepsin S inhibitor, for example, is being tested for the treatment of Sjögren's syndrome and, in parallel, in a small number of patients with celiac disease, where it is believed that similar immune principles apply.

Furthermore, our decisions in drug development increasingly reflect the voices of our patients. From paperwork to protocols, from dosing to delivery method, we are proactively introducing the perspective of those who are at the core and heart of our work. Are bi-weekly visits to a doctor's office, for example, for patients with SMA or ALS going to be a hardship?



Pipeline: [roche.com/pipeline](https://roche.com/pipeline)

What are more preferable; subcutaneous, intravenous or intramuscular injections? We know it is challenging for patients with SMA or ALS to participate in clinical trials. We designed our studies for these devastating diseases using valuable input from patients and caregivers. Similarly, we are collaborating closely with patient associations for Alzheimer's disease, ASD and other neurological disorders as we study novel treatments in those areas. With Lucentis, the current standard of care for many retinal diseases, we are exploring an innovative delivery mechanism that would alleviate the burden on patients who must visit their doctor for regular intravitreal injections.

#### Real-world considerations

Along with clinical superiority, we also demonstrate the value of our products in everyday settings. These real-world considerations are increasingly important in ensuring that our products are accepted by national policy-makers and adopted into medical practice. This dimension adds to our development complexities. A large proportion of the drugs in our pipeline, for instance, are being developed with sophisticated treatment schedules or advanced diagnostics. What needs to be done, then, in countries with few radiation devices, cooling apparatus or laboratory capacities? How do we accommodate the specific needs of different countries? From subtle treatment variations to major economic disparities, we are making great strides in understanding how medical care is delivered across the globe and how we can ensure that our medicines can deliver tangible benefit for patients worldwide.

*Partnerships help us stay on the front line of innovation.*

#### Creating value through transformative partnerships

At Roche, we have long valued external innovation as a critical component of our R&D strategy. A significant proportion of our sales is driven by products born of research partnerships, and 45% of our current pipeline comprises partnered products. Now, more than ever, collaborations are critical to realise the potential of personalised healthcare as well as enhance our pipeline in key disease areas. We have exceptional alliances across our therapeutic, diagnostic and technological areas, helping us better understand and leverage complex biology, find new drug candidates, and make best use of a growing volume of genomic and real-world data.

Partnering at Roche builds on our culture, one in which we listen carefully to a potential partner and then creatively structure a collaboration that meets both parties' needs. Our choice is driven by searching for partners that share our passion for innovative science. We look for opportunities that address unmet medical need and have the potential to revolutionise the standard of care. We also keep our finger on the pulse of emerging science through alliances with leading academic and entrepreneurial investigators. Whether small or large, we value partnerships equally.

In 2016, we entered a number of transformative partnerships:

**Ophthalmology:** New alliances are helping extend our scientific leadership in retinal diseases. We signed a license agreement with Eleven Biotherapeutics, Cambridge, US, for its novel anti-IL-6 monoclonal antibody, which, in combination with standard-of-care anti-VEGF therapy, is positioned to be a first-in-class treatment for wet age-related macular degeneration and diabetic macular oedema.

**Neuroscience:** Roche signed a license agreement with Chugai for SA237, an anti-IL-6 receptor monoclonal antibody currently being investigated in two pivotal phase III studies in neuromyelitis optica spectrum disorders (NMOSDs). This rare autoimmune disease of the central nervous system is characterised mainly by inflammation of the optic nerve and spinal cord. There is no approved therapy for NMOSD, which is often confused with multiple sclerosis at the time of diagnosis. SA237 offers a potentially best-in-disease treatment of NMOSD and adds to our growing portfolio to treat people with neuroinflammatory disorders.

**Immunology:** Research around the role of the innate immune response in triggering autoimmunity has been a growing area of interest at Roche. We entered into an early R&D collaboration with Monash University, Melbourne, Australia, which will focus on a novel innate immunity checkpoint modulator discovered by Monash principal investigators, who are considered leaders in this space. An anti-ST2 investigational medicine was in-licensed from Amgen which complements our existing R&D programmes and strengthens our respiratory portfolio. Anti-ST2 has the potential to be best in class in patients with high-need asthma, chronic obstructive pulmonary disease, as well as other IL33-mediated diseases.

We also entered into an option agreement with Novimmune for NI-0101, an anti-TLR4 (toll-like receptor 4) investigational medicine. Advances in our scientific understanding of cellular and molecular immunology are guiding the development of potential new treatments, and we believe NI-0101 has the potential to be a best-in-class therapy for the treatment of rheumatoid arthritis and other autoimmune diseases.

**Antibacterial resistance:** With ten million people projected to die from untreatable bacterial infections by 2050, Roche is leveraging decades of infectious disease research to help address this threat.<sup>6</sup> Teams from our Pharmaceuticals and Diagnostics Divisions are embarking on a landmark alliance with the US authority BARDA. It involves studying our next-generation beta-lactamase inhibitor, potentially a breakthrough antibiotic to cure drug-resistant severe infections, as well as our *in vitro* diagnostics capabilities.

**Oncology:** We are increasingly collaborating with external partners, particularly in cancer immunotherapy, to explore drug combinations that are rationally designed to maximise the therapeutic benefit, and tailored to the biology associated with patients' tumours. In 2016, we entered into ten new clinical collaboration agreements to develop our lead immunotherapy drug Tecentriq for a broad number of haematological and solid tumour types. In addition, we announced collaborations with BioNTech, a Germany-based biotechnology company, to develop, manufacture and commercialise novel messenger RNA (mRNA)-based, individualised cancer vaccines, and with Hanmi, an established innovative drug company in Korea to develop a novel pan-RAF inhibitor.

**Academic alliances:** We are working with distinguished scientists on cutting-edge projects at leading institutions such as Harvard University, Massachusetts Institute of Technology, Cambridge University, Max Planck Institutes, and Swiss Federal Institute of Technology. Through these collaborations, we seek to find and develop new molecules, invent new research tools, and further advance our understanding of disease mechanisms.

<sup>6</sup> amr-review.org

*Dr Amy Abernethy,  
Flatiron Health*

## “Advancing cancer treatment together”

As a cancer researcher, clinician, and caregiver, I am at a unique vantage point in our fight against cancer. For 20 years, I worked as a practicing oncologist. I spent much of my career at Duke University, where I last served as Professor of Medicine and Head of the Cancer Care Research Program. In 2014, I joined Flatiron Health because I saw an opportunity to make a profound difference by bringing together the fields of medicine and technology.

Flatiron was founded on the premise of leveraging ‘big data’ to help researchers discover more effective therapies and better match cancer patients with life-saving treatments.

### **Gleaning insights from ‘real-world evidence’**

Today, only about 4% of cancer patients in the US are enrolled in clinical trials. These data are our principle source for analysing which treatments are most effective, as well for providing clues about developing future therapies. But what about the other 96% of patients who have cancer and are undergoing treatment, without access to clinical trials?

Flatiron focuses on the 96% of cancer patients by capturing their real-world data through our OncoCloud™ platform. With the help of trained experts, we take ‘unstructured data’ such as medical case notes, X-rays and pathology reports, and transform them into validated information in our registry. We have strict procedures to ensure the quality of the entries and patient anonymity.

We are now capturing data from over 1.5 million patients and 260 cancer care providers, which opens up new vistas for physicians and scientists. Our partnership with Roche is helping us to accelerate our programmes. In addition, we are collaborating on designing clinical trials for promising new cancer treatments.

Roche and Flatiron share a vision of personalised healthcare, which resonates with me as Secretary of the Board of the Personalised Medicine Coalition. Flatiron also works with Roche’s strategic partner Foundation Medicine, which analyses variations of the human genome to find targeted cancer therapies. The next step in our collaboration is truly exciting: combining real-world evidence with genomic analysis of cancer patients to learn which therapies work best for each individual.

As a physician, I always come back to the human impact of our work. One of my patients who lost her battle to skin cancer asked me to use the insights from her tumour tissue, her family history with melanoma and her treatment to help others. We owe it to her and many other patients to make the best use of the pearls of information they have left behind.

As a daughter, I know only too well the limits of today’s medicine. My father is suffering from an extremely difficult-to-treat cancer. For me, this underscores the urgency of doing everything we can to find more effective oncology treatments.



Video:  
[roche.com/ar16bio](https://roche.com/ar16bio)

# Access to healthcare

*We design access programmes at the country level to support healthcare systems, improve diagnosis, educate and build local skills, and address affordability issues.*

Measuring blood glucose levels with the highest degree of accuracy is a precondition to managing diabetes successfully.

## Material topics covered in this chapter

- Growth strategy in emerging and developed markets
- Sustainable healthcare
- Pricing
- Disease awareness and treatment education

## Contribution to the UN SDGs



**G**round breaking advances in medical science are only meaningful when they reach patients.

Today, about 400 million people across the globe lack access to essential healthcare services.<sup>1</sup> Access to healthcare is one of the biggest challenges society is facing and one that we have to work in partnership to address. It is a multidimensional challenge. Improving one aspect of healthcare is often not enough, especially in treatment of complex diseases like cancer. Access to a hospital for a cancer patient is only beneficial if there is a trained oncologist. In turn, access to a diagnostic test for a disease is only effective if accompanied by education and awareness.

We believe we have a responsibility to improve access for those who need it most and, by working together with our partners and resources all over the world, we have the ability to help facilitate change. In 2016, we strengthened our commitment to widening access through an industry partnership, Access Accelerated, which brings together 22 biopharmaceutical companies to leverage innovation, expertise and resources to address the treatment of non-communicable diseases (NCDs). These diseases, such as cancer and heart disease, are a significant and growing problem in low and low-middle income countries, where nearly 80% of deaths from these kinds of diseases occur.<sup>2</sup> Access Accelerated is a multi-year programme facilitating cooperation with other healthcare stakeholders to achieve a tangible impact on improving access to treatment and care of NCDs. What is more, thanks to our focus on diagnostics and medicines as well as on health-related data, we have expertise across a range of areas related to access.

**We are making progress but there is a long way to go**

To really make a difference on the ground, we need a deep understanding of the challenges in each individual healthcare system. We take a systematic and comprehensive approach, identifying the key hurdles and the right stakeholders, in order to develop tailored, effective solutions that reach more patients. Partnerships with a broad spectrum of stakeholders are essential to improve access to healthcare for people in need. To date, we have developed 60 access plans in total, each with a clear proposal for overcoming access barriers within a particular country. These plans are integrated into the local business, ensuring continued and sustained support, thus demonstrating an ongoing commitment to those markets as an integral part of our business model.

**Access to healthcare is a complex challenge**

We believe four key factors need to be in place for successful treatment: awareness, diagnosis, healthcare capacity and funding. We have a wide array of initiatives to support all four areas and improve access to our medicines and tests. They include working with governments on disease awareness campaigns, training lab technicians in sophisticated diagnostics, training community healthcare workers, and providing flexible pricing solutions.

In Argentina, a comprehensive local programme has been implemented which has led to an expansion of oncology treatment coverage to approximately one



Disease awareness and modern tools for reliable and fast diagnosis are some of the key factors for successful medical interventions.

million more people in the country, and a reduction in the average time-to-treatment of 74%.

**Awareness—a crucial factor for success**

Awareness of disease and symptoms is essential for screening and early detection. To support this, a major focus in 2016 was connecting countries so as to further best practice-sharing. We found, for example, that people in the Philippines are dealing with very similar issues to people in Venezuela, but because they are in different geographies, they are unaware of each other's approach. In 2016, we held our first ever summit dedicated to developing and sharing access best practices across the globe. We find that the best way to promote access programmes is through collaboration across different geographies with similar hurdles. In a virtual community, we have shared questions and ideas and developed an online case study library. This will greatly support the implementation of the local access plans in the coming years.

**Patient organisations—vital partners**

Patients and patient organisations are essential partners for Roche and we share a common vision to improve patient access to innovative treatments and services. They help us understand what it is

like to live with a disease, the challenges patients and their families are facing, and the role diagnostics and treatments play in managing disease. Our aim is to support the voice of patients and to foster a constructive healthcare debate for all.

As patient organisations represent patient views on issues surrounding healthcare, including timely and equitable access to treatment, they help shape the current and future healthcare environment by making patients' voices heard.

**Exchanging knowledge and ideas**

The 9<sup>th</sup> Annual International Experience Exchange for Patient Organisation (IEEPO), a large global patient organisation meeting fully sponsored by Roche, was held in Copenhagen, Denmark, in March 2016 with an overarching theme of 'innovation'. A record total of 223 delegates from 45 countries attended IEEPO 2016,

*Four key factors need to be in place for successful treatment: awareness, diagnosis, healthcare capacity and funding.*

<sup>1</sup> [who.int/mediacentre/news/releases/2015/uhc-report](http://who.int/mediacentre/news/releases/2015/uhc-report) | <sup>2</sup> [who.int/mediacentre/news/releases/2015/noncommunicable-diseases](http://who.int/mediacentre/news/releases/2015/noncommunicable-diseases)

and many of the sessions focused on innovative ways to empower and involve patients, for example in health technology assessments (HTAs). Patient centricity in drug development, clinical and access processes is crucial, and we want to help patient organisations have respective conversations at local level.

Based on the IEEPO model, but with a focus on country- and region-specific topics, Roche organises experience exchanges for patient organisations at a local level, too. In 2016, the Eastern Europe, Middle East and Africa (EEMEA) region conducted its second Annual EEMEA Experience Exchange for patient organisations, and in Latin America, its first Patient Group Workshop on Health Policy. In April, the first-ever patient organisation exchange in sub-Saharan Africa took place. In Abidjan, Côte d'Ivoire, 46 patient group representatives from 11 countries took the unique opportunity and shared best practices on strategic planning, fundraising and communications.

Roche also supports training for patient organisations as part of its membership of the European Patient Academy on Therapeutic Innovation, the first patient-led project of the pan-European Innovative Medicines Initiative. The first-year of the expert-level online training course already showed impressive results: Prior to the training, only 12% of trainees advised regulatory agencies and only 8% advised HTAs—these figures jumped to 40% and 52% respectively six months after they finished the course. Consequently, these individuals became a trusted partner in discussions

around the value of and access to innovative healthcare solutions with various stakeholders—a true example of patient empowerment.

**Success in idiopathic pulmonary fibrosis**

Roche is a supporter of the European Idiopathic Pulmonary Fibrosis Group, which had been working to ensure that a written declaration calling for improved access to treatments was accepted by the European Parliament—a goal achieved in 2016. This was a special moment for everyone affected by this devastating disease, which is associated with a low life expectancy, lack of awareness, diagnosis issues and treatment delays. We trust this will open a new chapter in this disease and we will continue to support the excellent work of patient organisations in this area.

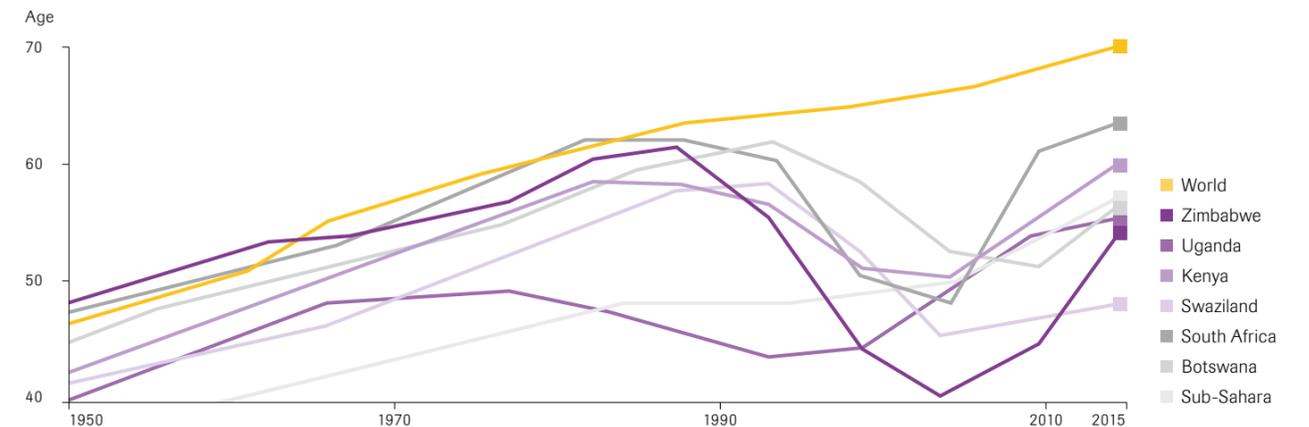
**Diagnosis—vital for effective therapies**

Diagnosis of a disease can be complex, but is vital to ensuring the right treatment choice. At Roche, we work with many global and local country partners, including local governments, non-governmental organisations (NGOs), patient organisations and other healthcare companies, to find tailored solutions to barriers to diagnosis and access. We also engage with global health institutions, such as the World Health Organization (WHO), to address key global health challenges.

Roche has been able to support Novo Nordisk's Changing Diabetes in Children Programme, for example, by providing free blood glucose monitoring tools, testing supplies and education to healthcare professionals and people with diabetes as well as their caregivers in seven countries in Africa. About 8,000 children have been reached to date, with 90 clinics established and over 3,200 healthcare professionals trained.

*As a result of scaled-up HIV treatment services, overall life expectancy in sub-Saharan Africa has sharply increased.*

Dramatic impact of HIV response on life expectancy<sup>3</sup>



In Africa, tragically many infants with HIV die before their first birthday. To help diagnose and combat HIV infections in children and adults, Roche partnered with UNAIDS, the Clinton Health Access Initiative, the President's Emergency Plan for AIDS Relief and the Global Fund. Through our Global Access Programme we have initiated the largest infant testing programme in the world featuring a dried blood sampling diagnostic technique—to date, over seven million infants have been tested for HIV.

The Global Access Programme is just one part of a concerted approach to support UNAIDS in combating HIV. The impact of the UNAIDS programme goes beyond access. There is already a compelling body of evidence documenting the extraordinary health and economic benefits that will accrue from success in fighting HIV. As a result of scaled-up HIV treatment services, overall life expectancy in sub-Saharan Africa has sharply increased.<sup>3</sup> Receiving antiretroviral therapy leads to remarkable improvements in quality of life for people living with HIV and substantially improves their economic prospects.<sup>4,5</sup>

**Supporting healthcare capacity**

Healthcare capacity requires trained teams working together with the right equipment to provide the best chance of successful treatment. Fundamentally we believe that everyone deserves access to medicines. And the region currently with the least access—

sub-Saharan Africa—requires particular focus. In 2016, we continued to implement our Africa Strategy, which involves developing tailored solutions with local partners.

Access in many countries is beset by unexpected challenges. Take shipping of our medicines for example. Some products have to be shipped in special, large cargo boxes that maintain the low temperatures required by many cancer medicines, but these are not at all practical for delivering medicines to remote locations only accessible by small aircraft. In 2016, specialists at Roche invented a new 'small cold chain box', which has significantly improved on this situation, and shipped it to more than 50 countries in Africa and other regions of the world.

Our goal is to increase access to our innovative treatments for patients across the globe whilst creating a long-term sustainable business environment.

**Funding and innovative pricing solutions**

Funding for healthcare investment and reimbursement of medicines and tests is critical to protect patients from financial burden. The current economic environment and increasing demands on healthcare systems are making it more challenging for payers to fund the latest treatment options for many patients. This is why we are using more flexible pricing approaches, including differential pricing, to support patient access to our

<sup>3</sup> United Nations Population Division. World Population Prospect, 2015. | <sup>4</sup> Rosen, S., et al. Effect of antiretroviral therapy on patients' economic wellbeing: five-year follow-up. AIDS, 2014. | <sup>5</sup> Lifson, A. and Grund, B. Increased Quality of Life with Immediate ART Initiation: results from the START Trial (# 475), in Conference on Retroviruses and Opportunistic Infections, 2016.

medicines. Scientific and clinical insights are leading us to develop more effective medicines that can be used across multiple indications or in combination with other drugs, and the benefits for patients can vary. We believe these different benefits should be reflected in the way medicines are priced, marking a shift from the traditional approach of pricing a medicine by pack or by vial. We are implementing this through Personalised Reimbursement Models (PRM).

We are currently running PRM pilots across Europe. When countries demonstrate flexibility in their systems and approach, we work with them to ensure the required infrastructure is in place. We expect PRM to be implemented over the next couple of years on a country-by-country basis, with some countries already reporting first successes.

**Private insurance to complement public healthcare systems**

We work with private insurance companies to make a meaningful impact on patient access to diagnostics and treatments through creating private funding solutions in countries where public coverage is inadequate. Working together with local insurance company partners focusing on cancer coverage, we have enabled the launch of several private insurance products in countries like China, India, Portugal, Vietnam and Thailand. By late 2016, more than 20 types of cancer insurance policies were available in different countries, and millions of people now

have coverage. Since there are many more cancer insurance products in the global pipeline, we are estimating this number will only continue to grow.

Furthermore, we are currently exploring options to expand the initiative beyond cancer funding. In 2016, we started to explore expanding the scope to areas such as molecular diagnostic tests, multiple sclerosis and diabetes.

We are currently working with 12 global and regional partners in 22 countries, including direct insurers and reinsurers. One benefit of collaborating with the right partners is that we have been able to replicate successful insurance products in other regions. With many new insurance products in the pipeline, there is tremendous potential to expand coverage for many more millions of people. Due to the proven success of this approach, the model has been replicated by other companies, organisations and healthcare systems.

**A focus on partnerships for progress in Africa**

As part of our Africa Strategy, Roche is improving each step of a patient’s journey by addressing all four key access factors: awareness, diagnosis, healthcare capacity and funding. We aim to bring quality healthcare to all Africans, regardless of where they live or their ability to pay. We work towards this goal with a thoughtful and multidisciplinary approach to partnerships, collaboration and investment, and by empowering local healthcare providers.

There are many fundamental barriers in regions of sub-Saharan Africa, from lack of basic infrastructure (eg, access to hospitals, clean water) to the limited availability of treatments and adequate care. While it is clear that it is not Roche’s remit to build hospitals or hire physicians, Roche contributes by supporting training of healthcare professionals and supporting pragmatic epidemiology and socio-demographic data

*We have contributed to more than 20 types of cancer insurance policies in different countries that provide coverage to millions of people.*

Collaboration with private insurance companies provides increased access to cancer care.

Supported development of 21 new private insurance policies covering cancer therapy

22 countries involved



Pipeline of 20 additional cancer insurance policies

12 global and regional partners involved

As many more cancer insurance products are in development by multiple providers, the number of people gaining access to cancer care is expected to grow strongly.

generation. We collaborate with the US Centers for Disease Control and Prevention on training of the next generation of lab technicians. Benefitting from the healthcare project management know-how within our Diagnostics Division, we can act as a catalyst to bring hospital builders and medical devices companies into the region.

In 2016, formal agreements (memorandums of understanding) were signed with several sub-Saharan countries, including Ghana and Kenya, following the first agreement with Côte d’Ivoire in 2014. The aim of these agreements is to improve access to timely and precise diagnostic services and treatments to make high-quality care more widely available.

In Ghana, an agreement with the Ministry of Health was signed to improve access to care for people with breast cancer and viral hepatitis. Signed in May 2016, the initiative includes setting up disease awareness programmes, conducting screening to promote early detection, establishing two centres of excellence, improving diagnostic facilities at treatment centres, training specialists, developing a national cancer registry to better understand the disease burden, and working on establishing national treatment guidelines.

In August, an agreement signed in Kenya by the Ministry of Health and Roche heralded the start of activities. These include breast cancer awareness programmes, improvements in screening and diagnostics, training for five new oncologists and six oncology nurses, support for the development of best-practice national treatment guidelines, and an increase in the number of cancer treatment centres in Kenya. Access to medicine will be made available to patients treated at public institutions, with the government of Kenya and Roche jointly covering the costs.

We partnered with Breast Cancer Initiative 2.5 to hold a summit in March, offering breast cancer education for multi-disciplinary teams of healthcare professionals in sub-Saharan Africa.<sup>6</sup> The event in Ghana welcomed 75 attendees—including surgeons, radiologists, pharmacists, nurses and oncologists—from 13 academic and public hospitals in six different countries. The teams worked together to identify gaps in their respective institutions, prioritise needs and develop 6- and 12-month action plans to improve patient care and strengthen centres of excellence.

<sup>6</sup> [fredhutch.org/en/labs/phs/projects/breast-cancer-initiative\\_2-5.html](http://fredhutch.org/en/labs/phs/projects/breast-cancer-initiative_2-5.html)

Marianne Gilchrist,  
Swiss Re

## “Joining forces to address oncology needs in China”

I grew up with the insurance industry. For 42 years, my father worked for Scottish Life Assurance Company. At age 15, my first after-school job was filing life insurance policies in the safe at Scottish Life's Head Office in Edinburgh, Scotland.

After finishing my degree at Oxford, I worked for several years in financial services, marketing and advertising. In 1999, I discovered my affinity for Asia and realised that it was in the world of insurance where I truly felt a sense of purpose. I did take a break from this path from 2009–2011 to study clinical psychology and set up a private practice in Singapore. What I learned in those years has served me very well, and I am sure will continue to do so.

I joined Swiss Re in 2012 as Head of Health Solutions in Asia. Private insurance is still developing in many countries in Asia, where healthcare costs are often paid out of pocket and an illness such as cancer can wipe out a lifetime of savings.

### Closing society's protection gaps

In China, cancer is the leading cause of death. The numbers are shocking: almost three million fatalities and over four million newly diagnosed cases every year.<sup>1</sup> Most oncology treatments are not covered by government-provided healthcare. Swiss Re saw an opportunity to address that treatment gap, but we were unable to do it alone. That is why we partnered with Roche.

Data is the lifeblood of the insurance industry and in Roche, we found a partner who provided us with accurate information on the incidence of cancer, disease progression, treatment pathways and associated costs. This allowed us to work with local and international insurance companies to design policies to cover oncology treatment. By being able to calculate the risks, insurance companies can run a sustainable business and still offer individuals affordable premiums.

As a reinsurance company, Swiss Re takes on part of the risks as well as the rewards. It is important to note that these insurance policies in China do not stipulate the use of any company's products—this is about expanding overall access to treatment.

In addition to data, Roche provides education programmes on cancer prevention and leverages its connections with leading physicians, who give insurance agents a basic understanding of oncology. Swiss Re works with government regulators to help ensure that patients understand the policies and buy the coverage they need.

Opportunities are opening up for private insurance in China. Our collaboration with Roche illustrates how creative approaches can close society's protection gaps and demonstrates the power of cross-industry partnership in improving access to healthcare.

<sup>1</sup> Chen W, Zheng R, Zhang S, et al. Cancer Statistics in China, 2015. CA: J. Clin, 2016.



# Our people

*Our employees are making a valuable difference for patients and are committed to doing their very best work with integrity, courage and passion.*

Diversity and inclusion are vital to foster innovation by encouraging different perspectives, ideas and thinking styles. We strive to create a work environment that includes all facets of diversity.

## Material topics covered in this chapter

- Employee engagement and talent retention
- Compensation/benefits
- Leadership commitments
- Organisational effectiveness

## Contribution to the UN SDGs



**W**orking for Roche means more than just having a job. It is an opportunity to make a difference, think and act boldly and be a part of a global community of talented people.

#### Engagement at Roche

Our employees make Roche distinct and special. Through our highly engaged people, who are deeply connected to our purpose of *Doing now what patients need next*, we are able to achieve the highest standards.

Roche provides people with a rewarding and enriching experience. This means focusing on the things that matter most: respect for diverse perspectives, recognition that celebrates successes as well as healthy risk-taking, leaders who embrace our values and leadership commitments, development that enables meaningful

and successful careers, and a great work environment where people feel valued and respected.

We take time to ask every employee for their opinion, and measure their engagement through regular global employee surveys. We then act on the results together, building an even better place to work.

#### Giving back to our local communities

Being present in more than 100 countries around the world, we are proud to be part of our local communities, be it at our headquarters in Basel or at any of our other sites. We engage in a variety of ways to support giving back to our local communities.

Our employees in South San Francisco, for example, participate in different forms of organised volunteer activity, from cleaning up a school to working at a local food bank, over a week-long period called Genentech Gives Back. In 2016, a total of 245 projects were completed by 5,600 volunteers during this special Give Back week, involving 137 non-profit organisations. A total of 14,500 hours were volunteered and USD 315,000 donated by employees.

⊕ Read more in our 'Community engagement' chapter on page 90



In South San Francisco, 5,600 employees volunteered a total of 14,500 hours and donated USD 315,000 for the Genentech Gives Back week.

### Consistently voted a great place to work

Our employees and external institutions consistently rank us as an employer of choice. In 2016, both Roche and Genentech were recognised by Forbes as being among America's top companies to work for. We ranked first and second on the biotechnology list. Renowned organisations such as The Great Place to Work Institute and Top Employers Institute placed Roche on their best places to work lists for a number of years and in several countries, including Brazil, China, Denmark, France, Germany, Italy, Mexico, Poland, Spain, Switzerland and the UK.

#### Diversity and inclusion foster innovation

We fundamentally believe that innovation comes from leveraging the diverse perspectives of our talented people. We strive to create a work environment that includes all facets of diversity: age, gender, race, ethnicity, sexual orientation and religious affiliation, but also the less visible differences such as educational background, professional knowledge, personality type, thinking style and life experience.

One of our Leadership Commitments is to take a genuine interest in people. This emphasises not only the importance of each person's uniqueness, but also the importance of each person feeling a part of a team and engaging with inclusive-minded leaders. We launched our Inclusion Index in the Pharmaceuticals Division in 2016, asking our employees how well we are doing in building respect and gaining their trust, the hallmarks of an inclusive organisation. In 2017, the index will measure inclusion Roche-wide as part of our next Global Employee Opinion Survey (GEOS).

In our Diagnostics Division, we pioneered a programme providing opportunities for high-potential women to systematically acquire sponsorship that would establish another pathway for valuable feedback and further career progression. This approach is effective and the

results reflect this progress: In 2009, only 5% of our top key positions in Diagnostics were filled by women; by the end of 2016, the figure had risen to 22%. We have since expanded the programme to include those who have experience in developing regions. This also provides an element of reverse mentoring, allowing the sponsors to gain deeper insights around the challenges as well as opportunities in new and emerging markets.

#### Increasing our employees' experience in both established and developing regions

With our global presence, it is critical that we understand the specific challenges and circumstances in all the markets where we operate. We want to increase the number of employees—particularly leaders—who have experience in both established and developing regions. Among other things, we support international assignments to help individuals gain this experience, with over one in four of these assignments being to and from developing regions. We also look for that experience when hiring, as 29% of hires into key leadership positions have developing regions experience. Bringing this diverse experience and those capabilities into the company ensures our leadership readiness for the continued growth in these markets.

## Developing our leaders

### Fostering strong leadership

We want our people to have great leaders, who instil our values and act as role models, as well as foster accountability for our leadership commitments throughout all levels of the company. In order to continuously cultivate our leadership culture, we offer a broad portfolio of tailor-made leadership development options to enhance leadership competencies and skills.

In addition to our local courses, over 2,600 leaders attended global leadership development programmes in 2016, which include initiatives such as Leading Leaders@Roche and Leading People@Roche.

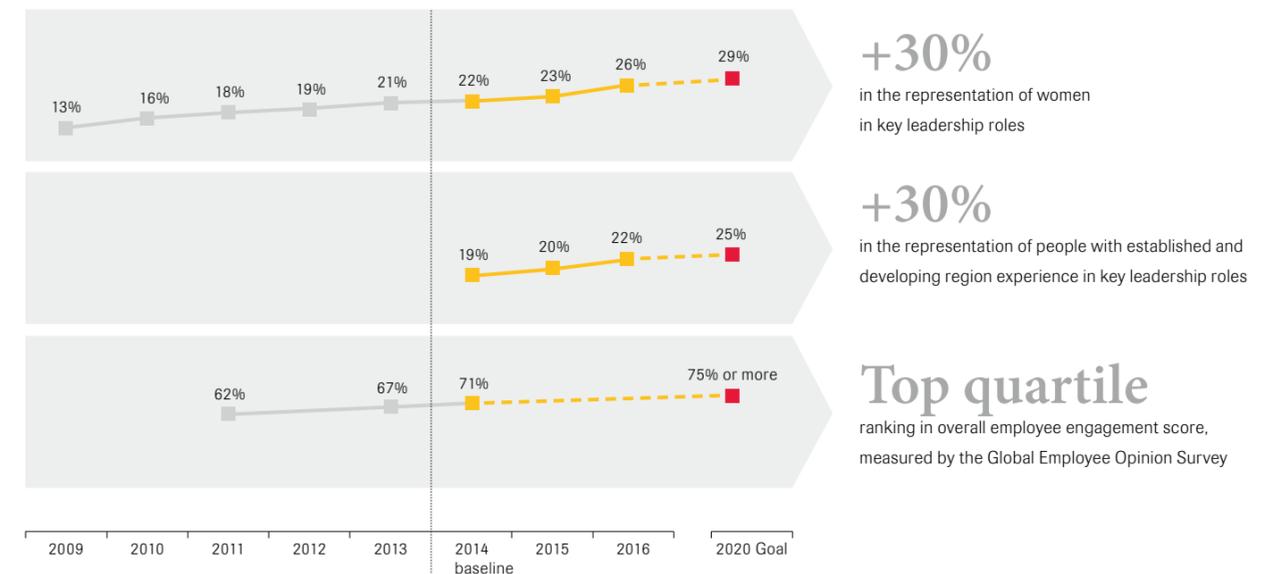
For our executive leadership programme, we are assessing major trends in the changing healthcare environment, such as the growth of digital healthcare, and focusing on the new leadership capabilities it will require. In 2016, 87% of our Leading@Roche participants reported a positive leadership change within six months. And, 85% of the participants' managers said they noticed a positive leadership change in their employees after six months as well. At Genentech, we launched an initiative called Leadership Excellence, enabling each leader to evaluate how they live the promise of our leadership commitments and our company values.

Our programmes push boundaries outside the classroom, as well. For example, the NJIA (which means 'path' in Kaswahili) programme—launched in 2015—involves Roche leaders travelling to Tanzania and working in partnership with local non-governmental organisations (NGOs) to address current healthcare challenges in the country. Our leaders gain on-the-ground insights needed to operate in emerging markets, and work with our NGO partners to implement sustainable solutions locally.

#### Our leadership commitments

1. I take a genuine interest in people.
2. I listen carefully, tell the truth, and explain 'the why.'
3. I empower and trust people to make decisions.
4. I discover and develop the potential in people.
5. I strive for excellence and extraordinary results.
6. I set priorities and simplify work.
7. I congratulate people for a job well done.

## People: five-year goals based on 2014 figures



We are already seeing the longer-term leadership impact of NJIA: One year after the first group travelled to Tanzania, all Roche participants agreed it has had a 'profound impact on my leadership behaviour and mindset'. Meanwhile in Tanzania, a campaign resulting from the programme to increase awareness of cervical cancer screening has already led to new funding allocation for nursing staff training.

*We want to increase by 30% the number of leaders with experience in both established and developing regions.*

## Attracting and retaining the best talent

### *Providing space for innovation*

Cultural diversity is growing, the emergence of a multi-generational workforce—which means five generations of people working more often together in the same office—is increasing, and millions of women will enter the global workforce in coming years. Being a great place to work which attracts the best people aligned to our values and purpose is paramount to our continued success.

#### Rewarding and recognising our employees

Our efforts to strike an attractive balance between a highly competitive base salary, performance-linked rewards, and flexible benefits tailored to different needs are a key focus. Through our Roche Connect programme, we promote ownership in and partnership with Roche by allowing employees to purchase Roche stock at a discounted price in many countries. In 2016, we incorporated China into the initiative and have seen the highest participation rate since its launch.

#### *Promoting employee wellbeing*

With ‘Live well. Find your balance’—an initiative to foster a culture of health and wellbeing among Roche employees—we promote awareness of and education in healthy life styles, nutrition and emotional wellbeing, and we offer resources such as gyms, sports clubs, medical services and counselling. The yearly Global Wellbeing Week, which is part of the initiative, involved participation by 152 sites in 2016.

We also offer numerous additional benefits and/or amenities for employees which vary from site to site. These may include pension schemes, health insurance, childcare, medical facilities, flu vaccinations, preventive health screenings, discounts with local retailers, and transportation to/from the workplace.

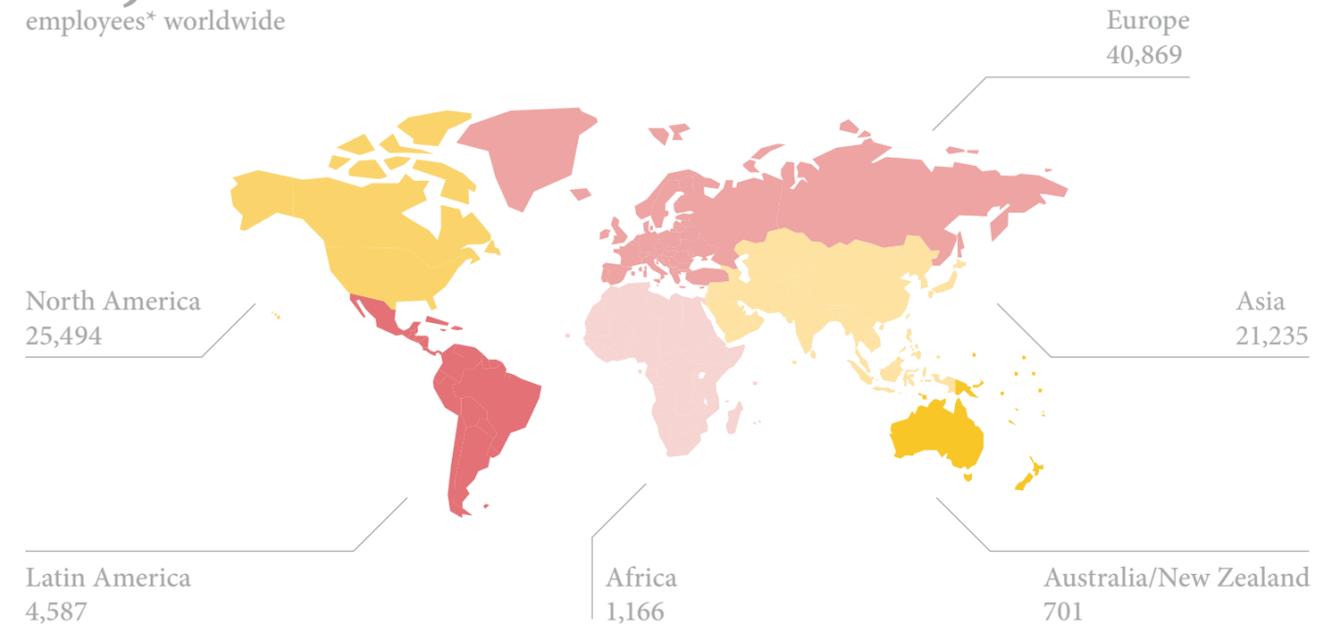
To accommodate individual circumstances, we support flexible working models, which are actively in use in many countries. They enable employees to work from home, buy or sell days, or job share. We have seen a particularly sharp increase in the utilisation of flexible working models allowing working parents and others to balance personal time and work time in an optimal way. In Latin America, where circumstances have demanded an even greater accommodation, Roche has created a regional flexible benefits programme to allow additional alternative compensation—such as fuel vouchers in areas with fuel shortages.

We are now in the third year of the Applause programme, an online tool which employees can use to recognise each other directly, through e-cards or reward point nominations. In 2016, overall usage was up by 9% since its launch, with over 200,000 peer-to-peer recognitions among our employees.

#### Giving people space to innovate

In recent years, we have challenged our own thinking on how to find the very best people, identify and nurture potential, and assess performance. Through targeted initiatives, leaders are better equipped to

94,052  
employees\* worldwide



#### Employees by operating unit

Roche Pharmaceuticals	Roche Diagnostics
<b>51,410</b>	<b>34,076</b>
Chugai	Corporate
<b>7,309</b>	<b>1,257</b>

#### Employees per function

Marketing and distribution	Research and development	Services
<b>30,079</b>	<b>21,980</b>	<b>17,052</b>
Manufacturing and logistics	General and administration	
<b>19,116</b>	<b>5,825</b>	

hire and promote a diverse group of talented people, and help new ideas and innovative solutions to flourish.

It remains one of our goals to hire and retain the very best scientists in the world. To do so, we are expanding our recruitment efforts beyond the traditional universities and actively collaborating with academic institutions to attract the best talent. We also offer a number of internships and post-doctoral research positions.

⊕ Read Haruku's story on page 76

Furthermore, we proactively encourage our scientists to publish their work. We want them to do great research, have the opportunity to build their external reputation, and engage with other great scientific minds.

Ultimately, we are committed to cultivating a rich working environment; one that allows individuals to thrive and make a difference for patients.

\* Number of employees expressed in full-time equivalents

Haruku Shirahata,  
The University of Tokyo

*“It’s exciting to make a real contribution.”*

It all started in December 2014, when I raised my hand during laboratory work at the University of Tokyo. Professor Hirokazu Sugiyama from the department of Chemical System Engineering was asking for candidates for a new internship programme at Roche in Switzerland.

I was a little nervous about leaving home and academia for the first time, but I found the courage to go ahead. I began my two-month internship in August 2015. This was my first time living outside Japan and away from my family, so a lot was new to me. I shared an apartment in Basel with other interns and commuted every day to Kaiseraugst, where Roche produces drugs to treat cancer, hepatitis, and many other diseases.

**Everyone plays a valuable role**

On my first day, the plant manager welcomed new interns and employees, and emphasised how every single one of us would play an important role in producing life-saving medicines for patients. Right from the beginning, I was aware that teamwork was important.

In the facility for liquid sterile drugs, my main project was optimising batch production for rubber materials used as stoppers in glass vials and syringes. These rubber materials are critical to maintaining the sterility of the pharmaceutical products, so I felt that I could truly make a difference in making products safe for patients as well as contribute to more sustainable batch production. I was proud to see that, through my

work, we were able to identify potential for efficiency gains and reducing waste.

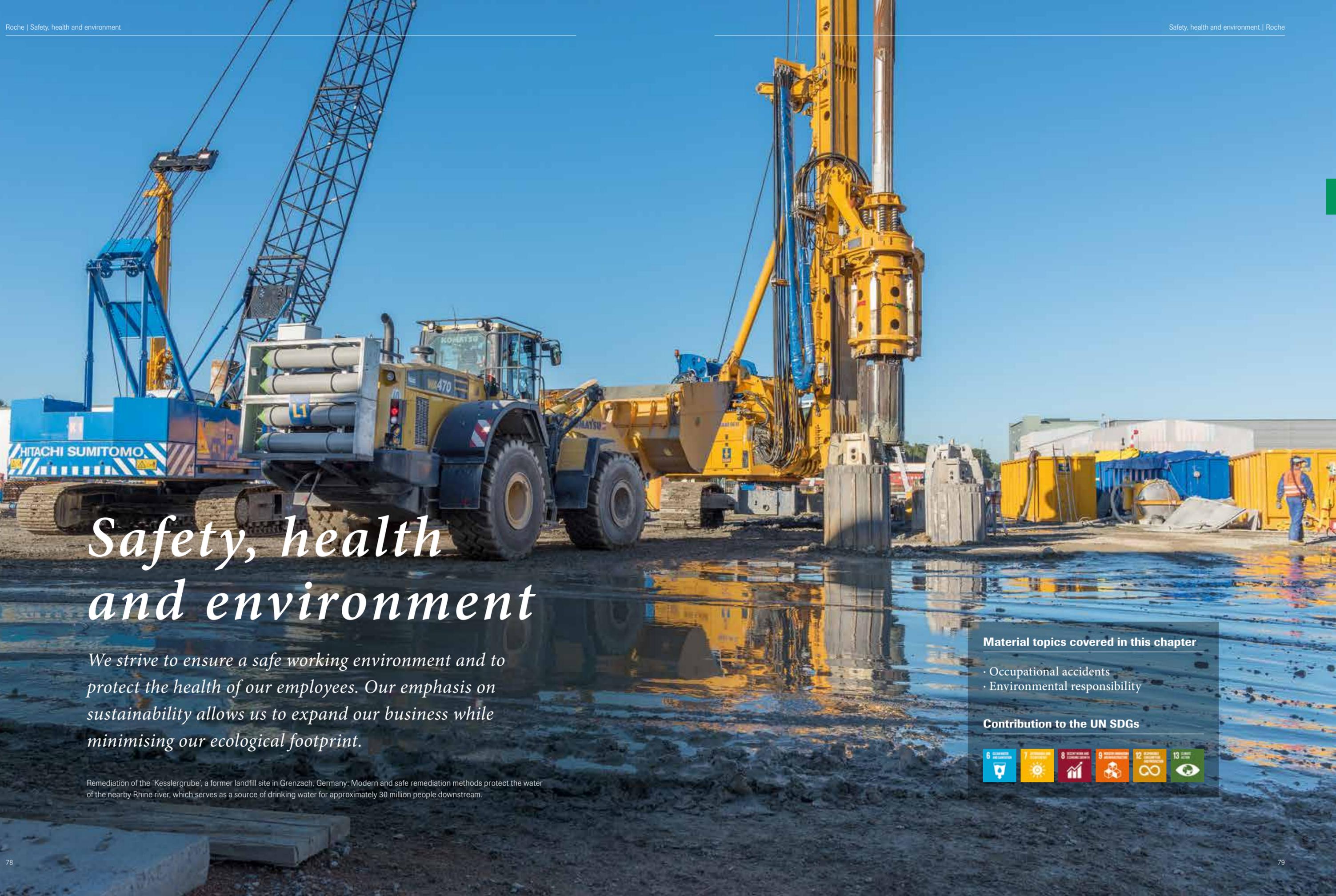
My supervisors were very approachable and open to discussing my projects or answering questions. During lunch or coffee breaks, there were many opportunities to network, discuss ideas and meet new people.

During my internship, it was clear to me that diversity is important to Roche. My colleagues were happy to have someone from Japan on the team and valued my input. I was also pleased to see that almost half of the 2,000 employees in Kaiseraugst were women.

I am now back at the University of Tokyo, pursuing a master’s degree and a doctorate in chemical engineering. My experience at Roche brought me closer to the impact my work can have on patients, and convinced me that I have chosen the right career path.

The hands-on experience also showed me how engineering can add value to a team of pharmacists, chemists and other specialists when it comes to making processes more efficient and environmentally friendly. It’s exciting to make a real contribution!

I would definitely recommend this programme to other students. The key to getting the most from this experience is to make an extra effort to ask questions, share your thoughts and engage with people. And remember, even though your contribution may be one of many, it does make a difference to the lives of patients.



# Safety, health and environment

*We strive to ensure a safe working environment and to protect the health of our employees. Our emphasis on sustainability allows us to expand our business while minimising our ecological footprint.*

Remediation of the 'Kesslergrube', a former landfill site in Grenzach, Germany: Modern and safe remediation methods protect the water of the nearby Rhine river, which serves as a source of drinking water for approximately 30 million people downstream.

### Material topics covered in this chapter

- Occupational accidents
- Environmental responsibility

### Contribution to the UN SDGs



**W**e have made significant progress in increasing the use of renewable resources.

Our procedures in safety, security, health and environmental protection are embedded throughout our operations. They are important components of our sustainability concept and our high standards in this area are built on a solid foundation of prevention. We continually improve site infrastructure, enhance efficiency and reduce our environmental impact, while expanding our successful business. We are committed to improving our track record, and we monitor results and progress to ensure compliance with our standards and objectives. Our aim is to cover at least 95% of each key performance indicator.

**Improving and monitoring our performance**

As a company with complex production operations and affiliates around the world, Roche is exposed to global risks, ranging from dependency on limited fossil fuels as a source of energy and access to clean water to the worst-case scenario of fatalities. Our mitigation plans help to reduce such risks. We also invest in innovative technologies, perform audits

at our sites with a frequency proportionate to the risks, and conduct training programmes for all Roche employees. In 2016, a total of 78,487 employees participated in 278,583 hours of dedicated training, an average of approximately 3.5 hours per employee.

**Ensuring occupational health and safety**

It is essential that all categories of work at Roche are safe, whether the tasks are urgent, complex or routine. We aim to minimise the number of working days lost due to occupational accidents per employee per year (Roche Accident Rate, RAR), and the number of accidents causing absence from work (Lost Time Accident Rate, LTAR, per 200,000 worked hours). We are on track to achieve our 2020 safety goals: to keep RAR below 0.06 and LTAR below 0.5. Despite our preventive measures, in 2016, an employee drowned while taking part in a water sport activity during a company event. We profoundly regret this tragic accident, and again offer our sincere condolences to the victim's family and friends.



Safety, health and environment:  
roche.com/environment

*Five-year goals*

**-10%** Eco-balance\*      **-15%** Energy consumption\*\*      **-10%** Water consumption\*\*\*      **-10%** General waste\*\*\*

\* 2014-2019 | \*\* 2015-2025 | \*\*\* 2015-2020



The solar power plant at Genentech's Oceanside, US, facility is expected to provide 22% of the site's total electrical power requirements.

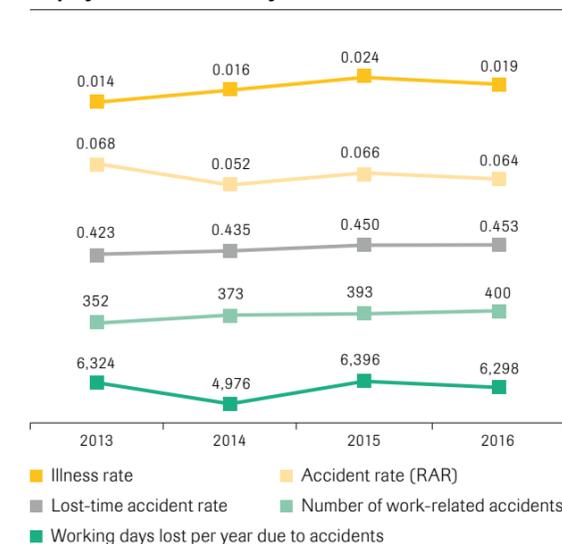
**A focus on security**

Protecting our employees, physical assets, critical information, and the integrity of our brands and products are principal concerns of Roche. Preventive measures are a priority in all aspects of security.

One focus in 2016 was the introduction of the new Roche Security Incident Reporting tool, which is a global platform for reporting incidents and issues that have occurred. The application allows affiliates and Group Security to gain a thorough overview of adverse events and losses that occurred during the year, and to focus on measures and training based on lessons learned.

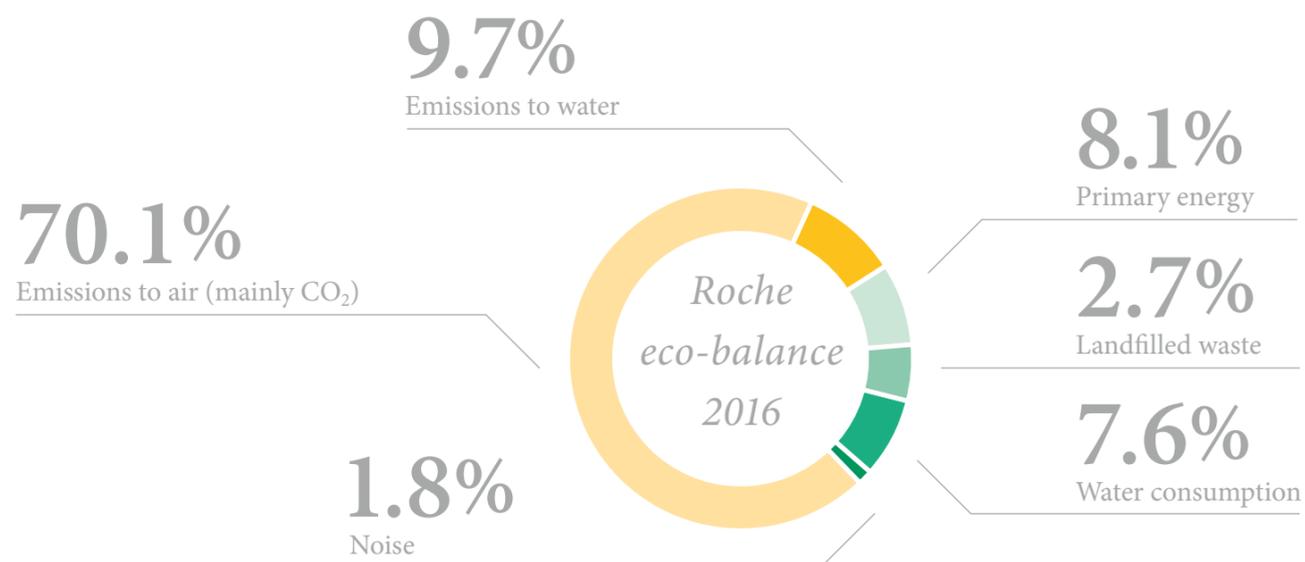
A second security focus in 2016 was the Eastern Europe Security Workshop held in Budapest, Hungary. Site security officers from all Eastern European sites discussed challenges and good practice on three key topics for the region: prevention and response to counterfeiting of our products, information security, risks to our intellectual property and measures to protect it, as well as training in adequate security measures for small affiliates.

**Employee health and safety**



**Minimising our ecological footprint**

We are aware that much of our business is dependent on increasingly scarce natural resources. As part of our commitment towards sustainable development, it is our duty and responsibility to use new and more sustainable technologies and processes, thereby minimising our impact on the environment.



The less Roche depends upon non-renewable resources, the less vulnerable the company is to supply constraints and volatile market prices. We have set up energy-saving action plans across our sites, with innovative technologies and upgraded infrastructure. In 2016, for example, a large solar panel array started operations at our facility in Oceanside covering up to 22% of the site's electrical power. Similarly, we have installed additional solar panel arrays at our site in Kaiseraugst, located close to Basel.

We are reducing our carbon footprint by purchasing energy-efficient equipment, including hybrid cars, and increasing sustainable energy supplies, as well as by monitoring employee travel needs and work processes. Since 2010, 1,298 projects have been completed, resulting in an avoidance of 152,390 tonnes of CO<sub>2</sub> emissions in 2016, leading up to an estimated cost saving of CHF 31.9 million per year.

In 2011, Roche's Basel site developed Energy Vision 2020. This initiative supports our corporate goals by reducing energy consumption and increasing the use of renewable energy and innovative technical solutions. This has meant huge monetary savings for Roche and is equally beneficial to the environment. A good example of Energy Vision 2020 in action was the renovation of the staff restaurant at the Basel headquarters. This led to savings in 2016 of approximately CHF 1,020,000 via:

- Insulation and optimisation of the building

- Joint district heating and cooling (40 °C renewable heat and 15 °C groundwater) instead of steam and chillers
- Replacement of compressed air systems
- Energy recovery technology

In terms of energy, this represents a reduction of heat consumption from 30,300 GJ from steam to 3,200 GJ from 40 °C renewable heat, a 65% reduction of compressed air, and a reduction in CO<sub>2</sub> emissions of 2,100 tonnes.

We measure our impact on the environment by using the eco-balance metric, developed by the Swiss Federal Office for the Environment. By 2019, we want to improve our eco-balance by 10%, compared to 2014. Our improvements in decreasing energy consumption, air emissions, and the volume of consumed water, as well as in reducing the weight of both general and chemical waste, led to a further improvement of 9.2% in 2016. We achieved these results despite the continued growth of our business.

**Internal ideas trigger significant improvements**

We encourage and welcome all suggestions from employees for improving our sustainability culture and performance. In 2016, we held the seventh edition of the ECompetition, resulting in 172 ideas submitted and 19 winners. In the past, ECompetition submissions helped us improve in many different areas, including energy conservation, waste reduction, decreased consumption of water and raw materials,

and reduced air pollution. They have also raised awareness about environmental protection, and encouraged sustainability.

**Energy consumption** terajoules

	2016	2015	2014	2013
Total (scope 1 and scope 2) Energy (scope 1 and 2) consumption (GJ/employee)*	98	105	108	118
Scope 3 Business flights	2,953	2,876	2,672	2,661

\* Data collected by Group SHE. (GJ = gigajoule)

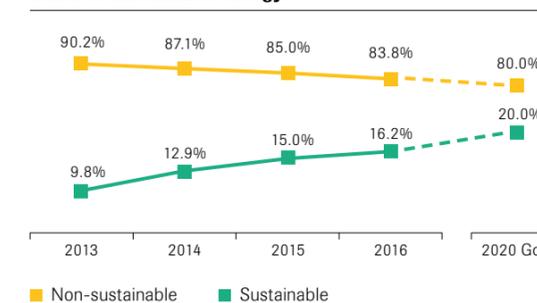
**Replacing fossil fuels with renewable energy**

A large proportion of the energy used in our operations currently comes from fossil fuel sources such as oil and gas. We are working on maximising efficient energy usage and increasing the use of sustainable energy whilst continuing to expand our global business. Longer term, our goal is to reduce energy consumption per employee by approximately 50%, compared to 2005 baseline levels. In 2016, our energy consumption decreased by 5.2%, while sales grew 4%.

Our mid-term goal is to reduce consumed energy from Scope 1 and Scope 2 sources per employee by 15% within our own facilities by 2025. We also plan to increase the proportion of sustainable energy to 20% by 2020, both compared to 2015 levels. Our Genentech facility in Oceanside helped to make substantial progress toward this goal in 2016 by completing a solar panel array project. It consists of more than 17,000 panels and provides 22% of the site's total electrical power requirements. With its capacity of 3.8 megawatts, this solar plant could power almost

800 average-sized homes within this community. Over the course of the 20-year lease, the Oceanside solar facility will save about USD 500,000 each year in energy costs. There was also a 8.3% decrease in energy used in buildings and stationary equipment (gas, fuel oil, waste, electricity, district heating) across the Roche Group.

**Share of sustainable energy**



**Natural capital**

In 2016, we completed a pilot test of the new Natural Capital Protocol, an internationally agreed framework that sets out how businesses can measure the monetary value of their environmental impacts and dependencies to both society and themselves. The Natural Capital Assessment (NCA) undertaken included a high level assessment of Roche's overall value chain. This proved useful in highlighting a complex and broad spread of natural capital dependencies and impacts. The study also involved a more detailed assessment of Roche's operational sites in Switzerland. The outcome demonstrated that, from a natural capital perspective, our Swiss sites are well managed, and that the most significant societal impacts are greenhouse gas emissions. Roche is already carefully managing this material issue. We also assessed how the results from the Protocol study compared to our existing Eco-balance methodology. The societal impact-monetary-valuation-results were found to be highly comparable

**CO<sub>2</sub>-equivalent emissions** metric tonnes

	2016	2015	2014	2013
Scope 1				
Fuel combustion	319,538	379,457	356,348	396,588
Halogenated hydrocarbons	6,463	4,964	6,234	6,548
Scope 2				
Pre-2015			376,159	418,214
Market-based	320,860	322,046*	-	-
Location-based	403,924	408,078*	-	-
Total (Scope 1 and Market-based)	646,861	706,467*	738,741	821,350
Scope 3				
Business flights	209,660	204,179	189,714	188,924
Energy-intensive utilities**	15,170	20,064	-	-
Waste	63,560	-	-	-

\* Due to changes in reporting methodology, this number is different to that reported in 2015. | \*\* Compressed air and liquid nitrogen.

to our Eco-balance scores, thus effectively validating both approaches. The study concluded that NCAs could provide Roche with valuable insights to enhance decision-making and better manage risks and opportunities in many other contexts. This includes, for example, in relation to water management in water scarce regions.

**Increased energy efficiency to reduce CO<sub>2</sub>**

As our business continues to grow, we are committed to maintaining the low level of emissions to the air achieved so far, and to making further improvements at our manufacturing sites. Our emissions to air from nitrogen oxides, sulphur dioxide and particulates decreased by 3.9%, 49.1% and 20.0%, respectively. Emissions from volatile organic compounds increased by 7.1%. Emissions to air from our sites are at very low levels, which means that new processes or activities, as well as the timing of sampling, can result in large but temporary fluctuations. As the majority of our greenhouse gas (GHG) emissions originate from the transformation and use of energy, our goal for

improving energy efficiency is also relevant—a 15% reduction in GHGs per employee over a ten-year period from 2015 to 2025. Our absolute Scope 1 and Scope 2 GHG emissions were cut by 8.4% in 2016. This reduction was achieved by implementing energy-saving measures and reducing the amount of fuel we use to heat, cool and operate our sites. A key contributor to this success was our site at Oceanside, which switched to solar power.

Halogens, halogenated refrigerants and fire suppressants, are GHGs that can remain in the atmosphere for a long period of time. We have therefore committed to a 20% reduction in our use of these halogens over the next five years. This is in addition to the 90% reduction we achieved by 2015 for legacy Roche sites. We continue to examine all available alternatives, and we work with refrigeration and fire suppression suppliers to achieve these reductions. The importance of our approach is paralleled by the agreement taken at the United Nations Environment Programme meeting in Kigali, Rwanda, in October

2016. In a landmark deal, nearly 200 countries agreed to phase out hydrofluorocarbons, which are powerful GHGs; this is seen as a significant step in curbing global warming.

In recognition of our programme to reduce emissions of GHGs and mitigate climate change, we were identified as a global leader for our actions and strategies and awarded a position on The Global Climate 'A' List developed by CDP (former Carbon Disclosure Project) in 2016.

**Halogenated hydrocarbons tonnes\*\*\***

	2016	2015	2014	2013
Inventory	134.3	154.6	167.3	176.4
Consumed	2.7	1.8	2.6	3.7

\*\*\* Global inventory including Chugai, Genentech and Ventana.

**Environmentally sustainable products**

We consider the entire lifecycle of our products in terms of their environmental impact. Our aims are to safeguard the ecosystem and protect our business against long-term financial and reputational risks. MabThera/Rituxan, Avastin, Herceptin, Perjeta and Lucentis, some of our monoclonal antibodies, together generated more than CHF 24 billion sales in 2016. They have a low excretion rate and are judged by the respective authorities to present no significant risk to sewage works and surface waters. They are therefore termed 'benign in nature' and constitute environmentally sustainable compounds.

**Managing limited water resources**

Our water usage has remained relatively unchanged over several years and our procedures ensure efficient water use whilst allowing business continuity. Our goal is to reduce water consumption per employee by 10% by 2020, weighted according to the water stress for a respective region. To this end, all Roche sites are

either working on or implementing programmes to increase efficiency in water usage. Our Genentech South San Francisco, US, site is employing innovative approaches to reduce water withdrawal and improve wastewater management. Since 2016, this site has been reusing approximately 85% of the reverse osmosis reject water in their cooling towers. The cooling towers use the equivalent of approximately 75,700 m<sup>3</sup> of water per year, of which approximately 64,400 m<sup>3</sup> per year comes from the reject water. Since its implementation in 2013, this environmental initiative has led to incremental savings, amounting to USD 224,000 in 2016.

**Water usage and discharge**

	2016	2015	2014	2013
Water withdrawn (million cubic metres)	18.2	18.9	18.4	19.7
Water consumed (million cubic metres)	3.1	3.5	3.0	3.5
Wastewater discharged to treatment plant (million cubic metres)	5.7	7.8	5.8	5.4
Organic matter discharged to waterways after treatment (tonnes)	149	190	141	144
Heavy metals discharged to waterways after treatment (kilogrammes)	164	160	236	178

Feasibility studies are also ongoing on a method for treating manufacturing and processing equipment whereby surfaces become super-hydrophobic. This creates a 'self-cleaning' effect such that protein and

*Being recognised as a leader for corporate action on climate change is a result of our commitment to protect natural resources.*

cellular debris remain in solution and do not adhere to the metal surfaces. This modification targets a 10% reduction in the 760 m<sup>3</sup> of water used for cleaning per day, simultaneously reducing the USD two million spent on cleaning each year. Furthermore, the self-cleaning surface would reduce the need for phosphates used in the cleaning process, thereby decreasing the environmental impact from the discharge into nearby bodies of water. We also support global efforts on water protection. We aim to reduce total wastewater toxicity in selected production plants by 10% by 2020 versus the 2015 level. Approximately half of the water we draw is used in cooling circuits. Although this water is not chemically contaminated, we analyse it before directly discharging it. Furthermore, we only discharge wastewater and pollutants if they comply fully with relevant regulations, including pre-treatment requirements.

**Minimising waste and maximising recycling**

We aim to implement the following waste management strategy in all our activities: avoid, reduce, reuse, recycle and thermally destroy. We permit landfilling only as a last resort and, even then, only for inert\* materials such as slag or ashes. Depending on the availability of suitable local waste-treatment plants, we may sometimes dispose of non-hazardous general waste in authorised landfills. Our objective is to avoid disposal of chemical waste or other hazardous materials in landfill sites. We accept responsibility for all waste generated at our operations, including waste previously deposited at our sites or landfills. Using 2015 as a baseline, we aim to reduce general waste per employee by 10% and landfilling of organic chemicals by 50%, by 2020. Chemical waste (incinerated and land filled) increased by 199%. This was largely due to remediation

activities at Kesslergrube in Grenzach, Germany, as well as environment-related activities at our Genentech site in South San Francisco. These one-off activities contributed 72.8% of the 76,842 tonnes generated. In terms of our regular production, we are reducing further the already low volumes of chemical waste. In 2016, general waste (incinerated and landfilled) decreased by 53%.

Activities in optimising packaging within the supply chain are under way on both sides of the Atlantic. In 2016, Roche's Kaiseraugst site optimised their procedures for delivering small quantities of material at 2–8 °C temperature by changing to shipping boxes that allow for efficient and agile shipping. As well as being able to cope with smaller quantities, this small change aids business continuity by mitigating the risk of transportation capacity restrictions. In addition, the initiative reduces freight costs, uses less packaging material, and reduces material waste and CO<sub>2</sub> emissions. In 2016, this small change resulted in approximate savings of CHF 140,000. Genentech in South San Francisco has proposed a process for making the packaging supply chain far less complex by cutting and consolidating the number of shipping boxes, saving over USD 3 million as well as cutting CO<sub>2</sub> emissions due to reduced shipments.

**Waste tonnes**

	2016	2015	2014	2013
General waste generated	12,498	26,314	16,730	13,445
Chemical waste generated	76,842	25,742	27,142	30,843
Construction waste	12,804	8,223	15,064	8,618

\* Substances that are not chemically reactive.

We are determined to create long-term social value for the community. In 2016, we continued our remediation programme at our previously used landfill sites. At our former site in Nutley, US, an agreement was reached with Hackensack University Health Network and Seton Hall University to create a medical school on part of the former site. Roche will retain responsibility for environmental clean-up beyond this divestment.

The setting up of infrastructure necessary for the remediation of the former Kesslergrube landfill site

*Sustainability, the protection of people and the environment are top priorities at Roche.*

was completed in 2016, and the excavation had started by the end of the year. Thanks to careful planning, Roche is ensuring the safe and efficient execution of a complex programme to reduce emissions to a minimum.



Kesslergrube:  
kesslergrube.de/  
perimeter1

From left: Dr Richard Hürzeler, Roche, Boris Krause, Friends of the Earth Germany, Dr Tobias Benz, Mayor Grenzach-Wyhlen and Samer Hijazi, Bauer Umwelt GmbH discussing the progress of remediation activities at Kesslergrube in Germany.



Ali Afghan,  
Genentech

## “Joining the company that helped save my life”

I left Iran in 1978 to follow three brothers who had already emigrated to the US. My courageous mother raised four boys as a single parent and insisted that we all get a higher education—but there were limited academic opportunities in Iran.

Having earned Bachelor’s Degrees in General Science and Mechanical Engineering from Portland State University, I pursued a career in engineering, including 17 years at Intel. In 1984, I got married, and we had two beautiful daughters.

### Life-changing news

In 2009, I went for a routine medical check-up, and my doctor detected an elevated white blood cell count. He referred me to a specialist, who gave me the shattering diagnosis: chronic lymphocytic leukaemia (CLL) at stage 2 to 3. It was like hitting a wall at 100 miles an hour. My world just stopped.

I remember vividly how the doctor showed me a bell curve with an average survival rate of four to eight years for older men with CLL. I was in my late 40s, and there wasn’t much reliable data about my survival chances.

I had to pull myself together. I couldn’t let my family and friends down. In 2011, I started chemotherapy combined with Rituxan/MabThera, a Roche monoclonal antibody that targets specific lymphocytes. After six months of treatment, doctors gave me the exhilarating news that my body was free of cancer. I had a new lease on life.

After recovering from leukaemia, I wanted to give something back. My disease and tragic events in my family in the preceding years transformed me. I began to ask myself what really mattered and what I should do with my time.

### A new chapter

After retiring from Intel in 2014, I decided to use my skills and experience to help others. Then came an opportunity to join the company that helped save my life.

In 2015, I became the programme director at Genentech on a huge project to upgrade the facilities in South San Francisco with more environmentally-friendly cooling systems. I am now making a contribution for a better planet for my daughters and their children.

In parallel, I was asked to speak to groups of employees about my experience as a leukaemia patient. It wasn’t easy at first to open up about my private life to so many people. However, I have now spoken to many groups and each time I can hear in people’s comments how my experience as a cancer patient touches and inspires them. They say it makes a difference in their daily work on the next generation of life-saving medicines. It came about unexpectedly, but it has become clear to me that my story as a patient is another way of giving back to the people who have helped me so much.



Video:  
[roche.com/ar16pat](https://roche.com/ar16pat)

# Community engagement

*In collaboration with international and local partners, we support programmes that result in lasting improvements and sustainable benefits for the communities in which we operate, and for society in general.*

Schoolchildren performing chemical and biological experiments at the Experio Roche school laboratory in Kaiseraugst, Switzerland.

## Material topic covered in this chapter

- Community engagement

## Contribution to the UN SDGs



*F*or over a century, our philanthropic engagement has been focused on building stronger, healthier communities where we operate. We believe this is our role as a good corporate citizen.

We support social causes, science and education programmes, as well as arts and cultural projects. Our aim is to make a lasting impact on people's lives.

We focus on addressing needs in communities where Roche operates, which is why many of our philanthropic activities are selected and managed locally. At Roche affiliates around the world, we work with partners who share our commitment to long-term solutions and our objective of strengthening communities sustainably. We expect our partners to share the risk, commitment and investment of resources in the implementation of a project.

At the corporate level, we supplement local activities when needed, support areas where Roche may not yet operate, and manage long-term international programmes, such as:

- the Transnet-Phelophepa healthcare train, a mobile clinic bringing medical care and medicines to 375,000 people per year in remote areas of South Africa since 1994;
- the Roche Children's Walk, a worldwide fund-raising employee project initiated in 2003 to support children's initiatives in Malawi and in more than 90 communities around the world;
- Roche Continents, a partnership with the Salzburg Festival launched in 2007, which encourages university-level students to explore the common ground of innovation in arts and science.

#### **Providing long-term disaster relief**

For communities that have experienced a major natural disaster, especially in the developing world, we support projects that result in lasting, sustainable benefits. After the initial emergency phase, we partner with local authorities and relief organisations to help affected communities rebuild and prepare for the future. Our contributions range from product donations and logistical support to transfer of knowledge and expertise.

One example of our humanitarian engagement is in Nepal, which experienced earthquakes that affected eight million people and destroyed more than 600,000 homes in 2015. Our local management centre responded by donating 180,000 vials of antibiotics in a phased approach. Since then, we have partnered with the World Wildlife Fund, the Nepalese government and local organisations to support the rebuilding of communities and ecosystems in Langtang National Park. We are also working on a two-year 'Build Nepal Project' with Habitat for Humanity International. Together, we are supporting the rebuilding of the Salme municipality in the Nuwakot district, which saw 88% of houses destroyed in the earthquakes. The project will help to cover the most urgent needs of 500 families and provide access to safer, disaster-resistant housing solutions.



Roche started a partnership with the Maharishi Institute in Johannesburg, South Africa, to cover the university-education costs of 50 students.

In the Philippines, we completed our support of a project with the Open Arms Foundation, which provided cost-effective solar light sources to people in rural and slum areas who continue to be affected by the aftermath of Typhoon Haiyan in 2013.

In Haiti, after the devastating earthquake in 2010 we supported the construction of two disaster-resistant schools in partnership with the Swiss Agency for Development and Cooperation. Both schools, which opened in 2012, sustained Hurricane Matthew in October 2016 and were unaffected.

In Pakistan, we have partnered with The Citizens Foundation over the last six years to establish and extend a primary school in rural Jacobabad, which was built following extensive flooding in the area in 2010.

#### **Investing in education**

We believe in the long-term impact that education can have on improving the lives of children, their families and the communities in which they belong. In partnership with local institutions, we support education programmes designed to inspire children and youth from primary grades through university,

in the developing world as well as in developed countries. In all cases, we respect the independence and autonomy of our partners in the areas of research and education.

In developing areas, we fund education programmes that support talented students from disadvantaged backgrounds. In 2016, we started a partnership with the Maharishi Institute in South Africa to cover the university-education costs of 50 students. Additionally, Roche South Africa supports a health education and wellness programme for students, career development and personal finance workshops, and has employed graduates on their 'learnership' programme.

*In Nepal, we partner with Habitat for Humanity International, the World Wildlife Fund and local authorities to help rebuild communities and ecosystems after the two earthquakes in 2015.*

In Latin America, we support Fundación Educación in Peru, Colombia, El Salvador and Guatemala and its goal to develop a middle class; Roche provides four-year scholarships for 25 students studying engineering or economics at leading colleges/universities. In India, we support college/university scholarships for nine students of the Kiran Children's Village, a home and school for children—some of whom have disabilities—who come from very poor families.

As a research-based healthcare company, science and technology are at the core of what we do. That is why, for many years now, we have supported multiple programmes to promote an interest in these disciplines among young people. By building a foundation for science and technology, providing real-world science skills, and enabling continued education and careers in biotech, we hope to help grow the next generation of innovators.

The Roche Young Scientist Award in Hong Kong, Futurelab in the US, and Experio Roche in Switzerland are some leading examples of our efforts to support young scientists across the globe.

The biannual Roche Young Scientist Award (RYSA) was launched in 2012 in partnership with some of the

*About 9,300 students in 15 South San Francisco schools are benefiting from Genentech's Futurelab science education programme.*

leading local academic organisations, including Hong Kong Education City as well as the Hong Kong University of Science and Technology School of Science. This joint Roche Pharmaceuticals and Roche Diagnostics initiative is a science competition and mentorship programme which aims to encourage secondary school students to use their science acumen and innovative thinking to solve daily health issues. RYSA also aims to shine a spotlight on the importance of innovation and science education, and uncover the young science talent of Hong Kong. Since its inception, over 500 students from more than 100 schools have participated.

Futurelab is a Genentech science education programme developed in partnership with the South San Francisco Unified School District to support science education at every grade level, from elementary school to high school—impacting 9,300 students in South San Francisco. Futurelab supports teachers with professional development, students with field trips and access to scholarships, and classrooms with equipment and supplies teachers need for their curriculum. It also gives employees the chance to get involved through volunteering and mentoring. In 2016 alone, more than 1,300 Genentech employees volunteered over 25,000 hours through programmes that offer exciting science experiences for local students. Futurelab also includes the creation of Science Garage, a state-of-the-art biotech facility for local high-school students to take hands-on biotech classes, which broke ground in September 2016. We project that over 1,000 high-school students will participate in the biotech curriculum once the building is completed in 2017.

#### Fostering interest in research

The Experio Roche school laboratory opened in February 2015 in Kaiseraugst, Switzerland, under the auspices of the Human Resources Apprenticeship department. This state-of-the-art laboratory has been designed to enable pupils in the region, from primary school to college, to experience the practical application of Science, Technology, Engineering and Mathematics (STEM) subjects for themselves. The high standard of equipment and professional supervision makes Experio Roche unique in Switzerland. It allows schoolchildren to try out a host of different experiments under the supervision of specialists. Activities include programming robots, soldering electronic circuits, and understanding the chemical process involved when a drop of ink

*Since its opening in 2015, the Experio Roche school laboratory has received over 4,000 visitors.*

falls into water, or when using a corrective pen. Workshops always start in a playful way, but can also give deep insights into drug synthesis, polymerase chain reaction (PCR) and gel electrophoresis, to show how the basic techniques are applied in research labs or production lines throughout the company. Since its opening, Experio Roche has received over 4,000 visitors, and expects to reach the mark of 5,000 visitors this year.



Experio Roche:  
[experio-roche.ch](http://experio-roche.ch)

Supporting  
communities:  
[roche.com/  
philanthropy](http://roche.com/philanthropy)

A student participating in the 'Helix Cup' annual science competition—an integral part of Genentech's Futurelab programme.



*Sara Shayesteh,  
South San Francisco  
Unified School District*

## *“Futurelab means the world to me as a teacher.”*

I have always loved math and science, so my educational and career path seemed clear. I graduated from San Francisco State University with a degree in biology, chemistry and business and then worked in a research lab with a local biotech company. The work was interesting, but I felt something was missing.

I had financed my college studies partly by tutoring high school students in math and science. I enjoyed connecting with them and seeing that flash of excitement in their eyes when they understood difficult concepts. When I started part-time tutoring again, I decided—after some soul-searching—to pursue a master’s degree in education at Stanford University.

In 2010, I started working as a science teacher at El Camino High School in the South San Francisco Unified School District, where 40% of the 9,300 students are from families living in poverty and 65% of elementary students are English-language learners.

Young people are natural scientists because they are curious about the world around them. But the way science is being taught in classrooms today doesn’t always successfully reach or engage students learning English for the first time. I knew more could be done. When Genentech invited me to join a brainstorming session focused on improving science education in South San Francisco, I was really hopeful for the possibilities. From that discussion emerged the Futurelab programme.

### **Hands-on science as eye opener**

Futurelab is driven by the enthusiasm and energy of over 1,300 Genentech employees who care about their local community. They volunteer as afterschool tutors in math and science, serve as chaperones on science field trips, and assist in the classroom in hands-on competitions that inspire students to apply scientific principles to the real world.

Thanks to the support of Genentech, Futurelab also includes two full college scholarships and the construction of a high-school biotechnology centre, called Science Garage, to open in 2017. I am excited to be part of this project and to have the opportunity to roll out a new biotech curriculum in Science Garage.

### **Making a difference, one student at a time**

One student’s story is a great example of Futurelab’s impact. He and his family were recent immigrants to the US. While he was bright and extremely interested in science—he wasn’t excelling in his science classes. He attended several hands-on science field trips at Genentech, where he had the opportunity to see science come to life in everyday work. These were transformative events for him. When I last bumped into him, he shared that he’s determined to attend college to study computer science. In fact, he is enrolled in our biotech class now.

I feel very lucky to be a part of Futurelab and witness its positive impact on students. It means the world to me as a teacher.

# Integrity in business

*At Roche, we believe that doing the right thing means good business. That's why we set high standards for ethical behaviour and live by them every day.*

A critical part of our supply chain in Portugal: Pharmaceutical warehousing at our partner Rangel.

## Material topics covered in this chapter

- Drug efficacy, safety and counterfeiting
- Data transparency on clinical trials
- Compliance
- Disease awareness and treatment education
- Patient organisation support
- Supply chain management
- Biosimilar safety

## Contribution to the UN SDGs



**W**e know that integrity is the foundation of our business. It is our 'license to operate' and key to our ability to make a lasting impact on public health.



Compliance starts with leading by example. Our senior executives act as role models and continually reinforce the importance of compliance at all levels of the company. Involving middle management is vital for a strong compliance culture. In 2016, we further developed our middle management's capabilities as compliance leaders to ensure that our high ethical standards are firmly embedded in daily working life. We believe that every employee at Roche has a responsibility to act with integrity, and we take a systematic and sustained approach to anchor compliance in our culture.

**Fostering a global compliance culture**

Our Code of Conduct guides Roche employees on acting with integrity at all times. Employees complete mandatory training to ensure they understand the code, including how to voice their compliance concerns over business practices or behaviour (eg. conflict of interest, bribery and improper advantages, discrimination and harassment). Above all, the code expresses the expectations that Roche has towards its employees in terms of patient safety, product quality and open and constructive dialogue with all our stakeholders. Our Code of Conduct is applicable even when it is stricter than local standards because we strongly believe in a consistent Roche approach across the globe.

These global compliance efforts are supported by a dedicated organisation led by our Chief Compliance Officer. At our affiliates, networks of compliance functions assisted by global functions and local line management ensure that the necessary compliance infrastructure is in place, training standards are being met, and that there is a high level of awareness about compliance.

Our goal is to create an atmosphere of mutual trust in which issues can be discussed openly. Employees with a compliance concern are encouraged to speak up by using different channels. We do not tolerate any retaliation against an employee who raises such a concern in good faith. All allegations are investigated. If they are substantiated, corrective measures and sanctions are carried out.

We make sure that our suppliers and service providers are subject to the same standards as our employees. Our Supplier Code of Conduct is included in contracts, and we offer an e-learning programme to help our suppliers and service providers understand both our expectations and industry standards.

We invite our suppliers to work jointly with us on improving supply chain sustainability.

In 2016, we transformed more of our supplier sustainability audits into assurance visits, creating mutual benefit and improving our relationships with our suppliers and service providers. We made 133 supplier sustainability assurance visits worldwide, 43 in the direct spend area (goods used directly in production) and 90 at service providers.

We collaborate on supplier audits with other pharmaceutical companies under the umbrella of the Pharmaceutical Supply Chain Initiative (PSCI), using a unified joint audit protocol. Focusing on Latin America, we engaged with 50 suppliers to reduce our environmental footprint by an average of 10%. We also conducted joint risk assessments with sole source suppliers and mitigated the identified risks, thereby making the supply more resilient. In the US, a service provider relocated its office to be closer to our facilities and hence provide us with better service.

We also call on our employees to suggest improvements and innovations in our internal processes and services. We created platforms where employees can submit their ideas, which can eventually lead to savings for the company. Such platforms exist in Mannheim and Penzberg in Germany as well as in Rotkreuz and Basel in Switzerland. Across these sites, annual net savings were in the six-to seven-digit range and around 20% of ideas were implemented in 2016. In Rotkreuz, one idea led to an optimised release procedure for reagents and annual savings of CHF 10,000. In Mannheim, production of a coagulation test was streamlined and led to annual savings of EUR 650,000.



Supplier Code of Conduct: [roche.com/supplier\\_code\\_of\\_conduct](https://roche.com/supplier_code_of_conduct)

PSCI: [psciinitiative.org](https://psciinitiative.org)

**Compliance**

In 2016, 120 employees used the Roche Group SpeakUp Line, which is available in 53 languages in 102 countries. The Chief Compliance Officer received 638 reports relating to alleged violations of the Code of Conduct via the Business Ethics Incident Reporting system. Out of these, 203 were unfounded, 156 are still under investigation, and 279 were substantiated. As a result, 123 employment contracts and 10 agreements with business partners were terminated on the grounds of unethical behaviour.



Roche Group Code of Conduct: [roche.com/code\\_of\\_conduct](https://roche.com/code_of_conduct)

## Patient safety comes first

### *Continuously improving our high standards*

Patients, the general public and many other stakeholders place their invaluable trust in our company. They have a right to expect Roche medicines and diagnostic products to be safe, reliable, of the highest quality and available.

We can only meet these expectations with enforcing standards of operational performance. These include the constant review and ongoing improvement of our quality standards, the precision and clarity of our packaging and product information, and the monitoring of each link of our international supply chain. In addition, we continue to strengthen our business continuity management to ensure that our sites and affiliates have strategies and tactics in place to deliver a minimum level of vital products and services.

Ensuring patient safety means that we collaborate continuously with regulatory agencies, carefully check reports of adverse events experienced by patients, and communicate transparently and regularly on our product quality. Roche's Safety Risk Management Department systematically monitors all Roche drugs worldwide—before and after they are launched. Adverse events are recorded in a global database, and reviewed and reported promptly to the appropriate regulatory authorities. We require all employees to report any drug safety or quality issue immediately, and to complete annual awareness training on adverse event reporting.

Our medicines must meet the highest quality standards at all times. Roche's pharmaceutical quality systems and processes comply with International Conference

of Harmonisation (ICH) guidelines. Our quality management system is inspected by all relevant health authorities worldwide as well as by internal quality and compliance audits on a regular basis, ensuring compliance with good manufacturing practice. In 2016, 73 inspections were conducted by regulatory authorities worldwide.

Our pharmaceutical production facility in Shanghai, China, illustrates our dedication to quality. Between 2015 and 2016, the site successfully passed regulatory audits by health authorities around the world. The Shanghai site not only helps to meet the growing pharmaceutical needs of China, it is also a production hub for many other parts of the world.

#### **Enhancing safety and quality through serialisation**

Patients must have complete confidence that Roche medicines are authentic, high-quality products. Although the problem of counterfeit and adulterated drugs has existed for decades, the risks have increased dramatically in recent years through internet sales and other difficult-to-control sources.

Roche has implemented initiatives that improve upon existing regulatory requirements and help to create new standards in product safety, security and quality. One way we have enhanced the safety and quality of our medicines is through serialisation: We understand that labelling every single package with a unique serial number will be the standard by 2020. We started to roll this safety feature out to numerous countries and are supportive of any new serialisation regulation

arising in any country. Serialisation allows any regulatory authority, distributor, pharmacy or physician to trace and verify, at any time, that the product has only been handled within the Roche supply chain and that the serial number is genuine.

We continue to work with health authorities around the world to share our approaches and insights into guaranteeing safety and traceability in the interests of patients and all our stakeholders. For example, we have invited and hosted numerous meetings with delegations from health authorities whom we educated and trained in product security. During these meetings, we have demonstrated our commitment towards patient safety and how serialisation and traceability techniques can be beneficial to the wider health community.

#### **Aligning biosimilar guidelines with global standards**

In 2010, the World Health Organisation (WHO) published guidelines defining the evidence required for one biotherapeutic product to be considered biosimilar to another. The recommendations outlined in the WHO guidelines have been built into national biosimilar regulatory processes in many, but not all, countries around the world. In order to ensure patient safety, Roche believes local regulatory pathways relating to biosimilars should align with global standards set by the WHO. Roche respects the legitimate undertakings of its competitors, including generic and biosimilar manufacturers, but expects them to comply with applicable laws, regulations and industry codes, and protects its products and interests against unfair competition.

#### **Rigorously validating diagnostic tests**

As the world's leader in *in vitro* diagnostics (IVD), Roche develops diagnostic tests that are a critical

component of patient management. IVDs are rigorously validated both analytically and clinically. In the US, laboratory-developed tests (LDTs or in-house tests) have so far not been subject to the same regulatory oversight as commercialised devices and tests.

In light of concerns around safety and efficacy voiced in the US about the use of LDTs in routine clinical decision-making, Roche has become actively engaged in the public debate about the assessment of such LDTs under the new regulatory framework.

#### **Sharing best practice in animal testing**

Before clinical trials for new medications can be conducted in humans, regulatory bodies worldwide require efficacy and safety data based on animal testing. Where regulations allow and where it is scientifically possible and ethical, Roche employs medical testing procedures that do not require animals. In Switzerland, we support the 3R Research Foundation, which provides funds for research projects promoting the 3Rs (Replace animal tests where possible, Reduce the number of animals in studies, Refine existing practices). Roche is actively engaged in the discussion on the future of the foundation. Under the lead of the Federal Food Safety and Veterinary Office, consideration is being given to establishing a national 3R Competence Centre.

We play a leading role in sharing best practices on animal testing. In China, for example, key opinion leaders and representatives from contract research organisations were invited in 2016 to the Roche Innovation Center in Shanghai to discuss state-of-the-art practices. Participants signed a China Animal Welfare & Non-clinical Quality Charter that goes beyond current local regulatory requirements.



Animal studies:  
[roche.com/animal\\_welfare](http://roche.com/animal_welfare)

# A matter of engagement

## Earning our stakeholders' trust

It is essential to earn the trust of our stakeholders and build understanding of their concerns. By truly embedding this into our daily business, we are able to jointly develop solutions. Our annual Sustainability Forum brings together internal stakeholders and external experts to discuss innovations and enhancements in our commitments and engagements. We have developed key performance indicators (KPIs) for measuring and monitoring progress in many areas that are relevant for our stakeholders.

We foster transparency about our relationships with patient organisations and healthcare professionals. Patient organisations are key partners for us. They provide a forum for patients and caregivers to share their stories and experiences and also help to shape the current and future healthcare environment by making their collective voices heard. They help us understand the human experience and personal challenges of a disease, providing us with invaluable insights to improve our product development and clinical trial programmes.

Our support of a patient organisation is always based on a written agreement, which states the purpose, the amount of any financial support and any significant indirect or non-financial benefits. In accordance with industry guidelines, we make the details of our relationships with patient organisations public.

### Contributions to patient organisations

Total amount CHF 28 million

	2016
Financial contributions to patient organisations	95%
Non-financial contributions to patient organisations	4%
Service contracts with patient organisations	1%

We are dedicated to engaging in transparent dialogue with healthcare professionals. The nature of our collaboration includes support to attend important congresses and conferences in their fields. We comply with disclosure requirements (for example, the US Sunshine Act and the EFPIA Disclosure Code). By adapting our disclosure guidelines, we have improved internal and external transparency.

### Contributions to healthcare organisations

Total amount CHF 125 million

	2016
Research	22%
Education of healthcare professionals	47%
Education of patients/general public	8%
Support for healthcare infrastructure	19%
Support for Personalised Healthcare and patient screening	4%

We engage with government officials and industry bodies to contribute to the public debate and to the development of effective public health laws, regulations and policies.

### Enhancing access to healthcare

The European Patients' Forum (EPF), a highly regarded voice, urged politicians to reinforce EU-wide collaboration on access to new medicines. Roche is making a significant contribution to new access and reimbursement models in the EU. We support the shift from a traditional approach of pricing a medicine by pack or by vial to multiple-indication pricing and outcome-based approaches. We also advocate the development of data infrastructure to implement this approach.

In the US, the Centers for Medicare & Medicaid Services (CMS), a federal agency, is charged with implementing innovative payment and delivery models across the healthcare system to decrease cost and enhance the quality of care. CMS is currently testing over 75 models, including Accountable Care Organisations, Bundled Payments, the Oncology Care Model, and the Medicare Part B Drug Payment Model. These models aim to transition from traditional fee-for-service to value-based payments. Roche and Genentech have been in active discussions with US commercial and public payers about the role that certain innovative payment models can play in healthcare reform.

### Sharing data to advance scientific progress

We share clinical information because we understand it helps physicians, patients and healthcare providers to make informed treatment decisions and enable researchers to advance scientific progress. We saw

the benefit of data-sharing come to life when we were working on a clinical development plan for an antibiotic and needed specific data to advance development. Under the data transparency policy adopted by the European Medicines Agency, Roche received the data within six weeks rather than the years it would have taken without data transparency.

We strive to make our clinical study information available to patients, physicians and researchers, subject to the protection of patient privacy and commercial confidentiality. We collaborate with a range of organisations such as The Wellcome Trust and TransCelerate that are involved in advancing opportunities for data-sharing.

In 2016, we introduced an updated version of the Roche policy on sharing clinical information. The document reflects changes in the regulatory environment and encourages greater understanding of our approach and our belief in the value of data-sharing. It provides an overview of our guiding principles, as well as details regarding the information available and the channels we use.

### Engaging with political institutions

We remain independent of any political affiliation; however, we support a number of associations and political institutions. In Switzerland, we spent CHF 9.1 million in 2016, which includes payments to industry associations and various chambers of commerce, financial assistance to trade unions, and donations to political parties at the cantonal and federal level. Donations to political parties are each in the low-double-digit thousand range in Swiss francs and together accounted for less than 3% of total contributions and donations.



Non-financial reporting: [roche.com/non-financial-reporting](http://roche.com/non-financial-reporting)

Working with patient groups: [roche.com/patientorganisations](http://roche.com/patientorganisations)

*Eduardo Rangel,  
Rangel Logistics Solutions*



## *“A special task based on a shared commitment”*

I learned the value of hard work early in life. At the age of 16, I was already a trainee in a customs office in Porto, while studying administration and accounting at night. Within three years, I was named head of the export department.

In 1980, aged 27, I took the bold decision to start my own freight-forwarding company, together with two colleagues. It was tough to find investors and customers. We convinced people with our willingness to put in long hours and our determination to succeed. In 1985, our engineers and I created an IT programme to process customs declarations electronically—we were the first company in Portugal to offer this software.

The biggest challenge came in 1992 with the creation of the European Union. The phasing out of customs duties within Europe eliminated 50% of our business. We had to reinvent ourselves by expanding internationally and opening up new markets.

### **A partnership based on trust**

In October 2007, I met Adriano Treve, the General Manager of Roche Portugal at the time, who needed a distributor to transport sensitive oncology products. I was completely honest and told him that we had no experience with pharmaceuticals, but we were willing to invest and learn. “Why should I trust you?” he asked. I looked him in the eye and replied: “Because I am putting my own reputation and the reputation of my company on the line. When I make promises, I keep them.”

We shook hands and started an intensive period of collaboration. At Rangel, we invested heavily in new warehousing with cold chambers and transportation boxes that remain at constant 2–8 degrees Celsius. Roche quality experts came to our site in Lisbon to train our people. I knew our teamwork was based on a shared commitment to get life-saving products to the hospitals, pharmacies and patients who need them.

In January 2009, we went live. Soon afterwards, we introduced ‘track and trace’ from our website, so Roche could follow the shipments and even monitor real-time temperatures in our delivery trucks—something that had never been done before.

Looking back, I am proud to say that we have kept our promise. During all of 2016, we did not miss a single delivery or failed once in the cold chain—a 100% fulfilment rate.

Today, Rangel is a successful international Group with 1,450 employees. What we have learned from our collaboration with Roche has made us the number one distributor for all pharmaceutical products in Portugal, supplying 90 million life-saving products a year.

As Chairman, I am training my son, Nuno, to take over when I retire. My greatest wish is to keep the Rangel Group in the family and to continue fulfilling our promise in the future.



# *Corporate Governance*

# Principles

Roche is committed to serving all its stakeholders. As a basis for the successful implementation of this commitment our corporate governance principles accordingly put the focus of our business activities on sustainable value creation and innovation and prescribe a management culture conforming to recognised standards of good corporate governance and a policy of transparent communication.

A strong Board of Directors, which represents the interests of the shareholders and all other stakeholders, and highly skilled managers that act with integrity are extremely important.

In 2016, for the 8<sup>th</sup> consecutive year, Roche has been recognised by the Dow Jones Sustainability Indices as the Group Leader in sustainability within the pharmaceuticals, biotechnology and life sciences industry. Sustainability is at the core of our business practices and this award reflects our commitment to running our business in a way that is ethical, responsible and creates long-term value for stakeholders.

This Corporate Governance Report sets out the structures, processes and rules which Roche takes as the basis for well-functioning corporate governance. In doing so, Roche complies with all relevant

corporate governance requirements, in particular with all applicable laws, the Swiss Stock Exchange (SIX Swiss Exchange) directives and the Swiss Code of Best Practice for Corporate Governance promulgated by the Swiss business federation 'economiesuisse'. The company's internal governance framework, particularly its Articles of Incorporation and Bylaws, embodies all the principles needed to ensure that the company's businesses are managed and supervised in a manner consistent with good corporate governance, including the necessary checks and balances.<sup>1</sup>

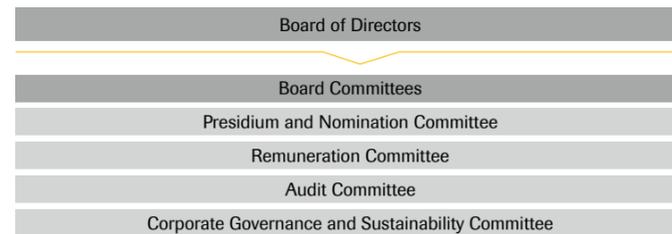
The printed Annual Report contains selected links to the Roche website ([www.roche.com](http://www.roche.com)). Readers are thus provided not only with a 'snapshot' of our company at the reporting date but are also directed to sources which they can consult at any time for up-to-date information about corporate governance at Roche. Whereas each annual report covers a single financial year ending 31 December, our website contains information of a more permanent nature, as well as the latest Roche news. The company's Articles of Incorporation, Bylaws and the curricula vitae of the members of the Board of Directors and the Corporate Executive Committee are published on our website.

For further details please refer to the following report.

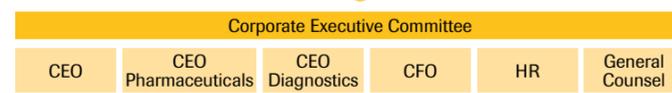
## Annual General Meeting



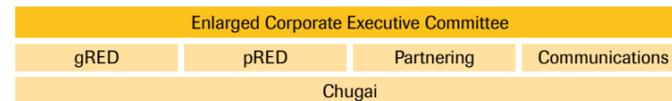
## Board of Directors and Board Committees



## Corporate Executive Committee



## Enlarged Corporate Executive Committee



<sup>1</sup> [roche.com/governance](http://roche.com/governance)

# Board of Directors

At the 98<sup>th</sup> Annual General Meeting (AGM) of Roche Holding Ltd, on 1 March 2016, shareholders re-elected Dr Christoph Franz as Chairman of the Board of Directors.

Furthermore, the AGM re-elected André Hoffmann, Prof. Dr Pius Baschera, Prof. Sir John Bell, Paul Bulcke, Prof. Dr Richard P. Lifton, Dr Andreas Oeri, Bernard Poussot, Dr Severin Schwan, Peter R. Voser and elected Julie Brown and Dr Claudia Süsmuth Dyckerhoff as new members of the Board of Directors for a term of one year as provided by the Articles of Incorporation. Dame DeAnne Julius and Prof. Dr Beatrice Weder di Mauro did not stand for re-election.

In addition, the AGM elected Dr Christoph Franz, André Hoffmann, Prof. Dr Richard P. Lifton, Bernard Poussot and Peter R. Voser as members of the Remuneration Committee.

At its organising meeting immediately following the AGM, the Board of Directors has determined the structure and composition of its remaining committees as shown below (see also pages 18 to 19 and page 115

'Board of Directors and Corporate Executive Committee').

On 14 March 2017, at the forthcoming AGM the Board of Directors nominates the Chairman, all remaining Members of the Board of Directors for re-election.

Prof. Dr Pius Baschera, who is a member of the Board of Directors since 2007, decided not to stand for re-election, as announced in December 2016.

The Board nominates Anita Hauser for election as a new member of the Board of Directors at the AGM 2017.

Moreover, the Board of Directors nominates Dr Christoph Franz, André Hoffmann, Prof. Dr Richard P. Lifton, Bernard Poussot and Peter R. Voser for re-election as members of the Remuneration Committee by the AGM in 2017.

As in the previous year, the Board of Directors nominates BDO AG as the independent proxy for the period from 2017 until the conclusion of the 2018 ordinary Annual General Meeting of Shareholders for election by the AGM.

Composition as at 31.12.2016	Name (year of birth)			First elected
<b>Board of Directors</b>	Dr Christoph Franz (1960)	C, D*, E	Chairman	2011
	André Hoffmann (1958) (representative of the shareholder group with pooled voting rights)	A, C*, D, E	Vice-Chairman	1996
	Dr Andreas Oeri (1949) (representative of the shareholder group with pooled voting rights)	A*, E		1996
	Prof. Dr Pius Baschera (1950)	A, E		2007
	Prof. Sir John Irving Bell (1952)	B, E		2001
	Julie Brown (1962)	B*, E		2016
	Paul Bulcke (1954)	B, E		2011
	Prof. Dr Richard P. Lifton (1953)	C, E		2015
	Bernard Poussot (1952)	C, E		2015
	Dr Severin Schwan (1967)	F		2013
	Dr Claudia Süsmuth Dyckerhoff (1967)	A, B, E		2016
	Peter R. Voser (1958)	C, E		2011
<b>Secretary to the Board of Directors</b>	Dr Gottlieb A. Keller (1954)			
<b>Honorary Chairman of the Board of Directors</b>	Dr Fritz Gerber (1929)			

A Corporate Governance and Sustainability Committee  
 B Audit Committee  
 C Remuneration Committee  
 D Presidium/Nomination Committee  
 E Non-executive director  
 F Executive director  
 \* Committee chairperson

## Corporate Executive Committee

Silvia Ayyoubi, Head of Group Human Resources for Roche and member of the Corporate Executive Committee, retired from Roche on March 2016. The Board of Directors has appointed Cristina A. Wilbur to succeed Silvia Ayyoubi as Head of Group Human Resources and member of the Corporate Executive Committee.

All other memberships of the Corporate Executive Committee remained unchanged in 2016.

Information on each member of the Corporate Executive Committee and of the Enlarged Corporate Executive Committee is listed below (see also pages 24 to 25 and page 115 'Board of Directors and Corporate Executive Committee').

Composition as at 31.12.2016	Name (year of birth)	Position	Since
<b>Corporate Executive Committee</b>	Dr Severin Schwan (1967)	CEO of the Roche Group	2008
	Daniel O'Day (1964)	CEO Roche Pharmaceuticals	2010
	Roland Diggelmann (1967)	CEO Roche Diagnostics	2012
	Dr Alan Hippe (1967)	Chief Financial and IT Officer	2011
	Cristina A. Wilbur (1967)	Head Group Human Resources	2016
	Dr Gottlieb A. Keller (1954)	General Counsel	2003
<b>Enlarged Corporate Executive Committee</b>	Osamu Nagayama (1947)	Chairman and CEO Chugai	2006
	Dr Michael D. Varney (1958)	Head Genentech Research and Early Development (gRED)	2015
	Prof. Dr John C. Reed (1958)	Head Roche Pharma Research and Early Development (pRED)	2013
	Dr Stephan Feldhaus (1962)	Head Group Communications	2010
	Dr Sophie Kornowski-Bonnet (1963)	Head Roche Partnering	2012
	Per-Olof Attinger (1960)		
<b>Secretary to the Corporate Executive Committee</b>			
<b>Statutory Auditors of Roche Holding Ltd</b>	KPMG Klynveld Peat Marwick Goerdeler SA (reporting years 2004–2008)		
	KPMG AG (since 2009) Auditor in charge: John A. Morris (2004–2010) Ilan Starkey (since 2011)		
<b>Chief Compliance Officer</b>	Dr Urs Jaisli (1956)		

### Corporate Executive Committee

Corporate Executive Committee					
CEO	CEO Pharmaceuticals	CEO Diagnostics	CFO	HR	General Counsel

### Enlarged Corporate Executive Committee

Enlarged Corporate Executive Committee			
gRED	pRED	Partnering	Communications
Chugai			

## Group structure and shareholders

Roche's operating businesses are organised into two divisions: Pharmaceuticals and Diagnostics. The Pharmaceuticals Division comprises the two business segments Roche Pharmaceuticals and Chugai, whereas Genentech as the former third segment has been integrated into Roche Pharmaceuticals. The Diagnostics Division consists of the following four business areas: Diabetes Care, Molecular Diagnostics, Professional Diagnostics and Tissue Diagnostics.

Business activities are carried out through Group subsidiaries and associated companies. Detailed information on Roche Holding Ltd and on significant subsidiaries and associated companies (including company name, listing information, domicile, share capital, and equity interest) are listed in the Finance Report, Note 31 to the Roche Group Consolidated Financial Statements ('Subsidiaries and associates', page 111).

Major shareholders are listed in the Finance Report, Notes 21 and 30 to the Roche Group Consolidated Financial Statements ('Equity attributable to Roche shareholders' and 'Related parties', pages 81 and 109)

and in Note 4 to the Financial Statements of Roche Holding Ltd ('Significant shareholders', page 151). In addition, significant shareholders are published on the relevant webpage of the disclosure office of SIX Exchange Regulation.

André Hoffmann, Vice-Chairman of the Board of Directors and Chairman of the Remuneration Committee, and Dr Andreas Oeri, member of the Board of Directors and Chairman of the Board's Corporate Governance and Sustainability Committee, serve in their respective capacities on the Board and its committees as representatives of the shareholder group with pooled voting rights and receive the remuneration set forth in the Remuneration Report on page 135 and in the Finance Report, Note 30 to the Roche Group Consolidated Financial Statements ('Related parties', page 109). With the exception of Dr Jörg Duschmalé, who works as a post-doc at Roche, no other relationships exist with the shareholders with pooled voting rights.

There are no cross-shareholdings.



SIX Exchange Regulation: [six-exchange-regulation.com/significant-shareholders](https://www.six-exchange-regulation.com/significant-shareholders)

### Pharmaceuticals

Roche Pharmaceuticals (incl. Genentech)
Chugai

### Diagnostics

Professional Diagnostics
Molecular Diagnostics
Tissue Diagnostics
Diabetes Care

Composition as at 31.12.2016

## Capital structure

Information on Roche's capital structure is provided in the Finance Report, Notes to the Financial Statements of Roche Holding Ltd (page 150). Additional details are contained in the Articles of Incorporation of Roche Holding Ltd.<sup>2</sup>

Movement in recognised amounts during the last three financial years are detailed in the Finance Report, Notes to the Financial Statements of Roche Holding Ltd (page 151).

The company has a share capital of CHF 160,000,000, divided into 160,000,000 fully paid bearer shares with a nominal value of CHF 1 each. There are no restrictions on the exercise of the voting rights of these shares. Upon deposit, shares can be voted without any restrictions.

There is no authorised or conditional capital.

In addition, 702,562,700 non-voting equity securities (NES) have been issued in bearer form. They do not form part of the share capital and confer no voting rights. Each NES confers the same rights as one share to participate in available earnings and in any liquidation proceeds following repayment of the share capital. Roche's NES and the rights pertaining thereto

(including the provisions protecting the interests of NES holders) are described in §4 of the Articles of Incorporation of Roche Holding Ltd.

Information on debt instruments which have been issued and on outstanding bonds is provided in the Finance Report, Note 20 to the Roche Group Consolidated Financial Statements ('Debt', page 76).

Information on employee stock options is provided in the Finance Report, Note 26 to the Roche Group Consolidated Financial Statements ('Equity compensation plans', page 93), including detailed information on the 'Stock-settled Stock Appreciation Rights (S-SARs) Plan', the 'Roche Restricted Stock Unit Plan', the 'Roche Performance Share Plan', 'Roche Connect' and the 'Roche Option Plan'.

Roche has issued no options apart from employee stock options as described in the Finance Report, Note 26 to the Roche Group Consolidated Financial Statements ('Equity compensation plans', page 93) and options issued in connection with debt instruments.

Neither the options awarded to employees nor the debt instruments which have been issued have any effect on Roche's share capital.

## Board of Directors and Corporate Executive Committee

Information on each member of the Board of Directors and on each member of the Corporate Executive Committee is listed on pages 111 and 112. Members of the Board of Directors have no age limit or restriction on their term of office. Curricula vitae of all current and of former members (of the last five years) of both bodies and other information (including information on the years of their first election as board members, additional positions, memberships and activities) are available and continuously updated on the Internet.<sup>3</sup>

Rules pursuant to article 12 para. 1 point 1 VegüV on the number of permitted activities of the Board of Directors and the Corporate Executive Committee members are outlined in §22.4 of the Articles of Incorporation of Roche Holding Ltd.<sup>4</sup>

Since 2014 the Annual General Meeting elects all members of the Board of Directors, the Chairman of the Board of Directors and the members of the Remuneration Committee on an annual basis in elections in which each nominee is voted on separately (see §18 of the Articles of Incorporation of Roche Holding Ltd<sup>4</sup> and the Minutes of the 98<sup>th</sup> Annual General Meeting of Roche Holding Ltd, held on 1 March 2016<sup>5</sup>).

With the exception of Dr Severin Schwan none of the members of the Board of Directors in office at the end of 2016 has been a member of Roche's Corporate Executive Committee or served in an executive

capacity at any Group subsidiary during the three financial years preceeding the current reporting period and they are for lack of existing business connections with any Group subsidiary independent. The independence definition is based on the definition in the Swiss Code of Best Practice for Corporate Governance of 'economiesuisse'.

The Principles of Governance (principles of delegation and competence, reservation of powers and management of a group of companies) of the executive bodies of the company include economic, environmental and social topics. The principles together with the internal organisation of the Board of Directors, the division of authority and responsibilities between the Board and management, the remits of the Board committees, and the information and control mechanisms available to the Board in its dealings with corporate management, are governed by the Bylaws.<sup>6</sup>

The Board of Directors of Roche Holding Ltd is organised so as to ensure that the Group conducts its businesses responsibly and with a focus on long-term value creation. To this end, the Roche Board has delegated certain responsibilities to several committees.<sup>7</sup> Their composition and chairpersons as at 31 December 2016 are described on page 111. Each committee's authorities and responsibilities are defined in detail in the Bylaws of the Board of Directors.<sup>8</sup>

All the committees are chaired by independent directors.

<sup>2</sup> roche.com/article\_of\_incorporation

<sup>3</sup> roche.com/board\_of\_directors and roche.com/executive\_committee

<sup>4</sup> roche.com/article\_of\_incorporation

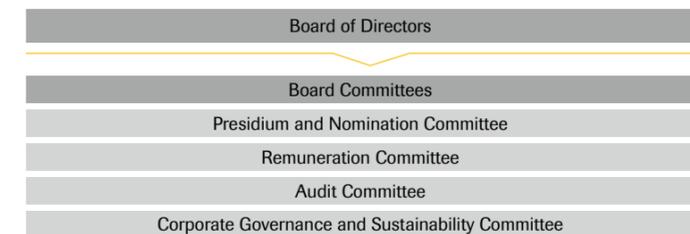
<sup>5</sup> roche.com/annual\_general\_meetings

<sup>6</sup> roche.com/article\_of\_incorporation

<sup>7</sup> roche.com/committees

<sup>8</sup> roche.com/article\_of\_incorporation

### Board of Directors and Board Committees



### Corporate Executive Committee



According to the Bylaws of the Board of Directors, a Board meeting may be convened without the Chairman present at the request of any of its members. The Roche Board meets once a year to assess the Chairman's performance. This meeting, which is not attended by the Chairman, is chaired by the Vice-Chairman.

As part of the Management Information System (MIS), the Board of Directors is informed about the most important issues, sales performance etc. on a monthly basis. The Board has access to an electronic information platform which provides timely information to the Board of Directors and the Board's committees as does the system of controls as set forth below.

The Board of Directors has established a system of controls which is continuously monitored by the Audit Committee, by the Corporate Governance and Sustainability Committee and by the Board of Directors and consists of the following elements:

- Report on operating and financial risks (risk management system)
- The Roche Group has established a risk management process covering the entire company with a system in place to identify and manage all type of risks potentially affecting its business (including economic, environmental, and social impacts, risks and opportunities and containing stakeholder input). The Board of Directors is the highest governance body involved. Roche's Risk Management Policy sets out the approach and accompanying responsibilities. The Pharmaceuticals and Diagnostics Divisions and global functions conduct a formal risk assessment process at least once a year and must develop risk plans for their most material risks. These are monitored and deviations reviewed in regular performance dialogues. The consolidated Group Risk Report including target risk profile is discussed by the Corporate Executive Committee and approved together with the Group Business Plan. All material risks are reviewed by the Board on a yearly basis. The effectiveness of the risk management process is monitored by the Group Risk Advisory team and the overall process is regularly reviewed by external

auditors, with findings presented to the Audit Committee and the full Board.

For details on risk management, including risk factors and the Risk Management Policy see 'Risk Management' on our website.<sup>9</sup> Financial risk management is specifically described in the Finance Report.<sup>10</sup>

- System of internal controls over financial reporting (see pages 124 and 133 of the Finance Report)
  - Internal audit
- Group Audit reports to the General Counsel, has direct access and gives regular briefings to the Audit Committee and to the Corporate Governance and Sustainability Committee about ongoing activities and audit reports. The Chief Audit & Risk Advisory Executive attends the Audit Committee and partly the Corporate Governance and Sustainability Committee meetings, as do the external auditors.

Group Audit is an independent appraisal function, which evaluates and reviews the Group's activities as a service to management. The annual audit plan with yearly defined focus areas (eg, market access, third-party management) is validated by Senior Management and presented to the Audit Committee. The Roche Group is committed to maintaining a high standard of internal control throughout its worldwide operations. Management is responsible for assessing the business risks in all aspects of its operation and for implementing effective and efficient processes and controls whilst ensuring compliance with internal and external rules and regulations.

By conducting operational audits, Group Audit determines management's response to the risks surrounding business processes and systems, and evaluates the appropriateness, completeness and efficiency of the processes and controls. Action plans to implement necessary changes and enhancements are developed together with the business/auditee and are tracked to completion.

- Statutory auditors, see page 120
- Chief Compliance Officer and Compliance Officers in subsidiaries, see page 123

- Safety, Health and Environmental Protection Department<sup>11</sup>
- Corporate Sustainability Committee<sup>12</sup>
- Science and Ethics Advisory Group (SEAG), for issues relating to genetics and genetic engineering<sup>13</sup>

The members of the Corporate Executive Committee are invited to attend meetings of the Board of Directors for, and report in person on, those agenda items concerning them. When the situation warrants, members of the Enlarged Corporate Executive Committee may also be invited to attend. The Board committees invite the Chairman of the Board and Corporate Executive Committee members to deliver reports at committee meetings and may elect to commission independent expert reports and call on the services of consultants.

Each year several black-out periods are imposed during which senior employees are prohibited from trading in company stock. The following black-out periods are in effect for 2017:

26 December 2016 to 1 February 2017

1 April to 27 April 2017

26 June to 27 July 2017

1 October to 19 October 2017

Black-out periods can be changed by the Chairman of the Board of Directors if circumstances warrant.

In 2016, the Board of Directors met for 7 meetings, generally each from 3 to 6 hours in length; including a full-day meeting and in addition for a 4-day visit to a major subsidiary\*\*. The Board committees met as follows in 2016:

- Presidium of the Board of Directors/Nomination Committee: 5 meetings (approx. 2 hours each\*\*)
- Remuneration Committee: 2 meetings<sup>14</sup> (approx. 2 to 3 hours each\*\*)
- Audit Committee: 4 meetings (approx. 3 to 4 hours each\*\*)
- Corporate Governance and Sustainability Committee: 3 meetings (approx. 3 hours each\*\*)

The Board of Directors regularly conducts an assessment (self-assessment/assessment by third parties via electronic survey and personal interviews) of its performance. In 2016, a self-assessment of the Board of Directors was conducted.

Members of the Corporate Executive Committee have a maximum ordinary notice period of twelve months. There are no change-of-control clauses in the employment contracts.

There are no management contracts which fall within the scope of Subsection 4.4 (annex) of the SIX Directive on Information relating to Corporate Governance.

<sup>9</sup> [roche.com/risk-management](http://roche.com/risk-management)

<sup>10</sup> Additional information is provided in the Finance Report, Note 29 to the Roche Group Consolidated Financial Statements, 'Risk management', page 100.

<sup>11</sup> [roche.com/environment](http://roche.com/environment)

<sup>12</sup> [roche.com/sustainability](http://roche.com/sustainability)

<sup>13</sup> [roche.com/ethical\\_conflicts](http://roche.com/ethical_conflicts)

<sup>14</sup> Remuneration Committee members recuse themselves from deliberations and decisions on matters that affect their interests.

\*\* These figures indicate the actual length of meetings and do not include the directors' extensive pre-meeting preparations and post-meeting follow-up activities.

**Board and Board Committees attendance 2016**

	Board	Presidium/ Nomination Committee	Remuneration Committee	Audit Committee	Corporate Governance and Sustainability Committee
<b>Number of meetings</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>3</b>
Ch. Franz	7	5	2	4*	3*
A. Hoffmann	7	5	2	-	3
P. Baschera	7	-	-	-	3
J. Bell	7	-	-	4	-
J. Brown (since March 2016)	6	-	-	3	-
P. Bulcke	7	-	-	4	-
R.P. Lifton	7	-	1	-	-
B. Poussot	7	-	2	-	-
S. Schwan	7	-	-	4*	-
A. Oeri	7	-	-	-	3
C. Süsmuth Dyckerhoff (since March 2016)	6	-	-	3	2
P.R. Voser	6	-	2	-	-
Retired Board members (retired in March 2016)					
D. Julius	1	-	-	1	-
B. Weder di Mauro	1	-	-	1	-

- Not a member of that committee.  
\* Invited as a guest to these Board committee meetings.

Dr Andreas Oeri, Chairman of the Corporate Governance and Sustainability Committee.



## Remuneration, shareholdings and loans

All details regarding remuneration, shareholdings and loans (content and method of determining the compensation and the shareholding programmes, basic principles and elements of compensation and shareholding programmes for serving and former members of the Board of Directors and Corporate Executive Committee, together with a description of the authorities and procedure for determining such) are set forth in the separate Remuneration Report on pages 124 to 150 and in the Finance Report, Notes 21 and 30 to the Roche Group Consolidated Financial Statements ('Equity attributable to Roche shareholders' and 'Related parties', pages 81 and 109), and are listed in Note 6 to the Financial Statements of Roche Holding Ltd ('Board and Executive shareholdings', page 152).

The following rules on Remuneration, shareholdings and loans for the Board of Directors (Board) and the Corporate Executive Committee (CEC) are set forth in the Articles of Incorporation (AoI)<sup>15</sup>:

Content	Rules in AoI <sup>15</sup> for	
	Board	CEC
Rules on the principles applicable to performance-related pay	\$25.1-6	\$25.1-6
Rules on the principles to the allocation of equity securities, convertible rights and options	\$25.7	\$25.7
Additional amount for payments to members of the Executive Committee appointed after the vote on pay at the General Meeting of Shareholders		\$24.5
Rules on loans, credit facilities and post-employment benefits	\$25.1 and 3	\$25.2 and 3
Rules on the vote on pay at the AGM	\$24	\$24

## Participatory rights of shareholders

The participatory rights of shareholders are defined in Roche's Articles of Incorporation.<sup>15</sup> As Roche shares are issued to bearer, there are no restrictions on admission to Annual General Meetings, with the exception that shares must be deposited within a specified period before the date of a meeting and an admittance card must be issued in the shareholder's name, as provided in §12 of the Articles of Incorporation. Any shareholder can elect to be represented by a third party at an Annual General Meeting.

The Articles of Incorporation contain no restrictions on the exercise of voting rights, and the only quorum requirements are those stipulated in §16, in conformity with the Swiss Code of Obligations.

Under §10.2 of the Articles of Incorporation, shareholders representing shares with a nominal value of at least CHF 1 million can request the placement of items on the agenda of an Annual General Meeting. This must be done no later than 28 days before the date of the meeting.

The rules on the issue of instructions to the independent proxy and rules on the electronic participation in the AGM are laid down in the corresponding invitation to the AGM and are not regulated in the Articles of Incorporation.

<sup>15</sup> [roche.com/article\\_of\\_incorporation](http://roche.com/article_of_incorporation)

## Change of control and defensive measures

The Articles of Incorporation contain no provisions on the mandatory bid rule. Swiss law applies.

There are no change-of-control clauses. Those components of remuneration based on Roche NES

would be terminated in the event of an acquisition, and vesting period restrictions on pre-existing awards would be removed, so that all such options could be exercised immediately.

## Relationship to statutory auditors

At the Annual General Meeting of Roche Holding Ltd on 1 March 2016, the shareholders voted to appoint KPMG AG (KPMG) as statutory auditors. Based on the existing legal requirements of the Swiss Code of Obligations (Article 730a) concerning the maximum term of office of seven years of the auditor in charge, Ian Starkey replaced his predecessor John Morris as auditor-in-charge starting with the business year 2011 (information on how long the auditors and auditor-in-charge have been serving in these capacities is provided on page 112). The statutory auditors participate in Audit Committee meetings. They prepare written and oral reports on the results of their audits. The Audit Committee oversees and assesses the auditors and makes recommendations to the Board (for information on the authorities and responsibilities of the Audit Committee, see Article 8.1 of the Bylaws<sup>16</sup>). The statutory auditors participated in all 4 meetings of the Audit Committee in 2016.

The reports of statutory auditor on the Consolidated Financial Statements and on the Financial Statements can be found on pages 125 and 156, respectively, of this year's Finance Report.

KPMG received the following remuneration for their services as statutory auditors of Roche Holding Ltd and as the auditors of other Roche companies (including Chugai):

	2016	2015
	(millions of CHF)	
Auditing services	21.5	21.1
Audit-related services		
— Assurance	0.8	0.8
— Non statutory audits	2.6	-
Tax services	1.4	1.3
Other services	2.2	1.7
<b>Total</b>	<b>28.5</b>	<b>24.9</b>

The statutory auditors are elected each year by the Annual General Meeting.

Auditing services are provided as legally required.

Audit-related services include assurance and accounting services provided by auditors but which are not necessarily provided by the statutory auditor. These services include audits of pension funds and employee benefit plans, internal control reviews which go beyond the legal requirements, and other attestation services, comfort letters, consents and consultation.

Tax services include services with respect to compliance, tax returns and tax advice except those services related to the audit of tax.

Other services include advice relating to process improvements, regulations and trainings.

The company has a formal policy governing the engagement of the statutory auditor for non-audit services. The policy prohibits certain services from being provided but permits certain other services up to limits agreed by the Audit Committee. Each potential non-audit service engagement is reviewed against this policy before any authority to proceed is given.

## Relationship to the independent proxy

In recent years, BDO AG served as the independent proxy and at the Annual General Meeting on 1 March 2016, shareholders elected BDO AG as the independent proxy for the period from 2016 until the conclusion of the 2017 ordinary Annual General Meeting of Shareholders. BDO AG was paid in 2016 for its services according to expenditure totalling CHF 17,334 (2015: CHF 17,010).

The rules on the issue of instructions to the independent proxy and rules on the electronic participation in the AGM are laid down in the corresponding invitation to the AGM and are not regulated in the Articles of Incorporation.

<sup>16</sup> [roche.com/article\\_of\\_incorporation](http://roche.com/article_of_incorporation)

## Information policy

As provided by §34 of the Articles of Incorporation<sup>17</sup>, corporate notices are published in the Swiss Official Gazette of Commerce and in other daily newspapers designated by the Board of Directors ('Basler Zeitung', 'Finanz und Wirtschaft', 'L'Agefi', 'Le Temps', 'Neue Zürcher Zeitung').

Roche reports its half-year and full-year results in business reports (published in print and/or online formats) and at media events. In addition, detailed first-quarter and nine months sales figures are published each year in April and October. The most current list of publication dates is available in English and German on the Internet.<sup>18</sup>

All relevant information and documents, including all media releases, investor updates<sup>19</sup> and presentations to analyst and investor conferences are available on the Internet. Further publications are available on [roche.com/publications](http://roche.com/publications) or can be ordered by e-mail or fax:

[basel.warehouse-services@roche.com](mailto:basel.warehouse-services@roche.com)  
fax +41 (0)61 688 41 96

The contact address for Investor Relations is:  
F. Hoffmann-La Roche Ltd, Investor Relations,  
Group Finance, 4070 Basel, Switzerland  
tel. +41 (0)61 688 88 80  
fax +41 (0)61 691 00 14

Additional information, including details on specific contact persons, is available on the Internet.<sup>20</sup>

## Chief Compliance Officer and Compliance Officers network

The Chief Compliance Officer with his Compliance Officers network is committed to ensuring that the Roche Group Code of Conduct<sup>21</sup> is consistently complied with throughout the Roche Group. He also serves as a contact person for shareholders, employees, customers, suppliers and the general public on issues relating to the implementation of and compliance with this Code. Employees and other parties who become aware of violations of the Roche Group Code of Conduct can bring them to the attention of their managers or supervisors, to the local compliance officer or report them to the Chief Compliance Officer (Dr Urs Jaisli, direct phone number: +41 (0)61 688 40 18, e-mail: [urs.jaisli@roche.com](mailto:urs.jaisli@roche.com)). Such disclosures will be treated confidentially. In addition, as of the end of 2009, employees may anonymously report irregularities or complaints in their mother tongue via a 'SpeakUp Line'. Starting in December 2013, a new compliance tool on Group level, the so-called Roche Group Code of Conduct Help & Advice Line, was introduced which strives to provide guidance in case of questions or uncertainties about the interpretation of the Roche Group Code of Conduct and its reference documents.

It furthermore will serve as a platform for ideas and suggestions concerning those documents.

In addition, Roche has established a Business Ethics Incident Reporting (BEIR) system which enables the Chief Compliance Officer to capture, track and monitor alleged violations, from initial reports by local Compliance Officers through to resolution.

Business ethics incidents are recorded in the system when the local management receives specific and concrete information about an alleged violation of the Roche Group Code of Conduct in one of certain pre-defined categories.<sup>22</sup> The Corporate Governance and Sustainability Committee and the Audit Committee of the Board of Directors are informed of substantial violations and management's corrective actions made.

The Chief Compliance Officer reports to the General Counsel and also submits regular reports to the Corporate Governance and Sustainability Committee and as needed to the Audit Committee of the Board of Directors.

## Non-applicability/negative disclosure

It is expressly noted that any information not contained or mentioned herein is either non-applicable or its omission is to be construed as a negative declaration

(as provided in the SIX Swiss Exchange Corporate Governance Directive and the Commentary thereto).

<sup>17</sup> [roche.com/article\\_of\\_incorporation](http://roche.com/article_of_incorporation)

<sup>18</sup> [roche.com/media](http://roche.com/media)

<sup>19</sup> [roche.com/investors](http://roche.com/investors)

<sup>20</sup> [roche.com/investors/contacts](http://roche.com/investors/contacts)

<sup>21</sup> [roche.com/code\\_of\\_conduct](http://roche.com/code_of_conduct)

<sup>22</sup> [roche.com/risk-management](http://roche.com/risk-management)



# *Remuneration Report*

**Material topic covered in this chapter**

· Executive compensation

# 1. Principles

Roche's success depends substantially on the expertise, motivation and performance of its employees. This conviction forms the basis of our compensation policy.

Roche aims to remunerate all employees fairly, transparently and in line with market conditions, to enable them to participate appropriately in the company's success. We pursue this goal by providing competitive, performance-based and results-oriented compensation.

We strive for a balanced mix of fixed and variable compensation components geared to each employee's position and management responsibility.

Firstly, the variable components are intended to create additional financial incentives to achieve corporate goals and to keep innovation at a consistently high level while increasing the value that the company creates for all stakeholder groups. Secondly, in order to allow employees and managers to participate in the company's business success, adequate compensation measures are key. Both objectives are incentivised by annual bonus payments and long-term share-based programmes.

For a global company like Roche, market-competitive remuneration plays a key role along with a performance-based, transparent compensation structure. To ensure that compensation packages are competitive, both the structure and individual components are regularly benchmarked against Swiss, European and international criteria. Our remuneration guidelines and their underlying principles are also subject to regular outside comparisons.

However, compensation policy is only one factor in safeguarding Roche's future success. Another key element is a corporate culture that offers employees conditions in which they can make their best possible contribution to the shared corporate goal of improving healthcare to patients. This includes a sound value system that is based on integrity, courage and passion. At the same time, our decentralised management approach plays a major role with its wide scope for individual decision-making, respectful interactions, openness to diversity, wide-ranging training and development opportunities and an attractive working environment. An unidimensional diminishment to questions on remuneration would fall by far too short.

Roche is committed to a fair, performance-based and results-oriented compensation policy that links employees' interests with those of various other stakeholder groups.



Compensation policy:  
roche.com/rewards

Sound value system:  
roche.com/living\_our\_values

# 2. Remuneration decision process and approval framework

## 2.1 Overview

Each year the Remuneration Committee of Roche's Board of Directors decides the remuneration of Board members and the members of the Group's Corporate Executive Committee. The terms of the long-term oriented Performance Share Plan (PSP) awards are decided annually by the Board of Directors, acting upon recommendations from the Remuneration Committee.

The Remuneration Committee tracks market data on salaries at other leading global pharmaceuticals companies<sup>1</sup> and at major Swiss companies<sup>2</sup> and reports its findings to the full Board. The external consulting firm PricewaterhouseCoopers (PwC) assists the Remuneration Committee of Roche in performing market comparisons and in advising. Information on the Remuneration Committee's remit,

powers and procedures for making remuneration decisions can be found in the Bylaws of the Roche Board of Directors<sup>3</sup> and in the Articles of Incorporation.<sup>4</sup> They are also outlined in the sections below on the principles governing specific remuneration components (see 3.).

Since 2014, total aggregate amounts which are based on these decisions are submitted to the General Meeting for approval implementing the 'Ordinance against excessive compensation in listed corporations' (Verordnung gegen übermässige Vergütungen bei börsenkotierten Aktiengesellschaften [VegüV]). The General Meeting shall vote annually and with binding effect on the approval of the remuneration (that the Board of Directors has resolved) of the Board of Directors and the Corporate Executive Committee (for details see 4. and 5.).

### Remuneration decision process and approval framework

Remuneration components	Beneficiary		Decision by	Approval by
	Board of Directors (BoD) Chairman (C)	Corporate Executive Committee (CEC) incl. CEO Roche Group		
Base pay/remuneration	√	√	Remuneration Committee	Annual General Meeting
Bonus	√ (C only)	√		
Stock-settled Stock Appreciation Rights	-	√		
Restricted Stock Units	-	Since 2016 for CEC replaced by award of corresponding PSPs		
Performance Share Plan	-	√		
Decisions on pension	√ (C only)	√	Board of Directors upon recommendation from Remuneration Committee	
			Remuneration Committee	

<sup>1</sup> Peer set for 2016: Abbott Laboratories, AbbVie, Amgen, Astellas, AstraZeneca, Bayer, Bristol-Myers Squibb, Eli Lilly, GlaxoSmithKline, Johnson & Johnson, Merck & Co., Novartis, Pfizer, Sanofi, Takeda (no change in composition of peer set compared to 2015).

<sup>2</sup> ABB, Actelion, Credit Suisse, LafargeHolcim, Nestlé, Sonova, Straumann, Swiss Re, UBS, Zurich Insurance.

<sup>3</sup> roche.com/article\_of\_incorporation

<sup>4</sup> roche.com/article\_of\_incorporation

Peer set for 2016

Abbott Laboratories  
 AbbVie  
 Amgen  
 Astellas  
 AstraZeneca  
 Bayer  
 Bristol-Myers Squibb  
 Eli Lilly  
 GlaxoSmithKline  
 Johnson & Johnson  
 Merck & Co.  
 Novartis  
 Pfizer  
 Sanofi  
 Takeda

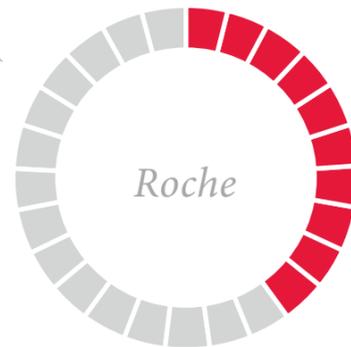


ABB  
 Actelion  
 Credit Suisse  
 LafargeHolcim  
 Nestlé  
 Sonova  
 Straumann  
 Swiss Re  
 UBS  
 Zurich Insurance

Peer set for 2016

Market comparison companies for salary assessment

- Pharma Peer set
- Major Swiss companies

André Hoffmann, Chairman of the Remuneration Committee.



**2.2 Procedure for submitting total Board and Executive remuneration for shareholder approval at the Annual General Meeting**

Each year at the Annual General Meeting (AGM) shareholders approve the total remuneration for the Board of Directors and for the Corporate Executive Committee as decided by the Board of Directors' Remuneration Committee and the Board of Directors, respectively.

According to the approval at the AGM 2014, Roche has committed itself to obtaining separate and binding shareholder approvals of the total remuneration paid to the Board of Directors and to the Corporate Executive Committee as follows:

**Retrospective approval**

Total aggregate bonus amounts for the Corporate Executive Committee and the Chairman of the Board of Directors for the financial year just ended will be submitted retrospectively at each ordinary AGM for separate and binding approval.

**Prospective approval**

All other Board and Executive aggregate remuneration will be submitted prospectively to the AGM for separate and binding approval for the period between two ordinary AGMs.

**Approval of total remuneration at the Annual General Meeting 2017**

*Retrospective:*

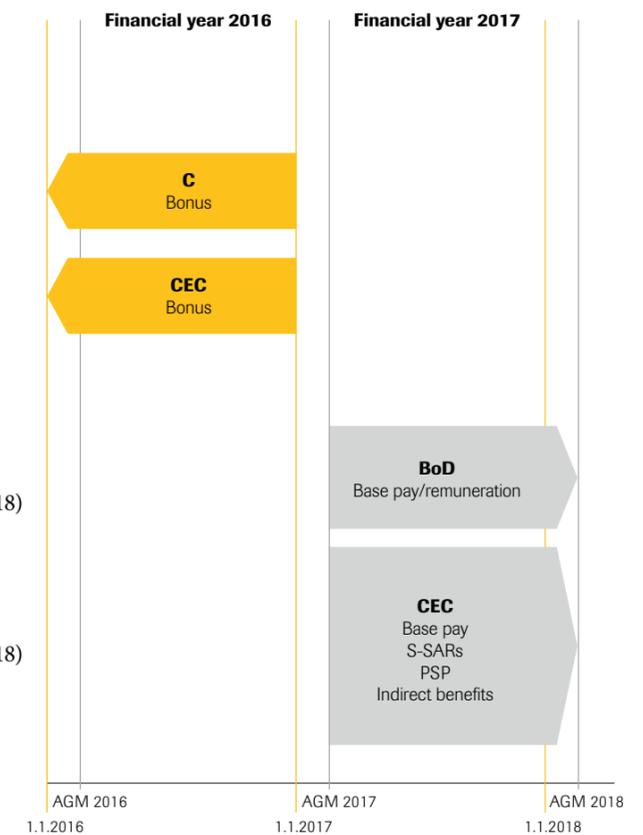
Chairman of the BoD (C):  
 • Bonus for financial year 2016 (total amount)

Corporate Executive Committee (CEC) including CEO Roche Group:  
 • Bonus for financial year 2016 (total amount)

*Prospective:*

Board of Directors (BoD) including C:  
 Aggregate total remuneration (AGM 2017–AGM 2018)  
 • Base pay/remuneration

Corporate Executive Committee (CEC) including CEO Roche Group:  
 Aggregate total remuneration (AGM 2017–AGM 2018)  
 • Base pay  
 • Stock-settled Stock Appreciation Rights (S-SARs)  
 • Performance Share Plan (PSP)  
 • Indirect benefits



### 3. Remuneration components

#### 3.1 Overview of remuneration elements

Remuneration to the members of the Board of Directors and the Corporate Executive Committee are composed of the following elements (for concrete composition see chart below: ‘Composition of remuneration to the Board of Directors and the Corporate Executive Committee’):

The fixed base salary is complemented with the annual variable bonus as **Short-Term Incentive (STI)** and with perennial variable remuneration elements (S-SARs, PSP) as **Long-Term Incentive (LTI)**.

In 2016, Restricted Stock Units (RSUs) as remuneration component for the Corporate Executive Committee were replaced by awarding of corresponding PSPs (see 3.1.4).

The remuneration components are linked to the employees’ performance, the company’s financial performance and commercial success and thus align the interests of Roche and its employees with those of shareholders.

The LTI remuneration components are intended to sustainably and homogenously and long-term oriented align management’s interest with those of shareholders and holders of non-voting equity securities and to give participating managers an additional incentive to achieve value growth in the form of long-term total shareholder returns. By creating value for Roche investors, management benefits as well. When no added long-term value is created for investors, management is ‘penalised’ by receiving less.

**Composition of remuneration to the Board of Directors and the Corporate Executive Committee**

Annual remuneration elements	Description	C	BoD	CEO Roche Group	CEC
<b>Base pay/ remuneration</b>	Monthly payment (see 3.1.1 below)	√	√ Quarterly payments	√	√
<b>Bonus</b>	Annual payment (see 3.1.2 below)	√ For 10 years blocked shares	-	√ For 10 years blocked shares	√ Cash
<b>Pensions etc.</b>	(see 3.1.6 below)	√	-	√	√
Perennial remuneration elements					
<b>Stock-settled Stock Appreciation Rights (S-SARs)</b>	(see 3.1.3 below)	-	-	√	√
<b>Performance Share Plan (PSP)</b>	(see 3.1.5 below)	-	-	√ For 10 years blocked shares	√

#### Variable

- STI:
- Bonus
- LTI:
- Stock-settled Stock Appreciation Rights
  - Performance Share Plan



- Base salary
- Indirect benefits (employer contribution):
- Pensions and insurance contributions
  - Roche Connect
  - Tax consulting services
- Expense allowances
- Others:
- Children’s schooling costs
  - Foreign tax obligation
  - AHV/IV/ALV

#### Fixed

#### 3.1.1 Base pay (fixed)

Base pay (cash payment) is determined for each position based on salary market data of other leading global pharmaceuticals companies (see footnote 1) and of other major Swiss companies (see footnote 2) and reflects individuals’ abilities, experience and performance over time. Pay adjustments are likewise linked to individual performance and take into account prevailing market conditions and the company’s overall financial situation.

The Remuneration Committee makes and reviews the final decision on the individual base pay paid to the Chairman of the Board of Directors and members of the Corporate Executive Committee and on the remuneration of the other members of the Board.

#### 3.1.2 Bonuses (variable)

Bonuses are annually awarded for individual contributions of value creation in a business year and are meant to be an incentive to strive for outstanding results and to create new business opportunities. Bonus amounts are linked to Group and divisional core profits, sales growth at constant exchange rates, Operating Profit After Capital Charge (OPAC) based on core operating profit, core earnings per share and Non-voting Equity Security (NES) growth at constant exchange rates, product development pipeline and to the achievement of measurable and qualitative individual or functional performance objectives. For competitive reasons, Roche does not disclose the

individual performance objectives of members of its Corporate Executive Committee.

In December at the end of a reporting year or in January following a reporting year the Remuneration Committee decides on the bonuses and their amounts payable to the Chairman of the Board and the members of the Corporate Executive Committee in respect of the current reporting year, based on performance against the aforementioned objectives. At the same time, the Remuneration Committee also decides in what form bonuses will be awarded, ie, cash payments and/or long-term blocked non-voting equity securities and/or blocked shares.

#### 3.1.3 Stock-settled Stock Appreciation Rights (variable)

S-SARs entitle holders to benefit financially from any increase in the value of Roche’s non-voting equity securities between the grant date and the exercise date. As of 2012, S-SARs granted all vest together after three years and then have to be exercised within seven years of the grant date. Unexercised S-SARs lapse without compensation. Since 2012, the fair value of S-SARs has been calculated at the grant date using the trinomial model for American options (for details see page 142).

S-SAR awards to the Corporate Executive Committee are allocated individually at the Remuneration Committee’s discretion. In 2016 in addition, around 19,000 employees received S-SAR awards.

**3.1.4 Restricted Stock Units (variable)**

Restricted Stock Units (RSUs) contain rights to receive non-voting equity securities and/or shares after a three-year vesting period plus a value adjustment (being the amount equivalent to the sum of the dividend paid during the vesting period attributable to the number of non-voting equity securities for which an individual award has been granted). RSU awards are allocated individually at the Remuneration Committee’s discretion and will be vested to the recipient after three years only. Thereafter, resulting non-voting equity securities may remain blocked for up to 10 years. With the vesting and blocking periods the interests of the RSU recipients shall be aligned with the company’s long-term success and the commitment of employees to the company shall be increased.

In 2016, RSUs as remuneration component for the Corporate Executive Committee were replaced by awarding of corresponding PSPs. Therefore, the variable long-term incentive programmes for the Corporate Executive Committee comprise PSP awards and S-SARs, approximately 50% each.

With this, the structure of the LTI is simplified, and in comparison with competitors the company’s long-term performance which is mirrored in the share price and the Total Shareholder Return (TSR) shall be stronger reflected in the Corporate Executive Committee’s remuneration.

RSUs as a remuneration component will be continued for all other around 19,000 authorised Roche employees.

**3.1.5 Performance Share Plan (PSP), (variable)**

The PSP was established in 2002 for periods of three years each and is based on a three-year comparison of the TSR with 15 peer companies (see footnote 1).

In a respective year, the PSP consists of three overlapping performance cycles, with a new cycle starting at the beginning of each year and a cycle

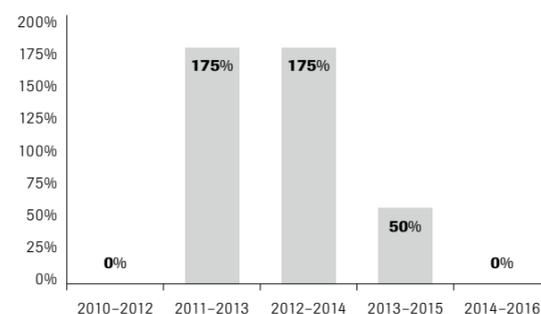
finishing at the end of each year. In 2016, there were the three overlapping performance cycles PSP 2014–2016, PSP 2015–2017 and PSP 2016–2018, of which PSP 2014–2016 closed on 31 December 2016. For the PSP cycle 2014–2016 none of the targeted NES will be awarded (PSP 2013–2015 [per 31 December 2015]: 50% of the targeted NES awarded; PSP 2012–2014 [per 31 December 2014]: 175% of the targeted NES awarded).

The plan’s key performance metric for an award, the Total Shareholder Return (TSR), is calculated as a three-month moving average rate before the start of and before the end of the performance cycle. The payment of the Performance Share Plan is determined by the Board of Directors on an annual basis, acting upon recommendations from the Remuneration Committee.

Starting in 2016, PSP awards as a remuneration component are reserved for the Corporate Executive Committee and the Enlarged Corporate Executive Committee whilst in previous years other members of senior management participated in the Performance Share Plan.

As of 2016, the long-term incentive programmes for the other previous PSP participants will comprise S-SARs and RSUs awards, approximately 50% each.

**PSP historical performance**  
(% of award of originally targeted NES)

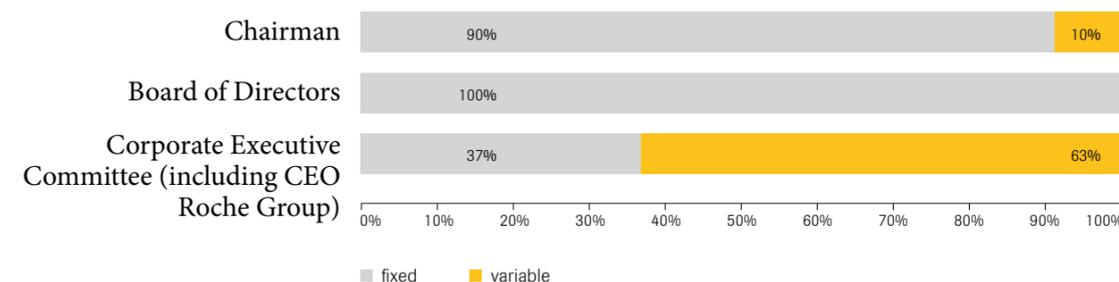


**3.1.6 Indirect benefits**

As shown in 5.9 (5.3 [for the CEO Roche Group] and 4.3 [for the Chairman], respectively), members of the Corporate Executive Committee additionally received indirect benefits (payments in pension funds, MGB [Stiftung der F. Hoffmann-La Roche AG für Mitarbeiter-Gewinnbeteiligung als Ergänzung der beruflichen Vorsorge, ie, employee profit-sharing

foundation supplementing occupational pension benefits], insurances, Roche Connect [see 5.9], payments for foreign tax obligation and tax consulting services and annual expense allowances) and as shown under 5.10 individual members of the Corporate Executive Committee received payments for schooling costs for their children.

**3.2 Weighting (fixed/variable) of 2016 remuneration components (at target and as percentage of total remuneration in 2016)**



**3.3 Ratio of variable remuneration components relative to fixed base pay of the Corporate Executive Committee 2016**

**Ratio of variable remuneration components (bonuses, S-SARs and PSP) relative to % of value of fixed base pay**

Criteria	STI	LTI	
	Bonus	S-SARs	PSP
Individual target value*	≤100%	66.66%	66.66%**
Minimum	0%	0%	0%
Maximum	200%	66.66%	133.33%
Performance criteria	Group objectives (Group and divisional business performance) and individual objectives considering core profits, sales growth at constant exchange rates, Operating Profit After Capital Charge (OPAC) based on core operating profit, core earnings per share and non-voting equity security (NES) growth at constant exchange rates, product development pipeline	Value development determined by performance (plus a value adjustment for dividends) of NES after grant	Value development determined by performance (plus a value adjustment for dividends) of NES/bearer shares after grant. Group performance of TSR in relation to TSR performance of peer set (TSR definition see 5.8)
Split in %			
a) Group objectives	70%	n.a.	100%
b) Individual objectives	30%	n.a.	-

n.a. – not applicable  
 \* Assessed in consideration of the performance of competitors and the macro-economic development.  
 \*\* Based on annual base pay measured at 1 January of first year of cycle.

For all further details please refer to the following sections of this Remuneration Report.<sup>5</sup>

<sup>5</sup> See also in the Finance Report Note 30 to the Roche Group Consolidated Financial Statements ('Related parties', page 109) and Note 6 to the Financial Statements of Roche Holding Ltd ('Board and Executive shareholdings', page 152).

## 4. Remuneration of the Board of Directors

### 4.1 Resolution and approval

Remuneration of the Chairman of the Board of Directors and of members of the Board of Directors was decided at the Remuneration Committee's discretion, taking into account market comparisons.

The remuneration is in form of cash payments and is annually tracked against market data on directors' pay at other leading global pharmaceuticals companies (see footnote 1) and other major Swiss companies (see footnote 2) which is assisted by the consultancy of PwC.

As in the previous year, in 2017, the Board of Directors will separately submit the total aggregate bonus of the Chairman of the Board of Directors to the General Meeting for the 2016 financial year for retrospectively binding approval.

The maximum amounts of the total aggregate remuneration of the Board of Directors for the period between the ordinary General Meeting 2017 and the ordinary General Meeting 2018 will be tabled in 2017 as in the previous year for the General Meeting's prospectively binding approval (see 2.2).

### 4.2 Amount of remuneration to the members of the Board of Directors

In 2016, the members of the Board of Directors<sup>6</sup> received remuneration and additional compensation in form of quarterly fixed cash payments as shown in the 'Remuneration of members of the Board of Directors 2016' table on page 135 for their Board activities. Roche paid legally required employer's contributions of total CHF 195,114 to Swiss social security programmes providing retirement, disability and unemployment benefits (AHV/IV/ALV) for the members of the Board of Directors beside the legally required contributions separately stated for the Chairman of the Board of Directors.

The basic remuneration of the Board of Directors (excluding the Chairman) has remained unchanged since 2001.

With the exception of the Chairman of the Board of Directors (bonus in form of blocked shares) and Dr Severin Schwan as an executive member of the Board, members of the Board of Directors were not awarded any shares, non-voting equity securities or S-SARs.

There are no loans or credits granted to the members of the Board of Directors.

In his capacity as a member of the Chugai International Council (CIC) of Chugai Pharmaceutical Co., Ltd. André Hoffmann received honoraria amounting to a total of USD 40,000 (CHF 39,411).

### Remuneration of members of the Board of Directors 2016 (in CHF)

	Basic remuneration	Additional compensation for committee members/chairs <sup>7</sup>	Additional special compensation	Total remuneration
Ch. Franz, Chairman		(see '4.3 Total remuneration paid to the Chairman of the Board of Directors')		
A. Hoffmann, Vice-Chairman	400,000 <sup>8</sup>	–	39,411 (see page 134)	439,411
P. Baschera	300,000	30,000	–	330,000
J. Bell	300,000	30,000	–	330,000
J. Brown (since 1 March 2016)	250,000 <sup>9</sup>	60,000	–	310,000
P. Bulcke	300,000	30,000	–	330,000
R.P. Lifton	300,000	30,000	–	330,000
A. Oeri	300,000	60,000	–	360,000
B. Poussot	300,000	30,000	–	330,000
S. Schwan	(See '5.3 Highest total remuneration paid to Dr Severin Schwan as a member of the Corporate Executive Committee', remuneration received in his primary function as CEO Roche Group and reflected in total remuneration for the Corporate Executive Committee)			
C. Süssmuth Dyckerhoff (since 1 March 2016)	250,000 <sup>9</sup>	60,000	–	310,000
P.R. Voser	300,000	30,000	–	330,000
D. Julius (retired in March 2016)	75,000 <sup>10</sup>	15,000 <sup>10</sup>	–	90,000 <sup>10</sup>
B. Weder di Mauro (retired in March 2016)	75,000 <sup>10</sup>	7,500 <sup>10</sup>	–	82,500 <sup>10</sup>
<b>Total<sup>11</sup></b>	<b>3,150,000</b>	<b>382,500</b>	<b>39,411</b>	<b>3,571,911</b>

<sup>7</sup> With the exception of members of the Presidium (Chairman, Vice-Chairman) Board members receive CHF 30,000/year for each committee they serve on and CHF 60,000/year for each committee they chair.

<sup>8</sup> Remuneration for serving as Vice-Chairman of the Board.

<sup>9</sup> Prorated remuneration for the period from March to December 2016.

<sup>10</sup> Prorated remuneration paid for the period January to March 2016.

<sup>11</sup> Additionally, employer contribution to AHV/IV/ALV totalling CHF 426,354 (including the Chairman) was paid that does not form part of compensation.

AUDITED

AUDITED

<sup>6</sup> For a list of members, their positions and their committee memberships and chairmanships see page 111.

**Remuneration of members of the Board of Directors 2015 (in CHF)**

AUDITED	Remuneration of members of the Board of Directors 2015 (in CHF)			
	Basic remuneration	Additional compensation for committee members/chairs <sup>12</sup>	Additional special compensation	Total remuneration
Ch. Franz, Chairman	(see '4.3 Total remuneration paid to the Chairman of the Board of Directors')			
A. Hoffmann, Vice-Chairman	400,000 <sup>13</sup>	-	24,065	424,065
P. Baschera	300,000	30,000	-	330,000
J. Bell	300,000	30,000	-	330,000
P. Bulcke	300,000	30,000	-	330,000
D. Julius	300,000	60,000	-	360,000
R.P. Lifton	250,000 <sup>14</sup>	-	-	250,000
A. Oeri	300,000	60,000	-	360,000
B. Poussot	250,000 <sup>14</sup>	30,000	-	280,000
S. Schwan	(See '5.3 Highest total remuneration paid to Dr Severin Schwan as a member of the Corporate Executive Committee', remuneration received in his primary function as CEO Roche Group and reflected in total remuneration for the Corporate Executive Committee)			
P.R. Voser	300,000	30,000	-	330,000
B. Weder di Mauro	300,000	30,000	-	330,000
<b>Total<sup>15</sup></b>	<b>3,000,000</b>	<b>300,000</b>	<b>24,065</b>	<b>3,324,065</b>

12 With the exception of members of the Presidium (Chairman, Vice-Chairman) Board members receive CHF 30,000/year for each committee they serve on and CHF 60,000/year for each committee they chair.  
 13 Remuneration for serving as Vice-Chairman of the Board.  
 14 Prorated remuneration for the period from March to December 2015.  
 15 Additionally, employer contribution to AHV/IV/ALV totalling CHF 398,324 (including the Chairman) was paid that does not form part of compensation.

**4.3 Total remuneration paid to the Chairman of the Board of Directors**

As Chairman, Dr Christoph Franz received total remuneration for 2016 as shown below. The Remuneration Committee's bonus proposal (adopted in late 2016) in respect of the 2016 financial year (in

form of bearer shares blocked for 10 years, payable in April 2017) will be put for shareholder binding vote at the 2017 ordinary Annual General Meeting (AGM).

The Chairman's total remuneration is contained in the total remuneration of the Board of Directors in 4.4.

**Total remuneration paid to the Chairman of the Board of Directors (in CHF)**

AUDITED	Total remuneration paid to the Chairman of the Board of Directors (in CHF)	
	2016	2015
Base salary (in cash)	3,500,000	3,500,000
Bonus (subject to approval of the Annual General Meeting 2017)	558,390*	558,390*
Pension funds/MGB <sup>16</sup> /insurances/annual expense allowances	1,665,122**	1,656,388**
<b>Total</b>	<b>5,723,512<sup>17</sup></b>	<b>5,714,778</b>

\* In form of shares blocked for 10 years (calculation of number of shares based on the share price at the date of transfer in April 2017 and 2016, respectively, after approval at the AGM 2017/AGM 2016, respectively), calculation of value in consideration of reduction of value due to blocking period of 10 years (reduced market value: 55.839%) to be submitted for shareholder approval at the AGM 2017/as approved at the AGM 2016, respectively.  
 \*\* Including employer contribution of social securities' beneficial parts.  
 16 MGB: Stiftung der F. Hoffmann-La Roche AG für Mitarbeiter-Gewinnbeteiligung (employee profit-sharing foundation supplementing occupational pension benefits).  
 17 Additionally, employer contribution to AHV/IV/ALV of CHF 231,240 was paid that does not form part of compensation.

**4.4 Total remuneration paid to the Board of Directors**

For the 2016 calendar year the members of the Board of Directors received remuneration including bonuses totalling CHF 9,295,423 (2015: CHF 9,038,843), excluding additional employer's contribution paid to AHV/IV/ALV totalling CHF 426,354 (2015: CHF 398,324) that does not form part of compensation.

**4.5 Remuneration paid to the former members of the Board of Directors**

Former member of the Board of Directors Dr Franz B. Humer in 2016 received honoraria amounting to a total of USD 200,000 (CHF 197,054) for serving as a member of the Board of Directors and as a member of the Chugai International Council (CIC) of Chugai Pharmaceutical Co., Ltd.

Former member of the Board of Directors William M. Burns in 2016 received honoraria amounting to a total of USD 40,000 (CHF 39,411) in his capacity as a member of the Chugai International Council (CIC) of Chugai Pharmaceutical Co., Ltd.

No additional remuneration was paid.

**4.6 Board remuneration subject to approval at the Annual General Meeting**

**4.6.1 Submission of the Chairman's total aggregate bonus for a binding vote at the Annual General Meeting**

Remuneration to the Chairman of the Board of Directors includes a bonus award of CHF 558,390 in form of shares blocked for 10 years as shown in the table '4.3 Total remuneration paid to the Chairman of the Board of Directors' on page 136. The Board of Directors will submit the Remuneration Committee's bonus proposal (adopted in late 2016) for the Chairman of the Board, Dr Christoph Franz, in respect of the 2016 financial year (payable in April 2017, excluding legally required employer's contributions to AHV/IV/ALV) for the shareholder binding vote to the 2017 ordinary Annual General Meeting (AGM).

**Retrospective approvals of the Chairman's total aggregate bonus (in CHF)\***

	Proposal AGM 2017	AGM 2016	AGM 2015
	Aggregate amount for financial year 2016	Aggregate amount for financial year 2015	Aggregate amount for financial year 2014
<b>Total aggregate amount proposal for approval/ approved by the AGM</b>	<b>558,390**</b>	<b>558,390**</b>	<b>3,350,340***</b>

\* Excluding legally required employer's contributions to AHV/IV/ALV.  
 \*\* Bonus award (in form of shares blocked for 10 years [calculation of number of shares based on the share price at the date of transfer in April 2017/ April 2016, respectively after approval at the AGM 2017/ AGM 2016, respectively], calculation of value in consideration of reduction of value due to blocking period of 10 years [reduced market value: 55.839%] to be submitted for shareholder approval at the AGM 2017/ as approved at the AGM 2016, respectively).  
 \*\*\* Includes Dr Franz B. Humer's bonus as the former Chairman.

**4.6.2 Submission of the Board's total aggregate future remuneration for a binding shareholder vote**

The Board of Directors proposes that the 2017 ordinary AGM approve Board remuneration totalling not more than CHF 10,000,000 (excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses) for the period ending at the 2018 ordinary AGM.

Dr Severin Schwan's remuneration as shown in 5.3 which he receives in his function as CEO Roche Group and member of the Corporate Executive Committee is not included here but is part of the Corporate Executive Committee's total remuneration.

**Prospective approvals of the Board's total aggregate future remuneration** (in CHF)\*

	Proposal AGM 2017	AGM 2016	AGM 2015
	Aggregate amount for the period AGM 2017-AGM 2018	Aggregate amount for the period AGM 2016-AGM 2017	Aggregate amount for the period AGM 2015-AGM 2016
<b>Total aggregate amount proposal for approval/ approved by the AGM</b>	<b>10,000,000</b>	<b>10,000,000</b>	<b>10,000,000</b>

\* Excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses.

**4.6.3 Reconciliation of the reported remuneration with the shareholders' approved remuneration for the members of the Board of Directors**

The 2015 ordinary AGM approved Board remuneration totalling not more than CHF 10,000,000 (excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses) for the period ending at the 2016 ordinary AGM.

For comparison from 2015 ordinary AGM to ordinary 2016 AGM actual remuneration amounted to CHF 8,623,576 (excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses).

**Prospectively approved total remuneration for the members of the Board of Directors in comparison to the actual total payments made** (in CHF)\*

	Total remuneration for the period AGM 2016-AGM 2017	Total remuneration for the period AGM 2015-AGM 2016	Total remuneration for the period AGM 2014-AGM 2015
Maximum of total remuneration approved by the AGM	10,000,000	10,000,000	11,000,000
Actual total remuneration paid	Calculation at end of period	8,623,576	10,364,027
Within the approved limit	Calculation at end of period	Yes	Yes

\* Excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses.

**4.7 Security holdings**

Directors André Hoffmann and Dr Andreas Oeri and members of the founders' families who are closely associated with them belong to a contractually bound shareholder group with pooled voting rights. At the end of 2016 this group held 72,018,000 shares (45.01% of issued shares). Detailed information about this group can be found in the Finance Report, Note 30 to the Roche Group Consolidated Financial

Statements ('Related parties', page 109) and in Note 4 to the Financial Statements of Roche Holding Ltd ('Significant shareholders', page 151). In addition, as at 31 December 2016 (as at 31 December 2015, respectively) the members of the Board of Directors and persons closely associated with them held shares and non-voting equity securities (NES) as shown in the table 'Security holdings' below.

**Security holdings** (shares and NES)

	(as at 31 December 2016)				(as at 31 December 2015)			
	Shares (number)	NES (number)	Close relatives' security holdings (number/type)	Others (number)	Shares (number)	NES (number)	Close relatives' security holdings (number/type)	Others (number)
<b>Board of Directors</b>								
Ch. Franz	7,639	4,810	-	-	3,663	350	-	-
A. Hoffmann	-*	200	-	-	-*	200	-	-
P. Baschera	1	4,600	-	-	1	4,600	-	-
J. Bell	300	1,647	-	-	300	1,647	-	-
J. Brown	-	-	-	-	n.a.	n.a.	n.a.	n.a.
P. Bulcke	-	2,500	-	-	-	2,500	-	-
R.P. Lifton	-	-	-	-	-	-	-	-
A. Oeri	-*	187,793	-	-	-*	187,793	-	-
B. Poussot	-	-	-	-	-	-	-	-
S. Schwan	See '5.16 Security holdings' Corporate Executive Committee on page 148				See '5.16 Security holdings' Corporate Executive Committee on page 148			
C. Süsmuth Dyckerhoff	-	621**	-	-	n.a.	n.a.	n.a.	n.a.
P.R. Voser	-	5,000	-	-	-	3,600	-	-
<b>Retired Board members</b>								
(retired in March 2016)								
D. Julius	n.a.	n.a.	n.a.	n.a.	350	2,050	-	-
B. Weder di Mauro	n.a.	n.a.	n.a.	n.a.	200	800	-	-
<b>Total</b>	<b>7,940</b>	<b>207,171</b>	<b>-</b>	<b>-</b>	<b>4,514</b>	<b>203,540</b>	<b>-</b>	<b>-</b>

n.a. – not applicable

\* Shares held by the shareholder group with pooled voting rights not listed.

\*\* Jointly hold with close relative.

## 5. Remuneration of the Corporate Executive Committee

### 5.1 Resolution and approval

Remuneration of the members of the Corporate Executive Committee was decided at the Remuneration Committee's discretion, taking into account market comparisons.

As in the previous year, in 2017, the Board of Directors will separately submit the total aggregate bonuses of the Corporate Executive Committee to the General Meeting for the 2016 financial year for retrospectively binding approval.

The maximum amounts of the total aggregate remuneration of the Corporate Executive Committee for the period between the ordinary General Meeting 2017 and the ordinary General Meeting 2018 will be tabled in 2017 as in the previous year for the General Meeting's prospectively binding approval (see 2.2).

### 5.2 Amount of remuneration to members of the Corporate Executive Committee

The general provisions assigning authority for decisions on Corporate Executive Committee remuneration to

the Remuneration Committee and to the Board of Directors are outlined on pages 127, '2. Remuneration decision process and approval framework'.

In 2016, members of the Corporate Executive Committee received remuneration for their work as shown in 5.3–5.12. The amount of remuneration for the CEO Roche Group, Dr Severin Schwan, is explained in 5.3 in detail.

### 5.3 Highest total remuneration paid to Dr Severin Schwan as a member of the Corporate Executive Committee

Dr Severin Schwan, executive member of the Board of Directors, received his remuneration in his primary function as CEO Roche Group. It is reflected as the highest total remuneration paid to a member of the Corporate Executive Committee (see below) and included in the total amount paid to the Corporate Executive Committee (see '5.12 Total remuneration paid to the members of the Corporate Executive Committee', page 146).

### Highest total remuneration paid to Dr Severin Schwan as a member of the Corporate Executive Committee (in CHF)

	2016	2015 <sup>18</sup>
Base salary	4,000,000	4,000,000
S-SARs <sup>19</sup>	2,666,711	2,600,270
RSUs <sup>20</sup> (Restricted Stock Units)	–	781,658*
Pension funds/MGB <sup>21</sup> /insurances	561,576**	563,879**
Roche Connect	100,008	100,008
Subtotal	7,328,295	8,045,815
Bonus (subject to approval of the total aggregate bonuses for the Corporate Executive Committee by Annual General Meeting 2017)		
— Blocked non-voting equity securities/shares	2,791,950 <sup>22*</sup>	3,126,984*
PSP	1,489,025 <sup>23*</sup>	744,485 <sup>24*</sup>
Other payments: expense allowance/for tax consulting services	33,186	32,586
<b>Total</b>	<b>11,642,456<sup>25</sup></b>	<b>11,949,870</b>

\* Calculation of value of non-voting equity securities/shares in consideration of reduction of value due to blocking period of 10 years (reduced market value: 55.839%).

\*\* Including employer contribution of social securities' beneficial parts.

<sup>18</sup> For detailed calculation of the remuneration for 2015 and 2014 see Annual Report 2015, page 178.

<sup>19</sup> Number of S-SARs 2016: 89,517, grant value according to the trinomial model for American call options: CHF 29.79. Trinomial model for American call options value as described in '5.6 Stock-settled Stock Appreciation Rights (S-SARs) of the other members of the Corporate Executive Committee', page 142.

Number of S-SARs 2015: 59,997, grant value according to the trinomial model for American call options: CHF 43.34. Trinomial model for American call options value as described in '5.6 Stock-settled Stock Appreciation Rights (S-SARs) of the other members of the Corporate Executive Committee', page 142.

<sup>20</sup> Since 2016, members of the Corporate Executive Committee do not receive RSUs anymore, they are replaced by awarding of corresponding PSPs. Number of RSUs 2015: 5,466, grant value CHF 256.10 (NES closing price at grant date on 5 March 2015) per RSU.

<sup>21</sup> MGB: Stiftung der F. Hoffmann-La Roche AG für Mitarbeiter-Gewinnbeteiligung (employee profit-sharing foundation supplementing occupational pension benefits).

<sup>22</sup> Shares blocked for 10 years (calculation of number of shares based on the share price at the date of transfer in April 2017 after approval at the AGM 2017).

<sup>23</sup> Target number of bearer shares for PSP 2016–2018 (9,968 bearer shares) multiplied per bearer share price averaged over the three months (October to December 2015) prior to the start of the performance cycle 2016–2018, CHF 267.52/bearer share.

<sup>24</sup> Target number of bearer shares for PSP 2015–2017 (4,872 bearer shares) multiplied per bearer share price averaged over the three months (October to December 2014) prior to the start of the performance cycle 2015–2017, CHF 273.66/bearer share.

<sup>25</sup> Includes an annual expense allowance (CHF 30,000) and payments for tax consulting services (CHF 3,186; 2015: CHF 2,586). Additionally, employer contribution to AHV/IV/ALV of CHF 612,119 was paid that does not form part of compensation.

AUDITED

### 5.4 Base pay of the other members of the Corporate Executive Committee

#### Base pay (in CHF)

	2016	2015
R. Diggelmann	1,300,000	1,275,000
A. Hippe	1,600,000	1,600,000
G.A. Keller	1,500,000	1,500,000
D. O'Day	2,500,000	2,375,000
C. A. Wilbur	686,668*	n.a.
S. Ayyoubi (retired from the Corporate Executive Committee in March 2016)	750,000	1,200,000
<b>Total</b>	<b>8,336,668</b>	<b>7,950,000</b>

n.a. – not applicable

\* Base pay 2016 including prorated remuneration for the period from March to December 2016 as member of the Corporate Executive Committee.

AUDITED

**5.5 Bonuses of the other members of the Corporate Executive Committee**

The Remuneration Committee of the Board of Directors determined the Corporate Executive Committee members' bonuses based on the performance 2016 against the agreed objectives. The total aggregate amount of bonuses will be brought forward for a binding vote by the Annual General Meeting 2017.

Except for Dr Severin Schwan, all members of the Corporate Executive Committee will receive the bonus 2016 as a 100% cash payment which is due in April 2017. Dr Severin Schwan will receive the bonus in form of Roche shares which are blocked for 10 years. Bonus payment is due in April 2017 (see page 141).

**Bonus (in CHF)**

	2016 (subject to approval of the total aggregate bonuses of the Corporate Executive Committee by the Annual General Meeting 2017)	2015
R. Diggelmann	1,250,000	1,400,000
A. Hippe	1,900,000	2,100,000
G.A. Keller	1,300,000	1,400,000
D. O'Day	3,000,000	3,100,000
C.A. Wilbur	850,000*	n.a.
S. Ayyoubi (retired from the Corporate Executive Committee in March 2016)	800 000	1,600,000
<b>Total</b>	<b>9,100,000</b>	<b>9,600,000</b>

n.a. – not applicable

\* Prorated remuneration for the period from March to December 2016.

**5.6 Stock-settled Stock Appreciation Rights (S-SARs) of the other members of the Corporate Executive Committee**

The S-SARs shown in the 5.16.2 'S-SARs' table on page 149 entitle holders to benefit financially from any increase in the value of Roche's non-voting equity securities (NES) between the grant date and the exercise date. The strike price for S-SARs under the terms of this multi-year plan was the closing price for Roche NES at grant date. All S-SARs vest three years after the grant date. Vested S-SARs can be exercised (converted into NES) within seven years of the grant date. Unexercised S-SARs lapse without compensation.

The fair value of the S-SARs is calculated at the grant date using the trinomial model for American options. The trinomial model is an effective method for valuation of American call options, as it considers the possibility of exercising the option any time prior to maturity (called 'American' option, as compared to a 'European' option, which only allows exercise at their maturity date).<sup>26</sup>

The numbers of S-SARs, the strike prices, expiry dates and grant values for S-SARs are shown in the 5.16.2 'S-SARs' table on page 149. The numbers of S-SARs as calculated at the time of issue have been entered as values in the table on pages 143 and 141.<sup>27</sup>

<sup>26</sup> For further information on the trinomial model for American options: Please refer to Boyle, Phelim P.: 'A lattice framework for options pricing with two state variables', The Journal of Financial and Quantitative Analysis, Volume 23, Issue 1 (Mar 1988), 1–12, [roche.com/trinomial-model.pdf](http://roche.com/trinomial-model.pdf)

<sup>27</sup> See strike prices in table 5.16.2 'S-SARs', page 149.

**Stock-settled Stock Appreciation Rights (S-SARs) (in CHF)**

	S-SARs 2016	S-SARs 2015
R. Diggelmann	866,889	780,380
A. Hippe	1,066,810	1,040,290
G.A. Keller	1,000,050	975,280
D. O'Day	1,666,751	1,300,200
C.A. Wilbur	456,949	n.a.
S. Ayyoubi (retired from the Corporate Executive Committee in March 2016)	800,010*	780,380
<b>Total</b>	<b>5,857,459</b>	<b>4,876,530</b>

n.a. – not applicable

\* Grant 2016: 26,855 S-SARs, grant value CHF 29.79 per S-SARs, price CHF 251.50, expiry date 3.3.2023.

**5.7 Restricted Stock Units of the other members of the Corporate Executive Committee**

Restricted Stock Units (RSUs)—rights to receive non-voting equity securities after a three-year vesting period plus a value adjustment (being the amount equivalent to the sum of the dividend paid during the vesting period attributable to the number of non-voting equity securities for which an individual award has been granted)—were introduced in 2013 as a new remuneration component partially replacing S-SARs. The value of S-SAR awards was reduced to 65% and the 35% balance is awarded in the form of RSUs. RSU

awards are allocated individually at the Remuneration Committee's discretion and will be vested to the recipient after three years only. Thereafter, resulting non-voting equity securities may remain blocked for up to 10 years.

In 2016, RSUs as remuneration component for the Corporate Executive Committee were replaced by awarding of corresponding PSPs. Therefore, the variable long-term incentive programmes for the Corporate Executive Committee comprise PSP awards and S-SARs, approximately 50% each.

**Restricted Stock Units (RSUs)**

	(number)	2016 (value in CHF)	(number)	2015 (value in CHF)
R. Diggelmann			1,639	419,748
A. Hippe	Since 2016 for Corporate Executive Committee replaced by award of corresponding PSPs		2,186	312,606*
G.A. Keller			2,049	293,015*
D. O'Day			2,733	699,921
C.A. Wilbur			n.a.	n.a.
S. Ayyoubi (retired from the Corporate Executive Committee in March 2016)				1,639
<b>Total</b>			<b>10,246</b>	<b>2 057,768</b>

n.a. – not applicable

\* Calculation of value in consideration of reduction of value due to an additional blocking period of 10 years, reduced market value: 55.839%.

\*\* Calculation of value in consideration of reduction of value due to an additional blocking period of 4 years, reduced market value: 79.209%.

Calculation of value 2015: Number of RSUs 2015 multiplied by grant value of CHF 256.10 (NES closing price at grant date on 5 March 2015) per RSU.

**5.8 Performance Share Plan (PSP) of the other members of the Corporate Executive Committee**

Starting in 2016, PSP awards as a remuneration component are reserved for the Corporate Executive Committee and the Enlarged Corporate Executive Committee while in previous years other members of

senior management participated in the Performance Share Plan.

The PSP consists of overlapping three-year performance cycles, with a new cycle beginning each year. In 2016, there were thus three cycles in progress

(PSP 2014–2016, PSP 2015–2017 and 2016–2018), whereas PSP 2014–2016 closed on 31 December 2016 with none of the targeted NES awarded (PSP 2013–2015 [per 31 December 2015]: 50% of the targeted NES awarded; PSP 2012–2014 [per 31 December 2014]: 175% of the targeted NES awarded). For the historical PSP performance see 3.1.5).

Under the provisions of this plan, a number of non-voting equity securities (NES) or bearer shares have been reserved for the participants in each cycle. The number of securities actually awarded will depend on whether and to what extent an investment in Roche securities (shares and NES) outperforms the average return on an investment in securities issued by a peer set of peer companies.<sup>28</sup> Comparisons are based on the securities' market prices and dividend yields, ie, on Total Shareholder Return (TSR). To reduce the effect of short-term market fluctuations, security prices are averaged over the three months (October to December) prior to the start of a performance cycle and over the three months (October to December) at the end of the cycle.

If Roche securities perform better than the average of the peer set, the Board of Directors can elect to increase the NES or bearer shares award. The maximum award is double the original-level reserved target number of NES or bearer shares according to the PSP plan (plus a value adjustment being the amount equivalent to the sum of the dividend paid during the vesting period attributable to the number of non-voting equity

securities or bearer shares for which an individual award has been granted) and requires that Roche securities perform as well as or better than those of 75% of the peer set. In the event that an investment in Roche securities underperforms the average return delivered by the peer companies, fewer or no NES or bearer shares will be awarded.

In 2016, bearer shares were reserved under the plan for members of the Corporate Executive Committee as shown in the table on page 145 and on page 141. The Board of Directors will decide on the actual level of NES, bearer shares or cash equivalent awards for the PSP cycles 2015–2017 and 2016–2018 after the close of the 2017 and 2018 financial years, respectively. The aim of the PSP is to provide an incentive to participants to achieve long-term value growth.

At the end of the PSP 2014–2016 cycle (based on a three-month average) with distributed dividends totalling CHF 20.616 billion (2016: CHF 6.987 billion; 2015: CHF 6.901 billion; 2014: CHF 6.728 billion), according to the terms of the plan, the participants received none of the originally targeted NES.

In 2016 for the first time, RSUs for the Corporate Executive Committee were replaced by awarding of corresponding PSPs. Therefore, the long-term incentive programmes for the Corporate Executive Committee comprise PSP and S-SAR awards, approximately 50% each.

#### Performance Share Plan (PSP)

	2016			2015		
	Target number of bearer shares for PSP 2016–2018 (number)	Fair value at grant per bearer share, bearer share prices averaged over the three months (October to December 2015) prior to the start of the performance cycle PSP 2016–2018 (value in CHF)	Fair value of target number of bearer shares for PSP 2016–2018 (value in CHF)	Target number of bearer shares for PSP 2015–2017 (number)	Fair value at grant per bearer share, bearer share prices averaged over the three months (October to December 2014) prior to the start of the performance cycle PSP 2015–2017 (value in CHF)	Fair Value at target number of bearer shares for PSP 2015–2017 (value in CHF)
R. Diggelmann	3,239	267.52	866,497	1,461	273.66	399,817
A. Hippe	3,987	267.52	844,845*	1,948	273.66	533,090
G.A. Keller	3,738	267.52	999,990	1,827	273.66	499,977
D. O'Day	6,230	267.52	1,666,650	2,436	273.66	666,636
C.A. Wilbur	1,706	267.52	456,389	n.a.	n.a.	n.a.
S. Ayyoubi**	997	267.52	211,264*	1,461	273.66	399,817
<b>Total</b>	<b>19,897</b>	<b>267.52</b>	<b>5,045,635</b>	<b>9,133</b>	<b>273.66</b>	<b>2,499,337</b>

n.a. – not applicable

\* Calculation of value of non-voting equity securities/shares in consideration of reduction of value due to blocking period of 4 years (reduced market value: 79.209%).

\*\* Retired from the Corporate Executive Committee in March 2016.

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#### 5.9 Indirect benefits of the other members of the Corporate Executive Committee

Employer contributions made in 2016 to social security schemes, pension plans and a Group-wide employee stock purchase plan (Roche Connect) in respect of members of the Corporate Executive Committee are shown in the 'Indirect benefits (employer contributions)' table on page 146 and employer contributions as shown in the table on page 141.

Roche Connect is a voluntary stock purchase plan offering employees the opportunity to buy Roche non-voting equity securities (NES) up to an amount equal to 10% of their annual salary at a 20% discount. NES purchased under this plan are subject to a holding period, which is four years in Switzerland.

In addition, members of the Corporate Executive Committee received annual expense allowances and some members payments for foreign tax obligations and tax consulting services as shown in the table on page 146.

<sup>28</sup> See footnote 1, page 127.

**Indirect benefits** (employer contributions) (in CHF)

	Pension funds/ MGB <sup>29</sup> / insurances*	Annual expense allowances	Roche Connect	2016		2015	
				Payments for tax/tax consulting services	Roche Connect	Payments for tax/tax consulting services	Roche Connect
R. Diggelmann	311,576	30,000	15,000	-	-	313,879	30,000
A. Hippe	311,576	30,000	39,996	11,818	39,996	313,879	30,000
G.A. Keller	98,384	30,000	37,500	-	-	98,969	30,000
D. O'Day	311,576	30,000	56,244	915,793	49,992	313,879	30,000
C.A. Wilbur	242,084	30,000	9,372	28,508	n.a.	n.a.	n.a.
S. Ayyoubi**	88,175	30,000	15,000	3,024	15,000	98,969	30,000
<b>Total</b>	<b>1,363,371</b>	<b>180,000</b>	<b>173,112</b>	<b>959,143</b>	<b>142,488</b>	<b>1,139,575</b>	<b>150,000</b>

n.a. - not applicable

\* Including employer contribution of social securities' beneficial parts.

\*\* Retired from the Corporate Executive Committee in March 2016.

<sup>29</sup> MGB: Stiftung der F. Hoffmann-La Roche AG für Mitarbeiter-Gewinnbeteiligung (employee profit-sharing foundation supplementing occupational pension benefits).

**5.10 Other remuneration and loans of members of the Corporate Executive Committee**

Based on contractual obligations, in 2016, Roche paid to individual members of the Corporate Executive Committee for their children's schooling costs totalling CHF 42,300 (2015: CHF 68,340).

All aforementioned additional payments are included in the total remuneration to members of the Corporate Executive Committee.

In 2016, there are no loans or credits granted to the members of the Corporate Executive Committee.

The maximum regular period of notice for members of the Corporate Executive Committee is 12 months. There are no change-of-control clauses in the employment contracts.

**5.11 Remuneration to former members of the Corporate Executive Committee**

In 2016, pensions totalling CHF 2,049,180 (2015: CHF 2,049,180) were paid to former Corporate Executive Committee members.

**5.12 Total remuneration paid to the members of the Corporate Executive Committee**

For the 2016 calendar year, the members of the Corporate Executive Committee received remuneration including bonuses totalling CHF 42,700,144 (2015: CHF 41,150,785), excluding additional employer's contribution paid to AHV/IV/ALV totalling CHF 1,972,422 (2015: CHF 3,688,642) that does not form part of compensation.

No additional remuneration other than the above mentioned payments was paid to current or former members of the Corporate Executive Committee.

**5.13 Executive remuneration subject to approval at the Annual General Meeting**

**5.13.1 Submission of Executive total aggregate bonuses for a binding vote at the Annual General Meeting**

The Board of Directors proposes awarding the members of the Corporate Executive Committee bonuses (for Dr Severin Schwan in form of Roche shares which are blocked for 10 years, for all other members of the Corporate Executive Committee as a 100% cash payment, see 5.5) totalling CHF 11,891,950 in respect of the 2016 financial year (2015: CHF 12,726,984), excluding legally required employer's contributions to AHV/IV/ALV, and will submit this proposed total amount to the ordinary Annual General Meeting (AGM) 2017 for a binding vote.

**Retrospective approvals of the members of the Executive Committee's total aggregate bonuses** (in CHF)\*

	Proposal AGM 2017	AGM 2016	AGM 2015
	Aggregate amount for financial year 2016	Aggregate amount for financial year 2015	Aggregate amount for financial year 2014
<b>Total aggregate amount proposal for approval/ approved by the AGM</b>	<b>11,891,950</b>	<b>12,726,984</b>	<b>10,440,136</b>

\* Excluding legally required employer's contributions to AHV/IV/ALV.

**5.13.2 Submission of Executive total future aggregate remuneration for a binding shareholder vote**

The Board of Directors proposes that the 2017 ordinary AGM approves remuneration for the Corporate Executive Committee totalling not more than CHF 41,000,000 (excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses) for the period ending at the 2018 ordinary AGM.

The amount of Executive total future aggregate remuneration is composed of base pay, long-term

incentives S-SARs (calculated at grant value without considering reductions of value due to blocking periods if applicable) and PSP (calculated at the time of reservation of non-voting equity securities or shares and taking into account their maximal potential to double, without considering reductions of value due to blocking periods), contributions to pension benefits (excluding legally required employer's contributions to AHV/IV/ALV) as well as contributions for expenses, payments for foreign tax obligations, tax consulting services and Roche Connect.

**Prospective approvals of the members of the Executive Committee's total future aggregate remuneration** (in CHF)\*

	Proposal AGM 2017	AGM 2016	AGM 2015
	Aggregate amount for the period AGM 2017-AGM 2018	Aggregate amount for the period AGM 2016-AGM 2017	Aggregate amount for the period AGM 2015-AGM 2016
<b>Total aggregate amount proposal for approval/ approved by the AGM</b>	<b>41,000,000</b>	<b>41,000,000</b>	<b>37,000,000</b>

\* Excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses.

**5.13.3 Reconciliation of the reported remuneration with the shareholders' prospectively approved remuneration for the members of the Corporate Executive Committee**

The 2015 ordinary AGM approved remuneration for the Corporate Executive Committee totalling not more than CHF 37,000,000 (excluding legally required employer's contributions to AHV/IV/ALV and

excluding bonuses) for the period ending at the 2016 ordinary AGM.

For comparison, from 2015 ordinary AGM to ordinary 2016 AGM remuneration amounted to CHF 33,938,257 (excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses. PSP: Assumption of maximum value).

**Prospectively approved total remuneration of the members of the Executive Committee in comparison to total remuneration (in CHF) \***

	Total remuneration for the period AGM 2016–AGM 2017	Total remuneration for the period AGM 2015–AGM 2016	Total remuneration for the period AGM 2014–AGM 2015
Maximum of total remuneration approved by the AGM	41,000,000	37,000,000	36,000,000
Total remuneration	Calculation at end of period	33,938,257	34,004,297**
Within the approved limit	Calculation at end of period	Yes	Yes
Additional amount paid for new members of the Corporate Executive Committee after approval by the AGM and not within the approved total amount	No	No	No

\* Excluding legally required employer's contributions to AHV/IV/ALV and excluding bonuses.

\*\* Due to no award of NES under the PSP 2014-2016 cycle and their originally included calculation of 200% (maximum possible award), the amount of the total remuneration for the period AGM 2014-AGM 2015 is reduced to CHF 26,472,255.

**5.14 Clawback**

In addition to applicable statutory provisions, Roche's long-term incentive plans include the option to partially reclaim distributed compensation as a result of special circumstances (clawback).

If the employee voluntarily serves notice of termination of employment, S-SARs and RSUs which are invested at the date of termination of employment lapse immediately without any compensation.

Upon termination of employment as a result of serious misconduct all S-SARs and RSUs granted and outstanding, whether vested or unvested, shall lapse immediately without any compensation. According to the S-SARs plan rules, serious misconduct by the participant may include (inter alia):

- activity leading to serious disciplinary action
- repeated or willful failure to perform such duties as have been reasonably assigned by Roche
- violation of any law or public regulation
- commission of a crime
- gross negligence or willful misconduct in employment
- engaging in conduct bringing disgrace or disrepute to Roche and/or any of its subsidiaries
- violation of any of Roche's directives and guidelines relating to business conduct

According to the regulations of the PSP programme, the originally targeted but not awarded NES or shares shall lapse without any compensation upon notice of termination of employment being given for any reason other than redundancy, disability or retirement.

**5.15 Guidelines for security holdings**

In 2012, the Board of Directors decided that the CEO Roche Group and other CEC members must acquire shares and/or NES equivalent to two annual base salaries (CEO Roche Group) and one annual base salary, respectively, by the end of 2016 and retain these holdings for as long as they serve on the CEC. With the exception of Cristina A. Wilbur who joined the Corporate Executive Committee in 2016 and who must fulfil the requirement by the end of 2020, all other members of the Corporate Executive Committee fulfil this requirement.

**5.16 Security holdings**

As at 31 December 2016 (as at 31 December 2015, respectively) the members of the CEC and persons closely associated with them held securities as shown in the table 'Shares and non-voting equity securities (NES)', 'S-SARs', 'Restricted Stock Units (RSUs)' below.

	Type of security	Value to be acquired
CEO Roche Group	Shares and/or NES	2 × annual base salary
Members of the Corporate Executive Committee	Shares and/or NES	1 × annual base salary

**5.16.1 Shares and non-voting equity securities (NES)**

	(as at 31 December 2016)			(as at 31 December 2015)		
	Shares (number)	NES (number)	Close relatives' security holdings (number/type)	Shares (number)	NES (number)	Close relatives' security holdings (number/type)
<b>Corporate Executive Committee</b>						
S. Schwan	138,011	29,836	-	115,745	16,179	-
R. Diggelmann	-	5,776	-	-	870	-
A. Hippe	6,970	13,305	-	6,970	9,370	-
G.A. Keller	19,191	18,277	1,100 shares	19,192	12,897	1,100 shares
D. O'Day	3,065	12,896	-	3,065	8,143	-
C.A. Wilbur	-	1,714	-	n.a.	n.a.	n.a.
S. Ayyoubi*	n.a.	n.a.	n.a.	12,622	13,223	-
<b>Total</b>	<b>167,237</b>	<b>81,804</b>	<b>1,100 shares</b>	<b>157,594</b>	<b>60,682</b>	<b>1,100 shares</b>

n.a. – not applicable

\* Retired from the Corporate Executive Committee in March 2016.

**5.16.2 S-SARs**

	Number of S-SARs held on 31 December 2016					
	2016	2015	2014	2013	2012	2011
<b>Corporate Executive Committee</b>						
S. Schwan	89,517	59,997	54,453	71,472	-	-
R. Diggelmann	29,100	18,006	16,338	17,874	15,000	12,732
A. Hippe	35,811	24,003	21,783	28,590	-	-
G.A. Keller	33,570	22,503	20,424	26,805	15,000	-
D. O'Day	55,950	30,000	27,231	35,739	-	-
C.A. Wilbur	15,339	4,164	5,754	4,594	2,122	-
<b>Total</b>	<b>259,287</b>	<b>158,673</b>	<b>145,983</b>	<b>185,074</b>	<b>32,122</b>	<b>12,732</b>
Price (CHF)	251.50	256.10	263.20	214.00	157.50	140.10
Market price per NES on 31 December 2016 (CHF)	232.60					
Expiry date	3.3.2023	5.3.2022	6.3.2021	7.3.2020	8.3.2019	28.2.2018
Grant value per S-SAR (CHF)	29.79	43.34*	47.75*	36.38*	24.41*	15.38*
Since 1.1.2012:						
— Trinomial model for American call options						
* Values according to corresponding annual reports						

**5.16.3 Restricted Stock Units (RSUs)**

		Number of RSUs held on 31 December 2016	
		2015	2014
<b>Corporate Executive Committee</b>			
S. Schwan	Since 2016 for Corporate Executive Committee replaced by award of corresponding PSPs	5,466	5,551
R. Diggelmann		1,639	1,665
A. Hippe		2,186	2,220
G.A. Keller		2,049	2,081
D. O'Day		2,733	2,775
C.A. Wilbur		379	585
<b>Total</b>		<b>14,452</b>	<b>15,983</b>
Grant value per RSU		CHF 256.10 (NES closing price at grant date on 5 March 2015)	CHF 252.19 (NES average market price over a 90 days period prior to grant date on 6 March 2014)  CHF 271.23 (NES average market price over a 90 days period prior to grant date on 30 October 2014)



# Statutory Auditor's Report

## To the General Meeting of Roche Holding Ltd, Basel

We have audited the accompanying remuneration report of Roche Holding Ltd for the year ended 31 December 2016. The audit was limited to the information according to articles 14–16 of the Ordinance against Excessive Compensation in Stock Exchange Listed Companies (the Ordinance) contained in the sections marked with a blue line, including the respective footnotes, on pages 124 to 150 of the remuneration report.

### Responsibility of the Board of Directors

The Board of Directors is responsible for the preparation and overall fair presentation of the remuneration report in accordance with Swiss law and the Ordinance. The Board of Directors is also responsible for designing the remuneration system and defining individual remuneration packages.

### Auditor's Responsibility

Our responsibility is to express an opinion on the accompanying remuneration report. We conducted our audit in accordance with Swiss Auditing Standards. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the remuneration report complies with Swiss law and articles 14–16 of the Ordinance.

An audit involves performing procedures to obtain audit evidence on the disclosures made in the remuneration report with regard to compensation, loans and credits in accordance with articles 14–16 of the Ordinance. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatements in the remuneration report, whether due to fraud or error. This audit also includes evaluating the reasonableness of the methods applied to value components of remuneration, as well as assessing the overall presentation of the remuneration report.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

### Opinion

In our opinion, the remuneration report for the year ended 31 December 2016 of Roche Holding Ltd complies with Swiss law and articles 14–16 of the Ordinance.

KPMG AG

Ian Starkey  
Licensed Audit Expert  
Auditor in Charge

Marc Ziegler  
Licensed Audit Expert

Basel, 24 January 2017

KPMG AG, Viaduktstrasse 42, PO Box 3456, CH-4002 Basel

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# Independent Assurance Report on the Roche Sustainability Reporting 2016

To the Corporate Governance and Sustainability Committee of Roche Holding AG, Basel.

We have been engaged to perform assurance procedures to provide limited assurance on the aspects of the 2016 Sustainability Reporting of Roche Holding AG, Basel and its consolidated sub-sidiaries ('Roche') included in the Annual Report 2016 ('Report').

## Scope and Subject matter

Our limited assurance engagement focused on the following data and information disclosed in the Sustainability Reporting of Roche for the year ended on December 31, 2016:

- the management of reporting processes with respect to the Sustainability Reporting in all material aspects and the preparation of Safety, Security, Health and Environmental protection ('SHE'), people key figures as well as the related control environment in relation to the data aggregation of these key figures;
- the materiality determination process of Roche at group level according to the requirements of the GRI G4 guidelines and disclosed on pages 2 and 3 of the Report;
- the design of the sustainability risks and opportunities determination process based on Roche corporate-level activities, disclosed on page 2 in the paragraph 'Risk Management' of the Report;
- people key figures disclosed on pages 70 to 75 of the Report and the SHE key figures (including greenhouse gas emissions for scope 1 & 2 and scope 3 resulting from business travel, compressed air, liquid nitrogen and waste generated in operations) in the tables and graphs on pages 80 to 87 of the Report; and
- the consolidated data and information on the Roche Group level in relation to the contributions breakdown, disclosed on pages 104 and 105 of the Report.

We have not carried out any work on data re-reported for prior reporting periods, nor have we performed work in respect of projections and targets.

## Criteria

The management reporting processes with respect to the Sustainability Reporting and key figures were prepared by Roche based on the internal policies and procedures as set forth in the following:

- the Roche Group internal Sustainability Reporting guidelines based on the Responsible Care Health, Safety and Environmental Protection reporting guidelines published by the European Chemical Industry Council CEFIC and the 'Sustainability Reporting Guidelines G4' published in 2013 by the Global Reporting Initiative (GRI);
- the Roche Group internal Corporate Reporting Manual, Version 2016.9 'Sustainability Reporting Guidance—Economic Performance';
- the Roche materiality determination process at corporate level based on the 'Sustainability Reporting Guidelines G4' published in 2013 by the Global Reporting Initiative (GRI);
- the defined guidelines, by which SHE, people and contributions key figures, and sustainability risks and opportunities are internally gathered, collated and aggregated.

## Inherent Limitations

The accuracy and completeness of sustainability indicators are subject to inherent limitations given their nature and methods for determining, calculating and estimating such data. Our assurance report should therefore be read in connection with Roche's internal guidelines, definitions and procedures on the reporting of its sustainability performance.

## Roche's Responsibilities

The Roche Corporate Governance and Sustainability Committee is responsible for both the subject matter and the criteria as well as for selection, preparation and presentation of the selected information in accordance with the criteria. This responsibility includes the design, implementation and maintenance of related internal control relevant to this reporting process that is free from material misstatement, whether due to fraud or error.

## Our Responsibility

Our responsibility is to form an independent opinion, based on our limited assurance procedures, on whether anything has come to our attention to indicate that the identified sustainability information selected and contained in this report is not stated, in all material respects, in accordance with the reporting criteria.

We planned and performed our procedures in accordance with the International Standard on Assurance Engagements (ISAE 3000) (revised) 'Assurance engagements other than audits or reviews of historical financial information'. This standard requires that we comply with ethical requirements, plan and

perform the assurance engagement to obtain limited assurance on the identified sustainability information.

A limited assurance engagement under ISAE 3000 (revised) is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks. Consequently, the nature, timing and extent of procedures for gathering sufficient appropriate evidence are deliberately limited relative to a reasonable assurance engagement and therefore less assurance is obtained with a limited assurance engagement than for a reasonable assurance engagement.

The procedures selected depend on the assurance practitioner's judgement.

## Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

## Summary of work performed

Our assurance procedures included, amongst others, the following work:

- **Evaluation of the application of Roche Group guidelines**  
Reviewing the application of the Roche Group internal corporate sustainability and contributions guidelines;
- **Site visits and management inquiry**  
Visiting selected sites of Roche's Pharmaceuticals and Diagnostics divisions in the USA, Germany, Japan, Vietnam and Indonesia. The selection was based on quantitative and qualitative criteria;  
Interviewing personnel responsible for internal sustainability reporting and data collection at the sites we visited and at the Roche Group level to determine the understanding and application of Roche's internal sustainability guidelines;
- **Assessment of the key figures**  
Performing tests on a sample basis of evidence supporting selected SHE, contributions and people key figures (ie, Roche accident rate, energy consumption, greenhouse gas emissions related to energy consumption, halogenated hydrocarbons, water, waste, contributions to healthcare institutions, patient organisations, public policy bodies, and philanthropic organisations, headcount/FTE data, and training hours) concerning completeness, accuracy, adequacy and consistency;

## Inspection of documentation and analysis of relevant policies and principles

Inspecting relevant documentation on a sample basis, including Roche Group sustainability policies, management of reporting structures and documentation;  
Inspecting the principles of the Roche materiality process providing the definition for the development of its adherence to GRI's environmental, social and economic reporting requirements addressing the soundness of the identification process, determination of impacted stakeholders, peer and competition review, integration of relevant regulatory requirements, integration of key organisational values and objectives and report prioritisation of material aspects; and  
Inspecting the integration of the sustainability risks and opportunities in the Group Risk Management Process and its adherence to the internal guidelines;

- **Assessment of the processes and data consolidation**  
Reviewing the management of/and Sustainability Reporting processes for SHE, contributions and people key figures; and  
Assessing the consolidation process of data at Roche Group level.

We have not conducted any work on data other than outlined in the subject matter as defined above. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our assurance conclusions.

## Conclusion

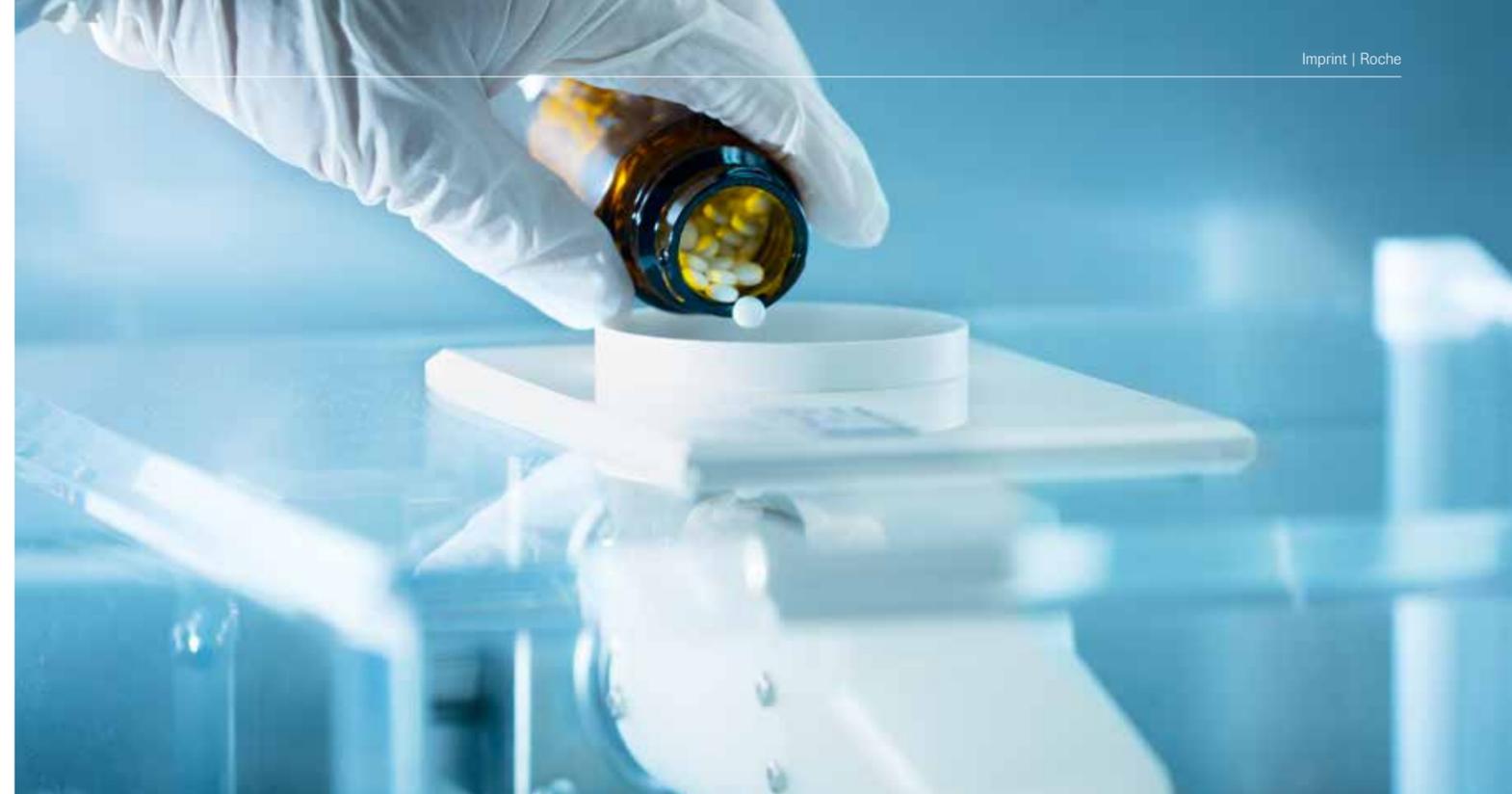
Based on our work performed and described in this report on the identified Roche' Sustainability Reporting 2016 nothing has come to our attention causing us to believe that in all material respects:

- the Roche Group internal sustainability reporting guidelines based on the GRI G4 Sustainability Reporting Guidelines as well as the CEFIC Guidelines are not applied;
- the Roche materiality determination process at corporate level as disclosed does not adhere to the principles and guiding factors (e.g. soundness, stakeholder determination, peer review, relevance of regulatory environment, integration of key organisational values and objectives) defined with GRI G4;
- the design of the sustainability risks and opportunities determination process at corporate level as disclosed does not function as designed;
- the internal reporting processes to collect and aggregate SHE and people data are not functioning as designed and provide an appropriate basis for its disclosure;
- the internal reporting processes to collect and aggregate contributions data are not functioning as designed and provide an appropriate basis for its disclosure; and
- the sustainability information mentioned in the subject matter and disclosed within the Sustainability Reporting in the Roche Annual Report 2016 is not stated, in accordance with the reporting criteria.

Zurich, 24 January 2017  
PricewaterhouseCoopers AG

Christophe Bourgoin

Bettina Buomberger



## Key dates for 2017

### Annual General Meeting

14 March 2017

### First-quarter sales

25 April 2017

### Half-Year results

27 July 2017

### Nine months sales

19 October 2017

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### Cautionary statement regarding forward-looking statements

This Annual Report contains certain forward-looking statements. These forward-looking statements may be identified by words such as 'believes,' 'expects,' 'anticipates,' 'projects,' 'intends,' 'should,' 'seeks,' 'estimates,' 'future' or similar expressions or by discussion of, among other things, strategy, goals, plans or intentions. Various factors may cause actual results to differ materially in the future from those reflected in forward-looking statements contained in this Annual Report, among others: (1) pricing and product initiatives of competitors; (2) legislative and regulatory developments and economic conditions; (3) delay or inability in obtaining regulatory approvals or bringing products to market; (4) fluctuations in currency exchange rates and general financial market conditions; (5) uncertainties in the discovery, development or marketing of new products or new uses of existing products, including without limitation negative results of clinical trials or research projects, unexpected side effects of pipeline or marketed products; (6) increased government pricing pressures; (7) interruptions in production; (8) loss of or inability to obtain adequate protection for intellectual property rights; (9) litigation; (10) loss of key executives or other employees; and (11) adverse publicity and news coverage.

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The Roche Annual Report is published in German and English.

Our reporting consists of the actual Annual Report and of the Finance Report and contains the annual financial statements and the consolidated financial statements. With regards to content, the Management Report as per the Articles of Incorporation consists of both aforementioned reports with the exception of the Remuneration Report.

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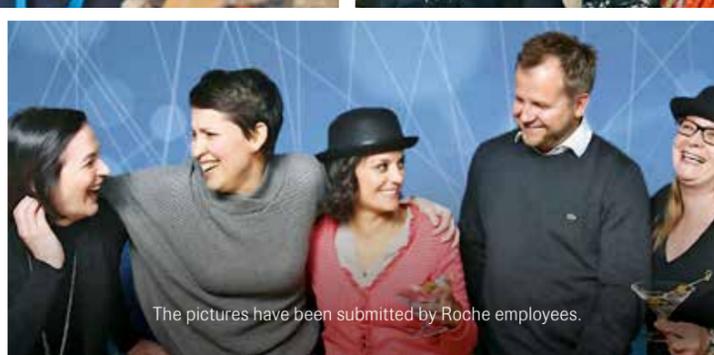
## *Doing now what patients need next*

*We believe it's urgent to deliver medical solutions right now—even as we develop innovations for the future. We are passionate about transforming patients' lives. We are courageous in both decision and action. And we believe that good business means a better world.*

*That is why we come to work each day. We commit ourselves to scientific rigour, unassailable ethics, and access to medical innovations for all. We do this today to build a better tomorrow.*

*We are proud of who we are, what we do, and how we do it. We are many, working as one across functions, across companies, and across the world.*

**We are Roche.**



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The pictures have been submitted by Roche employees.

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