BOEHRINGER INGELHEIM

2020

Partners

TOGETHER WE
SHAPE THE FUTURE
OF HEALTHCARE

Boehringer Ingelheim

BOEHRINGER INGELHEIM 2020 AT A GLANCE

Boehringer Ingelheim is one of the world's 20 leading pharmaceutical companies.

FOUNDED IN

1885

IN INGELHEIM AND FAMILY-OWNED TO THIS DAY

51,944

EMPLOYEES WORLDWIDE

THEREOF

9,504

IN RESEARCH AND DEVELOPMENT

3.7

BILLION EUR EXPENDITURE IN RESEARCH AND DEVELOPMENT

EQUIVALENT TO

18.9 %

OF TOTAL NET SALES

BUSINESS UNITS

HUMAN PHARMA

THERAPEUTIC AREAS

- Cardiovascular and metabolic diseases
- Oncology
- Respiratory diseases
- Immunology
- Central nervous system
- Retinal health

ANIMAL HEALTH

BUSINESS SEGMENTS

- Cattle/Ruminants
- Swine
- Poultry
- Horse
- Pets
- Veterinary Public Health

BIOPHARMACEUTICAL CONTRACT MANUFACTURING

PORTFOLIO

- Joint development, launch, and manufacturing activities for own biopharmaceutical products
- Contract development and manufacturing for clinical and commercial biopharmaceuticals in the external customer business
- Process transfer within the global biopharmaceutical supply network

Why We Believe in Partnerships

Patients are the reason we come to work each day. They inspire us in our mission to create breakthrough therapies that change lives. Developing new medicines and treatment options for humans and animals is a top priority for Boehringer Ingelheim's employees – and has been for over 135 years.

Every day our scientists are continuing this commitment to innovation by taking the paths scientifically less travelled. We focus on areas of unmet medical need and thus make a major contribution to improving health. We are innovative in order to provide our patients with a better quality of life and to ensure progressive, preventive animal health.

Our goal is to make sure that we stay at the forefront of science and technology. To achieve our vision, we embrace the power of partnerships and alliances. We supplement our in-house expertise by cooperating with academic institutions and other companies with which we jointly develop scientific innovations.

Within the life science community, we are currently pursuing more than 150 partnerships which represent around 50 percent of our pipeline projects. We share our knowledge and experience and provide promising startups with advice and support in order to accelerate the process from the germination of an idea to the realization of a therapeutic option. We are convinced that by working together we can learn more, do more, and achieve more.

Our commitment to partnerships applies both within our company and outwardly. We are team workers and innovators, and we encourage a diverse, collaborative, and open environment. We work with passion and integrity while aiming for success. We approach one another with respect, trust, and empathy and share a joint vision: to improve human and animal health.

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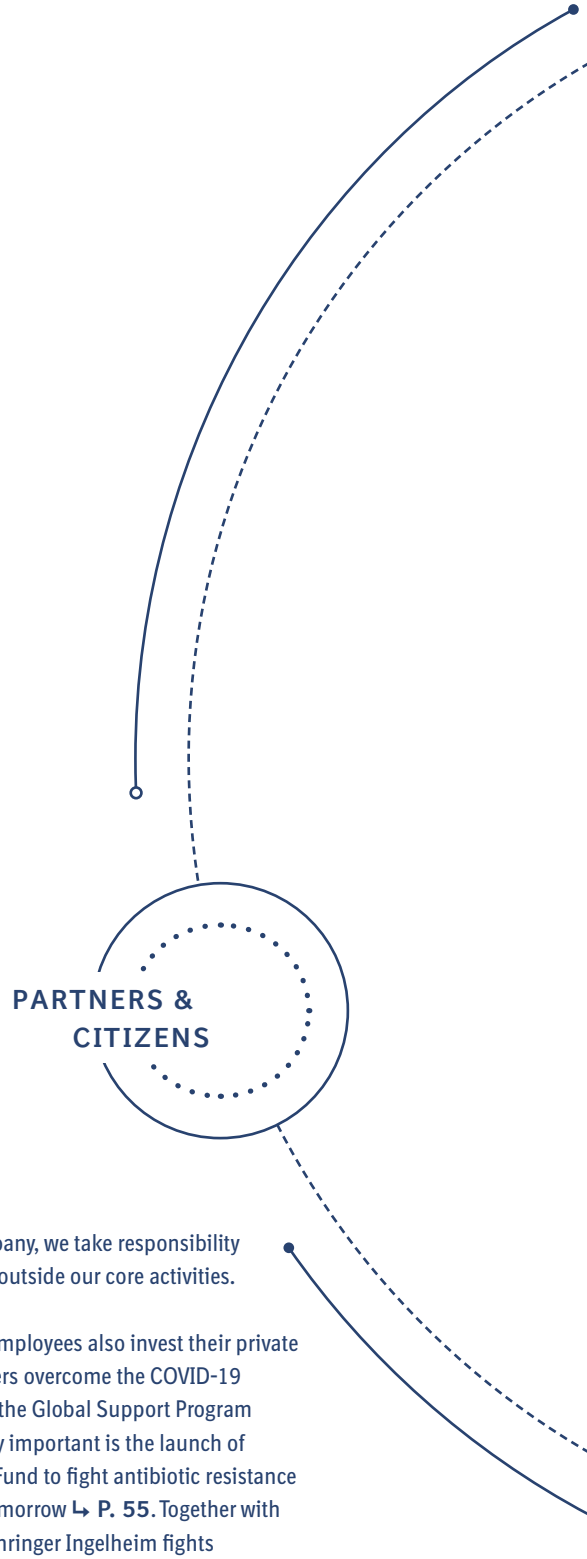
We live in extraordinary times. The COVID-19 pandemic has been a huge burden on people around the world. Together with our partners, we want to make a contribution to reducing the impact on humans and animals. The COVID-19 pandemic has once again made us aware that we must find solutions together.

We at Boehringer Ingelheim live the power of partnerships by embracing the diversity of experts across the life science community. Together, we can accelerate the development of new and innovative medicines which will transform the lives of humans and animals around the world.



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As a global company, we take responsibility both within and outside our core activities.

This is why our employees also invest their private time to help others overcome the COVID-19 pandemic, as in the Global Support Program ↳ **P. 52**. Equally important is the launch of the AMR Action Fund to fight antibiotic resistance for a healthier tomorrow ↳ **P. 55**. Together with its partners, Boehringer Ingelheim fights non-communicable diseases (NCDs) ↳ **P. 57**.

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Making new and better medicines for humans and animals is at the heart of what we do.

We support the scientific fight against COVID-19 ↳ **P. 14.** We form coalitions to eradicate the KRAS protein ↳ **P. 18.** We explore additional areas of application for key products, such as OFEV® ↳ **P. 20** and JARDIANCE® ↳ **P. 22.** And we strengthen our partnerships in the field of retinal health and rare skin diseases ↳ **P. 26.** In Animal Health, we reinforce our strategy to become even better, quicker, and more focused ↳ **P. 28.**

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Supplying patients with the medicines they need is our highest priority.

In times of COVID-19, our team workers at our production sites have maintained a steady production workflow – even under very difficult conditions ↳ **P. 34.** Our state-of-the-art production network in Human Pharma secures a solid supply of patients across the globe ↳ **P. 38.**

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We realize more scientific opportunities by embracing the power of partnership and diversity within our company.

Cooperation with internal and external partners is crucial for our success. Under the headline “The work of tomorrow", we highlight how our work is changing ↳ **P. 42.** Digital transformation plays a major role in this undertaking ↳ **P. 45.** Our new partnership with Google Quantum AI in quantum computing has the potential to revolutionize the research and development of medicines ↳ **P. 48.**

2020 IN FOCUS

2020 was an extraordinary year for the entire world, characterized by the fight against COVID-19. Boehringer Ingelheim has been heavily involved in the search for treatment options against the disease. In addition, the company has worked with its partners in many areas on innovative solutions to improve human and animal health. Here are some of the highlights.

NEW NEUTRALIZING ANTIBODY AGAINST COVID-19 ENTERS CLINICAL PHASE

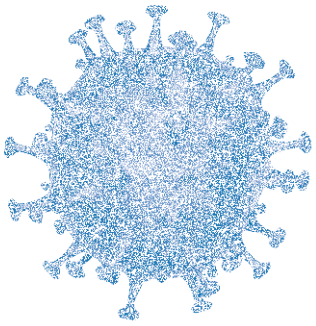
Boehringer Ingelheim is part of a research collaboration with Cologne University Hospital, the University of Marburg, and the German Center for Infection Research (DZIF), that initiated the Phase 1/2a clinical investigation of BI 767551, a new SARS-CoV-2 neutralizing antibody, in December 2020. The partners are seeking to develop BI 767551 as a new therapeutic and preventative option for the treatment of COVID-19 patients.

EUROPE'S LARGEST INITIATIVE TO ACCELERATE THERAPY DEVELOPMENT

CARE (Corona Accelerated R&D in Europe) is the largest undertaking in Europe to discover and develop urgently needed treatment options for COVID-19. Boehringer Ingelheim leads the work stream on the development of virus-neutralizing antibodies.

GLOBAL SUPPORT PROGRAM

In April 2020, Boehringer Ingelheim launched a Global Support Program to bring more financial relief, protective materials, and medicine donations to healthcare institutions and communities in need around the world.



LAUNCH OF EXTERNAL INNOVATION HUB IN CHINA

In the year marking the company's 25th anniversary in China, Boehringer Ingelheim launched its External Innovation Hub in Shanghai in July 2020. The hub integrates the company's external-facing functions for China under one roof, including Research Beyond Borders, Business Development & Licensing, and the Boehringer Ingelheim Venture Fund.

JARDIANCE® ON THE FAST TRACK

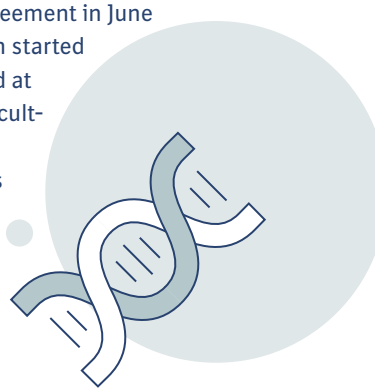
In March 2020, the US regulatory authority FDA granted fast-track designation for the investigation of JARDIANCE® (empagliflozin) for reducing the risk of kidney disease progression and cardiovascular death in adults with chronic kidney disease.

Positive results of the EMPEROR-Reduced trial, which investigated the effect of empagliflozin in heart failure with reduced ejection fraction, were presented in August 2020. These results led to submissions to the FDA, the European Medicines Agency, and other health authorities seeking approval for this indication.

Empagliflozin is currently approved to reduce hyperglycemia in adults with type 2 diabetes and for reducing the risk of cardiovascular death in patients with type 2 diabetes and known cardiovascular disease.

COLLABORATION TO DEVELOP ANTIBODY THERAPEUTICS FOR CANCER AND RETINAL DISEASES

Boehringer Ingelheim and Numab Therapeutics entered into a research collaboration and worldwide licensing agreement in June 2020. This collaboration started with two projects aimed at novel therapies for difficult-to-treat lung and gastrointestinal cancers and patients with geographic atrophy (GA), a progressive, irreversible retinal disease.



ESSENTIAL ADDITIONS TO CANCER RESEARCH

In December 2020, Boehringer Ingelheim announced that it is acquiring the biotechnology company NBE-Therapeutics based in Basel, Switzerland. This acquisition will add exceptional tumor targeting capabilities to the oncology portfolio of Boehringer Ingelheim. With its antibody drug conjugate (ADC) technology platform, NBE-Therapeutics focuses on targeted cancer therapies. This will add another key dimension to Boehringer Ingelheim's focus on targeted cancer cell-directed therapies and patients with difficult-to-treat solid tumors.

In addition, Boehringer Ingelheim acquired Labor Dr. Merk & Kollegen, a German biotech company, in order to expand its R&D and clinical manufacturing capabilities in ATMP (Advanced Therapy Medicinal Products)-based cancer immunology treatments.

OFEV®: EU APPROVAL OF THIRD INDICATION

In July 2020, the European Commission approved an additional indication for OFEV® (nintedanib). OFEV® is now also approved for use in adults for the treatment of chronic fibrosing interstitial lung diseases (ILDs) with a progressive phenotype.

STRENGTHENING RESEARCH FOR STEM CELL THERAPIES IN ANIMAL HEALTH

After two years of successful partnership, Boehringer Ingelheim acquired the Belgium-based biotech company Global Stem cell Technology (GST) in July 2020. GST develops and produces state-of-the art stem cell products for horses and pets. Already in 2019, both companies launched ARTI-CELL® FORTE in Europe, the first-ever stem cell product in the veterinary world granted marketing authorization by the European Commission.

INNOVATION FOR THE CHINESE PET MARKET

In September 2020, Boehringer Ingelheim acquired an equity stake in the China-based New Ruipeng Group, a company that specializes providing medical care services for pets. Boehringer Ingelheim is thus investing in a partnership to bring additional innovation to the Chinese pet market. China's pet market is one of the fastest growing pet markets in the world.

NEW BIOPHARMACEUTICAL PRODUCTION FACILITY IN VIENNA ON ITS WAY

Preparations for the new biopharmaceutical production facility in Vienna, the so-called Large-Scale Cell Culture (LSCC), are progressing well. The mechanical completion was finished in summer 2020 to demonstrate sterility. The sterility of bio-reactors is fundamental to cultivating cell cultures, and a first trial for the fermentation of cell cultures was performed in late 2020. Boehringer Ingelheim will inaugurate the LSCC, the single largest capital investment ever made by the company, in 2021.

MAKING MORE HEALTH CELEBRATES TEN YEARS OF SUCCESFUL IMPACT

Making More Health (MMH) is a long-term initiative driven by Boehringer Ingelheim that seeks to identify new and better ways of improving health globally. In 2020, MMH celebrated its tenth anniversary, supporting a broad range of innovative solutions that increase access to healthcare. In building on a long-standing partnership between Boehringer Ingelheim and the non-profit organization Ashoka, MMH has since built a large network of co-creation projects with social entrepreneurs around the world. Focus areas include health awareness trainings, income generation projects, investments in infrastructures, and accelerator programs.

Making more health

FIGHTING ANTIMICROBIAL RESISTANCE

The fight against antimicrobial resistance (AMR) is one of the most urgent global medical challenges. Boehringer Ingelheim is participating in the AMR Action Fund, launched in July 2020, and is contributing 50 million USD to the innovative collective venture. The broad alliance of industrial and non-industrial stakeholders aims to bring two to four new antibiotics to patients by the end of this decade.

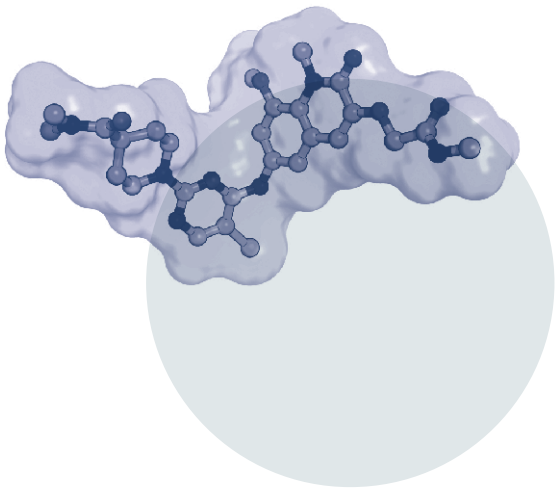
Boehringer Ingelheim contributes

50

million USD to the AMR Action Fund.

OPNME.COM – MOLECULES FOR FREE, COLLABORATIONS FOR SCIENCE

Boehringer Ingelheim spearheads open innovation by sharing free molecules to foster independent research. Exceeding 1,000 orders from 58 countries, opnMe.com is a real success. In 2020, a paper in the scientific journal Nature analyzed a novel cellular protein degradation mechanism that was explored with one of our molecules.



BETTER

TOGETHER

Since its foundation, Boehringer Ingelheim has emphasized the power of collaboration and long-term cooperation. This partnership-based approach does not only make the company more innovative, but it also helps to circumvent major challenges such as the COVID-19 pandemic.

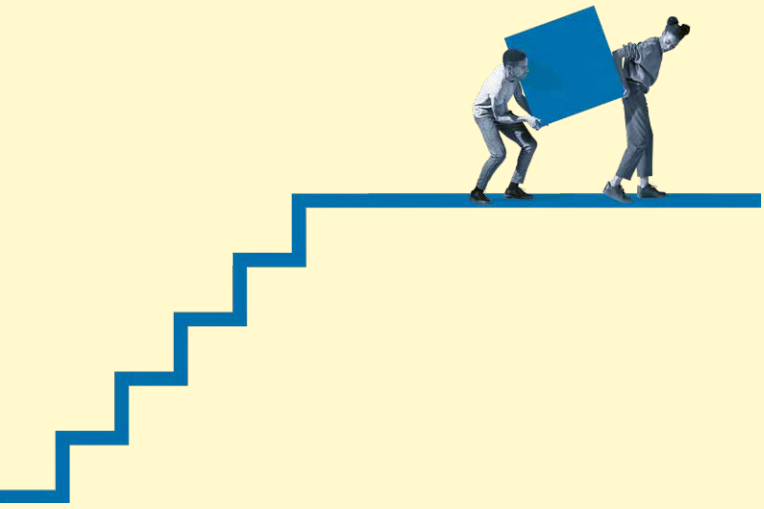
As the novel coronavirus (SARS-CoV-2) began rapidly spreading worldwide, governments could initially do little more than keeping people apart. They also banned travel and recommended that people work from home while shutting down public life. The measures adopted in many countries to curb the pandemic were as far-reaching as they were unprecedented – and they slowed the spread of the virus. Yet by the fall of 2020, it was already clear that these successes were merely temporary. More precise tools – therapies and vaccines – are needed if the COVID-19 disease is to be effectively treated or even defeated. Developing these tools requires the opposite of isolation: international cooperation.

For this reason, Boehringer Ingelheim is working intensively with the CARE consortium (Corona Accelerated R&D in Europe), a collaborative project of 37 research institutions and pharmaceutical companies. Together, they are developing antibodies to neutralize the virus. Boehringer Ingelheim is also active in the COVID-19 Therapeutics Accelerator by the Bill & Melinda Gates Foundation. Scientists are using algorithms to comb through Boehringer Ingelheim's molecular library in search of

small molecules which may be able to attack specific viral enzymes. And they are systematically reviewing whether the already available substances from Boehringer Ingelheim's HIV and hepatitis C research can be used to treat COVID-19 patients as well.

With all of these research initiatives, it was only natural for Boehringer Ingelheim to share its knowledge. "It's all about the patients' well-being and stopping the COVID-19 pandemic," says Hubertus von Baumbach, Chairman of the Board of Managing Directors of Boehringer Ingelheim. Isolated efforts are the wrong strategy. "We need medical solutions for people worldwide within a relatively short period of time. We will only improve our prospects if as many partners as possible collaborate and contribute their knowledge and experience."

Every time experts combine their insights, this produces new knowledge.



Transforming research results into the making of a new drug for patients is sometimes better achieved in cooperation. This was the case with risankizumab. Originally developed by Boehringer Ingelheim, this monoclonal antibody is now part of a collaboration between Boehringer Ingelheim and AbbVie, with AbbVie leading development and global commercialization. Since 2019, it has been marketed by AbbVie under the name Skyrizi® for the treatment of moderate to severe plaque psoriasis.

Shared Knowledge

This approach is neither new to the industry nor to science. The Japanese co-founders of the modern approach to knowledge management, Ikujirō Nonaka and Hirotaka Takeuchi, use a "knowledge spiral" concept to illustrate the circular mechanism involved. Every time experts combine their insights, this produces new knowledge. When various people work together on a team, a number of possible solutions automatically present themselves. New strategies may even arise when a team member adopts their colleagues' ideas, takes them a step further and combines them with their own ideas. Anyone who has ever organized a brainstorming event will be familiar with this productive circular effect.

This can be observed on a large scale since scientists began systematically recording their ideas and sharing them with each other. They cooperate in the battle against challenges for humanity such as cancer. In order to have even the chance of being successful, large teams of researchers from a wide variety of fields must work toward a joint goal. The overall picture is made up of many small pieces of the puzzle: The cancer research experts at Boehringer Ingelheim's research site in Vienna, Austria, are experimenting with the KRAS protein, which is responsible for various types of cancer. They want to use tailored proteins to deactivate it. At the same time, other teams in the company are trying to get the body's immune system to track down and destroy mutated cells. Their goal is to develop a kind of cancer vaccine. This complex project involves many hundreds of participants.

Open Innovation

Since the days of the company's founder Albert Boehringer, Boehringer Ingelheim has based its work on the principle that cooperation is more productive than going for it alone. Albert Boehringer himself laid the foundation for this by anchoring a strong collective spirit in the company's culture, characterized by esteem and mutual respect. Interdiciplinary collaboration among scientists let the substance nintedanib to be used not only for a whole series of different lung diseases but also in an increasing number of new indications from other therapeutic areas. This is the result of a natural exchange of information.

The same spirit extends to Boehringer Ingelheim's work with external partners such as scientists and other companies. For instance, Heinrich Wieland, who supported the company's first research department from 1917 onwards, frequently conducted pioneering work together with his doctoral students at the University of Munich. Today, Boehringer Ingelheim provides the scientific community with molecules created through its own research activities via its "opnMe.com" platform. Researchers can order molecules like they would in an online shop and get them delivered free for use in their experiments. As part of the "molecules for collaboration" program, scientists can even apply for molecules that have not been patented yet. Boehringer Ingelheim also supports research institutions such as Vienna's Research Institute of Molecular Pathology (IMP). Ranking third among 172 European Research Institutions with regard to the share of successful grant applications from the European Research Council from 2014 to 2018, the IMP has earned an outstanding reputation in the field of basic molecular biology research.

Persistence

It was thus not a big step for Boehringer Ingelheim to approach its competitors during the COVID-19 pandemic. The industry must pull together in the fight against this global crisis. While the world is grappling with the virus, Boehringer Ingelheim's experts and their partners are already busy in tackling the next potential global health threat: antimicrobial resistance (AMR). These are bacterial strains that have developed resistance and can therefore no longer be treated with antibiotics. Boehringer Ingelheim is participating in the AMR Action Fund, an initiative of more than 20 leading pharmaceutical companies. They are investing nearly a billion USD to bring between two and four new antibiotics to the market by 2030.

"In an increasingly complex world, success is even more tied to the ability to work together, both internally and externally."

Hubertus von Baumbach
Chairman of the Board
of Managing Directors

Boehringer Ingelheim is thereby relying once again on the power of partnership, as it has for generations. This partnership-based approach is reflected in its participatory company culture, its external collaborative research, and its interaction with the industry. While governments have had to close their countries' borders, Boehringer Ingelheim has opened up even further as a pharmaceutical company. "In an increasingly complex world, success is even more tied to the ability to work together, both internally and externally," says Hubertus von Baumbach. "If the last 135 years have taught us one thing, it is that success is always an achievement of many – and only with strong partnerships, we will be able to harness the opportunities of today and tomorrow."

PARTNERS &
SCIENTISTS

Together for new therapies in areas of unmet medical need

Making new and better medicines for humans and animals is at the heart of what we do. Together with our partners, our mission is to create breakthrough therapies that change lives.

COMBINING FORCES TO FIGHT COVID-19

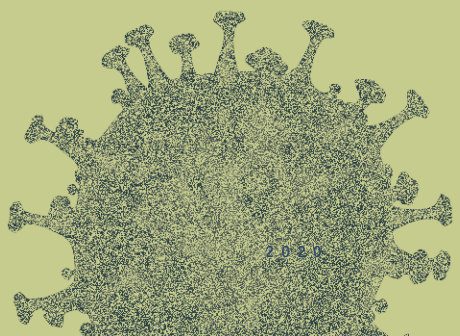
As a research-driven biopharmaceutical company, Boehringer Ingelheim is participating in the global fight against COVID-19. The company is contributing its resources and its expertise in support of the research efforts, in order to identify effective treatments for this deadly infectious disease as quickly as possible.

It is late January 2020. The Airbus "Kurt Schumacher" takes off from the military airport Cologne-Wahn, Germany. It is bound for Wuhan in eastern China. A novel lung disease, COVID-19, is spreading in this metropolis. The city is almost completely sealed off by order of the Chinese authorities. The German air force is repatriating hundreds of Germans – including infected individuals – from this hot spot to Frankfurt Airport. In a gym on the airport site, the German Ministry of Health has set up a temporary infirmary equipped with cots and plastic partition walls.

It is not just doctors and nurses who are awaiting the returnees but also scientists, including those from the German Center for Infection Research (DZIF) and the University Hospital of Cologne. They take blood samples from the infected persons, examine these samples, and isolate these patients' immune cells. Boehringer Ingelheim has long maintained a close relationship with the DZIF and is asked for its advice. By working together, the scientists hope to discover and develop antibodies over the next few months that have a neutralizing effect on the SARS-CoV-2 virus. In mid-December, their research entered the clinical testing phase; the Phase 1/2a studies include both SARS-CoV-2-uninfected and SARS-CoV-2-infected individuals.

As a research-driven biopharmaceutical company, Boehringer Ingelheim has been fighting against the deadly infectious disease on several different fronts since the start of the COVID-19 pandemic:

- The family-owned company is working on the development of very small molecules, with the aim of preventing viruses from spreading.
- Substances that have already been used to treat HIV or hepatitis C, for instance, are being examined in terms of whether they offer any benefits for COVID-19 patients.

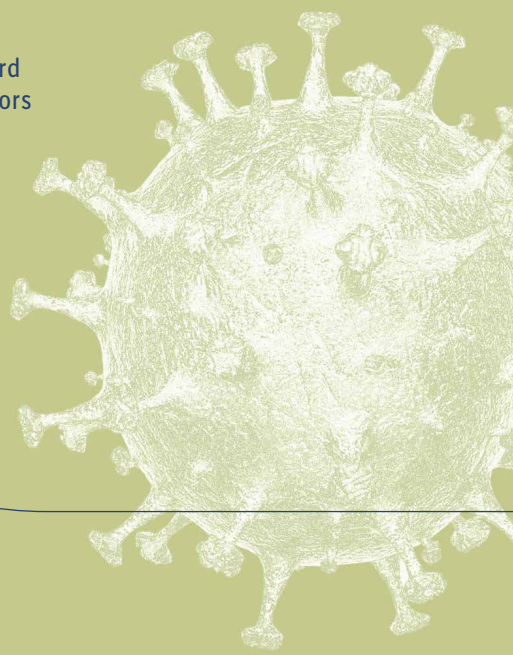


A GLOBAL ENDEAVOR: THE COVID-19 THERAPEUTICS ACCELERATOR

Together with the Wellcome Trust and Mastercard, the Bill & Melinda Gates Foundation established the COVID-19 Therapeutics Accelerator in March 2020. Pharmaceutical and life science companies are cooperating with governments, research institutions, and non-governmental organizations in order to curb the COVID-19 pandemic. Boehringer Ingelheim is contributing its expertise and has made its substance database available.

“Our scientists are committed to rapidly finding effective treatments to fight COVID-19. By doing so, we are not only helping patients, but also relieving pressure on healthcare systems around the world.”

Dr. Michel Pairet
Member of the Board
of Managing Directors
Innovation



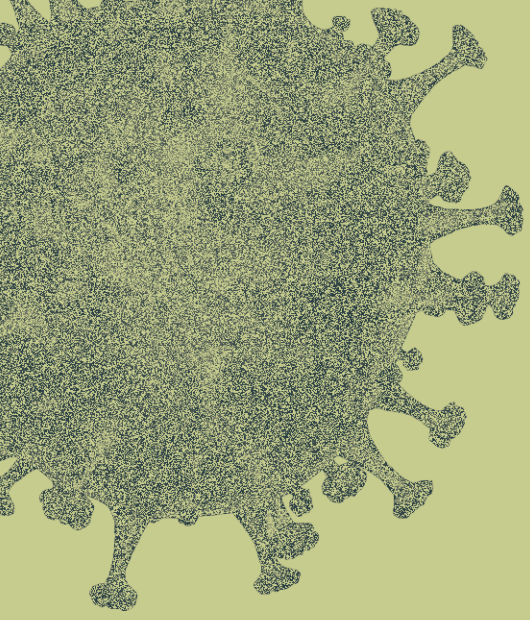
Boehringer Ingelheim is also actively engaged in international development initiatives such as the COVID-19 Therapeutics Accelerator and the Corona Accelerated R&D in Europe (CARE) consortium established by the Innovative Medicines Initiative (IMI). The company also supports the communiqué initiated by the Bill & Melinda Gates Foundation in support of equal global access to therapies and vaccines, since the scientists will only be able to stop the pandemic if global access to new solutions is guaranteed.

An Acute Unmet Medical Need

In all of its endeavors, Boehringer Ingelheim is working with partners throughout the life science community. Its cooperation with the DZIF is one such example of this. “When Professor Becker asked me after the identification of first antibodies of infected patients whether we would like to jointly pursue antibody research, we didn’t hesitate to come on board,” recalls Knut Elbers, Managing Director of Boehringer Ingelheim’s subsidiary ViraTherapeutics and Senior Advisor to the research initiative Research Beyond Borders. Elbers and Becker, who coordinates the DZIF’s Newly Emerging Infections department, have known each another for many years now. While the DZIF and a team of researchers led by Prof. Dr. Florian Klein of the University of Cologne contributed their expertise and equipment in order to extract antibodies from the B cells of infected patients, Boehringer Ingelheim was responsible for further characterization of these antibodies and for the production of promising candidates in the laboratory. That is no coincidence, since Boehringer Ingelheim is considered a leading company in the research, development, and production of monoclonal antibodies and other biological medicines.

“We are advancing these new antibodies with high priority, hoping they can contribute to a broader therapeutic armamentarium for physicians,” says David Wyatt, Group Head of Biotherapeutics Discovery Europe in Biberach and Vienna.

Unlike a vaccine, which takes time until the body’s immune system has produced an appropriate response, neutralizing antibodies are effective immediately once administered. These neutralizing antibodies are immune molecules



that attach themselves to viruses and incapacitate them, thus providing immediate protection. They bind to the surface of the virus and prevent it from entering a person's healthy cells. "Our goal is that patients will be prevented from developing more severe disease, or that these medicines can be used in a preventative setting for high-risk individuals," says Wyatt.

Although first COVID-19 vaccines have been approved, antibodies are expected to remain important, as it will take time to vaccinate everyone. And while vaccination has a prophylactic effect and prevents an outbreak of the illness, it seems likely that vaccinated individuals can nonetheless pass on the virus. This is because the immune system is most likely not efficient enough to stop the virus from multiplying at the point where it enters the body. "The virus may thus still be able to spread in the population and people who are unable to develop a protective immune response may remain susceptible to falling ill with COVID-19," Elbers explains. "We require a broad range of tools to tackle COVID-19. Our antibody research is potentially an important contribution to this."

TIMELINE

December 31, 2019
The Chinese city of Wuhan reports its first infections involving a novel lung disease.

January 20, 2020
Other countries outside China confirm the first cases, including the United States, Japan, and South Korea.

March 11, 2020
The World Health Organization (WHO) characterizes COVID-19 as a pandemic.

March 14, 2020
France and Spain join Italy in imposing lockdowns on tens of millions of people.

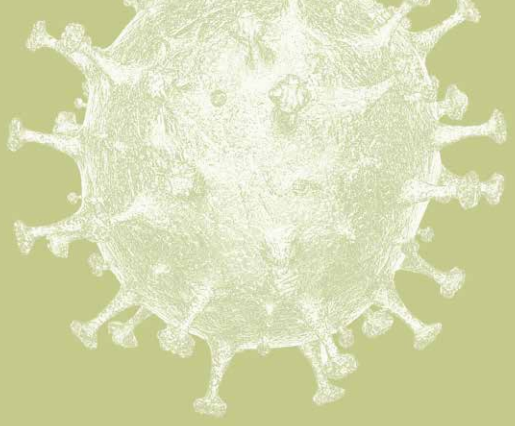
June 28, 2020
Global deaths related to COVID-19 exceed 500,000 and confirmed cases top ten million.

October 11, 2020
The world records more than one million new cases of COVID-19 in just the last three days.

December 18, 2020
Boehringer Ingelheim, the University Hospital of Cologne, the University of Marburg, and the DZIF launch the clinical test phase of their antibody medicine.

December 27, 2020
The European Union announces the official start of its vaccination program.

January 26, 2021
The total number of global COVID-19 cases since the start of the pandemic surpasses the 100,000,000 mark.

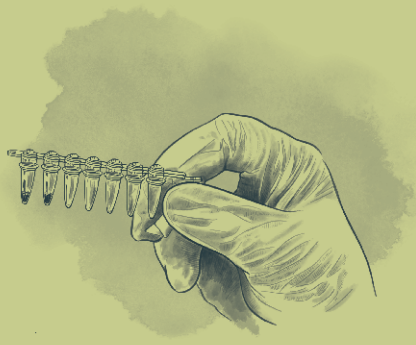


Boehringer Ingelheim is researching and developing virus-neutralizing antibodies not just in collaboration with the DZIF, but also as part of the CARE (Corona Accelerated R&D in Europe) consortium. This consortium consists of 37 public research institutions and pharmaceutical companies. Together, its members intend to accelerate the development of COVID-19 therapies and thus to prevent future coronavirus threats. As a member of the consortium, Boehringer Ingelheim is sharing its research findings with life science companies as well as governments, non-governmental organizations, multilateral institutions, and others.

A Known Substance with a New Function?

Boehringer Ingelheim has also been searching through its products as well as its clinical and preclinical pipeline for substances. The tissue-specific plasminogen activator ACTILYSE® is approved for the use after a stroke to dissolve blood clots in the brain in many countries worldwide. It might be a potential candidate for the treatment of COVID-19 as it may prevent organ failure in seriously ill COVID-19 patients.

"The scientific community is making good progress and we are contributing as best as we can at all levels," remarks Knut Elbers in summary of Boehringer Ingelheim's efforts. Cooperation with partners is crucial, according to Elbers. Humanity will only be able to win that fight by working together.



NEW SARS-COV-2 TEST FROM VIENNA

Researchers at the Vienna Bio-Center are achieving results with their RT-LAMP Tests that are similarly specific and significantly less expensive than standard PCR tests. With the PCR test, the viral genetic material is first copied into DNA and then duplicated many times. With the RT-LAMP Test, however, an incubator or a simple water bath with a constant temperature of 63 degrees Celsius suffices. A positive result is already available after 30 minutes. Tests of RT-LAMP with PCR standard analysis have already been performed, and pilot projects for hospitals in selected regions have started.

Research is being carried out by the Research Institute for Molecular Pathology (IMP). It employs 200 researchers from 40 countries, and is funded by Boehringer Ingelheim.

CURRENT AND POTENTIAL FUTURE OPTIONS TO FIGHT COVID-19

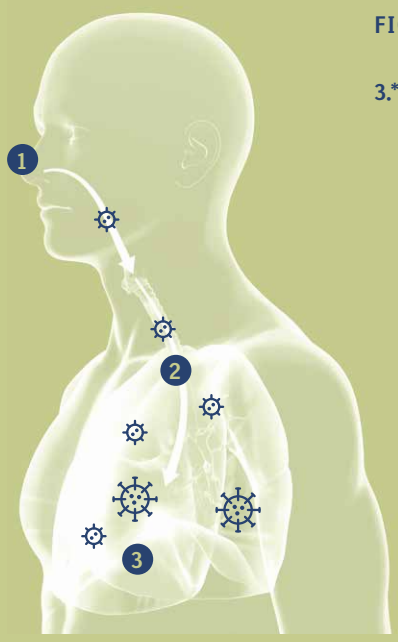
FIGHTING THE VIRUS

1. **Masks**
   Reduce the risk of virus transmission

2.* **Vaccines**
   Aim to fire up the immune system against the virus

   Antibodies
   Aim to block the virus from entering cells

   Antivirals
   Aim to reduce virus production in infected cells



FIGHTING THE DISEASE

3.* **Antiinflammatory treatments**
   Aim to reduce hyperinflammation

   Thrombolytics
   Aim to reduce microcoagulation

* Investigational treatments.

COALITIONS AGAINST CANCER

Researchers at Boehringer Ingelheim are seeking to eradicate one of the key drivers of cancer – the KRAS protein. New partnerships are intended to enable combination treatments that help to tackle different mutations.

Scientists have great respect for KRAS. Due to its importance, they refer to this protein from the RAS family as "the beating heart of cancer". KRAS promotes the growth of cancer cells; it is the most frequently mutated cancer-causing gene – and it is responsible for virtually every type of pancreatic cancer as well as many forms of intestinal and lung cancer. Moreover, even though KRAS' significance for cancer has long been understood, hardly anyone had dared to combat the protein. It was thought to be hopeless – KRAS appeared not to have any sites that medicine molecules could bind onto, and it was considered untreatable.

"For nearly 40 years, every attempt to develop inhibitors has failed," says Prof. Dr. Norbert Kraut, Global Head of Cancer Research at Boehringer Ingelheim. "However, there are now two promising approaches: On the one hand, binding KRAS directly. And on the other, blocking its activation through SOS1."

Not all KRAS proteins are alike. KRAS occurs in many mutant forms in the cell: Nine different KRAS mutants cause over 90 percent of all KRAS-driven cancers. One form is the driver mutation KRAS G12C, which occurs in around 15 percent of non-small cell lung cancers. Some pharmaceutical companies have already developed molecules for this that have yielded positive results in early clinical studies. They freeze KRAS in off mode. Boehringer Ingelheim is also taking part in this race. Its proprietary G12C inhibitor is set to undergo clinical testing in 2021. "We are not the first to do this, but we believe we have a very promising product," says Kraut. This inhibitor makes use of a binding site which Boehringer Ingelheim has identified by means of small pieces of drug molecules known as "fragments".

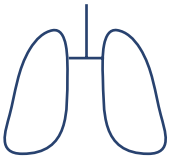
KRAS G12C is only the third most common form of mutated KRAS. The mutations KRAS G12D and KRAS G12V account for more than half of the total number of cancers caused by KRAS. Unlike in the case of G12C, no promising pockets or locks for substance molecules to attach themselves to have been identified for these mutations so far.

BI 1701963 – the pan-KRAS inhibitor of Boehringer Ingelheim – may be helpful in dealing with all of these mutations. It prevents KRAS from being switched on by blocking the activator protein SOS1. "KRAS cannot strike without SOS1," Kraut notes. The combination of SOS1

KRAS MUTATIONS OCCUR WITH MUTATION RATES OF MORE THAN:

90%
pancreatic cancer

40%
colorectal cancer



30%
lung adenocarcinomas

inhibitors with other inhibitors might make it possible to inhibit KRAS permanently – and in virtually all of its mutations. "The molecule BI 1701963 was developed with the goal of inhibiting a wide range of oncogenic KRAS variants," Kraut remarks. Pre-clinical data has confirmed that the pan-KRAS inhibitor blocks tumor growth in many of the G12 and G13 KRAS gene mutations tested.

Boehringer Ingelheim is working with partners across the life science community in order to achieve faster progress in researching such combination treatments. In September 2019, Boehringer Ingelheim expanded its KRAS cancer program through a partnership with the Indian pharmaceutical company Lupin Limited; Boehringer Ingelheim has in-licensed an MEK inhibitor as one of several potential SOS1 combination partners. MEK is another key protein in the RAS signal pathway.

Moreover, in September 2020, Boehringer Ingelheim announced its clinical partnership with the US biotech company Mirati Therapeutics in order to test a combination of the pan-KRAS inhibitor of Boehringer Ingelheim and Mirati's G12C KRAS inhibitor adagrasib (MRTX849). The potential of this combination as a more effective treatment option for people with lung or colon cancer with a KRAS G12C mutation will be examined in an initial Phase I study.

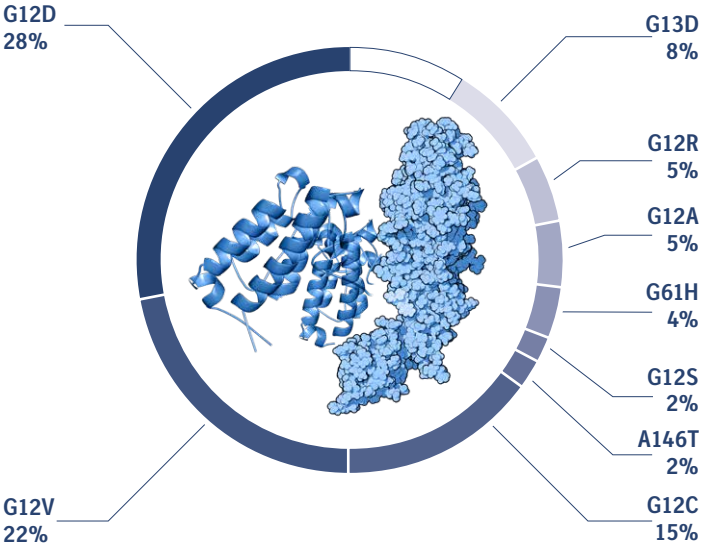
"We consider this a win-win situation," says Kraut in reference to the partnership. Both partners are convinced that the interaction of their inhibitors will benefit the patient – and that their cooperation provides a fast way to achieve a genuine improvement in the therapy options. "In pre-clinical studies, we have seen that many of the KRAS G12C-driven tumors treated shrink; that is a very positive starting point."

The partnership with Mirati will build on the longterm collaboration of Boehringer Ingelheim with the MD Anderson Cancer Center at the University of Texas, one of the largest cancer clinics in the United States. American scientists are seen as world leaders in cancer research, their expertise includes a broad range of study and patient data. They could be able to conduct potential clinical studies on behalf of the new partners. "We don't enter into partnerships at random. Our partnerships build on one another; they supplement one another, and they thus all support our goal of achieving faster and genuine progress in fighting cancer," says Kraut.

More partnerships may follow in the near future: In its annual strategy review, the companies board of managing directors announced that, in the medium term, Boehringer Ingelheim intends to invest even more strongly in research and, in particular, in its oncology pipeline. "That means we will be able to conduct more research on a broad front and enter into further partnerships," Kraut comments. "And all of that with the goal of achieving a decisive improvement of patients' health."

NINE KRAS MUTANTS ARE KEY

They cause over 90 percent of all KRAS-driven cancers



"The combination of SOS1 inhibitors with other inhibitors might make it possible to inhibit KRAS permanently," says Prof. Dr. Norbert Kraut, Global Head of Cancer Research at Boehringer Ingelheim.

BECAUSE EVERY BREATH COUNTS

There are many different causes of pulmonary fibrosis, and breathlessness is the most relevant symptom for patients. Left untreated, it is usually fatal. With its medicine nintedanib, Boehringer Ingelheim has now achieved a major breakthrough.

The moment you open your eyes for the first time each morning is generally followed by a deep breath, a stretch – for a good start into the day. For those who suffer from pulmonary fibrosis, this is different. Every morning, suddenly, there it is again, that unpleasant and oppressive feeling. It is as if you are stuck inside an over-tight jacket. For people who suffer from scleroderma associated lung fibrosis, it is even worse: It also feels as if the skin around your body has contracted. “Those are the words that a patient used to describe their symptoms and to explain what it feels like,” reports Dr. Wiebke Sauter, Senior Clinical Research Scientist at Boehringer Ingelheim. This patient is suffering from systemic sclerosis, also known as scleroderma, a systemic autoimmune disease. “This disease causes connective tissue to harden,” says Sauter. “The skin and other organs become hard and unpleasant.” But that is not the worst aspect of the disease: In conjunction with systemic sclerosis, a type of pulmonary fibrosis known as systemic sclerosis associated interstitial lung disease (SSc-ILD) can occur. “The lung then becomes increasingly stiff and people suffer from breathing problems due to the scar tissue, and its ability to transport oxygen into the bloodstream continuously declines. SSc-ILD is the most frequent cause of death among scleroderma sufferers,” the scientist explains. “That is why the lung is the most important organ in the treatment of the disease.”

Many Different Causes of Pulmonary Fibrosis

Around 200 underlying diseases can cause this rare and generally fatal syndrome. Besides systemic sclerosis, these also include rheumatoid arthritis. However, allergens and environmental toxins are also possible causes. In the case of idiopathic pulmonary fibrosis (IPF), doctors are not able to identify any cause at all. The consequences are always the same, however: Hardened tissue makes it increasingly difficult for the lung to transport oxygen into the bloodstream. If left untreated, life expectancy following diagnosis is no more than five years.

Research Focus on Respiratory Diseases

Boehringer Ingelheim has been conducting research in this field for more than ten years. In 2014, the pharmaceutical company introduced the substance nintedanib to the market and provided people with an IPF diagnosis with fresh hope to be able to live the life they want. Nintedanib can slow down the growth of fibroblasts, the cell type that the characteristic scar tissue consists of. Clinical trials have shown that the medicine can slow down the insidious loss of lung function associated with IPF. “More than any other IPF therapy, this product influences patients’ lives,” says Peter Fang, Head of Therapeutic Area Inflammation at Boehringer Ingelheim. “It has also contributed to our recognition as a leader in the field of pulmonary fibrosis.” He calls nintedanib “one of Boehringer Ingelheim’s greatest successes.” It was only possible because the company has now 100 years of expertise in the area of respiratory diseases and has pioneered research on this problem with a large, interdisciplinary team.

Major Breakthrough for SSc-ILD and PF-ILD Patients

Nintedanib has been helping patients with an IPF diagnosis since 2014. No approved treatment option has existed to date for people who suffer from SSc-ILD and other chronic fibrosing interstitial lung diseases with a progressive phenotype (PF-ILDs). As the first and only therapy, OFEV® is now approved in more than 50 countries for the treatment of SSc-ILD and in more than 40 countries for the treatment of PF-ILDs. This marks a turning point in the treatment of a wide range of rare forms of pulmonary fibrosis, and it is estimated that over 150,000 people with these rare lung conditions will have been treated with nintedanib worldwide by the end of 2020. But there is still further therapeutic need. With the InPedILD™ study, Boehringer Ingelheim is now also investigating the dosing and safety profile of nintedanib in children and adolescents.

Peter Fang leads the Therapeutic Area Inflammation at Boehringer Ingelheim, Dr. Wiebke Sauter oversees a clinical study on treatment with nintedanib.

TOGETHER FOR GLOBAL HEART HEALTH

Many people know that the heart is the hardest working muscle in the body. But what is often not known is that cardiovascular disease, which affects the heart and blood vessels, is the leading cause of death in the world today. Boehringer Ingelheim and its partners have therefore taken up the challenge of improving the lives of people living with cardiovascular diseases.

Since May 2017, Jean-Luc Eiselé has been leading the World Heart Federation (WHF). The WHF works to prevent premature cardiovascular deaths and improve access to treatment.

Why is heart health such an important topic?

Eiselé: Heart disease is the leading cause of death, claiming nearly 18 million lives annually. We know that up to 80% of premature deaths from cardiovascular diseases (CVD) are preventable.

To strengthen heart health worldwide is a common goal of the World Heart Federation and the alliance between Boehringer Ingelheim and Eli Lilly and Company. How can we achieve this together?

Eiselé: Partnerships can save millions of lives every year by enhancing our ability to raise awareness. Together with the Boehringer Ingelheim and Lilly Alliance, we have been able to successfully strengthen heart health for those people living with and without diabetes through education initiatives such as World Heart Day (WHD) since 2019.

On WHD, thousands of people from around the world unite to spread awareness of heart health. Together with the Alliance, we were able to reach more than 425 million people, who are diagnosed with diabetes, on WHD 2020. Under the slogan "Use Heart", we informed them about the link with cardiovascular diseases while explaining to them the need to protect their hearts to live longer, healthier lives. Furthermore, it is estimated that nearly 215 million people are living undiagnosed with diabetes. Therefore, partnerships like the one with the Alliance are key to educating people with and without diabetes to visit their health care professionals and start striving for a healthy heart today.

How do you assess the importance of partnerships like the one with the Boehringer Ingelheim and Lilly Alliance for the World Heart Federation?

Eiselé: Partnerships are crucial to expanding the reach of the WHF and thereby have a greater impact in the reduction of cardiovascular disease mortality through awareness and prevention.

To date, our partnership with the Boehringer Ingelheim and Lilly Alliance has enabled us to share more patient stories and inspire the over two billion people following WHD. Furthermore, teaming up with the Alliance has enabled us to conduct roundtables around the WHF Roadmap on CVD and diabetes. These roundtables bring together health professionals, government representatives, non-governmental organizations (NGOs), and industry to ensure a holistic, patient-centric approach that takes into account the specificity of national health systems.

Michael B. Mason, President of Lilly Diabetes.

"We are proud of the significant ways we have been able to improve the lives of people with diabetes as part of the Alliance."

Michael B. Mason

Ivan Blanarik,
Head of the Therapeutic Area Cardio, Metabolism & Respiratory at Boehringer Ingelheim.

“We look forward to the upcoming significant milestones in the continuation of this exciting and important journey to improve the lives of people with cardio-renal-metabolic diseases.”

Ivan Blanarik

Do you think it is important to involve patients in research on heart failure and diabetes and if yes, why?

Eiselé: Patients and their heart health are at the center of our efforts and the reason the WHF exists. We work regularly with patient groups and we engage them in both diabetes and heart failure research and campaigns. We are currently embarking on a journey to lead an unprecedented collaborative effort with the pharmaceutical industry on diabetes control and prevention. We focus on communications, awareness raising, and de-stigmatization. We believe that it is time for a concerted effort to tackle diabetes as a risk factor for cardiovascular diseases and COVID-19.

Patients and at-risk individuals are at the heart of every initiative to reach our vision of heart health for everyone. Our work is evidence-based but story-driven, and without patients there are no stories and no progress.

If you think about a leadership mindset, what do you see as a necessary “superpower” for organizations like the World Heart Federation and their partners in order to be prepared for the future?

Eiselé: We need to be agile, innovative, and able to inspire others. Our strong network and overall success are built on our credibility as an evidence-based global organization and our ability to adapt to evolving science. We collaborate with partners like the Boehringer Ingelheim and Lilly Alliance because of their leadership and innovation. This paves the way for others to join our important mission.

What do you enjoy most about your work as the CEO of the World Heart Federation?

Eiselé: The heart is the first sign of life and the only organ we can hear and feel. It is easy to get passionate about it, but it is not easy to make a real difference for millions of people. Yet, this is the part that inspires me the most. To unite a wide variety of organizations and companies with sometimes conflicting agendas under one mission – heart health – means a lot to me. The most rewarding experience is seeing how our team and Board manage to bring together the global cardiovascular community and create a lasting change in access to care and prevention. It is our job to inspire others and lead the way in cardiovascular knowledge sharing, communications and policy, and behavior change.

10 years of the Boehringer Ingelheim and Lilly Alliance

In January 2011, Boehringer Ingelheim and Eli Lilly and Company announced an alliance centered on compounds representing several of the largest type 2 diabetes treatment classes.

The Alliance has since leveraged the strengths of two of the world's leading pharmaceutical companies to focus on patient needs, thereby demonstrating their commitment not only to the care of people with type 2 diabetes but also to investigating the potential to address other areas of unmet medical need. Three successful products have come out of this alliance: TRAJENTA® (linagliptin) was launched in 2011, JARDIANCE® (empagliflozin) in 2014, and Basaglar® (insulin glargine) in 2016. In 2015, empagliflozin was the first SGLT-2 inhibitor to show a positive impact on cardiovascular mortality in the landmark cardiovascular EMPA-REG-OUTCOME® trial in patients with type 2 diabetes and established cardiovascular disease. Based on these groundbreaking results, clinical trials like the EMPEROR trials or EMPA-KIDNEY have been initiated to evaluate the impact of empagliflozin on people living with heart failure or chronic kidney disease, with and without type 2 diabetes. With the EMPEROR-Reduced trial in 2020, the Alliance took the first step toward providing a treatment option for adults facing heart failure.

"In Human Pharma at Boehringer Ingelheim, we strive to deliver innovative therapies that transform patients' lives. We embrace the power of partnerships, the creativity of our people, and the diversity of minds."

Carinne Brouillon
Member of the Board
of Managing Directors
Human Pharma

PARTNERING TO COMBAT RARE DISEASES

Those who suffer from the rare skin diseases generalized pustular psoriasis (GPP) and palmoplantar pustulosis (PPP) experience physical and mental pain. Boehringer Ingelheim is currently doing research on a substance with the goal of improving these patients' quality of life.

Brandon has suffered from the rare auto-inflammatory skin disease generalized pustular psoriasis (GPP) ever since his infancy. He particularly struggled with the condition during his childhood: "People didn't accept me because I looked different," he recalls. Whenever he had a bout of the disease, his skin would be covered with painful pustules. Even today, the disease still has a firm hold on him. "When I suffer a bout, I feel like I am freezing on the inside, but my skin is burning."

Fever, muscle weakness and an inflamed rash are the typical symptoms of GPP as well as the related disease palmoplantar pustulosis (PPP). With GPP, the entire body is covered with pustules, while PPP affects the hands and feet in particular. Sufferers therefore have difficulty walking and grasping things. If the pustules become inflamed, this can even lead to sepsis in the worst-case scenario. Patients urgently require a medicine, but no treatment options are currently available outside of Japan.

Boehringer Ingelheim is now researching a substance with the goal of improving these patients' quality of life. It is currently undergoing testing in several studies. These have shown initial promise: The potential medicine is being explored both intravenously, as well as at a later date, subcutaneously, with the goal of achieving rapid efficacy. It is the company's goal to bring this medicine to patients as fast as possible.

A key aspect of bringing improved patient outcomes is to ensure close cooperation with patient organizations, such as the National Psoriasis Foundation (NPF). Partners such as the NPF are of vital importance to patients, given their direct contact with them. Even doctors are frequently unaware of GPP and PPP, as only between one and nine persons out of every million suffer from them. Boehringer Ingelheim is precisely for this reason facing up to this challenge – and is doing so together with partners around the world.

THE PATIENT ORGANIZATION NPF

The US National Psoriasis Foundation (NPF) provides a platform for individuals whose lives have been impacted by psoriasis to find and share information about the disease. GPP and PPP patients are also supported by NPF, although both diseases differ in their underlying nature from more common plaque psoriasis. Additionally, the NPF promotes partnership with doctors and scientists. "Partnering with Boehringer Ingelheim has helped to bring much needed attention to this underserved patient population," says Emily Boyd Stormoen, Chief Revenue Officer of the NPF. "Through this work, NPF has developed critical resources to better serve this community." For Boyd Stormoen, it is clear: "Boehringer Ingelheim is always looking for new and innovative ways to partner that will elevate the patient voice and bring attention to unmet needs of the community."

FIGHTING FOR SIGHT

Millions of people are affected by retinal diseases worldwide, and the medical need is therefore very high. Boehringer Ingelheim is working together with external partners on numerous new treatment options.

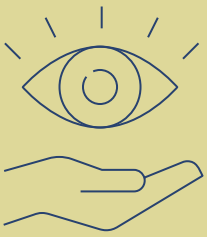
Diseases of the retina have a profound effect on people's lives, negatively impacting their ability to perform everyday tasks such as reading, driving, or maintaining their independence. Access to therapies as well as relevant and helpful information is therefore very important.

Retinal Health is a relatively new therapeutic area for Boehringer Ingelheim. The company collaborates with academic and biotech partners in the development of machine-learning technology and novel drug delivery systems aimed at improving existing treatments and developing new therapies.

"External partnerships and collaborations enable us to combine the potential of our own pipeline with the strengths of our partners and thus achieve crucial progress in the treatment of retinal diseases," emphasizes Dr. Ulrike Gräfe-Mody, Global Head of Retinal Health. "We further expanded our research and development activities for retinal diseases in 2020. The first compounds are already in clinical development."

Boehringer Ingelheim currently has many external collaborations worldwide; the partnerships with Inflammasome Therapeutics and CDR-Life are examples. "Inflammasome Therapeutics' novel drug delivery system will deliver our compound directly inside the eye where it is gradually released. Our goal is to reduce the hospital appointments from currently every four to eight weeks to once a year in patients with the wet form of age-related macular degeneration. Together, we hope to improve real-world efficacy and patients' quality of life," explains Dr. Victor Chong, Global Head of Medicine, Retinal Health at Boehringer Ingelheim. "By working with CDR-Life, we are striving to develop an antibody fragment-based therapy for geographic atrophy, the dry form of macular degeneration. Currently, there is no approved treatment for this severe form of macular degeneration."

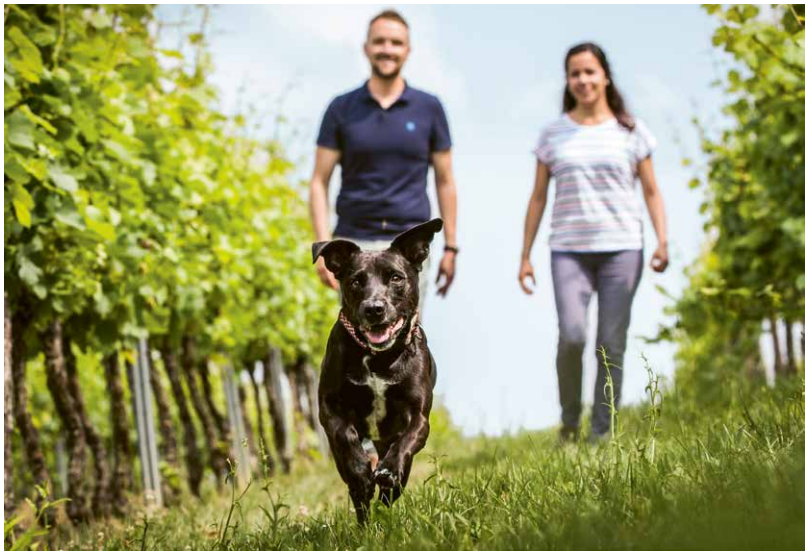
Partnerships with national and international patient organizations such as Retina International are also particularly important for the development of new therapeutic options. The main focus is guiding and influencing the course of research into rare, inherited, or age-related retinal diseases. The association also facilitates access to early detection services and new treatment methods to its members. In addition, information and education about retinal diseases also plays an important role. "Regarding our partnerships with patient organizations, we focus on integrating patient needs into our development strategies and awareness programs. Boehringer Ingelheim also benefits from the direct contact with patients and their families," explains Richard Pitt, Global Patient Advocacy Relations. "This means we can optimize how Boehringer Ingelheim's medicines and services address patients' unmet needs in terms of treatment options and quality of life."



Retina International, an umbrella organization with its headquarters in Dublin, Ireland, has given voice to over 40 patient-run charities and foundations for decades.

ACHIEVING NEXT GENERATION ANIMAL HEALTH

As a leading provider of animal healthcare, Boehringer Ingelheim supports veterinarians, pet and livestock owners, and public health officials around the world. The company builds on a dedicated global R&D network, the synergies with Human Pharma and external partnerships.



The lives of humans and animals are interconnected in complex ways.

Arthritis, diabetes, hypertension. Many people know a loved one who suffers from one of these diseases. Thanks to innovative pharmaceutical products, their lives are improved. At the same time, cats and dogs are increasingly coping with these diseases, too. Boehringer Ingelheim addresses these unmet medical needs by focusing on disease- and system-centric approaches. By doing so, the company creates opportunities to address disease conditions in larger populations and across species, encompassing both pets and livestock animals, while also revealing untapped synergies between Human Pharma and Animal Health. Zoonosis shows how important these connections are: Two thirds of the emerging human infectious diseases are zoonotic, passed from animals to humans. Boehringer Ingelheim therefore expects continuing advances in both prevention and treatment. This interdisciplinary approach to both Human Pharma and Animal Health is unique and sets the company apart from most competitors. However, this mindset is rather natural, as Jean Scheftsik de Szolnok, Member of the Board of Managing Directors with responsibility for the Animal Health business, explains: “The lives of humans and animals are interconnected in deep and complex ways. By adopting this interdisciplinary approach, we deliver value through innovation and enhance the well-being of both.”

Over the course of the last years, these synergies have led to several innovative and successful products. In 2018, for example, Boehringer Ingelheim introduced SEMINTRA®, a product approved to help control systemic hypertension in cats, using an angiotensin II receptor blocker – the same active compound as MICARDIS®, used to treat essential hypertension in humans. With such tools to effectively control hypertension, not only humans, but also their pets, can enjoy an improved and extended quality of life. And, in the future, these synergies will be found even more quickly.

The Disease Map as the Core of Global Innovation

These synergies do not come by chance. As a research-driven company, the worldwide R&D network of Boehringer Ingelheim is the powerhouse for innovation. “In the future, we want to discover, develop, and deliver breakthrough therapies in those areas with unmet needs,” as Prof. Dr. Eric Haaksma, Head of the company's Animal Health Global Innovation Division, outlines. Accordingly, in 2020, Boehringer Ingelheim began the implementation of a transformational innovation strategy. This process is guided by a Disease Map, a tool that gives a comprehensive overview of diseases for the main species and regions. In terms of R&D, the Disease Map sets the stage for the development of innovative solutions, identifying key focus areas in vaccines, parasiticides, and therapeutics. Like a compass, it navigates scientists in new directions – towards promising new synergies, unmet needs, research potential, and future markets. As of the end of 2020, the initial version of the map includes already nearly 2,500 established diseases.

In line with this process, Global Innovation is creating six Regional Centers in strategic locations. Each Regional Center focuses on specific fields, enabling efficient use of resources.

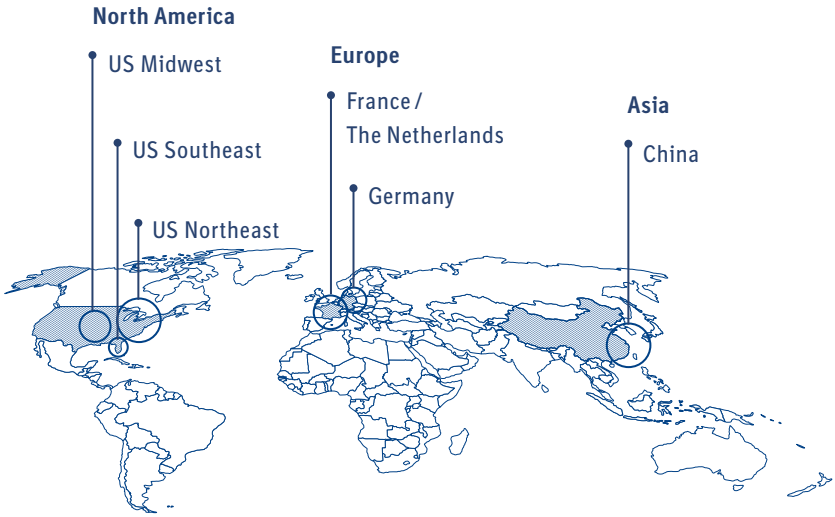
The Power of Partnerships

Beyond these internal developments, shared innovation through partnerships lead to even more groundbreaking solutions. In September 2020, Boehringer Ingelheim acquired an equity stake in New Ruipeng Group (NRP Group), which operates digital and clinical pet services across China and had served as a strategic partner before. David Gocken, the Head of Animal Health Boehringer Ingelheim for the Chinese market, describes this evolution: “It has become clear that we can bring more innovation more quickly to the pet market in China, and we are committed to expanding our active role in this dynamic and fast-paced market now.” Another strategic partnership which has entered a new stage through acquisition is GST (Global Stem cell Technology; see interview on page 30).

“Partnerships and collaborations are among the most impactful ways to innovate the Animal Health sector.”

Jean Scheftsik de Szolnok
Member of the Board
of Managing Directors
Animal Health

WORLD MAP
REGIONAL CENTERS



In October 2020, Boehringer Ingelheim announced its partnership with Henke-Sass. This cooperation with a leading provider of medical technology in Germany has already led to the development of an innovative intramuscular needle-free vaccine injection tool for pigs.

THE PERFECT MATCH

Recognizing the enormous therapeutic potential of stem cell research, Boehringer Ingelheim acquired the Belgium-based biotechnology company Global Stem cell Technology (GST) in July 2020. Prof. Dr. Jan Spaas, the founder of GST, and his team are now an integral part of the Animal Health team at Boehringer Ingelheim.

Prof. Dr. Jan Spaas was a professional show jumper and is a visiting professor for Veterinary Medicine at the University of Ghent, Belgium.

Jan, before joining Boehringer Ingelheim, you had already established a partnership with the company. Why did you decide to bring this partnership to the next level?

We had collaborated since 2018, so we felt that Boehringer Ingelheim is the perfect match for the ambition we have. We share the same culture, spirit, and desire for innovation with quality. Boehringer Ingelheim brings a lot of knowledge to the table, enabling us to accelerate our research.

How were your first months at Boehringer Ingelheim?

Becoming part of Boehringer Ingelheim is a big adventure for me. I have more than 51,000 colleagues now. Before, I had only 14. Since the acquisition, I have met many new people from a variety of different fields. Everyone is extremely supportive, giving me advice and insights, and asking how they can contribute most effectively to our endeavor.

What did you find most impressive?

Shortly after the acquisition, I visited the R&D site in Biberach, Germany, to get a better understanding of the research for Human Pharma there. The experience helped me to realize how close the synergies between Human Pharma and Animal Health can be. We are collaborating with the teams in Human Pharma in some areas on a regular basis now.

What are the benefits of these collaborations between Human Pharma and Animal Health?

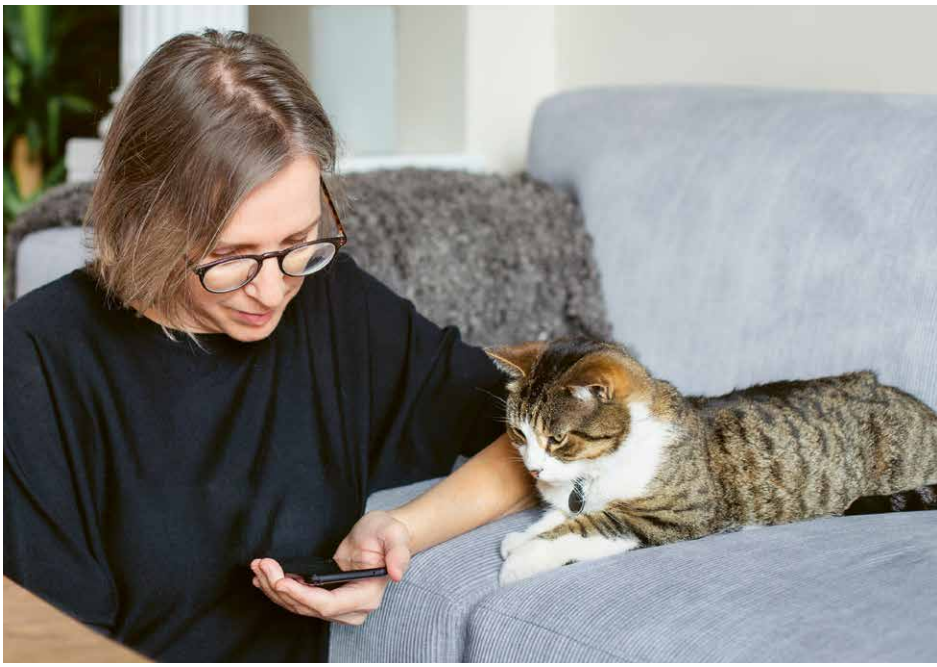
We believe that there are a lot of synergies regarding stem cell therapies. For years, we have conducted research, development, and production to treat orthopedic and metabolic diseases in animals. But now, we are initiating some projects to which our colleagues from Human Pharma can contribute as well. This certainly shows a cross-fertilization between Human Pharma and Animal Health.

Is there anything more we can expect in the upcoming months?

In Animal Health, we are exploring cross-species scientific and therapeutic synergies. We used to have a strong focus on horses. But together, we can also look into new species now.

DIGITAL PET HEALTHCARE

The digital age presents new opportunities to pet owners and veterinarians. The United States have proven to be a good testing market for innovation digital products. PetPro Connect, a user-friendly app and web portal, is the newest example.



Providing effective collaboration between pet owners and veterinarians by linking them via an app and a mobile-based platform forms the key principle of PetPro Connect. Originally developed by BI X, the digital laboratory of Boehringer Ingelheim, PetPro Connect was introduced to the US market in 2018, first as part of a pilot program in metropolitan Atlanta. But with the worldwide spread of COVID-19, this pilot program took off on the fast track. Heath Wilkes, Director of Digital Health for the company's United States Animal Health business, explains hands-on decision-making: "COVID-19 changed everything. Appointments to veterinarians were cancelled. We needed a digital solution. So, within 24 hours, we went live nationwide."

PetPro Connect serves as a convenient solution in times of social distancing and beyond. Features include a messenger service, online appointments and scheduling, shareable medical records, and telemedicine consultations. The in-app program "RX refills" enables pet owners to order medicine online, directly from the clinic. On top of that, veterinarians can use PetPro Connect as a web-based portal. This is why PetPro Connect is a true allrounder for pet owners, pet care brands – and veterinarians, such as Russell Ridge Animal Hospital, in Lawrenceville, Georgia, USA: "PetPro Connect enables us to continue to provide our exceptional service while building stronger relationships with our clients through adding virtual care," confirms a veterinarian of the Russell Ridge Animal Hospital. It is therefore not surprising that the app is a success story: Since its nationwide launch, PetPro Connect has become the fastest growing solution in the space, with over 1,000,000 pets on platform expertly cared for at over 1,200 clinics. In order to further accelerate the development of digital solutions for Animal Health, such as PetPro Connect, Boehringer Ingelheim created Pawru, Inc. in February 2021. It is a separate company within the Animal Health business unit.

PetPro Connect is a much needed digital solution for next generation pet healthcare.

PARTNERS &
TEAM WORKERS

Together, we ensure the worldwide supply of medicines

Supplying patients with the medicines they need is our highest priority. Our global production and supply network makes an important contribution to the reliable supply of medicines.

Manufacturing of a new active pharmaceutical compound in the pilot plant.

JOINING FORCES TO TACKLE THE COVID-19 PANDEMIC

The production sites of Boehringer Ingelheim worldwide were put to difficult tests at the beginning of 2020. During the first wave of the COVID-19 pandemic, the sites ensured that patients continued to receive vital medicines. They only achieved this because of their particularly close collaboration.

In Fornovo, Italy, most of public life came to a standstill in early March 2020. The Lombardy, where Fornovo is also located, had been hit especially hard by COVID-19. Nearly half of the 34,000 Italian who died from COVID-19 during the first wave of the pandemic came from that region. Local authorities put restrictions on daily life. Curfews and bans on meeting with others were implemented.

In the Bidachem factory buildings of Boehringer Ingelheim in Fornovo, however, there was a flurry of activity. After all, production operations had to go on. Among other medications, Bidachem manufactures active ingredients for cardiovascular and diabetes medicines that had to be ready on time for patients all over the world.

Doctors urgently required medicines to somehow treat the serious accompanying illnesses that often occur with a COVID-19 infection. Moreover, large quantities of medicines were being stockpiled worldwide. In short, the Fornovo plant had to produce at top speed. And all this during such dramatic weeks. At times, 30 percent of the plant's more than 200 employees had to go into quarantine. They also had to cope with a new shift system, with night and weekend shifts, and with strict social distancing rules. No one was allowed to get closer than two meters. "Those were difficult weeks," site manager Dr. Maurizio Sartorato recalls. Despite all adversities, there were no production delays or stoppages. Sartorato is convinced that "that was only possible because our sites supported each other."

The Ingelheim and Fornovo production sites and the laboratory site in Shanghai have long been in close contact with one another. The COVID-19 pandemic brought them even closer together. "We regularly talked things over with our colleagues in China and Germany," says Sartorato. Every day, employees of the three sites met in video conferences for the planning. "For instance, our colleagues in Ingelheim assisted us with the quality control process for our analysis patterns," he remarks. "All we had to do was call Ingelheim, and we knew our colleagues would support us."

Dr. Bernhard Rausch, who is responsible for chemical production in Ingelheim, likewise has vivid memories of the first COVID-19 wave, when aircraft were grounded and logistics chains collapsed in many places. “In early April 2020, we organized truck shipments. We were thus able to ensure seamless production of various medicines and to get important substances over the Brenner Pass to Italy,” Rausch recalls.

At the same time, colleagues in the supply chain management, purchasing, and logistics departments sought to reroute suppliers’ products to Ingelheim instead of Italy. Meanwhile, Boehringer Ingelheim’s Center of Chemistry in Shanghai safeguarded the integrity of international supply chains and the delivery of basic chemicals. “Thanks to our colleagues in China, there were no bad surprises in terms of the supply process,” says Rausch.

By working together, the three sites achieved more than just seamless production: Since China was affected first, then Italy, and Germany a bit later, they were able to learn from and help each other. Dr. Jinsong Yang, Head of the Center of Chemistry in Shanghai, sent his team to work from home for a week in early February before bringing them back to their workplaces subject to stringent safety measures. “We introduced a new shift system to reduce the number of people working together and to make it easier for them to keep out of each other’s way,” says Yang. Their European counterparts in Ingelheim and Fornovo subsequently adopted Shanghai’s system.

While China was struggling with a growing number of COVID-19 cases in January 2020, the situation was still manageable in Europe. Ingelheim and Fornovo sent face masks to China, where hardly any protective equipment was available. Fornovo's manager Sartorato already suspected what he might be faced with so he ordered several thousand masks at the start of the year – and had enough on hand once they were unobtainable in Italy. This foresight may ultimately have saved lives: “We were able to protect our employees at all times,” he says. The Shanghai site had already demonstrated

“All we had to do was call Ingelheim, and we knew our colleagues would support us.”

Dr. Maurizio Sartorato
Managing Director Fornovo site, Italy

Active pharmaceutical ingredient plant:
***above*: Transition through the personnel air lock to the closed filling area.**
***below:* Feeding an active ingredient into a micronization unit.**

Active pharmaceutical ingredient plant: The active ingredient tiotropium is ground in the isolator.

how to cope with the crisis: Employees in Italy and Germany oriented themselves to the hygiene measures of their Chinese colleagues. "We learned from our colleagues how to ensure optimal safety at our plants," says Rausch.

Everyone in China, Germany, and Italy was forced to drastically change their routines. "The decision to be overprotective might have created some difficulties in the initial phase, but it proved successful, allowing us to continue producing without interruption," Sartorato notes. But they managed to do so together, and no one was infected at work. Pragmatism, team spirit, and readiness to help: Employees at the three sites stuck close together. "That is an important reason why we handled the situation so well and were able to safeguard the supply of vital medicines for our patients," concludes Rausch.

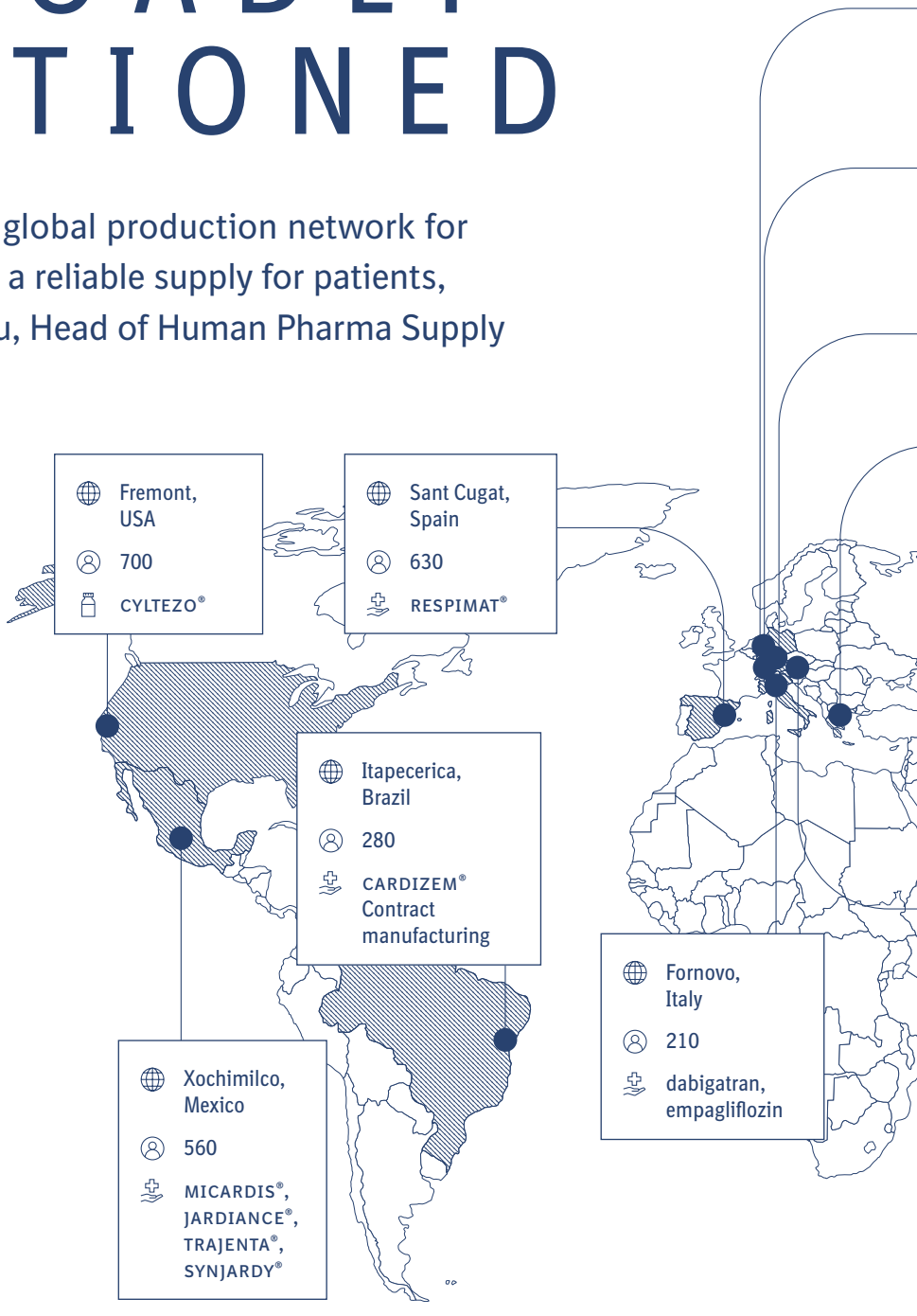
Pragmatism, team spirit, and readiness to help: Employees at the three sites stuck close together.

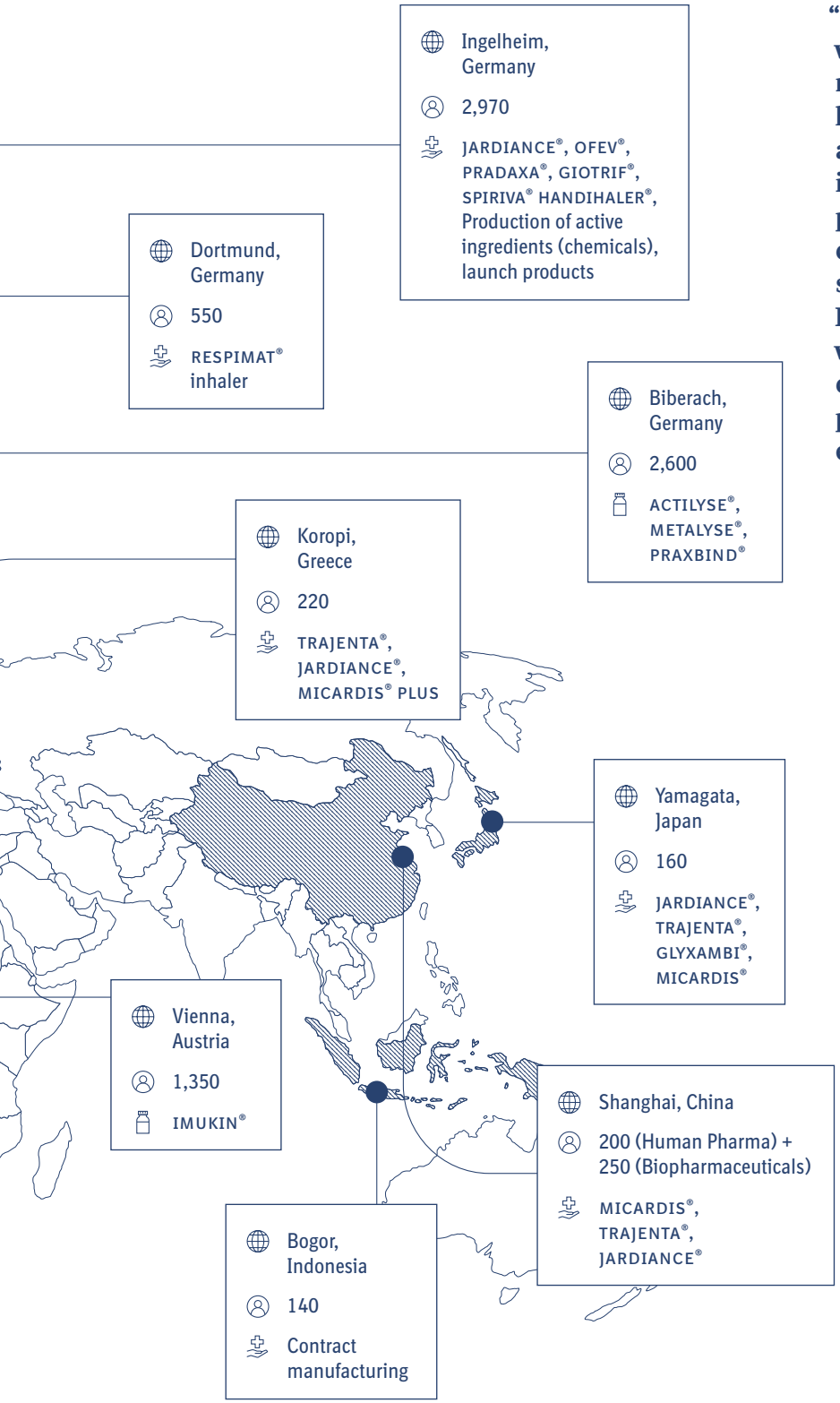
DELIBERATELY BROADLY POSITIONED

Boehringer Ingelheim's global production network for Human Pharma ensures a reliable supply for patients, explains Dr. Torsten Mau, Head of Human Pharma Supply & Global Quality.

"We deliberately established a global production network with sites on four continents in order to decentralize the tasks and therefore also spread out the supply risks to the highest possible extent. Producing in only one region or at one site would entail a higher risk; should problems arise there, the entire security of supply would immediately be compromised. We therefore opted to take a different path that has proven to be successful during the COVID-19 pandemic."

"Our site in Mexico faced major challenges in 2020. For instance, the country was hit hard by the COVID-19 pandemic. Employees from other sites were immediately on hand with help and advice; at the same time, we reduced production volumes in Mexico and increased them at other sites – in Germany, for example."





"We are only strong when we work together. We need close networking and the flexibility to help each other. This applies to all Boehringer Ingelheim sites, including the biopharmaceutical production and its important contribution to our products, such as ACTILYSE® and PRAXBIND®. But also for external producers who supply us with active chemical ingredients and products. We maintain a close exchange with all of them."

"We constantly review our processes. For example, with our respiratory medicine OFEV®, we have a product that is needed by more and more patients all over the world. This is why we decided to expand production to include a second site in order to minimize risks and to be able to permanently safeguard our ability to supply."

"It is clear that we must always maintain a certain reserve of ingredients and medicines to offset sudden changes in production and sales. We monitor our stocks closely to be able to react promptly if we need to."

PARTNERS &
INNOVATORS

Together, we create an agile and inclusive working culture

We realize more scientific opportunities by embracing the power of partnership and diversity within our company. Our working culture and openness for new ideas are the backbone of successful cooperation.

THE WORK OF TOMORROW

People's work is changing – not just since the COVID-19 pandemic. Boehringer Ingelheim is also changing and actively shaping the future of work, from virtual reality trainings up to smart office buildings and new work models.

IN PRODUCTION: VIRTUAL REALITY IN TRAINING AND EDUCATION

The production of pharmaceuticals is very complex and presents unique challenges for employees. Training and education in production is becoming increasingly important in order for the complex machinery to be operated properly. To improve the learning experience and learning success, Boehringer Ingelheim is using virtual reality more and more frequently. For example, to prepare its employees for work at the new Solids Launch Factory in Ingelheim, the company conducted training sessions on virtual machines before the factory was put into operation. "We have been working on the topic of virtual reality in training and education for a while now. The pressure to adapt and advance content and learning formats has increased significantly in the last few years," says Holger Holakovsky, who is Head of Production Solids Launch at Boehringer Ingelheim and responsible for one of the pilot projects in the field of virtual reality. Virtual reality offers key advantages over conventional training methods: Everyone can learn at their own pace, different senses are appealed to, and the lessons learned are retained better. And there is another positive side effect – employees who are wary of digitalization are introduced to the topic in an active and playful way.

Virtual reality trainings are finding their way into the production of Boehringer Ingelheim.

In the new smart office building in Ingelheim, employees can work in a state-of-the-art environment.

ON-SITE: SPACE FOR SHARING IDEAS AND COLLABORATION

The concept and design of office spaces has direct impacts on the well-being of the employees working there. Digitalization is one of the most important drivers of room design. “We want to provide our employees with a work environment that fulfills their need for more flexible, more transparent, and more effective collaboration in a highly connected world,” says Hagen Mörbel, Head of Business Process Excellence in Germany. The redesigned work day at Boehringer Ingelheim can look different from country to country and team to team. For example, in Lyon, France, and Ridgefield, Connecticut, USA, there are hardly any individual offices anymore. There is also a lot going on at company headquarters in Ingelheim. In late 2020, Boehringer Ingelheim opened a new smart office building there, where up to 1,000 employees can work in a state-of-the-art environment. The new six-story building is divided into different zones where employees spend time depending on their tasks. For example, there are co-working zones, multi-use spaces, and quiet zones. Offices are going to be designed for creative and cooperative work at other locations as well. The goal is to allow a greater exchange of ideas and collaboration between colleagues and to increase employee satisfaction.

IN THE FIELD: CLOSE TO PARTNERS DESPITE COVID-19

For a research-driven biopharmaceutical company like Boehringer Ingelheim, it is very important to maintain a consistent dialogue with doctors. This is where the field force plays a key role. The COVID-19 pandemic presented the world with new challenges for personal contact in the healthcare sector – different countries were, and still are, affected to varying degrees. In order to remain close to doctors, the company took new routes. “Before COVID-19, I was on the road every day – the standard was seven to ten meetings with doctors in clinics. During the pandemic, many colleagues could only visit about half the doctors in medical practices, and the percentage was even lower at the hospitals,” explains Andrea Wagner, Pharmaceutical Representative at Boehringer Ingelheim. Since spring 2020, Wagner mainly speaks to doctors and hospital directors via video chat, e-mail, or by phone. It works well in many cases, she says, but it is less personal than meeting them at their offices. “We will certainly make more frequent use of the digital possibilities in the future, but the focus will still be on the personal contact with the customer,” says the pharmaceutical representative.

Andrea Wagner works as a Pharmaceutical Representative for Boehringer Ingelheim. During the COVID-19 pandemic, she mainly visits doctors virtually.

“WE CAN POSITION OURSELVES EVEN MORE CLEARLY”

Satisfied and motivated employees are a crucial factor for the success of Boehringer Ingelheim. That is why the company recently founded a new department that deals entirely with the strategic perspective regarding culture and people topics. Heiko Schmidt, Head of Culture and People Strategy at the company, explains how Boehringer Ingelheim promotes employee development and how it succeeds in competing for the best talent.

Heiko, what kind of tasks do you and your colleagues in “Culture and People Strategy” take on?

Our main task as a department is to contribute to a successful implementation of our corporate strategy. We do this by identifying the relevant skills we need for the future, attracting and retaining the right talent, and fostering our unique corporate culture.

Why is your team part of the strategy department?

A company’s strategy and culture must go hand in hand for the company to be successful. In addition to the business strategies, a comprehensive strategic plan also includes the people strategy. This is important for the long term success of the company. For these reasons, the topics of culture and people strategy were integrated into the corporate division in February 2020. This enables us to work closely with our colleagues in this area on the central strategic planning and steering processes, while at the same time providing cross-functional support for the strategic initiatives that affect our topics.

What are the decisive steps here?

It is crucial for us to remain in constant exchange with many of the company’s divisions. This is the only way we can live our common culture and achieve a future-oriented people strategy. As a department, we act as an interface. Boehringer Ingelheim is a very large organization and has developed with great momentum in recent years. It is a very exciting challenge to be part of this development.

Can you give us a concrete example?

A key topic for us is our attractiveness as an employer in order to attract and retain talent for the company. We are a global company with over 51,000 employees, and we have to convince many highly qualified applicants to consider joining us. These days, that is mainly done through strong employer branding. In plain language, it means that Boehringer Ingelheim needs to be visible and distinctive so that applicants choose us. As an employer, we are characterized by being a family business and the fact that we can plan for the long term. At the same time, our excellent researchers have been working for decades on innovative medicines which can make a difference in patients’ lives. One of the goals of our employer branding is to highlight these strengths of our company even more.

Heiko Schmidt joined Boehringer Ingelheim in 2017, initially as Head of the Digital Laboratory BI X. Before that, the economist had worked as a management consultant for many years.

THE BACKBONE OF DIGITAL TRANSFORMATION

Digitalization offers enormous potential for the development of innovative pharmaceuticals. That is why Boehringer Ingelheim, as a research-driven biopharmaceutical company, is driving digital transformation in all areas of its organization – from its state-of-the-art IT infrastructure to its new digital laboratory in Shanghai, China.

Switching to remote working posed a major challenge, particularly for the IT infrastructure.

With the rapid global spread of COVID-19 in early 2020, millions of people have made the abrupt shift to working from home. For most of Boehringer Ingelheim's employees, this step came in mid-March 2020: At that time, the company's Board of Managing Directors decided that employees who could work from home should switch to remote working until further notice. The company thus undertook efforts to ensure that its employees were protected from SARS-CoV-2 as well as possible. Through this measure, the company mitigated the risk to its own business processes, with a focus on R&D, production, and supply.

For a company the size of Boehringer Ingelheim, with more than 51,000 employees across Europe, the Americas, and Asia, this switch to remote working within a very short time and under full steam, posed a major challenge, particularly for the IT infrastructure. "When the decision was made to send everyone home, we immediately knew that this was a business-critical situation for the entire company, but also for us in IT," Gerhard Kraus, Head of Global IT Infrastructure Services at Boehringer Ingelheim, recalls. "However, thanks to our IT infrastructure, we were prepared. Our entire preparation process took roughly four weeks: two weeks of preparation and two weeks of subsequent adjustments and refinements."

The switch to remote working was comparatively easy because the company had already implemented important changes to its IT in previous years: Boehringer Ingelheim had made significant investments in hardware – particularly notebooks and smartphones that support a remote work environment. Already 90 percent of the employees had the hardware needed for

Shanghai, China, has evolved as a global scientific and innovation hub.

Dr. Johannes Floeckner heads the BI X office in Shanghai.

remote working when the COVID-19 pandemic arose. The early introduction of communication via Skype for Business and the removal of telephones, which began several years ago, was another key factor. The introduction of tools such as Microsoft Teams, SharePoint, and OneNote had been another important move in switching to remote working. Employees were already familiar with the tools of digital collaboration. The expansion of the network, remote access capacities, and the upgrading of firewalls were additional measures to ensure a smooth transition to remote working. Since the switch to remote working in March 2020, up to 40,000 users work from outside the company network every day.

Some of these employees work in Shanghai, China, where Boehringer Ingelheim opened a second office of its digital laboratory BI X in the spring of 2020. The new team in Shanghai works closely with their colleagues in Ingelheim, where BI X was founded in 2017. At BI X, data scientists, designers, and software engineers work on innovative digital solutions for the healthcare industry, including apps, tools, and big data applications. Within its first three years, BI X had already developed nine digital products together with their colleagues in Human Pharma, Animal Health, and Biopharmaceutical Contract Manufacturing. These include the smart assistant ADAM (Advanced Design Assistant for Molecules), which speeds up the discovery of innovative drug molecules. The PetPro Connect platform (see page 31) is another product that enables veterinarians and pet owners in the United States to communicate via video and text in a secure and user-friendly manner.

BI X has now taken the next step by opening its office in Shanghai. “When it comes to digital transformation, there is hardly a more exciting place in the world,” explains Dr. Johannes Floeckner enthusiastically. “Sure, there is Silicon Valley, Tel Aviv, or Tallinn, locations known for setting digital trends. But nowhere has digitalization become as much a part of people’s everyday lives as here.” Floeckner has a PhD in Bioinformatics and manages the new local BI X office in China. Together with around 20 colleagues, he is working on digital healthcare solutions, particularly for the Chinese markets.

As such, the new team of BI X in Shanghai is already working on developing its first product, a new app that supports stroke patients. The app is designed for use in training during rehabilitation. “We are still at a very early stage of development, but we are convinced that the app can deliver real value to both patients and doctors,” says Floeckner. He views the openness to new technological solutions in China as a crucial location advantage. “When it comes to digitalization, Shanghai is the place to be. This is why we are here.”

“IT IS CRUCIAL TO HAVE THE SUPPORT OF THE TEAM”

Janet Maldonado enjoys traveling around Europe with her husband and two children in her spare time.

Janet Maldonado is the new Head of Engineering at BI X. The Mexican used to work as a front-end engineer for tech companies in Silicon Valley for several years. In her new role, she leads teams that are developing digital products to improve human and animal health.

Janet, why did you choose to join BI X in 2018?

During my work in computing and engineering in Mexico and Silicon Valley, I had developed a deep interest in the healthcare industry. I find it fascinating to develop products which can help improve human and animal health. I knew that Boehringer Ingelheim was one of the leading pharmaceutical companies. Therefore, I did not hesitate for long when BI X offered me the job.

You not only changed jobs to join BI X, but also moved to Germany – a huge personal change.

I want to see as much of the world as possible, therefore I was really looking forward to taking on this new challenge in Ingelheim.

Your start at BI X was very successful. A few months ago, you became Head of Engineering. How has your work changed?

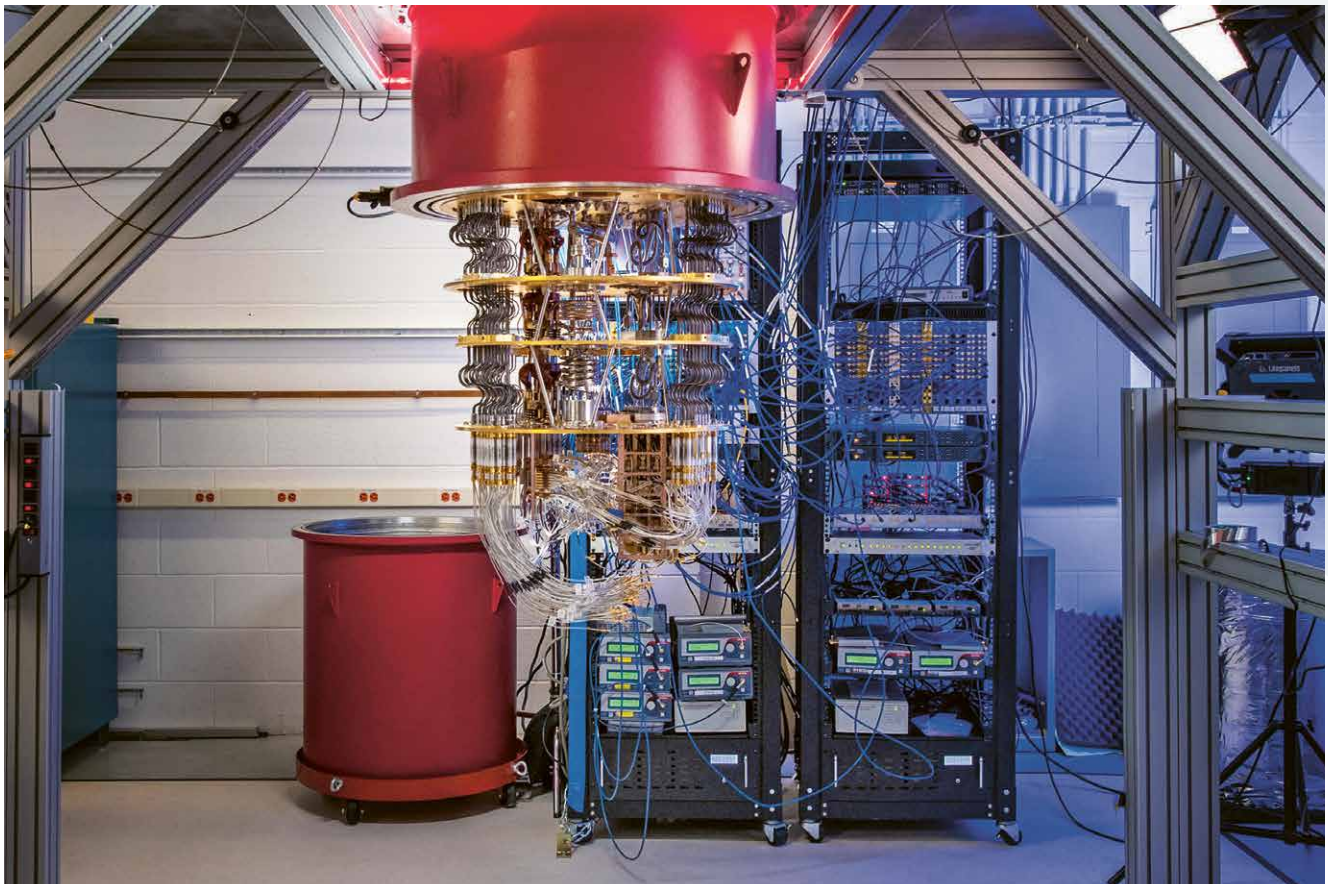
My work has changed fundamentally. In the past, I was responsible for developing our digital products. Now, I am primarily responsible for leading the teams and creating an environment in which everyone can grow.

Your promotion was the result of a certain selection process, where your colleagues nominated you to be their new superior. How does that feel?

It is a humbling experience. Initially, I had some concerns when the position was open. Not so much in terms of professional qualifications, but rather in terms of management responsibility. The nomination by my colleagues has given me a lot of confidence, as everyone trusted me with the new position. It is crucial to have the support of the team.

What makes BI X so special for you?

On the one hand, it is our team. We have a very international staff with colleagues from all parts of the world. We embrace the freedom we have here and take ownership and responsibility for the products we are working on. At the same time, we are part of Boehringer Ingelheim with its long history as a family-owned business. This combination is unique in our industry and makes this place so special.



PARTNERING WITH GOOGLE QUANTUM AI

Quantum computing has the potential to further accelerate and enhance the research and development of new compounds in the future. In early 2021, Boehringer Ingelheim entered into a quantum computing research partnership with Google Quantum AI to explore future applications in pharma R&D.

1981

This was the year American physicist and Nobel laureate Richard P. Feynman introduced the idea of simulating physical phenomena on a machine that operates on quantum mechanical principles. The idea of a universal quantum computer, a machine which uses quantum effects to simulate nature, was born.

“Quantum computing has the potential to significantly advance R&D processes in our industry. This technology could help us to provide even more humans and animals with innovative medicines.”

Michael Schmelmer
Member of the Board
of Managing Directors
Finance & Group Functions

The magic number is 200 seconds. According to recent studies, a quantum computer can solve specific problems in 200 seconds while the world’s fastest supercomputer would need 10,000 years to perform exactly the same task. Quantum computing could thus potentially create entirely new opportunities for highly computer-based fields, such as the pharmaceutical industry.

Special areas of interest here include early pharmaceutical R&D, particularly drug design and in-silico modelling – the very areas in which researchers at Boehringer Ingelheim have a high level of expertise. Therefore, quantum computing could have significant implications for the analysis and timing of these research processes: It could enhance drug discovery and design, reduce the time to market for new medicines, and lower the costs of data-rich processes. This is why quantum computing could potentially be a big leap for medical research in general.

The partnership between Boehringer Ingelheim and Google Quantum AI comes at exactly the right time, according to Ryan Babbush, Head of Quantum Algorithms at Google: “Extremely accurate modelling of molecular systems is widely anticipated as among the most natural and potentially transformative applications of quantum computing. Therefore, Google is excited to partner with Boehringer Ingelheim to explore use cases and methods for quantum simulations of chemistry.”

In line with its partnership, Boehringer Ingelheim has set up a dedicated Quantum Lab, assembling experts from academia, industry, and quantum providers. Further partnerships from the industry and academia as well as in-house expertise, particularly from the IT and the company’s R&D teams, will assist these experts with their work.

PARTNERS &
CITIZENS

Together, we make an impact on society

As a global company, we take responsibility both within and outside our core activities. We consider it our duty to care for each other and our world.

OUR VOLUNTEERS

Boehringer Ingelheim employees are committed to their fellow human beings – at work and in their free time. Many colleagues have also shown great dedication in the fight against the COVID-19 pandemic. Five inspiring examples from around the world.

SPAIN
ROSA MORELL SEWS PROTECTIVE MASKS

Spain has been seriously affected by the COVID-19 pandemic. There has been a particularly high number of cases in the country's cities – such as Valencia, the hometown of Rosa Morell. She works as Sales Representative at Boehringer Ingelheim and has taken sewing classes for a few years now as a leisure activity. When the first COVID-19 cases occurred in Valencia in March 2020, the course instructor asked the participants whether they would like to sew protective masks. "That was no problem for us, we are all good at sewing," says Morell. They divided up into three different groups: "One group cuts up pieces of cloth and rubber bands, another sews the masks, and a third group delivers them," Morell explains. These hardworking seamstresses have thus sewed around 100,000 masks to date: for clinics, for the Caritas charitable organization, for the fire department, and for the police. "When COVID-19 appeared, I wanted to help and didn't know how," says Morell. "But once I got started sewing masks, I couldn't stop." Morell is particularly proud that the mayor of Valencia has awarded her sewing group the city's Medal of Honor.

USA
ROBB KOCIOL HELPS WITH COVID-19 VACCINATIONS

Robb Kociol is a physician. In the spring of 2020, when the infection rate in New York City shot up faster than almost anywhere else in the world, Kociol, who works as Executive Director and Medical Expert at Boehringer Ingelheim rushed to help. He worked 13-hour shifts in a large hospital, for which Boehringer Ingelheim gave him paid time off. Together with other physicians and nurses, he helped treat patients

in the COVID-19 intensive care unit. “It meant a great deal to me,” Kociol tells us. “The situation in New York was extremely shocking, but I had the feeling that I could really make a positive contribution.”

And he continues to do so – but now in his free time on the weekends. Since the beginning of January 2021, he has been providing support for COVID-19 vaccinations, and, as a volunteer, he vaccinated some of the first health professionals who signed up. “It is a very fulfilling task,” says Kociol.

INDIA

SANJAY GULANI DISTRIBUTES FOOD

Sanjay Gulani learned about the importance of social engagement from his parents at a young age. “My parents taught me as a child that people should support one another,” says Gulani, who works as an Area Sales Manager in Ahmedabad, Gujarat State. He has been working with the non-profit organization Radha Soami Satsang Beas (RSSB), which provides food for the needy, for quite some time. The city of Ahmedabad was one of the locations where RSSB started with the food packages. Gulani supports the team there. During the COVID-19 pandemic, RSSB has been delivering around 45,000 packages instead of 5,000 food rations per day. Since the start of the crisis, Gulani has spent every weekend supporting the RSSB team. “If life offers us the opportunity to help others, then we should do so,” he says.

FIGHTING THE COVID-19 PANDEMIC AROUND THE WORLD

With its global support program, Boehringer Ingelheim is helping healthcare institutions and communities worldwide to cope with the COVID-19 pandemic. The program is based on four different pillars:

DONATIONS

Boehringer Ingelheim is contributing 7 million euros in cash donations and donations in kind to the global fight against the pandemic.

RESEARCH

Boehringer Ingelheim is researching potential therapies for COVID-19 patients. The company is also participating in international initiatives such as the CARE consortium and the Therapeutics Accelerator of the Bill & Melinda Gates Foundation.

Making more health

MAKING MORE HEALTH FUND

Boehringer Ingelheim has committed 580,000 euros to a relief fund in support of its global “Making More Health” network, which consists of social entrepreneurs and their communities in Kenya and India.

VOLUNTARY WORK

Volunteers play an important role in many communities. Boehringer Ingelheim is offering its around 52,000 employees worldwide the opportunity to take up to ten days of fully paid leave in order to assist external organizations in their fight against COVID-19.

> **“As we watch a patient’s condition improve, we can see how our hard work is paying off.”**
>
> ANNE HUNSTAD

NORWAY

ANNE HUNSTAD HELPS OUT IN THE HOSPITAL WARD

When COVID-19 began to spread in Norway in April 2020 and the pressure on the healthcare system steadily increased, the qualified intensive care nurse Anne Hunstad knew that she wanted to return to the health clinic. Before joining Boehringer Ingelheim, she had spent many years at a hospital in the Oslo region. She now wanted to support her former colleagues during the crisis because there is a shortage of personnel in Norwegian hospitals. “Two specialists are required in order to ventilate a COVID-19 patient,” says Hunstad. In the spring of 2020, she spent 80 percent of her time at the hospital and 20 percent as a nurse educator at Boehringer Ingelheim. The first few weeks at the hospital were highly emotional for her: She looked after patients who were not allowed to have any contact with the outside world. Working in full protection gear was more of a strain than she had expected. She was forced to watch a sick person die of COVID-19. Nonetheless, it is important for Hunstad to remain optimistic. “As we watch a patient’s condition improve, we can see how our hard work is paying off,” she remarks. When the number of COVID-19 patients rose sharply again in November 2020, she resumed her service at the hospital without hesitation.

AUSTRALIA

ANIKA KUEHLING KEEPS SENIOR CITIZENS COMPANY

Anika Kuehling met Albina and Hildegard – two senior citizens from a retirement home in Melbourne – nearly two years ago. They both had no friends and no family left in the city and often felt lonely. “I myself have long been thinking about what it’s like to be alone at that age,” says Kuehling, who works as a Hospital Sales Representative for Boehringer Ingelheim. She decided to visit the ladies once a week for coffee and cake and became an important part of their lives. Hildegard passed away last fall at age 94, and Albina probably needs her young friend Anika now more than ever. In Australia, personal visits were put on ice for several months due to COVID-19. Nevertheless, they still continued to enjoy coffee together – in front of screens, connected via video call. “The pandemic is hitting old people hardest, since they frequently no longer have any friends or relatives or else they live a long way away,” says Kuehling. Their conversation is frequently the highlight of Albina’s week. It is not just the senior who looks forward to the conversation. Kuehling says she can learn a lot from older people like Albina who have experienced so much in their lives. “She often shows me that my own problems are only minor ones.”

500

days of paid time off for

187

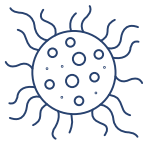
employees have been granted worldwide so far

WORKING TOGETHER TO PREVENT THE NEXT CRISIS

Conventional antibiotics are ineffective against multi-resistant bacteria. The world needs new substances, but few new antibiotics are currently in development. To speed up the research process, 20 pharmaceutical companies – including Boehringer Ingelheim – are jointly investing nearly a billion US dollars.

Since early 2020, the COVID-19 pandemic is not only dominating headlines; it also seems to be occupying all the energy of the international research community. Yet the world is on the verge of another health crisis: antimicrobial resistance (AMR). It is increasingly difficult or even impossible to treat bacterial infections with today's antibiotics because the germs have developed resistance to conventional substances. Dr. Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization (WHO), has referred to antibiotic resistance as a "slow tsunami that threatens to undo a century of medical progress." Routine procedures such as knee operations could become life-threatening – like they used to be in the 19th century – for want of reliable antibiotics to prevent infections.

WHAT IS AMR, AND HOW DOES IT OCCUR?



ANTIMICROBIAL RESISTANCE

An increasing number of bacterial infections can hardly be treated or are untreatable with today's antibiotics.

HOW DOES RESISTANCE DEVELOP?

Resistance is a natural consequence of evolution. It develops because a few bacteria always survive whenever antibiotics are used. These bacteria are immune against that particular medicine and can thus spread.

WHY ARE SO FEW NEW ANTIBIOTICS BEING DEVELOPED?

Substances are still available, even for treatment of "superbugs", so there is not yet an acute need for new antibiotics. New antibiotics are used sparingly in order to preserve their effectiveness. Moreover, new substances require lengthy and expensive basic research.

~ 700,000

people worldwide die annually as a result of antibiotic resistance (AMR).

The Antibiotics Market Follows Paradoxical Rules

Innovative substances are lacking, and the world urgently needs new antibiotics. Yet only a few are currently in the pipeline. There are several reasons for this: Research in the field of new antibiotic substances is scientifically complex and very expensive – and the outcome of such projects is very uncertain. At the moment, most bacterial diseases can still be treated with conventional antibiotics. The few new antibiotics that are available are being used sparingly in order to preserve their effectiveness. Paradoxically, this has prompted a number of biotechnology companies specializing in antibiotics research to withdraw from this field. Some have even gone bankrupt: Though there is long-term demand, there has been no market for their products. "Valuable expertise and important resources have thus been lost," remarks Hubertus von Baumbach, Chairman of the Board of Managing Directors of Boehringer Ingelheim.

Joint Fund Will Provide Help

The pharmaceutical industry is aware of the problem and mindful of the impending crisis. Therefore, 20 pharmaceutical companies have established the joint "AMR Action Fund". The fund has been endowed with nearly a billion US dollars of risk capital for biotechnology companies – and Boehringer Ingelheim is also participating in it. "The objective is to create incentives and help bring at least two to four novel antibiotics to the market until 2030," says von Baumbach. "We see this initiative as a stimulus for the global community." The fund is also working with governments. "This will help us ensure that a sustainable pipeline of new antibiotics is available in the fight against so-called superbugs," comments von Baumbach. The issue is important, even though it rarely makes the headlines.

AMR Action Fund

Who?
20 major pharmaceutical companies including Boehringer Ingelheim, Bayer, and Merck.

How much?
Around one billion US dollars.

What?
The AMR Action Fund invests in small biotechnology companies and supports them by contributing expertise in clinical research, production, approval procedures, and marketing.

Why?
The goal is to promote the development of new antibiotics. By 2030, at least two to four new antibiotics against resistant germs are to be developed.

REMOVING BARRIERS THROUGH COLLABORATION

A group of people is queuing in front of large white pavilions set up in the middle of an open grassland space. As the line moves ahead, many of them look around, trying to think about how long it will take until it is their turn. For many of them, getting here meant they had to travel for hours. Their common destination is a screening station for non-communicable diseases (NCDs), in Kigali, Rwanda. Underneath the pavilions, healthcare workers are extracting blood samples and measuring blood pressure, amongst other things. For many patients, it is the first screening in a long time.

Patients living in low-resource settings face many barriers, such as lack of prevention and health insurance coverage, an insufficient healthcare infrastructure, or supply issues. Saving lives by removing or reducing obstacles requires involving a wide range of supporters, ranging from governments and non-governmental organizations (NGOs), to contributor networks and healthcare companies.

In the face of ongoing health crises, Boehringer Ingelheim has continuously intensified its support for sustainable multilateral partnerships. This includes efforts alongside the United Nations Institute for Training and Research, the World Health Organization, and other members of the Defeat-NCD Partnership.

Since 2019, the Defeat-NCD Partnership has provided support to the Ministries of Health in Rwanda and Myanmar, resulting in the launch of national action plans for NCDs that address cardiovascular, metabolic, cancer, and respiratory health challenges.

Over 11 million people in Myanmar and 4.8 million people in Rwanda will gain access by 2022 and 2025, respectively. In 2021, the partnership will scale up support in Gambia, Nepal, Bhutan, India, Ecuador, and Caribbean countries, as part of its phased roll-out across 90 countries over the course of the decade.

The success shows that partnerships can lead to comprehensive, long-term solutions for patients in need. The partners provide support and funding, share risks, and optimize processes, thereby establishing an adequate framework of financially sustainable models for improved access to care.

As night falls in Kigali, the last patients are being screened for today. While many are in good health, some were diagnosed with a condition they were unaware of until now. But having been here today opened a path to receive the care they need.

The Defeat-NCD Partnership is a public-private partnership anchored in the United Nations system. It acts toward the United Nations Sustainable Development Goal 3.4 to reduce premature mortality from NCDs by one third by 2030, through prevention and treatment and the promotion of mental health and well-being.

IMPRINT

IF YOU HAVE ANY QUERIES OR COMMENTS, PLEASE DO NOT HESITATE TO CONTACT US.

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BOEHRINGER INGELHEIM

ANNUAL REPORT

2020

Value through Innovation

Boehringer Ingelheim

FINANCIAL HIGHLIGHTS

SUMMARY REPORT

Amounts in millions of EUR, unless otherwise indicated	2020	2019	Change
Net sales	**19,566**	**18,997**	**+3%**
by region			
Americas	45%	46%	
Europe	30%	30%	
Asia / Australia / Africa (AAA)	25%	24%	
by business			
Human Pharma	74%	74%	
Animal Health	21%	21%	
Biopharmaceutical Contract Manufacturing	4%	4%	
Discontinued Operations	1%	1%	
Research and development expenses	3,696	3,462	+7%
Personnel expenses	5,587	5,367	+4%
Average number of employees	51,944	51,015	+2%
Operating income	4,624	3,782	+22%
Operating income as % of net sales	23.6%	19.9%	
Group profit	3,062	2,721	+13%
as % of net sales	15.6%	14.3%	
Group equity	17,307	14,681	+18%
Investments in tangible assets	1,046	1,073	−3%
Depreciation of tangible assets	602	585	+3%

SUMMARY REPORT

2020

Boehringer Ingelheim

Top 4 products – Human Pharma

Net Sales 2020	in million EUR	Change
JARDIANCE®	2,480	+15%
OFEV®	2,055	+38%
SPIRIVA®	1,793	−13%
TRAJENTA® / JENTADUETO®	1,512	−3%

Top 4 products – Animal Health

Net sales 2020	in million EUR	Change
NEXGARD®	804	+9%
FRONTLINE®	406	+7%
HEARTGARD®	312	−2%
INGELVAC CIRCOFLEX® / FLEXCOMBO®	264	+11%

OVERVIEW

THE CORE OF OUR LEITBILD

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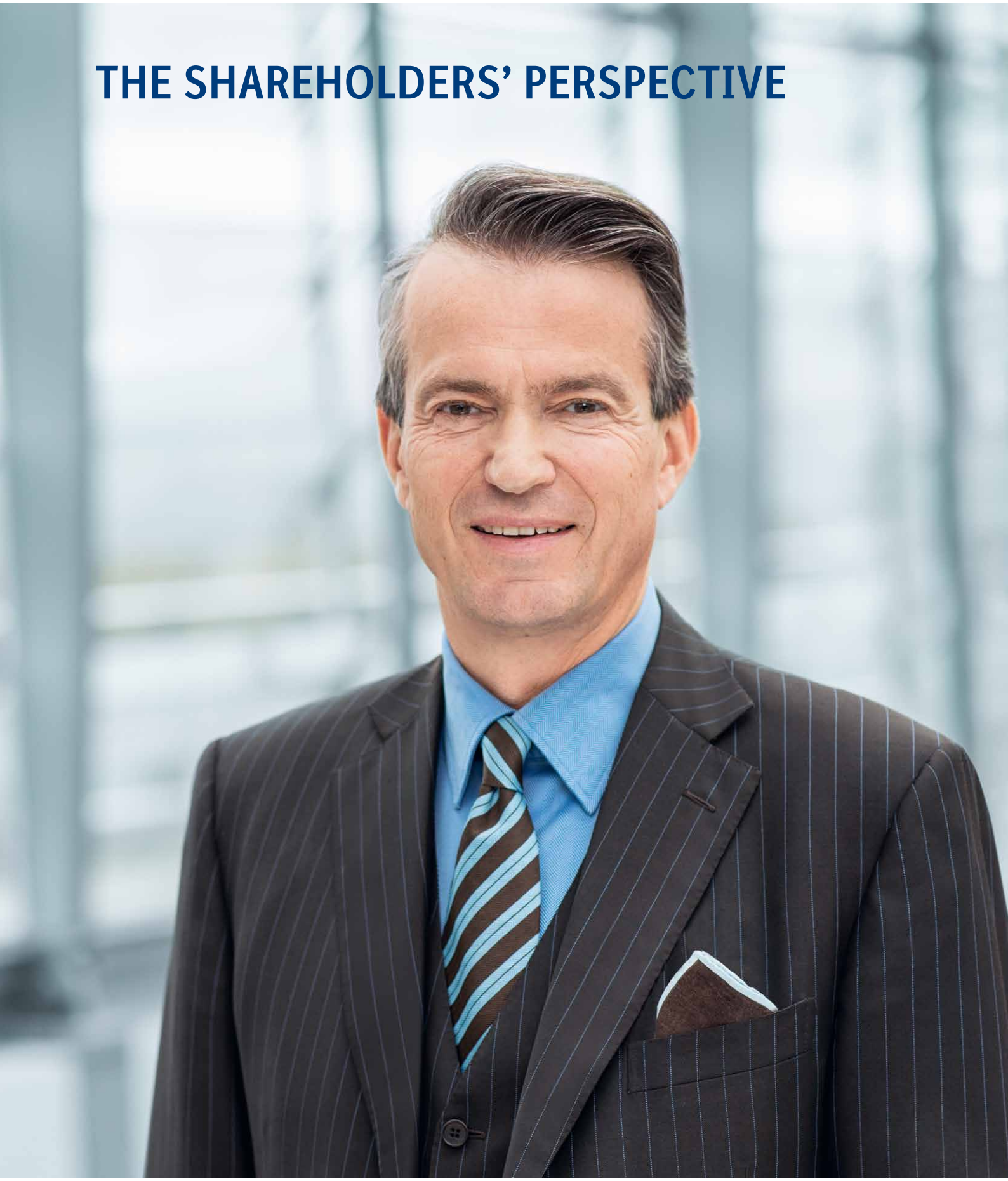
OUR COMPANY

Making new and better medicines for humans and animals is at the heart of what we do. Our mission is to create breakthrough therapies that change lives. Independent and family-owned, Boehringer Ingelheim has the freedom to pursue its long-term vision, looking ahead to identify the health challenges of the future and targeting those areas of need where we can do the most good.

As a world-leading, research-driven biopharmaceutical company, almost 52,000 employees create value through innovation daily for our three business areas: Human Pharma, Animal Health, and Biopharmaceutical Contract Manufacturing. In 2020, Boehringer Ingelheim achieved net sales of 19.6 billion euros. Our significant investment of almost 3.7 billion euros in R&D drives innovation, enabling the next generation of medicines that save lives and improve quality of life.

We realize more scientific opportunities by embracing the power of partnership and diversity of experts across the life-science community. By working together, we accelerate the delivery of the next medical breakthrough that will transform the lives of patients now, and in generations to come.

THE SHAREHOLDERS' PERSPECTIVE



Dear Reader,

2020 will go down in history as the year of the COVID-19 pandemic that cost more than two million people their lives, destroyed livelihoods, and put our society to a severe test. In light of this global challenge, the pharmaceutical industry has expanded its research into COVID-19 at an unprecedented pace. After all, despite comprehensive and diverse measures to protect life and health, it is the means of pharmacy that can be used to combat and end the pandemic.

Until recently, it would have taken more than ten years from the identification of a virus to the approval of a vaccine against it. The fact that vaccines and therapies have now been developed and made market-ready within months was only made possible by the close cooperation between pharmaceutical companies, academia, and public authorities. Policymakers are responsible for creating conditions that make such innovations possible, and the importance of an innovation-friendly environment for society as a whole has never been clearer than during this pandemic.

With our company vision of "Creating value through innovation", we affirm our commitment to excellence in science. This applies not only to the fight against COVID-19, but also to diseases for which no effective treatment options are available yet. To continue to be able to pursue these objectives in the future, we want to remain what makes Boehringer Ingelheim so unique – an independent and economically strong family-owned company of global importance.

We would like to express special appreciation to our employees. In an often difficult personal and professional environment, they have protected and supported one another by showing extraordinary commitment and great solidarity, thus maintaining the global supply of medicines that humans and animals so desperately need. Even during lockdowns, our employees continued to do their research and develop new therapies, not least to combat COVID-19. We would like to thank all of them for their outstanding commitment.

signed by
Christian Boehringer
Chairman of the Shareholders' Committee

THE BOARD OF MANAGING DIRECTORS

Michel Pairet

Carinne Brouillon

Hubertus von Baumbach *Michael Schmelmer* *Jean Scheftsik de Szolnok*

The photo was taken in February 2020.

Dear Reader,

The year 2020 was shaped by the SARS-CoV-2 pandemic – also for Boehringer Ingelheim. As a research-driven biopharmaceutical company, we have been involved in the research and development of therapies from the very beginning – on a national level with the German Center for Infection Research as well as in a global alliance with other companies and institutions, including the Bill & Melinda Gates Foundation and the US National Institute of Allergy and Infectious Diseases Research Center.

We also provided financial assistance and donated protective equipment and medicines as part of our Global Support Program to help counter the pandemic. At all times, protecting our around 52,000 employees has been at the forefront of every decision we made.

Patient care has the highest priority for Boehringer Ingelheim. The high level of engagement from our employees allowed us to sustain our production and logistics throughout 2020, despite strained supply chains, and thus continue to supply all those people who depend on their required medicines.

Thanks to the outstanding performance of our IT department, within less than a week, up to 40,000 users were able to perform their tasks outside the corporate network from home every day. Other colleagues continued to be needed directly on site, for example in production facilities and laboratories, but also in infrastructure, business operations, and site security.

An efficient infrastructure and the flexibility of our staff form the basis and are a prerequisite for the resilience of our entire organization, which attained remarkable achievements in the past year.

Thanks to everyone's efforts, we were able to grow in all three business areas. In 2020, we invested more than ever before in researching future therapies. One important area of research is oncology. Here, we are developing active substances that not only directly attack cancer cells, but can also specifically activate the human immune system. We are pioneers in the scientific understanding of inflammatory and fibrotic diseases of skin, intestinal, and lung tissue among other things, as well as diseases of the central nervous system and metabolic diseases such as the liver disease NASH (non-alcoholic steatohepatitis).

With the launch of the AMR Action Fund, we joined forces with other companies to ensure that infections with multi-resistant bacteria can continue to be treated effectively with new antibiotics in the future. Antibiotic resistance and, not least, COVID-19 show us how closely human and animal health are linked. This commonality is at the heart of our strategy, particularly in animal health, where we focus on synergies in research. External partnerships complement our market activities, for example the cooperation with China-based New Ruipeng Group for pet healthcare.

From our research pipeline to patient information, a substantial part of our corporate activities relies on various types of collaboration. We complement our in-house strengths with specific external skill sets, such as the use of quantum computers for pharmaceutical drug development in our basic research. We were the first pharmaceutical company to engage in this activity when we entered into a partnership with Google Quantum AI at the beginning of 2021.

The progress made by the Group this past year is not a result of COVID-19, but rather an achievement despite the challenges associated with the virus. We would like to extend our very special thanks to all our employees worldwide who have made this possible through their high level of personal commitment. Each and every one of us played a part in ensuring that Boehringer Ingelheim continued to make a contribution to improving the lives of patients in 2020.

signed by
Hubertus von Baumbach

signed by
Carinne Brouillon

signed by
Michel Pairet

signed by
Jean Scheftsik de Szolnok

signed by
Michael Schmelmer

CORPORATE BODIES

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Chairman of the Shareholders' Committee

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Erich von Baumbach

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Innovation

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Member of the Board of Managing Directors,
Animal Health

Michael Schmelmer
Member of the Board of Managing Directors,
Finance & Group Functions

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GROUP MANAGEMENT REPORT

INFORMATION ABOUT THE GROUP

The Group's business model

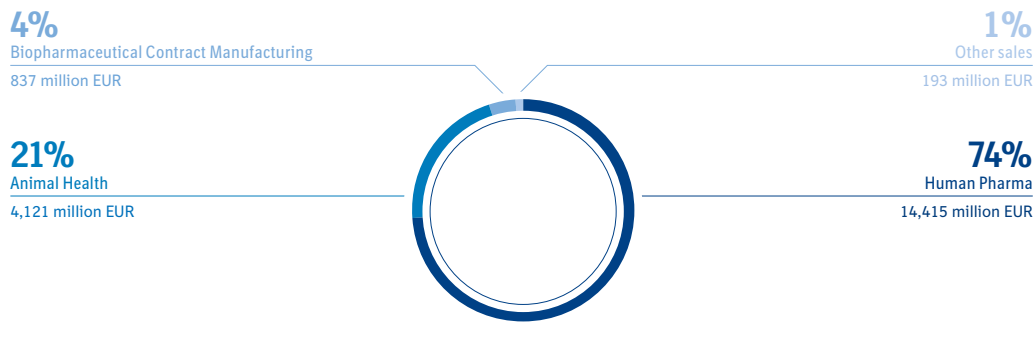
Boehringer Ingelheim has stood for innovation for over 135 years. The Group is among the world's 20 leading companies in this sector. Founded in 1885, the family-owned company with its headquarters in Ingelheim am Rhein is today one of Germany's most research-intensive companies. Its activities focus on both human and animal patients. Boehringer Ingelheim's strategic anchor is the goal of achieving medical breakthroughs in those areas where the need is greatest. In its Human Pharma, Animal Health and Biopharmaceutical Contract Manufacturing businesses, the company has 51,944 employees worldwide in research and development (R&D), from production to commercialization of its products and administration.

The Human Pharma business is the mainstay of Boehringer Ingelheim's activities and accounts for a 74% share of overall sales. This business area is underpinned by an innovative portfolio, and in many cases the company's products are standard treatments in medicine. Research focuses on cardiovascular and metabolic diseases, oncology, respiratory diseases, immunology, diseases of the central nervous system (CNS) and retinal health.

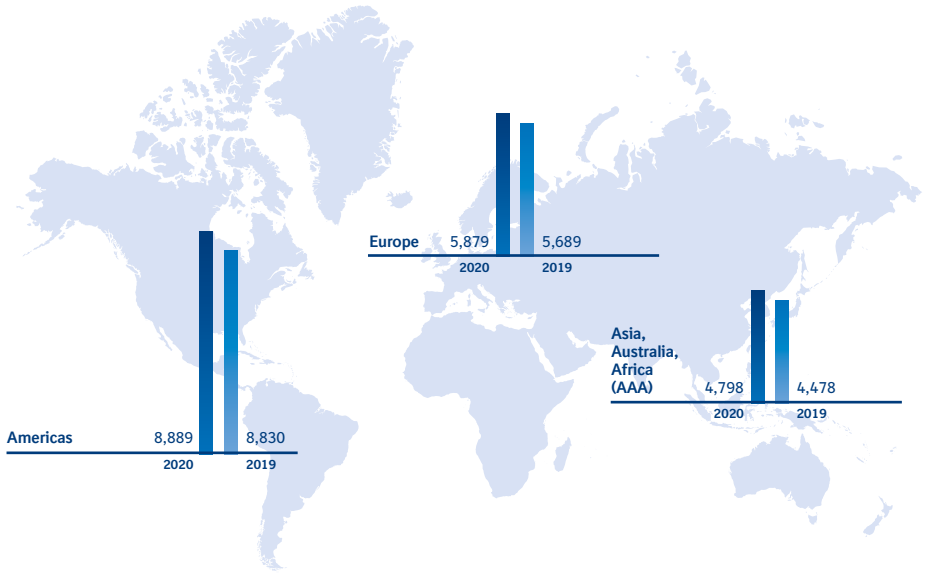
JARDIANCE® again strongest revenue contributor

JARDIANCE®, a medicine for treatment of type 2 diabetes which also reduces the risk of cardiovascular diseases for type 2 diabetics with pre-existing cardiovascular conditions, was the Group's biggest selling Human Pharma product for the second consecutive year. OFEV®, which is used for the treatment of the rare respiratory disease idiopathic pulmonary fibrosis (IPF) and increasingly also in a further indication – systemic sclerosis with interstitial lung disease (SSc-ILD) – registered especially strong growth.

NET SALES BY BUSINESS — **Group: 19,566 million EUR**



NET SALES BY REGION (IN MILLION EUR)



Three other products also played a significant role in Boehringer Ingelheim's success: SPIRIVA®, which is used for the treatment of chronic obstructive pulmonary disease (COPD) as well as asthma, TRAJENTA®, which is used for treatment of type 2 diabetes, and PRADAXA®, which is used to prevent strokes in patients with atrial fibrillation and for the prevention and treatment of thromboembolic disorders.

In its Animal Health business, Boehringer Ingelheim is one of the biggest providers of veterinary vaccines and medicines. Boehringer Ingelheim is the market leader in Germany and, at the global level, is the second largest provider in the area of animal health. Its portfolio includes products for pets and horses as well as livestock such as swine, ruminants and poultry. The company's core brands NEXGARD®, followed by FRONTLINE® and HEARTGARD®, are the foundations of its success in the pets segment. In the swine segment, the established swine vaccine INGELVAC CIRCOFLEX®, which is used to treat porcine circovirus type 2, is an important component of the company's product portfolio.

Boehringer Ingelheim's biopharmaceutical activities comprise the manufacture of its own human pharmaceutical products (such as ACTILYSE®, METALYSE® and PRAXBIND®) and also – as one of the world's leading providers – process development and commercial production of biopharmaceuticals for third-party industrial customers.

Other sales mainly comprise discontinued operations.

In the 2020 financial year, Boehringer Ingelheim once again achieved the majority of its sales in the Americas (45%) and Europe (30%) regions. The Asia/Australia/Africa (AAA) region includes countries such as China and is of strategic significance for the Group's future development, making up 25% of its sales.

Research and development

In line with its mission statement, Boehringer Ingelheim's goal is to research and develop innovative medicines and therapies for the treatment of diseases for which there are as yet no satisfactory treatments available. Its major emphasis is on the development of medicines as well as new approaches and therapies to prevent, detect and treat chronic diseases. Driven by the desire to make a difference for patients, we aim to make a relevant contribution in areas where the need for treatment is high, in the human pharmaceuticals segment as well as in the field of animal health.

We have a global research network of 13 countries, with major facilities in Germany (Biberach and Ingelheim am Rhein), the USA (Ridgefield, Connecticut; Duluth, Georgia; and St. Joseph, Missouri), Austria (Vienna), Japan (Kobe) and France (Lyon) as well as China (Shanghai). Boehringer Ingelheim continues to explore opportunities for expanding and renewing its existing product portfolio through organic growth. We thereby rely on long-established relationships with academic institutions, biotech companies and public research institutions. In the scientific area, we collaborate in over 150 projects with more than 120 academic institutions spanning three continents.

R&D expenses increased to 18.9% of net sales

We also expand our research portfolio in a targeted fashion with supplementary cooperation and license agreements. A key component of Boehringer Ingelheim's innovation strategy is to supplement our own broad-based R&D portfolio with partnerships. While the company's own research activities are highly productive and competitive, in Human Pharma we are aiming to source at least 30% of all new molecules in our pipeline through acquisitions from third parties. Our high scientific standards, the business development relationships which we have forged over time, and the early investments made by the Boehringer Ingelheim Venture Fund have proven to be a strong advantage here. The Group's research and development expenses have increased considerably in recent years – in the past three years, their growth has even outpaced our revenue trend.

Research and development

	2020	2019	2018	2017	2016
Expenses in million EUR	3,696	3,462	3,164	3,078	3,112
– as % of net sales	18.9	18.2	18.1	17.0	19.6
Human Pharma expenses in million EUR	3,283	3,042	2,780	2,714	2,870
– as % of Human Pharma net sales	22.8	21.8	22.1	21.5	23.9
Animal Health expenses in million EUR	412	419	384	357	180
– as % of Animal Health net sales	10.0	10.4	9.7	9.2	12.3
Average number of employees	9,504	9,154	8,552	8,589	8,055
Investments in tangible assets in million EUR (without investments in infrastructure)	181	183	136	71	92

Research network expanded

In 2020, Boehringer Ingelheim acquired the Belgian veterinary biotech company Global Stem cell Technology NV, which is dedicated to the research, development and production of evidence-based, regenerative medicines that are already used to treat orthopedic diseases in animals. In its Human Pharma business, Boehringer Ingelheim reinforced its position in the area of immunoncology therapies by acquiring shares in the Canadian company Northern Biologics Inc., which was subsequently renamed BI IO Canada Inc. The Group also expanded its portfolio of collaborations and partnerships: In the past year, Boehringer Ingelheim entered into new partnerships which include relationships with the U.S. firm Mirati Therapeutics, Inc., which is investigating the use of "PAN-KRAS" inhibitors in the fight against tumors, and with the Swiss company Numab Therapeutics AG, with the goal of developing and commercializing multi-specific antibody therapies for potential treatment of lung and gastrointestinal cancers as well as geographic atrophy. Another new partner, CDR-Life Inc., which is likewise headquartered in Switzerland, also focuses on the latter indication. On the other hand, Boehringer Ingelheim's new cooperation with the British company Enara Bio Ltd. aims to discover novel antigens for future cancer immunotherapies. In addition, with Click Therapeutics, Inc. in the USA, we are pursuing an innovative approach to the development and commercialization of a digital therapeutic for the treatment of schizophrenia. Shortly before the end of the year, Boehringer Ingelheim signed an agreement to acquire NBE-Therapeutics AG in the area of oncology. The transaction was completed on January 20, 2021. Additionally, we negotiated the acquisition of contract manufacturer Labor Dr. Merk & Kollegen GmbH. Completion of this transaction is subject to the usual closing conditions and is expected to take place over the course of the 2021 financial year.

R&D SITES

AMERICAS

Brazil
1. Paulínia (AH)

Mexico
2. Guadalajara/Tateposco (AH)

USA
3. Ames, Iowa (AH)
4. Athens/Colbert, Georgia (AH)
5. Duluth, Georgia (AH)
6. Fulton, Missouri (AH)
7. Gainesville, Georgia (AH)
8. North Brunswick, New Jersey (AH)
9. Ridgefield, Connecticut (HP)
10. St. Joseph, Missouri (AH)

EUROPE

Belgium
11. Evergem (AH)

Germany
12. Biberach (HP)
13. Ingelheim am Rhein (AH)
14. Katharinenhof-Rohrdorf (AH)

France
15. Lyon (AH)
16. Saint-Vulbas (AH)

Netherlands
17. Lelystad (AH)

Austria
18. Innsbruck (HP)
19. Vienna (HP)

Switzerland
20. Geneva (HP)

ASIA/OCEANIA

Australia
21. Sydney (AH)

China
22. Shanghai (AH)
23. Taizhou (AH)

Japan
24. Kobe (HP)
25. Tokyo (AH)

New Zealand
26. Auckland (AH)

In the 2020 financial year, BI X, Boehringer Ingelheim's digital laboratory, opened a second facility. With a total of 67 employees, it now has a presence in Shanghai as well as in Ingelheim am Rhein. In the past year, the BI X development teams transferred several innovative digital products to the company's businesses. For instance, "ADAM" helps researchers in early pharmaceutical research to identify the most relevant candidates in order to address a target molecule. BI X also added to its portfolio of services a company-wide scouting service, which helps to identify and evaluate potential partners in the field of digital technologies.

Since 2010, the Boehringer Ingelheim Venture Fund has driven innovation through its strategic investments in early-stage science and technology. The Venture Fund invests in biotech and start-up companies with innovative concepts and technologies that have the potential to provide ground-breaking therapeutic platforms. The Venture Fund also founds companies when it identifies promising research projects in universities and academic institutions.

The Research Institute of Molecular Pathology (IMP) in Vienna is a biomedical research institute, which is primarily funded by Boehringer Ingelheim. With more than 200 scientists from approximately 40 countries, the IMP conducts research into molecular and cellular mechanisms that form the basis of complex biological life processes as well as human diseases. The IMP is one of the world's leading institutions of its kind: As of late 2020, 13 of its 16 group leaders had received at least one of the prestigious grants awarded by the European Research Council (ERC). With a success rate of 58% in its ERC applications in the period from 2014 to 2018, the IMP was ranked third among 172 European research institutes and universities. Five of its six senior scientists have been elected full members of the European Molecular Biology Organization (EMBO).

Boehringer Ingelheim's R&D activities – the preclinical as well as clinical research and development – are the basis for the company's sustainable success. Our innovative capability has played a key role in the Group's positive business development over the past years. In-house R&D – supplemented by external cooperation and partnerships – will also continue to be a top priority in the future.

In the 2020 financial year, we employed an average of 9,504 people at our R&D facilities. A total of around 3.7 billion EUR was invested in the research and development of new medicines. This is above the level in 2019 and corresponds to around 18.9% of the Group's net sales in 2020.

More than 60 new active substances in our Human Pharma portfolio

Human Pharma

In 2020, it became particularly apparent that trusting collaboration and modern science are decisive for our goal: to transform the lives of patients in areas of significant unmet medical need. In Human Pharma R&D we are focused on the areas of cardiovascular and metabolic diseases, oncology, respiratory diseases, immunology, diseases of the central nervous system (CNS), and retinal health.

By the end of 2020, our Human Pharma research portfolio included more than 60 new substances, on whose development and registration we work in around 100 clinical and preclinical projects.

DEVELOPMENT PIPELINE END OF 2020	PHASE
CARDIOMETABOLIC DISEASES	
Hemodynamic modulator 1	Phase I
Hemodynamic modulator 2	Phase I
Anorectic>	Phase I
Transcient receptor potential channel inhibitor*	Phase I
BI 456906> **GLP1/GCGR agonist* | Obesity**	Phase II
Empagliflozin / New indication SGLT2 inhibitor | CKD	Phase III
Empagliflozin / New indication>** SGLT2 inhibitor | CHF	Phase III
ONCOLOGY	
PD-1 antibody	Phase I
mRNA vaccine*	Phase I
VEGF/Ang-2 antibody*	Phase I
BET inhibitor	Phase I
LRP 5/6 inhibitor	Phase I
MDM2-p53 antagonist*	Phase I
SIRP1α antagonist*	Phase I
SOS1::KRAS inhibitor*	Phase I
MEK inhibitor*	Phase I
KISIMA® cancer vaccine>*	Phase I
TRAILR2/CDH17 antibody>	Phase I
DLL3/CD3 bispecific antibody>*	Phase I
STING agonist	Phase I
Xentuzumab (BI 836845)* IGF1/2 antibody | mBC	Phase II

DEVELOPMENT PIPELINE END OF 2020	PHASE
RESPIRATORY DISEASES	
Cysteine protease inhibitor*	Phase I
Leukocyte protease inhibitor	Phase I
BI 1015550 Anti-fibrotic | IPF	Phase II
IMMUNOLOGY	
Epithelial barrier stress modulator	Phase I
Receptor serine / threonine kinase	Phase I
Spesolimab (BI 655130) IL36R antibody | GPP	Phase II
Spesolimab (BI 655130) IL36R antibody | PPP	Phase II
Spesolimab (BI 655130) IL36R antibody | AtD	Phase II
Spesolimab (BI 655130) IL36R antibody | CD	Phase II
Spesolimab (BI 655130) RORγ antibody | Psoriasis	Phase II
CENTRAL NERVOUS SYSTEM DISEASES	
Phosphodiesterase inhibitor*	Phase I
NMDA receptor modulator	Phase I
Osoresnontrine (BI 409306)* PDE 9 inhibitor | FEP	Phase II
Osoresnontrine (BI 409306)* PDE 9 inhibitor | REX	Phase II
BI 425809 GlyT1 inhibitor | CIAS	Phase II
BI 1358894*	Phase II
TRPC 4/5 inhibitor | MDD	
BI 1358894*	Phase II
TRPC 4/5 inhibitor | BoPD*	

DEVELOPMENT PIPELINE END OF 2020	PHASE
RETINAL HEALTH	
Neuronal damage modulator	Phase I
VEGF/Ang-2 antibody*	Phase I
Ischemia modulator>	Phase I
COVID-19	
SARS-CoV-2 neutralizing antibody>*	Phase I
BI 764198>* TRPC 6 inhibitor | Cov-19 iARDS	Phase II***

Indication abbreviations:

AtD: Atopic dermatitis
BoPD: Borderline personality disorder
CD: Crohn's disease
CHF: Congestive heart failure
CIAS: Cognitive impairment in schizophrenia
CKD: Chronic kidney disease
Cov-19 iARDS: COVID-19 induced acute respiratory distress syndrome
FEP: First episode psychosis
GPP: Generalized pustular psoriasis
HF: Heart failure
IPF: Idiopathis pulmonary fibrosis
mBC: Metastatic breast cancer
MDD: Major depressive disorder
MI: Myocardial infarction
PPP: Palmoplantar pustulosis
REX: Reduction of relapse in schizophrenia

* Partnered projects or acquired assets.
** Study complete, submissions ongoing. In progress: Prevention of HF post MI.
*** Study terminated end of February 2021.
> Key pipeline advances (Dec 2019 – Dec 2020).

Interconnected cardio-renal-metabolic conditions – affecting the heart, kidneys, and metabolic system – are the leading cause of mortality worldwide and account for up to 20 million deaths annually. Building on our expertise in developing innovative treatments for a range of cardiovascular and metabolic conditions, our R&D strategy in cardiometabolic diseases takes a holistic view on the therapeutic needs of people affected by multiple, related cardiovascular and metabolic conditions. To explore the impact of empagliflozin (JARDIANCE®) on major clinical cardiovascular and renal outcomes in a spectrum of cardio-renal-metabolic conditions, the Boehringer Ingelheim and Lilly Alliance has developed the EMPOWER program. With more than 377,000 adults enrolled worldwide it is one of the broadest and most comprehensive clinical programs for an SGLT2 inhibitor to date. In 2020, we reported positive results of the EMPEROR-Reduced Phase III trial in adults with heart failure with reduced ejection fraction, with and without diabetes. In addition, we announced the initiation of EMPACT-MI in collaboration with the Duke Clinical Research Institute, the only trial in the SGLT2 inhibitor class to investigate the prevention of heart failure after acute myocardial infarction in patients with and without diabetes.

We are convinced that we can use highly innovative approaches to make a difference by transforming the lives of cancer patients with a focus on lung cancer and cancers of the gastrointestinal tract. We are collaborating with the oncology community to deliver scientific breakthroughs and first-in-class treatments that can help win the fight against cancer. Our commitment has resulted in treatments for lung cancer (GIOTRIF® and VARGATEF®) and from our rich pipeline we have advanced 15 compounds into clinical development. We are taking cancer on by focusing on scientific approaches of cancer cell-directed agents and immuno-oncology therapies as well as their smart combination – here we are in a good competitive position. In projects with our partners such as The University of Texas MD Anderson Cancer Center, Mirati Therapeutics, Numab Therapeutics, Oxford BioTherapeutics, and others we have also achieved progress in both approaches and their combination in 2020.

Scientific research on new therapeutic concepts for people with respiratory diseases is another focus for Boehringer Ingelheim. For example, in 2020, following more than a decade of research, a breakthrough in pulmonary fibrosis therapy was achieved: Since 2014, OFEV® (nintedanib) has been a treatment option for idiopathic pulmonary fibrosis (IPF) to slow down the decline in lung function in more than 80 countries. For people living with systemic sclerosis associated interstitial lung disease (SSc-ILD) and other chronic fibrosing interstitial lung diseases with a progressive phenotype (PF-ILDs), no approved treatment option had existed in most countries so far. As the first and only therapy, OFEV® now is approved in more than 50 countries for the treatment of SSc-ILD and in more than 40 countries for the treatment of PF-ILDs. This marks a turning point in the treatment of a wide range of rare forms of pulmonary fibrosis. But there is still further therapeutic need. With the InPedILD™ study, Boehringer Ingelheim is investigating the dosing and safety profile of nintedanib in children and adolescents. Yet not all projects can be completed successfully: In 2020, Boehringer Ingelheim and Bridge Biotherapeutics mutually agreed on the termination of the collaboration on an autotaxin inhibitor for fibrosing interstitial lung diseases including idiopathic pulmonary fibrosis (IPF).

Boehringer Ingelheim is dedicated to discovering and developing first-of-their-kind therapies that will help treat serious inflammatory diseases, which can greatly impact patients' lives emotionally and physically. With a deep understanding of molecular pathways, Boehringer Ingelheim is pioneering scientific breakthroughs that target, repair, and prevent inflammatory diseases of the skin, gut, and joints. Spesolimab is the most advanced investigational compound in Boehringer Ingelheim's immunology pipeline. Boehringer Ingelheim aims to give people with serious inflammatory diseases the chance to lead a self-determined and fulfilled life.

Some of the most important neuropsychiatric diseases, such as schizophrenia or depression, continue to be at the center of Boehringer Ingelheim's research on central nervous system diseases. Here, Boehringer Ingelheim is currently further broadening its development activities: In 2020, Boehringer Ingelheim started two Phase II trials for treatments of borderline personality disorder and major depressive disorder and had positive results from a Phase II clinical trial in patients with cognitive impairment associated with schizophrenia. Furthermore, we broadened our innovative activities in schizophrenia by in-licensing a digital therapy from Click Therapeutics.

Retinal diseases such as age-related macular degeneration are the leading cause for legal blindness in the developed world. Although current therapies for some retinal diseases exist, they have limited effectiveness in the real world, and significant unmet treatment needs still exist. In 2020, Boehringer Ingelheim therefore again expanded the global research and development activities for retinal diseases, with the first assets already in clinical development. The work of our scientists is complemented by collaborations with academic and patient organizations, alongside partnerships with biotech companies. While new partnerships have been announced in 2020, the development of an anti-inflammatory AOC3 inhibitor for the treatment of patients with moderate to severe non-proliferative diabetic retinopathy (NPDR) with Pharmaxis has been discontinued.

As a research-driven biopharmaceutical company, we utilize our different areas of expertise to find medical treatments for COVID-19. We initially had a look at our portfolio to identify compounds that may have the potential to manage the symptoms and tissue damage related to the SARS-CoV-2 infection. To directly tackle the virus, we have worked together with Cologne University Hospital (UKK), the University of Marburg (UMR) and the German Center for Infection Research (DZIF). We identified a SARS-CoV-2 neutralizing antibody which entered Phase I clinical studies sponsored by UKK. In addition, we are involved in different consortia such as the CARE (Corona Accelerated R&D Europe) consortium, a project of the Innovative Medicines Initiative (IMI) of the European Union and the COVID-19 Therapeutics Accelerator (CTA) of the Bill & Melinda Gates Foundation (BMGF). The aim is to identify the next generation of neutralizing antibodies and novel small molecule inhibitors of viral proteins or host factors responsible for the replication of SARS-CoV-2. We provided compounds from our historical small molecule library including legacy HIV and HCV assets from previous virology projects, as well as molecules selected through computational screening against the proteases of SARS-CoV-2. Through further screening, we hope to provide starting points for new compound optimization campaigns to be conducted as part of these collaborative consortium efforts.

We are convinced that novel platform approaches will enable us to discover new medicines across therapeutic approaches and disease boundaries by tackling common disease-causing mechanisms. With this strategy, we study immune modulations in the context of oncology and inflammation, or in fibrotic diseases across organs such as the lung, liver, eye, and kidney.

The following table shows the relevant changes in current clinical studies (Phase III) and in studies in people with COVID-19:

CLINICAL TRIAL	PHASE	CHANGES IN 2020
EmpaLinaMet XR (fixed-dose combination tablet of empagliflozin, linagliptin and metformin extended release (XR) for the treatment of adults with type 2 diabetes).	Phase III completed in 2019.	*Approved in the USA.*
EMPEROR-Reduced (NCT03057977), a Phase III, randomized, double-blind trial investigating once-daily empagliflozin compared with placebo in adults with heart failure with reduced ejection fraction, both with and without diabetes, who are receiving current standard of care.	Phase III	*Study completed, primary endpoint met and published in New England Journal of Medicine.* *Empagliflozin significantly reduced the combined relative risk of cardiovascular death and hospitalization for heart failure by 25% in adults with and without diabetes who had heart failure with reduced ejection fraction. Empagliflozin also significantly reduced the relative risk of first and recurrent hospitalizations for heart failure by 30% and significantly slowed kidney function decline.*
EMPEROR-Preserved (NCT0357951), a phase III randomized, double-blind trial investigating once daily empagliflozin compared with placebo in adults with chronic heart failure and preserved ejection fraction, both with and without diabetes, who are receiving current standard of care.	Phase III	*Ongoing.*
INBUILD® (NCT02999178) was a double blind, randomized, placebo-controlled trial evaluating the efficacy and safety of Nintedanib over 52 weeks in patients with progressive fibrosing interstitial lung disease (PF-ILD).	Phase III completed in 2019.	*Approved in more than 40 countries, including in the USA and the EU.*
SENSCIS® (NCT02597933) was a double blind, randomized, placebo-controlled trial evaluating efficacy and safety of oral nintedanib treatment for at least 52 weeks in patients with systemic sclerosis-associated interstitial lung disease	Phase III completed in 2019.	*Approved in the EU in April 2020, now approved in more than 50 countries.*
INPEDILD™ (NCT04093024) is a double blind, randomized, placebo-controlled trial evaluating the dosing and safety profile of nintedanib in children and adolescents between 6 and 17 years old with clinically significant fibrosing interstitial lung disease.	Phase III	*Ongoing.*
BI 764198 (NCT04604184) TRPC6 inhibitor| ARDS in COVID-19 Study of an inhibitor of TRPC6 (inhibitor of the transient receptor potential cation channel 6), to investigate whether this selective inhibitor may reduce the need for ventilator support, improve patient recovery rates and ultimately save lives in patients hospitalized for COVID-19.	Phase II	*Ongoing.**
BI 767551 (NCT04631705, NCT04631666) Studies investigate the efficacy and safety of a neutralizing antibody that is in development as a new therapeutic and prophylactic treatment option against COVID-19.	Phase I/IIa	*Ongoing.*

* Study terminated end of February 2021.

Animal Health

In its research and development activities in the area of animal health, Boehringer Ingelheim concentrates on the research, development, and supply of pioneering treatments and preventive therapies in areas where the medical need is currently unmet and where we will have the greatest impact. This includes innovative vaccines and antiparasitics for the protection of livestock and pets, as well as pharmaceutical products for the treatment of chronic diseases.

In 2020, the R&D unit of our Animal Health business was renamed Animal Health Global Innovation and given a new organizational structure which is based on a disease and system-centered research and development approach. This enables us to more effectively examine diseases in larger populations and on a cross-species basis, to step up our cooperation with our Human Pharma colleagues and external partners, and to bring to the market pioneering innovations in treatment as well as in preventive veterinary therapies.

We have defined six regional innovation centers in strategically important regions in order to boost this approach and encourage cooperation. Three of these are situated in the United States, two in Europe (France/Netherlands and Germany) and one in China. These centers consist of local clusters with specific areas of competence and enable us to cooperate within disciplines and on a multidisciplinary basis, and to implement our strategy at a local level. Following the concentration of our vaccine research and development activities in France and the USA, our German facility in Hanover discontinued its activities at the end of 2020.

External partnerships also play a key role – it is not possible to realize innovations on a broad scale and in new areas through our internal efforts alone. In addition to our internal research and development activities, we evaluate external projects and products and, where appropriate, seek to pursue joint development routes with our partners. In July, we acquired the Belgian veterinary biotech company Global Stem cell Technology NV, which specializes in the research, development and manufacturing of evidence-based, regenerative medicines – stem-cell therapies – for the treatment of orthopedic and immunological animal diseases. This acquisition will enable us not only to strengthen our existing capacities in the equine segment, but also to produce groundbreaking innovations for other species. In September, we joined forces with the Fraunhofer Institute for Molecular Biology and Applied Ecology IME in order to develop the next generation of safe, effective, and sustainable antiparasitics.

In 2020, we initiated more than 450 clinical studies worldwide and were awarded more than 240 product authorizations, including approval in the EU and the USA for the innovative and award-winning ASERVO®EQUIHALER® for the alleviation of severe equine asthma. Obtaining approvals for new products and new areas of application and expanding the geographic scope of our sales activities for existing products are additional important aspects of our research and development activities which help us to create value through innovation.

PRODUCTION FACILITIES

Animal Health (AH)
Human Pharma (HP)
Biopharmaceutical Contract Manufacturing (Bio)

AMERICAS

Brazil
1. Itapecerica (HP)
2. Paulínia (AH)

Mexico
3. Guadalajara (AH)
4. Xochimilco (HP)

Puerto Rico
5. Barceloneta (AH)

USA
6. Athens, Georgia (AH)
7. Fremont, California (Bio)
8. Gainesville, Georgia (AH)
9. St. Joseph, Missouri (AH)
10. Worthington, Minnesota (AH)

EUROPE

Belgium
11. Evergem (AH)

Denmark
12. Kalundborg (AH)

Germany
13. Biberach (Bio)
14. Dortmund (HP)
15. Ingelheim am Rhein (HP)

France
16. Lyon (AH)
17. Toulouse (AH)

Greece
18. Koropi (HP)

Italy
19. Fornovo (HP)
20. Noventa (AH)

Netherlands
21. Lelystad (AH)

Austria
22. Vienna (Bio)

Spain
23. Sant Cugat (HP)

United Kingdom
24. Pirbright (AH)

ASIA / OCEANIA

China
25. Nanchang (AH)
26. Shanghai (HP, Bio)
27. Taizhou (AH)

Indonesia
28. Bogor (HP)

Japan
29. Yamagata (HP)

New Zealand
30. Auckland (AH)

Production

Human Pharma

In the Human Pharma business, our globally acting production division is responsible for the reliable supply of top-quality medicines for patients. The ongoing development of the company's internal production facilities and our strategic cooperation with external manufacturers have established a modern, flexible market supply network which encompasses the entire value chain, from suppliers of starting materials to worldwide logistics and the distribution of finished pharmaceutical products. Boehringer Ingelheim's production facilities concentrate on products that are strategically important for the company, as well as on state-of-the-art and in some cases unique manufacturing technologies. At the same time, partnerships with external manufacturers add specialist technologies to our production network that are not available in-house. They also expand the production capacity of standard technologies for products which have very high capacity requirements or are already far advanced in terms of their life cycle.

In the 2020 financial year, this global network included Boehringer Ingelheim's own plants in nine countries. The Group has four biopharmaceuticals facilities. It also has two facilities for the manufacture of pharmaceutical active substances; one that produces medical devices, and eight that manufacture finished pharmaceutical products. Even during the past year, which was unusual due to COVID-19-related logistical challenges, Boehringer Ingelheim was able to ensure a steady supply of medicines for patients. This was possible due to the fact that key manufacturing steps and technologies have been established at multiple facilities and that an inventory reserve concept is implemented at every step of the supply chain. The continuing digitalization of our production network and of the overall supply chain plays a key role in ongoing development measures to ensure the security of supply.

Delivery capacity and patient care are top priorities for Boehringer Ingelheim. The company consistently makes important investments in the development and transformation of production capacities in our chemical and pharmaceutical network. At its Ingelheim am Rhein headquarters, Boehringer Ingelheim made significant progress in line with its planning with the implementation of a key investment in a flexible plant for the industrialization of newly developed medicines and their initial market supply. We initiated the expansion of production technologies and capacities for pharmaceutical active substances at our Fornovo (Italy) facility and for finished pharmaceutical products at our Koropi (Greece) and Yamagata (Japan) facilities, to ensure the supply of anti-diabetic products (particularly JARDIANCE®) as well as pipeline products. The continuing expansion of Biopharmaceuticals at our Vienna facility serves to expand our own capacities in the network for newly developed products and covers the increased demand for ACTILYSE® and other products.

The ongoing implementation of the Group's supply chain strategy optimizes management of the value chain from the supplier to the customer ("end-to-end"). The use of modern digital and automated processes and technologies enables a high level of transparency and efficient management of the global production network supply chain.

17
Animal Health production facilities in twelve countries

Animal Health

In 2020, Animal Health products were manufactured for worldwide sale in a network of 17 production facilities in twelve countries. In addition to the company's own facilities, in 2020 around 135 contract manufacturers turned out products for Boehringer Ingelheim. The company's product portfolio comprises vaccines, pharmaceutical products and nutraceuticals. These traditional products are supplemented with diagnostic products as well as monitoring solutions, including digital applications which are used for livestock monitoring or which link livestock owners with veterinarians. Optimization of the company's production network continues and remains a priority, with the goal of ensuring a robust, efficient supply of all its products.

In 2020, Boehringer Ingelheim invested in capacity expansion for the strongest revenue contributor, NEXGARD®, at its Barceloneta (Puerto Rico) facility; in the expansion of small animal vaccine production at the company's facility in Athens, Georgia (USA); in the expansion of vaccine capacity in Lyon (France) and St. Joseph, Missouri (USA); and in capacity expansion for foot-and-mouth disease vaccines in Jonage (France). It also invested in the development of innovative technologies for the manufacture of our products.

Biopharmaceutical Contract Manufacturing

One of the leading providers for industrial customers

Boehringer Ingelheim pursues its biopharmaceutical activities at its facilities in Biberach (Germany), Vienna (Austria), Fremont (California, USA) and Shanghai (China). These comprise the manufacture of own-brand marketable products (such as ACTILYSE®, METALYSE®, and PRAXBIND®) and of biopharmaceuticals for clinical testing. BI is also one of the world's leading companies in process development, launch preparation, and commercial production of biopharmaceuticals for third-party industrial customers. Twelve of the top 20 pharmaceutical companies and innovative biotech firms are clients of our Biopharmaceutical Contract Manufacturing business. Boehringer Ingelheim covers the entire biopharmaceutical value chain, from development of the production cell (mammalian cells as well as microorganisms) and the production process, to the manufacture of the active substance and the finished pharmaceutical product, to product launch and global market supply.

Capacity utilization of the network's industrial-scale production facilities remained at a very high level in 2020. There was increased market demand for ACTILYSE® at our Biberach facility; in addition, two new customer products (monoclonal antibodies for cancer therapy) were approved in our Biopharmaceutical Contract Manufacturing business. Process validation (as a precondition of approval) was successfully completed for another two products. In 2020, our facility in Fremont, California (USA) succeeded in gaining authorization to produce a customer's pharmaceutical product. It will thus be possible to meet rising product demand within the network from both Biberach and Fremont. A further customer product at our Vienna facility was also approved by international authorities. Despite the challenging external conditions associated with COVID-19, our cell culture plants in Biberach, Shanghai and Fremont and our microbial production in Vienna continued to reliably manufacture and deliver biopharmaceuticals for patients worldwide without incurring interruptions.

We have almost completed the process of expanding our capacities at our Vienna facility. Initial test runs were successfully completed at the end of the year. The commissioning and qualification process is well advanced, whereby the measures to ensure employees' safety in the context of COVID-19 have made this work even more complex. In early 2020, our new energy center was already operating at full capacity, while our new cell culture production building has now been granted official authorization to operate. An additional, microbial expansion project for the production of a recombinant vaccine with a very high level of demand is expected to complete the commissioning and qualification process on time in 2021. These two projects are of key strategic significance in view of the growing global importance of biotechnologically produced active substances.

In Shanghai (China), hospital products and products for the commercial market were manufactured for both the local and export markets in line with our planning. Our first biopharmaceutical product to win approval under China's new contract manufacturing regulatory requirements was the first commercial product delivered to our customer. Its approval and launch were the final milestones in a pilot project between Boehringer Ingelheim and the Chinese regulatory authorities. The new rules governing cooperation between a marketing authorization holder – our customer – and a contract manufacturer were evaluated and successfully applied. Boehringer Ingelheim's facility in Shanghai was thus recognized as a contract manufacturer (CMO) by the Chinese authorities. We successfully completed the expansion of our "Oasis" production facility in Shanghai with a second 2,000 L bioreactor. Commercial production began in early October.

Employee reporting

Number of employees continues to increase

In 2020, Boehringer Ingelheim employed 51,944 people on average worldwide. This represents an increase of +1.8% over the previous year. The number of staff increased in every region.

Average number of employees by region

	2020	2019
Americas	13,176	13,113
Europe	27,379	26,884
Asia/Australia/Africa (AAA)	11,389	11,018
	51,944	51,015

A major success factor for the positive growth of the Group is our engaged and motivated staff. We place considerable emphasis on actively developing and supporting our employees. In order to be best prepared for the challenges ahead, we emphasize the acquisition of technical expertise and also promote social skills as part of a comprehensive qualification system.

The core aspects of our mission statement were particularly relevant in 2020: The success of our company relies on the strength of our employees; we aim to improve human and animal health; and we feel a sense of responsibility toward the communities in which we operate. As part of our global support program in the fight against COVID-19, we enabled all our employees to take up to 10 days of fully paid leave in the period from April 1 to December 31, 2020, so they could volunteer with external organizations. We will offer all of our employees the same opportunity in 2021. In this way, we can help meet the urgent need for volunteers with a medical background. The impact of the COVID-19 pandemic on work and private life has demanded a great deal from all employees, which is why all employees worldwide were given the opportunity to take a paid vacation from December 24, 2020 until January 3, 2021 inclusive.

By investing in a flexible infrastructure and digital technologies even prior to the pandemic, we had created important prerequisites that enable 40,000 users to work seamlessly from home at the same time. We were thus able to protect our employees while safeguarding our business activities, ensuring the global supply of medicines, and making progress in researching treatment options. Pre-established central digital tools, work flows, and digital channels also ensured communication with medical experts, veterinarians and pet owners.

However, the pandemic has not only raised challenges for us. It has also identified opportunities. Early on, we adapted digital learning formats and training concepts for our apprentices and students who are enrolled in dual-study courses to COVID-19 conditions. We established additional training courses to help our employees work in virtual teams. We document all our new experiences and insights regarding new virtual work methods and tools, meeting formats, business travel, as well as the role of offices, in a “future of work” concept. In the future, this will provide a global framework for a modern and flexible approach to work at Boehringer Ingelheim – beyond COVID-19.

Boehringer Ingelheim's success is based on innovation as well as its presence in 80 countries. The global nature of our value chain, the international nature of our clientele, and the stringent and substantially varying requirements of national regulators demand great flexibility on our organization as a whole. We are convinced that relationships based on trust as well as mutual openness, respect, and empathy are values that make us strong and competitive. Diversity of thought and a spirit of inclusion in our relationships with one another promote a capacity for innovation in every area of our business.

In addition to competitive salaries, Boehringer Ingelheim offers other benefits to its employees. These benefits include a range of company pension plans, flexible and home-based work options, and numerous health-related benefits. As a significant segment of our corporate strategy, the human resources department's scope of duties includes promoting a wide range of opportunities for innovation at work and helping our employees to nurture their own talents and to develop as individuals.

Vocational training has always been of major importance to Boehringer Ingelheim. The company provides many young people with career entry opportunities. At the same time, we also tie a talented and well-qualified workforce of young professionals to the company against a backdrop of demographic change. However, at our company, vocational training does not just mean passing on expertise. We also emphasize getting to know one another and enable young professionals to experience the many aspects of our company and our values.

In 2020, our new recruits began their training or dual-study courses in unusual circumstances. Boehringer Ingelheim anticipated the effects of the pandemic and developed a concept that enabled people to get to know one another in person, subject to strict safety concepts at our plants, while also providing a large number of new digital learning formats. At Boehringer Ingelheim's German facilities, 216 young people started their careers in more than 32 different scientific, technical and commercial fields, through training and dual-study courses. On average, more than 700 young people worldwide were enrolled in our vocational training program in 2020.

One of the company's aims is to strengthen the appeal of Boehringer Ingelheim as an employer for our current and future employees. In 2020, Boehringer Ingelheim once again won recognition as a top employer from the auditors of the international, independent Top Employers Institute. In addition to Germany, Boehringer Ingelheim also received this award in Argentina, Austria, Brazil, China, Colombia, Indonesia, Italy, Malaysia, the Philippines, Poland, Romania, Russia, Singapore, Spain, South Korea, Thailand and Vietnam.

Sustainable development

Sustainability has been firmly anchored in our corporate philosophy since our company's founding in 1885. As a family-owned business, Boehringer Ingelheim plans in generations and for generations. Our sustainable development efforts leverage our unique strengths as a global human and animal health company and are guided by our core values of empathy, respect, passion, and trust as well as by our Focus, our Leitbild. We aspire towards a healthier world where our people and communities can reach their full potential and aspire to have a positive impact on health, society, and our planet.

To achieve sustainability for future generations our efforts focus on three main areas:

1. More Health – Focusing on good health of people and animals
2. More Potential – Focusing on people and communities
3. More Green – Focusing on the environment

MORE HEALTH - Key initiatives

Angels

To optimize stroke care, Boehringer Ingelheim established the "Angels Initiative" together with the European Stroke Organisation (ESO), the World Stroke Organization (WSO), the Stroke Alliance for Europe (SAFE) and many other national stroke associations and companies. In the past year, this initiative achieved its goal of developing a network of over 4,300 clinics worldwide in 112 countries, which ensure that stroke patients are treated in line with defined standards. Overall, more than 40,000 doctors and nurses are involved.

LastMile

South of the Sahara, small farmers in Africa do not always have access to veterinary treatments. Boehringer Ingelheim's "LastMile" initiative seeks to tackle this problem together with the Bill & Melinda Gates Foundation and GALVmed. The goal is long-term, sustained improvement in the availability of veterinary medicine and the creation of awareness about this issue. This project was launched in Kenya in 2018 and is currently being expanded to include further central markets such as Cameroon, Nigeria, Mali, Burkina Faso, and Ethiopia. There are also plans to include Tanzania. The initiative targets ruminants such as sheep, goats, and cattle as well as poultry. Our mission is to establish long-term partnerships with small farming communities to promote sustainable economic activities in the target countries. In 2020, Boehringer Ingelheim launched a mobile app as part of this initiative. This enables the local "LastMile" teams and employees to manage their daily activities and to work more effectively with farmers, traders and veterinarians. The app helps with the precise monitoring of activities, data collection, and evaluation of the impact and scope of the initiative. It thus helps us better understand challenges and improve our knowledge of the small-farming sector. In the future, this will enable us to make informed decisions based on reliable data.

MORE POTENTIAL - Key initiatives

Making More Health

A major pillar of our social commitment is our Making More Health (MMH) initiative in partnership with Ashoka. Since its start in 2010, it has continuously developed as a social entrepreneurship movement, both within our company and externally. The emphasis is on co-creating sustainable solutions that empower local communities and start-ups while leveraging Boehringer Ingelheim's employees' expertise and engagement in vulnerable communities. MMH helps people living on the poverty line with many different areas of their daily lives, such as health, infrastructure, education and income-generating measures. These activities and various projects aim for systemic change. MMH supports the activities and the development of sustainable business models of social entrepreneurs worldwide and has established a broad and diverse network of local and international partners from different sectors. Co-creation as a bridge between social and commercial entrepreneurship brings together social entrepreneurs and non-profit organizations from the health care sector with Boehringer Ingelheim employees and their resources.

Networking across all traditional visible and invisible borders is a central element of a successful social movement, in order to identify, promote, and implement innovative solutions for far-reaching and complex challenges in the health care sector. Through the MMH network, which consists of more than 100 social entrepreneurs in the area of health care, Boehringer Ingelheim and Ashoka – one of the world's largest non-profit organizations – have together reached approximately 9.3 million people worldwide.

The MMH initiative promotes employees' commitment to social entrepreneurship in order to advance health care projects in many different countries, by working with local, external partners as well as colleagues from throughout Boehringer Ingelheim. Several MMH leadership programs have been established over the past 10 years: 1) Insights India and Insights Kenya in rural southern India and Kenya, 2) the MMH Business Accelerator in Kenya Nigeria and Ghana, 3) social intrapreneurship online courses, 4) the "Executives in Residence" program that provides opportunities to collaborate with social entrepreneurs in our MMH network, and 5) an internal competition promoting employees' own projects.

These MMH leadership programs have nurtured our staff's social entrepreneurial thinking and activities and have contributed significantly to local communities. We have also strengthened our networking philosophy through partnerships with non-profit organizations and social enterprises in the health care sector. A large number of local projects have taken shape in which our employees are actively involved. Above all, improving health means understanding people's environment and their everyday challenges and offering solutions where they are needed. Health awareness, affordability, accessibility of health services, and acceptance play a key role here. MMH is active in the university sector, with the goal of helping students and lecturers learn more about social entrepreneurial thinking and practical activities through the development of health care-related projects.

Diversity & Inclusion

Boehringer Ingelheim is convinced that employees with diverse ideas, strengths, interests, and backgrounds are critical to the success of our company. We see a major competitive advantage in the diversity of our employees. It not only helps us to better fulfill the various needs and requirements of our patients around the globe, but also strengthens our performance in the workplace. We are determined to create a work environment in which all of our employees are granted the same high level of respect – irrespective of their gender, nationality, ethnic origin, religion, worldview, abilities, age, sexual orientation or identity. We steadfastly oppose any form of discrimination.

As part of our global commitment in this area, we are participating in multiple internal and external initiatives, which are intended to promote diversity & inclusion. Throughout our company, we support the ongoing development of networks in which employees from different walks of life are granted a voice. This includes networks on gender roles in the working world, people who identify as LGBTIQ+, and people with disabilities.

Outside of our company, we are active members of national and international associations that promote communication and the exchange of knowledge and best practices. We are delighted to have not only published but successfully executed the first action plan in Germany for implementation of the UN Convention on the Rights of Persons with Disabilities 2012-2020, and that we thus serve as an example for many companies in Germany. Continuing the focus of the 2020 PROUT AT WORK conference and the motto "Achieving.More.Together," we sought optimal ways in which various diversity dimensions can work together and benefit from one another.

Be Safe

Health protection and safety are a prerequisite for our production, processes, business planning and decision-making. We offer all employees a safe workplace. Our “BE SAFE – Zero by Choice” program promotes the exchange of best practices; it increases our employees’ level of safety awareness as well as their training.

MORE GREEN - Key initiatives

The protection of employees and the environment, as well as the sustainable use of natural resources and the promotion of environmental awareness, are major components of our company’s mission statement and are of prime importance to Boehringer Ingelheim.

Group-wide, our company has developed binding standards in terms of environmental protection and health and safety at work. These internal guidelines reflect the respective country-specific requirements. In many cases, they go far beyond the standards prescribed by law. In particular, we follow international standards and guidance documents and closely cooperate with various associations. Within Boehringer Ingelheim, our Environment, Health, Safety & Sustainability (EHS&S) department is responsible for this strategic focus.

In 2011, we launched our “BE GREEN – Future by Choice” program. This underwent further development in 2020 and set new strategic, global goals for the period up to 2030, while taking our business growth into account. With this program, we optimize “green” activities at all our facilities and business areas worldwide, while factoring in the value chain. The program considers many different environmental aspects: building up facilities close to nature to provide habitats for a variety of plants and animals, encouraging “green” behavior of our employees, adopting measures to avoid water and air pollution, using renewable energy, reducing waste and creating environmentally friendly products as well as implementing certified systems for environmental protection and energy management.

We continuously work on measures to reduce CO_2 emissions at our facilities. We aim to continuously lower the greenhouse gas emissions associated with our global operations by purchasing energy from renewable sources, and we are planning further reductions in our emissions across our value chain. We are concentrating on the sustainability of our major projects and have established a BE GREEN capital expenditures fund as well as an internal CO_2 pricing method in order to invest in a green future and promote environmentally friendly solutions.

Using digitalized solutions, we are working on implementing globally efficient processes with standardized software solutions. Global digitalization projects such as the collection of environmental data for our Group-wide “BE GREEN” program and electronic signature solutions for EH&S audit systems were successfully supported and implemented. This digitalization approach enables us to rationalize our activities throughout the world and to reduce our expenditure without suffering quality or performance losses.

Certification of production and R&D facilities to standards such as ISO 14001, ISO 45001, and ISO 50001 serves as the basis for internally and externally recognized EHS management systems. Many BI facilities have already achieved a solid certification status. The systematic, continuous improvement of EHS&S facilitates compliance with legislation, reduces licensing fees and generates energy savings. The reduction in internal audits and a positive public profile are just two further examples of why these global standards should be maintained.

Boehringer Ingelheim is aware of the need for active water management programs. Access to sufficiently clean water has an impact on social and cultural justice, ecological sustainability and commercial benefits. We are therefore introducing water management programs at all facilities that are prone to water risk and are reducing the volume of medicines left in production wastewater; we require our suppliers to do the same. Our production facility in Xochimilco (Mexico) has a valid Alliance Water Stewardship (AWS) certification. In 2019, Boehringer Ingelheim was the first pharmaceutical company worldwide to receive certification according to this globally recognized standard.

Antimicrobial resistance (AMR) poses an increasingly serious threat to global public health and requires action at every level of government as well as by businesses and society at large. For this reason, Boehringer Ingelheim joined the AMR Industry Alliance – one of the largest private coalitions established to offer sustainable solutions for combating antimicrobial resistance.

Boehringer Ingelheim supports the objectives of the Nagoya Protocol and is concerned with those aspects of biodiversity, which are relevant for its activities in the pharmaceutical sector.

REPORT ON ECONOMIC POSITION

2020 will remain in our memories for a long time. The SARS-CoV-2 pandemic has caused a great deal of suffering for many people all over the world, and many have experienced considerable economic cutbacks. We would like to extend our sympathy to them. Thanks are due to those who have made tremendous efforts to care for sick and particularly vulnerable people, as well as families, during the lockdown. At the same time, we are pleased that the research-driven biopharmaceutical industry is able to utilize its strong global partnerships to develop solutions at an unprecedented pace. This allows us to look confidently to the future.

Macroeconomic environment

In 2020, world economic output fell by around 3.5% – its largest decline in several decades – chiefly due to the effects of the COVID-19 pandemic. In the second quarter especially, the consequences of anti-pandemic measures such as lockdowns and curfews resulted in a dramatic reduction in economic output, trade volume, and private investments, particularly in the developed and emerging economies. Extensive public investments cushioned the impact of the immediate economic consequences on consumers and companies. Unlike during previous crises, parts of the service industry were particularly badly affected by the social distancing measures.

The ongoing trade tensions between the USA and China and the United Kingdom's Brexit negotiations with the EU placed an additional burden on international trade and investment activities in general. However, these overall conditions had a more direct and immediate impact in the strongly cyclical sectors of the economy. Due to the essential nature of their products and their long-term preparation for Brexit, the pharmaceutical markets were less affected by these hurdles. In general, they are predominantly influenced by the performance capability of national economies and the demographic development of societies, especially on a long-term basis. Their performance is also shaped by the continuous global improvement in access to medical care. The global pharmaceutical market thus grew in the past financial year, unlike many other sectors, which were severely affected by the crisis. However, the growth was lower than in the previous year. Preliminary estimates currently suggest growth of at least 3% (Source: IQVIA). This was due to the fact that, especially in the industrialized nations, visits to doctors' offices and hospitals were postponed during the COVID-19 pandemic, which resulted in a decline in the demand for products. In addition, social distancing measures resulted in delays to clinical studies in the pharmaceutical industry and thus affected research activity schedules. Since its core business is stable compared with other sectors, pharmaceutical firms were able to make a strong contribution to the fight against COVID-19 by increasing their research and development investments in the SARS-CoV-2 virus.

In 2020, there were continued efforts in a number of countries – including in core markets – to reduce rising health care expenditures by means of regulatory action to lower pharmaceutical prices. There are also an increasing number of initiatives seeking a shift of the burden of payment onto patients, which limit the opportunities for access to innovative medicines. These include, for example, government-imposed industry-wide price reductions, mandatory reference price systems and imports of medicines from lower-cost countries. The approaches also include the mandatory substitution of patented medicines with generics. Furthermore, the protection of our intellectual property is under increasing pressure. The "Pharmaceutical Strategy for Europe" presented by the European Commission at the end of 2020 has the declared aim of sustainably strengthening the attractiveness of Europe as a research and production location and improving access to medicines and therapies. An important prerequisite for achieving this objective remains a reliable legal framework that promotes innovation and ensures the protection of intellectual property. We are critical of tendencies which are aimed at weakening incentive instruments. They would be the wrong signal and would further shift future cutting-edge research and investment in pharmaceutical innovation to other regions of the world, with an impact also on supply in Europe.

The animal health industry, which focuses on pets and livestock, is on a very strong growth path in the emerging markets in particular, due to population growth and improving living standards for many people. The animal health market is characterized by rising demands for animal proteins as well as the increasing popularity of pets. The impact of the COVID-19 pandemic on these segments varied. While product sales increased in the pet segment despite limited physical access to veterinary clinics at times, the livestock segment partly experienced a drastic decline in demand due to closures of slaughterhouses and restaurants. Online channels are becoming increasingly important and have largely made up for the lack of physical access during the COVID-19 pandemic. In general, consolidation through mergers on both the supplier and the customer side is ongoing, which leads to increased competition. In the future, growth in the Animal Health business will largely be driven by therapeutic innovation. In order to grow faster than the market, investment in innovation in this area will be vital. In therapeutic areas in particular, the company expects to be able to realize synergies from its Human Pharma business. Continuous, sustained and competitive investment in innovation will play a key role, analogous to the Human Pharma segment.

In the 2020 financial year, Boehringer Ingelheim implemented an extensive range of measures to minimize the impact of the COVID-19 pandemic on its employees, patients, and society at large, and to protect the health of its workforce. Another important aspect of its activities was safeguarding production and the supply of medicines for patients as well as veterinary pharmaceuticals for pet and livestock owners. Boehringer Ingelheim was able to realize this objective in 2020 thanks to its broad production and supplier network. In the second quarter of the year, the company even fulfilled peak wholesaler and pharmacy demand generated by their strategic stockpile purchases.

In this environment, Boehringer Ingelheim defended its market position thanks to the dedication of its workforce, its capacity for innovation, and its particularly strong and competitive investment in innovation. It will thus be able to make a major contribution to human and animal health.

In 2021, according to the International Monetary Fund, the global economy will grow by 5.5%. The trade policy of the new US government and the withdrawal agreement concluded between the United Kingdom and the EU offer the prospect of a significant upswing. The successful production, distribution and application of COVID-19 vaccines should also have a positive effect. However, according to the IMF, there are also many risks which, if realized, could lead to weaker growth. These include further lockdowns due to the uncontrolled spread of the COVID-19 pathogen, heightened geopolitical tensions, and weather-related natural disasters.

Due to its global presence, Boehringer Ingelheim is affected by changes in foreign exchange rates, particularly those of the US dollar (USD), the Japanese yen (JPY) and, increasingly, the Chinese renminbi (CNY). The US dollar fluctuated between 1.07 EUR/USD (January) and a low of 1.23 EUR/USD (December). Following an interim high of 114.65 EUR/JPY (May), the Japanese yen ended the year at a low of 127.23 EUR/JPY (December), around 4% lower than at the start of the year. The Chinese renminbi reached a high of 7.55 EUR/CNY (February) and an interim low of 8.26 EUR/CNY (July). Emerging markets currencies were also highly volatile in 2020. Significant transactional currency risks are hedged through suitable currency instruments.

Currency development

Average rate – basis: EUR 1	2020	2019	Effect on net sales (in million EUR)
US dollar	1.14	1.12	– 140
Japanese yen	121.78	122.06	3
Chinese renminbi	7.87	7.73	– 17

Earnings position

A stable and competitive earnings position and solid financing guarantee Boehringer Ingelheim's independence and are therefore central to our activities. It is on this basis that we pursue our guiding principle of "Value through Innovation" and contribute to improvements in human and animal health by means of innovative therapies.

19.6
billion EUR in sales

Despite the COVID-19 pandemic, business performance was positive in 2020. Boehringer Ingelheim recorded net sales of 19,566 million EUR, which corresponds to a + 3.0% increase compared with the previous year's 18,997 million EUR. The exchange rate development on the foreign exchange markets and the associated exchange rate effects had a negative impact on the sales trend. Adjusted for these effects, the Group grew by + 5.6%. All regions contributed to this growth.

With sales of 8,889 million EUR and a 45% share of overall sales, the Americas region remains Boehringer Ingelheim's key sales market. For the Americas region, sales increased by + 0.7% year-over-year (currency-adjusted + 4.8%). Sales in the Europe region rose by + 3.3% to 5,879 million EUR (currency-adjusted + 4.2%). This region accounts for 30% of the Group's net sales. This growth was driven by the countries in Central and Eastern Europe as well as Germany, Spain, and the United Kingdom, while in Italy the Group was unable to match the previous year's sales volume. The Asia/Australia/Africa (AAA) region also realized strong growth of + 7.1% (currency-adjusted + 8.8%). Revenues of 4,798 million EUR were generated in this region, corresponding to a 25% share of the Group's total revenues. The strategically important Chinese market provided 6.0% of the company's overall sales volume, which represents a currency-adjusted increase of + 20.5% year-over-year. Among other factors, the market

benefited here from the decline in the incidence of African swine fever, which had negatively affected growth in 2019.

Net sales by region (in million EUR)

	2020	2019	Change	currency adjusted
Americas	8,889	8,830	+0.7%	+4.8%
Europe	5,879	5,689	+3.3%	+4.2%
Asia/Australia/Africa (AAA)	4,798	4,478	+7.1%	+8.8%

Growth in all regions

In our Human Pharma business, in 2020 we once again made our products available to more patients thanks to new approvals in additional countries; we also further strengthened established products. Boehringer Ingelheim had already begun to introduce digital customer relations strategies in previous years. Our local sales organizations successfully expanded these strategies under COVID-19 restrictions, and they played an even more important role in our customer relations activities. The strategic growth areas of our Animal Health business registered positive results. However, some parts of the livestock segment were strongly impacted by the effects of COVID-19 measures (for instance, our customers' sales declined due to the closure of slaughterhouses and restaurants).

Key figures (in million EUR)

	2020	2019	Change
Net sales	19,566	18,997	+3.0%
Operating income	4,624	3,782	+22.3%
Return on net sales	23.6%	19.9%	
Income before taxes	4,305	3,496	+23.1%
Income after taxes	3,062	2,721	+12.5%

The materials ratio (taking into consideration the change in inventory) improved to 12.9% (2019: 13.2%). Personnel expenses increased primarily due to the additional employees hired in the areas of research, development, medicine and biopharmaceutical medicine production, which are of strategic significance for Boehringer Ingelheim. In addition to the increase in the average number of employees (+1.8%), the higher personnel expenses reflect effects associated with additional vacation days, which we granted our employees in 2020 to provide them with support, as well as the performance-related compensation which enables our employees to share in the company's success.

Amortization of intangible assets and depreciation of tangible assets increased by 196 million EUR by comparison with 2019. This rise mainly reflected higher valuation adjustments on intangible assets in the Animal Health and Human Pharma businesses. Depreciation of tangible assets also increased, due to the continuing high volume of investment activities.

The increase in operating income to 4,624 million EUR in 2020 demonstrates that Boehringer Ingelheim is resolutely pursuing its long-term goal of profitable growth in all business areas. In addition to the positive sales trend for our business activities, lower operating costs year-over-year also contributed to the improved level of operating income. The return on sales thus increased to 23.6% in the

2020 financial year (2019: 19.9%). Income before taxes rose, due in particular to the higher operating income. Financial income declined overall due to reduced income from plan assets to cover pension and similar obligations, as well as a lower level of income from long-term securities; this was partly offset by holding income, which was influenced by one-off effects.

Income after taxes was 12.5% higher than in the previous year and reflects the favorable course of business. It is noteworthy in this regard that, under the provisions of German commercial law, shareholders' personal taxes arising from Group business activities may not be recognized as tax expenses. Instead, these taxes are presented as part of withdrawals from Group equity. When taking this specificity into account, the actual tax ratio is markedly higher than the figure shown in the profit and loss statement.

3,062
million EUR
Group profit

Despite challenging market conditions in some business areas, Boehringer Ingelheim registered a positive performance in the 2020 financial year. The improved level of profitability enabled additional research and development investments, including in the race to develop therapies to treat the health effects of COVID-19. Following a Group profit of 2,721 million EUR in the previous year, in 2020 this figure rose by 341 million EUR to 3,062 million EUR.

Development of the businesses

As in the previous year, Boehringer Ingelheim's activities were divided into the Human Pharma, Animal Health, and Biopharmaceutical Contract Manufacturing businesses.

Net sales by businesses (in million EUR)

	2020	2019	Change	currency adjusted
Human Pharma	14,415	13,961	+3.3%	+5.8%
Animal Health	4,121	4,035	+2.1%	+5.0%
Biopharmaceutical Contract Manufacturing	837	786	+6.5%	+6.6%
Other sales	33	41	−19.5%	−19.7%
Discontinued Operations	160	174	−8.0%	+1.0%

Human Pharma

With around 74% of total Group revenue, Human Pharma was the main pillar of Boehringer Ingelheim's business activities. In the context of the COVID-19 restrictions, the company effectively expanded the scope of the digital information strategies, which it had already established in previous years. This was crucial, since important scientific symposia and the activities of pharmaceutical representatives were greatly limited or could not take place due to contact restrictions. Human Pharma sales amounted to 14,415 million EUR in 2020. This is equivalent to growth of +3.3% (currency-adjusted +5.8%) compared with the previous year. This positive sales trend resulted primarily from increased sales of products in the JARDIANCE® family and OFEV®. The company achieved growth year-over-year in all regions. Despite price pressure – particularly for established medicines – Boehringer Ingelheim successfully held its own and continues to pursue the reorganization of its Human Pharma product portfolio as planned. This included the sale of non-strategic products in the 2020 financial year. The growing licensing business – in particular of SKYRIZI®, which has been licensed to AbbVie – also contributes to the positive development of the Human Pharma segment.

As in the previous year, JARDIANCE®, which is used to treat type 2 diabetes, was the company's biggest revenue contributor in 2020. We achieved sales of 2,480 million EUR with JARDIANCE® in the reporting period, which represents a currency-adjusted increase of +18.1% year-over-year.

Net sales (in million EUR)

	2020	2019	Change	currency adjusted
JARDIANCE®	2,480	2,152	+15.2%	+18.1%
OFEV®	2,055	1,491	+37.8%	+40.6%
SPIRIVA®	1,793	2,058	−12.9%	−10.8%
TRAJENTA® / JENTADUETO®	1,512	1,559	−3.0%	−0.3%
PRADAXA®	1,492	1,529	−2.4%	−0.2%

40.6%
currency-adjusted growth of OFEV®

Last year, OFEV® was Boehringer Ingelheim's second-strongest revenue contributor for the first time. This product is used to treat idiopathic pulmonary fibrosis and, to an increasing extent, for two additional indications, SSc-ILD and PF-ILD. OFEV® generated sales of 2,055 million EUR, which represents currency-adjusted growth of 40.6%. This significantly exceeded the previous year's figure.

SPIRIVA®, which is used for the treatment of chronic obstructive pulmonary disease (COPD), is the third-strongest product in Boehringer Ingelheim's portfolio, with sales of 1,793 million EUR. This revenue was lower than in the previous year (2,058 million EUR), as expected in view of the product's life cycle.

TRAJENTA® and JENTADUETO® for treatment of type 2 diabetes registered a slightly lower sales volume of 1,512 million EUR. With sales of 1,492 million EUR in the 2020 financial year, the anticoagulant PRADAXA® likewise fell marginally short of the previous year's result but nonetheless remains one of Boehringer Ingelheim's strongest revenue contributors.

Risankizumab, a medication for treatment of plaque psoriasis, which was mainly developed by Boehringer Ingelheim, is successfully marketed globally through our partner AbbVie under the brand name SKYRIZI®. Revenues from the license agreement increased by 17.5% in 2020 year-over-year (currency-adjusted +17.5%).

With regard to the regional distribution of revenues in the Human Pharma business, the USA was once again the largest market with a share of 39%. Here, Boehringer Ingelheim generated sales of 5,658 million EUR, which corresponds to a 1.5% increase compared with the previous year (currency-adjusted +3.4%).

The EUCAN region (Europe, Canada, Australia, and New Zealand), our second-biggest market, accounted for 32%, with revenues of 4,585 million EUR. Sales increased by +4.7% (currency-adjusted +6.0%) compared to 2019 (4,381 million EUR).

In the past year, the company's emerging markets registered sales growth of +3.2% (currency-adjusted +10.4%). Sales rose from 2,753 million EUR in the previous year to 2,841 million EUR in 2020. The People's Republic of China was a key driving force in the region, with a currency-adjusted growth rate of +12.7%.

In Japan, sales increased by +6.4% to 1,331 million EUR (currency-adjusted +6.2%). Last year's sales amounted to 1,251 million EUR.

Net sales by region (in million EUR)

	2020	2019	Change	currency adjusted
USA	5,658	5,576	1.5%	3.4%
EUCAN	4,585	4,381	4.7%	6.0%
Emerging Markets	2,841	2,753	3.2%	10.4%
Japan	1,331	1,251	6.4%	6.2%

Animal Health

The sales in the Animal Health business amounted to 4,121 million EUR in 2020. This is equivalent to growth of +2.1% (currency-adjusted +5.0%) compared with the previous year.

Net sales (in million EUR)

	2020	2019	Change	currency adjusted
NEXGARD®	804	740	+8.6%	+12.0%
FRONTLINE®	406	379	+7.1%	+9.2%
HEARTGARD®	312	318	−1.9%	+0.0%
INGELVAC CIRCOFLEX® / FLEXCOMBO®	264	238	+10.9%	+14.9%

Antiparasitics drive growth

The swine and pet antiparasitics segments developed successfully and outperformed expectations. The increased sales in the pet segment in the USA compensated for declining sales in the ruminant and equine segments. In the USA region especially, livestock medication sales declined due to the temporary closures of slaughterhouses and restaurants due to COVID-19. In China, the decrease in the incidence of African swine fever had a positive impact on the swine segment. The swine vaccine INGELVAC CIRCOFLEX® thus achieved a global growth rate of +10.9% to 264 million EUR (currency adjusted +14.9%).

However, the pet segment accounts for the three best-selling medicines in Boehringer Ingelheim's Animal Health business: NEXGARD® enjoyed revenues of 804 million EUR (2019: 740 million EUR), with a currency-adjusted growth level of +12.0% year-over-year. The antiparasitic FRONTLINE® achieved sales of 406 million EUR, a +9.2% improvement on the previous year's level on a currency-adjusted basis. HEARTGARD®, another antiparasitic, registered a −1.9% decline and sales of 312 million EUR (2019: 318 million EUR).

There was a decline in sales in the poultry segment. The equine segment was also unable to match the previous year's strong performance. This was primarily a reflection of the cancellation in 2020 of equestrian events – at which we present our innovative equine health solutions – due to COVID-19.

The decline in sales in the ALAMEA (Asia, Latin America, Middle East, Africa) region is mainly attributable to developments in the Middle East and Africa region. The COVID-19 crisis has aggravated existing economic difficulties in this region and triggered a significant decline in demand, especially in the poultry segment. In addition, Boehringer Ingelheim discontinued its unprofitable ruminant business in India. The region TCM (The Chinese Market) registered 43.0% currency-adjusted growth.

In the 2020 financial year, the Animal Health business was confronted with various production and supply bottlenecks because of the COVID-19 pandemic; this included delays in the delivery of raw materials and active ingredients and capacity constraints in freight transport (especially air and sea freight). Thanks to the significant commitment of all employees, particularly in production and sales, Boehringer Ingelheim was able to ensure the market supply to the extent possible, and thus minimize potential revenue losses.

Net sales by region (in million EUR)

	2020	2019	Change	currency adjusted
USA	1,815	1,768	+2.7%	+4.6%
EUCAN	1,244	1,233	+0.9%	+2.2%
ALAMEA	770	829	−7.1%	+0.2%
TCM	292	205	+42.3%	+43.0%

Biopharmaceutical Contract Manufacturing

In the Biopharmaceutical Contract Manufacturing business, revenue was +6.5% higher (currency-adjusted +6.6%) than in the previous year due to strong demand for our customers' market products. The order situation for the entire business has developed positively, resulting in a high level of capacity utilization.

Continued strong growth in the Biopharmaceutical Contract Manufacturing

Other sales / discontinued operations

Other sales mainly contain discontinued operations, which were winding down as expected. Under discontinued operations we aggregate activities of minor strategic importance for Boehringer Ingelheim, which include obligations and income resulting from the business swap with Sanofi.

Discontinued operations still include the BUSCOPAN® business in Brazil, whose divestiture was completed in 2020.

Financial position

Boehringer Ingelheim's financial management strategy aims to safeguard the company's financing by means of its operating cash flow as far as possible, to minimize financial risks and optimize the cost of capital.

(in million EUR)	2020
Financial funds as of 1.1.	**2,195**
Cash flow from operating activities	3,963
Cash flow from investing activities	– 326
Cash flow from financing activities	168
Change in financial funds from cash relevant transactions	**3,805**
Change in financial funds due to change of consolidated companies or exchange rate movements and valuation adjustments	105
Financial funds as of 31.12.	**6,105**

Cash inflow from operating activities amounted to 3,963 million EUR, which represents an increase of 619 million EUR in comparison to the previous year (3,344 million EUR). This is attributable to the positive business performance.

Cash outflow from investing activities amounts to 326 million EUR and remains significantly lower than in the previous year, despite a continuing high level of investment in strategic infrastructure for our business activities and external innovation. This was especially due to the divestiture of our holding in Hikma Pharmaceuticals PLC in 2020.

High capital expenditure volume

Further milestones were reached in the 2020 financial year in terms of major investments in fixed assets, such as the expansion of the production facilities in Vienna (Austria) for Biopharmaceutical Contract Manufacturing. They included the first successful test runs at production scale in our fermentation unit. In 2020, we invested more than 300 million EUR in our long-established Vienna site. The development center for biopharmaceutical medicines (BDC), currently under construction in Biberach, also achieved important project milestones in 2020. Around 70 million EUR were invested in the BDC, supplementing a number of significant investments in Boehringer Ingelheim's global research and development network.

In Jonage (France), Boehringer Ingelheim is investing in a new antigen production center in the area of Animal Health for regulatory animal disease control, in response to the growing demand for medicines to treat foot-and-mouth and bluetongue disease. Due to the magnitude of the COVID-19 pandemic in France, this investment project failed to match the envisaged level of progress in 2020. The infection rates in France and the countermeasures employed will determine whether further delays arise in 2021. Also noteworthy is the Group's acquisition of the Belgian company Global Stem cell Technology NV in the area of Animal Health R&D.

Cash inflow from financing activities amounts to 168 million EUR and mainly comprises tax refunds for shareholders' personal taxes associated with the Group's activities in previous years, as well as research bonuses received – in particular with regard to our investments in research in Austria.

Overall, after taking into consideration changes within the group of consolidated companies as well as changes due to exchange rate movements and valuation-related changes, the Group's financial funds increased by 3,910 million EUR to 6,105 million EUR as of December 31, 2020.

Net assets position

(in million EUR)	31.12.2020	31.12.2019	Change	Change in %
Assets				
Intangible and tangible assets	9,345	9,636	–291	
Financial assets	8,553	9,162	–609	
Fixed assets	**17,898**	**18,798**	**–900**	**–4.8%**
Inventories	3,863	3,563	300	
Trade accounts receivable	4,302	4,196	106	
Other receivables and other current assets	950	1,241	–291	
Securities	1,499	0	1,499	
Cash and cash equivalents	4,606	2,195	2,411	
Current assets	**15,220**	**11,195**	**4,025**	**+36.0%**
Other assets	3,769	3,487	282	
Total assets	**36,887**	**33,480**	**3.407**	**+10.2%**
Equity and liabilities				
Group equity	**17,307**	**14,681**	**2,626**	**+17.9%**
Provisions for pensions and similar obligations	5,581	5,185	396	
Tax provisions and other provisions	9,739	9,336	403	
Accounts payable and loans	1,912	1,715	197	
– thereof residual term over 1 year:	77	83	–6	
Liabilities	**17,232**	**16,236**	**996**	**+6.1%**
Other liabilities and difference from capital consolidation	2,348	2,563	–215	
Total equity and liabilities	**36,887**	**33,480**	**3,407**	**+10.2%**

As of December 31, 2020, Boehringer Ingelheim's total assets amounted to 36,887 million EUR, an increase of 3,407 million EUR as compared with the previous year. This increase was due, in particular, to the rise in the level of cash and cash equivalents which was attributable to the positive cash flow in the financial year.

Despite the high level of investment in the strategic expansion of the company's business in Human Pharma research in Germany, Biopharmaceuticals in Vienna (Austria) and Fremont, California (USA), as well as Animal Health in France, overall intangible and tangible fixed assets decreased due to depreciation and amortization as well as exchange rate effects. In spite of negative currency effects, working capital (receivables and inventories) increased, particularly due to the buildup of safety stocks in the Human Pharma business, especially in Germany, the USA, and Austria. Trade accounts receivable increased on business grounds in the USA and China in particular. Other receivables and other assets declined due to exchange rate effects, lower tax prepayments in France and decreases in Germany. Other assets increased due to higher deferred tax assets resulting from temporary differences between the valuations in the consolidated companies' tax balance sheets and the valuations in the consolidated balance sheet as well as the positive market trend for plan assets for pensions and similar obligations in the USA.

Despite negative exchange rate effects, Group equity increased due to the Group profit in 2020. Equity amounted to 17,307 million EUR as of December 31, 2020. The equity ratio thus improved to around 47% (December 31, 2019: 44%) in spite of the higher balance sheet total. In addition to equity, the pension provisions and long-term liabilities are also available to the Group as capital in the long term. These three items totaled 22,965 million EUR as of December 31, 2020, representing a 62% share of total assets. Consequently, as in previous years, long-term disposable capital continues to cover all intangible and tangible fixed assets as well as working capital.

Pension provisions increased in Germany, especially due to a lower actuarial discount rate. The increase in other provisions correlates to the change in the level of revenue, since this includes provisions for discounts in the USA and for royalty payments. Provisions for environmental and legal risks, unclaimed vacation and other personnel-related expenses also rose. Exchange rate effects in particular had the opposite effect. The increase in liabilities mainly relates to other liabilities as well as trade accounts payable, in Germany especially. The other liabilities declined, mainly due to the release of the difference arising from capital consolidation and lower deferred income.

The net assets position likewise reflects Boehringer Ingelheim's positive development in the 2020 financial year. Boehringer Ingelheim remains a soundly financed company, incurring considerable capital expenditure in the development of its business and research activities in order to ensure its long-term growth and thus its independence.

REPORT ON OPPORTUNITIES AND RISKS

Opportunities and risk management

When assessing the risks in the context of holistic opportunities and risk management, we also endeavor to take into account the resulting opportunities.

Opportunity management is based on the strategies and objectives of the company and of individual businesses and operating business units, and is an integral part of the Group-wide planning and management systems. Those responsible for the businesses and functions bear direct responsibility for the early and systematic identification, analysis and use of opportunities.

For Boehringer Ingelheim as a research-driven biopharmaceutical company, its current research and development activities are naturally considered an opportunity. Relevant projects have already been outlined in the research and development (R&D) chapter. We also consider digitalization to be an opportunity and see new technological possibilities in the areas of research and (particularly clinical) development, as well as in the support of patients during therapy. In the current COVID-19 pandemic, we are giving greater priority to this opportunity for digitalization in many different areas, but especially in sales and administration.

The aim of the risk management system implemented at Boehringer Ingelheim is to identify business-specific risks as early as possible (particularly risks that jeopardize the continued existence of the company), to assess them, and to reduce them to a reasonable level by means of suitable measures. The persons responsible for the key businesses and functions are also included in the process of calculating and assessing risks. The Group-wide risk and information system ensures that all identified risks are analyzed and assessed carefully. Following appropriate classification, adequate risk management measures are initiated and their implementation is consistently monitored.

In the year under review, internal auditing performed targeted routine audits as well as extraordinary audits around the world. In addition to adherence to legal requirements and internal Group guidelines, the main focal points were the functionality of systems, the effectiveness of internal controls for the prevention of loss of assets and the efficiency of structures and processes. Corresponding adjustments or optimizations were initiated as necessary.

Individual risks

The most important risks to which Boehringer Ingelheim is exposed are broken down into the following specific categories: financial risks, legal risks, production and environmental risks, personnel risks and industry-specific risks.

Risks are identified below as being “concrete” when they appear to be controllable by means of specific management procedures. The term “abstract” is used in the case of risks that cannot be completely controlled, even by means of targeted management procedures, regardless of the probability of their occurrence.

Financial risks

Relevant financial risks are themselves broken down as follows: currency risks, credit and country-specific risks, as well as financial investment and shareholding risks.

Currency risks

The global orientation of our business activities is subject to opportunities and risks due to exchange rate volatility, particularly with regard to the US dollar and Japanese yen – but also with regard to emerging markets' currencies, especially the Chinese renminbi. The Group monitors and quantifies these risks at regular intervals, making them predictable for future business by means of relevant hedging strategies and appropriate financial instruments, such as forward exchange contracts. The resultant risks are subsequently designated as being concrete and controllable and therefore limited.

Credit and country-specific risks

Boehringer Ingelheim is exposed to various credit and country-specific risks as a result of its international business activities. From the portfolio of trade accounts receivable and trade accounts payable, we have not identified any extraordinary risks for the Group beyond the usual level in the industry since the start of the COVID-19 pandemic, also compared with previous years. The same applies to possible default risks for receivables, which are largely hedged against economic and political risks. We will continue to carefully track credit and country-specific risks, so as to be in a position to respond to negative changes in a timely manner. These risks, which we consider moderate, are therefore regarded as concrete.

Financial investment and shareholding risks

The Group pursues a defensive investment strategy in the management of its financial assets.

This is reflected in the orientation of its portfolio, which is focused on European Economic and Monetary Union (EMU) government bonds with top credit ratings and short-term money market deposits. This results in a concrete, controllable and thus limited risk – but therefore only limited opportunities – for the major part of the financial investments. The net book value of some of the strategic investments in related companies is affected by market and business circumstances, which leads to a higher level of volatility in the fair market value. All specific risks have been covered by respective impairments in the consolidated financial statements.

Legal risks

The business activities of the Group are exposed to legal risks. A distinction is made between regulatory, liability and patent protection risks.

Regulatory risks

Boehringer Ingelheim is exposed to risks arising from legal disputes and proceedings as well as official investigations. As the legal or administrative decisions in ongoing or future proceedings cannot be predicted, we regard the resultant risks as being abstract and high.

Liability risks

The marketing and sale of pharmaceuticals are exposed to a potential product liability risk. Boehringer Ingelheim currently has product liability insurance for the company's risk profile. There is absolutely no guarantee, however, that this insurance coverage can be maintained at reasonable cost and acceptable conditions, or that it is sufficient to protect Boehringer Ingelheim against a claim or loss, or against all potential claims or losses. In case it is foreseeable that the product liability insurance does not cover or only partially covers a specific liability risk, the remaining risk exposure has been covered by a provision. We therefore see a moderate risk for the Group here.

Furthermore, product liability claims could tie up substantial financial resources and management capacity and be detrimental to the company's image in the event that the market considers the product to be unsafe or ineffective as a result of unexpected side effects. We see this as an abstract and moderate risk.

Patent protection risks
Protection of innovations through trademark and patent rights is of particular importance to Boehringer Ingelheim as a research-driven biopharmaceutical company. These commercial protective rights are increasingly the target of attacks and breaches. We have taken the necessary precautions to allow us to detect threats at an early stage and, by commencing appropriate countermeasures, defend our legal position using all legal means available to us so that these factors are regarded as concrete and moderate risks.

Production and environmental risks

Our quality management system and compliance processes are continuously optimized in close cooperation with the relevant authorities in order to ensure compliance with cGMP standards (current good manufacturing practices). Risks in this area continue to be of high significance to the Group and are classified as abstract. Boehringer Ingelheim implemented risk-mitigating measures in the past year in order to counter COVID-19-specific threats to its production activities. These include the physical segregation of production teams when possible, the obligation to wear a mask, an increase in the supply of disinfectants, and in-house initiatives for testing the COVID-19 status of employees. In order to protect facility-based functions, employees whose presence is not site-dependent were asked to work from home.

In order to guarantee the supply of our products to the market, we have implemented measures that guarantee reliable and high-quality supplies for internal and external customers. In addition to supplier management on the procurement side, this also involves building up internal standby capacities. Overall, this represents a concrete and moderate risk.

Risks in the areas of environment, health, safety and sustainability (EHS&S) are preemptively minimized by ensuring global adherence to our high safety standards. Appropriate emergency plans have been drawn up for possible incidents of any kind and are practiced and subjected to comprehensive quality testing at regular intervals. As a result of these measures, these risks are classed as concrete and limited.

Personnel risks

Boehringer Ingelheim, as other companies, is exposed to demographic change and the resultant risk of being affected by a lack of appropriately qualified personnel. This potential risk can have a substantial impact on the company's business activities. It has therefore been included in the long-term planning process for many years and has gained strategic significance as a result.

Boehringer Ingelheim counters the risk by means of a comprehensive personnel concept. In the context of global personnel management, this also presents the Group with opportunities. Regardless of their ethnic background, gender or religion, we offer all of our company's employees development opportunities based on their professional abilities, social skills, personal aptitudes, and willingness to take on responsibility in accordance with the needs of the company. In view of the measures described above, the risk is regarded as concrete and moderate.

Boehringer Ingelheim is likewise exposed to human resources risks as a result of the COVID-19 pandemic. If the pathogen were to spread, this would have a significant impact both in and outside of our production activities. The company is therefore closely monitoring the situation in the vicinity of its sites. It also emphasizes working from home, using digital applications rather than in-person meetings, and curbing employee travel to a large extent. In view of these measures, this is considered to be a concrete and moderate risk.

Industry-specific risks

Boehringer Ingelheim is subject to the industry-specific business risks of the pharmaceutical industry. These risks have partly materialized in the past financial year and are becoming increasingly important for Boehringer Ingelheim due to their effects. They continue to be classed as abstract and high. In addition to the loss of exclusivity of products established on the market and risks associated with the development and registration of new products, these risks increasingly include changing and restrictive requirements relating to pricing and reimbursement in many markets. Frequently, the prices of pharmaceutical products are subject not only to state monitoring and regulation, but also to price pressure from cheaper generic drugs caused by state reimbursement systems. Boehringer Ingelheim is keeping a close eye on the various changes in its sales markets and takes appropriate measures in response to current developments.

Overall statement on the risk situation

From a current perspective, we are not aware of any risks that alone or in conjunction with other risks could lead to a lasting impairment of the company's assets or financial or earnings position and could jeopardize the continued existence of Boehringer Ingelheim.

REPORT ON EXPECTED DEVELOPMENTS

Boehringer Ingelheim can look back on a successful 2020 financial year in which we achieved our ambitious targets, in terms of both absolute figures and our contribution to the wellbeing of patients, pets, and livestock. We were able to safeguard the company's sustainable development and profitable growth, even during volatile months for the world economy and the pharmaceutical industry.

The ongoing COVID-19 pandemic and a more difficult industry environment will continue to pose challenges for Boehringer Ingelheim in 2021. While this makes planning for the coming cycle more difficult than usual, we nonetheless look forward to the year ahead with confidence. For 2021, we envisage a partial recovery of the world economy from the deep recession of the past year. Due to our experience last year, we are optimistic that we will be able to cope with temporary setbacks and new lockdowns without experiencing substantial supply problems.

In view of global efforts to reduce the prices of medicines, financial flexibility remains critical for the growth and innovation of Boehringer Ingelheim. Assuming that the approved vaccines and other medicines currently undergoing the approval process help curb the COVID-19 pandemic, we expect strong general market growth for prescription pharmaceuticals. The "Focus to Accelerate" initiative in our Animal Health business represents a strategic reorientation. In the future, it will allow us to provide our customers with even more innovative solutions, including through external partnerships. The continuing spread of African swine fever remains a significant factor, despite an improved situation in some key markets such as China. Our priorities in our biopharmaceuticals business are supplying the market with our own products and contract manufacturing for customers. Beyond this, the launch of our LSCC large-scale production facility in Vienna (Austria) remains a focus.

For 2021, we expect Boehringer Ingelheim to achieve a slight year-on-year increase in net sales on a comparable basis (adjusted for currency and extraordinary effects).

Our consistently high R&D expenditure, which once again increased in 2020, is compatible with our strategic focus on continuing to drive growth and the flow of new products. In 2020, we once again achieved our goal of obtaining some of our R&D through external innovation and partnerships. We will continue to actively pursue this strategy in 2021.

We invest in our own and external R&D after close investigation of the therapeutic benefit and the associated prospects for success. The flow of innovative medicines in our research pipeline shows short-, medium- and long-term growth potential. For 2021, we anticipate a significant increase in R&D investments for new medicines; we also expect to continue our high level of commitment to research on medicines that will help alleviate the effects of the COVID-19 disease.

In addition to patent expiry and attacks on patents, the major challenges facing the research-driven pharmaceutical industry are the increasing amount of investment in R&D as well as bigger hurdles and increased costs associated with product approvals. Also of particular note is the previously mentioned growing cost pressure in health care systems. In 2020, policymakers' readiness to contribute to the substantial investments needed for the development of new medicines was apparent in the area of COVID-19 research. Only by providing vaccines and therapeutics will it be possible to successfully tackle the COVID-19 pandemic in the long term. In the past year, research-driven pharmaceutical companies displayed an unprecedented level of networking and energy to develop solutions extremely quickly, thus proving the societal value of research and innovation. Additional concrete steps are

needed so that the contribution of pharmaceutical companies to the increased efficiency of the overall health care system is remunerated appropriately. Animal health research likewise requires major investments in both preventive research and diagnostic options.

In conjunction with the long planning and development cycles for new products, growing public cost pressure means that business is less predictable. It requires us to quickly recognize and seize opportunities in both Human Pharma and Animal Health on the one hand while continuously monitoring and adjusting costs and strategies on the other. In 2020, we implemented measures in all our business areas to accelerate the speed of our response to changes, to reduce the complexity of the organization, and to optimize the cost base. In this way, we are creating potential for capital expenditure and securing the company's long-term success.

In view of its increased research activities in the coming financial year, Boehringer Ingelheim expects a slightly lower operating result for 2021 on a comparable basis (adjusted for currency and extraordinary effects).

As a family-owned company, Boehringer Ingelheim's primary aim remains the creation of "Value through Innovation." This safeguards our competitiveness and our long-term entrepreneurial independence. We are confident that we will achieve our ambitious targets in all our business areas, thanks to our considerable innovative strength, which rests on a comprehensive portfolio of prospective products, our global presence, and the support of our highly qualified and motivated employees. We remain committed to our "Ambition 2025" for our company as a whole. We will research and develop innovative products in human and veterinary medicine and bring them to the market in areas of high medical need, and we will break new ground with therapeutic approaches. The aim of our endeavors is to make new medicines available to both humans and animals so they can be treated more effectively with new therapies.

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OVERVIEW OF SELECTED CONSOLIDATED COMPANIES

C.H. BOEHRINGER SOHN AG & CO. KG, INGELHEIM AM RHEIN

BOEHRINGER INGELHEIM VETMEDICA GMBH, INGELHEIM AM RHEIN

ARGENTINA D
- Boehringer Ingelheim Animal Health Argentina S.A., *Buenos Aires*

AUSTRALIA D R
- Boehringer Ingelheim Animal Health Australia Pty. Ltd., *North Ryde*

BELGIUM D P R
- Boehringer Ingelheim Animal Health Belgium S.A., *Brussels*
- Global Stem cell Technology NV, *Evergem*

BRAZIL D P R
- Boehringer Ingelheim Animal Health do Brasil Ltda., *São Paulo*

CANADA D
- Boehringer Ingelheim Animal Health Canada Inc., *Burlington*

CHINA D P R
- Nanchang Boehringer Ingelheim Animal Health Co., Ltd., *Nanchang*
- Boehringer Ingelheim Animal Health (Shanghai) Co., Ltd., *Shanghai*
- Boehringer Ingelheim Animal Health Operations (China) Co., Ltd., *Taizhou*
- Boehringer Ingelheim Vetmedica (China) Co., Ltd., *Taizhou*

DENMARK D P
- Boehringer Ingelheim Animal Health Denmark A/S, *Copenhagen*

FRANCE D P R
- Boehringer Ingelheim Animal Health France, *Lyon*

GREAT BRITAIN D P
- Boehringer Ingelheim Animal Health UK Limited, *Bracknell*

ITALY D P
- Boehringer Ingelheim Animal Health Italia S.p.A., *Milan*

JAPAN D R
- Boehringer Ingelheim Animal Health Japan Co., Ltd., *Tokyo*

MEXICO D
- Boehringer Ingelheim Animal Health México S.A. de C.V., *Mexico City*

NETHERLANDS D P R
- Boehringer Ingelheim Animal Health Netherlands B.V., *Velserbroek*

NEW ZEALAND D P R
- Boehringer Ingelheim Animal Health New Zealand Limited, *Auckland*

PHILIPPINES D
- Boehringer Ingelheim Animal Health Philippines, Inc., *Makati City*

PUERTO RICO P
- Boehringer Ingelheim Animal Health Puerto Rico LLC, *Barceloneta*

SOUTH AFRICA D
- Boehringer Ingelheim Animal Health South Africa Pty Ltd., *Randburg*

SOUTH KOREA D
- Boehringer Ingelheim Animal Health Korea Ltd., *Seoul*

SPAIN D
- Boehringer Ingelheim Animal Health España, S.A., *Barcelona*

TAIWAN D
- Boehringer Ingelheim Animal Health Taiwan Co., Ltd., *Taipei*

THAILAND D
- Boehringer Ingelheim Animal Health (Thailand) Limited, *Bangkok*

USA D P R
- Boehringer Ingelheim Animal Health USA, Inc., *Wilmington, Delaware*
- Newport Laboratories, Inc., *Wilmington, Delaware*

GERMANY D P R
- Boehringer Ingelheim Corporate Center GmbH, *Ingelheim am Rhein*
- Boehringer Ingelheim GmbH, *Ingelheim am Rhein*
- Boehringer Ingelheim Pharma GmbH & Co. KG, *Ingelheim am Rhein*
- Boehringer Ingelheim microParts GmbH, *Dortmund*
- Boehringer Ingelheim Venture Fund GmbH, *Ingelheim am Rhein*
- Boehringer Ingelheim Biopharmaceuticals GmbH, *Ingelheim am Rhein*
- Boehringer Ingelheim Middle East and Africa GmbH, *Ingelheim am Rhein*

D *Distribution*
P *Production*
R *Research and development*

C.H. BOEHRINGER SOHN GRUNDSTÜCKSVERWALTUNG GMBH & CO. KG, INGELHEIM AM RHEIN

BOEHRINGER INGELHEIM INTERNATIONAL GMBH, INGELHEIM AM RHEIN

ARGENTINA D
- Boehringer Ingelheim S.A., *Buenos Aires*

AUSTRALIA D
- Boehringer Ingelheim Pty. Ltd., *North Ryde*

AUSTRIA D P R
- Boehringer Ingelheim RCV GmbH & Co. KG, *Vienna*
- Forschungsinstitut für molekulare Pathologie Gesellschaft mbH, *Vienna*
- ViraTherapeutics GmbH, *Rum*

BELGIUM D
- SCS Boehringer Ingelheim Comm.V., *Brussels*

BRAZIL D P
- Boehringer Ingelheim do Brasil Química e Farmaceutica Ltda., *São Paulo*

CANADA D
- Boehringer Ingelheim (Canada) Ltd., *Toronto*

CHILE D
- Boehringer Ingelheim Ltda., *Santiago de Chile*

CHINA D P
- Boehringer Ingelheim Shanghai Pharmaceuticals Co., Ltd., *Shanghai*
- Boehringer Ingelheim Biopharmaceuticals (China) Co., Ltd., *Shanghai*
- Boehringer Ingelheim (China) Investment Co., Ltd.,*Shanghai*
- Boehringer Ingelheim International Trading (Shanghai) Co., Ltd., *Shanghai*

COLOMBIA D
- Boehringer Ingelheim S.A., *Santa Fé de Bogotá*

CZECH REPUBLIC D
- Boehringer Ingelheim, spol. s.r.o., *Prague*

DENMARK D
- Boehringer Ingelheim Danmark A/S, *Copenhagen*

ECUADOR D
- Boehringer Ingelheim Del Ecuador Cia. Ltda., *Quito*

FINLAND D
- Boehringer Ingelheim Finland Ky, *Espoo*

FRANCE D
- Boehringer Ingelheim France S.A.S., *Paris*

GREAT BRITAIN D
- Boehringer Ingelheim Ltd., *Bracknell*

GREECE D P
- Boehringer Ingelheim Ellas A.E., *Athens*

HONG KONG D
- Boehringer Ingelheim (Hong Kong) Ltd., *Hong Kong*

INDIA D
- Boehringer Ingelheim India Private Ltd., *Mumbai*

INDONESIA D P
- PT Boehringer Ingelheim Indonesia, *Jakarta*

ISRAEL D
- Boehringer Ingelheim Israel Ltd., *Tel Aviv*

ITALY D P
- Boehringer Ingelheim Italia S.p.A., *Milan*
- Bidachem S.p.A., *Fornovo S. Giovanni*

JAPAN D P R
- Nippon Boehringer Ingelheim Co., Ltd., *Tokyo*
- Boehringer Ingelheim Seiyaku, *Yamagata*

MEXICO D P
- Boehringer Ingelheim Mexico S.A. de C.V., *Mexico City*
- Boehringer Ingelheim Vetmedica S.A. de C.V., *Guadalajara*
- Boehringer Ingelheim Promeco S.A. de C.V., *Mexico City*

NETHERLANDS D
- Boehringer Ingelheim B.V., *Alkmaar*

NEW ZEALAND D
- Boehringer Ingelheim (N.Z.) Ltd., *Auckland*

NORWAY D
- Boehringer Ingelheim Norway KS, *Asker*

PERU D
- Boehringer Ingelheim Peru S.A.C., *Lima*

PHILIPPINES D
- Boehringer Ingelheim (Philippines), Inc., *Manila*

POLAND D
- Boehringer Ingelheim Sp. z o.o., *Warsaw*

PORTUGAL D
- Unilfarma-Uniao Internacional de Laboratórios Farmacêuticos, Lda., *Lisbon*

RUSSIA D
- OOO Boehringer Ingelheim, *Moscow*

SAUDI ARABIA D
- Boehringer Ingelheim Saudi Arabia Trading, *Riyadh*

SERBIA D
- Boehringer Ingelheim Serbia DOO Beograd, *Belgrade*

SOUTH AFRICA D
- Ingelheim Pharmaceuticals (Proprietary) Ltd., *Randburg*

SOUTH KOREA D
- Boehringer Ingelheim Korea Ltd., *Seoul*

SPAIN D P
- Boehringer Ingelheim España S.A., *Barcelona*

SWEDEN D
- Boehringer Ingelheim Aktiebolag, *Stockholm*

SWITZERLAND D R
- Boehringer Ingelheim (Schweiz) GmbH, *Basel*
- Amal Therapeutics S.A., *Geneva*

TAIWAN D
- Boehringer Ingelheim Taiwan Ltd., *Taipei*

THAILAND D
- Boehringer Ingelheim (Thai) Ltd., *Bangkok*

TURKEY D
- Boehringer Ingelheim Ilaç Ticaret A.S., *Istanbul*

USA D P R
- Boehringer Ingelheim Pharmaceuticals, Inc., *Wilmington, Delaware*
- Boehringer Ingelheim Fremont, Inc., *Wilmington, Delaware*
- Boehringer Ingelheim USA Corporation, *Wilmington, Delaware*

VIETNAM D
- Boehringer Ingelheim Animal Health Vietnam Limited Liability Company, *Ho Chi Minh City*

CONSOLIDATED BALANCE SHEET

Assets (in million EUR)	Notes [1]	31.12.2020	31.12.2019
Intangible assets	(3.1)	4,295	4,882
Tangible assets	(3.2)	5,050	4,754
Financial assets	(3.3)	8,553	9,162
Fixed assets		**17,898**	**18,798**
Inventories	(3.4)	3,863	3,563
Accounts receivable and other assets	(3.5)	5,252	5,437
Securities		1,499	0
Cash and cash equivalents		4,606	2,195
Current assets		**15,220**	**11,195**
Prepaid expenses		330	313
Deferred tax assets		3,194	3,000
Exceeding amount of plan assets		245	174
Total assets		**36,887**	**33,480**

Equity and liabilities (in million EUR)	Notes [1]	31.12.2020	31.12.2019
Shareholders' capital		178	178
Group reserves		17,672	14,709
Balance sheet currency conversion difference		– 544	– 207
Equity attributable to the parent company		**17,306**	**14,680**
Non-controlling interests		1	1
Group equity		**17,307**	**14,681**
Difference from capital consolidation		**1,283**	**1,471**
Provisions	(3.6)	15,320	14,521
Accounts payable and loans	(3.7)	1,912	1,715
Liabilities		**17,232**	**16,236**
Deferred income		385	441
Deferred tax liabillities		680	651
Total equity and liabilities		**36,887**	**33,480**

[1] For explanations, see relevant section in the notes to the consolidated financial statements.

CONSOLIDATED PROFIT AND LOSS STATEMENT

(in million EUR)	Notes [1]	2020	2019
Net sales	(4.1)	**19,566**	**18,997**
Changes in finished goods and work in process		328	224
Other own work capitalized		2	11
Other operating income	(4.2)	3,358	2,040
Total revenues		**23,254**	**21,272**
Cost of materials	(4.3)	– 2,567	– 2,534
Personnel expenses	(4.4)	– 5,587	– 5,367
Amortization of intangible assets and depreciation of tangible assets	(4.5)	– 1,376	– 1,180
Other operating expenses	(4.6)	– 9,100	– 8,409
Operating income		**4,624**	**3,782**
Financial income	(4.7)	– 523	– 369
Holding income	(4.8)	204	83
Income before taxes		**4,305**	**3,496**
Income taxes [2]	(4.9)	– 1,243	– 775
Income after taxes		**3,062**	**2,721**
Net income	(4.10)	3,062	2,721
Non-controlling interests		0	0
Group profit		**3,062**	**2,721**

[1] For explanations, see relevant section in the notes to the consolidated financial statements.
[2] Due to legal requirements, the shareholders' personal taxes arising from group business activities are shown as withdrawals from the group reserves.

CASH FLOW STATEMENT

(in million EUR)	2020
Income after taxes (including non-controlling interests)	3,062
Amortization/reversal of write-downs of intangible assets and depreciation/reversal of write-downs of tangible assets	1,376
Change in provisions for pensions and similar obligations (including change of plan assets)	365
Change in other provisions	868
Other non-cash income and expenses	– 196
Gain/loss from disposals of fixed assets	– 195
Grants received	– 87
Change in inventories	– 517
Change in accounts receivable and other assets not related to investing or financing activities	– 414
Change in accounts payable and other liabilities not related to investing or financing activities	100
Interest income/interest expenses	29
Other income from investments	– 13
Income/expenses from the sale of businesses	– 298
Income taxes	1,243
Income taxes paid	– 1,360
Cash flow from operating activities	**3,963**
Payments to aquire intangible fixed assets	– 170
Payments to aquire tangible fixed assets	– 1,046
Payments to aquire financial fixed assets	– 265
Payments to aquire or generate plan assets	– 28
Payments relating to purchase price adjustments of consolidated entities	– 7
Investments in consolidated companies	– 152
Proceeds from disposals of intangible fixed assets	0
Proceeds from disposals of tangible fixed assets	13
Proceeds from disposals of financial fixed assets	1,052
Cash receipts from the sale of businesses	302
Interest received	22
Income from dividends	13
Income taxes paid from the sale of businesses	– 60
Cash flow from investing activities	**– 326**

CASH FLOW STATEMENT

(in million EUR)	2020
Cash receipts from grants	66
Interest paid	–37
Cash receipts from shareholders of the parent company [1]	103
Proceeds from loans	178
Cash repayments of loans	–142
Cash flow from financing activities	**168**
Change in financial funds from cash relevant transactions	**3,805**
Changes in financial funds due to change of consolidated companies	1
Changes in financial funds due to exchange rate movements and valuation adjustments	104
Financial funds [2] as of 1.1.	**2,195**
Financial funds [2] as of 31.12.	**6,105**

[1] This line mainly contains aperiodic tax refunds of personal taxes arising from the group business activities of the shareholders.
[2] Cash and cash equivalents and securities within current assets.
(+) = source of funds, (-) = use of funds

STATEMENT OF CHANGES IN GROUP EQUITY

(in million EUR)	Shareholders' capital [1]	Group reserves [2]	Balance sheet currency conversion difference	Equity attributable to the parent company	Non-controlling interests	Group equity
Balance as of 31.12.2018	**178**	**12,453**	**–298**	**12,333**	**1**	**12,334**
Withdrawals	0	–465	0	–465	0	–465
Net income	0	2,721	0	2,721	0	2,721
Currency effects	0	0	91	91	0	91
Balance as of 31.12.2019	**178**	**14,709**	**–207**	**14,680**	**1**	**14,681**
Withdrawals	0	–99	0	–99	0	–99
Net income	0	3,062	0	3,062	0	3,062
Currency effects	0	0	–337	–337	0	–337
Balance as of 31.12.2020	**178**	**17,672**	**–544**	**17,306**	**1**	**17,307**

[1] The shareholders' capital consists of the equity of C.H. Boehringer Sohn AG & Co. KG and C.H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG. The shareholders' capital consists only of the limited partner's capital contribution.
[2] The shareholders' personal taxes arising from group business activities are shown as withdrawals from the group reserves.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1 Principles and methods

1.1 General principles

The consolidated financial statements of Boehringer Ingelheim for the 2020 financial year were prepared in accordance with Section 264a of the German Commercial Code (HGB), in line with the legal requirements to prepare consolidated financial statements under Section 290 et seq. HGB.

In accordance with Section 297 (1) HGB, the consolidated financial statements consist of the consolidated balance sheet, the consolidated profit and loss statement, the notes to the consolidated financial statements, the cash flow statement, and the statement of changes in equity.

The consolidated financial statements were prepared in euros in accordance with Section 298 (1) in conjunction with Section 244 HGB.

To improve the clarity and transparency of the consolidated financial statements, subtotals have been added in the consolidated profit and loss statement; furthermore, individual items of the consolidated balance sheet and the consolidated profit and loss statement have been combined. These items are presented and explained separately in the notes. The additional disclosures required for the individual items can also be found in the notes.

1.2 Registry information

The parent company is registered under the name C.H. Boehringer Sohn AG & Co. KG, with its headquarters in Ingelheim am Rhein, in the commercial register of Mainz district court under the number HRA 21732.

1.3 Information on the group of consolidated companies

The parent company of the Boehringer Ingelheim Group is C.H. Boehringer Sohn AG & Co. KG, Ingelheim am Rhein. Boehringer AG, Ingelheim am Rhein, is the sole unlimited partner of this company.

The Boehringer Ingelheim Group consists of a total of 176 affiliated companies in Germany and abroad. 149 subsidiaries have been included in the consolidated financial statements of C.H. Boehringer Sohn AG & Co. KG under full consolidation rules. C.H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG is a special purpose entity in which C.H. Boehringer Sohn AG & Co. KG bears a majority of the risks and opportunities in economic terms. C.H. Boehringer Sohn AG & Co. KG holds a majority of the voting rights in the other subsidiaries, either directly or indirectly.

In accordance with Section 296 (2) HGB, 24 subsidiaries were not included in the consolidation in the reporting year, as they are individually and collectively insignificant to the Group's net assets, financial, and earnings position. The total amount of the sales, equity, and net income for the year of the subsidiaries not included in consolidation accounts for less than 1% of the aggregated Group financial statements totals. For two further subsidiaries there are ongoing restrictions on control due to the terms of the articles of association. In accordance with Section 296 (1) No. 1 HGB, these companies were not consolidated either.

The total number of subsidiaries increased by one compared to the previous year:

- Four companies were acquired.
- One company lost its separate legal identity by merger.
- Two affiliated companies were liquidated.

The following subsidiaries were exempted from the reporting and disclosure obligations of Section 264 (3) HGB:

- Boehringer Ingelheim GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Europe GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Finanzierungs GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Secura Versicherungsvermittlungs GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Grundstücks-GmbH, Ingelheim am Rhein
- Boehringer Ingelheim R&D Beteiligungs GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Venture Fund GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Invest GmbH, Ingelheim am Rhein
- Boehringer Ingelheim Animal Health France Participations GmbH, Ingelheim am Rhein

The following subsidiaries were exempted from the reporting and disclosure obligations of Section 264b HGB:

- C.H. Boehringer Sohn AG & Co. KG, Ingelheim am Rhein
- C.H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG, Ingelheim am Rhein
- Boehringer Ingelheim Pharma GmbH & Co. KG, Ingelheim am Rhein
- Boehringer Ingelheim Veterinary Research Center GmbH & Co. KG, Hanover

Boehringer Ingelheim participates in one joint venture company, which has not been included in the consolidated financial statements using either the proportionate method or the equity method, since it is not material. Furthermore, Boehringer Ingelheim holds an interest in 20 associated companies, which also have not been accounted for using the equity method due to their lack of significance. The resulting effect on the Group's total assets and net income is less than 1%.

1.4 Consolidation methods

For inventories and fixed assets, receivables, liabilities, and income and expense items, transactions between the companies included in consolidation were eliminated as part of debt consolidation procedures in accordance with Section 303 HGB, procedures to eliminate intercompany profits in accordance with Section 304 HGB and income and expenses consolidation procedures in accordance with Section 305 HGB.

The revaluation method was applied when including subsidiaries in the consolidation for the first time in accordance with Section 301 HGB. Companies were included in the consolidation for the first time on the date on which the company became a subsidiary.

The book value of the shares held by the parent company was offset against the corresponding equity of the subsidiary. Equity was carried at the amount of the fair value of the assets, liabilities, prepaid expenses, deferred income, and special reserves included in the consolidated financial statements as of the time of consolidation. Any remaining positive balance was recorded as goodwill; any remaining negative balance was recorded as a difference from capital consolidation.

1.5 Currency translation

Assets and liabilities resulting from foreign currency transactions were translated using the average spot exchange rate as of the balance sheet date. The realization principle (Section 298 (1) in conjunction with Section 252 (1) No. 4 half-sentence 2 HGB) and the historical cost convention (Section 298 (1) in conjunction with Section 253 (1) sentence 1 HGB) were applied to items with a remaining term of more than one year.

In these consolidated financial statements, the financial statements of foreign subsidiaries domiciled in a state outside the eurozone that are denominated in a foreign currency have been converted into euros using the modified closing rate method, in accordance with Section 308a HGB.

Using the modified closing rate method, the asset and liability items of the annual financial statements prepared in foreign currency were translated into euros using the average spot exchange rate as of the balance sheet date, with the exception of equity, which was translated using the historical rate. Items included in the profit and loss statement were translated into euros using the annual average rate. The resulting translation differences were reported within consolidated equity below the reserves in “Balance sheet currency conversion difference”.

The exchange rates for the Group’s most important currencies changed as follows during the reporting year (basis: 1 EUR):

	Spot rate		Average rate	
	31.12.2020	31.12.2019	2020	2019
US dollar	1.23	1.12	1.14	1.12
Japanese yen	126.49	121.94	121.78	122.06
Chinese renminbi	8.02	7.82	7.87	7.73

2 Accounting policies

2.1 Fixed assets

Acquired tangible and intangible assets are carried at cost, less scheduled straight-line amortization and depreciation determined under consideration of the technical and economic circumstances. This is based on the following useful lives:

Goodwill	10 years
Other intangible assets	2 to 19 years
Buildings	20 years
Technical facilities and machines	10 years
Other facilities, operating equipment	3 to 10 years

Only straight-line depreciation and amortization are used in the consolidated financial statements. Additional write-downs are recorded to reflect impairments when the value of assets has been considered permanently impaired. Manufacturing costs include materials and labor manufacturing costs, an appropriate portion of materials and labor overheads, and the depreciation of fixed assets (to the extent caused by production). Manufacturing costs do not include financing costs.

All capitalized intangible assets have finite useful lives.

In the current financial year, the acquisition of Global Stem cell Technology NV and an additional milestone payment for ICD-Therapeutics GmbH resulted in a total increase in goodwill of 84 million EUR.

Financial assets primarily include investment securities, shareholder rights, and loans and were carried at the lower of cost or fair market value, if impaired. In the event that the reasons for the impairment losses recognized in previous financial years were no longer applicable, corresponding reversals were recorded.

2.2 Current assets, prepaid expenses, deferred income, and exceeding amount of plan assets

Inventories are carried at the lower of cost or fair market value.

Raw materials, consumables, and supplies are capitalized at the lower of average acquisition prices or fair market value on the balance sheet date.

Finished goods and work in progress are measured at manufacturing cost on the basis of individual calculations, taking into account the directly attributable costs of materials, direct labor costs, special direct costs, an appropriate share of material and production overhead costs, and production-related depreciation.

Goods for resale are valued at the lower of either acquisition cost or fair market value.

All identifiable risks in inventories arising from above-average storage periods, diminished marketability, and lower replacement costs were taken into account by recording appropriate valuation adjustments.

Inventories are valued loss-free – that is, deductions were made from the expected sales prices to reflect costs yet to be incurred.

Receivables and other assets were recognized at cost less allowances for specific risks and general credit risk. Low-interest or non-interest-bearing receivables with a term of more than one year were discounted.

Securities classified as current assets solely include other securities and have been recognized at the lower of cost or the fair market value/the stock market price as of the reporting date.

Cash and cash equivalents, consisting of cash, balances at banks, and checks, were recognized at the lower of cost or fair market value.

Prepaid expenses recorded in accordance with Section 250 (1) HGB include expenses paid in advance in respect of a defined period of time after the balance sheet date.

Deferred income recorded in accordance with Section 250 (2) HGB includes proceeds that represent income in respect of a defined period of time after the balance sheet date.

The fair market value of pension plan assets and the corresponding present value of pension obligations have been offset according to German GAAP. The exceeding amount of plan assets has been capitalized separately.

2.3 Group reserves

Group reserves include the retained earnings of the consolidated subsidiaries from prior and current years and consolidation entries that affect earnings.

2.4 Difference from capital consolidation

The difference from capital consolidation reported on December 31, 2020 was primarily a result of the business swap of Boehringer Ingelheim's consumer healthcare business and Sanofi's animal health business, which was completed on January 1, 2017. This resulted in a difference from capital consolidation of 1,986 million EUR. The difference is amortized over an estimated period of 15 years. The remaining balance of the difference amounted to 1,283 million EUR as of December 31, 2020.

The difference from capital consolidation was primarily influenced by the current year release of 188 million EUR. The income from the release of the difference arising from capital consolidation is included in other operating income. The release is made corresponding to the amortization of those assets of the acquired company identified in the purchase price allocation not previously recognized in that company's balance sheet.

2.5 Provisions

Tax provisions and other provisions include all uncertain liabilities and expected losses from executory contracts. They were carried at the amount required to settle the obligation based on reasonable prudent commercial judgment (that is, including future cost and price increases). Provisions with a remaining maturity of more than one year were discounted using the matched-term, average market interest rate. In the case of pension provisions this interest rate results from the average market interest rate over the last ten years and in the case of other provisions from the average market interest rate over the last seven years (in accordance with the "Rückstellungsabzinsungsverordnung", German Regulation on the Discounting of Provisions).

2.6 Accounts payable and loans

Accounts payable and loans were recognized at settlement amount.

2.7 Deferred taxes

To calculate deferred taxes arising from temporary or quasi-permanent differences between the carrying amounts of assets, liabilities, prepaid expenses, and deferred income in the commercial balance sheet and their carrying amounts for tax purposes or tax loss carryforwards, the amounts of the resulting tax benefits and expenses at the time that the differences will reverse were measured using tax rates specific to the respective consolidated company (4%–39%). Deferred tax balances are not discounted. Differences due to consolidation measures in accordance with Sections 300 to 305 HGB were also measured using the company-specific tax rates applicable at the time of the expected reversal of the difference. Deferred tax assets on loss carryforwards were taken into account if it is likely that they will be used within the next five years.

Deferred tax assets and liabilities were reported without offsetting.

3 Notes to the consolidated balance sheet

3.1 Intangible assets

(in million EUR)	Acquired concessions/ similar rights	Goodwill	Advance payments	Total
Acquisition/manufacturing costs				
Balance as of 1.1.2019	**6,908**	**29**	**26**	**6,963**
Currency conversion difference	54	0	0	54
Changes in consolidated companies	34	57	0	91
Additions	214	0	7	221
Disposals	−117	0	0	−117
Reclassifications	23	0	−21	2
Balance as of 31.12.2019	**7,116**	**86**	**12**	**7,214**
Currency conversion difference	−276	0	0	−276
Changes in consolidated companies	99	84	0	183
Additions	162	0	8	170
Disposals	−116	0	0	−116
Reclassifications	15	0	−11	4
Balance as of 31.12.2020	**7,000**	**170**	**9**	**7,179**
Accumulated amortization				
Balance as of 1.1.2019	**1,840**	**3**	**0**	**1,843**
Currency conversion difference	12	0	0	12
Changes in consolidated companies	−2	0	0	−2
Additions	589	6	0	595
Write-ups	0	0	0	0
Disposals	−117	0	0	−117
Reclassifications	1	0	0	1
Balance as of 31.12.2019	**2,323**	**9**	**0**	**2,332**
Currency conversion difference	−110	0	0	−110
Changes in consolidated companies	0	0	0	0
Additions	762	12	0	774
Write-ups	0	0	0	0
Disposals	−116	0	0	−116
Reclassifications	4	0	0	4
Balance as of 31.12.2020	**2,863**	**21**	**0**	**2,884**
Book value as of 31.12.2019	**4,793**	**77**	**12**	**4,882**
Book value as of 31.12.2020	**4,137**	**149**	**9**	**4,295**

3.2 Tangible assets

(in million EUR)	Land and buildings	Technical facilities and machines	Other facilities/ operating equipment	Advance payments/ construction in progress	Total
Acquisition/manufacturing costs					
Balance as of 1.1.2019	**3,925**	**3,970**	**2,228**	**972**	**11,095**
Currency conversion difference	27	19	14	3	63
Changes in consolidated companies	– 61	– 97	– 3	– 8	– 169
Additions	62	85	156	770	1,073
Disposals	– 46	– 84	– 110	– 7	– 247
Reclassifications	175	172	85	– 434	– 2
Balance as of 31.12.2019	**4,082**	**4,065**	**2,370**	**1,296**	**11,813**
Currency conversion difference	– 156	– 95	– 66	– 25	– 342
Changes in consolidated companies	0	1	0	0	1
Additions	57	69	129	791	1,046
Disposals	– 34	– 63	– 83	– 1	– 181
Reclassifications	158	30	113	– 305	– 4
Balance as of 31.12.2020	**4,107**	**4,007**	**2,463**	**1,756**	**12,333**
Accumulated depreciation					
Balance as of 1.1.2019	**2,223**	**2,857**	**1,735**	**0**	**6,815**
Currency conversion difference	16	13	10	0	39
Changes in consolidated companies	– 60	– 95	– 3	0	– 158
Additions	190	225	170	0	585
Write-ups	0	0	0	0	0
Disposals	– 40	– 77	– 104	0	– 221
Reclassifications	8	– 14	5	0	– 1
Balance as of 31.12.2019	**2,337**	**2,909**	**1,813**	**0**	**7,059**
Currency conversion difference	– 94	– 63	– 48	0	– 205
Changes in consolidated companies	0	0	0	0	0
Additions	184	228	190	0	602
Write-ups	0	0	0	0	0
Disposals	– 31	– 59	– 79	0	– 169
Reclassifications	12	– 45	29	0	– 4
Balance as of 31.12.2020	**2,408**	**2,970**	**1,905**	**0**	**7,283**
Book value as of 31.12.2019	**1,745**	**1,156**	**557**	**1,296**	**4,754**
Book value as of 31.12.2020	**1,699**	**1,037**	**558**	**1,756**	**5,050**

3.3 Financial assets

(in million EUR)	Investments in affiliated companies	Loans to affiliated companies	Investments in related companies	Loans to related companies	Investment securities	Other loans	Total
Acquisition/manufacturing costs							
Balance as of 1.1.2019	**12**	**0**	**1,001**	**0**	**5,166**	**38**	**6,217**
Currency conversion difference	0	0	0	0	0	0	0
Changes in consolidated companies	−6	0	−11	0	0	0	−17
Additions	0	0	45	4	3,071	5	3,125
Disposals	0	0	−81	0	−46	−8	−135
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2019	**6**	**0**	**954**	**4**	**8,191**	**35**	**9,190**
Currency conversion difference	0	0	−3	0	−1	−1	−5
Changes in consolidated companies	0	0	0	0	0	0	0
Additions	0	0	227	1	33	4	265
Disposals	0	0	−838	0	−27	−8	−873
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2020	**6**	**0**	**340**	**5**	**8,196**	**30**	**8,577**
Accumulated depreciation							
Balance as of 1.1.2019	**0**	**0**	**141**	**0**	**15**	**3**	**159**
Currency conversion difference	0	0	0	0	0	0	0
Changes in consolidated companies	0	0	0	0	0	0	0
Additions	0	0	3	0	2	0	5
Write-ups	0	0	−60	0	−7	0	−67
Disposals	0	0	−68	0	−1	0	−69
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2019	**0**	**0**	**16**	**0**	**9**	**3**	**28**
Currency conversion difference	0	0	−1	0	−1	0	−2
Changes in consolidated companies	0	0	0	0	0	0	0
Additions	0	0	3	0	0	0	3
Write-ups	0	0	0	0	0	0	0
Disposals	0	0	−5	0	0	0	−5
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2020	**0**	**0**	**13**	**0**	**8**	**3**	**24**
Book value as of 31.12.2019	**6**	**0**	**938**	**4**	**8,182**	**32**	**9,162**
Book value as of 31.12.2020	**6**	**0**	**327**	**5**	**8,188**	**27**	**8,553**

As in the previous year, the “Other loans” item does not include any loans to shareholders.

3.4 Inventories

(in million EUR)	31.12.2020	31.12.2019
Raw materials and supplies	811	635
Unfinished goods	1,891	1,763
Finished goods and goods for resale	1,152	1,155
Advance payments to suppliers	9	10
	3,863	**3,563**

3.5 Accounts receivable and other assets

(in million EUR)	31.12.2020	Residual term over 1 year	31.12.2019	Residual term over 1 year
Trade accounts receivable	4,302	7	4,196	2
Receivables from affiliated companies	21	0	19	0
Receivables from related companies	21	0	29	0
Other assets	908	161	1,193	176
	5,252	**168**	**5,437**	**178**

The “Other assets” item includes receivables from shareholders of 23 million EUR (previous year: 123 million EUR).

Receivables from affiliated companies almost exclusively consist of receivables from loans.

Receivables from related companies primarily consist of trade accounts receivable.

3.6 Provisions

(in million EUR)	31.12.2020	31.12.2019
Pension provisions and similar obligations	5,581	5,185
Tax provisions	1,746	1,816
Other provisions	7,993	7,520
	15,320	**14,521**

Provisions for pensions and similar obligations

The provisions for pensions and similar obligations were determined on the basis of actuarial calculations using the projected unit credit method, taking into account future adjustments in salaries and pensions.

In addition to local biometric data (in Germany, for example, 2018 G mortality tables published by Prof. Dr. Klaus Heubeck which have been adjusted for group-specific death probabilities and invalidity rates), pension obligations in the significant countries were calculated on the basis of the following actuarial parameters:

(in % as of December 31, 2020)	Germany	USA	Japan
Discount rate	2.31	3.70	0.95
Salary increase	3.50	4.00	3.51
Pension increase	1.88	3.00	0.00

Discounting rates were determined by reference to average market rates for 15-year maturities in accordance with the German Regulation on the Discounting of Provisions of March 11, 2016. The interest rates used to discount significant foreign pension obligations (USA and Japan) were determined with comparable parameters, in line with the German Regulation on the Discounting of Provisions of March 11, 2016.

The difference calculated in accordance with Section 253 (6) HGB amounts to 803 million EUR (previous year: 743 million EUR).

The plan assets intended solely to cover pension and similar obligations that are unavailable to all other creditors (plan assets as defined in Section 246 (2) sentence 2 HGB) were measured at fair market value, which is essentially derived from stock market prices, and offset against the underlying pension and similar obligations. The fair market value of the plan assets on the balance sheet date was 2,165 million EUR. The related amount of pension obligations and similar obligations was 7,501 million EUR.

Tax provisions

The tax provisions also include provisions for double taxation risks, which have resulted following the implementation of the action plans of the Organisation for Economic Cooperation and Development (OECD) as part of their international initiative known as the “Action Plan on Base Erosion and Profit Shifting” (BEPS).

Other provisions

Other provisions mainly include provisions for discounts and guarantees, personnel-related provisions, provisions for outstanding invoices, as well as provisions for litigation, legal claims, and compensation for damages.

3.7 Accounts payable and loans

(in million EUR)	Residual term less than 1 year	over 1 year	thereof over 5 years	31.12.2020	31.12.2019	Residual term less than 1 year
Bank loans	243	8	0	251	256	247
Other accounts payable	1,592	69	28	1,661	1,459	1,385
thereof:						
– Trade accounts payable	*924*	*4*	*0*	*928*	*830*	*822*
– Advance payments received	*196*	*23*	*10*	*219*	*192*	*170*
– Accounts payable to affiliated companies	*3*	*5*	*5*	*8*	*8*	*3*
– Accounts payable to related companies	*0*	*0*	*0*	*0*	*2*	*2*
*– Other liabilities**	*469*	*37*	*13*	*506*	*427*	*388*
	1,835	**77**	**28**	**1,912**	**1,715**	**1,632**

* thereof:

– from taxes (in million EUR)	*201*	*205*
– social security liabilities (in million EUR)	*29*	*35*

As in the previous year, there were no liabilities secured by mortgages or similar collateral rights on the balance sheet date.

At the end of the year, there were liabilities to shareholders of 163 million EUR (previous year: 61 million EUR). These are presented within the “Other liabilities” item.

Accounts payable to affiliated companies include loans amounting to 4 million EUR (previous year: 4 million EUR) and trade accounts payable amounting to 4 million EUR (previous year: 4 million EUR).

4 Notes to the consolidated profit and loss statement

The structure of the consolidated profit and loss statement is based on the total cost format. Other taxes are included in other operating expenses.

To provide a better view of the earnings position, cost of materials has been partially reclassified to other operating expenses. The previous year's figure has been adjusted by 384 million EUR for better comparability.

4.1 Net sales

by businesses (in million EUR)	2020	2019
Human Pharma	14,415	13,961
Animal Health	4,121	4,035
Biopharmaceutical Contract Manufacturing	837	786
Other sales	33	41
Discontinued Operations	160	174
	19,566	**18,997**

by region (in million EUR)	2020	2019
Americas	8,889	8,830
Europe	5,879	5,689
Asia/Australia/Africa (AAA)	4,798	4,478
	19,566	**18,997**

4.2 Other operating income

Other operating income includes income from currency translation of 1,964 million EUR (previous year: 811 million EUR).

4.3 Cost of materials

(in million EUR)	2020	2019
Costs of raw material, supplies, and goods for resale	2,005	1,963
Expenditure on services	562	571
	2,567	**2,534**

4.4 Personnel expenses

(in million EUR)	2020	2019
Wages and salaries	4,586	4,349
Social benefits and retirement benefits	1,001	1,018
thereof: retirement benefits	*261*	*267*
	5,587	**5,367**

Interest effects of the measurement of the provisions for pensions and similar obligations are shown under financial income.

Average headcount	2020	2019
Production	16,940	16,590
Marketing and sales	18,468	18,463
Research and development	9,504	9,154
Administration	6,310	6,104
Apprentices	722	704
	51,944	**51,015**

4.5 Amortization of intangible assets and depreciation of tangible assets

Amortization of intangible assets and depreciation of tangible assets include impairment losses of 369 million EUR (previous year: 181 million EUR).

4.6 Other operating expenses

Other operating expenses include expenses from currency translation of 2,150 million EUR (previous year: 1,056 million EUR).

In addition, other items included in operating expenses are mainly the charges made to record provisions for legal risks and restructuring, as well as third-party services for research, development, medicine, and marketing purposes, administrative expenses, fees and contributions, commissions, rent, freight, and expenses for repairs carried out by third parties.

4.7 Financial income

(in million EUR)	2020	2019
Interest expenses and similar expenses	– 559	– 526
Amortization of and loss on disposal of financial fixed assets and short-term investments	– 7	– 2
Income from other investment securities and from long-term loans	12	105
Other interest income and similar income	31	54
	– 523	**– 369**

The “Interest expenses and similar expenses” item includes the interest result from provisions for pensions and similar obligations and other provisions in the amount of 499 million EUR (previous year: 437 million EUR) as well as other interest expenses and similar expenses in the amount of 60 million EUR (previous year: 89 million EUR).

Gains and losses from plan assets and interest expense relating to pension and similar obligations were offset in accordance with Section 246 (2) sentence 2 HGB. In total, 270 million EUR in earnings from plan assets and 657 million EUR in interest expense relating to pension and similar obligations are included in the interest result from provisions for pensions and similar obligations and other provisions.

4.8 Holding income

(in million EUR)	2020	2019
Write-downs on financial assets	– 3	– 4
Write-ups of financial assets	0	60
Income from related companies	207	27
thereof: from disposal of related companies	*194*	*12*
	204	**83**

4.9 Income taxes

(in million EUR)	2020	2019
Current income taxes	1,529	1,027
Deferred taxes	– 286	– 252
	1,243	**775**

Current income taxes primarily include the corporation and trade tax expenses of the consolidated companies.

The total balance of deferred tax assets as of the balance sheet date amounted to 3,194 million EUR (previous year: 3,000 million EUR). Deferred tax assets primarily arise on the difference between the carrying amounts of provisions for pension obligations and for discounts, tax goodwill, intangible assets, inventories, and tangible assets. Deferred tax liabilities of 680 million EUR (previous year: 651 million EUR) were recorded. These primarily relate to differences between the carrying amounts of intangible assets, tangible assets, inventories, and provisions.

4.10 Net income

The net income for 2020 was positively influenced by non-period income (primarily from the reversal of other provisions) of 634 million EUR (previous year: 630 million EUR) and was negatively influenced by non-period expenses (in particular by taxes for previous years and additional expenses related to other provisions) of 226 million EUR (previous year: 206 million EUR).

5 Notes to the cash flow statement

The cash flow statement shows the changes in financial funds of the Boehringer Ingelheim Group resulting from cash inflows and outflows in the reporting year. Due to the development of Boehringer Ingelheim's investment strategy, investments which do not have the status of cash equivalents according to German Accounting Standard (DRS) no. 21 comprise an increased proportion of the Group's long-term investment securities. We have therefore revised the definition of financial funds in the 2020 financial year. Financial funds now merely comprise cash and short-term investments which can be converted into cash in the short term. The financial funds figure as of January 1, 2020, has been restated to ensure comparability.

The changes in the balance sheet items of the affiliated companies included were translated using average rates for the year. As on the balance sheet, financial funds are carried at the spot rate. The effect of exchange rate changes on the financial funds has been shown separately.

The financial funds as of December 31, 2020 comprised the following items:

(in million EUR)	2020
Cash and cash equivalents	4,606
Securities	1,499
	6,105

The financial funds included 14 million EUR in restricted funds as of the balance sheet date.

6 Other disclosures

6.1 Contingent liabilities

(in million EUR)	31.12.2020	31.12.2019
Liabilities from guarantees	44	25
Warranties and the granting of securities for third-party liabilities	55	70
	99	**95**

The risk of utilization of these contingent liabilities is assessed as low on account of the good net assets, financial, and earnings position.

6.2 Other financial commitments and off-balance sheet transactions

(in million EUR)	31.12.2020	31.12.2019
Rental and lease obligations	470	486
Residual other financial commitments	1,845	1,610
	2,315	**2,096**

Within the rental and lease obligations, 23 million EUR (previous year: 29 million EUR) relate to long-term rental agreements with subsidiaries not included in the consolidation.

The purpose of the lease agreements is the lower capital commitment compared to buying property and the absence of the resale risk. Risks could arise from the term of the lease should it not be possible to continue to utilize the properties fully. There are no indications of this at this time.

The residual other financial commitments include investments with future effects on cash flows of 1,090 million EUR (previous year: 1,279 million EUR).

6.3 Derivative financial instruments and valuation units

Due to its extensive international structure, the Boehringer Ingelheim Group is highly dependent on developments in the world's currencies and interest rates. To hedge these risks, particularly those emerging from delivery of goods, services, and financing, currency forwards and options are generally used for currency risks. Interest rate swaps and options are used for interest rate risks.

The use of derivative financial instruments and the organizational processes are set out in internal guidelines. There is a strict separation between trading, processing, documentation, and control.

Risk positions are regularly tracked, analyzed, and measured in a special Group-wide financial report. The positions entered into are periodically reevaluated and monitored. The fair value of the derivative financial instruments is calculated using generally accepted market valuation methods (currency forwards based on the present value method) taking into account the market data as of the balance sheet date.

Provisions of 53 million EUR were recognized for currency forwards not included in hedge accounting for which there was a negative fair value within one currency as of the balance sheet date. In line with the imparity principle, positive fair values within one currency are not recognized.

On the balance sheet date, the derivative financial instruments not included in hedge accounting valuation units were as follows:

	Nominal value		Fair value	
(in million EUR)	31.12.2020	31.12.2019	31.12.2020	31.12.2019
Foreign exchange forward contracts	5,183	5,620	41	–71

To the extent that the requirements for hedge accounting of foreign currency forward exchange contracts with highly probable forecast transactions in accordance with Section 254 HGB are met, the foreign currency forward exchange contracts are not recognized in the balance sheet in line with the net hedge presentation method.

The following accounting policies apply to the recognition of valuation units in accordance with Section 254 HGB:

Economic hedges are accounted for in the financial statements by using valuation units. The valuation units are recognized for each foreign currency based on the net amount of highly probable forecasted transactions and currency forwards that match the forecasted net cash flow in terms of maturity, nominal amount, and foreign currency (macro hedge). The highly probable forecasted transactions (incoming and outgoing payments for planned sales and purchases) are derived from company planning. Ex-post analysis of planning has shown that the planned transactions are highly probable.

The opposing changes in value of the hedged item and the hedging instrument are fully offset as the critical terms (maturity, nominal amount, and foreign currency) match. An effective hedge can therefore be assumed both prospectively and retrospectively. The critical term match method is exclusively used to measure the prospective and retrospective effectiveness of hedges. Excess amounts under hedging transactions are not included in the valuation units.

As of December 31, 2020, hedges for highly probable forecasted net cash flows were recognized as follows:

January to December 2021:

Net cash flow (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
USD	1,900	USD	2,113	USD	78
JPY	905	JPY	729	JPY	14
AUD	117	AUD	92	AUD	−3
MXN	94	MXN	94	MXN	−5
CAD	238	CAD	203	CAD	2
GBP	191	GBP	147	GBP	−3

January to December 2022:

Net cash flow (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
USD	2,020	USD	1,477	USD	88
JPY	919	JPY	481	JPY	18
AUD	12	AUD	10	AUD	0
MXN	26	MXN	16	MXN	−1
CAD	27	CAD	27	CAD	0
GBP	33	GBP	31	GBP	−1

January to December 2023:

Net cash flow (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
USD	2,049	USD	940	USD	70
JPY	912	JPY	233	JPY	7

January to February 2024:

Net cash flow (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
USD	2,036	USD	502	USD	39
JPY	178	JPY	26	JPY	1

January to February 2025:

Net cash flow (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
USD	645	USD	165	USD	13

Furthermore, as of December 31, 2020, valuation units for foreign currency receivables were recognized as follows:

Receivables (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
RUB	111	RUB	63	RUB	7
PLN	49	PLN	19	PLN	0

As of December 31, 2020, valuation units for foreign currency receivables resulting from loans were recognized as follows:

Receivables (in million EUR)		Foreign exchange forward contracts (in million EUR)			
	Nominal value		Nominal value		Fair value
AUD	18	AUD	18	AUD	0
BRL	60	BRL	60	BRL	–1
CNY	57	CNY	57	CNY	0
CZK	6	CZK	6	CZK	0
MXN	206	MXN	206	MXN	–8
PLN	11	PLN	11	PLN	0
RUB	11	RUB	11	RUB	0
THB	46	THB	46	THB	0
USD	62	USD	62	USD	2

The amount of the hedged foreign currency risk correlates to the relative change in the exchange rate between the planning date and the realization date of the forecasted transactions. If all currencies were to appreciate or depreciate against the euro by 10.0%, there would be a foreign currency risk of +/-1,294 million EUR without hedging.

6.4 Research and development expenses

(in million EUR)	2020	2019
Research and development expenses	3,696	3,462

Non-capitalized research and development expenses include, among other items, the costs associated with clinical studies.

6.5 Total auditor fees

Total fees charged to the Group by the auditor for the financial year amounted to 5.4 million EUR. 1.6 million EUR of this relates to audits of financial statements, 0.8 million EUR to other assurance services, 2.3 million EUR to tax advisory services, and 0.7 million EUR to other services.

6.6 Subsequent events

On December 7, 2020, Boehringer Ingelheim undertook to purchase 100% of the shares in the Swiss biotech company NBE-Therapeutics AG for an overall price of up to 1,180 million EUR. The purchase price consists of a payment made for completion of the transaction as well as future performance-related payments, depending on the achievement of certain clinical and regulatory milestones. The transaction was completed on January 20, 2021. As of the date of acquisition, Boehringer Ingelheim held an interest of around 25% in NBE-Therapeutics through a fully consolidated subsidiary.

Since the end of the 2020 financial year, we have not become aware of any further events that are of material significance to the Group or that could lead to a reappraisal of its net assets, financial, and earnings position.

6.7 Shareholdings

The list of companies included in the consolidated financial statements and the complete list of shareholdings presented in accordance with Section 313 (2) HGB are included in the audited consolidated financial statements submitted to the German Federal Gazette.

Ingelheim am Rhein, March 2, 2021
Boehringer AG

Board of Managing Directors

Hubertus von Baumbach
Carinne Knoche-Brouillon
Dr. Michel Pairet
Jean Scheftsik de Szolnok
Michael Schmelmer

INDEPENDENT AUDITOR'S REPORT

To C.H. Boehringer Sohn AG & Co. KG, Ingelheim am Rhein

Qualified Audit Opinion on the Consolidated Financial Statements and Audit Opinion on the Group Management Report

We have audited the consolidated financial statements of C.H. Boehringer Sohn AG & Co. KG, Ingelheim am Rhein, and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 31 December 2020, the consolidated profit and loss statement, cash flow statement and statement of changes in group equity for the financial year from 1 January to 31 December 2020, and notes to the consolidated financial statements, including the recognition and measurement policies presented therein. In addition, we have audited the group management report of C.H. Boehringer Sohn AG & Co. KG for the financial year from 1 January to 31 December 2020.

In our opinion, on the basis of the knowledge obtained in the audit,

- except for the effects of the matter described in section "Basis for the Qualified Audit Opinion on the Consolidated Financial Statements and the Audit Opinion on the Group Management Report" the accompanying consolidated financial statements comply, in all material respects, with the requirements of German commercial law and give a true and fair view of the assets, liabilities and financial position of the Group as at 31 December 2020 and of its financial performance for the financial year from 1 January to 31 December 2020, in compliance with German Legally Required Accounting Principles, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to Section 322 (3) sentence 1 HGB [Handelsgesetzbuch: German Commercial Code], we declare that, except for the qualification of the audit opinion on the consolidated financial statements mentioned, our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Qualified Opinion on the Consolidated Financial Statements and the Audit Opinion on the Group Management Report

Contrary to Section 314 (1) number 6 letters a) and b) HGB the total remuneration granted to the members and the former members of the board of managing directors as well as the pension provisions recognized and not recognized for the former members of the board of managing directors are not disclosed in the notes to the consolidated financial statements.

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Section 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of German commercial and

professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the group management report.

Other Information

Management is responsible for the other information. The other information comprises the annual report, with the exception of the audited consolidated financial statements and group management report and our auditor's report.

Our opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report audited for content or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of Management for the Consolidated Financial Statements and the Group Management Report

Management is responsible for the preparation of the consolidated financial statements that comply, in all material respects, with the requirements of German commercial law and that the consolidated financial statements, in compliance with German Legally Required Accounting Principles, give a true and fair view of the assets, liabilities, financial position and financial performance of the Group. In addition, management is responsible for such internal control as they, in accordance with German Legally Required Accounting Principles, have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting, provided no actual or legal circumstances conflict therewith.

Furthermore, management is responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, management is responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by management and the reasonableness of estimates made by management and related disclosures.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with German Legally Required Accounting Principles.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with [German] law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by management in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by management as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Frankfurt am Main, 2 March 2021

KPMG AG
Wirtschaftsprüfungsgesellschaft

Original German version signed by

Kneisel	Krauß
Wirtschaftsprüfer	Wirtschaftsprüfer
[German Public Auditor]	[German Public Auditor]

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RESPIRATORY DISEASES

Respiratory diseases are very common. Chronic obstructive pulmonary disease (COPD) and bronchial asthma are among the most prevalent chronic diseases and a frequent cause of morbidity and premature deaths worldwide.

Idiopathic pulmonary fibrosis (IPF) is a rare disease which is severely debilitating and ultimately lethal.

COPD

COPD is a chronic disease of the lungs that causes coughing, excessive mucus production and dyspnea and ultimately destroys the lung tissue. The alveoli and thus gas exchange are the most affected. This leads to a limitation of airflow, causing shortness of breath and other respiratory symptoms. The airflow limitation is only partially reversible and usually worsens over time, leading to disability and ultimately to death. Symptoms such as excess cough and breathlessness are the main reasons why COPD is very stressful for patients. Lung emphysema and chronic bronchitis are the main manifestations of COPD.

COPD is caused by continuous damage to the lungs resulting from inhaling pollutants, primarily cigarette smoke. However, other factors also need to be considered including indoor and outdoor air pollution. The course of COPD, which is a disease that occurs in the second half in a human's life, is characterized by an accelerated loss of lung function compared to normal ageing and by occasional sudden worsening of symptoms and function referred to as acute exacerbations. This can lead to a downward spiral of worsening symptoms and thus further inactivity.

Bronchial asthma

Bronchial asthma is a chronic inflammatory disorder of the airways. The inflammation is accompanied by airway hyperresponsiveness, which leads to a narrowing of the airways and recurrent episodes of wheezing, breathlessness and coughing. These symptoms occur particularly at night or in the early hours of the morning. It is now known that asthma can be triggered by genetic and environmental factors (e.g. allergens and viral infections). Unlike COPD, asthma can occur very early in childhood; it can also be present in adolescents or adults. Asthma is often underestimated as an easy-to-manage condition. However, almost one in two patients with asthma still experience symptoms while receiving maintenance therapy, putting them at increased risk of potentially life-threatening asthma exacerbations. In addition, patients often adjust their daily lives to accommodate their conditions and avoid physical exertion in day-to-day activities, which has a negative impact on quality of life.

Indications	Brand Names	Active Ingredients	
– Chronic obstructive pulmonary disease (COPD)	SPIRIVA® SPIRIVA® HANDIHALER® SPIRIVA® RESPIMAT®	*tiotropium bromide* 	Maintenance treatment of patients with COPD (including chronic bronchitis and emphysema), maintenance treatment of associated dyspnoea and for prevention of exacerbations.
– Bronchial asthma	SPIRIVA® RESPIMAT®	*tiotropium bromide* 	An add-on maintenance bronchodilator treatment in patients aged six years and older with severe asthma who experienced one or more severe asthma exacerbations in the past year.* * SPIRIVA® RESPIMAT® *is approved for use in asthma in the EU, Japan, the USA and many other countries. The label varies by country. Please refer to the local product information.*
– Chronic obstructive pulmonary disease (COPD)	SPIOLTO® RESPIMAT® STIOLTO® RESPIMAT® INSPIOLTO® RESPIMAT®	*tiotropium bromide, olodaterol hydrochloride* 	Maintenance treatment of airflow obstruction in patients with chronic obstructive pulmonary disease (COPD).
– Chronic obstructive pulmonary disease (COPD)	STRIVERDI® RESPIMAT®	*olodaterol hydrochloride* 	Maintenance treatment of patients with chronic obstructive pulmonary disease (COPD).
– Reversible bronchospasms associated with obstructive airway diseases	COMBIVENT® RESPIMAT®	*ipratropium bromide, salbutamol, sulphate* 	A combination of a short-acting anticholinergic and beta-adrenergic for the management of reversible bronchospasms associated with obstructive airway diseases in patients requiring more than one bronchodilator.
– Chronic obstructive pulmonary disease (COPD) – Chronic bronchitis – Bronchial asthma	ATROVENT®	*ipratropium bromide* 	Prevention and treatment of shortness of breath in patients with chronic obstructive pulmonary disease (COPD) and mild to moderate bronchial asthma in adulthood and childhood as a supplement to beta-agonists in cases of acute asthma.
– Chronic obstructive airway disorders	BERODUAL® BRONCHODUAL® DUOVENT®	*ipratropium bromide, fenoterol hydrobromide* 	Prevention and treatment of symptoms in chronic obstructive airway disorders with reversible airflow limitation such as bronchial asthma and especially chronic bronchitis with or without emphysema.

RESPIRATORY DISEASES (CONTINUED)

Idiopathic pulmonary fibrosis (IPF)

IPF is a chronic progressive lung disease associated with a markedly reduced life span and affecting as many as 14 – 43 people per 100,000 worldwide. IPF is characterized by progressive scarring of lung tissue and a loss of lung function over time. Development of scarred tissue is called fibrosis. Over time, as the tissue thickens and stiffens with scarring, the lungs lose their ability to take in and transfer oxygen into the bloodstream, and vital organs do not get enough oxygen. As a result, individuals with IPF experience shortness of breath, even when resting, and often have difficulty coping with the demands of everyday life due to their limited physical capacity.

Acute IPF exacerbations are defined as rapid deteriorations of symptoms and lung function within days or weeks. These events can occur at any point in the course of the disease, even at first presentation, and are associated with high mortality. All patients with IPF are at risk of acute IPF exacerbations.

Systemic sclerosis associated interstitial lung disease (SSc-ILD)

Systemic sclerosis (SSc), also known as scleroderma, is a rare incurable autoimmune disease affecting connective tissue. The disease is estimated to affect 15 to 24 people in every 100,000 in Europe and 2.5 million worldwide. SSc impacts four times as many women as men, and the onset of the disease typically occurs at a young age – between 25 and 55 years. It can cause scarring (fibrosis) of the skin as well as major organs such as the heart, lungs, digestive tract and kidneys and can have life-threatening complications. Approximately 25% of patients develop significant pulmonary involvement within three years of diagnosis. When SSc affects the lungs, it can cause interstitial lung disease (ILD), known as SSc-ILD. It is a key driver of mortality among people with SSc, accounting for approximately one third of deaths.

Other chronic fibrosing interstitial lung diseases (ILDs) with a progressive phenotype beyond idiopathic pulmonary fibrosis (IPF)

Interstitial lung diseases are a heterogeneous group of more than 200 mostly rare conditions of the lung that run the risk of developing pulmonary fibrosis. Fibrosis is a pathological multiplication of the connective tissue leading to usually chronic and irreversible scarring of the lung tissue. The course of interstitial lung disease may develop into a progressive fibrosing ILD, leading to a decline function associated with increased morbidity and mortality. Idiopathic pulmonary fibrosis (IPF) is a phenotype of a chronic fibrosing ILD. The course of the disease and symptoms are similar to chronic PF-ILDs, despite the underlying ILD diagnosis. On average, 18-32% of ILD patients will develop progressive pulmonary fibrosis.

Indications	Brand Names	Active Ingredients		
– Bronchial asthma	BEROTEC®	*fenoterol hydrobromide*		Symptomatic treatment of acute asthma attacks. Prophylaxis of exercise-induced asthma bronchiale. Symptomatic treatment of allergic and non-allergic asthma bronchiale and other conditions with reversible airway narrowing, e.g. chronic obstructive bronchitis.
– Bronchial asthma – Allergic rhinitis	ALESION® FLURINOL®	*epinastine hydrochloride*		Prophylactic treatment of patients with bronchial asthma. Prophylaxis and symptomatic treatment of allergic rhinitis.
– Idiopathic pulmonary fibrosis (IPF) – Systemic sclerosis associated interstitial lung disease (SSc-ILD) – Chronic fibrosing interstitial lung diseases (ILDs) with a progressive phenotype	OFEV®	*nintedanib*		In more than 80 countries for the treatment of patients with idiopathic pulmonary fibrosis (IPF). In more than 50 countries as therapy for SSc-ILD to slow down the rate of decline in pulmonary function. In more than 40 countries for the treatment of other chronic fibrosing interstitial lung diseases (ILDs) with a progressive phenotype beyond IPF.

CARDIOVASCULAR AND METABOLIC DISEASES

Cardiovascular (CV) disease is the leading cause of death worldwide and is still increasing in prevalence. Currently, it is responsible for nearly one in three deaths worldwide. One key risk factor for developing cardiovascular disease is the presence of diabetes: people with type 2 diabetes are two to four times more likely to develop cardiovascular disease than people without diabetes, and as a result, their life expectancy is up to 12 years shorter. Proper control of diabetes and other treatable risk factors is therefore vital for the prevention of cardiovascular events.

Stroke

Stroke is the rapidly developing loss of brain functions caused by a disrupted blood flow to the affected brain tissue. This can be due to ischemia (lack of blood supply) caused by thrombosis or embolism, or due to bleeding (hemorrhagic stroke). As a result, the affected area of the brain is unable to function and the damage quickly becomes permanent, if untreated. A stroke is an acute event requiring emergency diagnosis and intervention. Worldwide, stroke is one of the leading causes of death and long-term disability.

Symptoms of a transient ischemic attack (TIA) are similar to stroke, but last for only a few minutes or hours and do not result in permanent neurological damage. As a TIA may precede a stroke, emergency medical care and subsequent preventive treatment may be necessary.

Atrial fibrillation

Atrial fibrillation (AF) is the most common sustained heart rhythm condition, affecting approximately 2% of the total population. One in four adults over 40 develops AF in their lifetime. Patients with AF are at higher risk of developing blood clots in their upper left heart chamber, which can cause a stroke if the clot breaks loose and travels to the brain. AF leads to a five-fold increase in the risk of stroke, resulting in up to three million patients worldwide suffering AF-related strokes each year. For patients with AF, the risk of stroke can be reduced by appropriate anticoagulation therapy.

Prevention and treatment of venous thromboembolism

Venous thromboembolism (VTE) is an umbrella term that encompasses deep vein thrombosis (DVT) and pulmonary embolism (PE). DVT occurs when a thrombus (blood clot) forms in a deep vein, most commonly in the leg, and partially or completely blocks the flow of blood. As the thrombus grows, a portion may break away from the main clot and travel in the circulatory system to the lungs. The lodging of a blood clot in the arteries of the lung is called a PE. VTE is a serious disorder with potentially fatal consequences.

Patients undergoing orthopedic surgery are at considerable risk of developing DVT, and chronic venous insufficiency and/or pulmonary hypertension may develop in the longer term. To prevent VTE events and their consequences after orthopedic surgery, patients should receive some kind of thromboprophylaxis. Patients who have already suffered from VTE require anticoagulant treatment for secondary prevention of a recurrent thromboembolic event.

Reversing anticoagulation

Anticoagulation therapy offers important benefits for patients at risk of thromboembolic events. However, even though rare, there may be situations when rapid reversal of anticoagulation is medically necessary, e.g. if a patient taking an anticoagulant is involved in a severe car accident and needs emergency surgery.

Indications	Brand Names	Active Ingredients	
– Stroke prevention in atrial fibrillation – Primary prevention of venous thromboembolic events after orthopedic surgery – Treatment and secondary prevention of venous thromboembolic events	PRADAXA® PRADAXAR® PRAZAXA®	*dabigatran etexilate* 	Prevention of strokes and blood clots in patients with atrial fibrillation. Primary prevention of venous thrombo-embolic events (VTE) in adults after elective total hip or knee replacement surgery. Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and secondary prevention of recurrent DVT and PE in adults.
– Specific reversal of PRADAXA® (dabigatran etexilate)	PRAXBIND®	*idarucizumab* 	PRAXBIND® is a specific reversal agent for dabigatran and is indicated in adult patients treated with PRADAXA® (dabigatran etexilate) when rapid reversal of its anticoagulant effects is required: for emergency surgery/urgent procedures; in life-threatening or uncontrolled bleeding.
– Hypertension – Cardiovascular morbidity and mortality prevention	MICARDIS®	*telmisartan* 	Treatment of hypertension. For the reduction of the risk of myocardial infarction (heart attack), stroke or death from cardiovascular (CV) causes in patients 55 years of age or older at high risk of developing major CV events who are unable to take ACE inhibitors (US). For the reduction of cardiovascular morbidity in patients with manifest atherothrombotic cardiovascular disease (history of coronary heart disease, stroke or peripheral arterial disease), or patients with type 2 diabetes mellitus with documented target organ damage (EU).
– Hypertension	MICARDISPLUS® MICARDIS® PLUS MICARDIS® HCT CO-MICARDIS®	*telmisartan; hydrochlorothiazide* 	Treatment of hypertension alone or with other antihypertensive agents, to lower blood pressure. Lowering blood pressure reduces the risk of fatal and nonfatal cardiovascular events, primarily strokes and myocardial infarctions. Not indicated for initial therapy (US). Treatment of essential hypertension. MICARDISPLUS® fixed dose combination is indicated in adults whose blood pressure is not adequately controlled on telmisartan alone (EU).

CARDIOVASCULAR AND METABOLIC DISEASES (CONTINUED)

Hypertension and cardiovascular diseases

Hypertension (high blood pressure) is a chronic disease in which the blood pressure is chronically elevated. Hypertension is also one of the major risk factors for stroke, heart attacks, heart failure and chronic renal failure. The primary goal of anti-hypertensive treatment is to prevent such cardiovascular events and to reduce the risk of cardiovascular mortality.

Acute myocardial infarction

An acute myocardial infarction, or heart attack, occurs when a thrombus (blood clot) suddenly prevents blood flow to an area of the heart muscle. Unless the blood flow is restored quickly, the affected section of heart muscle becomes permanently damaged. Heart attacks are one of the most common causes of death in industrialized countries.

Indications	Brand Names	Active Ingredients	
– Hypertension	TWYNSTA® MICAMLO® MICARDIS® AMLO MICARDIS® DUO	*telmisartan, amlodipine* 	Treatment of hypertension alone or with other antihypertensive agents. As initial therapy in patients likely to need multiple antihypertensive agents to achieve their blood pressure goals (US). Add-on therapy in adult patients with not adequately controlled blood pressure on amlodipine, and replacement therapy in adult patients receiving telmisartan and amlodipine from separate tablets (EU).
– Acute ischemic stroke – Acute myocardial infarction – Acute massive pulmonary embolism – Catheter clearance due to thrombotic occlusion	ACTILYSE® ACTILYSE® CATHFLO®	*alteplase* 	Fibrinolytic treatment of acute ischemic stroke, acute myocardial infarction, acute massive pulmonary embolism. Fibrinolytic treatment of occluded catheters.
– Secondary prevention of stroke or transient ischemic attacks (TIA)	AGGRENOX® ASASANTIN® ASASANTIN® RETARD	*dipyridamole, acetylsalicylic acid* 	Prevention of stroke following an initial first stroke, or transient ischemic attacks (TIA).
– Acute myocardial infarction	METALYSE®	*tenecteplase* 	Fibrinolytic treatment of acute myocardial infarction.
– Hypertension	CATAPRESAN® CATAPRES® CATAPRESSAN®	*clonidine; clonidine hydrochloride* 	Treatment of hypertension.

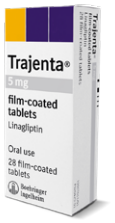
CARDIOVASCULAR AND METABOLIC DISEASES (CONTINUED)

Diabetes and the cardio-renal-metabolic system

Type 2 diabetes is a chronic, progressive condition associated with elevated blood sugar levels. People with type 2 diabetes have a high burden of comorbidities and risk factors, which include heart failure, kidney disease, hypertension, and obesity. Cardio-renal-metabolic conditions affect more than one billion people worldwide and are a leading cause of death.

Effective treatment of people with type 2 diabetes, in addition to diet and exercise, demands an early and balanced multidisciplinary approach. The interconnected nature of the cardio-renal-metabolic systems requires addressing blood sugar control and cardiovascular risk factors in the short term and reducing the overall risk of disease progression and associated heart and kidney complications in the long term.

A collaborative multidisciplinary team approach to optimize patient care by coordinating treatment of related comorbidities, including the use of emerging medications with broad cardiovascular, renal, and metabolic effects, can help improve outcomes for people with these serious chronic conditions.

Indications	Brand Names**	Active Ingredients		
– Type 2 diabetes mellitus	JARDIANCE® JARDIANZ®	*empagliflozin*		Treatment of adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycemic control and to reduce the risk of cardiovascular death in adults with type 2 diabetes mellitus and established cardiovascular disease.* ** US indication, December 2016. The label varies by country. Please refer to the local product information.*
– Type 2 diabetes mellitus	SYNJARDY® JARDIANCE DUO® JARDIANZ DUO® SYNJARDY® XR	*empagliflozin, metformin hydrochloride*		Treatment of adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycemic control when treatment with both empagliflozin and metformin is appropriate.* ** US indication, December 2016. The label varies by country. Please refer to the local product information.*
– Type 2 diabetes mellitus	GLYXAMBI® TRADIANCE® JARDIANZ DPP®	*empagliflozin, linagliptin*		Treatment of adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus when both empagliflozin and linagliptin are appropriate treatments.* ** US indication, March 2015. The label varies by country. Please refer to the local product information.*
– Type 2 diabetes mellitus	TRAJENTA® TRADJENTA® TRAZENTA® TRAYENTA®	*linagliptin*		Treatment of adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycemic control, used in monotherapy (if metformin is not tolerated or contraindicated) or in combination therapy.
– Type 2 diabetes mellitus	JENTADUETO® TRAYENTA DUO® TRAJENTA DUO® TRAJENTAMET® JENTADUETO® XR	*linagliptin, metformin hydrochloride*		Treatment of adults with type 2 diabetes mellitus as an adjunct to diet and exercise to improve glycemic control when treatment with metformin does not lead to sufficient control or when patients are treated with TRAJENTA® (linagliptin) and metformin.

** Diabetes portfolio in collaboration with Eli Lilly and Company.

ONCOLOGY

Cancer is a threat to global health. In 2018, an estimated 18 million new cases of cancer were diagnosed worldwide and 9.6 million people died from cancer, nearly one in six global deaths (WHO World Cancer Factsheet 2018). The most common diagnosed cancer types were lung cancer (nearly 12%), breast cancer (nearly 12%), colorectal cancer (10%), prostate cancer (7%) and stomach cancer (6%).

Lung cancer

Lung cancer refers to malignant abnormal cell growth inside the lung tissue. It is the most common cancer with an estimated 2.1 million new cases per year worldwide (2018). Smoking is the primary cause of the disease, contributing to almost 90% of the cases. Recently, however, the incidence of lung cancer among non-smokers has increased. Lung cancer has a poor prognosis, with 1.8 million deaths per year, representing nearly 20% of all cancer deaths. Lung cancer symptoms are unspecific so that the disease may take many years to appear. Late diagnosis in an advanced stage of the disease results in an often dismal prognosis, with only 10–15% of lung cancer patients surviving five years or more following diagnosis.

There are different subtypes such as small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). More than ten different molecular genetic aberrations (mutations) present in the tumor have been identified. By focusing on molecular changes that are specific to the respective subtype of lung cancer, targeted therapies have become more effective than other treatments. They show a survival benefit and are at the same time less harmful to normal cells, thereby reducing side effects.

Indications	Brand Names	Active Ingredients	
– Non-small cell lung cancer (NSCLC)	GIOTRIF® GILOTRIF®	*afatinib* 	First-line treatment of adult patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) whose tumors have activating epidermal growth factor receptor (EGFR) mutations. For the treatment of patients with locally advanced or metastatic NSCLC of squamous histology progressing on or after platinum-based chemotherapy.
– Non-small cell lung cancer (NSCLC)	VARGATEF®	*nintedanib* 	Combination therapy with docetaxel for the treatment of adult patients with locally advanced, metastatic or locally recurrent non-small cell lung cancer (NSCLC) of adenocarcinoma tumor histology after first-line chemotherapy.

DISEASES OF THE CENTRAL NERVOUS SYSTEM

Mental and neurological diseases such as depression and Parkinson's disease significantly impact patients and their families and are also a substantial burden to society.

Parkinson's disease

Parkinson's disease (PD) is a degenerative disorder of the central nervous system. Patients usually notice motor symptoms like hand shaking (tremor) as their first sign of the disease, which may progress to include shaking of the arms, legs or head. Other motor symptoms that may develop over time include stiffness that often results in loss of facial expression and a gradual slowing or loss of motion, or "freezing". About 30 – 40% of patients also suffer from non-motor symptoms associated with PD, such as depression and sleep disorders. The primary symptoms are the result of a lack of the neurotransmitter dopamine in distinct areas of the human brain.

Restless legs syndrome (RLS)

Restless legs syndrome (RLS) is a common neurological disorder characterized by an uncontrollable urge to move the legs, primarily occurring in the evening and night hours. It is usually accompanied by unpleasant and sometimes painful sensations in the legs as well as disturbed sleep resulting in daytime tiredness or sleepiness. The sensations are felt deep within the legs and are described as creeping, crawling or aching.

INFECTIOUS DISEASES

HIV infection/AIDS

Acquired immune deficiency syndrome (AIDS) is a set of symptoms and infections resulting from the damage to the human immune system caused by the human immunodeficiency virus (HIV). If untreated, infection with HIV progressively reduces the effectiveness of the immune system and leaves individuals susceptible to opportunistic infections and tumors. Babies of infected mothers are at risk of getting the virus during pregnancy, childbirth or breastfeeding.

Indications	Brand Names	Active Ingredients	
– Parkinson's disease (PD) – Restless legs syndrome (RLS)	SIFROL® MIRAPEX® MIRAPEXIN® PEXOLA® MIRAPEX® ER SIFROL® ER	*pramipexole* *pramipexole dihydrochloride monohydrate* 	Symptomatic treatment of idiopathic Parkinson's disease. It may be used as monotherapy or in combination with levodopa. Symptomatic treatment of idiopathic moderate to severe restless legs syndrome.
– Sleep disorders	LENDORMIN®	*brotizolam* 	Short-term treatment of disorders of initiating and maintaining sleep. Insomnia requiring pharmacological intervention.

Indications	Brand Names	Active Ingredients	
– HIV/AIDS	VIRAMUNE® VIRAMUNE XR®	*nevirapine* 	For the combination therapy of HIV-1 infection and (in several countries) for the prevention of mother-to-child transmission of HIV-1 in pregnant women who are not taking antiretroviral therapy at time of labor. Prolonged release tablets for once-daily dosing within combination therapy.
– HIV/AIDS	APTIVUS® ELODIUS®	*tipranavir* 	Indicated for combination antiretroviral treatment of HIV-1-infected patients, co-administered with 200 mg of ritonavir, who are treatment-experienced and infected with HIV-1 strains resistant to more than one protease inhibitor.

LIVESTOCK - SWINE

Infectious respiratory diseases

INGELVAC CIRCOFLEX® is the first single-dose piglet vaccine for the control of porcine circovirus disease (PCVD). INGELVAC CIRCOFLEX® contains IMPRANFLEX® adjuvant which allows for fresh mixing with INGELVAC MYCOFLEX® to form FLEXCOMBO® with the TwistPak system. Our INGELVAC® PRRS products are licensed for active immunization against the respiratory and reproductive form of porcine reproductive and respiratory syndrome (PRRS).

INGELVAC PROVENZA® protects against multiple IAV-S strains, providing protection where pigs are most vulnerable.

Infectious enteric diseases

ENTERISOL® ILEITIS is the first and only oral live vaccine against ileitis, globally the most prevalent enteric disease in swine caused by Lawsonia intracellularis. It is licensed to improve weight gain and to reduce growth variability associated with the disease. ENTERISOL® ILEITIS helps to reduce the total antimicrobial use in pork production.

Integrated Health Management (IHM)

With FARMERA® and SOUNDTALKS™ we will empower pig producers, breeders, retailers, and consumers to improve health, animal welfare, and efficiency by giving insights, predictions, and recommendations through our IHM solutions.

Indications	Brand Names	Active Ingredients	
– Infectious respiratory diseases	INGELVAC CIRCOFLEX®	*recombinant vaccine (porcine circovirus type 2, PCV2)* 	For the active immunization of pigs over the age of two weeks against porcine circovirus type 2 to reduce mortality, clinical signs – including weight loss – and lesions in lymphoid tissues associated with porcine circovirus diseases (PCVD). In addition, vaccination has been shown to reduce PCV 2 nasal shedding, viral load in blood and lymphoid tissues, and duration of viremia.
– Infectious respiratory diseases	INGELVAC® PRRS MLV INGELVAC PRRSFLEX® EU REPROCYC® PRRS EU	*attenuated live vaccine (PRRS virus type 2, type 1)* 	Depending on the product, for the active immunization of pigs at various ages against porcine reproductive and respiratory syndrome virus (PRRS).
– Infectious respiratory diseases	INGELVAC MYCOFLEX®	*inactivated vaccine (Mycoplasma hyopneumoniae)* 	For the active immunization of pigs from the age of three weeks to reduce lung lesions following infections with Mycoplasma hyopneumoniae.
– Infectious respiratory diseases	INGELVAC PROVENZA®	*attenuated live influenza vaccine (LAIV)* 	For the vaccination of pigs one day of age or older against influenza virus strains H1N2 and H3N2.
– Infectious enteric disease	ENTERISOL® ILEITIS	*attenuated live vaccine (Lawsonia intracellularis)* 	For the active immunization of pigs from the age of three weeks against intestinal lesions caused by Lawsonia intracellularis infection and to reduce growth variability and loss of weight gain associated with the disease.
– Respiratory diseases	SOUNDTALKS™*	*sound monitors, gateways and algorithms* 	SOUNDTALKS™ is sound monitoring technology that detects early symptoms of respiratory distress in swine thanks to its 24/7 monitoring and algorithms.
– Data capture forms and tools	FARMERA®	*mobile app. Digital data management and communication platform for swine production* FARMERA	FARMERA™ allows being more efficient, effective, and proactive by enabling evidence-based decision making with real-time information when managing health and production in production companies.

* SOUNDTALKS™ is a trademark of SoundTalks, N.V.

LIVESTOCK – CATTLE/RUMINANTS

Our cattle/ruminants business is a global leader in antiparasitic brands such as IVOMEC®, LONGRANGE® and EPRINEX®. These world renowned parasiticides treat and protect grazing animals from the harmful effects of internal and external parasites.

ZACTRAN® treats cattle with bacterial pneumonia and sheep with digital dermatitis infections.

BOVELA® is for active immunization of cattle of three months of age in terms of reproductive infectious diseases.

Indications	Brand Names	Active Ingredients	
– Internal and external parasites of cattle	IVOMEC®	*ivermectin* 	Depending on formulation, the product is for the treatment of nematodes, lice, mites, ticks, flies, lungworms and liver flukes.
– Internal and external parasites of cattle	LONGRANGE®	*eprinomectin, long-acting* 	The Theraphase® technology used to develop this formulation of eprinomectin allows a single treatment to last up to 100-150 days – long enough to break the parasite life cycle and effectively reduce parasite burdens on the pasture. LONGRANGE® is effective in the control of most internal and external parasites of cattle: gastrointestinal roundworms, lungworms, grubs, mites.
– Internal and external parasites of ruminants	EPRINEX®	*eprinomectin* 	Depending on formulation, the product is for the treatment of nematodes, lice, mites, ticks, flies and lungworms in cattle and sheep.
– Bacterial causes of respiratory disease and interdigital dermatitis (footrot)	ZACTRAN®	*gamithromycin* 	Depending on species indication (and country of registration), the product is for the treatment and metaphylaxis control of respiratory disease in cattle caused by key bacteria (Mannheimia, Pasteurella, Histophilus and Mycoplasma) and footrot disease in sheep caused by key bacteria (Fusobacterium and Dichelobacter).
– Reproductive infectious diseases in cattle	BOVELA®	*bovine viral diarrhoea (BVD) types 1 and 2* 	Reduces hyperthermia and minimizes the reduction of leukocyte count caused by bovine viral diarrhoea virus (BVDV-1 and BVDV-2); reduces virus shedding and viremia caused by BVDV-2 and prevents the birth of persistently infected calves caused by transplacental infection.

LIVESTOCK - CATTLE/RUMINANTS (CONTINUED)

Our vaccine PYRAMID®/PRESPONSE® is part of our expanding portfolio of respiratory and reproductive vaccines to prevent diseases that affect livestock.

METACAM® is a non-steroidal anti-inflammatory drug (NSAID), helping to minimize losses from inflammation and tissue damage in animals suffering from disease, hence addressing the need for maintained profitability and the concern for farm animal well-being.

Indications	Brand Names	Active Ingredients	
– Infectious respiratory diseases and reproductive disorders in cattle	PYRAMID® PRESPONSE®	*family of multivalent vaccine combinations including different modified live viruses: bovine viral diarrhoea (BVD) types 1 and 2, infectious bovine rhinotracheitis (IBR), parainfluenza 3 (PI3) and bovine respiratory syncytial virus (BRSV), and bacteria: Pasteurella multocida, Mannheimia haemolytica, L. canicola, L. grippotyphosa, L. hardjo, L. icterohaemmorrhagiae and L. pomona* 	The PYRAMID®/PRESPONSE® family of vaccines provides broad coverage for BVD types 1 and 2, IBR, BRSV, PI3 and Mannheimia haemolytica with only a single dose. They contain the MetaStim®* adjuvant system to enhance the animal's response for greater protection (US and Canada only). * *MetaStim® is a registered trademark of Zoetis Services LLC*
– Pain and inflammatory disorders	METACAM®	*meloxicam* 	For the treatment of mastitis in lactating cows and for the control of pain associated with dehorning or surgery. It is also indicated for use in calves affected by diarrhoea and in cattle suffering from respiratory disease.

LIVESTOCK - POULTRY

Our poultry vaccine portfolio consists of a significant range of live and inactivated vaccines for broilers, layers and breeder hens, providing protection against the most critical viral and bacterial diseases like avian influenza, infectious bronchitis, Newcastle disease, infectious bursal disease, egg drop syndrome and avian coryza. This portfolio of preventive products helps producers worldwide to provide safe, affordable, abundant and sustainable high-quality poultry meat and eggs.

Indications	Brand Names	Active Ingredients	
– Various viral and bacterial diseases in poultry	GALLIMUNE® GALLIVAC® VOLVAC®	*polyvalent attenuated live and inactivated vaccine containing antigens for vaccination against avian influenza, Newcastle disease, avian coryza, egg drop syndrome, infectious bronchitis, infectious bursal disease, gallibacterium anatis* 	For vaccination of healthy chickens against diseases caused by the included antigens. For the prevention of the most common diseases in broiler chickens and diseases responsible for losses in egg production in layers.
– Infectious bursal disease (IBD), Marek's disease (MD) and Newcastle disease (ND), or infectious laryngotracheitis (ILT)	VAXXITEK® HVT + IBD VAXXITEK® HVT + IBD + ND VAXXITEK® HVT + IBD + ILT	*serotype 3, live Marek's disease vector, live vHVT013-69 recombinant virus which contains a gene of IBD virus and, for the trivalent vaccines, a gene of IBD virus and of ND or ILT viruses (and diluent)* 	The vaccination of 18- to 19-day-old embryos or one-day-old chickens is effective against standard and variant infectious bursal disease, Marek's disease and for the trivalent vaccines against Newcastle disease or infectious laryngotracheitis.
– Newcastle disease (ND)	AVINEW®	*live Newcastle disease virus, VG/GA-AVINEW strain* 	In broiler chickens from one day of age: active immunization against Newcastle disease to reduce mortality and clinical signs associated with the disease. In future layer and future breeder pullets from the age of four weeks: priming for active immunization against egg drop caused by Newcastle disease before vaccination with an inactivated vaccine (strain Ulster 2C) prior to the beginning of lay.
– Marek's disease	PREVEXXION® RN PREVEXXION® RN+HVT PREVEXXION® RN+HVT+IBD PREVEXXION® RN & VAXXITEK® HVT+IBD	*live herpes virus chimera, serotype 1, strain RN1250 (and diluent)* 	The vaccination of 18- to 19-day-old embryos and/or one-day-old chickens is recommended to protect against the very virulent Marek's disease.
– Newcastle and Marek's diseases	NEWXXITEK™ HVT + ND	*live Marek's disease vectored virus, serotype 3, that contains a gene insert from Newcastle disease (and diluent)* 	The vaccination of 18- to 19-day-old embryos or one-day-old chickens is effective against Marek's disease and Newcastle disease.

VETERINARY PUBLIC HEALTH (VPH)

We work with governments and private partners toward improving control and eradicating diseases such as foot-and-mouth disease, bluetongue virus and rabies.

Our foot-and-mouth (FMD) vaccines portfolio including AFTOPOR®, AFTOVAXPUR® and AFTOVAX® provides active immunization of cattle, sheep or pigs to reduce clinical signs and mortality following exposure to FMD virus.

RABISIN® is an inactivated vaccine against rabies, available as a clear colorless suspension for injection. RABORAL V-RG® is an oral recombinant vaccine that protects wildlife against rabies.

BTVPUR ALSAP® is a multi-strain vaccine used for active immunization of sheep and cattle to prevent viremia and to reduce clinical signs caused by bluetongue virus.

Indications	Brand Names	Active Ingredients	
– Foot-and-mouth disease (FMD)	AFTOPOR® AFTOVAXPUR® AFTOVAX® AFTOVAXPUR® DOE	*mix of inactivated FMD virus antigens with the widest range of vaccine strains* 	AFTOPOR® and AFTOVAXPUR® are highly potent vaccines with purified antigens, recommended in endemic or emergency situations. Both have potential marker properties that allow differentiation between infected and vaccinated animals (DIVA). AFTOVAX® is a low-cost and effective vaccine profile for cattle and sheep, suitable for mass vaccination in endemic situations. AFTOVAXPUR® DOE is suitable for emergency situations only.
– Rabies	RABISIN® RABORAL V-RG®	*Rabisin: inactivated and adjuvanted rabies virus;* *Raboral V-RG: vaccinia-vectored rabies vaccine* 	RABISIN® is used for the active immunization of dogs and cats to reduce mortality and clinical signs due to rabies infection. Immunity has been demonstrated one month after vaccination and has been shown to persist up to the first booster dose, (1 year after primary vaccination) and up to 3 years following booster vaccination. RABORAL V-RG® is an oral rabies recombinant vaccine that protects wildlife (raccoons, foxes and coyotes) against rabies, thereby reducing the risk of exposure to rabies for humans and domestic animals. It is only sold to government agencies conducting rabies control programs.
– Bluetongue	BTVPUR ALSAP®	*mix of inactivated bluetongue virus* 	Active immunization of sheep to prevent viremia and to reduce clinical signs caused by bluetongue virus serotypes 1, 2, 4 and/or 8 (combination of maximum 2 serotypes). Active immunization of cattle to prevent viremia caused by bluetongue virus serotypes 1, 2, 4 and/or 8, and to reduce clinical signs caused by bluetongue virus serotypes 1, 4 and/or 8 (combination of maximum 2 serotypes). Onset of immunity has been demonstrated three weeks (or five weeks in sheep for BTV-2) after the primary vaccination course for BTV-1, BTV-2 (cattle), BTV-4 and BTV-8 serotypes.

COMPANION ANIMALS - HORSE

Our equine portfolio is highly comprehensive, covering the key aspects of equine health, including parasite control, vaccination, and the management of chronic diseases. We have a range of flagship products for the treatment of colic, joint disease, and respiratory disease, the latter two categories being recently enhanced with the addition of new innovative products. We also have a line of nutraceuticals which can be bought without prescription.

PRASCEND® is indicated for the treatment of pituitary pars intermedia dysfunction (PPID), which is also known as equine Cushing's disease. Clinical signs of PPID are hypertrichiosis, laminitis, change in body conformation and lack of performance. Treatment with PRASCEND® is life-long.

VETERA® vaccines are the first US vaccine portfolio to include multiple convenient combinations of disease protection for horses from as young as four months of age. The vaccines protect against as many as nine infectious organisms including influenza, herpes, the West Nile virus, tetanus and others. This enables customized protection for each horse with limited needle injections.

GASTROGARD®/ULCERGARD® is indicated for the treatment and prevention of equine gastric ulcers, which is one of the most common diseases in horses. GASTROGARD® is supplied in an easy-to-use oral paste form and has been the first choice for treatment of gastric ulcers since its launch in 1999. ULCERGARD® in the USA is the preventive of choice for horses with an increased risk of developing gastric ulcers.

EQVALAN®/ZIMECTERIN® contains ivermectin, a leading ingredient that controls a wide variety of important internal parasites, including bots and benzimidazole-resistant small strongyles, in an easy-to-administer oral paste. EQVALAN®/ZIMECTERIN® is approved for adult horses and foals as young as six weeks of age.

EQVALAN® DUO/GOLD, ZIMECTERIN® GOLD combines ivermectin with praziquantel, an ingredient that specifically controls tapeworms.

ARTI-CELL® forte is the world's first licensed veterinary stem cell product which is a ready-to-use intra-articular injection of chondrogenic induced mesenchymal cells for the treatment of lameness linked to non-infective joint inflammation in horses. ARTI-CELL® forte is one of the latest additions to the equine portfolio and is available in a range of countries within the EU as of 2019. Further approvals are expected in due course.

ASERVO® EQUIHALER® is the first inhalation product for the treatment of severe equine asthma. This product is a novel glucocorticoid pro-drug (ciclesonide inhalation solution) delivered in an inhaler specifically designed for use in horses, and implementing the Soft Mist™ technology derived from the RESPIMAT® inhalers in human pharma. This exciting new introduction gained final authorization and product availability in the EU, US and Canada in 2020; further approvals in other countries are expected in due course.

Indications	Brand Names	Active Ingredients	
– Pituitary pars intermedia dysfunction (PPID)	PRASCEND®	*pergolide mesylate* 	Symptomatic treatment of clinical signs associated with pituitary pars intermedia dysfunction (PPID, also known as equine Cushing's disease).
– Combination vaccine against up to nine common diseases in horses	VETERA®	*Eastern, Western and Venezuelan encephalomyelitis, tetanus, West Nile virus, equine herpes virus, equine influenza viruses* 	For vaccination of healthy horses as an aid in the prevention of diseases caused by the included antigens (US and Canada only).
– Equine gastric ulcers	GASTROGARD® ULCERGARD®	*omeprazole* 	For treatment and prevention of gastric ulcers and prevention of recurrence of gastric ulcers in horses and foals four weeks of age and older.
– Internal parasites	EQVALAN® ZIMECTERIN® EQVALAN® GOLD EQVALAN® DUO ZIMECTERIN® GOLD	*ivermectin* *ivermectin, praziquantel* 	For treatment and prevention of parasitic infestations in horses and donkeys due to large and small strongyles, ascarids. GOLD/DUO includes treatment against tapeworms.
– Reduction of mild to moderate recurrent lameness associated with non-septic joint inflammation in horses	ARTI-CELL® FORTE	*chondrogenic induced equine allogeneic peripheral blood-derived mesenchymal stem cells* 	For treatment of mild to moderate lameness linked to non-infective joint inflammation in horses. It contains stem cells which are obtained from equine blood. Stem cells can develop into other types of cells. The stem cells in the active substance (mesenchymal stem cells) are treated so that they develop into cartilage cells.
– Severe equine asthma	ASERVO® EQUIHALER®	*ciclesonide inhalation solution* 	For the alleviation of clinical symptoms of severe equine asthma characterized by coughing, nasal discharge, nasal flaring, increased breathing effort at rest, or abnormal lung sounds.

COMPANION ANIMALS - PETS

Our pet portfolio offers diverse solutions for some of the most important needs of canine and feline health including industry-leading parasiticides, vaccines, and therapeutics to address major chronic diseases: heart failure, kidney diseases, hypertension, epilepsy, diabetes mellitus, and osteoarthritis.

For 25 years, FRONTLINE® has been a leader in flea and tick control on dogs and cats, and is one of the most trusted brands in animal health.[1] FRONTLINE® continues to bring innovation to the category, with the recent launch of FRONTLINE TRI-ACT®, which features repellency and insecticidal efficacy on many disease-carrying flying insects and which decreases the risk of transmission of vector-borne pathogen.[2]

NEXGARD® contains the active ingredient afoxolaner and was the first oral medication to treat both fleas and ticks in dogs. Because of its efficacy and palatable, beef-flavored soft chew formulation, NEXGARD® is currently the best-selling pet medication in the animal health industry.[3]

NEXGARD SPECTRA® combines the flea and tick efficacy of afoxolaner in NEXGARD® with a broad-spectrum deworming ingredient, milbemycin oxime, in the same beef-flavored chew. NEXGARD SPECTRA® is not only effective in treating flea, tick and mite infestations, as well as gastrointestinal parasites infections, it also protects dogs against deadly parasites such as heartworm and lungworm.

HEARTGARD® PLUS contains the active ingredients ivermectin and pyrantel in a soft beef chew. When given monthly, ivermectin is effective in preventing deadly heartworm disease. Pyrantel is effective in the treatment and control of round worms as well as hookworms. HEARTGARD® was launched in 1987 as the first monthly heartworm preventative and is still the best-selling heartworm preventative in the world.[4]

BROADLINE® offers cat owners all-in-one convenience providing confidence that their cat has the broadest possible protection. It protects cats against the broadest spectrum of internal and external parasites, including adult fleas, flea eggs, flea larvae, ticks, heartworms, hookworms, roundworms, vesical worms and tapeworms.

VETMEDIN® is an inodilator which has become the standard of care when treating dogs with congestive heart failure caused by dilated cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). It significantly improves clinical signs and extends life expectancy in these patients. Recent studies have also shown that when used in asymptomatic cases of either dilated cardiomyopathy in Doberman pinschers or valvular insufficiency VETMEDIN® significantly delays the onset of clinical signs of congestive heart failure, a first in veterinary cardiology.

[1] Data on file.
[2] Babesia canis transmitted by Dermacentor reticulatus ticks, Ehrlichia canis transmitted by Rhipicephalus sanguineus ticks, and Leishmania infantum, transmitted by phlebotmine sandflies.
[3] Data on file.
[4] Data on file.

Indications	Brand Names	Active Ingredients	
– Antiparasitic: canine/feline external parasites	FRONTLINE® FRONTLINE COMBO® FRONTLINE PLUS® FRONTLINE TRI-ACT® FRONTECT®	*fipronil* *fipronil/s-methoprene* *fipronil/permethrin*	FRONTLINE PLUS®/FRONTLINE COMBO® was launched as an innovative combination to continue the FRONTLINE® story. It is indicated for the treatment and prevention of flea, tick, and lice infestations. It also breaks the flea life cycle by preventing the development of flea immature stages. FRONTLINE TRI-ACT®/FRONTECT® is indicated for the treatment and prevention of flea and tick infestations in dogs. It also provides repellent activity against mosquitoes, sandflies, and ticks, reducing the risk of transmission of vector-borne pathogens.
– Antiparasitic: canine external parasites	NEXGARD®	*afoxolaner*	NEXGARD® is delivered in a highly palatable beef-flavored chew. It is indicated for the treatment and prevention of flea and tick infestations in dogs. It is also indicated for the prevention of Borrelia burgdorferi infections (USA), and the treatment of Demodex, Sarcoptes, and Otodectes mite infestations in non-US geographies.
– Antiparasitic: canine internal and external parasites	NEXGARD SPECTRA®	*afoxolaner, milbemycin oxime*	NEXGARD SPECTRA® is delivered in a highly palatable beef-flavored chew. It is indicated for the treatment and/or prevention of flea, tick, and mite infestations. It also prevents heartworm disease, angiostrongylosis, and thelaziosis. It treats hookworm, roundworm, and whipworm infestations in dogs.
– Antiparasitic: canine internal parasites	HEARTGARD® PLUS	*ivermectin, pyrantel*	For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae for a month (30 days) after infection, and for the treatment and control of roundworms and hookworms.
– Antiparasitic: feline internal and external parasites	BROADLINE®	*fipronil, (s)-methoprene, eprinomectin, praziquantel*	Protects cats against the broadest spectrum of internal and external parasites including adult fleas, flea eggs, flea larvae, ticks, heartworms, lungworms, hookworms, roundworms, vesical worms, and tapeworms.
– Congestive heart failure	VETMEDIN®	*pimobendan*	Treatment of canine congestive heart failure originating from dilated cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). Treatment of dilated cardiomyopathy in the preclinical stage (asymptomatic with an increase in left ventricular end-systolic and end-diastolic diameter) in Doberman Pinschers. Treatment of dogs with myxomatous mitral valve disease (MMVD) in the preclinical stage (asymptomatic with a systolic mitral murmur and evidence of increased heart size) to delay the onset of clinical symptoms of heart failure.

COMPANION ANIMALS - PETS (CONTINUED)

Boehringer Ingelheim has the most complete, trusted, and proven range of products and services in pain management. Choosing this portfolio gives veterinarians the freedom to tailor treatment to each patient and provides access to value-added veterinary services.

METACAM® offers an extensive range of formulations and indications, making it the complete non-steoridal anti-inflammatory drug (NSAID) for dogs, cats, and guinea pigs. It enables veterinarians to better achieve their goals in pain management and gives each owner and pet exactly the product they need. Ample long-term studies support the product's safety and efficacy and have led to multiple indications across diverse species.

The liquid formulation of METACAM® for dogs makes it easy to titrate to the lowest effective dose while the liquid formulation for cats is easy to administer. An improved dog administration syringe aimed to achieve better accuracy was introduced in 2020.

PREVICOX® was designed specifically for dogs and is the most selective veterinary COX-2 inhibitor. PREVICOX® provides safe, sustained pain relief with a fast onset of action. Long-term safety and efficacy have been established in large field studies and PREVICOX® has been shown to be more efficacious than competition in acute models of osteoarthritis.

SEMINTRA® is the first-ever licensed angiotensin receptor blocker for veterinary use. Specifically designed for cats, SEMINTRA® is the scientifically advanced treatment in one simple solution that safely and effectively harnesses the protective benefits of the cat's renin-angiotensin-aldosterone system to protect kidneys and other key organs. SEMINTRA® is available as 4mg/ml and 10mg/ml oral solution. SEMINTRA® (4mg/ml) was first launched in 2013 for the reduction of proteinuria associated with chronic kidney disease in cats. In 2018, SEMINTRA® (10mg/ml) was launched for the control (US)/treatment (EU) of feline systemic hypertension. It is the first vet-licensed product for feline hypertension in the US.

Since its launch in 2009 PROZINC® has become the proven insulin choice for feline patients and their owners for convenient management of feline diabetes. With the approval of PROZINC® for canine patients, we have the opportunity to become the first-choice solution for successful management of diabetes in both dogs and cats. Large clinical studies in Europe, the US, and Japan have confirmed that the majority of dogs can be managed with one injection of PROZINC® insulin per day – a major breakthrough for dogs, owners, and veterinarians.

Our pet vaccine product portfolio includes the PUREVAX® feline vaccines formulated to provide effective protection without the use of adjuvants, RECOMBITEK®, providing targeted protection for dogs through recombinant technology, and decades of proven efficacy and safety against rabies with RABISIN® and IMRAB®.

Indications	Brand Names	Active Ingredients	
– Pain and inflammatory diseases	METACAM®	*meloxicam* 	METACAM® is used to reduce specific types of post-operative pain and inflammation as well as musculoskeletal disorders in dogs and cats.
– Pain and inflammatory diseases	PREVICOX®	*firocoxib* 	For the relief of pain and inflammation associated with osteoarthritis as well as specific types of post-operative pain in dogs.
– Chronic kidney disease (CKD) in cats – Hypertension in cats	SEMINTRA®	*telmisartan* 	Management of chronic kidney disease (CKD) and feline systemic hypertension (US and EU) in cats.
– Diabetes	PROZINC®	*protamine zinc* 	For the treatment of diabetes mellitus in cats and dogs to achieve reduction of hyperglycemia and improvement of associated clinical signs.
– Feline vaccines portfolio	PUREVAX®	*feline herpes virus* *feline calicivirus* *feline panleukopenia virus* *chlamydia felis* *recombinant vectored feline leukemia virus* *recombinant vectored rabies virus* 	PUREVAX® is the only fully adjuvant-free feline vaccine range and leverages its innovative canarypox technology for FeLV and rabies. It also offers sustained protection on rabies for up to three years.
– Canine vaccines portfolio	RECOMBITEK®*	*recombinant vectored canine distemper virus,* *canine parvovirus,* *canine adenovirus type 2,* *canine parainfluenza virus,* *canine coronavirus,* *leptospira Canicola,* *leptospira grippotyphosa,* *leptospira icterohaemorrhagiae,* *leptospira Pomona,* *recombinant borrelia burgdorferi,* *bordetella bronchiseptica* 	RECOMBITEK® features a complete line of canine vaccines including: RECOMBITEK® lyme: The only vaccine that contains OspA in a non-adjuvant formulation. RECOMBITEK® oral bordatella: Effective and safe protection made easy.
– Rabies vaccines portfolio	RABISIN® IMRAB®	*inactivated and adjuvanted rabies glycoproteins* 	Sustained rabies protection up to 3 years after first year booster. Consistently high seroconversion rate.

** In the US and others.*

C.H. Boehringer Sohn AG & Co. KG, Ingelheim am Rhein

COMPARISON OF BALANCE SHEET AND FINANCIAL DATA 2011 – 2020

(in million EUR)

Assets (as of December 31)	2011	2012	2013	2014	2015
Intangible assets	710	682	582	592	606
Tangible assets	3,442	3,103	2,887	3,070	3,264
Financial assets	3,953	4,222	4,737	5,312	5,933
Fixed assets	**8,105**	**8,007**	**8,206**	**8,974**	**9,803**
Inventories	1,998	2,095	2,083	2,237	2,483
Accounts receivable and other assets (incl. prepaid expenses, deferred taxes and exceeding amount of plan assets)	4,652	4,814	5,131	5,546	6,463
Liquid funds	3,903	2,374	2,879	3,294	4,536
Current and other assets	**10,553**	**9,283**	**10,093**	**11,077**	**13,482**
Total assets	**18,658**	**17,290**	**18,299**	**20,051**	**23,285**

Equity and Liabilities (as of December 31)	2011	2012	2013	2014	2015
Shareholders' capital	178	178	178	178	178
Group reserves (incl. balance sheet currency conversion difference)	5,812	4,763	5,619	6,884	7,844
Group profit	1,476	1,237	1,324	1,047	1,577
Equity attributable to the parent company	**7,466**	**6,178**	**7,121**	**8,109**	**9,599**
Non-controlling interests	0	0	1	2	4
Group equity	**7,466**	**6,178**	**7,122**	**8,111**	**9,603**
Difference from capital consolidation	**157**	**134**	**104**	**91**	**71**
Provisions (incl. deferred taxes)	7,402	7,749	7,817	8,840	10,543
Liabilities (incl. deferred income)	3,633	3,229	3,256	3,009	3,068
Total liabilities (incl. deferred taxes and deferred income)	**11,035**	**10,978**	**11,073**	**11,849**	**13,611**
Total equity and liabilities	**18,658**	**17,290**	**18,299**	**20,051**	**23,285**

Summary of selected financial data	2011	2012	2013	2014	2015
Net sales	13,171	14,691	14,065	13,317	14,798
Operating income	2,272	1,853	2,114	2,140	2,269
Operating income as % of net sales	17.3	12.6	15.0	16.1	15.3
Income after taxes	1,476	1,237	1,324	1,046	1,576
Income after taxes as % of net sales	11.2	8.4	9.4	7.9	10.7
Equity ratio (in %)	40.0	35.7	38.9	40.4	41.2
Cash flow from operating activities	2,570	2,170	1,819	2,015	2,232
Financial funds	3,903	2,374	2,879	3,294	4,536
Personnel expenses	3,664	4,024	4,071	4,116	4,518
Personnel expenses as % of net sales	27.8	27.4	28.9	30.9	30.5
Average number of employees	44,094	46,228	47,492	47,743	47,501
Research and development expenses	2,516	2,795	2,743	2,654	3,004
R&D as % of net sales	19.1	19.0	19.5	19.9	20.3
Investments in tangible assets	458	562	558	548	591
Depreciation of tangible assets	535	793	640	449	475

2016	2017	2018	2019	2020
550	5,372	5,120	4,882	4,295
3,045	3,867	4,280	4,754	5,050
6,092	5,830	6,058	9,162	8,553
9,687	**15,069**	**15,458**	**18,798**	**17,898**
2,610	3,087	3,312	3,563	3,863
6,837	7,159	7,815	8,924	9,021
7,005	3,071	4,303	2,195	6,105
16,452	**13,317**	**15,430**	**14,682**	**18,989**
26,139	**28,386**	**30,888**	**33,480**	**36,887**

2016	2017	2018	2019	2020
178	178	178	178	178
9,296	10,703	10,080	11,781	14,066
1,853	– 223	2,075	2,721	3,062
11,327	**10,658**	**12,333**	**14,680**	**17,306**
0	– 1	1	1	1
11,327	**10,657**	**12,334**	**14,681**	**17,307**
52	**1,729**	**1,511**	**1,471**	**1,283**
12,233	13,482	14,438	15,172	16,000
2,527	2,518	2,605	2,156	2,297
14,760	**16,000**	**17,043**	**17,328**	**18,297**
26,139	**28,386**	**30,888**	**33,480**	**36,887**

2016	2017	2018	2019	2020
15,850	18,056	17,498	18,997	19,566
2,872	3,487	3,472	3,782	4,624
18.1	19.3	19.8	19.9	23.6
1,849	– 229	2,075	2,721	3,062
11.7	– 1.3	11.9	14.3	15.6
43.3	37.5	39.9	43.8	46.9
2,888	2,624	2,988	3,344	3,963
7,005	3,071	4,303	2,195	6,105
4,570	4,934	5,276	5,367	5,587
28.8	27.3	30.2	28.3	28.6
45,692	49,610	50,333	51,015	51,944
3,112	3,078	3,164	3,462	3,696
19.6	17.0	18.1	18.2	18.9
645	872	950	1,073	1,046
516	521	552	585	602

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Andreas Reeg (page 2, 4, 5)

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