Group Management Report

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Information about the Group

The Group's business model

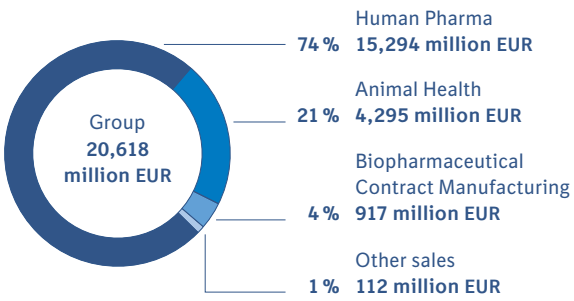
Boehringer Ingelheim develops breakthrough therapies that transform lives, today and for generations to come. Independent and family-owned, we pursue our long-term vision to identify tomorrow's challenges, seeking for solutions that target areas of unmet medical need. This is captured in our purpose Transforming Lives for Generations, which inspires over 52,000 of us to make a significant difference to human and animal lives. Boehringer Ingelheim has stood for innovation for over 135 years. We are among the world's 20 leading companies in this sector and one of Germany's most research-focused companies.

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

JARDIANCE® with two new indications in heart failure

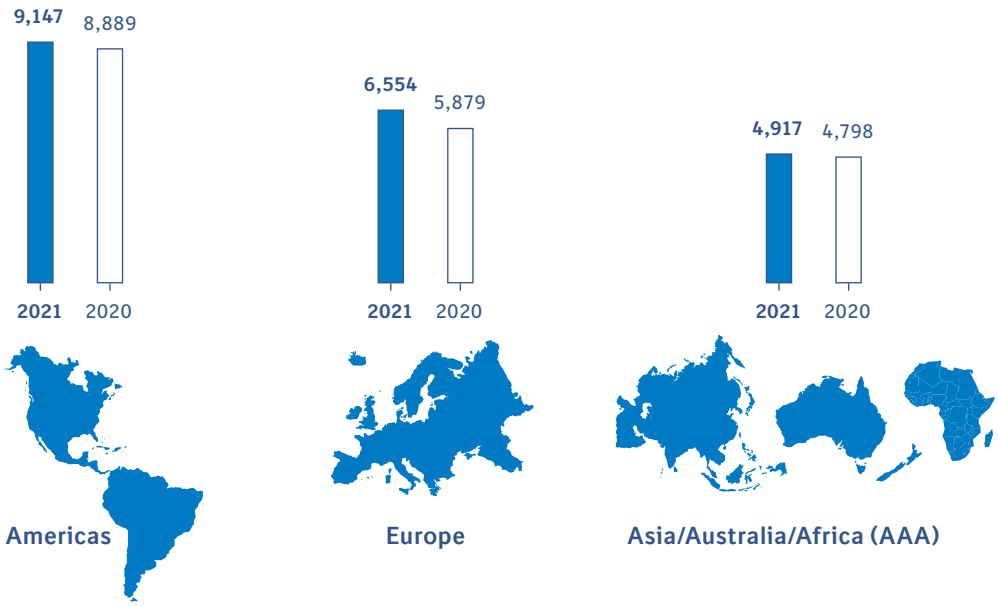
JARDIANCE®, a medicine for treatment of type 2 diabetes, which also reduces the risk of cardiovascular diseases for type 2 diabetics with pre-existing cardiovascular conditions, was the Group's biggest selling Human Pharma product for the third consecutive year. In addition, in 2021, the US public health authority, the FDA, awarded JARDIANCE® a Breakthrough Therapy Designation (BTD) for extended use in the treatment of heart failure. Moreover, this medicine was awarded a new indication through the EU's approval of its use for the treatment of heart failure with reduced ejection fraction (HFrEF) and a first approval in Paraguay for the treatment of heart failure with preserved ejection fraction (HFpEF). OFEV®, which is used for the treatment of the rare respiratory disease idiopathic pulmonary fibrosis (IPF) and increasingly also in a

Net sales by business



Net sales by region

in million EUR



further indication – systemic sclerosis with interstitial lung disease (SSc-ILD) – registered strong growth. 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 a significant provider of vaccines and therapeutics. Our portfolio includes products for pets and horses as well as livestock: swine, ruminants and poultry. Our core brands NEXGARD®, followed by FRONTLINE® and HEARTGARD®, are the foundations of our 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.

Our biopharmaceutical activities comprise the manufacture of our 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 2021 financial year, we achieved the majority of our sales in the Americas (44 %) and Europe (32 %) 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 24 % of its sales.

Research and development

Our 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. Our major emphasis is on the development of medicines and therapies to prevent, detect, and treat chronic diseases. 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.

More than 4 billion EUR invested in R&D

In our global research network, we employed an average of 10,109 people in 2021. We are present in nine countries, with central 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). Through our activities here we are continuing to expand and renew our existing product portfolio, in order to safeguard the Group's organic long-term growth. Accordingly, we have considerably increased our research and development (R&D) expenses in recent years – in the past three years, their growth has even outpaced our revenue trend. A total of around 4.1 billion EUR was invested in the research and development of new medicines. This is above the level in 2020 and corresponds to around 20.0 % of the Group's net sales in 2021 (2020: 18.9 %). Our research and development expenses in Human Pharma amounted to 3.7 billion EUR.

Research and development

	2021	2020	2019	2018	2017
Expenses in million EUR	4,127	3,696	3,462	3,164	3,078
– as % of net sales	20.0	18.9	18.2	18.1	17.0
Human Pharma expenses in million EUR	3,710	3,283	3,042	2,780	2,714
– as % of Human Pharma net sales	24.3	22.8	21.8	22.1	21.5
Animal Health expenses in million EUR	416	412	419	384	357
– as % of Animal Health net sales	9.7	10.0	10.4	9.7	9.2
Average number of employees	10,109	9,504	9,154	8,552	8,589
Investments in tangible assets in million EUR (without investments in infrastructure)	242	181	183	136	71

In our research, we rely on long-established relationships with academic and public research institutions, biotech companies, and other pharmaceutical companies. In the scientific field, we are collaborating in over 150 projects with more than 120 academic institutions spanning three continents. We are expanding our R&D portfolio through supplementary cooperation and license agreements as well as acquisitions. 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 play a key role in our success.

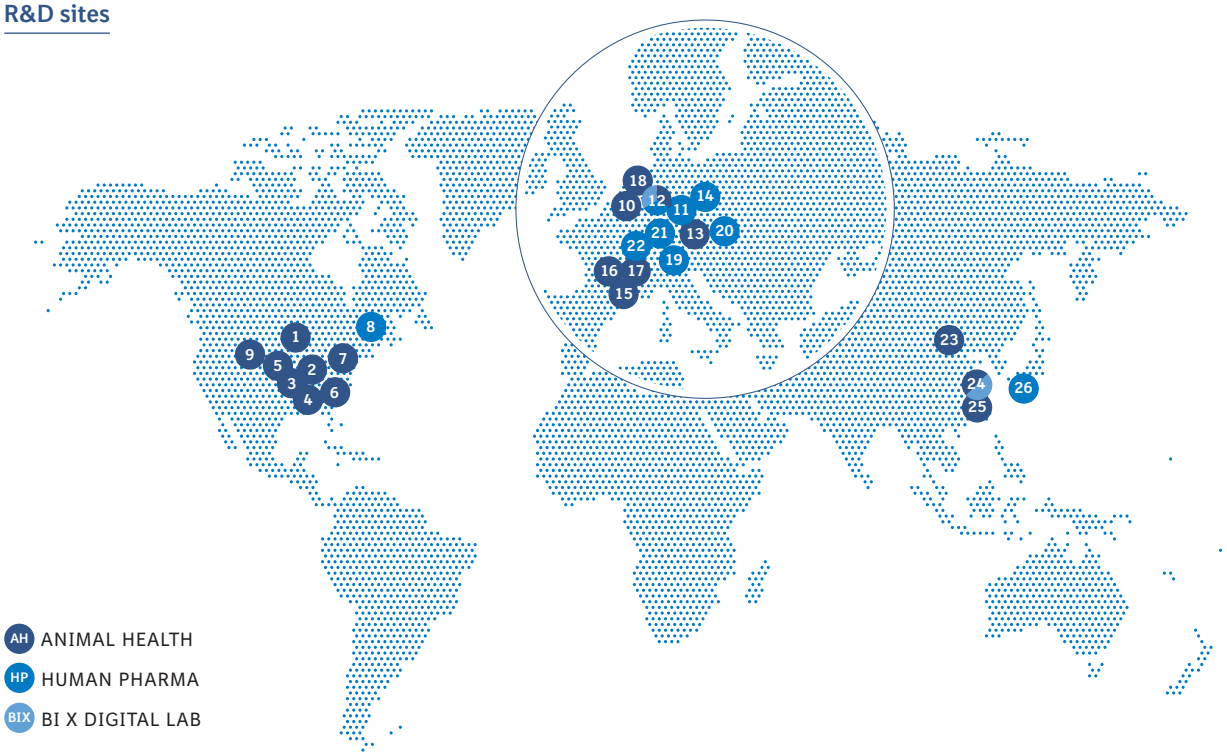
Innovation network expanded

In 2021, Boehringer Ingelheim confirmed its attractiveness as a partner through new acquisitions and partnerships. In our Human Pharma business, we completed our acquisition of NBE-Therapeutics AG at the start of the year. The Swiss biotech company supplements our research activities through an innovative platform for the development of an antibody-drug conjugate pipeline. We also completed our acquisition of contract manufacturer Labor Dr. Merk & Kollegen GmbH. This company was subsequently renamed to Boehringer Ingelheim Therapeutics GmbH. It is an important component of our research activities in the field of immuno-oncology. We further strengthened our activities in the field of oncology – which we have significantly stepped up over the past few years – through our acquisition of Abexxa Biologics, Inc. in September 2021. The research collaboration, established in 2016, aims at developing new antibodies targeting cancer-specific proteins. We also expanded our portfolio of partnerships in the past financial year: We are now working with the well-known Lieber Institute for Brain Development in researching new methods for treating neuropsychiatric diseases. We also entered into a collaboration with the Twist Bioscience Corporation which is headquartered in San Francisco. The collaboration objective is to utilize Twist's proprietary antibody library to identify potential antibody candidates in various therapeutic areas.

We have also established long-term partnerships in our Animal Health business. PetMedix Ltd. is a strong partner for antibody-based therapies for pets. The British company has a proprietary, innovative platform which enables the rapid development of antibodies. Our long-term cooperation with Lifebit Biotech Ltd., a provider of biomedical data analyses, aims to utilize an AI platform in order to more rapidly identify global outbreaks of infectious diseases and to report these at an earlier stage.

We are pursuing basic research through a three-year cooperation agreement with Google in the field of quantum computing. As part of our digital transformation strategy, this partnership aims to harness the computing power of this new technology in the service of Boehringer Ingelheim's research and development and thus to pursue innovation in a more rapid and, above all, more precise manner, while at the same time conserving resources.

R&D sites



Americas

USA

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

Europe

Belgium

10. Evergem (AH)

Germany

11. Biberach (HP)
12. Ingelheim am Rhein (AH, HP, BI X)
13. Katharinenhof-Rohrdorf (AH)
14. Ochsenhausen (HP)

France

15. Lyon – Boreal (AH)
16. Lyon – Porte des Alpes (AH)
17. Saint-Vulbas (AH)

Netherlands

18. Lelystad (AH)

Austria

19. Innsbruck (HP)
20. Vienna (HP)

Switzerland

21. Basel (HP)
22. Geneva (HP)

Asia

China

23. Beijing (AH)
24. Shanghai (AH, BI X)
25. Taizhou (AH)

Japan

26. Kobe (HP)

Our digital laboratory, BI X, focused in 2021 on establishing its new facility in Shanghai as well as building new capabilities for developing and approving medical software products. The strategy is for BI X to become a center of excellence for developing medical software products throughout our company. As well as the above-mentioned structural development of BI X as an organization, BI X also focused on solutions for doctors and patients in our Human Pharma business in its development of digital products in 2021. For instance, GUARD is a system which helps general practitioners to make the best possible treatment decision for type 2 diabetes patients, based on medical guidelines.

Since 2010, the Boehringer Ingelheim Venture Fund has driven innovation through its strategic investments in young companies which are carrying out research into early-stage science and technology. Our Venture Fund invests in biotech start-up companies with innovative concepts and technologies that have the potential to provide ground-breaking new therapeutic platforms. The Venture Fund also founds companies when it identifies promising research projects in universities and academic institutions. In 2021, we established a Venture Fund Asia alongside our existing venture funds in Germany and the USA.

The Research Institute of Molecular Pathology (IMP) in Vienna is a biomedical research institute which, as a wholly owned Group company, is 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 leading institutions of its kind: As of late 2021, ten of its 15 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 in 2020. Six of its 15 group leaders have been elected full members of the European Molecular Biology Organization (EMBO).

With its open innovation platform opnMe.com, Boehringer Ingelheim is contributing to the process of scientific collaboration in the pharmaceutical world: Around 57 molecules in the preclinical stage are currently being made available to academic researchers around the world free-of-charge. These molecules have already enabled new scientific findings, e.g., in the field of oncology.

Boehringer Ingelheim's R&D activities – the preclinical as well as clinical research and development – are the basis for our sustainable success. The Group's positive business development over the past years has been underpinned by an organic process of renewing its portfolio, based on its own research and development activities. In-house R&D – supplemented by external cooperation and partnerships – will also continue to be a top priority in the future. Our high commitment to innovation was confirmed last year by means of three Breakthrough Therapy Designations granted by the FDA: In May 2021, a BTD was issued for our glycine transporter type 1 inhibitor (Gly-T1) BI 425809 as a contribution to research into the treatment of cognitive impairment induced by schizophrenia. In the same month, spesolimab received BTD classification, following its orphan drug designation in 2020. Spesolimab is used for treating the rare inflammatory disease generalized pustular psoriasis (GPP). In addition, JARDIANCE® was awarded a BTD in connection with its extended use for the treatment of patients with heart failure.

More than 60 new active substances in our Human Pharma portfolio

Human Pharma

The promise in 2021 in the Human Pharma business and R&D was to pioneer therapies that transform the lives of patients significantly. We made progress in our focus areas such as cardiovascular and metabolic diseases, oncology, respiratory diseases, immunology, diseases of the central nervous system (CNS), and retinal health.

In 2021, the Human Pharma portfolio included 64 compounds whose development happened in around 250 clinical trials in more than 100 projects.

Development pipeline end of 2021

Cardiometabolic diseases	Phase
> **Metabolic modulator***	Phase I
> **Angiopoietin antibody**	Phase I
> **Food intake regulator***	Phase I
Hemodynamic modulator 1	Phase I
Hemodynamic modulator 2	Phase I
Transcient receptor potential channel inhibitor*	Phase I
> **BI 456906*** GLP1/GCGR agonist | NASH	Phase II
BI 456906* GLP1/GCGR agonist* | Obesity	Phase II
> **BI 685509** Hemodynamic modulator | CKD	Phase II
> **Tenecteplase (China)** Tissue Plasminogen Activator | AIS	Phase III
Empagliflozin / New indication SGLT2 inhibitor | CKD	Phase III
> **Empagliflozin / New indication**** SGLT2 inhibitor | HF post MI	Phase III
> **Empagliflozin / New indication**** SGLT2 inhibitor | CHF	Registration
Oncology	**Phase**
> **B7-H6/CD3 T-cell engager***	Phase I
DLL3/CD3 T-cell engager*	Phase I
> **CD137/FAP antagonist***	Phase I
Ezabenlimab (PD-1 antibody)	Phase I
> **HER2 exon20 inhibitor**	Phase I
KISIMA® cancer vaccine*	Phase I
> **KRAS (G12C) inhibitor***	Phase I
LRP 5/6 antagonist*	Phase I
MDM2-p53 antagonist*	Phase I
MEK inhibitor*	Phase I
> **ROR1 ADC***	Phase I
SIRP1α antagonist*	Phase I
SOS1::KRAS inhibitor*	Phase I
STING agonist	Phase I
TRAILR2/CDH17 antibody	Phase I

Development pipeline end of 2021 (continued)

Respiratory diseases	Phase
Cysteine protease inhibitor*	Phase I
˃ **BI 1015550** Anti-fibrotic | IPF	Phase II
Immunology	**Phase**
˃ **BI 706321** Kinase inhibitor | CD	Phase II
Spesolimab (BI 655130) IL36R antibody | PPP	Phase II
Spesolimab (BI 655130) IL36R antibody | CD	Phase II
˃ **Spesolimab (BI 655130)** IL36R antibody | HS	Phase II
Spesolimab (BI 655130) IL36R-antibody | GPP	Registration
Central nervous system diseases	**Phase**
Phosphodiesterase inhibitor*	Phase I
Digital therapy*	Phase I
BI 1358894* TRPC 4/5 inhibitor | MDD	Phase II
BI 1358894* TRCP 4/5 inhibitor | BoPD	Phase II
BI 425809 GlyT1 inhibitor | CIAS	Phase III

Development pipeline end of 2021 (continued)

Retinal diseases	Phase
> **Ischemia modulator**	Phase I
Neuronal damage modulator	Phase I
> **BI 836880*** VEGF/Ang-2 antibody | wAMD	Phase II
> **BI 764524** Ischemia modulator | DMI	Phase II
COVID-19	**Phase**
> **Alteplase** TPA | Cov-19 iARDS	Phase III

Indication abbreviations:

AIS	Acute Ischemic Stroke	Cov-19 iARDS	COVID-19 induced acute respiratory distress syndrome	mBC	Metastatic breast cancer
AtD	Atopic Dermatitis	DMI	Diabetic macular ischemia	MDD	Major depressive disorder
BoPD	Borderline personality disorder	GPP	Generalized pustular psoriasis	MI	Myocardial infarction
CD	Crohn's disease	HF	Heart failure	NASH	Non-alcoholic steatohepatitis
CHF	Congestive heart failure	HS	Hidradentis Suppurtiva	PPP	Palmoplantar pustulosis
CIAS	Cognitive impairment associated with schizophrenia	IPF	Idiopathis pulmonary fibrosis	TPA	Tissue-type Plasminogen Activator
CKD	Chronic kidney disease			wAMD	Moisture of age-related macular degeneration

* Partnered projects or acquired assets
** Study complete, submissions ongoing
> Key pipeline advances (Dec 2020 – Dec 2021)

Cardiometabolic diseases

In 2021, we reported positive results of the EMPEROR-Preserved Phase III trial in adults with heart failure with preserved ejection fraction, with and without diabetes. Based on this, the US FDA granted JARDIANCE® the status Breakthrough Therapy to reduce the risk of cardiovascular death and hospitalization for heart failure in adults with heart failure and preserved ejection fraction. In addition, we announced positive results of the EMPULSE trial in adults who are in hospital for acute heart failure.

In 2021, we also advanced the GLP-1/glucagon dual agonist, which was already being investigated in a Phase II study for individuals with diabetes, to Phase II clinical trials in adults living with obesity and non-alcoholic steatohepatitis (NASH). In addition, we received Fast Track Designation from the US FDA for adults with NASH.

Oncology

Cancer is a disease that devastates not only the people diagnosed with it but also their loved ones. In partnership with the wider community, we support awareness, education, improved diagnosis, and care for patients with cancer. We work with patients throughout the development process and beyond to ensure our new treatments make a meaningful difference and reach the patients faster who need them the most. We are advancing a unique pipeline of cancer cell directed agents, immuno-oncology therapies, and combination approaches to help win the fight against cancer.

Respiratory diseases

Research and development of new therapeutic options for people with respiratory diseases is another focus for Boehringer Ingelheim. Since 2014, OFEV® (nintedanib) has been a treatment option for idiopathic pulmonary fibrosis (IPF) to slow down the decline in lung function. In 2020, a breakthrough in pulmonary fibrosis therapy was achieved leading to two new indications in systemic sclerosis-associated interstitial lung disease (SSc-ILD) and other chronic fibrosing interstitial lung diseases with a progressive phenotype (PF-ILD) building the foundation for approvals in further countries in 2021. OFEV® now is approved as a treatment for IPF in more than 80 countries, in more than 70 countries for SSc-ILD, and in more than 60 countries for PF-ILD. In almost all countries it is the first and only approved treatment option for SSc-ILD und PF-ILD. The ongoing open-label extension trials SENSCIS™-ON and INBUILD™-ON will provide data on longtime safety and efficacy of nintedanib in SSc-ILD and PF-ILD. Additionally, the InPedILD™ study is investigating the dosing and safety profile of nintedanib in children and adolescents. Despite these advances in therapy, there is still a very high unmet therapeutic need in fibrosing pulmonary diseases. Therefore, we are investigating the safety and tolerability of BI 1015550 in patients with IPF in a clinical trial which is making good progress.

Immunology

Immunological diseases greatly impact the lives of people living with it emotionally and physically. Boehringer Ingelheim is dedicated to discovering and developing first-of-their-kind therapies for these serious inflammatory diseases. With a deep understanding of molecular pathways, we are 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. In 2021, we filed for marketing authorization with the FDA, EMA, Chinese and Japanese authorities for treating patients with a flare of Generalized Pustular Psoriasis. The filing is based on positive Phase II data from our EFFISAYIL-1 trial. In addition, spesolimab has been granted Breakthrough Therapy Designation in China and USA.

Central nervous system

At Boehringer Ingelheim, we are redefining mental health to enable people to thrive. A decade ago, Boehringer Ingelheim embarked on a research domain criteria (RDoC) inspired approach where we link behavior to the underlying neurobiology to develop targeted therapies that can ease the burden of these conditions, not just the symptoms. One example of this approach is BI 1358894 that we currently further investigate in clinical Phase II trials in people living with borderline personality and major depressive disorder. In 2021, Boehringer Ingelheim initiated the innovative CONNEX Phase III clinical trial for the treatment of Cognitive Impairment Associated with Schizophrenia (CIAS). Based on a successful Phase II trial in the CIAS, the US FDA has granted Breakthrough Therapy Designation for BI 425809, a novel glycine transporter-1 (GlyT1) inhibitor for this indication.

Retinal diseases

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 2021, Boehringer Ingelheim continued developing and advancing the retinal health pipeline. Clinical development of several new compounds was started, with the potential to treat wet age-related macular degeneration and geographic atrophy. Boehringer Ingelheim also transitioned a potential treatment for diabetic macular ischemia (DMI) to a Phase II trial. The work of our scientists is complemented by collaborations with academic and patient organizations, alongside partnerships with biotech companies.

COVID-19

As a research-driven biopharmaceutical company, we utilize our different areas of expertise to find medical treatments for COVID-19. In 2020, we initiated three programs to develop new therapy options. We are thus fully concentrating our efforts in this area on the development of alteplase as a potential treatment for COVID-19 patients with severe breathing problems, called acute respiratory distress syndrome (ARDS). Currently, the compound is being investigated in the Phase III part of the TRISTARDS Phase II/III study. These two other programs were discontinued in 2021: the development of BI 764198 for patients hospitalized with COVID-19 with respiratory complications due to the lack of efficacy and the BI 767551 SARS-CoV-2 neutralizing antibody due to the lack of coverage for the delta variant.

The following table shows the relevant changes in current clinical studies (Phase III):

Clinical trial	Phase	Changes in 2021
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	*Study completed, primary endpoint met and published in New England Journal of Medicine. Empagliflozin demonstrated a 21 percent reduction in the combined risk of cardiovascular death and hospitalization for heart failure in adults with heart failure and preserved ejection fraction. Empagliflozin also reduced first and recurrent hospitalizations for heart failure by 27 percent and significantly slowed kidney function decline.*
EMPULSE (NCT04157751), a multicenter, randomized, double-blind, 90-day superiority trial to evaluate the effect on clinical benefit, safety, and tolerability of once daily oral Empagliflozin 10 mg compared to placebo, initiated in patients hospitalized for acute heart failure (de novo or decompensated chronic HF) who have been stabilized.	Phase III	*Study completed, primary endpoint met. In the EMPULSE Phase III study, Empagliflozin shows a significant clinical benefit in adults stabilized after acute heart failure in the hospital. Adults hospitalized for acute heart failure were 36 percent more likely to experience clinical benefit when treated with Empagliflozin than with placebo. The benefit was consistent in people with new or existing heart failure, regardless of the ejection fraction or diabetes status.*
EFFISAYIL™ 1 (NCT03782792) was a 12-week Phase II trial investigating patients with a GPP flare (N=53). Patient were randomized 2:1 and were treated intravenously with either 900 mg of Spesolimab or placebo. The primary endpoint was a GPP Physician Global Assessment (GPPGA) pustulation subscore of 0 (no visible pustules) at week one. The key secondary endpoint was a GPPGA score of 0/1 (clear/almost clear skin) at week one.	Phase II	*Study completed and primary endpoint met. Published in New England Journal of Medicine. Data showed that spesolimab, a novel IL-36 antibody treatment, was effective in rapidly treating adult patients with generalized pustular psoriasis (GPP) experiencing a flare.*
CONNEX is a Phase III clinical trial program designed to assess the safety and efficacy of BI 425809 for improving cognition in adults with schizophrenia. The program is comprised of three clinical trials, which are Phase III randomized, double-blind, placebo-controlled parallel group trials, to examine the efficacy and safety of BI 425809 once daily over a 26-week treatment period in patients with schizophrenia.	Phase III	*Start of Phase III.*
TRISTARDS (NCT04640194) is a seamless, open-label, randomized, parallel-group Phase IIb/III trial which evaluates the efficacy and safety of daily intravenous alteplase for up to five days on top of best available medical management (standard of care) compared with best available medical management alone, in adults with COVID-19 Acute Respiratory Distress Syndrome (ARDS). Primary objective of the trial is the time to clinical improvement or hospital discharge.	Phase III	*Start of Phase III.*

Animal Health

In the area of Animal Health, Boehringer Ingelheim concentrates on the discovery and development of treatments and preventive therapies in areas where the medical need is unmet and where our efforts will have the greatest impact – such as targeted therapeutics for oncology and immunology, new chemical entities and new methods of control to counter resistance in parasites, as well as new tools and technologies to improve the prevention of infectious diseases. The current portfolio includes innovative vaccines and antiparasitics for the protection of livestock and pets, as well as pharmaceutical products for the treatment of chronic diseases. Our research increasingly incorporates new approaches and technologies such as the use of stem cells and monoclonal antibodies.

Our innovation strategy is built on a scientific approach to the investigation of the causes and mechanisms of diseases across multiple species – including animals and humans – leading to the discovery of new ways to mitigate those causes or intervene in the disease process. This broad approach enables us to work in close cooperation with our Human Pharma colleagues as well as with external partners in areas outside Animal Health. In our three strategic areas of infectious disease, noninfectious disease, and parasiticides, we use this strategy to target solutions that can be broadly applied across species:

- **Infectious disease (e.g., vaccines):** Focus on areas of innovation, such as mucosal immunity, bacterial disease, and transboundary and emerging diseases.
- **Non-infectious disease (e.g., therapeutics):** Focus on collaboration with Human Pharma and grow our capabilities in key technologies through targeted external partnerships.
- **Parasiticides:** Focus on maintaining our leadership through acceleration of key discovery and development programs for new molecules and investment in innovative technologies for the long term, including solutions that address sustainability.

Our 18 research and development sites are organized into six regional innovation centers located in the USA, Europe, and China. This organization supports the global innovation strategy by ensuring the concentration of critical mass and expertise needed to deliver therapies to customers in our key geographies. Specific sites within each region serve as a focus for competencies in particular segments of our overall strategy. Our footprint strengthens local execution and facilitates regional external networks and partnerships.

Synergies through collaboration of Human Pharma and Animal Health

A key strategic advantage for Boehringer Ingelheim is that we retain both Human Pharma and Animal Health divisions. By exploiting the synergies between them, we have already successfully introduced such products as VETMEDIN®, SEMINTRA®, METACAM®, and ASERVO® EQUIHALER®. With additional promising compounds in our pipeline, we expect further innovation through this connection, particularly in the area of therapeutics.

External partnerships also play a key role. This is demonstrated by the integration of Global Stem cell Technology NV (later renamed Boehringer Ingelheim Veterinary Medicine Belgium), a company specialized in stem cell therapies for orthopedic and immunological animal diseases, already acquired in 2020. The cooperation led to the first stem cell-based animal health product, ARTI-CELL® FORTE, which was approved by the European Commission. In 2021, we initiated a number of new strategic partnerships, including a partnership with PetMedix, whose platform generates canine therapeutic antibodies for use in developing therapies for immune-mediated conditions such as cancer, allergy, and arthritis. We also are partnering with Lifebit to aid in detecting and early reporting of global infectious disease outbreaks through their AI platform. Furthermore, we continue our work with key research institutions such as the Friedrich-Loeffler-Institut, the Pirbright Institute, and Oxford University Innovation to develop more effective approaches to prevent African Swine Fever, which threatens the swine industry worldwide.

In 2021, we initiated more than 500 research, development and clinical studies worldwide and were awarded more than 126 product authorizations. New regulatory approvals in 2021 include NEXGARD® COMBO in the EU and Canada, which extends one of our flagship parasiticide brands to cats, and NEXGARD® SPECTRA in Brazil – a new market for this broad spectrum product that treats both endo- and ectoparasites. In the USA we received approval for FLEX PARVOPRRS®, a combination vaccine effective against reproductive failure caused by the two most common viral causes of porcine reproductive failure globally. 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

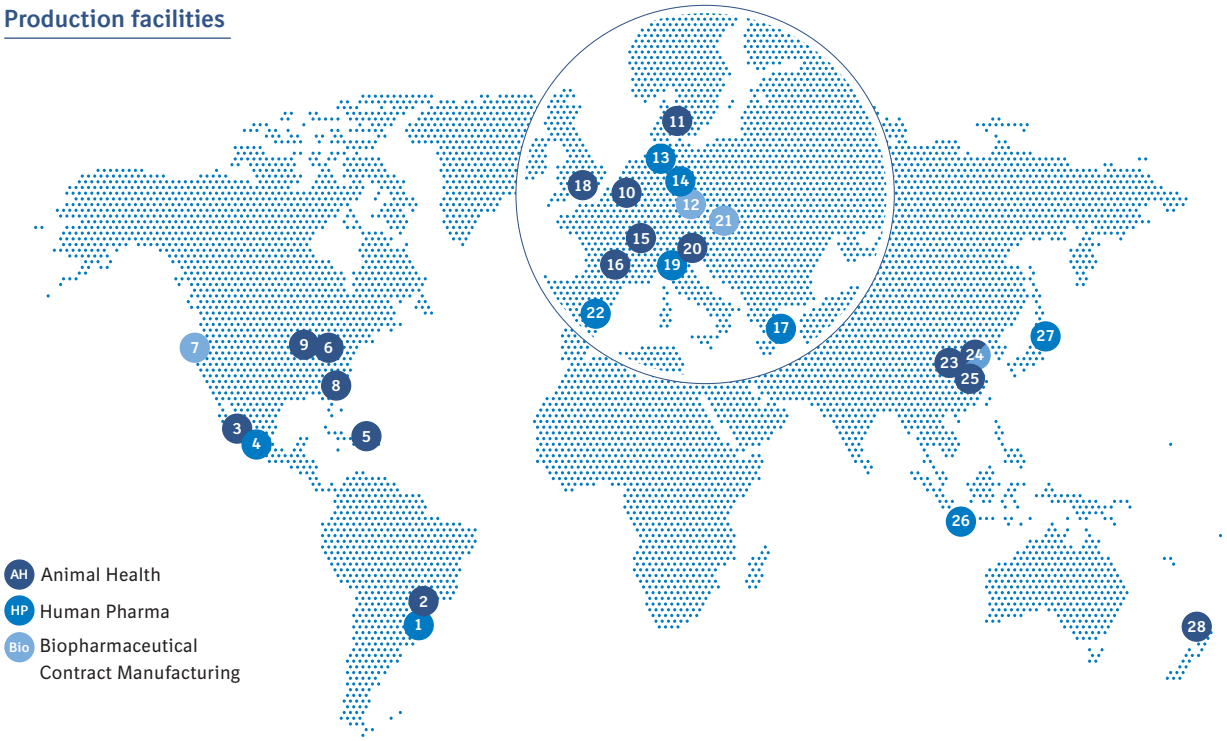
Human Pharma

In the Human Pharma business, our globally active production facilities are responsible for the steady 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 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 2021 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 and one that produces medical devices. Finished pharmaceutical products are manufactured at eight facilities. In the past year, which was once again characterized by unusual logistical challenges due to the COVID-19 pandemic, Boehringer Ingelheim was able to ensure a steady supply of medicines for patients. This was possible thanks to the establishment of key manufacturing steps and technologies at multiple facilities and by further strengthening the resilience concept for every link in the supply chain. The progressing digitalization of our production network and overall supply chain in 2021 played a key role in ongoing development measures to ensure the security of supply. The ongoing implementation of the Group's supply chain strategy optimizes the value chain management from the supplier to the customer ("end-to-end"). The use of digital and automated processes and technologies enables a high level of transparency and efficient management of the global production network supply chain.

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 our Ingelheim am Rhein headquarters, we made a key investment in a flexible plant for the industrialization of newly developed medicines and their initial market supply. We made progress with the expansion of production technologies and capacities for pharmaceutical active substances at our Fornovo (Italy) facility, pharmaceutical bulk drugs at our Sant Cugat (Spain) facility, and for finished pharmaceutical products at our Koropi (Greece) and Yamagata (Japan) facilities to ensure the supply of antidiabetic products (JARDIANCE® in particular) as well as pipeline products. The opening of our

Production facilities



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)

Europe

Belgium
10. Evergem (AH)

Denmark
11. Kalundborg (AH)

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

France
15. Lyon (AH)*
16. Toulouse (AH)

Greece
17. Koropi (HP)

Great Britain
18. Pirbright (AH)

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

Austria
21. Vienna (Bio)

Spain
22. Sant Cugat (HP)

Asia/Oceania

China
23. Nanchang (AH)
24. Shanghai (HP, Bio)
25. Taizhou (AH)

Indonesia
26. Bogor (HP)

Japan
27. Yamagata (HP)

New Zealand
28. Auckland (AH)

* Grand Lyon Industrial Biologic Center (LPA St. Priest, Lentilly, Jonage)

biopharmaceutical large-scale cell culture production building at our Vienna facility represented a milestone in the expansion of our capacities in our network for newly developed products. Together with other production facilities in our global biopharmaceutical network, it covers, among other activities, the increased demand for ACTILYSE® and METALYSE®.

Animal Health

In 2021, Animal Health products were manufactured in a network of 15 production facilities in eleven countries. In addition to the company's own facilities, in 2021 around 110 contract manufacturers turned out medicines for Boehringer Ingelheim. The company's product comprises vaccines, pharmaceutical products and nutraceuticals. These traditional medicines 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 reliable, efficient supply of all its products.

15
Animal Health production facilities in eleven countries

In 2021, 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) as well as the expansion of its pharmaceutical manufacturing capacities in Toulouse (France). It also invested in the development of modern technologies for the manufacture of our products.

Biopharmaceutical Contract Manufacturing

Boehringer Ingelheim pursues its biopharmaceutical activities at its facilities in Biberach (Germany), Vienna (Austria), Fremont (California, USA), and Shanghai (China). They comprise the manufacture of own-brand marketable products (such as ACTILYSE®, METALYSE®, and PRAXBIND®), the manufacture of biopharmaceuticals for clinical testing of pipeline products and – as one of the world's leading companies – 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.

One of the leading Biopharma providers for industrial customers

Capacity utilization of the established network's industrial-scale production facilities remained at a very high level in 2021. At our Biberach facility, the optimized production process was successfully demonstrated in a bioequivalence study along with ramped-up production to meet the growing market demand for ACTILYSE®. To achieve a rapid increase in production volumes, we initiated the transfer of the optimized process to our new large-scale cell culture plant in Vienna. By way of support for the process of submission to the authorities in the EU, the USA, and Japan, Biberach launched preparatory activities for Boehringer Ingelheim's IL36R monoclonal antibody spesolimab which is expected to be introduced to the market in 2022. Our microbial production facility at our Vienna site was approved for a further customer product, a carrier protein for vaccines; our microbial product portfolio has thus increased to 18 biopharmaceuticals. Despite the challenging external conditions associated with the COVID-19 pandemic, our cell culture plants in Biberach, Shanghai, and Fremont and our microbial production in Vienna continued to manufacture and deliver biopharmaceuticals for patients worldwide without incurring interruptions.

The expansion of our cell technology capacity at our Vienna facility was completed in the past year. The local authority authorized its commissioning in compliance with good manufacturing practices (GMP) halfway through the year. Transfer and production activities are currently underway.

Also at our Vienna facility, we completed our microbial expansion project for the production of a recombinant vaccine in 2021. In view of the growing global importance of biotechnologically produced active substances and the significant increase in the number of internal development projects in our own portfolio, these two projects are both of key strategic relevance.

In 2021, our Shanghai facility focused on the market supply of an immuno-oncological antibody for a Chinese customer's cancer therapy. We also further expanded our customer and product portfolio at our facility in Shanghai (China), and filed for this facility's approval for the US market. Its activities focus on the supply of innovative medicines for patients through Chinese and multinational biopharmaceutical companies. Customers greatly benefit from the fact that Boehringer Ingelheim, as a contract development manufacturing organization, is able to cover the entire value chain from a single source and has long-term experience and technical expertise in the preparation of product launches and market supply.

Employee reporting

In 2021, Boehringer Ingelheim employed 52,391 people on average worldwide. This represents an increase of +0.9 % over the previous year.

Average number of employees by region

	2021	2020
Americas	13,187	13,176
Europe	28,266	27,379
Asia/Australia/Africa (AAA)	10,938	11,389
	52,391	51,944

Our committed employees, who identify with our company's aims and appreciate the respectful work climate at Boehringer Ingelheim, are a major success factor driving our Group's positive growth. With their high level of personal commitment, they help us to fulfill our joint promise of ensuring the supply of vital medicines. This holds particularly true during the worldwide pandemic. Our annual global employee survey provides us with relevant feedback which enables us to continuously improve our work environment.

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 greatly varying requirements of national regulators demand great flexibility of 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. Our human resources department is responsible for promoting a wide range of opportunities for innovation at work – which is a significant aspect of our corporate strategy – and for helping our employees to nurture their personal strengths while developing as individuals. In order to be best prepared for the challenges ahead, we emphasize the acquisition of technical expertise as part of a comprehensive qualification system.

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

On average, 749 young people worldwide were enrolled in Boehringer Ingelheim's vocational training program in 2021. At Boehringer Ingelheim's German facilities alone, 201 young people started their careers in 28 different scientific, technical, and commercial fields, through training and dual-study courses. The selection of training and dual-study courses is closely coordinated with our disciplines to ensure that the curricula and training programs meet our needs.

Boehringer Ingelheim recognized as "Global Top Employer"

One of the company's important aims is to strengthen the appeal of Boehringer Ingelheim as an employer for our current and future employees. In 2021, Boehringer Ingelheim once again won recognition as a top employer from the auditors of the international independent Top Employers Institute. Awards in 27 countries and three regions not only represent an increase of nine awards compared to the previous year, but also mean that Boehringer Ingelheim is, for the first time, a "Global Top Employer." Of the approximately 1,600 companies which received awards, only 16 were awarded this distinction worldwide. In addition to Germany, Boehringer Ingelheim was also granted this distinction in Argentina, Australia, Austria, Brazil, Chile, China, Colombia, Ecuador, Hungary, Indonesia, Italy, Malaysia, Mexico, the Netherlands, New Zealand, the Philippines, Poland, Romania, Russia, Saudi Arabia, Singapore, South Korea, Spain, Thailand, the United Kingdom, and Vietnam.

Sustainable Development – For Generations

Sustainable Development as part of our strategy

Sustainability has been firmly anchored in our corporate philosophy since Boehringer Ingelheim's founding in 1885. Our understanding and awareness of sustainability has continuously developed over the generations and influences our decision-making and actions. We have also learned from the global pandemic. This has made it obvious how imperative a holistic approach is to address the intertwined connection between humans, animals, and the environment.

With our focus on human and animal health, Boehringer Ingelheim is well positioned to provide a relevant contribution to a healthier and more sustainable future. In 2021, we updated our sustainability strategy, entitled "Sustainable Development – For Generations." In the process, the focus was on the following: the definition of designated impact areas, a stronger usage of synergies, and unifying our company's global collaborative network as well as ensuring alignment with the UN Sustainable Development Goals. The strategy is based on the following three pillars:

MORE HEALTH – For People and Animals
MORE POTENTIAL – For Communities and Our People
MORE GREEN – For Our Planet

Boehringer Ingelheim aims to achieve the following concrete measurable goals by 2030:

MORE HEALTH: Expanding access to healthcare for an additional 50 million people in vulnerable communities, investing 35 billion EUR in health innovation and research to tackle non-communicable diseases and an additional 250 million EUR in partnerships to combat emerging infectious diseases.

MORE POTENTIAL: Our aim is to positively impact 50 million people in vulnerable communities by empowering and supporting our employees, partners, and innovative social entrepreneurs.

MORE GREEN: We will become carbon-neutral in our company operations by 2030 (Scope 1 and 2). We will also significantly reduce the resource footprint across the value chain in the same period, despite our growing business activities.

MORE HEALTH – For People and Animals

MORE HEALTH follows our ambition to develop better therapies and enable better solutions for global healthcare challenges. The pillar includes a number of projects and initiatives, reflecting the diversity of our patients and the expertise of our partners. These include:

MORE HEALTH
Focus on the health of people and animals

Access to Healthcare

The "Access to Healthcare" initiative seeks to improve the healthcare in vulnerable communities, starting with availability of medicines to access to safe and effective prevention and care. We have achieved several milestones, for example:

- Expanding access to healthcare in less developed regions through the UN Defeat-NCD Partnership.
- We have launched a joint initiative with "PharmAccess" as part of our "In Reach Africa" program in Kenya. Mobile technology improves awareness of hypertension and diabetes and lowers barriers to access.
- The "Pathway" project fund launched in Canada in 2021 intends to improve the lives of 20,000 members of indigenous communities. Above all, the project will address the excessive prevalence of certain non-communicable diseases in these communities.
- A pilot program was launched in Pakistan in 2021 in collaboration with the World Organization of Animal Health, which supports the elimination of rabies by donating the animal vaccine RABISIN® and dog identification collars.

Angels

The "Angels" initiative was established in 2016 to improve stroke care worldwide. In 2021, additionally around 2,000 clinics, 26 countries, and 27,000 doctors and nurses joined this continuously growing network. It now includes over 72,300 healthcare professionals and 6,300 clinics in 145 countries and helps ensure that all patients are treated in line with defined standards. The Angels Initiative was featured in the Access To Medicine Report 2021 as a "best practice" example of capacity building and was distinguished with the World Stroke Organization's Stroke Service Award.

LastMile

South of the Sahara, smallholder farmers in Africa often lack access to veterinary treatment. The joint initiative "LastMile" aims to achieve a long-term, sustained improvement in the availability of veterinary products and services. This project was launched in Kenya in 2018 and has since expanded to Cameroon, Nigeria, Mali, Burkina Faso, and Ethiopia. Currently, 22 LastMile Livestock Service Providers (LLSPs) are working in the field. In 2021, relevant veterinary medicine and farm management modules were added to the LLSP training programs, and four new products were included in the product portfolio. Subsequently, a total of 55 products have now been included. In total, LastMile has assisted many farmers and provided numerous animal trader visits and veterinarian visits.

MORE POTENTIAL
Focus on people and communities

MORE POTENTIAL – For Communities and Our People

MORE POTENTIAL is focused on providing not only safe, but also the best possible conditions in order for people at Boehringer Ingelheim, in our communities, and at our partners to reach their full potential.

BE SAFE

Through the "BE SAFE" program, which was established in 2010, we place a particular emphasis on ensuring a safe workplaces for our employees and partners. We are therefore continuously reviewing and optimizing our work and safety culture and strive to maintain our employees' long-term good health by preventing accidents, incidents, and occupational health risks. In 2021, Boehringer Ingelheim became an official partner of the EU-OSHA "Healthy Workplaces Lighten the Load 2020-2022" campaign to prevent work-related musculoskeletal disorders (MSDs). In addition, in the spring the internal campaign "Shed a Light" was launched to raise awareness on mental health issues in the workplace and encourage employees to speak up and address this.

Diversity & Inclusion

Through our core values of empathy, respect, passion, and trust, we foster a diverse, collaborative, open, and inclusive work environment, which is key for innovation, value creation, and sustainable growth. Boehringer Ingelheim is convinced that valuing diversity is not only the right thing to do for our people and communities, but also the smart thing to do for our business, since it helps us to understand and fulfill the different needs and requirements of our patients, customers, and partners around the globe. In 2021, we continued our focus on awareness and education. This included updating training programs on topics such as unconscious bias and inclusive behavior.

Human Rights

Boehringer Ingelheim is continuously stepping up efforts in the areas of human rights and ethics. The approach is aligned with the United Nations' Guiding Principles on Business and Human Rights. Subsequently, our Human Rights Policy is an integral component of our guidelines for cooperation with external partners, e.g., in the code of conduct.

Making More Health

In 2010, Boehringer Ingelheim and Ashoka, the world's largest network of social entrepreneurs, jointly established the "Making More Health" (MMH) initiative. This long-term partnership focuses on enabling innovative solutions to tackle complex healthcare challenges for people, animals, and their communities. This approach links interdependent issues such as economic development, infrastructure, education, culture, and healthcare issues. It emphasizes collaboration with communities as equal partners and engages Boehringer Ingelheim employees to share their knowledge and skills. Highlights include:

- **Social innovation:** To date, over 120 innovators worldwide working in the areas of human and animal health have been supported.
- **Community activation:** Since 2014, programs have been initiated in India, Kenya, Nigeria, and Ghana which have already impacted 150,000 lives and proven to be game changers. This includes clean water and hygiene projects, implementing innovative farming models, and providing animal health and business skills training courses as well as inclusion programs for marginalized community groups, such as people with albinism.

- **Cross-sector collaboration:** "Making More Health" emphasizes a "win-win" collaborative approach to bridge the gap between business and society. One such initiative is the "Business Accelerator" funding program. The initiative provides funding and expertise to support social start-ups in Sub-Saharan Africa, enabling them to scale up and sustain their business models. Many of these social enterprises have now progressed to a stage where more substantial funding is necessary.

Subsequently, the new initiative "Boehringer Ingelheim Social Engagement" was launched in 2021 with an investment of 50 million EUR to offer in addition to corporate donations alternative financing opportunities for social entrepreneurs. This includes, for example, the provision of subordinate loans, whose terms and conditions would be adjusted to the local needs and requirements of the social enterprises.

Also in 2021, the "MMH Connect" IT platform was launched, which aims to enable and match 20,000 Boehringer Ingelheim employees to support effective and innovative partnerships with social enterprises by 2030, where they will be able to contribute their skills while also developing as individuals.

The "Making More Health Together 2021" convention, a two-day virtual event, brought together over 1,800 participants from across academia and the non-profit, industry and political sectors. In more than 40 interactive sessions, the participants discussed how to resolve the world's most pressing health-related issues.

MORE GREEN – For Our Planet

MORE GREEN
Focus on the environment

A healthy planet is a prerequisite for healthy people, animals, and communities. Environmental challenges should not be seen in isolation, as they have tangible effects on the health of whole societies. The sustainable use of natural resources and the promotion of a strong environmental awareness are subsequently key components of our environmental sustainability program, in order to help protect the health of current and future generations and safeguard their prospects for a healthy future.

The MORE GREEN Fund supports internal projects in the areas of decarbonization, water management, and the circular economy and has already provided funding for approximately 40 new environmental projects worldwide since 2020. Boehringer Ingelheim pays particular attention to ecological aspects in its major projects and has set aside an additional 130 million EUR for this purpose.

In 2021, Boehringer Ingelheim was the first pharmaceutical company in the EU to receive the "GreenCanteen" certification for the sustainable catering concept at the Ingelheim headquarters.

Carbon Footprint

We are continuously working on reducing our greenhouse gas emissions, having committed to becoming carbon-neutral in our operations (Scope 1 and 2) by 2030, using 100 % renewable electricity and continuing to make substantial investments in sustainable technology. One of the tools used in this process is the introduction of an internal carbon price of 100 EUR per ton to create an additional economic incentive for green innovation. Further recent examples of our activities include:

- The construction of a new biomass power plant in Ingelheim.
- The transition to renewable electricity solutions at numerous locations, including sites in Germany, Austria, Spain and the USA. Since 2020, the company's share of renewable electricity purchased worldwide has increased from 30 % to over 50 %.
- The certification of carbon neutrality for the sites Dortmund and Sant Cugat.
- Our partnership with ClimateSeed supports biodiversity and protects drinking water by offsetting carbon emissions through, among others, reforestation projects in Africa, India, Indonesia, and Germany.

Resource Use

Circular economy aspects are implemented in stages of the value chain to minimize waste and to apply eco-design and green chemistry concepts in new products. Through continuous optimization measures, we have reduced our annual volume of waste to landfills and resource use since 2010. We are thus optimizing the environmental footprint of future Boehringer Ingelheim products.

Water Stewardship

Access to clean water has a major impact on social and cultural justice, environmental sustainability, and the local economy. For this reason, Boehringer Ingelheim implements programs related to water and related risks at all production sites. Sites in established water scarcity areas implement a recognized "Water Stewardship" program, such as that of the "Alliance for Water Stewardship" (AWS). In 2021, the AWS certification of our Promeco production facility in Xochimilco (Mexico) was renewed and the AWS certification process for our production facility in Fremont (California, USA) was initiated.

Furthermore, we have evaluated the wastewater at the production sites regarding possible residues of active pharmaceutical ingredients (API) and other trace substances. On this basis, "Clean Water" initiative ensures that traces of pharmaceuticals in wastewater remain significantly below any effect level. The initiative also works with industrial networks and suppliers to cover the entire value chain.

In this context, Boehringer Ingelheim finances joint projects with "Making More Health" in Kenya, which aim to improve access to clean water.

Report on economic position

Macroeconomic environment

World economic output recovered in 2021 following its COVID-19-related collapse in 2020. According to the International Monetary Fund (IMF), the global economy grew by +5.9%. In the first six months of the year, many economies experienced an upswing due to the easing of the measures which had been introduced in order to contain the pandemic and on account of the increased level of consumer demand. This growth slowed in the second half of the year due to factors including industrial enterprises' continuing global supply and capacity bottlenecks as well as rising commodity prices and freight costs. The trade policy situation between the USA and China remained tense. There was a further increase in tensions in 2021, which was reflected in factors such as increased import duties. Also the conflict between Russia and Ukraine is closely monitored. There were also signs of rising inflation.

Growing Human Pharma market allowed increased investment in R&D

Unlike other sectors, pharmaceutical markets tend to be shaped by long-term economic output and, in particular, by societies' demographic trends. Their performance is also influenced by the continuous global improvement in access to healthcare. The global pharmaceutical market – not including COVID-19 vaccines – thus increased to 1.3 trillion USD in the past year. This corresponds to a +5% average annual rate of growth over the past five years (source: IQVIA). However, developing countries' growth contribution decreased relative to the situation at the start of this decade. In the pharmaceutical industry, social distancing measures resulted in delays in clinical studies and thus impacted the schedules of research activities or had to be compensated by additional costs where possible. Largely stable core business by comparison with other industries allowed pharmaceutical companies to remain a key driver of investment in research and development, including in the fight against the SARS-CoV-2 virus.

In 2021, healthcare systems around the globe were further pressured by the COVID-19 pandemic, the burden of chronic diseases, aging populations, and increased budget pressure. In order to address these challenges, governments and healthcare authorities are expanding the use of cost-containment actions including mandatory price reductions, external reference pricing, lengthy as well as complex negotiation processes which delays access to innovative new medicines. Also the patient is increasingly involved in the cost for treatments, by different forms of co-payments. Such measures are increasingly putting pressure on the pharmaceutical companies and thus might limit their future ability to invest in the development of new treatment options and to improve access to innovative medicines. The pharmaceutical industry is working together with governments and healthcare authorities to address these challenges and thus to maintain and improve sustainable patient access, to reduce access delays and continuously bring innovation to the patients. An important prerequisite for achieving this objective remains a reliable legal framework that promotes innovation and ensures the protection of intellectual property.

Animal health market continues positive growth trend

The animal health market – consisting of the pet and livestock segments – continued its positive growth trend in 2021. This mainly reflects population growth, many people's rising living standards in the emerging markets and animals' improved life expectancy due to continuous advances in veterinary care. In the pet segment, pets' growing popularity due to the COVID-19 pandemic prompted an increased level of demand for products. The livestock segment is benefiting from growing demand for animal products. The increasing prevalence of zoonoses (infectious diseases which are transmissible from animals to humans and from humans to animals)

is reinforcing the importance of the animal health industry. In general, consolidation through mergers on both the supplier and customer sides is ongoing. This is resulting in increased competition. In the future, growth in the Animal Health business will largely be driven by therapeutic innovation. In order to grow with the market, investments need to be continuous, sustainable, and competitive.

In 2022, according to the IMF, the global economy will grow by 4.9 %. The advanced economies which have broad access to COVID-19 vaccines are expected to have made up for their pandemic-related decline in economic output by the end of 2022. Moreover, there are many different scenarios with regard to the inflation trend and when inflation might return to a pre-pandemic level. However, according to the IMF there are also a large number of risks associated with world economic growth: Vaccine-resistant mutations of the COVID-19 pathogen and uneven access to vaccines are resulting in increasing gaps between developing countries, emerging markets, and the advanced economies. In addition, ongoing climate change is increasing the risk of natural disasters and thus of the related health and economic impacts.

Currency trends

Boehringer Ingelheim's global presence means that currency trends influence its revenue figures. The US dollar (USD), the Japanese yen (JPY) and the Chinese renminbi (CNY) are particularly worthy of note here. Following a low of 1.22 EUR/USD (January) at the start of the year, the US dollar had reached a high of 1.13 EUR/USD (December) by the end of the year. The Japanese yen fluctuated between a high of 126.31 EUR/JPY (January) and a low of 132.63 EUR/JPY (June). At the start of the year, the Chinese renminbi was at a low of 7.87 EUR/CNY (January) and had reached a high of 7.20 EUR/CNY by the end of the year (December). Significant transactional currency risks are hedged through suitable currency instruments.

Currency development

Average rate – basis: 1 EUR	2021	2020	Effect on net sales (in million EUR)
US dollar	1.18	1.14	–268
Japanese yen	129.86	121.78	–92
Chinese renminbi	7.63	7.87	+33

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.

Boehringer Ingelheim's positive growth trend remained intact in 2021. We recorded net sales of 20,618 million EUR, which represents a +5.4% increase relative to the previous year's net sales figure of 19,566 million EUR. Exchange rate effects adversely affected the sales trend in 2021. Adjusted for these effects, the Group achieved a growth rate of +7.5%.

20.6
billion EUR in net sales

We achieved sales growth in every region. As in previous years, with sales of 9,147 million EUR and a 44% share of overall sales the Americas region was Boehringer Ingelheim's key sales market and grew by +2.9% (currency-adjusted +6.6%). The Europe region registered the strongest level of sales growth in the past financial year, with a rate of +11.5% (currency-adjusted +11.3%). Its sales volume amounted to 6,554 million EUR, which represents a 32% share of Group sales. This positive trend was mainly driven by the global licensing business which is allocated to this region, as well as in the markets in Germany, Spain, the United Kingdom, and the countries of Eastern Europe. In our Asia/Australia/Africa (AAA) region, sales increased by +2.5% (currency-adjusted +4.3%) to 4,917 million EUR. Especially due to institutional price adjustments in a core market and, to some degree, the continuing effects of the COVID-19 pandemic on the course of business, the AAA region was unable to emulate the growth rates which it had registered in previous years.

Growth in all regions

Net sales by region (in million EUR)

	2021	2020	Change	currency-adjusted
Americas	9,147	8,889	+2.9%	+6.6%
Europe	6,554	5,879	+11.5%	+11.3%
Asia/Australia/Africa (AAA)	4,917	4,798	+2.5%	+4.3%

In our Human Pharma business, in 2021, we once again made our products available to more patients thanks to new approvals in additional countries; we also further strengthened established products. These include the products of the JARDIANCE® family and OFEV® especially. Global licensing business also provided a significant growth contribution. Our R&D pipeline is developing positively. Important milestones were reached here in 2021. Our Animal Health business grew in 2021, particularly in our pet segment. In our Biopharmaceutical Contract Manufacturing business, the commissioning of our large-scale cell culture plant in Vienna was a key milestone for us and a highlight of the 2021 financial year.

Key figures (in million EUR)

	2021	2020	Change
Net sales	20,618	19,566	+5.4%
Operating income	4,705	4,624	+1.8%
Return on net sales	22.8%	23.6%	
Income before taxes	4,368	4,305	+1.5%
Income after taxes	3,406	3,062	+11.2%

The materials ratio (taking into consideration the change in inventory) rose slightly to 13.5 % (2020: 12.9 %). Personnel expenses increased by + 1.9 %, 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.

Amortization of intangible assets and depreciation of tangible assets in 2021 were – 242 million EUR lower compared with the previous year. This was particularly attributable to a high volume of impairment losses on intangible assets in the 2020 financial year. On the other hand, the continuing high level of investment activity and acquisitions resulted in increased amortization of intangible assets and depreciation of tangible assets.

We achieved growth in all of our businesses in the 2021 financial year, and our operating income increased to 4,705 million EUR. The positive sales trend for our businesses enables us to make long-term investments in research and development – we increased our research and development expenditure as a percentage of net sales to 20.0 % in the 2021 financial year. Our return on sales fell to + 22.8 % (2020: + 23.6 %). This was due to higher prices on our procurement markets, our increased number of employees in strategically important areas, and our investments. Financial income and holding income were both influenced by one-off effects. While the previous year's holding income had included the profit from the sale of an investment and was thus lower in 2021 for this reason especially, financial income improved, in particular, due to the new method which was introduced in 2021 for the measurement of long-term obligations. Income before taxes therefore rose particularly due to the higher operating income.

Income after taxes was likewise higher than in the previous year. This reflected the improved pre-tax profit as well as lower income taxes. It must be noted 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.

3.4
billion EUR
Group profit

Despite challenging market conditions in some business areas and the heightened cost pressure, Boehringer Ingelheim registered a positive performance in the 2021 financial year. Following a Group profit of 3,062 million EUR in the previous year, in 2021, this figure rose by + 344 million EUR to 3,406 million EUR.

Development of the businesses

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

Net sales by business (in million EUR)

	2021	2020	Change	currency-adjusted
Human Pharma	15,294	14,415	+6.1%	+8.4%
Animal Health	4,295	4,121	+4.2%	+6.2%
Biopharmaceutical Contract Manufacturing	917	837	+9.6%	+9.5%
Other sales	33	33	+0.0%	+1.2%
Discontinued operations	79	160	−50.6%	−49.2%

Human Pharma

The Human Pharma business is the mainstay of Boehringer Ingelheim's activities and accounts for a 74% share of the Group's net sales. Sales in our Human Pharma business increased by +6.1% (currency-adjusted +8.4%) in the 2021 financial year to 15,294 million EUR. This growth was mainly driven by the established products of the JARDIANCE® family as well as OFEV®. The growing volume of licensing business – in particular SKYRIZI® which we have licensed to AbbVie, which is responsible for the marketing of this product – also made a key contribution to the positive development of our Human Pharma business.

Human Pharma: Net sales Top 5 products (in million EUR)

	2021	2020	Change	currency-adjusted
JARDIANCE® Family	3,940	3,140	+25.5%	+28.6%
OFEV®	2,491	2,055	+21.2%	+25.4%
TRAJENTA® / JENTADUETO®	1,552	1,512	+2.6%	+5.1%
SPIRIVA®	1,548	1,793	−13.7%	−11.9%
PRADAXA®	1,318	1,492	−11.7%	−10.3%

JARDIANCE® and OFEV® drive growth

The strongest revenue contributor in 2021 was JARDIANCE®, which is used to treat type 2 diabetes. The JARDIANCE® family generated net sales of 3,940 million EUR, which was thus +25.5% (currency-adjusted +28.6%) higher than in the previous year.

OFEV®, Boehringer Ingelheim's second biggest-selling product in 2021, is mainly used to treat idiopathic pulmonary fibrosis and two additional indications, SSc-ILD and PF-ILD. OFEV® recorded net sales of 2,491 million EUR and thus achieved a growth rate of +21.2% (currency-adjusted +25.4%).

Unlike in the previous year, TRAJENTA® and JENTADUETO® – which are used to treat type 2 diabetes – returned to sales growth. Sales increased by +2.6% (currency-adjusted +5.1%) in 2021 to 1,552 million EUR.

SPIRIVA®, which is used for the treatment of chronic obstructive pulmonary disease (COPD), registered declining sales figures. This reflects the stage that this product has now reached in its life cycle. In line with expectations, the net sales volume of 1,548 million EUR in 2021 was – 13.7 % (currency-adjusted – 11.9 %) lower than in the previous year.

Sales of the anticoagulant PRADAXA® fell by – 11.7 % (currency-adjusted – 10.3 %) year-over-year. However, with a sales volume of 1,318 million EUR PRADAXA remained one of Boehringer Ingelheim's five biggest-selling medicines in the 2021 financial year.

Sales growth of + 136.3 % (currency-adjusted likewise + 136.3 %) was registered for the licensing income provided by SKYRIZI®. This product, which is marketed globally by our partner AbbVie, is based on risankizumab, a medication for treatment of plaque psoriasis which was mainly developed by Boehringer Ingelheim. In 2021, this medicine was also approved in several markets for the treatment of Crohn's disease and psoriasis arthritis. The sales volume in the 2021 financial year thus also reflects related one-off milestone payments.

The Human Pharma business achieved growth in every region year-over-year. In terms of the regional distribution of this revenue, the USA remained our strongest revenue contributor, with a growth rate of + 2.1 % (currency-adjusted + 5.9 %) to 5,777 million EUR. This represents an almost 38 % share of the Human Pharma business's overall sales volume.

We achieved net sales of 5,221 million EUR in our EUCAN region (Europe, Canada, Australia, and New Zealand) in 2021, a growth rate of + 13.9 % (currency-adjusted + 13.2 %). The EUCAN region thus once again gained in importance, with a 34 % share of sales (+ 2 % points higher than in the previous year).

The company's emerging markets also registered an improved volume of sales in the past financial year, with a growth rate of + 4.2 % (currency-adjusted + 5.9 %). Overall, sales in these countries rose to 2,959 million EUR. However, single-digit growth in the emerging markets fell short of our expectations. The Chinese market was particularly challenging. Sales fell here by – 4.5 % (currency-adjusted – 7.3 %) due to the inclusion of core products in the country's national reimbursement drug list and the use of volume-based procurement mechanisms.

Japan accounted for almost 9 % of total net sales in the Human Pharma business. Sales here rose by + 0.5 % (currency-adjusted + 7.1 %) to 1,337 million EUR.

Human Pharma: Net sales by region (in million EUR)

	2021	2020	Change	currency-adjusted
USA	5,777	5,658	+ 2.1 %	+ 5.9 %
EUCAN	5,221	4,585	+ 13.9 %	+ 13.2 %
Emerging Markets	2,959	2,841	+ 4.2 %	+ 5.9 %
Japan	1,337	1,331	+ 0.5 %	+ 7.1 %

Animal Health

In the past financial year, the Animal Health business achieved net sales totaling 4,295 million EUR and thus provided almost 21 % of the Group's sales. Animal Health increased its sales volume by + 4.2 % (currency-adjusted + 6.2 %) and thus stepped up its pace of growth relative to the previous year. This growth was driven by the pet segment.

Animal Health: Net sales Top 4 products (in million EUR)

	2021	2020	Change	currency-adjusted
NEXGARD®	916	804	+13.9%	+16.6%
FRONTLINE®	418	406	+3.0%	+4.8%
HEARTGARD®	307	312	−1.6%	+1.4%
INGELVAC CIRCOFLEX® / FLEXCOMBO®	253	264	−4.2%	−2.7%

Pet segment drives growth

This segment accounts for the biggest-selling medicines in our Animal Health business: The antiparasitics NEXGARD® and FRONTLINE® registered growth rates of +13.9% (currency-adjusted +16.6%) and +3.0% (currency-adjusted +4.8%) in 2021. In the past year, NEXGARD® achieved a sales volume of 916 million EUR and thus remained the biggest-selling product in our Animal Health portfolio. FRONTLINE® was our second-biggest seller, with a revenue of 418 million EUR.

The medicine HEARTGARD® suffered a −1.6% decline (currency-adjusted +1.4%) in sales in the past financial year. This product is used to prevent heartworm disease. It contributed 307 million EUR to the Animal Health business' sales volume.

Our swine vaccine INGELVAC CIRCOFLEX® also registered a declining sales volume in 2021: revenue fell by −4.2% (currency-adjusted −2.7%) to 253 million EUR – not least due to the continuing challenges associated with African swine fever in key markets.

In our Animal Health business, we surpassed the previous year's sales volume in every region. In the USA, we achieved currency-adjusted growth of +3.9% and registered a positive course of business in the 2021 financial year, particularly in our pet segment including horses. This compensated for a slightly lower sales figure in the swine segment.

The EUCAN region likewise registered strong sales growth in the pet segment. On the other hand, growth in the swine and poultry segments failed to match our expectations. Overall sales growth in the EUCAN region amounted to +8.1% (currency-adjusted +7.0%).

The TCM region (The Chinese Market) improved its sales volume by +17.1% (currency-adjusted +15.1%) year-over-year. This growth was mainly driven by the swine segment.

The ALAMEA (Asia, Latin America, Middle East, Africa) region registered sales growth of +2.5% (currency-adjusted +6.6%). Sales in the pet segment were higher than those in the livestock segment.

Animal Health: Net sales by region (in million EUR)

	2021	2020	Change	currency-adjusted
USA	1,819	1,815	+0.2%	+3.9%
EUCAN	1,345	1,244	+8.1%	+7.0%
ALAMEA	789	770	+2.5%	+6.6%
TCM	342	292	+17.1%	+15.1%

Continued strong growth in the Biopharmaceutical Contract Manufacturing

Biopharmaceutical Contract Manufacturing
In the Biopharmaceutical Contract Manufacturing business, revenue was +9.6% (currency-adjusted +9.5%) higher than in the previous year due to strong demand for our business partners' market products. The order situation for the entire business has developed positively, resulting in a high level of capacity utilization.

Other sales/discontinued operations
Under discontinued operations we aggregate activities of minor strategic importance for Boehringer Ingelheim. Net sales decreased as expected.

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 to optimize the cost of capital.

Cash inflow from operating activities amounted to +3,846 million EUR and is attributable to the positive business performance in the 2021 financial year. It was −117 million EUR lower than in the previous year (2020: +3,963 million EUR), mainly due to an increase of receivables and higher tax payments.

(in million EUR)	2021
Financial funds as of 1.1.	**6,105**
Cash flow from operating activities	3,846
Cash flow from investing activities	−6,002
Cash flow from financing activities	−1,499
Change in financial funds from cash relevant transactions	**-3,655**
Change in financial funds due to exchange rate movements and valuation adjustments	96
Financial funds as of 31.12.	**2,546**

Cash outflow from investment activities increased significantly to −6,002 million EUR (2020: −326 million EUR). In the 2021 financial year, cash holdings and funds previously invested in current assets were invested in long-term securities. In addition, the previous year included one-off payments from share and business divestitures.

High capital expenditure volume to enable business development

Further milestones were achieved in the context of the large investments in tangible assets in 2021. The expansion of the production facilities in Vienna (Austria) for Biopharmaceutical Contract Manufacturing was successfully completed. In 2021, more than 150 million EUR were invested again at the Vienna site. In Germany, the construction of the Biological Development Center (BDC) and the expansion of the research site in Biberach were further promoted last year. The investments amounted to around 115 million EUR, supplementing a number of high investments in Boehringer Ingelheim's global research and development network.

In Animal Health, Boehringer Ingelheim invests in a new antigen production center in Jonage (France) for Veterinary Public Health in response to the growing demand for medicines to treat foot-and-mouth and bluetongue disease. The total investment for this project is over 230 million EUR, of which approximately 60 million EUR were paid in the past financial year.

Cash outflow from financing activities in the amount of – 1,499 million EUR mainly comprises tax refunds for shareholders' personal taxes associated with the Group's activities. These amounts are not to be reported in the Group's tax expense due to commercial law regulations.

Overall, after taking into consideration changes due to exchange rate movements and valuation-related changes, the Group's financial funds decreased by a total of – 3,559 million EUR to 2,546 million EUR as of December 31, 2021, in particular due to the transfer of cash and short-term securities to long-term financial assets.

Net assets position

(in million EUR)	31.12.2021	31.12.2020	Change	Change in %
Assets				
Intangible and tangible assets	10,113	9,345	768	
Financial assets	12,964	8,553	4,411	
Fixed assets	**23,077**	**17,898**	**5,179**	**+28.9%**
Inventories	4,237	3,863	374	
Trade accounts receivable	5,178	4,302	876	
Other receivables and other current assets	1,407	950	457	
Securities	250	1,499	– 1,249	
Cash and cash equivalents	2,296	4,606	– 2,310	
Current assets	**13,368**	**15,220**	**- 1,852**	**- 12.2%**
Other assets	4,174	3,769	405	
Total assets	**40,619**	**36,887**	**3,732**	**+10.1%**
Equity and liabilities				
Group equity	**19,331**	**17,307**	**2,024**	**+11.7%**
Provisions for pensions and similar obligations	6,190	5,581	609	
Tax provisions and other provisions	10,765	9,739	1,026	
Accounts payable and loans	2,224	1,912	312	
- thereof residual term over 1 year:	85	77	8	
Liabilities	**19,179**	**17,232**	**1,947**	**+11.3%**
Other liabilities and difference from capital consolidation	2,109	2,348	– 239	
Total equity and liabilities	**40,619**	**36,887**	**3,732**	**+10.1%**

As of December 31, 2021, Boehringer Ingelheim's total assets amounted to 40,619 million EUR, an increase of + 3,732 million EUR as compared with the previous year. This increase was mainly attributable to investments in tangible assets and acquisitions, as well as to the positive cash flow of the financial year. Inventories and receivables also rose. Moreover, positive currency effects have increased all balance sheet items.

Intangible and tangible fixed assets increased due to acquisitions and the continuously high volume of capital expenditure in the strategic expansion of the company's business, including

in Human Pharma research in Germany, Biopharmaceuticals in Vienna (Austria) and Fremont (California, USA), and Animal Health in France. In addition, positive currency effects have increased the volume of fixed assets. Funds which were previously held as cash or invested in short-term investments were invested in long-term securities. Together with the investment of further funds resulting from cash flow over the course of the financial year in long-term securities and investments, this significantly increased the volume of long-term financial assets.

Working capital (inventories and receivables) rose due to the increased production costs as a result of higher price levels on the procurement markets, the buildup of safety stocks for Biopharmaceutical Contract Manufacturing and Animal Health as well as positive currency effects. Moreover, trade accounts receivable rose in the USA as of the reporting date due to an increased volume of receivables from wholesalers, and in Germany due to an increase in the volume of receivables arising from license agreements. The rise in other receivables and other assets resulted from increased tax prepayments and sales tax receivables in Germany, Mexico, and the USA in particular. 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 (for pension provisions especially) as well as the positive market trend for plan assets for pensions and similar obligations. This item also increased due to currency effects.

19.3
billion EUR
equity

48 %
equity ratio

Equity amounted to 19,331 million EUR as of December 31, 2021. The equity ratio improved to around 48 % (December 31, 2020: 47 %) 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 25,606 million EUR as of December 31, 2021, representing a 63 % 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 rose in Germany in particular due to a further decline in the discount rate as well as currency effects. The increase in other provisions correlates to the change in the level of revenue, since this includes provisions for discounts in the USA, for commissions and for royalty payments. In addition, positive currency effects resulted in higher tax provisions and other provisions. The volume of liabilities has risen due to increased debt financing in Brazil, Greece, and China, advance payments by customers in the Biopharmaceutical Contract Manufacturing business, liabilities to shareholders, and positive currency effects. Other liabilities have declined, mainly due to the release of the difference arising from capital consolidation as well as deferred income.

The net assets position likewise reflects Boehringer Ingelheim's positive development in the 2021 financial year. Boehringer Ingelheim remains a soundly financed company, making 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 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 key risks which Boehringer Ingelheim is exposed to are broken down into the following specific categories: financial risks, legal risks, information technology risks, production and environmental risks, personnel risks, and sector-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, geopolitical 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 risks and opportunities due to exchange rate volatility in relation to the US dollar and the Japanese yen above all – 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.

Geopolitical risks

The business of Boehringer Ingelheim as a global company can be adversely affected by geopolitical developments. Significant risks may arise, for example, from geopolitical tensions or from changing economic and political conditions, which may have an impact on production sites and on sales markets. Global geopolitical developments are under constant observation by Boehringer Ingelheim, in order to be able to take appropriate measures at an early stage to address these abstract and low risks and to maintain a successful global business.

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 conservative investment strategy in its management of its financial assets. Its primary objective is the long-term preservation of their real value. This is reflected in the orientation of our portfolio, which mainly comprises money market and bond investments. This results in a concrete, controllable, and limited level of risk for most of our 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.

Information technology risks

Boehringer Ingelheim uses globally networked IT systems in core areas of its operations for business and production processes as well as internal and external communication. It also makes use of cloud-based third-party systems and services. These systems are used to process, store, and transmit confidential and personal data. The availability, integrity, and confidentiality of these systems and the data processed are thus highly significant.

External cyberattacks or any manipulation of systems may result in the loss of information and expertise as well as temporary interruptions to business and production processes. This risk is considered to be high and concrete in view of the continuously evolving global environment and the growing frequency of cyberattacks.

The COVID-19 pandemic has elevated the risk of such threats and attacks, since people are increasingly working from home and employees thus have access to sensitive data via less secure IT environments.

Boehringer Ingelheim is countering this risk by means of continuous IT process analysis and improvements as well as further preventive and reactive measures. This helps to identify and ward off current threats and to minimize potential damage.

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 ensure 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 the 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 medicines, these risks increasingly include changing and restrictive requirements relating to pricing and reimbursement on many sales 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 which is induced 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 2021 financial year in which we surpassed our ambitious targets, both in terms of absolute figures and our contribution to the well-being of patients, pets, and livestock. Despite the volatile global economic situation, we were able to ensure the company's sustainable development and profitable growth.

The continuing COVID-19 pandemic, fragile global supply chains, general inflation trend, and a more difficult industry environment mean that we will continue to face challenges in 2022. However, the uncertainty of the past two years – in the context of a global pandemic – would appear to be gradually giving way to more predictable challenges and opportunities. We therefore have an optimistic view of the ongoing volatility, even if it remains difficult to make forecasts for the coming financial year.

In 2022, we expect to see ongoing global economic recovery, and we assume that the vaccines and medicines already approved, plus other therapies currently undergoing the approval process, will help to curb the COVID-19 pandemic. On the strength of our experience of the past few years and the measures which we have implemented, we are confident that we will be able to handle any temporary setbacks without encountering any substantial supply problems.

The largest source of uncertainty over the next five years will be the potential impact of economic factors on governments' budget planning and whether this will affect policymaking in terms of expenditure on healthcare and medicines. Assuming that it is possible to curb the COVID-19 pandemic, we expect to see moderate market growth for prescription pharmaceuticals. However, we are also witnessing growing global institutional efforts to bring down the prices of medicines. In view of this trend, financial flexibility remains critical for us, in order to ensure long-term growth and innovation.

In our Animal Health business, following strong market growth in 2021, we now expect to see a normalization of the market growth trend in the new financial year. Research and innovation will play a particularly important role here. Together with our business partners, we intend to continue to provide our customers with innovative solutions. The development of the African swine fever situation will remain a critical factor in 2022. Our priorities in our Biopharmaceuticals business are supplying the market with our own products and contract manufacturing for our business partners. The increasing level of capacity utilization of our new large-scale cell culture plant in Vienna will be another core area of focus in 2022.

For 2022, 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 2021, is in line with our strategic focus on continuing to drive growth and the flow of new products. In 2021, 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 2022. 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 and development pipeline shows short-, medium-, and long-term growth potential. We expect to see a further increase in R&D investments in new medicines in 2022, and intend to reach new milestones in research and development as well as individual market approvals.

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 healthcare systems. In the last two years of the pandemic, 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, with the support of policymakers. Additional concrete steps are needed so that the contribution of pharmaceutical companies to the increased efficiency of the overall healthcare 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 2021, 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.

For 2022, we expect Boehringer Ingelheim to achieve slightly lower operating income due to our increased level of investment in research and development 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 of our business areas, thanks to our great 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.