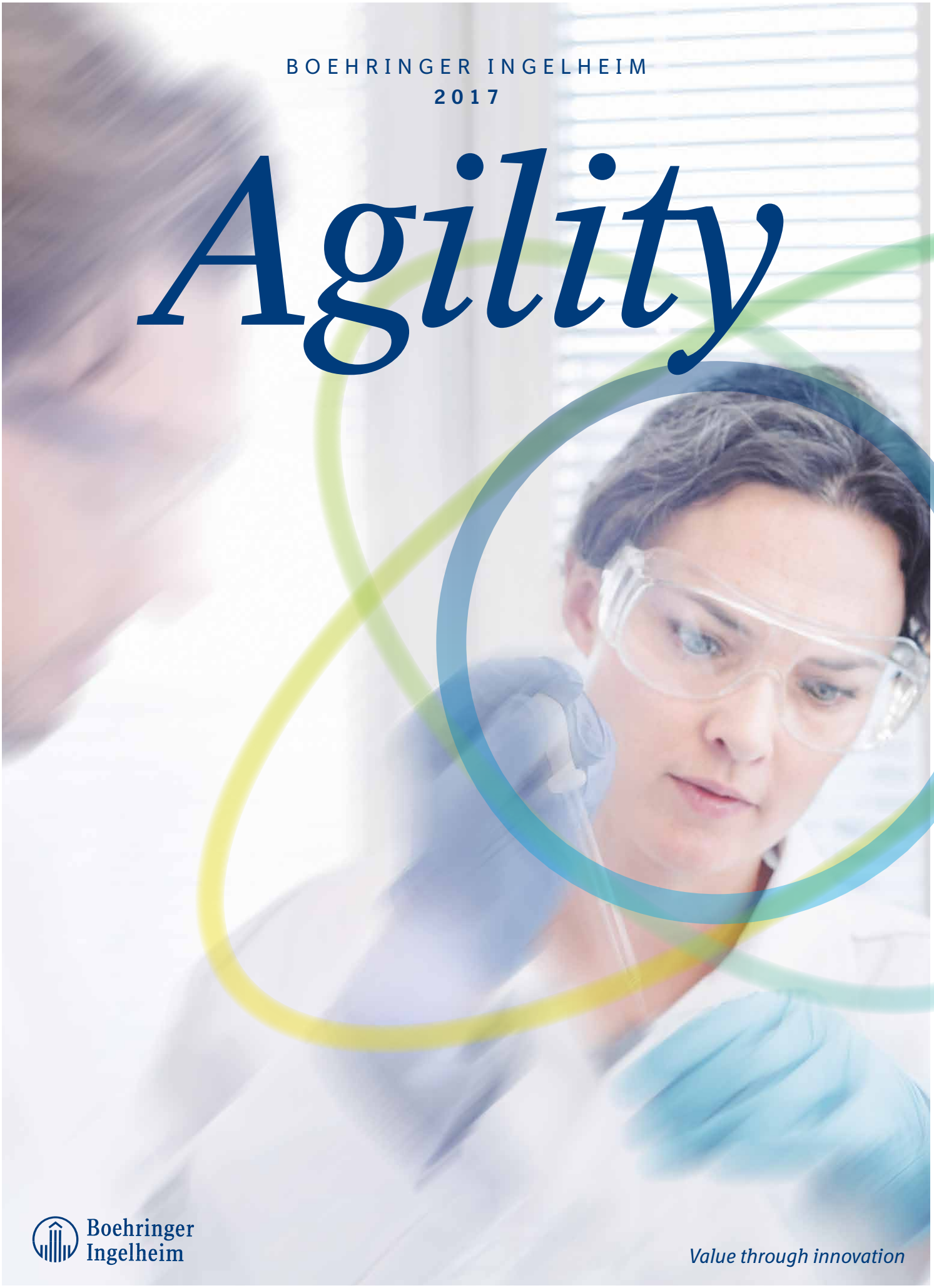
BOEHRINGER INGELHEIM

2017

Agility



Boehringer Ingelheim

Value through innovation

CONTENT

AN EYE FOR THE BIG PICTURE

Dr Michael Mark and his team are researching active ingredients for the treatment of cardio-metabolic diseases.

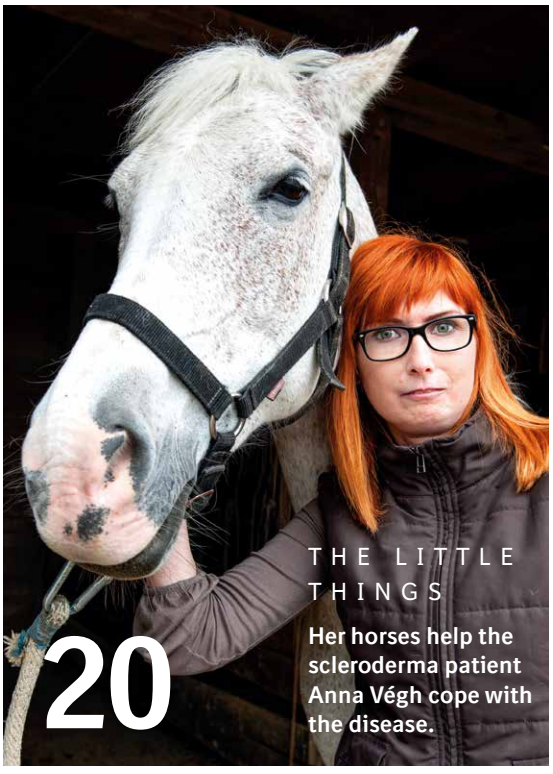
THE BEST OF BOTH WORLDS

The integration of the new Animal Health is in full swing – the course is set for growth.

TRANSFORMATION MEETS TRADITION

The goal of the new digital lab BI X is to create innovative, digital solutions for the research-driven pharmaceutical company.

25



THE LITTLE THINGS

Her horses help the scleroderma patient Anna Végh cope with the disease.

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EXPLORE THE INTERACTIVE CONTENT!

This Annual Report is smart. Whenever you see this symbol in the magazine, you can start a video straight from the corresponding page on your smartphone or tablet.

STEP 1
Download the Layar App on your smartphone or tablet and open the app.

→ **https://play.google.com/store**
→ **https://www.apple.com/ios/app-store**

STEP 2
Hold your device over the page for which you would like to watch additional video content. Tap the screen to scan. Keep still! The device will scan the page and the video will open directly and play.

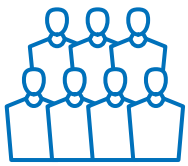
STEP 3
If you wish to view the video full screen, tap on the video when it is playing.

STEP 4
Press the "close" symbol to exit the video.

BOEHRINGER INGELHEIM
2017 AT A GLANCE

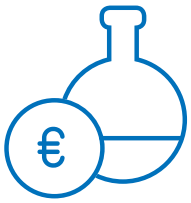
Boehringer Ingelheim is one of the world's 20 leading pharmaceutical companies.

FOUNDED IN
1885
IN INGELHEIM
AND FAMILY-OWNED
TO THIS DAY



~ 50,000
EMPLOYEES WORLDWIDE

EUR
18.1
BILLION
TOTAL NET SALES



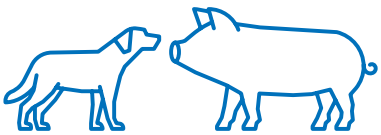
EUR
3.1
BILLION
EXPENDITURE IN RESEARCH
AND DEVELOPMENT

≙ 17.0%
OF TOTAL NET SALES

EUR
12.6
BILLION

HUMAN PHARMACEUTICALS

EUR
3.9
BILLION



ANIMAL HEALTH

EUR
678
MILLION

BIOPHARMACEUTICALS

Our company

Improving the health and quality of life of patients is the goal of the research-driven pharmaceutical company Boehringer Ingelheim. The focus in doing so is on diseases for which no satisfactory treatment option exists to date. The company therefore concentrates on developing innovative therapies that can extend patients' lives. In animal health, Boehringer Ingelheim stands for advanced prevention.

Family-owned since it was established in 1885, Boehringer Ingelheim is one of the pharmaceutical industry's top 20 companies. Some 50,000 employees create value through innovation daily for the three business areas human pharmaceuticals, animal health and biopharmaceuticals. In 2017, Boehringer Ingelheim achieved net sales of almost 18.1 billion euros. R&D expenditure, exceeding three billion euros, corresponded to 17.0 per cent of net sales.

As a family-owned company, Boehringer Ingelheim plans in generations and focuses on long-term success, rather than short-term profit. The company therefore aims at organic growth from its own resources with simultaneous openness to partnerships and strategic alliances in research. In everything it does, Boehringer Ingelheim naturally adopts responsibility towards mankind and the environment.


WHAT
AGILITY
MEANS
FOR US

What role does agility play in the Boehringer Ingelheim tradition?

“Boehringer Ingelheim’s initial success as a family-owned company was based on the industrial production of acids. The move from mass-produced chemical raw materials to patent-protected pharmaceutical specialties required building up a successful own research operation and called for understanding a new customer class – physicians. This example of agility, which turned us into the leading research-driven pharmaceutical company we are today, should serve as an inspiration to us during the current transformation of the healthcare market to also adapt to the needs of those who have to finance our healthcare system.”

CHRISTIAN BOEHRINGER
Chairman of the Shareholders’ Committee

Where will the agile company Boehringer Ingelheim be in 2025?

“Agility to 2025 and beyond will allow Boehringer Ingelheim to increase its contribution to patient health. We will be offering new and innovative therapeutic options and breakthroughs to answer medical needs – on the human as well as the animal side. Using new technology, collaborating with our partners even more intensely in networks and being able to manage ever larger data will enable us to target our medicine more precisely to the individual patient, making our products even more effective and increasing the benefit to society.”

HUBERTUS VON BAUMBACH
Chairman of the Board of Managing Directors

How much influence does agility have on the integration of the new Animal Health Business?

“In Animal Health, we are currently engaged in building a new unit by bringing two successful companies together. This has given us the opportunity to regroup around what is truly core for our business. One of the cornerstones is a common culture where agility is embedded. In such a process, flexibility and adaptability are called for in order to meet the requirements of our customers and to further expand our leading position in this highly competitive market.”

DR JOACHIM HASENMAIER
Member of the Board of Managing Directors with responsibility for the Animal Health Business Unit

How agile must a company be to position itself successfully on the market?

“To be successful in the market it is crucial for a company to be agile. And agility is required in many areas. One is having excellent customer understanding and the agility to react to changing customer perceptions and expectations. Another is the agility to react to changing market conditions. Finally, the agility to respond to competitors’ actions and strategies is important to increase our competitiveness.”

ALLAN HILLGROVE
Member of the Board of Managing Directors with responsibility for the Human Pharma Business Unit

How can agility drive the company's financial success?

"Agility is a precondition for economic success. For this reason, we not only want to recognise ever faster changing internal and external conditions early, but to also draw the right conclusions. Then it is a matter of acting rapidly, but with the necessary diligence. Thus we will also overcome future challenges, compete successfully and deliver the best services to our customers."

MICHAEL SCHMELMER

Member of the Board of Managing Directors with responsibility for Finance

How can agile Boehringer Ingelheim employees secure the company's future?

"Change is the new normal and the change is changing. Often the whole journey from start to end is unclear. This is where the agility of our organisation and our employees comes into play. Agility is not the opposite of structure. In fact it often requires a disciplined approach to decision making. Combined with accountability and intrapreneurship, it is powerful and a recipe for our success."

DR ANDREAS NEUMANN

Member of the Board of Managing Directors with responsibility for Human Resources

What does agility mean for Boehringer Ingelheim's innovative capability?

"Agility is required every day in the journey from idea to innovation. It is indispensable for the timely integration of new information, allowing us to learn from failures and build on small wins, step by step, to achieve breakthroughs."

DR MICHEL PAIRET

Member of the Board of Managing Directors with responsibility for the Innovation Unit


AGILITY
NEEDS
COURAGE

“It is about doing the right thing”

Strategic decisions demand great flexibility and courage from the people involved. When the Animal Health organisations of Boehringer Ingelheim and Sanofi merged, two corporate cultures and many different nationalities found their way into a single melting pot that is now Boehringer Ingelheim’s new Animal Health Business Unit. Rogier Biemans, Site Director in Pirbright (UK) and originally from the Boehringer Ingelheim organisation, and Vanessa Mariani, Global Commercial Operations Integration Lead and former Merial employee, discuss how they bring together the best of both worlds.

Rogier, you transferred from the Boehringer Ingelheim site in Weesp in the Netherlands to Pirbright in the UK. Vanessa, you left Atlanta in the USA and came to Ingelheim. How much courage did that take?

BIEMANS It wasn't easy, I can tell you that. Saying goodbye to colleagues is hard. I would have really liked to take some of them with me. I try to stay in touch, but life is moving on. And the people in the UK have been treating me very well.

MARIANI For me the move was a game changer. In Atlanta I worked for Merial, now I'm part of Boehringer Ingelheim. I've been living in Ingelheim since March 2017 and will stay here until March 2018 on an extended business trip. My husband still lives in Atlanta, so I try to fly home every four weeks.

BIEMANS Our jobs also keep us very busy. There's really no time to miss old ways.

MARIANI That's true. And, after all, it's really about the people, not the location. I'm still in touch with some colleagues I worked with in Atlanta. But the people here in Ingelheim have been so amazing and welcoming, there's nothing that I'd change.

Vanessa, how is living in a rather rural area going for you so far?

MARIANI Originally I am from Mexico City and I lived in New York City for 15 years. Ingelheim is definitely a change – but I like it. I haven't really suffered any cultural shock. The only thing that takes a little bit to get used to is Sundays when all the stores are closed in Germany.

Not only has the size of the town taken some time to get used to. The people are also different. What's special about the Boehringer Ingelheim headquarters?

BIEMANS Whenever I visit Ingelheim I feel people are very correct and value rules. The dress code is stricter, the conversations are more formal. But, if you get to know the people, they loosen up.

MARIANI I noticed a certain formality here in Ingelheim as well – which I like. I appreciate having a framework and rules. But our lives are so different every day that we have to be flexible. So, despite the formality, we've created a space where we can be a lot more relaxed about how we interact with each other or how we approach different situations.

Vanessa, you have spent most of your life in North America. Is working in Germany challenging?

MARIANI We work in a global corporate world, so it's rare to find someone who hasn't interacted with other cultures. The most positive part about the move to Ingelheim is the culture: the way that I've felt welcomed in the Boehringer Ingelheim organisation, in the integration team, in Ingelheim in general. It's a fantastic experience.

It's not only a change for you personally, but also for Boehringer Ingelheim and Merial in general – two companies are trying to integrate two businesses and form a single entity, right?

BIEMANS This process is still ongoing and will continue throughout the upcoming months. The differences regarding the corporate structure are huge: Merial is a multinational public company, Boehringer Ingelheim is a privately held, global organisation.

MARIANI To combine the two businesses, we developed a new vision. We are driven by the conviction that animals enrich human life. It's vital for the integration process to have a common set of beliefs.

Boehringer Ingelheim and Merial both have their own unique corporate culture. What does corporate culture mean to you?

Vanessa Mariani and Rogier Biemans met in October 2017 in Ingelheim. Both work for Boehringer Ingelheim's new Animal Health Business Unit.

VANESSA MARIANI
Vanessa Mariani moved to Ingelheim, Germany, last spring as Global Commercial Operations Integration Lead. She transferred to Boehringer Ingelheim from Merial where she was responsible for Strategic Planning and Marketing Excellence. Originally from Mexico City, Mariani lived much of her life in New York City before moving to Atlanta and then Ingelheim.

ROGIER BIEMANS
Rogier Biemans is currently Boehringer Ingelheim's Site Director in Pirbright, UK. Before moving to the Greater London area in August 2017, the Dutchman worked as a production manager at the Boehringer Ingelheim site in Weesp in the Netherlands. Biemans has 20 years of experience in life sciences, pharmaceutical research and development, and manufacturing.

Over lunch together, Vanessa Mariani and Rogier Biemans exchanged views on Boehringer Ingelheim's corporate culture.

BIEMANS For me it's how people interact with each other. This relates to the underlying values. At Boehringer Ingelheim there is a structured way of working, people are always correct and respectful. This creates a certain atmosphere that determines how people interact with each other.

MARIANI Culture – whether it's in society at large or in a corporation – is down to behaviour and everyday life. You can have a written code, but it's really how you live the underlying values that build a culture.

What are the main differences in the cultures of Merial and Boehringer Ingelheim?

MARIANI I found that Merial was a lot more lax and more open about structuring the daily business, which probably had to do with the fact that it was previously a joint venture. This gave the organisation great freedom to operate.

BIEMANS I agree. At the beginning of this year, we had a global operations conference at the Merial headquarters in Lyon. It was a three-day conference and everybody was waiting for the agenda to be sent out. So we all arrived in Lyon still waiting for the agenda. It was certainly more informal and improvised than Boehringer Ingelheim people were used to.

MARIANI Yes, for many people coming from a more lax environment, a tight framework can be a little bit of a shock.

You've both worked in various locations. How does the culture differ in each place?

BIEMANS With Boehringer Ingelheim there's a common corporate culture, but certain elements are unique for each location. The country hugely influences the way people interact. The type of location also plays a role, whether it's a production site or an office.

MARIANI I feel that in Animal Health in general, people are very passionate about the industry, about the social purpose their work is fulfilling, about doing the right thing for animals and people. It's an industry where people work really hard across all locations and countries.

Is doing the right thing specific to Animal Health?

MARIANI I've been working in the field for almost 20 years, so from my perspective, it was always very intrinsic for Animal Health. But I've found in the time I've been here in Ingelheim that it is intrinsic to the overall Boehringer Ingelheim culture. We always ask ourselves, is this the best approach? What is the long-term gain? How does it fit the overall strategy? We try to do the right thing for the right reasons – long-term. It's refreshing that there's a link from today to tomorrow, which you don't always see in other companies.

BIEMANS Again, I agree with you. For example, the products we make in the UK are vaccines against foot-and-mouth disease (FMD). We sell them to governments through the department of Veterinary Public Health in Lyon. These vaccines can change people's lives. For many people, our products are fundamental – even more fundamental than we sometimes realise.

One of the main differences between English-speaking countries and Germany is how people who work together address each other. In German, we use last names and the more formal word for "you" to retain a certain distance. How do you find that?

BIEMANS In the UK, we hardly use people's last name, the atmosphere is very relaxed. Animal Health is also a little bit more casual than other areas of the pharmaceutical industry. At production locations in particular it's less formal. I like that. But in my opinion, boundaries are not established by first or last names. There are other underlying factors.

MARIANI Right. It's more about creating respect between different parts of the team. My boss, for example, has a "Dr" before of his name. This usually establishes a certain distance, but he is the most approachable person you can find. He works in our team room with us. Whether he's a doctor or not, an engineer or an architect – what really matters to us is that he's got commitment. We respect him more for his work than for any title.

BIEMANS I also feel that things are changing in Germany. In the 1980s, it was more formal than today.

Rogier Biemans moved from the Boehringer Ingelheim site in Weesp in the Netherlands to Pirbright in the UK. Vanessa Mariani came from Atlanta in the USA to Ingelheim.

Combining two different corporate cultures isn't easy. Have there been any teambuilding activities to make the transition easier?

MARIANI When the deal between Sanofi and Boehringer Ingelheim was concluded, different countries had "day one events" and integration workshops. In our team here in Ingelheim, we organise quarterly social activities, like going out for dinner.

BIEMANS When I transferred to the UK, the onboarding was good. People are very nice, open and really straightforward. At Pirbright, everyone gets a card for their birthday. We didn't do that at my previous site in Weesp. I like new ideas, it's always good to take the best of both worlds and use them.

Are there any stereotypes that arise when working with so many different cultures?

BIEMANS The British are strong on humour; I don't think that's a stereotype though. They appreciate a vigorous exchange of views which is sometimes enjoyable and sometimes a little bit too much.

MARIANI Ingelheim is a melting pot of so many different nationalities. You can't have stereotypes when you work with so many different people; there is just no place for it.

BIEMANS Every individual is different. The fact that one comes from a certain country doesn't pigeonhole them. There are very formal and informal Germans, there are heated and cool Mexicans.

MARIANI I work with people from Columbia, Spain and other Spanish-speaking countries and we joke about each other's accents and colloquialisms. But it's all in good humour.

BIEMANS If you can happily make jokes about each other, you're communicating at the same level. What matters is the underlying respect.

JOACHIM LARSEN *in his role as People Strategy Manager is responsible for the development and implementation of the People Strategy. He works from Boehringer Ingelheim's Copenhagen office.*

"IT TAKES COURAGE TO TAKE NEW ROADS TOGETHER"

What's the goal of the new People Strategy Boehringer Ingelheim has been implementing worldwide since the beginning of 2016?

LARSEN We're faced with the challenge of having to rapidly adapt and position ourselves effectively in a competitive and also increasingly volatile market environment. We'll only achieve these objectives if our company has the right employees with the right competencies at the right time. We've established the strategic basis for this with our People Strategy. With the aid of a structured and holistic approach, we aspire to identify which employees and competencies will be key to our future success.

What changes will the new People Strategy entail for the management and employees?

LARSEN We're supporting individual departments, business areas and subsidiaries in answering: What can we do today to develop the necessary competencies for tomorrow's challenges? On the basis of a good understanding of what our strengths and weaknesses are, we describe what competencies we need and how we can prepare our employees accordingly. We put special emphasis on also providing the appropriate training. Implementation of our People Strategy will thus sharpen our ability to handle future challenges.

Why is that important?

LARSEN Because it takes courage to take new roads together and adapt our organisation to a changing environment. Employees want to know their positions, their roles and their responsibilities in the company today and tomorrow. It's therefore essential for us in HR to acknowledge that yes, we've got to be even more agile and respond accordingly. In the end only a successful business will allow us to create new jobs and keep existing ones. And vice versa only talented, highly motivated people will help us to keep the company flourishing.

Our FOCUS is a framework that helps us concentrate our efforts where they are needed most.

WHO ARE WE?

THE CORE OF OUR *LEITBILD* IS THAT WE ARE AN INDEPENDENT, FAMILY-OWNED COMPANY AND INTEND TO REMAIN SO

- We are driven by the desire to serve mankind by improving human and animal health.
- We feel responsible for our communities and are respectful of our resources.
- We plan in generations and focus on long-term performance.

WE CREATE VALUE THROUGH INNOVATION FOR OUR CUSTOMERS

- We develop breakthrough therapies and health care solutions in areas of unmet medical need.
- We excel in innovation and deliver the highest quality to drive our competitiveness.
- We believe in partnering for success and the sustainable economic health of the company.

WE ARE POWERED BY OUR PEOPLE

- We nurture a diverse, collaborative and open environment which appeals to the best people.
- We are driven by results, working with integrity and passion.
- We treat each other with respect, trust and empathy, and we grow together.

WHAT DO WE WANT TO ACHIEVE?

Boehringer Ingelheim's commitment to serve mankind can be met if we are the preferred partner and admired competitor by being:

- Number one in Animal Health
- Number one in biopharmaceutical contract manufacturing
- Number one in value share for our brands in One Human Pharma

By 2025 we aspire to grow our sales to 25 billion euros.

Our FOCUS is a catalyst to unlock our potential. We are Boehringer Ingelheim!

HOW DO WE WORK TOWARDS OUR GOAL?

AGILITY:

We quickly act with an open mind to face internal and external transformation.

- Search and respond to drivers of changes through active experimentation.
- Challenge the status quo and assumptions of your own and others with no political bias.
- Quickly turn data into insights and insights into actions.
- Learn with an open mind and rarely make the same mistake twice.

ACCOUNTABILITY:

Even in ambiguous circumstances, we always demonstrate ownership for our decisions and actions.

- Role model *Boehringer Ingelheim Values* by always doing what you say and saying what you think.
- Make timely decisions with well-balanced analysis and intuition, particularly in tough situations.
- Ruthlessly prioritise, then drive execution excellence through discipline and collaboration.
- Actively give and seek feedback; leverage each other's strengths to deliver results and develop every individual.

INTRAPRENEURSHIP:

Together with our customers, we create innovative ideas to respond to changing markets.

- Serve the needs of customers and patients by turning innovative ideas into business results.
- Take smart risks by leveraging all possible opportunities – including resources and talents.
- Demonstrate winning spirit through creating a can-do attitude and positive energy among others.
- Deliver high quality results, despite challenging conditions

Using the collective power

More than a year has now passed since Boehringer Ingelheim acquired its competitor Sanofi's animal health business, Merial. Its integration is well underway and everything is set for growth: Boehringer Ingelheim intends to make its animal health business the market leader by 2025.

Boehringer Ingelheim has a vision: this research-driven pharmaceutical company wants to create a world where animals no longer suffer from avoidable diseases, because targeted prevention work will help stop them from occurring in the first place. Boehringer Ingelheim is convinced that, when animals are healthy, humans are healthier too.

To realise this vision, Boehringer Ingelheim acquired Merial, the animal health business of the pharmaceutical company Sanofi, in January 2017. The acquisition brings together two highly compatible portfolios to strengthen Boehringer Ingelheim's competitiveness in the field of animal health: following the integration of Merial, its net sales in animal health have more than doubled and now provide more than one fifth of its total group net sales. With around 10,000 employees in this business unit worldwide, Boehringer Ingelheim now offers animal health products in over 150 markets.

Merial and Boehringer Ingelheim fit together like the pieces of a jigsaw puzzle. While Boehringer Ingelheim was a leader in the livestock segment, Merial brought leadership in companion animals such as cats and dogs.

When animals are healthy, humans are healthier too.

To create a world where animals no longer suffer from avoidable diseases.

The combination of these strengths enables Boehringer Ingelheim to take full advantage of the market's potential. This potential is enormous:

- Forecasts predict that net sales in the global animal health market will double to 53 billion euros by 2030. This in part reflects a growing world population. By 2050, the world's population will have reached nine billion and current demand for meat will have doubled or even tripled.
- Increasing globalisation and stronger links between different countries and continents mean that infectious animal diseases may become even more frequent in future.
- Another trend is that people are spending increasingly large sums of money on their pets. Their dogs, cats and other domestic animals have long since become members of the family.

BOEHRINGER INGELHEIM ANIMAL HEALTH GLOBAL MARKET POSITIONS

#1

PETS

EQUINE

SWINE

VETERINARY PUBLIC HEALTH

#3

AVIAN

#4

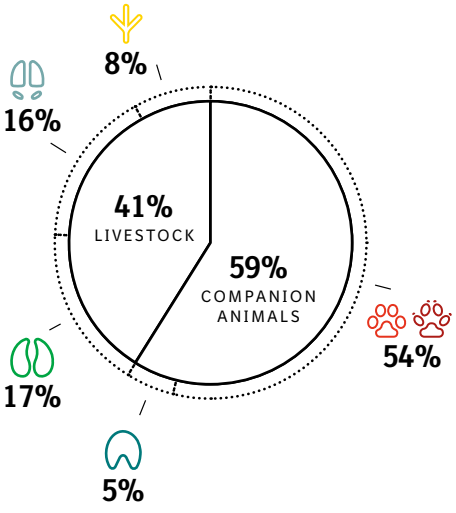
CATTLE

GLOBAL LEADER IN

PARASITICIDES

VACCINES

SALES SPLIT BY SPECIES



Boehringer Ingelheim is optimally positioned with its integrated product portfolio which now features more than 200 products for dogs, cats, horses, pigs, cattle and poultry. Following its acquisition of Merial, Boehringer Ingelheim is now the second-biggest player in the global animal health market. Its goal for the next years is clear: Boehringer Ingelheim aims to become the market leader in animal health by 2025. Today, the company is already the leader in the areas of vaccines and parasiticides. And Boehringer Ingelheim is also the number one in pets, equine and swine and in the field of veterinary public health. It now aims to catch up in poultry and cattle.

More than

200

products for dogs, cats, horses, pigs, cattle and poultry

Yet competition is fierce on the animal health market. Research and development is a key factor for future success and growth. Around 1,200 scientists and support staff are conducting research at more than 20 sites globally in order to stem the spread of diseases before they even occur. As well as its core segments of vaccines, parasiticides and pharmaceuticals, Boehringer Ingelheim intends to expand its pet health care, diagnostics and live therapeutics segments, so as to be able to offer its customers even broader solutions in the future.

The acquisition brings together two highly compatible portfolios to strengthen Boehringer Ingelheim's competitiveness in the field of animal health.

While Boehringer Ingelheim has been leader in the livestock segment, Merial brought leadership in companion animals such as cats and dogs.

THE NEW ANIMAL HEALTH BUSINESS: FOCUSING ON PREVENTION

Boehringer Ingelheim has a long tradition on prevention in animal health. Following the integration of Merial, and thanks to strategic partnerships with external partners such as Novozymes, Boehringer Ingelheim is able to offer even more innovative solutions – now and in the future.

Partnership with Novozymes

In order to further boost its expertise in the field of prevention, Boehringer Ingelheim entered into a strategic partnership with Danish biotech company Novozymes in March 2017. Over the next ten years, the new partners want to work together to develop live therapeutic products for poultry hatcheries. While Novozymes will be responsible for the research and development work, Boehringer Ingelheim will market the differentiated solutions, with the first product in line being FLORAMAX®, a probiotic product from the Novozymes portfolio.

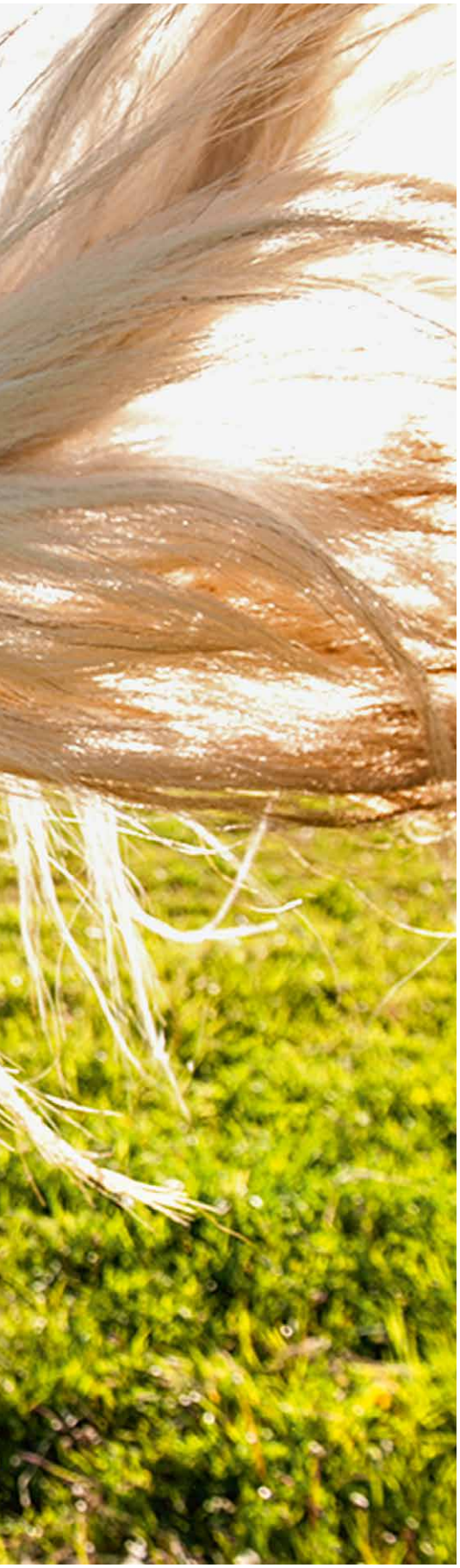
Probiotics are becoming increasingly important as alternatives to antibiotics. As such, they could also play a major role in preventive health: living microbes have a positive impact on the intestinal flora balance of poultry and other animals, thereby providing specific health benefits. In some cases, they produce distinct compounds that will help the immune system to mature – leading to a healthier gut. The first probiotic product from the Boehringer Ingelheim and Novozymes alliance is currently in the test phase and is set for market launch during 2018.

NEXGARD® *to combat parasites*

If dogs get fleas, owners soon face a challenge. The pests burrow deep into the dog's fur and skin and like to jump into their surroundings. Untreated, fleas can cause health problems in dogs and humans, just as ticks can. This makes prevention all the more important.

Thanks to the integration of Merial, Boehringer Ingelheim's portfolio now includes the NEXGARD® family of medicines: NEXGARD® is administered as a beef-flavoured chew and, at its launch, was the first oral medication to treat both fleas and ticks in dogs. It is currently the best-selling pet medication in the animal health industry.[1] In certain markets, Boehringer Ingelheim recently launched NEXGARD® SPECTRA which adds protection for dogs against certain internal parasites.

[1] *Data on file*



Nothing has ever been the same again for Anna Végh since she learned in 2009 that she suffers from scleroderma, a rare autoimmune disease. But Anna did not give up – and has found her way to have a happy life despite her condition.

The little things

Anna is sitting with her mother in a hospital waiting room. This petite young woman with auburn hair is nervous and anxious about what might lie ahead for her. She has been experiencing severe pain for some weeks now. She suffers particularly painful sensations in her stomach and hands as well as when breathing. It is worst in the mornings and evenings. No one knows what causes this or can explain why Anna's skin changes and suddenly feels so different; rough and thicker. Her doctor is unable to account for this, her family is frightened and this Hungarian woman living in the small town of Szombathely simply wants to know what is happening with her. Everyone she knows senses that she is seriously ill. That is why she is now sitting here in the hospital, waiting. As the minutes slowly pass, a poster catches Anna's eye. Its heading is "Scleroderma" and displays facts about the disease as well as images of people suffering from it. Anna is shocked. She leans over to her mother. "How awful must it be to have that disease?" she asks. Some time later, Anna's doctor tells her that she is suffering from scleroderma.

That was eight years ago. The very rare disease scleroderma, also known as systemic sclerosis, causes swelling and scarring of connective tissue. In many cases, the lungs and other organs gradually also suffer scarring, which can become life-threatening for patients. The disease affects around two million people worldwide, mainly women between the age of 25 and 55.

"Back then, my world completely fell apart," Anna recalls. Even though the doctor assured her that many patients maintained a good quality of life with this disease, it felt as though she would never be happy ever again. "I simply couldn't imagine how someone could lead a nice life with a disease like that", says Anna, who is now 36 years old. At the time, she did a lot of research in order to find out what she faced. "Everything I found was absolutely terrifying." She found no

positive examples. Nor did she find anybody else suffering from this disease to talk things over with. “I was completely on my own.”

At the same time, she noted that she was experiencing more and more symptoms. Her mobility declined, she was out of breath more rapidly and had to give up hobbies. Before she fell ill, she had gone to the gym several times a week to exercise on a spinning bike. “But there came a point where I could no longer manage it, I simply didn’t have the strength. That really frustrated me,” says Anna. She also had to get used to regularly taking medicines and attending hospital check-ups as well as being suddenly extremely restricted, even in entirely normal everyday situations. “I couldn’t even use my credit card on my own since it was too much of a strain for my hands to take it out of my purse.”

“The horses sense my mood without me having to say anything.”

Anna nevertheless learned how to cope with this disease. “I noticed that there were many important things which I was still capable of doing”, she says. She kept her job as a quality manager. “It was important for me that my colleagues continued to treat me normally and that I was able to do my job.” Nor did her social life change as a result of the disease. “My family is still the most important thing for me.” Her mother, brother and sister never leave her side during tests and consultations with doctors. Her friends also give her a lot of strength. “It was important to know that the disease can’t take them away from me.”

In the meantime, Anna has become happy once again, and maybe even happier than she was before her diagnosis:

When she feels down, Anna turns to her special antidote – her horses. They help her to come to terms with the disease.

“Today I’m much more grateful for the little things.” She does not think about the future all that much. Whenever she feels afraid, she tells herself: “I’ve already been through the worst – what else can happen to me?” While she is naturally aware of the disease every day, it does not dominate her life. “I really only think about it when I take my medicines or have a hospital appointment.” And that despite her lung capacity now being just 65 per cent. Breathing exercises and medicines help, but many things are simply no longer possible.

Luckily, that does not include riding, which is like a therapy for Anna. Several times a week, she spends time at a riding school outside Szombathely. She rides there regularly – it is one of the few sports which she can still engage in. “The horses sense my mood without me having to say anything. That really comforts me on days when I don’t feel so good.”

On the days she spends in the sun with the horses she often forgets her illness. “The place means absolute relaxation for me.” The worst thing for Anna would be if she could no longer ride. For this eventuality, she nevertheless plans to continue to visit the horses. “Just being with them would be enough of a reason for me to go.”

Anna has decided to go public with her story in order to encourage other sufferers. “I would like to make it clear

Anna long looked for a stud farm that keeps horses in paddocks. The huge amount of space the horses enjoy also gives her a sense of freedom when she rides across the paddocks.

“I would like to make it clear to them that they are not alone.”

to them that they are not alone.” She has not forgotten that poster in the waiting room. “Seeing those horror scenarios makes it only worse – instead, we should be hearing more about people who live happy lives in spite of the disease.” People like Anna.

[1] *University of Michigan, Scleroderma Program: www.med.umich.edu/scleroderma/patients/scleroderma.htm*

MORE THAN SCLERODERMA

Scleroderma, or systemic sclerosis (SSc), is a rare, so far incurable disease. It is characterised by hardening of the skin and connective tissue. It affects around two million people worldwide[1] and three times more women than men, mainly in mid-life. Lung diseases are a common manifestation of systemic sclerosis. This is particularly serious as most patients develop pulmonary fibrosis to some extent. Boehringer Ingelheim – a leader in respiratory medicine – has been conducting active research into the potential fatal consequences of fibrotic lung diseases for years. With its global initiative “More than Scleroderma: The Inside Story”, Boehringer Ingelheim is pursuing the goal of educating society as a whole and providing information about the disease to those interested. To this end, the company collects inspiring stories from patients all over the world and publishes brief portraits of their lives on the website www.boehringer-ingelheim.com. These portraits may be video interviews or photo series. Sufferers can read about how other patients cope with the disease. At the same time, they learn about the progression of the disease and its in part serious effects. But the initiative is not seeking to scare people – on the contrary: the goal is to show patients that the disease will not determine their lives and that each of them can find their own way of coping with it. Eight portraits of patients from seven countries are currently featured on the website.


AGILITY
NEEDS
CREATIVITY

Transformation meets tradition

Wild sketches, brightly painted office walls, fur-covered stools – BI X, Boehringer Ingelheim's new digital lab, looks like the work spaces of a start-up in San Francisco or Berlin. The goal: innovative digital solutions for the research-driven pharmaceutical company. BI X thereby marks the beginning of the transformation of the whole company. The digitisation of Boehringer Ingelheim is in full swing.

“Even projects that fail can indirectly lead to success later, if we learn something from them.”

Anyone looking for the new BI X digital lab on the Boehringer Ingelheim campus in Ingelheim, Germany, stands a good chance of getting lost. It is a 15-minute walk from the main gate. The building is located on the edge of a little wood and is rather unassuming, almost old-fashioned from the outside. Only inside does it look like a start-up. Although there are also desks, people work wherever it suits them at the time: in the foyer, in the lounge corner or at the large wooden table in the kitchen. Anyone who has a spontaneous idea can instantly jot it down with a marker pen on the writable walls. Even the large windows with their views of greenery have bright post-it notes stuck on them so that no ideas are lost. The technology is impressive too. In almost every room there is a giant touchscreen. In addition there are unconventional tools such as small building blocks in case quick, tangible models are called for.

BI X is a whole new world for Boehringer Ingelheim. While elsewhere on the Ingelheim site, people predominantly dress in traditional businesswear, lab coats and overalls, Dr Daniel Hach opens the doors to BI X in trainers and a T-shirt. The 32-year-old was one of the first people employed by the digital lab and is responsible as part of a four-man management team for day-to-day operations. At our visit in October 2017, we meet Michael Schmelmer[1], who was then head of BI X as well as Boehringer Ingelheim’s Chief Information Officer (CIO).

The company, founded in summer 2017, is still comparably small with a staff of around 30. However, new faces join the team every month. By mid-2018, around 50 talented tech specialists should be working at the digital lab. The company seeks out experienced experts who bring with them in-depth knowledge of the industry and of methodical digitisation, as well as pioneers with the necessary passion for implementing initiatives and visions with conviction.

Formally, BI X is a subsidiary of Boehringer Ingelheim, but the digital lab is de facto a start-up. The synergies with the parent company create benefits and make everyday work easier: “As an independent company, BI X benefits greatly from the freedom of a start-up, but also from the tried-and-tested processes of a globally leading pharmaceutical company – for example, when it comes to contracts or approval processes,” says Schmelmer. “This gives our people more time for what they are meant to be doing.” And it is specifically this way of working that distinguishes BI X so clearly from the rest of the company. The tech experts work in accordance with the latest agile planning methods.

The fact that this does not always lead to instant success is all part of the plan. “Failure is allowed at BI X,” states Schmelmer. “At BI X, we consciously work on high-risk projects that are hard to implement. On average, only half of our projects are successful.” Set-backs are all part of the learning process:

The list of good ideas is long. That is why the windows at BI X are turned into pinboards.

BI X aims to lead Boehringer Ingelheim into the future with a new digital movement. The team is working on innovative solutions for this enterprise.

WANTED: INNOVATIONS. THE FIRST BI X PROJECTS

BI X developments go through three cycles, Michael Schmelmer[1] explains. The first phase is all about ideas that are very closely aligned with the business of the parent company. For example, the BI X team has developed software for researchers to make it easier to analyse data and the latest scientific insights from the whole world and to identify possible relationships. For example, certain protein concentrations could be recognised as a possible therapeutic approach and medication development speeded up. The team is currently in the second wave of generating ideas. They are developing new approaches that are still connected to Boehringer Ingelheim's business but are disruptive and thereby capable of opening up new business areas. The BI X team has, for instance, developed an app for the digital early detection of Alzheimer's disease. The aim is to determine by only analysing speech whether a person is showing early signs of the disease. "Alzheimer's research is linked to the traditional businesses at Boehringer Ingelheim, but the app offers a service that does not yet exist in this form. What's more, nobody else has done anything like it before," Michael Schmelmer says. In the third wave, the team wants to go still further and take on assignments with the potential to shake up the market, as Schmelmer puts it. "But that will come with time, once BI X is more mature. We will start with topics that we can gauge, and once the processes are in place, when the team knows how BI X works, then we can address more high-risk matters." However, what kind these might be is not something that Schmelmer wants to reveal yet.

[1] *CFO of Boehringer Ingelheim since 1 January 2018*

"Successful implementation is not the only thing that counts. Even projects that fail can indirectly lead to success later, if we learn something from them."

Learning from mistakes is part of BI X's DNA. The mission statement is literally writ large in the foyer. "We take on challenges every day. We take risks and make mistakes with pride. We play by our own rules. We are BI X," the manifesto states. The members of staff developed the mission statement together, which is a new approach for Boehringer Ingelheim: "I like the fact that the team decides for itself what it wants to achieve and how it wants to work, who its members are and what their plans are," says Schmelmer. In large corporations in particular, it is not usual that staff from all levels in the organisation make strategy decisions together. It is also not always easy for Schmelmer to accept the decision-making freedom of the staff at BI X: "It's a learning process for me to be hands-off. But I try not to intervene in the day-to-day running of BI X."

Digitisation is of strategic importance to Boehringer Ingelheim. With BI X, the company hopes to offer even better treatment options to its patients in future. The goal is to combine the expertise of a global research-driven pharmaceutical company with technological know-how and to integrate this newly acquired knowledge into the classic pharma business on a lasting basis. Boehringer Ingelheim sees powerful development potential here for the whole organisation, with the customers in mind. "Without the support of the top management and the whole company's combined aspiration, however, that would not be possible," says Schmelmer.

The birth of BI X came in spring 2016. Out of the idea of structuring digital initiatives for Boehringer Ingelheim, the desire to do more grew rapidly. For this, a small team of digital-thinking colleagues and external strategists was formed to jointly develop the BI X concept. Hach, still an external consultant then, was on board. "We discussed a lot about what Boehringer Ingelheim needed in terms of its digital transformation," he recalls. "For the first few weeks, we just collected ideas. It quickly became clear that we wanted action."

Every morning, the BI X team agrees on the priorities of the day.

Since

1 August 2017

BI X has been an independent subsidiary of Boehringer Ingelheim that focuses on innovative digital solutions in the healthcare sector.

The start-up works closely together with the three Boehringer Ingelheim businesses – Human Pharmaceuticals, Animal Health and Biopharmaceuticals.

BI X develops product prototypes and solutions and then tests them in pilot phases.

Boehringer Ingelheim invested

20 million euros

in BI X in 2017.

By the end of 2017, around

30 people

worked for BI X, with this number set to increase to around 50 by mid-2018.

It was all about basics in the beginning: what was needed in terms of office space, technologies and staff? How should the company look like? And was Ingelheim really the right place for this? It quickly became clear that BI X would need to be near the parent company's headquarters. The BI X team found a suitable building in the former guest restaurant, which was at the time only being used occasionally for internal training sessions. Modification took four months, with the BI X team moving in in June 2017.

The team includes Maria Apsolon from Estonia, who joined BI X as a software specialist in October 2017. As a front-end developer, she digitally implements the design of developed ideas. She is currently working on a platform with which pharmaceutical researchers can collect, structure and exchange data. When she started at BI X she was the only front-end developer. Serious pressure, she says, looking back: "We work hard and a lot. But it's worth it, as we're developing products that make a difference." What in her opinion makes BI X stand out above all is the special way of working.

The tech experts work flexibly, using the scrum method. "At the start of a

project phase, which generally lasts two weeks, there is only one clearly defined, measurable goal. The individual project steps are flexible, however, and only emerge in the course of the I process," Apsolon says. For each project, the staff are divided up into new teams comprising data scientists, scrum masters, front-end and back-end developers and user experience designers. They all get together for a daily stand-up at which each member of staff briefly explains their priorities for that day. At the end of the project phase, the team looks back together at the results and decides whether or not the direction of the project needs adjusting. Progress can be seen by all members of staff in the foyer, where the status of the project is displayed on three large screens. "Each team sets its own goals for the respective week," Schmelmer says. "There's an immense performance culture here – everyone wants to make a difference and you can really feel it."

As a counter balance to their hard work, the team enjoys regular time-outs. Once a week, the team goes out for dinner together, trying out the various restaurants in the area. If something is not going quite right with a project, that is when the table football in the foyer comes in: "If we have different ideas of how something should be done, we just go with whatever the winner decides," jokes Apsolon.

The front-end developer is the only Estonian on the team. Her colleagues come from countries like the USA, Spain, Austria, the Netherlands, Hungary and Bulgaria. The BI X office language is English. And it is no accident that so many different nationalities come together to work here. Boehringer Ingelheim has focused on diversity and inclusion for years. The company is certain that diversity is a major driver for innovation and growth.

International talent, however, is in international demand. Undoubtedly, only very few people would off the top of their heads name Ingelheim as their preferred job location. "That's one of the greatest challenges facing BI X because we need the right people in order to be successful," says Schmelmer. He wants to draw talented staff to the location with the exciting content of the work: "With us, people can actually bring about change. They will be working on solutions that could potentially save lives."

The BI X team's plans are almost limitless: "In the current year, we want to implement as many projects as possible, and Boehringer Ingelheim will help us to build up these ideas," Hach says. But this initial support also has impact in the other direction too, with BI X spreading the entrepreneurial spirit and innovative working techniques from the digital lab throughout the entire company. After all, one thing is clear: the qualities associated with a start-up – agile, flexible and result-driven work – will also be factors for success in the future for a traditional company like Boehringer Ingelheim.

INTO THE FUTURE WITH BITS AND BYTES

Boehringer Ingelheim aims to fully exhaust the digital potential and thereby build on multiple initiatives. Here is a selection.

BI X

As an independent subsidiary, BI X promotes smart healthcare solutions in the business areas Human Pharmaceuticals, Animal Health and Biopharmaceuticals. In order to develop a digital business idea, the business areas can turn to BI X. The digital lab helps them to clearly define the idea and delivers prototypes for new products. Failure is expressly allowed here. What is decisive is trying out new technologies and thereby possibly also reaching the goal indirectly.

Business Model & Healthcare Innovation

The innovation team located in the One Human Pharma business unit works closely with experts from the various therapeutic areas. The experts can thus recognise needs early and work jointly with partners on targeted solutions. Here they concentrate intensively on digital healthcare solutions based on modern information and communication technology (see interview with Dr Oliver Reuß, page 48).

Accelerate

With its IT initiative Accelerate, Boehringer Ingelheim employs the innovative potential of all its employees worldwide. On it everyone can submit proposals for digital innovations. An interdisciplinary jury decides on these. The submitters must then implement their proposals within the desired timeframe, which is mainly about three months. Subsequently, they report on their experiences, even if projects have in the meantime failed, for it is important that everybody learns from each other (see text on the Hololens project, page 33).

ON THE MOVE– WORLDWIDE

In the past year, Boehringer Ingelheim has driven various projects covering the most varied topics. However, there is something they all have in common: open-minded employees with a sense of responsibility, who have consistently and inventively sought answers to change – and found them.

THE POWER OF INFLUENCERS

We are already used to them in social networks, but actively harnessing the power of influencers is still a new phenomenon in companies. Boehringer Ingelheim Japan has taken up the concept and tailored it for a research-driven pharmaceutical company. More than 150 young employees, known as Change Champions, started pushing ahead with the new global principles of working together, rolled out in 2017: agility, accountability and intrapreneurship – AAI (see page 14). The AAI Change Champions are connected with each other in informal networks and work as facilitators, influencers, storytellers and front-runners. Without any instructions from above, they develop goals, own initiatives and seek dialogue with their colleagues. This practical approach has developed a very favourable dynamic that has inspired all sides. So it is no surprise that the second generation of AAI Change Champions is already in the starting blocks.

AFRIKA KOMMT!

The “Afrika kommt!“ (Africa is coming) initiative allows specialists from Africa to exchange views with managers from major German corporations and to effect change together. As one of the founding members, the research-driven pharmaceutical company Boehringer Ingelheim has since 2008 supported this initiative to foster diversity. The pharmacist Simon Manyara from Kenya participated in the programme at Boehringer Ingelheim’s site in Ingelheim, Germany, for eight months. Since his fellowship, Simon has continued to support various projects within Corporate Strategy and Development at Boehringer Ingelheim.

LEARNING TO UNDERSTAND PATIENTS BETTER

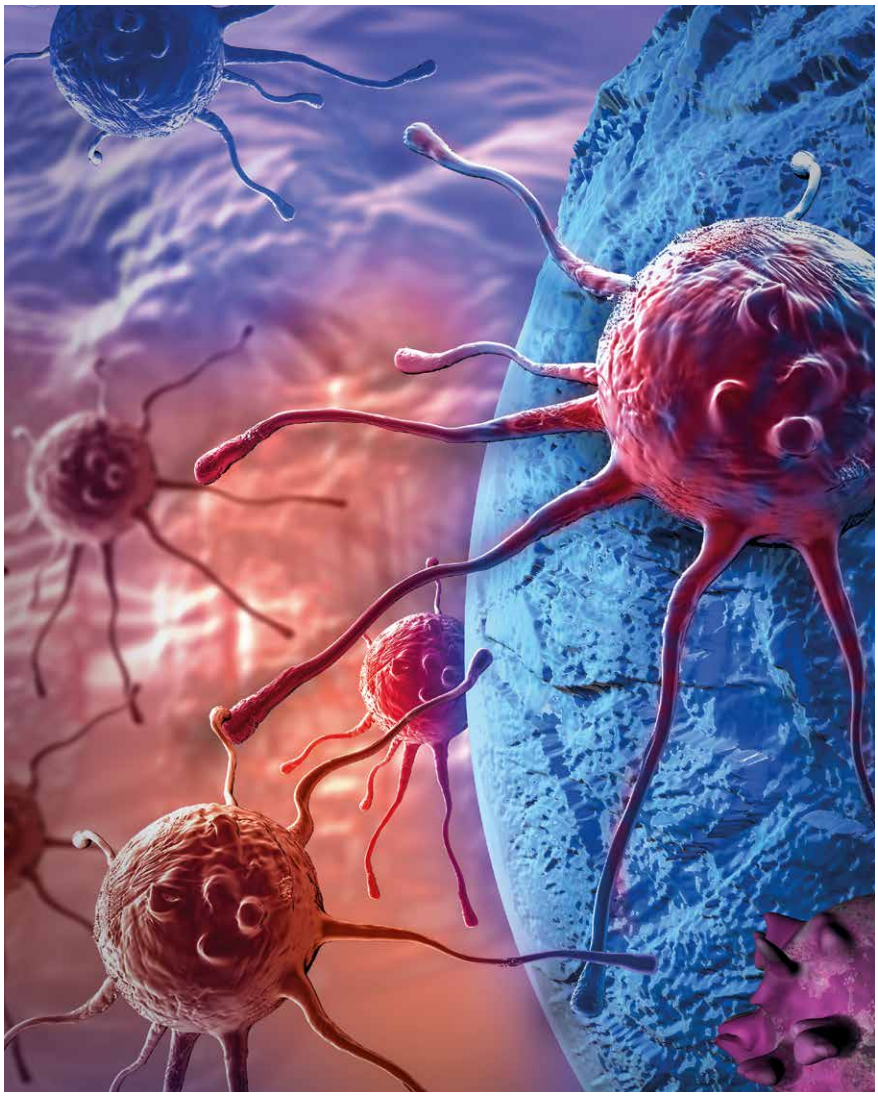
What is important to the patient? What are the unfulfilled needs and how can research be tangibly applied to help address those needs? In order to get to the bottom of such questions, Boehringer Ingelheim launched the Scorecard Project in the USA in March 2017. Eight cross-disciplinary teams now look far beyond the therapeutic areas of a traditional research-driven pharmaceutical company – and they work in very close cooperation with the patients themselves to improve clinical trials and gain a better understanding of patients’ needs. This is done by employing questionnaires and one-on-one patient interviews, as well as moderated online discussions on a digital consultation platform.

VIRTUAL PIGS

Pigs are romping about Boehringer Ingelheim's corporate site in Ingelheim, Germany. But the animals can only be seen by people wearing special goggles. A Microsoft Hololens allows interactive 3-D images to be projected onto the immediate environment. Hand movements can herd the pigs and, when touching them, you can even hear a gentle grunt. A tool like this could in future help farmers administer medicines to their animals. However, this is still a long way off. The aim of Boehringer Ingelheim and the Fraunhofer Institute for Software and System Technology (ISST) was to test in a three-month pilot project the opportunities this new technology can offer. An employee from the IT department had requested further research into this innovative, dynamic digital approach via the company's special "Accelerate" internal platform. Boehringer Ingelheim agreed to the request and supported the development of the pilot project with 50,000 euros.

TOGETHER FOSTERING SOCIAL INNOVATION

During two days in October 2017, 267 participants from a variety of countries gathered at the Boehringer Ingelheim Campus in Ingelheim, Germany. Their joint objective was to drive the future success of the Making More Health (MMH) initiative. Founded in 2010 by Boehringer Ingelheim and Ashoka, MMH fosters social innovation around the world, explores unconventional partnerships and business models, and encourages Boehringer Ingelheim employees. The MMH Convention gave the participants the opportunity to network, inform themselves about innovative local and international MMH projects, and unleash new cooperations. Three pillars provided the framework: co-creation as a bond between social responsibility and business; social innovation of 85 social entrepreneurs in the MMH network; and the fostering of entrepreneurial and intrapreneurial thinking. This changemaker programme is an innovative way to develop leadership skills. The convention delivered an exhibition, different workshops, success stories, panel discussions and interviews.



ACCELERATING THE DEVELOPMENT OF IMMUNO-ONCOLOGY THERAPIES

The combination of immuno-oncology therapy concepts is an essential part of Boehringer Ingelheim's cancer research. The strategy focuses on turning tumours that are hidden to the immune system visible and therefore enable the body's immune system to recognize and attack these tumours – an approach that can be commonly described as "turning cold tumours into hot tumours". The researchers are focusing on novel approaches that might result in breakthrough treatments for patients with difficult-to-treat conditions such as lung cancer or gastrointestinal cancers. Despite recent treatment advances, lung cancer still is the number one cancer killer. Gastrointestinal tumours have been of increasing importance over the last years and are among the most frequent cancers in Asia. To bring the results of oncology research to patients quickly, Boehringer Ingelheim is collaborating with Sarah Cannon Cancer Research Institute, US, to conduct clinical trials. The expertise of this partner supports the research-driven pharmaceutical company in identifying the right patients and in optimally supporting them in clinical trials so that meaningful results of high quality may be achieved in a timely manner. Boehringer Ingelheim's goal remains always to accelerate the development of innovative cancer treatments for patients with high therapeutic need.

RIDGEFIELD EMBODIES DIVERSITY

An open, unbiased way of thinking requires a corresponding (working) environment. That is why Boehringer Ingelheim has reshaped its Ridgefield site in the USA. The Inclusive Campus has now been completely redesigned with diversity and inclusion in mind – from its workstations and parking places to its bathroom facilities. Another example is a re-designed auditorium, with wheelchair access and technology to support employees with hearing impairments. The project was instigated and implemented by the Ridgefield workforce. This is a clear example of the changes that teams are able to bring about when everyone pulls together.

DISCOVER IPF IN A 3-D ENVIRONMENT

It is often difficult to correctly interpret the symptoms of the rare disease idiopathic pulmonary fibrosis (IPF). However, a fast diagnosis is decisive. In Denmark, a virtual reality game is helping doctors to hone their awareness – for example, by interpreting various lung noises in the virtual world, or by investigating healthy lung tissue or that of an IPF sufferer. Boehringer Ingelheim's brand and communication team in Denmark developed the game in record time last year so that it could be employed for the first time at the annual conference for Danish lung specialists.

TWELVE CITIES IN TWELVE MONTHS

Today's modern workers desire flexibility and a healthy work-life balance. Innovative companies, like Boehringer Ingelheim, identify this transformation and turn to programmes such as Remote Year for support and inspiration. Remote Year is an organised development programme that brings together a mix of international professionals, freelancers and entrepreneurs to live and work as a community in twelve global cities over a whole year. Remote Year promises to provide personal and professional growth, giving participants the opportunity to learn from one another and immerse themselves in different local cultures and business ecosystems. Anne-Madeleine Kleinwächter, Global Senior Manager Leadership Development at Boehringer Ingelheim, is the first Boehringer Ingelheim employee to take part in this programme. Anne-Madeleine's itinerary covers both emerging and mature markets and consists of cities as e.g.: Prague, Lisbon, Kyoto, Kuala Lumpur, Chiang Mai, Buenos Aires and Mexico City. Picture: Anne-Madeleine with colleagues at work in Kyoto, Japan.

AMBITIOUS CONSTRUCTION PROJECT

Speed is the name of the game. Boehringer Ingelheim's new manufacturing facility for the RESPIMAT® pocket inhaler in Sant Cugat, Spain, is to go into production by September 2019. The ground-breaking ceremony took place in June 2017. The path to this point involved several hurdles, but the project and engineering teams were ultimately able to stay on schedule and to obtain planning permission from the local authorities. In the future, Boehringer Ingelheim will manufacture up to 20–25 million cartridges for the RESPIMAT® inhaler every year and also package the finished product in Sant Cugat.

INITIATIVE FOR STROKE PATIENTS

It all began in October 2014 in Dubai in the United Arab Emirates. After the first stroke center was set up there, with the support of Boehringer Ingelheim, the "META Stroke Initiative" quickly expanded to the rest of the META region, consisting of Middle East, Turkey and the Africa region. Because every second counts in the treatment of stroke patients' lives, the initiative aims at creating stroke centers of excellence all over the region, spreading knowledge and experience locally. As a result of the initiative, the thrombolysis rate was increased from 0.001 per cent when the initiative was established to 3 per cent in 2017. The initiative focuses on more than 19 countries, with its board including 14 specialists from eight of those countries. Together with Boehringer Ingelheim and the health authorities, its objective is to heighten public awareness about stroke. The initiative meanwhile succeeded in increasing the number of treated stroke patients from around 1,400 in 2015 to more than 10,000 in 2017. The incidence of stroke is on the rise around the world. The "META Stroke Initiative" is part of the Boehringer Ingelheim-initiated "Angels Initiative" that cooperates with leading stroke organisations and experts. The goal is to improve acute stroke care for patients worldwide.

WHEN TWO BECOME ONE

2017 was a year of change for Boehringer Ingelheim's animal health business. Two former competitors became one. Previous strangers became colleagues and supervisors. In order to make the transition as seamless as possible, the staff of Boehringer Ingelheim Animal Health in the Philippines organised the "Camp ONE" project, a team-building activity not only calling for mental agility. Everybody understood that the merger would mean that everyone would have to operate outside their comfort zone. The project was a success: the new animal health business in the Philippines already enjoyed a significant increase in sales in the second half of the year.

SHOWING POSITIVE HEALTH IMPACT

Communicating results from highly-scientific registration trials and transforming its complex data in layman's terms is becoming ever more challenging. In order not to lose sight of the overall picture in big data, Boehringer Ingelheim has set in train the development of the in-house app "Health Impact – Care for Patients" (HI-CAP). It enables the measurement of how many patients worldwide have been helped by the research-driven pharmaceutical company's products. A committed team of statisticians and data experts have taken on the task. The result is an app that converts the abstract concept of public benefit into accessible visuals. The HI-CAP calculator, which is based on R shiny technology, gives an estimated number of prevented events of interest or life-years gained by those patients who have been taking a Boehringer Ingelheim medication. These calculations with all assumptions are transparent and scientifically sound. Initially, the HI-CAP calculator will be used by Boehringer Ingelheim's internal specialists from Medical Affairs and Marketing. HI-CAP is far more than simply an innovative gadget. The app translates highly complex technical details based on clinical trial results and drug sales data – broken down by country – into easily understood graphic elements and shows the great contribution from Boehringer Ingelheim to benefiting patients' health.


AGILITY
NEEDS
FORESIGHT

An eye for the big picture

When the Boehringer Ingelheim Science Department was founded 100 years ago, future Nobel Prize winner Heinrich Wieland ensured that this was done in a future-oriented way. Today, the company's scientific activities are bundled in the Innovation Unit, which continues to embody the company's spirit of research. Although scientists such as Michael Mark do things quite differently now compared to Wieland's time, there are still lots of similarities.

Michael Mark noticed one thing straight away: "Everyone gave such a friendly welcome", he says, looking back on his first day at Boehringer Ingelheim in Biberach, in Germany's Upper Swabian region. The then 28-year-old pharmacology graduate joined the research department in 1985.

His feeling of belonging has remained to this day, Mark says. In other respects, a lot has happened since then. The company has grown enormously and Mark has participated in countless research projects, advancing to become Head of the Cardiometabolic Research Department within the Innovation Unit. He has never for one minute regretted choosing Boehringer Ingelheim. "The job appealed to me straight away – it was exactly what I wanted. Here, I was able to discover new mechanisms of action and develop new medicines – there's nothing more appealing to a trained pharmacist."

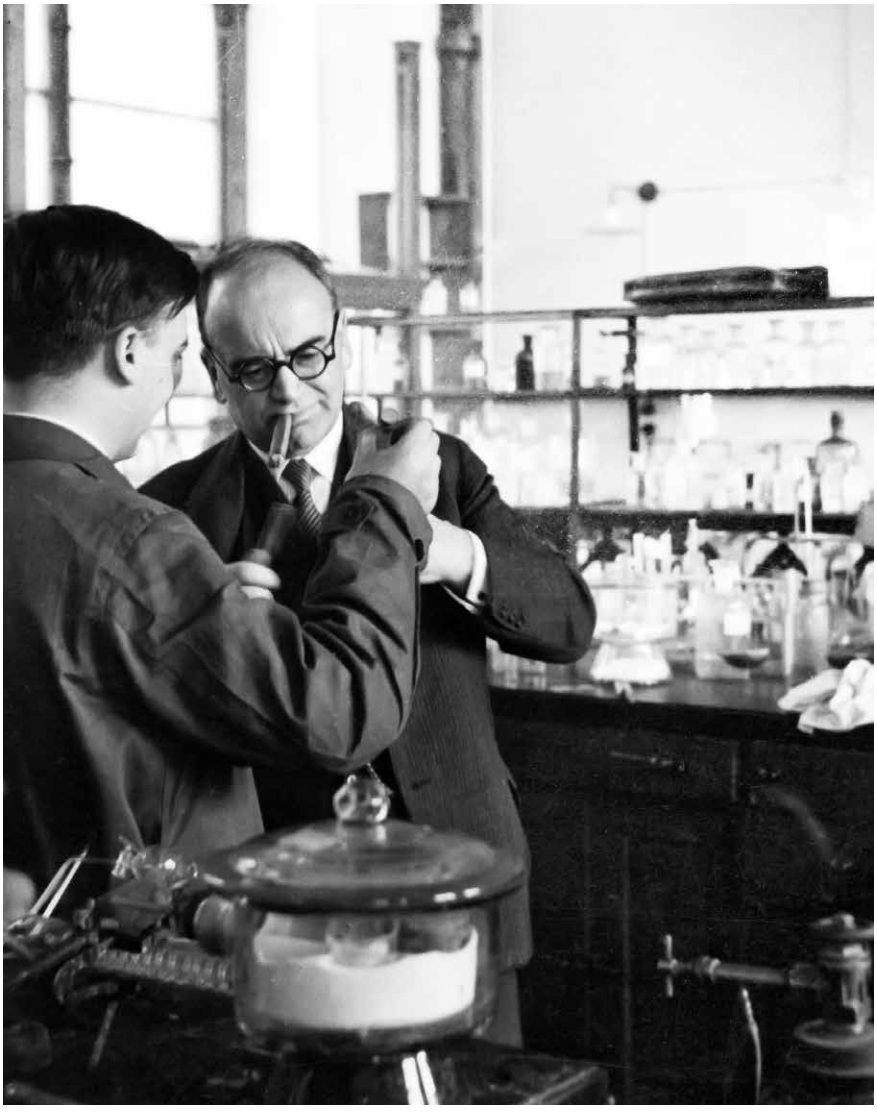
Today, Mark is responsible for the work of 80 researchers in Biberach as well as 40 people in Ridgefield, Connecticut, USA. He organises the various research projects internally and in partnership with collaboration partners, reviews ideas put forward by the working groups, withdraws staff from projects or increases their number if a substance is looking particularly promising. "At Boehringer Ingelheim, we are able to work on fundamental issues with the necessary foresight", Mark says. "We get the time required and, above all, the responsibility."

It is not least the spirit of Heinrich Wieland that has a lasting effect here. The company's Science Department celebrated its centenary in 2017 and the great chemist and later Nobel Prize winner was there from the very beginning.

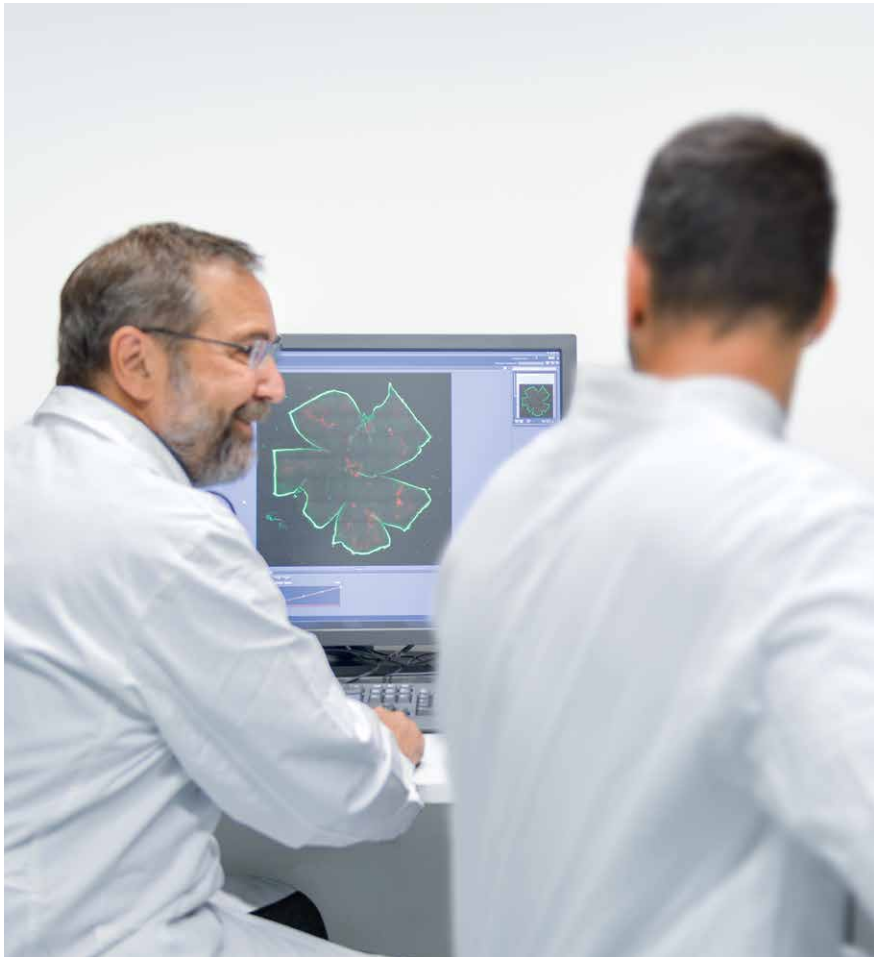
"We need champions who believe in their idea and want to follow it through."

Born in 1877, Wieland was a cousin of Helene, the wife of company founder Albert Boehringer. From 1904 onwards, he advised Boehringer's company on the development of new medicines. At the time, he was about the same age as Mark was when he started at Biberach.

A gifted chemist, Wieland pushed the boundaries of research into plant-based alkaloids. He developed the cardiovascular medicine CADECHOL® for Boehringer Ingelheim and later LOBELIN®, an emergency treatment for respiratory arrest and other shock conditions. He conducted regular basic research with his students and assistants at the University of Munich – to a degree that would hardly have been possible for the medicine developers at the Ingelheim-based company on their own.



Heinrich Wieland (right) in the laboratory.



Dr Michael Mark with his staff evaluating digital images from a fluorescence laser microscope.

At the start of the 20th century, in addition to pursuing their academic careers, young chemists usually worked as advisors to pharmaceutical companies in order to make a living as external lecturers. But Wieland was much better connected and integrated at Boehringer Ingelheim than most of his colleagues in the industry. He was thus a kind of founding father to today's researchers at the company – who also include Mark.

When he thinks of the great Heinrich Wieland today, Mark sometimes wishes he could engage in finding solutions with the same freedom and straightforward manner as was possible then. "Drug development is more complex now, involving many different disciplines. Regulations are of course necessary, not least to ensure patient safety", says Mark. On the other hand, researchers today naturally have many more opportunities at their disposal. In his team, Mark works with scientists from nine countries with differing education and expertise, including specialists in human medicine and molecular biology. He can employ gene analysis and modern microscopes, has access to all available scientific databases, and will probably even soon be able to simulate effects and side effects using software – as promised by the nascent discipline of systems biology. With regards to all research activities, Boehringer Ingelheim also builds on collaborations with external partners, universities as well as start-up companies (please see the guest contribution of Rui-Ping Xiao from Peking University on page 50).

> **"We are able to work on fundamental issues with the necessary foresight."**

Mark came to his current field of research thanks to his PhD supervisor. The well-known pharmacologist Hermann Ammon was working on diabetes research, so his young protégé – during and after his doctoral studies – worked on the mechanisms of insulin release. At Boehringer Ingelheim in Biberach, Mark directly linked in with these studies and initially focussed on glinides, the substance class that stimulates insulin secretion from the pancreas. From this emerged repaglinide, which was put on the market as Prandin®[1] in 1997. After a protracted phase, during which Mark and his colleagues focussed on lipid metabolism and atherosclerosis, a new phase in diabetes research began in 1999. As one of the first projects, Mark initiated the search for DPP-4 inhibitors. These are substances that inhibit the breakdown of a specific hormone from the intestine, eventually lowering blood sugar. As a result of his work, the active substance linagliptin (TRAJENTA®[2]) was launched in 2011 and is now one of the best-selling medicines in the Boehringer Ingelheim portfolio.

[1] *licensed to Novo Nordisk*
[2] *jointly marketed with Eli Lilly and Company*

The next significant medicine in which Mark's work played a major role is the SGLT2 inhibitor called JARDIANCE®[3] with its active substance empagliflozin. Reading scientific articles in the late 1990s, it occurred to Mark that phlorizin, which was initially isolated from the root bark of apple trees, lowers blood sugar levels as it causes glucose to be excreted in the urine. While this mechanism had been known for a long time, Mark and his team were among the first to use this knowledge to develop a medicine to treat diabetes. They therefore applied knowledge about a rare genetic mutation, the carriers of which also excrete sugar in their urine. "We knew from these people that this mechanism has no apparent disadvantages. Accordingly, the SGLT2 inhibitors should be efficacious and well-tolerated long-term," says Mark. Although many experts were sceptical, the team was able to pursue the idea and JARDIANCE® is also a major success today.

For JARDIANCE®, the diabetes researchers drew on a plant-based source material – one that Wieland would probably have been aware of. Wieland represented the last generation of Boehringer Ingelheim developers to work with natural active substances. His best student, Georg Scheuing, who headed the Science Department from 1926 onwards, guided the company to synthetic substances, which was a major step forwards. Mark and his colleagues approached the development of JARDIANCE® in a similar way to what Wieland did in his time. They had an idea of how a substance could work and pursued it until the application for diabetic patients. "In modern pharmaceutical research, we constantly ask ourselves which patients and which diseases need improved therapies. What applications are possible? And then we search for therapeutic approaches in full knowledge of the disease and with understanding of the fundamental biological mechanism, as well as with expertise in how to arrive at the suitable molecules."

"In modern pharmaceutical research, we constantly ask ourselves which patients and which diseases need improved therapies. What applications are possible?"

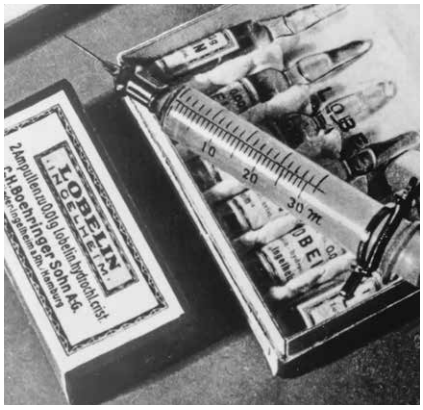
The fact that individual scientists, such as Wieland and his successor Georg Scheuing, developed entire medicines practically on their own would no longer be possible in today's world, Mark says. "The fields of research are simply too big and the individual topics too complex, making the specialist knowledge and expertise of many necessary." But Mark is convinced that even today we need "champions who believe in their idea and want to follow it through".

Currently, he and his colleagues are working on treatments for the complications of diabetes, addressing the damage that it causes to the eyes, kidneys and vascular system. Wherever possible, he also wants to investigate the root causes of diabetes development as well as what can be done to avoid this disease. Here, as with diseases of the liver – a further focus of cardiometabolic research – the lipid metabolism plays a major role and Boehringer Ingelheim is already one step ahead, Mark believes: "We have never looked at diabetes and glucose metabolism in isolation but always as being part of the body's entire metabolic events."

Something else has also remained fundamentally unchanged since the Wieland era. Boehringer Ingelheim has close ties with the scientific community, supports basic research and draws on these factors to attract talented people to work for the company. Mark calls it talent management – supporting promising young scientists, supervising them and preparing them for new tasks, or playing an active role in international research networks. So, in the final analysis, he is not all that different from Wieland, who regularly recommended some of his best students and promising scientists to Boehringer Ingelheim. And he was himself the PhD supervisor of Ernst Boehringer, younger son of the company's founder.

[3] *jointly marketed with Eli Lilly and Company*

From his office in Biberach, Germany, Michael Mark is responsible for the work of 120 research colleagues.



For Boehringer Ingelheim Heinrich Wieland developed LOBELIN®, an emergency medication for respiratory arrest and other shock conditions.

Phlorizin, from which the SGLT2 inhibitor empagliflozin (JARDIANCE®) was derived, originally comes from the root bark of the apple tree. Today, the diabetes medicine JARDIANCE® is a great success.

FOCUS ON PATIENTS

DR OLIVER REUSS
studied molecular biology and worked in management consultancy after completing his postdoc. He joined Boehringer Ingelheim in 2008, where he initially worked in corporate business analysis before driving strategy development forwards in core business from 2012. In 2014, he became Head of Business Model & Health Care Innovation.

Which products and services can Boehringer Ingelheim in future offer beyond medicines? This idea is being addressed by Dr Oliver Reuß and his team of doctors, biologists and business managers.

Dr Reuß, why is Boehringer Ingelheim even considering technologies outside the conventional medicine business?

DR REUSS Our aim is to provide patients with more comprehensive care than before. Until now, we've primarily provided medicines, that's to say ways to treat illness. For several years now, however, increasing focus has been on services and technologies that go beyond that, putting patients at the centre of things and offering them additional benefit.

How do you work in practice?

DR REUSS On the one hand, we work together closely with the human pharmaceuticals therapeutic areas and define solutions when we identify new needs. On the other hand, we also establish contacts outside Boehringer Ingelheim, as innovative ideas often come from start-ups. Special partners, known as accelerators, put us in contact with these start-ups so that we can gauge the potential of a partnership very early on. This way we're able to incorporate their entrepreneurial spirit into our company. In this context, it's exciting that the Boehringer Ingelheim Venture Fund recently received additional funding for digital healthcare concepts.

What kinds of projects are these specifically?

DR REUSS Let me give you an example. We're currently working on a smart add-on for the classic stethoscope: a small digital microphone fitted inside the stethoscope can be linked to a smartphone. Algorithms analyse the patient's lung sounds and help the doctor to identify respiratory disorders. One example of this is idiopathic pulmonary fibrosis – a rather rare and not always so easily diagnosed disease, but one which requires early treatment.

Aren't the major technology companies the pioneers in the digital environment? What opportunities does Boehringer Ingelheim expect here?

DR REUSS Of course, there's mega-hype in this field and lots of digital concepts centred on the patient. There's a huge selection of sensor technologies enabling the patient to measure, for instance, their own blood pressure or blood sugar levels simply, and sometimes on an ongoing basis. Other approaches involve Blockchain in order to enable the secure handling of patient data. Until now, this technology has primarily been used in the financial sector in the context of bitcoin. And, of course, artificial intelligence is a huge topic.

But across all these fields, we as a pharmaceutical company primarily consider the overall challenges for patients, doctors and the healthcare system when it comes to the development of new medicines. As such, we are in a position to identify potential solutions and to develop them ourselves or with partners. Additionally, our knowledge of regulatory affairs and our global presence are absolutely necessary for marketing a new product. This is our core competence and we utilise this competitive advantage.

At the turning point

In recent decades, China has become a leading economic power. The country is currently outstanding in research, too. Those involved now can help shape the future.

A GUEST CONTRIBUTION BY
RUI-PING XIAO,
HEAD OF THE INSTITUTE
OF MOLECULAR MEDICINE AT
PEKING UNIVERSITY

Lots of people have asked me why I left the USA to return to China eight years ago in 2010. I had worked there for twenty years as a senior investigator at the National Institute on Aging (NIH). The answer is simple: in 2010, scientific research was at an historical turning point in China and I wanted to be part of history when my home country progresses into one of the leading research locations on the planet. So, when Peking University invited me to become the head of its new Institute of Molecular Medicine, I seized the opportunity and accepted. And the institute, with its research into cardio-metabolic diseases and regenerative medicine, has in fact become one of the leading institutions in the world over the past few years.

> **“Basic research is often time-consuming and expensive. It can take decades, if ever, to achieve any marketable results.”**

In general, the international significance of my homeland's scientific community has grown considerably over recent years. China is now ranked second for research after the USA in terms of the number of patents and scientific publications in international journals. According to forecasts, this trend is set to continue. The Chinese government is thus increasingly investing resources to further promote science and technology in the country.

When I graduated in medicine from Tong-Ji Medical University in Wuhan in 1987, the standing of the sciences in the country was not so good. Universities simply lacked resources to finance their research. It was clear to me then that if I wanted to achieve anything as a scientist, I would have to leave my homeland. That was the case for lots of Chinese researchers at the time. Thousands of talented people, like me, left for the USA or Europe in order to continue to research or teach there. But then the Chinese government increased its research spending by over 20 per cent – on a sustainable basis. As a result, the situation today is completely different with more and more scientists returning home to China.

In the USA, I specialized in cardiovascular disease. At the National Institute on Aging, I developed treatments to strengthen the heart muscle after a heart attack, for example. I was able to continue my research in this field at Peking University. At the Institute of Molecular Medicine, we are now also conducting basic research into metabolic disorders. We are looking at the consequences for major diseases, such as type-2 diabetes and its complications like high blood pressure and high cholesterol, which can have a disastrous impact on the whole body. That is why we are looking for ways to treat these complications.

Basic research is often time-consuming and expensive. It can take decades, if ever, to achieve any marketable results. Without basic research, however, medical breakthroughs are difficult. Now, the team at the university

Both partners, Boehringer Ingelheim and Peking University, at the contract signing on 16 May 2017 in Beijing. In the foreground: Dr Rui-Ping Xiao of Peking University and Dr Clive Wood, Head of Discovery Research at Boehringer Ingelheim.

thankfully has opportunities to pursue this costly but necessary form of research. As a scientist, however, you might get to the stage where you need further support from the private sector. After all, even the best research is fruitless if it fails to reach people. This is where strong industry partners come in, bringing the strength and zest to develop the results further, making them ready for the market.

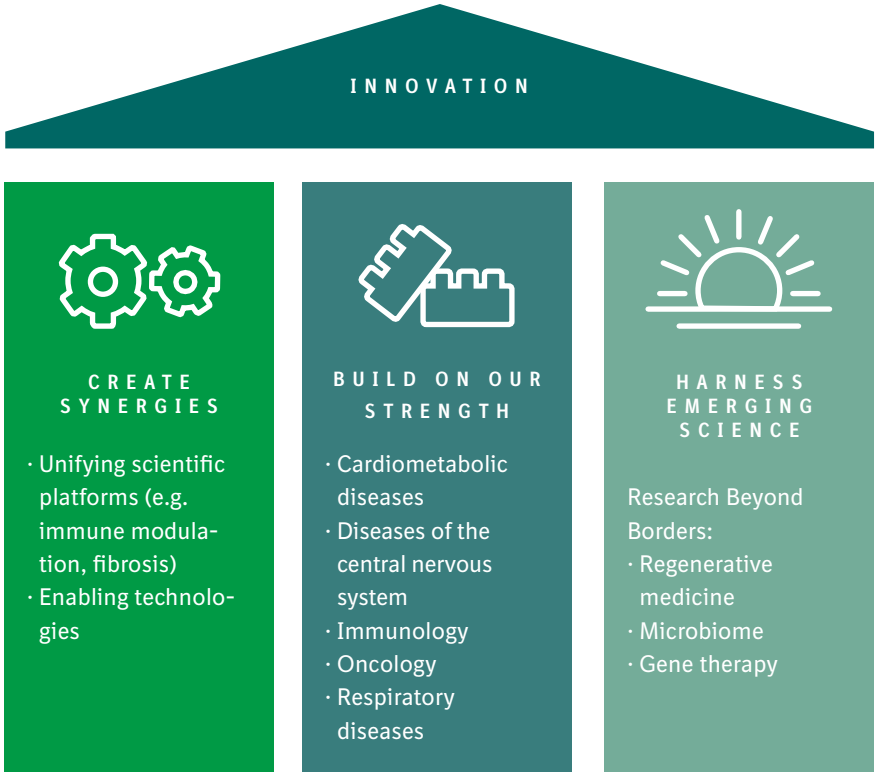
We have found such a partner in Boehringer Ingelheim. Since May 2017, Peking University has been a cooperation partner of the Research Beyond Borders programme with which Boehringer Ingelheim promotes highly promising research outside the company's traditional therapeutic areas. The strategic partnership primarily concerns regenerative medicine. Currently, there are five projects investigating different topics, such as cell regeneration of the heart and the pancreas. However, the joint research agenda also covers topics such as cancer and diabetes research, as well as gene therapy. Two further projects are also to be launched in the near future. Thanks to the partnership, Boehringer Ingelheim has access to our research results and helps us to implement them in practice.

> **“Thanks to the partnership, Boehringer Ingelheim has access to our research results and helps us to implement them in practice.”**

At the same time, Boehringer Ingelheim supports Peking University in several ways: the company is currently financing four of our postdoc positions, with other posts in the pipeline. However, even more important than financial support is the wealth of specialist expertise that we are able to draw on as participants of the Research Beyond Borders programme. Boehringer Ingelheim has, for example, an extensive expertise on cancer research, which has significantly enriched our research.

Over the course of my career as a researcher, I have already worked with many different partners from the world

BOEHRINGER INGELHEIM'S DISCOVERY RESEARCH STRATEGY



Boehringer Ingelheim's discovery research strategy is based on three pillars. The cooperation with Peking University supports the goal of harnessing emerging scientific developments. These activities are bundled in the third pillar, Research Beyond Borders (see infobox, right). The discovery research strategy helps Boehringer Ingelheim to repeatedly originate innovations that benefit patients. The company focuses on external partnerships, its own strengths and further approaches.

of industry – and it is not always easy. Many companies simply do not understand that good research can also show no apparent success for decades before ultimately achieving a major breakthrough overnight. Instead, they press for quick results that can be marketed profitably so that they get a rapid return on their investment. But research does not work under such conditions. In addition, there are the cultural hurdles that many companies are unable to handle properly. This can lead to misunderstandings that make a partnership difficult.

Precisely in the field of basic research, it is very important to be able to communicate properly and unambiguously. Boehringer Ingelheim has understood that. As part of the strategic partnership, we have a contact partner within the Research Beyond Borders team who not only lives and works in China, but is also familiar with the European and American ways of working. Thanks to her knowledge of both worlds, she's an outstanding mediator between the two cultures. That makes cross-border communication much easier.

Our aim for the future is to continue to deepen and expand this cooperation. For example, we plan to establish a further five postdoc positions and finance them as part of the program. I think that it is very important for many researchers that their work will benefit society at some point. China is offering scientists exceptional opportunities at the moment. Perhaps these positions might enable us to welcome more returnees who do not want to miss this historic moment in China.

BEYOND BORDERS

In 2015, Boehringer Ingelheim established its Research Beyond Borders (RBB) team in the field of Discovery Research. The team has 28 employees based in Biberach (Germany), Ridgefield, Connecticut and Boston, Massachusetts (USA), Beijing and Shanghai (China), Kobe (Japan) and Vienna (Austria). From these locations, the team's scouts search the international scientific community for promising ideas and actively establish contact with researchers at external research institutions and universities.

RBB's goal is to identify novel scientific approaches and technologies within and beyond the company's current therapeutic areas, which could be future focus areas. Examples are regenerative medicine, gene therapy and microbiome research. In the meantime, RBB has concluded over 30 partnerships with universities and scientific institutes. RBB is also planning collaborations with biotech companies and start-ups.

IMPRINT

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

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BOEHRINGER INGELHEIM

2017

ANNUAL REPORT

Value through Innovation

Boehringer Ingelheim

FINANCIAL HIGHLIGHTS

Amounts in millions of EUR, unless otherwise indicated	2017	2016	Change
Net sales	**18,056**	**15,850**	**+14%**
by region			
Europe	32%	32%	
Americas	45%	41%	
Asia, Australia, Africa	23%	27%	
by business			
Human Pharmaceuticals	70%	76%	
Animal Health	22%	9%	
Biopharmaceuticals	4%	4%	
Other sales	0%	0%	
Discontinued Operations	4%	11%	
Research and development expenses	3,078	3,112	−1%
Personnel expenses	4,934	4,570	+8%
Average number of employees	49,610	45,692	+9%
Operating income	3,487	2,872	+21%
Operating income as % of net sales	19.3%	18.1%	
Group profit/loss	−223	1,853	−112%
as % of net sales	−1.2%	11.7%	
Group equity	10,657	11,327	−6%
Return on Group equity	−2.0%	19.3%	
Investments in tangible assets	872	645	+35%
Depreciation of tangible assets	521	516	+1%

SUMMARY REPORT 2017

Boehringer Ingelheim

Top 4 products – Human Pharmaceuticals

Net Sales 2017	in millions of EUR	change
SPIRIVA®	2,826	−6%
PRADAXA®	1,438	+4%
TRAJENTA® / JENTADUETO®	1,333	+18%
JARDIANCE®	1,008	+133%

Top 4 products – Animal Health

Net sales 2017	in millions of EUR	Change
NEXGARD®	546	n.a.[1]
FRONTLINE®	381	n.a.[1]
INGELVAC CIROFLEX®	302	+7%
HEARTGARD®	284	n.a.[1]

[1] in 2017 newly aquired Merial products

OVERVIEW

OUR COMPANY

Improving the health and quality of life of patients is the goal of the research-driven pharmaceutical company Boehringer Ingelheim. The focus in doing so is on diseases for which no satisfactory treatment option exists to date. The company therefore concentrates on developing innovative therapies that can extend patients' lives. In animal health, Boehringer Ingelheim stands for advanced prevention.

Family-owned since it was established in 1885, Boehringer Ingelheim is one of the pharmaceutical industry's top 20 companies. Some 50,000 employees create value through innovation daily for the three business areas human pharmaceuticals, animal health and biopharmaceuticals. In 2017, Boehringer Ingelheim achieved net sales of almost 18.1 billion euros. R&D expenditure, exceeding three billion euros, corresponded to 17.0 per cent of net sales.

As a family-owned company, Boehringer Ingelheim plans in generations and focuses on long-term success, rather than short-term profit. The company therefore aims at organic growth from its own resources with simultaneous openness to partnerships and strategic alliances in research. In everything it does, Boehringer Ingelheim naturally adopts responsibility towards mankind and the environment.

CONTENT

THE SHAREHOLDERS' PERSPECTIVE

Christian Boehringer, *Chairman of the Shareholders' Committee*

Dear Reader,

With gratitude and satisfaction we present to you Boehringer Ingelheim's positive results for 2017 in this Annual Report. This report is the proof that we reached more patients – both human and animal – and that with our medicines we made a positive contribution to their disease progression and thereby to their health.

Over the past few years, the structure and positioning of our company have undergone fundamental change. And even if the work is not quite finished, we have already successfully completed the fundamental tasks.

Boehringer Ingelheim's primary objective is and remains to maintain our independence as a family-owned company, at the same time helping people and animals with innovative medicines. We are convinced that the dedication and commitment of our staff is of great value over and above economic success. In 2017, we once again clearly demonstrated where we come from and who we are. With the global "Our FOCUS" initiative, we described our path towards innovation and growth in the future.

In times of change and upheaval in particular, this gives all our employees clear, joint orientation and motivation. We would like to expressly thank each and every one of them for successfully stepping up to the challenges of the past year and for all their energy and commitment in working to achieve our company goals.

signed by
CHRISTIAN BOEHRINGER
Chairman of the Shareholders' Committee

Our FOCUS

Joachim Hasenmaier *Michael Schmelmer* *Hubertus von Baumbach* *Andreas Neumann*

THE CORE OF THE LEITBILD

We are independent, family-owned and intend to remain so

We create Value through Innovation for our customers

We are powered by our people

Michel Pairet *Allan Hillgrove*

Dear Reader,

We thank you for your interest in our company and are pleased to inform you about Boehringer Ingelheim and the progress over the past year. On the one hand, this concerns the Annual Report with the yearly financial statements. On the other hand, we would again like to invite you to find out more about us in the accompanying “Agility” report.

2017 was a successful year for Boehringer Ingelheim with growth in all businesses. We would like to highlight our human pharmaceuticals business, which showed organic, profitable and distinctly above-market growth.

We are not, however, just looking at sales figures, but rather see them standing for patients with very different medical histories. All of us at Boehringer Ingelheim are motivated by the desire to make an important contribution to the health of people and animals. For generations, Boehringer Ingelheim employees have been researching, developing and manufacturing innovative medicines to positively change the lives of patients. We will invest relatively large sums in the research of new medicines in the future too and have set ourselves the goal, particularly in the human pharmaceuticals business, of 75 per cent of our innovations being the first for patients with the relevant therapeutic approach or mode of action.

The strategic decisions of 2015 and 2016 have laid the foundations for a new period of successful growth for Boehringer Ingelheim. We are thus focused on long-term success.

As in other sectors too, digitisation means sustained change – particularly in data-based industries like ours. With our new BI X lab and through a range of other initiatives, we are facing up to this challenge. We see opportunity here.

We have achieved a great deal over the past year. This success is reflected in the trust our customers have in us, for which we would like to thank them. We would also like to thank our partners, who accompanied and supported us on our journey over the past year. But very special thanks go to each of our employees, who stand for all that we have achieved, who faced new challenges and overcame them with dedication, and who share our passion for making a positive contribution through innovation to the health of people and animals alike.

signed by
HUBERTUS VON BAUMBACH

signed by
JOACHIM HASENMAIER

signed by
ALLAN HILLGROVE

signed by
ANDREAS NEUMANN

signed by
MICHEL PAIRET

signed by
MICHAEL SCHMELMER

CORPORATE BODIES

Shareholders' Committee

CHRISTIAN BOEHRINGER
Chairman of the Shareholders' Committee

CHRISTOPH BOEHRINGER

ERICH VON BAUMBACH JR

ISABEL BOEHRINGER

DR MATHIAS BOEHRINGER

PROF. DR DR ANDREAS BARNER

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Trustee, Martin Hilti Family Trust
President, Hilti Foundation

KURT BECK (until 31.05.2017)
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Münchener Rückversicherungs-Gesellschaft AG

DR ANDREAS KREIMEYER
Former member of the Board of Executive Directors
and Research Executive Director BASF SE

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Chairman of the Board of Management
Heraeus Holding GmbH

Board of Managing Directors

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Corporate Board Division Animal Health

ALLAN HILLGROVE
Corporate Board Division Human Pharma

SIMONE MENNE (until 31.12.2017)
Corporate Board Division Finance

DR ANDREAS NEUMANN
Corporate Board Division Human Resources

DR MICHEL PAIRET
Corporate Board Division Innovation

MICHAEL SCHMELMER (from 01.01.2018)
Corporate Board Division Finance

GROUP MANAGEMENT REPORT 2017

GROUP MANAGEMENT REPORT 2017

INFORMATION ABOUT THE GROUP

The Group's business model

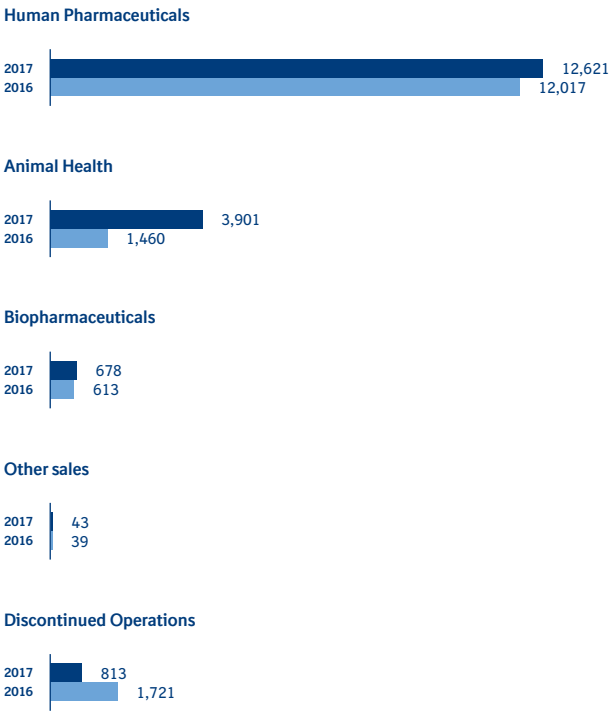
The research-based pharmaceutical company Boehringer Ingelheim has stood for innovative medicines for humans and animals for more than 130 years and is one of the world's top 20 pharmaceutical companies. The focus of the family-owned company, which has its headquarters in Ingelheim, Germany, is on the research, development, production and sale of pharmaceuticals improving health and quality of life and contributing great therapeutic benefit to both human medicine and animal health. In its three areas of business, human pharmaceuticals, animal health and biopharmaceuticals as well as with discontinued operations and other activities Boehringer Ingelheim generated net sales of almost EUR 18.1 billion in 2017, with more than 49,600 employees worldwide.

At the start of the 2017 financial year, the exchange of Boehringer Ingelheim's consumer health care business (CHC) for Sanofi's animal health business (Merial) took place. This step represented the successful completion of the strategic transaction which began in December 2015 with exclusive negotiations and underlines the company's consistent focus on innovation-oriented fields. Following the successful completion of this transaction on 1 January 2017, Boehringer Ingelheim's consumer health care business was transferred to Sanofi, while in return Boehringer Ingelheim received Sanofi's animal health division, Merial.

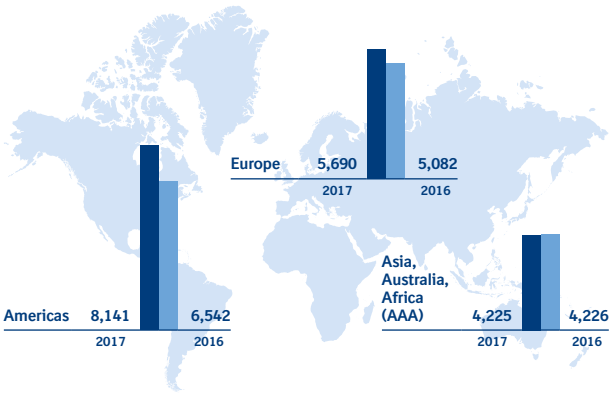
Due to changes within the group of consolidated companies numbers of the previous year are comparable to a limited extent only. We refer to the remarks within the notes to the financial statements.

Human pharmaceuticals form the core of Boehringer Ingelheim's activities. Medicines from Boehringer Ingelheim have long been standard treatments for respiratory disorders, cardiovascular diseases, metabolic diseases, oncology, diseases of the central nervous system and immunology.

Net sales by business (in EUR million)



Net sales by region (in EUR million)



In 2017, the company's biggest revenue contributor was once again SPIRIVA®, which is used to treat chronic obstructive pulmonary disease (COPD) and asthma. Moreover, PRADAXA®, which is used to prevent strokes in patients with atrial fibrillation, as well as for the prevention and treatment of thromboembolic disorders, and TRAJENTA® and JARDIANCE®, which remain on a growth path and are used to treat type 2 diabetes, also made significant contributions to Boehringer Ingelheim's success. OFEV®, which was newly introduced in 2015 and which offers people with the rare, fatal respiratory disease idiopathic pulmonary fibrosis (IPF) a new treatment option, also achieved strong growth.

The business aim of Boehringer Ingelheim is to continue to drive forward with the innovative development of its existing product portfolio through organic growth, in cooperation with its external partners. To do this, Boehringer Ingelheim operates a global research network with major facilities in Biberach, Hanover and Ingelheim (Germany), Ridgefield, Connecticut, Duluth, Georgia and St. Joseph, Missouri (USA) as well as in Vienna (Austria) and Lyon (France).

The Animal Health Business Unit has become the second largest animal health business worldwide, following the merger of Boehringer Ingelheim's existing activities with Sanofi's Merial business. The products NEXGARD®, HEARTGARD® and FRONTLINE® have been successfully incorporated into the company's product portfolio. The established swine vaccine INGELVAC CIRCOFLEX®, which is used to treat porcine circovirus type 2, remains one of the most significant products in animal health in terms of net sales.

The biopharmaceuticals business is another important growth area for Boehringer Ingelheim. Boehringer Ingelheim's biopharmaceutical activities comprise the manufacture of own-brand marketable products (such as ACTILYSE®, METALYSE® and PRAXBIND®), the process development and manufacture of new biological entities (NBEs) and biosimilars, and – as one of the world's leading companies – the process development and commercial production of biopharmaceuticals for third-party industrial customers.

In the 2017 financial year, Boehringer Ingelheim once again achieved the majority of its sales in the Americas (45%) and Europe (32%) regions. The region of Asia / Australia / Africa (AAA) is of strategic significance for the Group's future growth, making up 23% of its sales. The three biggest markets, the USA, Japan and Germany, accounted for 52% of sales last year.

Research and development (R&D)

In line with its mission statement, Boehringer Ingelheim's entrepreneurial goal is to research and develop innovative medicines and therapies for the treatment of diseases for which there are not yet satisfactory treatments available. Our aim at all times is to make a major contribution in areas where the need for treatment is high and to occupy a leading position in major indication areas, not only in human pharmaceuticals, but also within animal health, where major emphasis is on development of vaccines, antiparasites and pharmaceuticals as well as new approaches and therapies to prevent, detect and treat chronic diseases more effectively.

Boehringer Ingelheim relies on a global research network comprising its own facilities in various countries around the world as well as cooperation with public research

Research and development	2017	2016	2015	2014	2013
Expenditure in EUR million	3,078	3,112	3,004	2,654	2,743
– as % of net sales	17.0	19.6	20.3	19.9	19.5
Human Pharmaceuticals expenditure in EUR million	2,714	2,870	2,780	2,333	2,444
– as % of Human Pharmaceuticals net sales	21.5	23.9	24.8	23.1	22.4
Average number of employees	8,269	8,055	7,895	8,104	7,741
Investments in tangible assets (without investments in infrastructure) in EUR million	71	92	77	78	114

institutions, academic institutions and other biotech companies. Its own research efforts are supplemented with various cooperation and licence agreements in the field of development projects and in technologies. The company has entered into various agreements in the field of oncology that focus on highly innovative research approaches. This includes partnerships with Siamab Therapeutics and AbeXXa Biologics as well as the cooperation with the academic centres of Vanderbilt University, the University of California and the Sarah Cannon Research Institute. Partnerships with Gubra and Dicerna add to the company's own development portfolio in the area of metabolic diseases. The company also entered into new partnerships and alliances in the fields of respiratory disorders and diseases of the central nervous system (CNS).

The aforementioned partnerships are a key component of Boehringer Ingelheim's innovation strategy. They supplement our highly comprehensive development portfolio with external partnerships and thus boost the innovative capability of our own R&D. They are also evidence of Boehringer Ingelheim's solid and successful cooperation with external innovation leaders.

In July 2017, Boehringer Ingelheim established its digital laboratory BI X as an independent subsidiary. This serves as a platform for innovation in the functions of data science, agile software development and user experience design and cooperates exclusively with Boehringer Ingelheim's business areas to develop going-to-market health innovation for both human medicine and animal health.

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

In the 2017 financial year, we employed an average of 8,269 people at our R&D facilities. A total of almost EUR 3.1 billion was invested in the R&D of new medicines, corresponding to 17% of the Group's net sales, which is the level of 2016, as expected.

Human pharmaceuticals

For over a century, we have been committed to improving the lives of people living with respiratory diseases. The scientific research in this field has been important again for Boehringer Ingelheim in the year 2017. We initiated clinical trials and announced new data that will help to increase the therapeutic options for patients and their doctors with these conditions. We focused on chronic obstructive pulmonary disease (COPD), idiopathic pulmonary fibrosis (IPF), systemic sclerosis with interstitial lung disease (SSc-ILD) and progressive fibrosing interstitial lung disease (PF-ILD).

New sub-analyses of the TONADO® and OTEMTO® trials for SPIOLTO® (tiotropium/olodaterol) RESPIMAT® were presented at the European Respiratory Society (ERS) International Congress in September 2017. These were based on the new assessment of COPD patients according to the "Global Initiative for Chronic Obstructive Lung Disease" (GOLD) guidelines. The sub-analyses confirmed

that tiotropium/olodaterol provides significant benefits over tiotropium monotherapy or placebo in terms of symptom reduction and quality of life. These results prove that COPD patients benefit from dual bronchodilation with tiotropium/olodaterol from early on in their disease.

The recently published GOLD report 2018 also recommends a dual bronchodilation with a long-acting anticholinergic (LAMA) and a long-acting beta2-agonist (LABA), the substance classes as in SPIOLTO® RESPIMAT®, as a first-line treatment option for symptomatic COPD patients in GOLD groups B-D.

For patients with obstructive respiratory diseases it is important that they get the medication deep into their lungs. Therefore the inhaler plays an important role in the therapy. RESPIMAT® is an innovative inhaler that actively delivers a unique mist, meaning a person just needs to take a slow deep breath in for the medication to go deep into the lungs. Patient experience surveys showed that the majority of patients consider RESPIMAT® as easy to use.

Results from the INJOURNEY™ trial, investigating the safety and tolerability profile of nintedanib in combination with pirfenidone in treating idiopathic pulmonary fibrosis (IPF), have been published in September in the American Journal of Respiratory and Critical Care Medicine (AJRCCM). Results show that the combination of nintedanib and pirfenidone resulted in a manageable safety and tolerability profile in the majority of patients.

In March 2017 we enrolled the first patient in the INBUILD trial (a double blind, randomized, placebo-controlled trial evaluating the efficacy and safety of nintedanib over 52 weeks in patients with Progressive Fibrosing Interstitial Lung Disease (PF-ILD)). This study investigates the efficacy and safety of nintedanib in a range of progressive fibrosing lung conditions other than idiopathic pulmonary fibrosis (IPF). The approach to enroll patients with different fibrosing lung diseases in one trial, who all exhibit a progressive fibrosing behavior, offers an opportunity to these patients who would not otherwise be eligible to participate in a clinical trial.

The SENSCIS™ trial (Safety and Efficacy of Nintedanib in Systemic SClerosIS) is another example of our ongoing commitment to improving the lives of patients living with rare diseases. By end of the year the recruitment for this trial has been completed. With more than 520 patients recruited, it is the largest global prospective clinical trial in SSc-ILD to date.

Boehringer Ingelheim is strongly committed to oncology and we are leading scientific discoveries through a broad research and development programme in cancer cell directed agents, immune oncology therapies and their combinations. In 2017, we have successfully advanced our research programmes focused on delivering first-in-class treatments with breakthrough potential. To further strengthen its oncology portfolio, the company has established a series of important partnerships and strategic collaborations with many of the world's leading academic, industry and advocacy organisations as well as research driven startup companies. Our commitment to innovation has already resulted in important treatments for lung cancer.

Afatinib (GIOTRIF®/GILOTRIF®), a second-generation medicine for the treatment of a specific type of non-small cell lung cancer (NSCLC) patients and metastatic NSCLC of squamous histology, has been available to patients since 2013 in certain countries. In 2017, we received approval of GIOTRIF® in China and this product has become the standard of care in many markets in the approved indications. Additionally, Boehringer Ingelheim has initiated GioTag, a real-world study to investigate how the treatment sequence with cancer cell directed therapies can extend the chemotherapy-free treatment time for patients. The study will include patients who started treatment with Afatinib as part of standard clinical practice, followed by a third-generation medicine. This real-world study builds on the comprehensive 'LUX-Lung' trial programme for afatinib which includes nine trials including direct head to head randomized trials versus first-generation treatments.

Boehringer Ingelheim's second cancer drug on the market, VARGATEF® (nintedanib), for the treatment of advanced non-small cell lung cancer (NSCLC), was approved und launched in further markets worldwide throughout 2017. Phase II data of the LUME-Meso trial which studied the effect of nintedanib in mesothelioma, a rare and aggressive cancer that is strongly associated with asbestos contact, showed that Nintedanib in combination with standard chemotherapy could prevent the tumor to continue growing and halved the risk of disease progression. These results are meaningful for patients because there are currently only few treatment options available for this condition. Data from a phase III trial of nintedanib in mesothelioma are expected to be available in 2018.

Boehringer Ingelheim's largest therapeutic area, cardiovascular and metabolic diseases, once again achieved strong growth. Boehringer Ingelheim will continue to invest in this area.

The company will continue to supplement the regulatory product information for JARDIANCE® (empagliflozin, an SGLT2 inhibitor) worldwide in order to reflect the data on the risk of cardiovascular disease resulting from the landmark EMPA-REG OUTCOME® study. The number of prescriptions increased continuously over the course of 2017: with sales of more than EUR 1 billion, JARDIANCE® reached blockbuster status in 2017. The product was also the most frequently prescribed SGLT2 inhibitor in new to brand prescriptions. At the same time, JARDIANCE® is the only oral antidiabetic drug on the market with data in the label supporting its use to reduce the risk of cardiovascular death in people with type 2 diabetes and established cardiovascular disease. In addition, JARDIANCE® sets itself apart from its in-class competition on safety, with new data presented during the course of 2017 showing no increased risk of lower-limb amputations (LLA) and bone fractures. The development of empagliflozin in additional disease areas is ongoing. In the first quarter of 2017, the two EMPEROR sister trials (EMPEROR reduced and EMPEROR preserved), which aim to investigate empagliflozin for the treatment of people with chronic heart failure with and without diabetes were initiated and have started recruitment. In the second quarter, Boehringer Ingelheim and Eli Lilly and Company announced plans to initiate an additional new trial of empagliflozin for the treatment of people with chronic kidney disease. This trial will also enrol participants with and without diabetes and will start in 2018.

TRAJENTA® (linagliptin, a DPP-4 inhibitor), Boehringer Ingelheim's third-biggest product, registered strong growth of 17 %. The cardiovascular outcome studies CARMELINA® and CAROLINA® continue as planned. The key results of CARMELINA® are expected to be published in 2018. Both JARDIANCE® and TRAJENTA® are jointly marketed by Boehringer Ingelheim and Eli Lilly and Company.

In the anticoagulation space, 2017 saw the publication of three very important phase III studies for PRADAXA® (dabigatran etexilate) and Praxbind® (idarucizumab) at highly recognised international congresses. Each study was also simultaneously published in the prestigious New England Journal of Medicine. In March, the results of the RE-CIRCUIT® trial in atrial fibrillation patients undergoing ablation were presented at the American College of Cardiology Scientific Sessions. The data showed significantly reduced major bleeding rates compared to warfarin during the ablation procedure. The study provided highly relevant data for electrophysiology specialists and their patients. In July, the final results of the RE-VERSE AD® study of PRAXBIND® (idarucizumab) were presented at the International Society of Thrombosis and Haemostasis Biennial Congress. The data showed that PRAXBIND® immediately reversed the anticoagulant effect of PRADAXA® in patients in emergency situations. And in August, the results of the RE-DUAL PCI® study in atrial fibrillation patients following percutaneous coronary intervention with stent placement were presented at the European Society of Cardiology Congress. Using PRADAXA® in combination with a single platelet inhibitor led to a highly significant reduction of the bleeding rate when compared to the standard of care with warfarin therapy in combination with dual platelet inhibition. In addition, a number of analyses based on data from routine clinical

practice were published, including new results from the GLORIA AFTM registry. All of the above publications confirmed the established safety profile PRADAXA®.

More than 1,200 hospitals are already participating in the Angels Initiative for improved acute stroke care in Europe, which we are leading together with the European Stroke Organisation (ESO). The common goal is to optimise stroke treatment and thus to save lives.

Animal health

In its R&D work in the field of animal health, Boehringer Ingelheim traditionally concentrates on innovative vaccines for the protection of livestock and pets, as well as on pharmaceutical products for the treatment of chronic diseases. These core areas were further strengthened through the company's acquisition of Merial at the beginning of 2017 and were supplemented with a third pillar: antiparasitics.

At our facilities in Europe, Asia, Oceania and North, Central and South America, we focus on research into new drugs and the development of future therapeutic solutions. Since many vaccines are based on local pathogens and pathogen variants, it is imperative that we are present in all key market regions with local R&D and production facilities. In the past year, we invested approximately EUR 65 million in new R&D plants and the expansion of existing facilities. These investments demonstrate our commitment to strengthen animal health by means of innovative, preventive medicines and our intention to sustainably strengthen our leading position in this field.

In 2017, we initiated more than 500 clinical studies worldwide, registered over 80 patents and received more than 200 authorisations. In addition to our internal research and development (R&D), we analyse external projects or products and integrate them in our portfolio where appropriate. Obtaining approvals and expanding the geographical distribution of existing products are other important aspects of our R&D activities.

Biopharmaceuticals

Biopharmaceuticals have brought significant changes to the treatment of many diseases that severely restrict patients' lives. Since these chronic diseases are becoming more frequent, health care systems are exposed to increasing financial pressure in relation to their treatment. The introduction of biosimilars will improve the sustainability of health care systems and allow more patients to benefit from biologically produced medicines. Boehringer Ingelheim is developing biosimilars in oncology and immunology with the goal of providing further therapy options that provide genuine value for patients in these therapeutic areas.

CYLTEZO®, Boehringer Ingelheim's biosimilar to Humira® (adalimumab), was approved in 2017 in the USA and in the EU for the treatment of several chronic inflammatory autoimmune diseases in adults and children. Its approval is based on a comprehensive package of data, which documents the biosimilarity of CYLTEZO® to Humira® (adalimumab) according to analytical, pharmacological, non-clinical and clinical data. CYLTEZO® is not available in Europe or the USA at present. Boehringer Ingelheim and AbbVie are currently involved in patent litigation in the USA.

BI 695502, Boehringer Ingelheim's biosimilar candidate for Avastin® (bevacizumab), a drug used for treatment of advanced stage cancers, is in the late phase of clinical development.

Production

Human pharmaceuticals

The task of human pharmaceuticals production is the reliable market launch of our products and the supply of our patients using high-quality pharmaceuticals at competitive costs. Boehringer Ingelheim makes use of a global network comprising its own facilities, contract manufacturers and suppliers for this purpose. To be able to react in a flexible manner to the continually evolving demands of a modern production network, the company launched its strategy "From Volume to Value" in late 2015. This is currently being gradually rolled out, as planned,

and is undergoing continuous development throughout the value chain.

In the past year, Boehringer Ingelheim operated 16 plants in 11 countries; 12 plants manufacture pharmaceutical products, while three produce important chemical active substances. Boehringer Ingelheim also has one production facility for medical products. At our own production facilities, we manufacture the products of particular relevance to our Group or whose manufacturing technology requires unique expertise. Our own production capacities are appropriately supplemented by strategic partnerships with contract manufacturers. Our partners primarily focus on the manufacture of products that are in an advanced stage of their life cycle.

In the past year, important investments were approved in particular for our Ingelheim (Germany) headquarters and for our Fornovo (Italy), Sant Cugat (Spain) and Yamagata (Japan) facilities. Our Ingelheim facility is making further progress in its transformation with the goal of focusing on the initial market supply process in the future, while Fornovo will be strengthened in terms of its role of ensuring the routine supply of chemical active ingredients for our network. Sant Cugat will expand its existing product portfolio to include RESPIMAT® technology. Our investment in Yamagata is intended to meet the needs of our Japanese patients on a long-term basis at a local level.

Our "From Volume to Value" strategy is intended to optimise the underlying business processes as well as bringing greater focus to our production network and boosting its flexibility. These processes are being standardised and continuously optimised in terms of their benefit for our business. They are implemented by way of IT systems, step-by-step and throughout our process chains (end-to-end). Further core elements are the active management of our products throughout their life cycle, the optimisation of our inventories worldwide and the implementation of a high-performance global logistics and distribution strategy.

Animal health

Subsequent to the acquisition of Merial, Boehringer Ingelheim Animal Health is operating with a network of 19 facilities in 11 countries. It comprises 13 sites for manufacturing vaccines, five for pharmaceuticals and one for nutraceuticals. This industrial set-up is complemented by contract manufacturers, primarily in North and Central America as well as in Europe. We have defined a new network strategy in order to balance internal and external production subsequently to the integration of Merial and focus on core products in full alignment with business requirements. We are investing globally in foot and mouth disease research capacities and have started to consolidate the relevant network. In China, our Taizhou facility has successfully obtained the GMP-certificate.

Biopharmaceuticals

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 new biological entities (NBEs) and biosimilars for clinical testing and – as one of the globally leading companies – the process development and commercial production of biopharmaceuticals for third-party industrial customers. 15 out of the top 20 pharmaceutical companies are clients of Boehringer Ingelheim's biopharmaceuticals business. Boehringer Ingelheim covers the entire biopharmaceutical value chain, from genetic development of the cell, followed by manufacturing the active substance and filling the finished pharmaceutical product, down to the product launch and the global market supply.

By comparison with the previous year, 2017 saw an overall increase to almost full use of capacity at its network of industrial-scale production facilities. Boehringer Ingelheim's volume of production meets the continuously rising demand for ACTILYSE®, particularly for the Chinese market. The company's facility in Fremont, California, (USA), was successfully approved by the FDA and the EMA authorities for market production of the biosimilar

CYLTEZO®. Furthermore, our large-scale plant in Biberach successfully completed the registration processes for two further customer products for submission of the application for approval to the authorities. The expansion project (a new industrial-scale biopharmaceutical production facility) at Boehringer Ingelheim's site in Vienna (Austria) reached a further milestone, as the foundations for this facility were laid in summer 2017. The company's commercial facility in Shanghai (China), was also successfully put into operation. GMP hospital material was produced and delivered for studies in China and other countries in 2017, as scheduled.

Occupational safety and environmental protection

The protection of the employees, the facilities and the environment, as well as the sustainable use of natural resources and the promotion of environmental awareness, are major components of our company's mission statement and are of prime importance to Boehringer Ingelheim. Compliance with social and environmental aspects has been firmly anchored in our corporate philosophy for many years now to ensure that we can achieve sustainability for future generations.

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

For Boehringer Ingelheim, 2017 was characterised by the integration of Sanofi's animal health division (Merial) into our Group. To ensure compliance with the EHS&S duty of care, environmental risk assessments were implemented for our new facilities, integration audits were initiated, standards were aligned and processes were harmonised.

Technical support and regular EHS&S audits, both at Boehringer Ingelheim's internal facilities and at the premises of suppliers and contract manufacturers, ensure compliance with our own as well as with international standards (e.g. Pharmaceutical Supply Chain Initiative). The Supplier Code of Conduct applies to all relevant suppliers and supplements this programme. The status of environmental protection and occupational safety is continuously reviewed and potential for improvement is identified on this basis. In addition, the company addresses important current social issues that are of relevance for Boehringer Ingelheim and for the implementation of our sustainability goals. It is important for us to consult closely with stakeholders, both within our company and outside it, and to make progress in relation to key issues. We are taking a stand and formulating related position papers. We are striving to achieve continuous improvements in these areas, for the sake of our company as well as sustainability.

Boehringer Ingelheim is committed to supporting the UN's sustainable development goals (SDGs) and is making its own contribution to a sustainable future. At the 23rd UN Climate Change Conference in Bonn (Conference of the Parties, COP23) in 2017, EHS&S representatives of Boehringer Ingelheim participated.

As our contribution towards reducing global CO_2e emissions, we have set ourselves the goal of reducing our entire CO_2 emissions by 20% by 2020 as compared with 2010 values.

The health and safety of our employees is a high priority at Boehringer Ingelheim. This is reflected in our international safety standards and in the safety culture that we practise. The roll-out of the Group-wide BE SAFE initiative, which aims to further reduce the number of workplace accidents, continued in 2017. Successful workshops were held with a focus on behaviour-based safety.

Employee reporting

In 2017, Boehringer Ingelheim employed 49,610 people worldwide. This represents an increase of 8.6% on the

previous year. Boehringer Ingelheim increased the number of staff in all of its regions.

Average number of employees by region	2017	2016
Americas	12,890	11,469
Europe	26,300	24,164
Asia/Australia/Africa (AAA)	10,420	10,059
	49,610	45,692

A major success factor for the positive growth of the Group is its motivated and reliable staff. Accordingly, we are particularly committed to actively developing and supporting our employees. In order to be best prepared for the challenges ahead and as part of a comprehensive training system, we do not only set great store by the acquisition of technical expertise but also by promoting social skills.

With the integration of various experiences, cultural backgrounds and personalities, Boehringer Ingelheim creates an openness to different approaches and opinions, living up to its corporate vision "Value through Innovation". As a global company, it is important to us that the diversity of the markets is reflected in our workforce. Creating a working environment that embraces diversity and differences is one of the pillars of the corporate culture of Boehringer Ingelheim and is a contributing factor to the company's success.

In addition to competitive salaries, Boehringer Ingelheim offers other benefits to its employees. These include a range of company pension plans, flexible and home-based work options and numerous health-related benefits. As a significant segment of our corporate strategy, it is part of our Talent Management department's remit to ensure the employability of our staff, promote a wide range of opportunities for innovation at work, and motivate our employees to nurture their own talents and develop as individuals.

Vocational training has always been of major importance to Boehringer Ingelheim. As part of its understanding of social responsibility, the company offers career opportunities to a great number of young people. At the same time, we also tie a talented and well-qualified workforce of young professionals to the company against a backdrop of demographic change. In 2017, 206 young professionals started their careers with Boehringer Ingelheim in Germany in over 23 different scientific, technical and commercial fields. As of 31.12.2017, 660 young people were enrolled on our training programme.

One of the company's aims is to strengthen the appeal of Boehringer Ingelheim as a top employer for our current and future employees. Boehringer Ingelheim was the recipient of various awards for its efforts in this area in 2017. We received top marks from the auditors of the international, independent "Top Employers Institute" in relation to key areas, such as staff planning, performance management, career and succession planning as well as compensation and benefits. We received this distinction for our facilities in Germany as well as for our facilities in China, Taiwan, Brazil, Russia, Spain and Poland. The number of countries that were awarded this rating was unprecedented. This is evidence of the strong appeal and development opportunities at our company – both for employees and for potential recruits.

Social responsibility

Taking social responsibility is also an important aspect of our corporate culture. Our commitment to the well-being of our patients, employees and their families is the focus of a range of projects. In addition, we support people in need through various initiatives in countries and regions where we are active as a company. All of our company's activities also focus on protecting and maintaining the environment.

As in previous years, Boehringer Ingelheim continues to assist in providing support and in the integration of people who have fled their home country and migrants from crisis regions. It pursues a broad range of measures in this area: Boehringer Ingelheim employees in Germany are conducting integration workshops at the state centre for asylum seekers in Ingelheim. In addition, since mid-2017, the company has pursued a partnership with the Deutsche Universitätsstiftung. Through this partnership, Boehringer Ingelheim sponsors the WELCOME scholarship programme, which supports students from crisis regions. The

company also helps candidates from crisis regions and areas people are fleeing from to join our company by offering them apprenticeships or the opportunity to complete an introductory training year or an internship.

A major pillar of our social commitment is our Making More Health (MMH) initiative. Since its start in 2010, this has developed as a social entrepreneurship movement, both within our company and externally. Socially committed and sustainable activities are not limited to individual projects relating to various regions and issues. Instead, this initiative focuses on connecting with local and international partners from different sectors. Networking across all traditional visible and invisible borders is a central element of a successful social movement, in order to identify, promote and implement innovative solutions for far-reaching and complex challenges in the healthcare sector. Co-creation as a bridge between social and commercial entrepreneurship brings together social entrepreneurs and non-profit organisations from the health care sector with Boehringer Ingelheim employees and their resources. To date, within the MMH network, Boehringer Ingelheim and Ashoka – one of the world's largest non-profit organisations – have together helped more than 85 social entrepreneurs to reach 7.5 million people in the area of healthcare.

Internally, MMH has featured in Boehringer Ingelheim's HR development activities for some years now and has changed its understanding of emerging markets. The initiative is supported by the Executive in Residence (EiR) and MMH Insight India staff development programmes. As part of a network of partnerships with non-profit organisations and social enterprises in the healthcare sector, these programmes give young professionals the opportunity to support the participants at their project facilities for a certain period of time and to jointly develop projects. Above all, improving health means understanding people's environment and their everyday challenges and offering solutions where they are needed. Health awareness, affordability, accessibility of health services and acceptance play a key role here. MMH plays a role in the university sector, with the goal of helping students and lecturers to learn more about socially entrepreneurial thinking and practical activities in the development of social entrepreneurship projects.

Boehringer Ingelheim values and respects its employees' differences and actively promotes a diverse, cooperative and open working environment. We are conscious of the fact that the diversity of our markets and customers should be reflected in our workforce. For us, diversity makes for the right mix, but it is inclusion which brings out the best results from this mix. We therefore focus on encouraging an inclusive environment where this kind of diversity can thrive. Boehringer Ingelheim participated in the 5th German Diversity Day under the motto "Diversity in Companies" at its two largest German facilities, Ingelheim and Biberach, and it has been an official member of the "Diversity Charter" since early 2016.

REPORT ON ECONOMIC POSITION

Macroeconomic environment

With growth of almost 4%, the global economy was in robust form in 2017. Neither the USA's increasing protectionism nor the Brexit vote – both of which are sources of economic uncertainty – had a significant negative impact on markets. Growth in the volume of world trade outpaced global gross domestic product growth for the first time since 2011. Europe's economic recovery continued and all of the larger countries achieved stronger growth rates in the past year than in the previous year. Nonetheless, the eurozone continued to be burdened by the huge structural weaknesses of some member states. The picture for the emerging economies was mixed. Growth in Turkey declined significantly due to the political conflicts in that country. Brazil and Russia are back on track with their growth, having spent the past few years in recession particularly on account of the decline in crude oil prices.

Growth also picked up in Japan, buoyed by expansionary fiscal and monetary policies. Increasing exports under-

pinned investments. Rising wages for private households and declining unemployment stimulated consumer spending and willingness to invest in the USA. The monetary environment remained favourable despite the three interest rate hikes implemented by the American central bank, and the level of inflation was moderate.

In 2018, growth is expected in almost all world regions. A global growth level of 4% is predicted. The risks surrounding growth in Europe continue to include the possible consequences of Brexit as well as negative effects resulting from intensifying international competition in the field of taxation due to America's tax reform. In the USA, this is likely to have an additional stimulating effect on the economy. The stabilisation of oil prices will encourage fresh investments in the energy sector.

For China, a high level of growth is once again expected, even if this will be slightly weaker than in the previous year. Some larger emerging economies are likely to pick up growth due to stabilising commodity prices.

In Germany, the economy was benefiting from a broad-based upward trend. This was reflected in the lowest unemployment rate in over 25 years and lively consumer demand among private households and from other countries. The European Central Bank's low interest rate policy has stimulated demand for construction investments, while the influx of refugees has triggered growth in the level of government consumption spending. Adjusted for the low number of working days, the country's gross domestic product increased by 2.5%. Government finances registered significant surpluses, despite an expansionary spending policy. A solid economy and declining interest payments reduced the ratio of debt to below 65% of the country's gross domestic product.

In general, the increasing supply constraints on the labour market and the heavy use of capacities will somewhat limit opportunities for growth in 2018. The rise in the level of employment – which is set to drop off due to a low level of immigration and the process of demographic change – is aggravating the scarcity of skilled workers that is already apparent in some sectors. However, in overall terms, the economic upturn will continue and price-adjusted gross domestic product growth of 2.4% is thus expected. Exports will maintain a clear upward trend, driven by the improved economic outlook in the eurozone and the rest of the world. Additional budget costs are likely to be resolved following the formation of a new German government.

Consumer prices increased rapidly in 2017 as crude oil and food prices once again picked up considerably. Prices increased by 1.8% in the past year. This was thus close to the target inflation rate of the European Central Bank (ECB) for the euro currency area as a whole. Despite slight overutilisation and tensions in some areas of the economy, there is no sign of overheating in Germany.

In addition to the euro, the major currencies for the Boehringer Ingelheim Group are the US dollar (USD) and the Japanese yen (JPY). The US dollar fluctuated between USD/EUR 1.05 (January) and USD/EUR 1.19 (December) and reached a low of USD/EUR 1.20 in September. The Japanese yen remained volatile against the euro, as usual. At the end of the year, the euro had picked up against the Japanese yen, at a rate of JPY/EUR 134.78, having reached a low of JPY/EUR 115.36 in mid-April.

The global pharmaceuticals market registered growth of 3% in the 2017 financial year. This trend was driven by rising demand in the industrialised countries for cancer medicines, products for the treatment of autoimmune diseases and anti-diabetic medicines. Due to the ageing population in the industrialised countries, the industry's growth remained stable, albeit slightly weaker than in previous years. This development is also related to structural problems of some eurozone and emerging countries, which leads to decelerating growth of demands.

Course of business

Long-term and sustainably successful development forms the basis for securing the company's independence over the long term. Combined with stable earnings and sound financing, this is at the core of Boehringer Ingelheim's

strategic focus. As in previous years, we based our approach on these principles.

The year 2017 was characterised by significant changes for Boehringer Ingelheim; these were changes that also represented important steps for the company's future. The completion of the exchange of our consumer health care business for Sanofi's animal health business (Merial) at the turn of the year was one of the biggest changes of the past few years. This transaction will significantly improve our market position in the field of animal health and will establish us as one of the largest global players in this segment.

Boehringer Ingelheim recorded net sales of EUR 18,056 million in the 2017 financial year, which corresponds to an increase of 13.9% compared with the previous year's figure of EUR 15,850 million. The exchange rate developments on the foreign exchange markets and the associated exchange rate effects had only a slight impact. Currency adjusted, Boehringer Ingelheim's growth rate stood at 15.7%.

With sales of EUR 8,141 million, the Americas region represents around 45% of our total sales and remains the biggest market for Boehringer Ingelheim. The strong increase in sales on the previous year (24.4%) is mainly due to the purchase of Merial. The Europe region likewise registered strong sales growth (12.0%) and reached EUR 5,690 million. Accordingly, as in the previous year, 32% of the Group's sales were achieved in this region. The Asia/Australia/Africa (AAA) region once again registered growth. Currency-adjusted sales increased here by 4.7%. Boehringer Ingelheim realised revenues of EUR 4,225 million in this region, corresponding to a share of around 23% of the Group's total revenues.

Net sales by region (in EUR million)	2017	2016	Change	currency adjusted
Americas	8,141	6,542	+24.4%	+31.0%
Europe	5,690	5,082	+12.0%	+6.3%
Asia/Australia/Africa (AAA)	4,225	4,226	+0.0%	+4.7%

Overall, sales growth exceeded expectations. Supported by good results from clinical trials, we have been able to place promising new products on the market and successfully push ahead with well-established products. On the other hand, we are experiencing an increasingly difficult market situation with constantly challenging market access and growing price pressure in our key markets. Overall, the company has asserted itself well despite the difficult conditions and has laid the foundations for future growth.

Boehringer Ingelheim recorded an operating income of EUR 3,487 million, corresponding to a return on sales of 19.3%, which is 1.2 percentage points above the previous year's return on sales. The operating income includes significant positive (EUR 1,183 million) and negative (EUR 1,492 million) extraordinary effects, which are mainly associated with the exchange of business areas with Sanofi. Despite this negative impact amounting to EUR 309 million, operating income increased by EUR 615 million in absolute terms as a result of the positive sales growth.

The financial income was negatively affected by interest effects from pensions and similar liabilities and the holding income reduced due to an impairmennt of a related company, income before taxes was therefore only slightly higher than in the previous year.

Key figures (in EUR million)	2017	2016	Change
Net sales	18,056	15,850	+13.9%
Operating income	3,487	2,872	+21.4%
Return on net sales	19.3%	18.1%	

Tax expenses were also influenced by significant extraordinary effects. Tax expenses in the current period include tax expenditure due to the disposal of the company's consumer health care business. Moreover, in the USA, a tax reform was approved on 22 December 2017 through the "Tax Cuts and Jobs Act". This required the revaluation of deferred tax assets and liabilities based on the corporate income tax rate enacted into law as at the balance sheet date for future financial years. This likewise had a significant negative impact on tax expenses.

Overall, Boehringer Ingelheim recorded a very positive development of the operating business during the 2017 financial year despite the negative one-time effects related to the integration of the Merial animal health business and the sale of the consumer health care business. Due to by far the highest tax payments in the company's history and the effects connected to the US tax reform, the Boehringer Ingelheim Group ended the year with a group loss of EUR 223 million (2016: group profit of EUR 1,853 million).

Earnings position

In the past financial year, Boehringer Ingelheim's business activities were divided into human pharmaceuticals, animal health and biopharmaceuticals. The consumer health care business that was sold to Sanofi on 1 January 2017 has been reported under discontinued operations. In 2017, this still includes production and other services not yet completed within the scope of transferring business to Sanofi.

Net sales by businesses (in EUR million)	2017	2016	Change	currency adjusted
Human Pharmaceuticals	12,621	12,017	+5.0%	+6.9%
Animal Health	3,901	1,460	+167.2%	+170.7%
Biopharmaceuticals	678	613	+10.6%	+10.7%
Other sales	43	39	+10.3%	+8.7%
Discontinued Operations	813	1,721	−52.8%	−52.1%

Human Pharmaceuticals

With around 70% of total revenue, human pharmaceuticals is the main pillar of Boehringer Ingelheim's business activities. In 2017, revenues amounted to EUR 12,621 million. This is equivalent to a change of +5.0% (+6.9% currency adjusted) compared with the previous year. The positive sales growth trend has resulted, in particular, from the successful placement of innovative products as well as the solid market position of established medicines. The emerging markets and the US market were the key growth drivers here. We are continuing to experience increasing price pressure, however, particularly for established medicines, in many of the major markets. Overall, Boehringer Ingelheim was again able to assert itself well in this difficult environment in 2017 and has laid the foundations for further growth.

As in previous years, SPIRIVA®, which is used to treat chronic obstructive pulmonary disease (COPD), was once again the biggest contributor to sales in 2017. It achieved revenues of EUR 2,826 million in the reporting period, which was thus slightly below the previous year's level (EUR 2,995 million). In Europe in particular, sales of SPIRIVA® have declined significantly due to the increased level of generic competition on account of the loss of the relevant patent.

The second biggest sales contributor for Boehringer Ingelheim, the anticoagulant PRADAXA®, recorded sales of EUR 1,438 million, which corresponds to an increase over the 2016 level (+3.8%).

At EUR 1,008 million, the medicine JARDIANCE®, which is used for the treatment of type 2 diabetes, achieved sales in excess of one billion euros for the first time in 2017 (+132.8%).

Net sales (in EUR million)	2017	2016	Change
SPIRIVA®	2,826	2,995	−5.6%
PRADAXA®	1,438	1,385	+3.8%
TRAJENTA®/JENTADUETO®	1,333	1,128	+18.2%
JARDIANCE®	1,008	433	+132.8%

With regard to the regional distribution of sales, the USA, with a share of 40%, was once more by far the largest market. Here, Boehringer Ingelheim generated sales of EUR 5,096 million, which corresponds to an increase of 18.5% compared with the previous year (+21.0% currency adjusted). This increase was both volume and price driven.

The second-biggest market, Europe, accounted for 31%, with revenues of EUR 3,965 million. Sales decreased by 2.7% compared to 2016 (EUR 4,076 million). Exchange rate effects did not have any significant influence on the sales trend. In Europe, the price pressure on SPIRIVA® and declining sales of other established brands had an impact.

Net sales by region (in EUR million)	2017	2016	Change
USA	5,096	4,300	+18.5%
Europe	3,965	4,076	−2.7%
Emerging Markets	2,145	1,901	+12.8%
Japan	1,415	1,740	−18.7%

In the emerging markets, sales increased by 12.8% to EUR 2,145 million (currency adjusted +14.7%). Sales in the previous year had amounted to EUR 1,901 million. Due to the expiry of the patent for MICARDIS®, sales in Japan decreased by 18.7% to EUR 1,415 million. The increased level of sales for other products was unable to compensate for this effect. This was in line with our expectations.

Animal health

Revenues from products in the animal health business increased to EUR 3,901 million in the past financial year due to the acquisition of Merial's activities, corresponding to a 167.2% increase on the previous year (+170.7% currency adjusted).

Net sales (in EUR million)	2017	2016	Change
NEXGARD®	546	0	n.a.
FRONTLINE®	381	0	n.a.
INGELVAC CIRCOFLEX®	302	283	+6.7%
HEARTGARD®	284	0	n.a.

All of the Group's regions benefited from this sales growth. Its four best-selling products include three products from the Merial group, NEXGARD®, FRONTLINE® and HEARTGARD®.

Net sales by region (in EUR million)	2017	2016	Change
USA	1,683	662	+154.2%
Europe	968	393	+146.3%
METAsia	954	337	+183.1%
Latin America	296	68	+335.3%

The product INGELVAC CIRCOFLEX® once again achieved sales growth. With sales of EUR 302 million, it achieved a growth rate of 6.7% compared to the previous year.

Biopharmaceuticals

Sales for 2017 in biopharmaceutical contract manufacturing amounted to EUR 678 million, which represents growth of 10.6% compared with the previous year.

Presentation of expenditure and income

Cost of materials were 31.4% higher than in the previous year (EUR 2,643 million), coming in at EUR 3,474 million. This represented a cost of materials ratio of 19.2%. Personnel expenses amounted to EUR 4,934 million (+8.0%), corresponding to a personnel cost ratio of 27.3%, which was thus 1.5 percentage points lower than the previous year.

Depreciation and amortisation recorded an increase of EUR 343 million (+55.3%) to EUR 963 million. Other operating expenses rose by 8.8% compared with the previous year, coming in at EUR 8,334 million. Among other items, this cost category includes commission and licence payments that are dependent on sales.

Operating income was 21.4% higher than the previous year (EUR 2,872 million), coming in at EUR 3,487 million. This was influenced by significant positive and considerably higher negative extraordinary factors and one-time effects, particularly related to the exchange of business areas with Sanofi and the reversal of provisions. Adjusted for these extraordinary effects, operating income was considerably higher than in the previous year. This exceeded our expectations.

In the reporting period, the financial income amounted to EUR −330 million, down by EUR 254 million compared with the year 2016. This was mainly due to interest effects resulting from pensions and similar obligations. Holding income also decreased, in particular due to an impairment loss on a related company investment.

Despite the decrease in the financial income and holding inome, income before taxes amounted to EUR 2,856 million and was thus EUR 64 million (+2.2%) higher than in the previous year. Tax expenses were influenced by significant extraordinary effects. Tax expenses in the current period include tax expenditure due to the disposal

of the company's consumer health care business. Moreover, in the USA, a tax reform was approved on 22 December 2017 through the "Tax Cuts and Jobs Act". This required the revaluation of deferred tax assets and liabilities based on the corporate income tax rate enacted into law as at the balance sheet date for future financial years. This likewise had a significant negative impact on tax expenses.

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 recognised as tax expenses. Instead, these taxes are presented as part of withdrawals from Group equity. Taking this extraordinary effect into account, the actual tax ratio is markedly higher than the figure shown in the profit and loss statement.

Overall, despite the positive business development and the significant increase in its operating income the Boehringer Ingelheim Group ended the year with a consolidated loss of EUR 223 million (2016: consolidated profit of EUR 1,853 million), due to by far the highest tax payments in the company's history and the effects connected with the US tax reform.

Financial position

Boehringer Ingelheim's financial management instruments and methods are aimed at securing liquidity, minimising financial risks and optimising the cost of capital with an appropriate capital structure. Our financial activities are therefore geared towards supporting the business strategy.

As a global company, exchange rate volatility has a significant impact on Boehringer Ingelheim's financial performance. The importance of our US business and the associated supply relationships mean that the exchange rate development of the US dollar constitutes the greatest individual risk. Within the framework of Group-wide financial reporting, foreign exchange risk is calculated and generally hedged through derivative financial instruments. The nature and scope of these measures are set out in our Group guidelines and are regularly discussed and approved by the relevant committee in a standardised process.

Investments are of particular importance to Boehringer Ingelheim from a strategic point of view. Continuous investment is a requirement for long-term development of the company and forms the basis for the profitable growth of our business activities.

A total of EUR 1,023 million was invested in tangible and intangible assets in the year under review.

In April 2017, the groundbreaking ceremony took place for the expansion of biopharmaceutical production in Vienna (Austria). This investment with a volume of EUR 700 million, including infrastructure measures, is the biggest single investment in Boehringer Ingelheim's company history. A further 500 new jobs will thus be created at what has been a significant facility for decades.

A new biopharmaceutical production facility was also opened in Shanghai (China). More than 100 new jobs were created here. In an initial investment phase, more than EUR 70 million has already been invested in this project. This facility is the first and, to date, the only biopharmaceutical cell culture production facility launched by a leading international biopharmaceutical manufacturer in China. With its global network of biopharmaceutical production facilities in Biberach (Germany), Vienna (Austria), Fremont, California (USA) and now Shanghai (China), Boehringer Ingelheim's contract manufacturing business, Boehringer Ingelheim BioXcellence™, is well placed to supply innovative products so as to reliably meet the strong rise in demand from the biopharmaceutical industry not only in China, but also worldwide.

Cash flow from operating activities amounted to EUR 2,624 million in 2017. Despite the significantly higher operating income, this represented a slight decline on 2016 (EUR 2,888 million). In contrast to provision releases in 2017 the operating income of the previous year included an increase in provisions. Cash flow from investments (- EUR 5,115 million) was mainly impacted by the

cash settlement for the exchange of business areas with Sanofi and tax payments resulting from the sale of our consumer health care business. The cash outflow from financing activities (- EUR 1,206 million) mainly includes the repayment of financial liabilties of Merial companies to their previous holding company Sanofi. Overall, after taking into consideration exchange effects and changes within the group of consolidated companies, this led to a decrease in the Boehringer Ingelheim Group's financial funds of EUR 3,859 million to EUR 8,130 million.

Net assets

In the 2017 financial year, Boehringer Ingelheim's total assets amounted to EUR 28,386 million, an increase of EUR 2,247 million (+8.6%) as compared with the previous year. This was due to the acquisition of Merial. Tangible and intangible assets amounted to EUR 9,239 million.

As at the end of the year, financial investments amounted to EUR 5,830 million, which corresponds to a decrease of EUR 262 million on the previous year's value. Inventories showed growth of 18.3% to EUR 3,087 million. Trade receivables rose by EUR 91 million to EUR 3,146 million in 2017. Liquid funds, including securities within current assets, stood at EUR 3,071 million (previous year: EUR 7,005 million).

In view of the aforementioned changes, Group equity amounted to EUR 10,657 million and thus covers the value of the Group's tangible and intangible assets. In addition to equity, the pension provisions and long-term accounts payable and loans are also available to the Group in the long term. The total of these three items amounted to EUR 15,080 million in 2017, representing a share of 53.1% of the total assets. Consequently, long-term disposable capital covers all intangible and tangible assets, as well as trade receivables.

The difference from capital consolidation increased to EUR 1,729 million (2016: EUR 52 million), exclusively driven by the exchange of our consumer health care business for Sanofi's animal health business.

While other provisions were 3.7% higher than the previous year and amounted to EUR 6,689 million, accounts payable and loans also increased in the past year by 1.0%, totalling EUR 2,004 million.

The status already shown in the financial position remains resoundingly positive on both the balance sheet and in the respective balance sheet ratios. To sum up, Boehringer Ingelheim's net assets, financial and earnings position confirm its credentials as a soundly financed and profitable company.

RISK REPORT

Risk and opportunity management

The aim of the risk management system implemented at Boehringer Ingelheim is to identify business-specific risks and, in particular, risks that jeopardise the continued existence of the company as early as possible, to assess them and to reduce them to a reasonable level by means of suitable measures.

When assessing the risks in the context of holistic risk management, we also endeavour to take into account the resulting opportunities. Opportunity management is based on the strategies and objectives of the company, 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 and innovative pharmaceutical company, the current research and development activities are naturally considered a relevant opportunity. Relevant projects have already been illustrated in the research and development chapter.

The persons responsible for the key businesses and functions are included in the process of calculating and assessing risks. The Group-wide risk and information system ensures that all identified risks are analysed and assessed carefully. Following an appropriate classification into

various categories, adequate countermeasures 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 compliance with 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 optimisations were initiated as necessary.

Individual risks

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

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

Financial risks

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

Currency risks

The global orientation of our business activities results in currency risks due to exchange rate volatility, particularly with regard to the US dollar and Japanese yen. 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 thus controllable.

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 sector. 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 to be in a position to respond to negative changes in a timely manner. These risks are therefore regarded as concrete.

Financial investment and shareholding risks

The Group pursues a defensive investment strategy in the management of its financial assets. This is reflected in the orientation of its portfolio, which is focused on European Economic and Monetary Union (EMU) government bonds with top credit ratings and short-term investments at selected banks, so that this results in a concrete and thus controllable risk for the major part of the financial investments. The net book value of some of the strategic investments in related companies is more affected by market and business circumstances, which leads to a higher volatility of 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.

Liability risks

The marketing and sale of pharmaceuticals are exposed to a potential product liability risk. Boehringer Ingelheim

currently has product liability insurance covering 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 or only in parts cover a specific liability risk, the remaining risk exposure has been covered by a provision.

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 regard this risk as abstract.

Patent protection risks

Protection of innovations through trademark, brand and patent rights is of particular importance to Boehringer Ingelheim as a research 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 risks are regarded as concrete.

Production and environmental risks

Our quality management system and compliance processes are continuously optimised 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.

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

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

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. Regardless of their ethnic background, gender or religion, we offer all company employees development opportunities based on their vocational skills, social expertise, personal aptitudes and willingness to take on responsibility in accordance with the needs of the company. In view of the countermeasures described above, the risk is regarded as concrete.

Industry-specific risks

Boehringer Ingelheim is exposed to business risks specific to the pharmaceutical industry. Some of these risks materialised in the past financial year and are increasing in significance as a result of their impact on Boehringer Ingelheim. They will continue to be classed as abstract.

In addition to the loss of exclusivity of products established on the market and risks associated with the development and registration of new products, these risks increasingly include changing and restrictive requirements relating to pricing and reimbursement 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 caused by the state reimbursement systems. Boehringer

Ingelheim is therefore 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, financial or earnings position that could jeopardise the continued existence of Boehringer Ingelheim.

REPORT ON EXPECTED DEVELOPMENTS

As in 2016, the year under review was an intense and challenging time for Boehringer Ingelheim, during which we laid the foundations for the sustainable development and long-term growth of our company with several major decisions.

The consistent focus of our business on innovation-oriented fields is attested by the strategic exchange of Sanofi's animal health business (Merial) and Boehringer Ingelheim's consumer health care business. The contract for this exchange was signed in June 2016 and the transaction was successfully closed on 1 January 2017. This transaction will not only improve the competitiveness of our animal health business in the industry's important growth markets, but will enable us to offer our customers worldwide even more innovation and added value at a very high level by pooling the complementary product portfolios of Merial and Boehringer Ingelheim, the existing technology platforms for vaccines and anti-parasitic as well as pharmaceutical speciality products.

The increasingly difficult market environment and increased unpredictability of doing business posed major challenges for the entire pharmaceutical industry and will continue to require significant attention from Boehringer Ingelheim in 2018, too. With regard to competitiveness, it is even more important, therefore, that we retain our scope for growth and innovation so that we can continue to be successful on the market in the future. With regard to the many changes in healthcare systems and the increasing price pressure, particularly for well-established medicines in many major markets, and with regard to increasing challenges to market access for new products, we only expect low growth impetus for the pharmaceutical industry in the coming year. Boehringer Ingelheim has asserted itself well in 2017 despite the difficult conditions and has laid the foundations for further growth.

For 2018, we presume that revenue will continue to grow slightly on a comparable basis (i.e. without discontinued operations)

Research and development expenses remained high in 2017, in line with our strategy to drive growth and promote new products in the future primarily with products from our own research and development facilities. We invest in this area with care after close investigation of the therapeutic benefit and the associated prospects for success. Our comprehensive portfolio of prospective products with promising study outcomes, along with newly approved products with significant sales potential, justifies our high level of investment in research and development. For 2018, we envisage a slight increase in our investments in the research and development of new pharmaceuticals.

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. In this context, also the increasing cost pressure in healthcare systems has to be particularly emphasised, leading to decreasing willingness to adequately recognise large amounts invested into the development of new medicines. As a result, there is significant price pressure in all major markets for prescription medicines. In conjunction with longer planning and development cycles for new products, this makes business less predictable and requires us to recognise and seize opportunities quickly on the one hand, while sub-

jecting costs and strategies to continual monitoring and adjustments on the other hand. To this end, we have launched initiatives over the past few years to accelerate our reaction to changes and to reduce organisational complexities as well as to lower our cost base in order to create potential for investments and to secure the company's long-term success. With the difficult market environment on the one hand, and the potential resulting from the measures we have introduced as well as promising new product launches on the other hand, we plan to see a 2018 operating income which is on a comparable basis slightly above last year's level.

As a family-owned company, Boehringer Ingelheim's primary aim is to maintain the firm's independence and competitiveness. As such, long-term and sustainable organic growth still takes precedence over short-term profit targets. We are confident that we will achieve our ambitious targets thanks to our great innovative strength based on a comprehensive portfolio of prospective products, our global presence and the support of our highly qualified and motivated employees. Current product launches and expansions in emerging markets will boost growth in all our areas of business. We will stand by our vision "Value through Innovation" and hence research and develop innovative products that offer high medical benefits and bring them to the market. As a result of our efforts, we will provide new medicines that will enable doctors to treat patients with novel therapies more effectively.

CONSOLIDATED FINANCIAL STATEMENTS 2017

OVERVIEW OF THE MAJOR CONSOLIDATED COMPANIES

C. H. BOEHRINGER SOHN AG & CO. KG*

BOEHRINGER INGELHEIM VETMEDICA GMBH

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

BRAZIL D P R
- Merial Saude Animal Ltda., *São Paulo*

CHINA D P R
- Merial Animal Health Co. Ltd., *Nanchang*

DENMARK D P R
- Merial Norden A/S, *Hoersholm*

FRANCE D P R
- Merial S.A.S., *Lyon*

ITALY D P
- Merial Italia S.p.A., *Milano*

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

PUERTO RICO P
- Merial Barceloneta, LCC, *Barceloneta*

UNITED KINGDOM D P
- Merial Animal Health Ltd., *Harlow*

GERMANY D P R
- Boehringer Ingelheim Pharma GmbH & Co. KG, *Ingelheim*
- Boehringer Ingelheim GmbH, *Ingelheim*
- Boehringer Ingelheim microParts GmbH, *Dortmund*
- Boehringer Ingelheim Biopharmaceuticals GmbH, *Ingelheim*
- Boehringer Ingelheim Veterinary Research Center GmbH & Co. KG, *Hanover*

BOEHRINGER INGELHEIM EUROPE GMBH

AUSTRIA D P R
- Boehringer Ingelheim RCV GmbH & Co. KG, *Vienna*
- Boehringer Ingelheim Pharma Ges.m.b.H., *Vienna*

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

FINLAND D
- Boehringer Ingelheim Finland Ky, *Espoo*

NORWAY D
- Boehringer Ingelheim Norway KS, *Asker*

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

BOEHRINGER INGELHEIM INTERNATIONAL GMBH

AUSTRIA R
- Forschungsinstitut für Molekulare Pathologie Gesellschaft mbH, *Vienna*

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

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

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

USA D P R
- Merial, Inc., *Duluth, Georgia*
- Merial Select, Inc., *Gainesville, Georgia*

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

*Sole, personally liable, managing shareholder: Boehringer AG

C. H. BOEHRINGER SOHN GRUNDSTÜCKSVERWALTUNG GMBH & CO. KG

BOEHRINGER INGELHEIM AUSLANDSBETEILIGUNGS GMBH

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

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

BRAZIL
D P
- Boehringer Ingelheim do Brasil Quimica e Farmaceutica Ltda., *São Paulo*
- Solana Agro Pecuaria Ltda., *Arapongas*

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

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

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

COLOMBIA
D P
- Boehringer Ingelheim S.A., *Bogotá*

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

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

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

GREECE
D P
- Boehringer Ingelheim Ellas AE, *Athens*

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

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

IRELAND
D
- Boehringer Ingelheim Ireland Limited, *Dublin*

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

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

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

THE NETHERLANDS
D P
- Boehringer Ingelheim B.V., *Alkmaar*
- Boehringer Ingelheim Animal Health Operations B.V., *Alkmaar*

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

PORTUGAL
D
- Boehringer Ingelheim Lda., *Lisbon*
- Unilfarma Lda., *Lisbon*

SINGAPORE
D
- Boehringer Ingelheim Singapore Pte. Ltd., *Singapore*

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

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

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

SWEDEN
D
- Boehringer Ingelheim AB, *Stockholm*

SWITZERLAND
D
- Boehringer Ingelheim (Schweiz) GmbH, *Basel*

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

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

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

UNITED KINGDOM
D
- Boehringer Ingelheim Ltd., *Bracknell*

USA
D P R
- Boehringer Ingelheim Corp., *Ridgefield, Connecticut*
- Boehringer Ingelheim Pharmaceuticals, Inc., *Ridgefield, Connecticut*
- Boehringer Ingelheim USA Corporation, *Ridgefield, Connecticut*
- Boehringer Ingelheim Vetmedica, Inc., *St. Joseph, Missouri*
- Boehringer Ingelheim Fremont, Inc., *Fremont, California*

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

CONSOLIDATED BALANCE SHEET

Assets (in millions of EUR)	Notes [1]	31.12.2017	31.12.2016
Intangible assets	(4.1)	5,372	550
Tangible assets	(4.2)	3,867	3,045
Financial assets	(4.3)	5,830	6,092
Fixed assets		**15,069**	**9,687**
Inventories	(4.4)	3,087	2,610
Accounts receivable and other assets	(4.5)	4,506	4,083
Securities		0	402
Cash and cash equivalents		3,071	6,603
Current assets		**10,664**	**13,698**
Prepaid expenses		334	334
Deferred taxes		2,307	2,420
Exceeding amount of plan assets		12	0
Total assets		**28,386**	**26,139**

Liabilities and equity (in millions of EUR)	Notes [1]	31.12.2017	31.12.2016
Shareholders' capital		178	178
Group reserves		10,868	11,220
Balance sheet currency conversion difference		−388	−71
Equity attributable to the parent company		**10,658**	**11,327**
Non-controlling interests		−1	0
Group equity		**10,657**	**11,327**
Difference from capital consolidation		**1,729**	**52**
Provisions	(4.6)	12,728	11,937
Accounts payable and loans	(4.7)	2,004	1,984
Liabilities		**14,732**	**13,921**
Deferred charges		514	543
Deferred taxes		754	296
Total liabilities and equity		**28,386**	**26,139**

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

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

CONSOLIDATED PROFIT AND LOSS STATEMENT

(in millions of EUR)	Notes [1]	2017	2016
Net sales	(5.1)	18,056	15,850
Changes in finished goods and work in process		– 291	198
Other own work capitalised		16	10
Other operating income	(5.2)	3,411	2,306
Total revenues		**21,192**	**18,364**
Cost of materials	(5.3)	– 3,474	– 2,643
Personnel expenses	(5.4)	– 4,934	– 4,570
Amortisation of intangible assets and depreciation of tangible assets	(5.5)	– 963	– 620
Other operating expenses	(5.6)	– 8,334	– 7,659
Operating income		**3,487**	**2,872**
Financial income	(5.7)	– 330	– 76
Holding income	(5.8)	– 301	– 4
Income before taxes		**2,856**	**2,792**
Income taxes [2]	(5.9)	– 3,085	– 943
Income after taxes		**– 229**	**1,849**
Net loss/income	(5.10)	– 229	1,849
Non-controlling interests		6	4
Group loss/profit		**– 223**	**1.853**

[1] For explanations, see relevant section in the Notes to the consolidated financial statements.
[2] Due to legal requirements the disclosure of the shareholders' personal taxes arising from consolidated business activities as tax expenses is not allowed. These taxes are shown as withdrawals from the group reserves.

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

CASH FLOW STATEMENT

(in millions of EUR)	2017
Income after taxes (including third-party share)	– 229
Amortisation of intangible assets and depreciation of tangible assets [1]	963
Change in provisions for pensions	56
Change in other provisions	– 255
Other non-cash income and expenses	610
Gain/loss on disposals of fixed assets	– 6
Change in inventories	305
Change in accounts receivable and other assets not related to investing or financing activities	0
Change in trade accounts payable and other liabilities not related to investing or financing activities	– 60
Interest income/interest expenses (net)	45
Other income from investments	– 12
Income/expenses of extraordinary magnitude or significance	– 1,006
Income taxes	3,085
Cash receipts of extraordinary magnitude or significance	255
Income taxes paid	– 1,127
Cash flow from operating activities	**2,624**
Investments in intangible assets	– 151
Investments in tangible assets	– 872
Investments in non-current financial assets [1]	– 30
Investments in consolidated companies	– 4,299
Proceeds from disposals of intangible assets	25
Proceeds from disposals of tangible assets	25
Proceeds from disposals of non-current financial assets [1]	9
Cash receipts of extraordinary magnitude or significance	1,125
Interest received	20
Income from dividends	12
Income taxes paid due to sale of businesses	– 979
Cash flow from investing activities	**– 5,115**

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

CASH FLOW STATEMENT

(in millions of EUR)	2017
Cash receipts from grants	5
Interest paid	– 65
Cash payment to owners of parent entity	– 198
Cash repayments of loans	– 948
Cash flow from financing activities	**– 1,206**
Change in liquid funds from cash relevant transactions	**– 3,697**
Changes in liquid funds due to change of consolidated companies	273
Changes in liquid funds due to exchange rate movements	– 435
Financial funds [2] as of 1.1.	**11,989**
Financial funds [2] as of 31.12.	**8,130**

[1] Excl. fixed-asset securities
[2] Liquid funds, securities within fixed and current assets
(+) = source of funds, (-) = use of funds

STATEMENT OF CHANGES IN GROUP EQUITY

(in millions of EUR)	Shareholders' capital [1]	Group reserves [2]	Balance sheet currency conversion difference	Equity attributable to the parent company	Non-controlling interests	Group equity
Balance as of 31.12.2015	**178**	**9,515**	**– 94**	**9,599**	**4**	**9,603**
Withdrawals	0	– 152	0	– 152	0	– 152
Net income	0	1,853	0	1,853	– 4	1,849
Other changes	0	4	0	4	0	4
Currency effects	0	0	23	23	0	23
Balance as of 31.12.2016	**178**	**11,220**	**– 71**	**11,327**	**0**	**11,327**
Withdrawals	0	– 145	0	– 145	0	– 145
Net loss	0	– 223	0	– 223	– 6	– 229
Changes in consolidated companies	0	16	– 21	– 5	5	0
Currency effects	0	0	– 296	– 296	0	– 296
Balance as of 31.12.2017	**178**	**10,868**	**– 388**	**10,658**	**– 1**	**10,657**

[1] The shareholders' capital consists of the equity of C. H. Boehringer Sohn AG & Co. KG and C. H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG. The shareholders' capital consists only of the limited partner's capital contribution.
[2] The shareholders' personal taxes arising from consolidated business activities are shown as withdrawals from the group reserves. As of 31 December 2017 a negative capital account of one limited partner with the amount of EUR 8 million (previous year: EUR 6 million) was shown as a net item within the group reserves. The liability of this limited partner reinstated in the amount of EUR 10,000.

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

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

1 Principles and methods

1.1 General principles

The consolidated financial statements of Boehringer Ingelheim for the 2017 financial year were prepared in accordance with Section 264a of the German Commercial Code (HGB), in line with the legal requirements to prepare consolidated financial statements under Section 290 et seq. HGB.

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

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

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

1.2 Registry information

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

1.3 Information on companies included in the consolidation

The parent company of the Boehringer Ingelheim Group is C. H. Boehringer Sohn AG & Co. KG, Ingelheim. Boehringer AG, Ingelheim, is the sole personally liable managing shareholder of this company.

Besides C. H. Boehringer Sohn AG & Co. KG, there is C. H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG whose general partner is controlled by C. H. Boehringer Sohn AG & Co. KG.

The Boehringer Ingelheim Group consists of a total of 181 affiliated companies in Germany and abroad. In addition to C. H. Boehringer Sohn AG & Co. KG and C. H. Boehringer Sohn Grundstücksverwaltung GmbH & Co. KG, a further 155 companies in which C. H. Boehringer Sohn AG & Co. KG directly or indirectly holds the majority of voting rights have been included in the consolidated financial statements under full consolidation rules.

In accordance with Section 296 (2) HGB, 22 companies were not included in the consolidation in the reporting year, as they are individually and collectively insignificant to the Group's net assets, financial and earnings position. The total amount of the sales, equity and net income for the year of the companies not included in consolidation accounts for less than 1% of the aggregated Group financial statements totals.
For two further affiliated companies there are ongoing restrictions on control due to the terms of the articles of association. These companies were also not consolidated in accordance with Section 296 (1) No. 1 HGB.

The total number of affiliated companies increased by 38 compared to the previous year:

- 36 companies were acquired in the exchange of business areas between Boehringer Ingelheim and Sanofi completed on 1 January 2017.
- Two companies (Pharmaton S. A. and SSP Co. Ltd.) were sold in the exchange of business areas between Boehringer Ingelheim and Sanofi.
- Seven companies were founded.
- Two companies lost their separate legal identity by merger (Boehringer Ingelheim Animal Health GmbH and Merial GmbH: the latter was acquired in the exchange of business areas between Boehringer Ingelheim and Sanofi).
- One unconsolidated affiliate company was liquidated.

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

- Boehringer Ingelheim GmbH, Ingelheim
- Boehringer Ingelheim Europe GmbH, Ingelheim
- Boehringer Ingelheim Secura Versicherungsvermittlungs GmbH, Ingelheim
- Boehringer Ingelheim Grundstücksgesellschaft mbH, Ingelheim
- Boehringer Ingelheim Finanzierungs GmbH, Ingelheim
- Boehringer Ingelheim R&D Beteiligungs GmbH, Ingelheim
- Boehringer Ingelheim Venture Fund GmbH, Ingelheim
- Boehringer Ingelheim Invest GmbH, Ingelheim

The following subsidiary companies were exempt from the duty to prepare and disclose annual financial statements and management reports in accordance with Section 264b HGB:

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

Two joint ventures acquired in the exchange of business areas between Boehringer Ingelheim and Sanofi have not been included in the consolidated statements either using the proportionate method or the equity method, since they are not material.

In accordance with Section 311 (2) HGB, associated companies were also not included using the equity method due the lack of significance.

1.4 Consolidation methods

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

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

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

1.5 Currency translation

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

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

Using the modified closing date rate method, the asset and liability items of the annual financial statements prepared in foreign currency were translated into euros using the average spot exchange rate as at the balance sheet date, with the exception of equity, which was translated using the historical rate. Items included in the profit and loss statement were translated into euros using the average rate. The resulting translation difference was reported within consolidated equity below the reserves in “Balance sheet currency conversion difference”. For annual financial statements from countries with hyperinflation, significant foreign currency items were translated with prior year exchange rates (temporal method) to improve the true and fair view of the Group’s net assets, financial and earnings position.

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

	Closing rate		Average annual rate	
	31.12.2017	31.12.2016	2017	2016
US dollar	1.20	1.05	1.13	1.11
Japanese yen	135.01	123.40	126.66	120.33
Pound sterling	0.89	0.86	0.88	0.82
Chinese renminbi	7.80	7.32	7.63	7.35

2 Accounting policies

2.1 Fixed assets

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

Intangible assets	2 to 15 years
Buildings	20 years
Technical equipment and machinery	10 years
Other equipment, operating and office equipment	3 to 10 years

Only straight-line depreciation and amortisation are used in the consolidated financial statements. Additional write-downs are recorded to reflect impairments when the value of assets has been considered permanently impaired. Production costs include materials and labour manufacturing costs, an appropriate portion of materials and labour overheads, and the depreciation of fixed assets (to the extent caused by production).

All capitalised intangible assets have finite useful lives.

Financial assets primarily include shareholder rights, securities and loans and are carried at the lower of cost or fair market value, if impaired.

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

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

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

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

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

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

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

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

Securities classified as current assets include other securities and were recognised at the lower of cost or quoted/market prices on the reporting date.

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

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

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

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

2.3 Difference from capital consolidation

The difference from capital consolidation reported on 31 December in the previous year resulted almost exclusively from the acquisition of a US company in 2011. The original difference amounted to EUR 157 million. The difference is amortised over an estimated period of ten years. The remaining balance of the difference amounted to EUR 30 million at 31 December 2017; the reduction was due to the release of EUR 16 million for the current period and due to the effect of changes in the exchange rate.

In addition, the only increase in the difference from capital consolidation reported on 31 December 2017 was a result of the exchange of business areas between Boehringer Ingelheim's consumer health care business (CHC) and Sanofi's animal health business (Merial), which was completed on 1 January 2017. In accordance with the accounting policy selected by Boehringer Ingelheim on the application of exchange principles (book value method), the acquisition cost of the shareholdings in the Merial companies acquired from Sanofi is equal to the cash compensation, including the assumed obligations (EUR 4,970 million) plus the carrying amount of the CHC business transferred in exchange (EUR 408 million). The proportional equity share in the Merial companies at 1 January 2017 (EUR 7,364 million) corresponded to the fair value of the acquired assets and liabilities, after taking non-controlling interests into account. This resulted in a difference from capital consolidation of EUR 1,986 million. The amortisation period for the difference on this transaction is estimated to be 15 years. The remaining carrying amount of this difference at 31 December 2017, after the release of EUR 287 million for the current financial year, amounted to EUR 1,699 million. The release for the 2017 financial year was influenced by one-off effects, primarily as a consequence of the tax reform in the USA.

The income from the release of the difference arising from capital consolidation is included in other operating income. The release is made corresponding to the amortisation of those assets of the acquired company identified in the purchase price allocation not previously recognised in that company's balance sheet ("hidden assets").

2.4 Group reserves

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

2.5 Provisions

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

2.6 Accounts payable and loans

Accounts payable and loans were recognised at settlement amount.

2.7 Deferred taxes

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

Deferred tax assets and liabilities were reported without offsetting.

3 Explanation of the comparability of the previous year's figures

As a result of the exchange of our consumer health care business (CHC) for Sanofi's animal health business (Merial), there has been a significant change in the composition of the consolidated companies during the financial year. In order to provide for better comparability in the consecutive consolidated financial statements, significant balance sheet and profit and loss statement items are adjusted for the consumer health care business that has been discontinued (2016) and for the newly acquired animal health business (2017).

Balance sheet:

	31.12.2017			31.12.2016		
(in millions of EUR)	incl. Merial	thereof Merial	excl. Merial	incl. CHC	thereof CHC	excl. CHC
Fixed assets	15,069	5,797	9,272	9,687	248	9,439
Current assets	10,664	1,365	9,299	13,698	316	13,382
Liabilities	14,732	1,137	13,595	13,921	171	13,750

For an explanation of the decrease in adjusted current assets reported on 31 December 2017, please refer to chapter 6 in the notes.

Profit or loss statement:

	2017				2016		
(in millions of EUR)	incl. Merial	thereof Merial	TDSA CHC	excl. Merial	incl. CHC	thereof CHC*	excl. CHC
Net sales	18,056	2,470	682	14,904	15,850	1,579	14,271

*The numbers for the earnings of the CHC business unit are based on the management reporting of C. H. Boehringer Sohn AG & Co. KG. These diverge from the actual transaction amounts; the difference is not significant.

In order to derive comparable figures for net sales in 2017, these must not only be adjusted for the newly acquired animal health business but also for the sales governed by a transitional services and production agreements as part of the transaction with Sanofi (TDSA/TSA).

For information on the performance of adjusted net sales, please refer to the statements in the report on economic position in the management report.

Other operating expenses and income were, as in the previous year, subject to significant positive and negative extraordinary and one-time effects, which means that a comparative presentation in a similar manner to the net sales does not result in better comparability. With regard to the extraordinary and one-time effects, please refer to chapter 5 in the notes.

The change in personnel expenses corresponded to the change in the number of employees. Overall, more employees were transferred from Sanofi than were transferred out of the Group with the disposal of the consumer health care business.

The cost of materials where, besides the increase from the newly aquired animal health business, subject to exceptional effects which means that a comparative presentation in a similar manner to the net sales does not result in better comparability. With regard to the exceptional effects, please refer to chapter 5 in the notes.

Besides the addition of the animal health business, which is more capital intensive than the CHC business, the increase in the depreciation and amortisation of tangible and intangible fixed assets is primarily due to the amortisation of intangible assets aquired within the transaction.

4 Notes to the consolidated balance sheet

4.1 Intangible assets

(in millions of EUR)	Acquired concessions/ similar rights	Goodwill	Advance payments	Total
Procurement/manufacturing costs				
Balance as of 1.1.2016	**1,756**	**570**	**15**	**2,341**
Currency conversion difference	37	0	0	37
Changes in consolidated companies	−21	0	0	−21
Additions	43	0	9	52
Disposals	−13	−564	0	−577
Reclassifications	13	0	−12	1
Balance as of 31.12.2016	**1,815**	**6**	**12**	**1,833**
Currency conversion difference	−625	−1	−1	−627
Changes in consolidated companies	5,635	0	−1	5,634
Additions	137	0	14	151
Disposals	−290	0	−1	−291
Reclassifications	4	0	−4	0
Balance as of 31.12.2017	**6,676**	**5**	**19**	**6,700**
Accumulated depreciation				
Balance as of 1.1.2016	**1,173**	**562**	**0**	**1,735**
Currency conversion difference	27	0	0	27
Changes in consolidated companies	−13	0	0	−13
Additions	99	5	0	104
Write-ups	0	0	0	0
Disposals	−6	−564	0	−570
Reclassifications	0	0	0	0
Balance as of 31.12.2016	**1,280**	**3**	**0**	**1,283**
Currency conversion difference	−72	0	0	−72
Changes in consolidated companies	−164	0	0	−164
Additions	442	0	0	442
Write-ups	0	0	0	0
Disposals	−161	0	0	−161
Reclassifications	0	0	0	0
Balance as of 31.12.2017	**1,325**	**3**	**0**	**1,328**
Book value as of 31.12.2016	**535**	**3**	**12**	**550**
Book value as of 31.12.2017	**5,351**	**2**	**19**	**5,372**

4.2 Tangible assets

(in millions of EUR)	Land and buildings	Technical facilities and machines	Other facilities/ operating equipment	Advance payments/ construction in progress	Total
Procurement/manufacturing costs					
Balance as of 1.1.2016	**2,980**	**3,214**	**2,126**	**539**	**8,859**
Currency conversion difference	41	23	20	0	84
Changes in consolidated companies	–218	–227	–54	–122	–621
Additions	94	93	137	321	645
Disposals	–32	–60	–118	–26	–236
Reclassifications	97	104	42	–244	–1
Balance as of 31.12.2016	**2,962**	**3,147**	**2,153**	**468**	**8,730**
Currency conversion difference	–170	–101	–77	–34	–382
Changes in consolidated companies	802	536	18	162	1,518
Additions	50	88	135	599	872
Disposals	–134	–132	–175	–58	–499
Reclassifications	117	179	64	–360	0
Balance as of 31.12.2017	**3,627**	**3,717**	**2,118**	**777**	**10,239**
Accumulated depreciation					
Balance as of 1.1.2016	**1,658**	**2,276**	**1,661**	**0**	**5,595**
Currency conversion difference	27	17	15	0	59
Changes in consolidated companies	–113	–140	–40	0	–293
Additions	153	199	164	0	516
Write-ups	0	0	0	0	0
Disposals	–27	–56	–109	0	–192
Reclassifications	0	0	0	0	0
Balance as of 31.12.2016	**1,698**	**2,296**	**1,691**	**0**	**5,685**
Currency conversion difference	–88	–65	–58	0	–211
Changes in consolidated companies	376	318	12	0	706
Additions	141	218	162	0	521
Write-ups	0	0	0	0	0
Disposals	–72	–109	–148	0	–329
Reclassifications	1	–1	0	0	0
Balance as of 31.12.2017	**2,056**	**2,657**	**1,659**	**0**	**6,372**
Book value as of 31.12.2016	**1,264**	**851**	**462**	**468**	**3,045**
Book value as of 31.12.2017	**1,571**	**1,060**	**459**	**777**	**3,867**

4.3 Financial assets

(in millions of EUR)	Investments in affiliated companies	Loans to affiliated companies	Investments in related companies	Advance payments	Investment securities	Other loans	Total
Procurement/manufacturing costs							
Balance as of 1.1.2016	**2**	**0**	**146**	**0**	**5,857**	**27**	**6,032**
Currency conversion difference	1	0	0	1	−2	7	7
Changes in consolidated companies	4	0	0	0	0	0	4
Additions	0	0	845	17	628	12	1,502
Disposals	0	0	−26	0	−1,327	−6	−1,359
Reclassifications	0	0	0	0	−156	156	0
Balance as of 31.12.2016	**7**	**0**	**965**	**18**	**5,000**	**196**	**6,186**
Currency conversion difference	0	0	−1	−2	−1	−20	−24
Changes in consolidated companies	0	0	16	−16	0	0	0
Additions	0	0	16	0	107	14	137
Disposals	0	0	−5	0	−30	−17	−52
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2017	**7**	**0**	**991**	**0**	**5,076**	**173**	**6,247**
Accumulated amortisation							
Balance as of 1.1.2016	**0**	**0**	**65**	**0**	**31**	**3**	**99**
Currency conversion difference	0	0	0	0	0	0	0
Changes in consolidated companies	0	0	0	0	0	0	0
Additions	0	0	21	0	7	0	28
Write-ups	0	0	0	0	−9	0	−9
Disposals	0	0	−11	0	−13	0	−24
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2016	**0**	**0**	**75**	**0**	**16**	**3**	**94**
Currency conversion difference	0	0	−1	0	−1	0	−2
Changes in consolidated companies	0	0	0	0	1	0	1
Additions	0	0	324	0	1	0	325
Write-ups	0	0	−1	0	0	0	−1
Disposals	0	0	0	0	0	0	0
Reclassifications	0	0	0	0	0	0	0
Balance as of 31.12.2017	**0**	**0**	**397**	**0**	**17**	**3**	**417**
Book value as of 31.12.2016	**7**	**0**	**890**	**18**	**4,984**	**193**	**6,092**
Book value as of 31.12.2017	**7**	**0**	**594**	**0**	**5,059**	**170**	**5,830**

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

4.4 Inventories

(in millions of EUR)	31.12.2017	31.12.2016
Raw materials and supplies	575	510
Unfinished goods	1,547	1,244
Finished goods and goods for resale	951	845
Advance payments to suppliers	14	11
	3,087	**2,610**

4.5 Accounts receivable and other assets

(in millions of EUR)	31.12.2017	Residual term over 1 year	31.12.2016	Residual term over 1 year
Trade accounts receivable	3,146	1	3,055	1
Receivables from affiliated companies	29	0	34	0
Receivables from related companies	28	0	31	0
Other assets	1,303	79	963	26
	4,506	**80**	**4,083**	**27**

The “Other assets” item includes receivables from shareholders of EUR 87 million (previous year: EUR 111 million).

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

Receivables from related companies primarily consist of trade accounts receivable.

4.6 Provisions

(in millions of EUR)	31.12.2017	31.12.2016
Provisions for pensions and similar obligations	4,289	4,285
Tax provisions	1,750	1,202
Other provisions	6,689	6,450
	12,728	**11,937**

Provisions for pensions and similar obligations

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

In addition to local biometric data (e.g. for Germany, mortality tables 2005 G published by Prof. Dr Klaus Heubeck), pension obligations in the significant countries were calculated on the basis of the following actuarial parameters:

(in % as of 31 December 2017)	Germany	USA	Japan
Discount rate	3.68	4.46	1.41
Salary increase	3.50	4.00	2.0 – 4.18
Pension increase	1.88	3.00	0.00

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

The difference calculated in accordance with Section 253 (6) HGB amounts to EUR 678 million.

The plan assets intended solely to cover pension and similar obligations that are unavailable to all other creditors (plan assets as defined in Section 246 (2) sentence 2 HGB) were measured at fair market value, which is essentially derived from stock market prices, and offset against the underlying pension and similar obligations. The fair market value of the plan assets on the balance sheet date was EUR 1,624 million. The related amount of pension obligations and similar obligations was EUR 5,901 million. Gains and losses from plan assets and interest expense relating to pension and similar obligations were offset in accordance with Section 246 (2) sentence 2 HGB. In total, EUR 195 million earnings from plan assets and EUR 495 million in interest expense relating to pension and similar obligations are included in the financial result.

Tax provisions

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

Other provisions

Other provisions mainly include provisions for discounts and guarantees, provisions for litigation, legal claims and compensation for damages, provisions for outstanding invoices, provisions for assumed risks in the course of the business exchange with Sanofi as well as personnel-related provisions.

4.7 Accounts payable and loans

(in millions of EUR)	Residual term less than 1 year	greater than 1 year	greater than 5 years	31.12.2017	31.12.2016	Residual term less than 1 year
Bank loans	373	66	0	439	305	221
Other accounts payable	1,381	184	134	1,565	1,679	1,481
of which:						
- Trade accounts payable	*875*	*5*	*0*	*880*	*903*	*902*
- Advance payments received	*131*	*0*	*0*	*131*	*99*	*99*
- Accounts payable to affiliated companies	*1*	*5*	*5*	*6*	*11*	*6*
- Accounts payable to related companies	*1*	*0*	*0*	*1*	*2*	*2*
*- Other liabilities**	*373*	*174*	*129*	*547*	*664*	*472*
	1,754	**250**	**134**	**2,004**	**1,984**	**1,702**
* Of which:						
- from taxes (EUR million)				*182*	*188*	
- social security liabilities (EUR million)				*37*	*21*	

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

At the end of the year, there were liabilities to shareholders of EUR 22 million (previous year: EUR 99 million). These are presented within the “Other liabilities” item.

Accounts payable to affiliated companies include loans amounting to EUR 5 million (previous year: EUR 6 million) and trade accounts payable amounting to EUR 1 million (previous year: EUR 5 million).

5 Notes to the consolidated profit and loss statement

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

5.1 Net sales

by business and business segment (in millions of EUR)	2017	2016
Human Pharmaceuticals	12,621	12,017
Animal Health	3,901	1,460
Biopharmaceuticals	678	613
Industrial Customers and other sales	43	39
Dicontinued Operations	813	1,721
	18,056	**15,850**

by geographic region (in millions of EUR)	2017	2016
Europe	5,690	5,082
of which: Germany	*982*	*956*
Americas	8,141	6,542
of which: USA	*6,861*	*5,360*
Asia/Australia/Africa	4,225	4,226
of which: Japan	*1,601*	*2,127*
	18,056	**15,850**

5.2 Other operating income

Other operating income in the financial year includes exceptional and one-time income amounting to EUR 1,183 million, in particular as a result of the sale of a business in the USA in order to adjust the animal health product portfolio for antitrust reasons, as well as due to the release of provisions.

Other operating income includes income from currency translation of EUR 1,040 million (previous year: EUR 409 million).

5.3 Cost of materials

(in millions of EUR)	2017	2016
Costs of raw material, supplies and goods for resale	2,431	1,763
Expenditure on services	1,043	880
	3,474	**2,643**

Cost of materials in 2017 was affected by the impact of sales of inventory from the newly acquired Merial companies; these inventories were valued at market value at 1 January 2017 (EUR 442 million).

5.4 Personnel expenses

(in millions of EUR)	2017	2016
Wages and salaries	4,078	3,722
Social benefits and retirement benefits	856	848
of which: retirement benefits	*154*	*230*
	4,934	**4,570**

All interest effects of the measurement of the provisions for pensions and similar obligations were shown as a separate item of financial income.

Average headcount	2017	2016
Production	15,226	13,414
Administration	7,647	5,237
Marketing and Sales	17,757	18,265
Research and Development	8,269	8,055
Apprentices	711	721
	49,610	**45,692**

5.5 Amortisation of intangible assets and depreciation of tangible assets

Amortisation of intangible assets and depreciation of tangible fixed assets include extraordinary write-downs of EUR 16 million (previous year: EUR 59 million).

5.6 Other operating expenses

Other operating expenses include expenses from currency translation of EUR 2,060 million (previous year: EUR 548 million). In total, other operating expenses were affected by the impact of exceptional and one-time expenses amounting to EUR 1,050 million in connection with the exchange of business areas with Sanofi.

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

5.7 Financial income

(in millions of EUR)	2017	2016
Interest expense relating to pensions and similar obligations and other provisions	– 321	– 79
Other interest expense and similar expenditure	– 153	– 194
Interest expense and similar expenditure	**– 474**	**– 273**
Amortisation of and loss on disposal on financial assets and short-term investments	– 1	– 7
Income from other investment securities and from long-term loans	104	165
Other interest income and similar proceeds	41	39
	– 330	**– 76**

5.8 Holding income

(in millions of EUR)	2017	2016
Write-offs on financial assets	– 324	– 21
Income from related companies	23	17
of which: from disposal of related companies	*10*	*6*
	– 301	**– 4**

5.9 Income taxes

(in millions of EUR)	2017	2016
Current income taxes	2,333	1,160
Deferred taxes	752	– 217
	3,085	**943**

The income tax expense was also affected by significant extraordinary effects. The tax expense for the current period includes tax expenses arising from the disposal of the CHC business (approximately EUR 1.3 billion). Moreover, in the USA, a tax reform was approved on 22 December 2017 through the “Tax Cuts and Jobs Act”. This required the reassessment of deferred tax assets and liabilities at the corporate income tax rate enacted into law as at the balance sheet date for future financial years. This also resulted in a significant increase in the tax expense (EUR 583 million).

Current income taxes primarily include the corporation and trade tax expenses of the companies included in consolidation.

The total balance of deferred tax assets at the balance sheet amounted to EUR 2,307 million (previous year: EUR 2,420 million). Deferred tax assets primarily arise on the difference between the carrying amounts of provisions for pension obligations and for discounts, tax goodwill and on fixed assets and inventories. Deferred tax liabilities of EUR 754 million (previous year: EUR 296 million) were recorded. These primarily relate to differences between the carrying amounts of intangible assets, tangible assets, inventories and provisions.

5.10 Group loss

The group loss for 2017 was positively influenced by prior-period operating income (primarily from the reversal of other provisions) of EUR 724 million (previous year: EUR 381 million) and negatively influenced by prior-period operating expenses of EUR 170 million (previous year: EUR 217 million).

6 Notes to the cash flow statement

The cash flow statement shows the changes in cash and cash equivalents (cash and long-term securities and investments classified as current assets that can be sold at any time) of the Boehringer Ingelheim Group resulting from cash in- and outflows in the reporting year. In accordance with German Accounting Standard on the cash flow statement (DRS 21), the cash flow statement has been broken down according to cash flows from operating activities and cash flows from investing and financing activities.

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

The financial funds also include financial assets with a remaining maturity in excess of three months on the date of acquisition. These financial assets can be converted into cash in the short-term.

The financial funds as of 31 December 2017 comprised the following items:

(in millions of EUR)	2017
Cash and cash equivalents	3,071
Securities	0
Financial assets	5,059
	8,130

The financial funds included EUR 162 million in restricted funds at the balance sheet date.

In the financial year, interest of EUR 20 million (previous year: EUR 99 million) was received and interest of EUR 65 million (previous year: EUR 109 million) and taxes of EUR 2,106 million (previous year: EUR 987 million) were paid.

7 Other disclosures

7.1 Contingent liabilities

(in millions of EUR)	31.12.2017	31.12.2016
Liabilities from guarantees	21	8
Warranties and the granting of securities for third-party liabilities	159	51
	180	**59**

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

7.2 Other financial commitments and off-balance sheet transactions

(in millions of EUR)	31.12.2017	31.12.2016
Rental and leasing obligations	445	276
Purchase commitment	1,392	476
	1,837	**752**

There are obligations from rental and lease agreements of EUR 445 million (previous year: EUR 276 million), EUR 11 million of which (previous year: EUR 25 million) relate to long-term rental agreements with subsidiaries not included in the consolidation.

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

Other financial commitments include future expenses from follow-up investments, investments already initiated and future major repairs. As at the balance sheet date, purchase commitments include future cash flow effects of investments totalling EUR 1,120 million (previous year: EUR 258 million).

7.3 Derivative financial instruments and valuation units

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

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

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

Provisions of EUR 72 million were recognised for currency forwards not included in hedge accounting for which there was a negative fair value within one currency as at the balance sheet date. In line with the imparity principle, positive fair values within one currency were not recognised.

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

	Nominal value		Fair value	
(in millions of EUR)	31.12.2017	31.12.2016	31.12.2017	31.12.2016
Foreign exchange forward contracts	4,105	2,892	– 23	– 35

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

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

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

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

As of 31 December 2017, hedges for highly probable forecast net cash flows were recognised as follows:

January to December 2018:

Net cash flow (in millions of EUR)		FX forward contracts (in millions of EUR)			
	Nominal value		Nominal value		Fair value
USD	1,104	USD	−1,104	USD	62
JPY	554	JPY	−554	JPY	29
AUD	97	AUD	−73	AUD	1
MXN	48	MXN	−38	MXN	4
CAD	173	CAD	−95	CAD	0
GBP	199	GBP	−116	GBP	5

January to December 2019:

Net cash flow (in millions of EUR)		FX forward contracts (in millions of EUR)			
	Nominal value		Nominal value		Fair value
USD	1,197	USD	−761	USD	50
JPY	558	JPY	−400	JPY	25
AUD	15	AUD	−10	AUD	0
MXN	9	MXN	−9	MXN	1
CAD	28	CAD	−13	CAD	0
GBP	43	GBP	−23	GBP	0

January to December 2020:

Net cash flow (in millions of EUR)		FX forward contracts (in millions of EUR)			
	Nominal value		Nominal value		Fair value
USD	1,149	USD	−331	USD	10
JPY	550	JPY	−224	JPY	11

January to February 2021:

Net cash flow (in millions of EUR)		FX forward contracts (in millions of EUR)			
	Nominal value		Nominal value		Fair value
USD	166	USD	−43	USD	0
JPY	39	JPY	−27	JPY	1

For the years 2018 and 2019, there were also hedge accounting valuation groups from long and short positions of derivatives. The offsetting nominal values amount to +/− EUR 188 million from Japanese yen and +/− EUR 3 million from US dollar.

Furthermore, as at 31 December 2017, valuation groups for foreign currency receivables were recognised as follows:

Receivables (in millions of EUR)		Forward exchange contracts (in millions of EUR)			
	Nominal value		Nominal value		Fair value
RUB	74	RUB	−64	RUB	−2
PLN	50	PLN	−9	PLN	0

The amount of the hedged foreign currency risk correlates to the relative change in the exchange rate between the planning date and the realisation date of the forecast transactions. If all currencies were to appreciate or depreciate against the euro by 10.0%, there would be a foreign currency risk of plus or minus EUR 605 million without hedging.

7.4 Research and development expenses

(in millions of EUR)	2017	2016
Research and development expenses	3,078	3,112

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

7.5 Report on post-balance sheet date events

Since the end of the 2017 financial year, we have not become aware of any events that are of material significance to the Group or that could lead to a reappraisal of its net assets, financial position and earnings.

7.6 Total auditor fees

Total fees charged to the Group by the auditor for the financial year amounted to EUR 37.6 million. EUR 3.2 million of this relates to audits of financial statements, EUR 1.8 million to other assurance services, EUR 2.6 million to tax advisory services and EUR 30.0 million to other services.

INDEPENDENT AUDITOR'S REPORT

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

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

We have audited the consolidated financial statements of C. H. Boehringer Ingelheim Sohn AG & Co. KG, Ingelheim, and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 31 December 2017, and the consolidated income statement, consolidated statement of changes in equity and consolidated cash flow statement for the financial year from 1 January to 31 December 2017, and notes to the consolidated financial statements, including the recognition and measurement policies presented therein. In addition, we have audited the group management report of C.H. Boehringer Ingelheim Sohn AG & Co. KG for the financial year from 1 January to 31 December 2017.

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

- except for the effects of the matter described in section „Basis for the Qualified Audit Opinion on the Consolidated Financial Statements and the Audit Opinion on the Group Management Report" the accompanying consolidated financial statements comply, in all material respects, with the requirements of German commercial law. The consolidated financial statements give a true and fair view of the assets, liabilities and financial position of the Group as at 31 December 2017 and of its financial performance for the financial year from 1 January to 31 December 2017 in compliance with German Legally Required Accounting Principles, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

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

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

Contrary to § 314 Abs. 1 Nr. [Number] 6 Buchstaben [letters] a) and b) HGB the total remuneration granted to the members and the former members of the board of managing directors as well as the pension provisions recognized and not recognized for the former members of the board of managing directors are not disclosed in the notes to the consolidated financial statements.

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our qualified audit opinion on the consolidated financial statements and for the audit opinion on the group management report.

Other Information

The executive directors are responsible for the other information. The other information comprises the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report.

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

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

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

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

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

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

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

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

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

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

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

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

- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

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

Frankfurt am Main, 9 March 2018

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

DR. ULRICH STÖRK
Wirtschaftsprüfer
(German public auditor)

MICHAEL CONRAD
Wirtschaftsprüfer
(German public auditor)

PRODUCT PORTFOLIO

A SELECTION

RESPIRATORY DISEASES

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

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

COPD

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

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

Bronchial asthma

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

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

RESPIRATORY DISEASES (CONTINUED)

Idiopathic pulmonary fibrosis (IPF)

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

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

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Bronchial asthma	BEROTEC®	*fenoterol hydrobromide* 	Symptomatic treatment of acute asthma attacks. Prophylaxis of exercise-induced asthma bronchiale. Symptomatic treatment of allergic and non-allergic asthma bronchiale and other conditions with reversible airway narrowing, e.g. chronic obstructive bronchitis.
– Bronchial asthma – Allergic rhinitis	ALESION® FLURINOL®	*epinastine hydrochloride* 	Prophylactic treatment of patients with bronchial asthma. Prophylaxis and symptomatic treatment of allergic rhinitis.
– Idiopathic pulmonary fibrosis (IPF)	OFEV®	*nintedanib* 	Treatment of patients with idiopathic pulmonary fibrosis (IPF).

CARDIOVASCULAR AND METABOLIC DISEASES

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

Stroke

Stroke is the rapidly developing loss of brain functions caused by a reduced blood flow to the affected brain tissue. This can be due to ischaemia (lack of blood supply) caused by thrombosis or embolism, or due to a bleeding. As a result, the affected area of the brain is unable to function and the damage quickly becomes permanent, if untreated. A stroke is an acute event requiring emergency diagnosis and intervention. Worldwide, stroke is one of the leading causes of death and long-term disability. Symptoms of a transient ischaemic attack (TIA) are similar to stroke, but last for only a few minutes or hours and usually do not result in permanent neurological damage. As a TIA may precede a stroke, emergency medical care and subsequent preventive treatment may be necessary.

Atrial fibrillation

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

Prevention and treatment of venous thromboembolism

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

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

Reversing anticoagulation

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

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Stroke prevention in atrial fibrillation – Primary prevention of venous thromboembolic events after orthopaedic surgery – Treatment and secondary prevention of venous thromboembolic events	PRADAXA® PRADAXAR® PRAZAXA®	*dabigatran etexilate* 	Prevention of strokes and blood clots in patients with abnormal heart rhythm (atrial fibrillation). Primary prevention of venous thromboembolic events (VTE) in adults after elective total hip or knee replacement surgery. Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), and secondary prevention of recurrent DVT and PE in adults.
– Specific reversal of PRADAXA® (dabigatran etexilate)	PRAXBIND®	*idarucizumab* 	PRAXBIND® is a specific reversal agent for dabigatran and is indicated in adult patients treated with PRADAXA® (dabigatran etexilate) when rapid reversal of its anticoaculant effects is required: for emergency surgery/urgent procedures; in life-threatening or uncontrolled bleeding.
– Hypertension – Cardiovascular morbidity and mortality prevention	MICARDIS® MICARDISPLUS® MICARDIS® PLUS MICARDIS® HCT CO-MICARDIS®	*telmisartan;* *telmisartan, hydrochlorothiazide* 	Treatment of hypertension. For the reduction of the risk of myocardial infarction (heart attack), stroke or death from cardiovascular (CV) causes in patients 55 years of age or older at high risk of developing major CV events who are unable to take ACE inhibitors (USA). For the reduction of cardiovascular morbidity in patients with manifest atherothrombotic cardiovascular disease (history of coronary heart disease, stroke or peripheral arterial disease), or patients with type 2 diabetes mellitus with documented target organ damage (EU).
– Hypertension	TWYNSTA® MICAMLO® MICARDIS® AMLO MICARDIS® DUO	*telmisartan, amlodipine* 	Treatment of hypertension alone or with other antihypertensive agents. As initial therapy in patients likely to need multiple antihypertensive agents to achieve their blood pressure goals (USA). Add-on therapy in adult patients with not adequately controlled blood pressure on amlodipine, and replacement therapy in adult patients receiving telmisartan and amlodipine from separate tablets (EU).

CARDIOVASCULAR AND METABOLIC DISEASES (CONTINUED)

Hypertension and cardiovascular diseases

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

Acute myocardial infarction

An acute myocardial infarction, or heart attack, is an event that occurs when a thrombus or clot suddenly prevents blood flow to an area of the heart muscle. Unless the blood flow is restored quickly, the affected section of heart muscle becomes permanently damaged. Heart attack is a leading cause of death in all developed countries.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Acute ischaemic stroke – Acute myocardial infarction – Acute massive pulmonary embolism – Catheter clearance due to thrombotic occlusion	ACTILYSE® ACTILYSE® CATHFLO®	*alteplase* 	Fibrinolytic treatment of acute ischaemic stroke, acute myocardial infarction, acute massive pulmonary embolism. Fibrinolytic treatment of occluded catheters.
– Secondary prevention of stroke or transient ischaemic attacks (TIA)	AGGRENOX® ASASANTIN® ASASANTIN® RETARD	*dipyridamole, acetylsalicylic acid* 	Prevention of stroke following an initial first stroke, or transient ischaemic attacks (TIA).
– Acute myocardial infarction	METALYSE®	*tenecteplase* 	Fibrinolytic treatment of acute myocardial infarction.
– Hypertension	CATAPRESAN® CATAPRES® CATAPRESSAN® CATAPRES-TTS®	*clonidine; clonidine hydrochloride* 	Treatment of hypertension.
– Hypertension	MOTENS®	*lacidipine* 	Treatment of hypertension.

CARDIOVASCULAR AND METABOLIC DISEASES (CONTINUED)

Diabetes

Type 2 diabetes is a chronic, progressive condition associated with elevated blood sugar levels that can cause long-term complications if not treated.

Approximately 4 million deaths worldwide every year are linked directly to the long-term effects of diabetes. Type 2 diabetes is the most common form of the disease and accounts for up to 95% of all cases in the developed world. Currently, more than 425 million people in the world live with diabetes, which represents an enormous burden on health care systems globally. Without effective prevention and management strategies, it is estimated that the number of cases will reach 693 million by 2045.

In addition, type 2 diabetes is one of the major risk factors for cardiovascular disease. Life expectancy of people with type 2 diabetes at high cardiovascular risk decreases, on average, by up to 12 years.

Overall, around half of deaths in people with type 2 diabetes are caused by concomitant cardiovascular disease, indicating a high unmet medical need.

In addition to cardiovascular disease, serious complications of diabetes include:

- Nephropathy, culminating in renal failure requiring dialysis
- Retinopathy with potential loss of vision
- Peripheral neuropathy with the risk of developing foot ulcers and potentially requiring foot or leg amputations
- Autonomic neuropathy, which can cause gastrointestinal, genitourinary and cardiovascular symptoms and sexual dysfunction.

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

* Diabetes portfolio in collaboration with Eli Lilly and Company.

ONCOLOGY

Cancer is a threat to global health. In 2012, an estimated 14 million new cases of cancer were diagnosed worldwide and 8.8 million people died from cancer, nearly one in six global deaths (WHO World Cancer Factsheet 2017). The most common diagnosed cancer types were lung cancer (nearly 20%), liver cancer (9%), colorectal cancer (9%); stomach cancer (9%) and breast cancer (8%).

Lung cancer

Lung cancer refers to malignant abnormal cell growth inside the lung tissue, forming a cluster or tumour. It is the most common cancer with an estimated 1.8 million new cases per year worldwide (2014). Smoking is the primary cause of the disease, contributing to nearly 90% of the cases. Recently, however, the incidence of lung cancer among non-smokers has increased. Lung cancer has a poor prognosis, with 1.7 million deaths per year, representing nearly 20% of all cancer deaths. Lung cancer symptoms are unspecific so that the disease may take many years to appear. Late diagnosis in an advanced stage of the disease results in an often dismal prognosis, with only 10 - 15% of lung cancer patients surviving five years or more following diagnosis.

Lung cancer is more than just one disease. There are different subtypes such as small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). More than 10 different molecular genetic aberrations (mutations) present in the tumour have been identified. By focusing on molecular changes that are specific to the respective subtype of lung cancer, targeted therapies have become more effective than other treatments. They show a survival benefit and are at the same time less harmful to normal cells, thereby reducing side effects.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS		
– Non-small cell lung cancer (NSCLC)	GIOTRIF® GILOTRIF®	*afatinib*		First-line treatment of patients with metastatic non-small cell lung cancer (NSCLC) whose tumours have activating epidermal growth factor receptor (EGFR) mutations. For the treatment of patients with locally advanced or metastatic NSCLC of squamous histology progressing on or after platinum-based chemotherapy.
– Non-small cell lung cancer (NSCLC)	VARGATEF®	*nintedanib*		Combination therapy with docetaxel for the treatment of adult patients with locally advanced, metastatic or locally non-small cell lung cancer (NSCLC) of adenocarcinoma tumour histology after first-line chemotherapy.

DISEASES OF THE CENTRAL NERVOUS SYSTEM

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

Parkinson's disease

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

Restless legs syndrome (RLS)

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

INFECTIOUS DISEASES

HIV infection/AIDS

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

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

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

LIVESTOCK - SWINE

Infectious respiratory diseases

INGELVAC CIRCOFLEX® is the first single-dose piglet vaccine for the control of porcine circovirus disease (PCVD). This vaccine provides significant reduction of mortality in the acute phase of PCVD as well as improved growth rates in the chronic phase of the disease. INGELVAC CIRCOFLEX® protects with minimal systemic adverse reactions or injection site swellings and can be used during gestation and lactation. Our INGELVAC® PRRS products are licensed for active immunisation against the respiratory and reproductive form of porcine reproductive and respiratory syndrome (PRRS).

INGELVAC MYCOFLEX® provides proven safety, efficacy and rapid onset of long-lasting immunity against Mycoplasma hyopneumoniae (M. hyo.) with a single dose. INGELVAC MYCOFLEX® contains the IMPRANFLEX® adjuvant which allows for fresh mixing with INGELVAC CIRCOFLEX® to form FLEXCOMBO®.

Infectious enteric diseases

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

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Infectious respiratory diseases	INGELVAC CIRCOFLEX®	*recombinant vaccine (porcine circovirus type 2, PCV 2)* 	For the active immunisation of pigs over the age of two weeks against porcine circovirus type 2 to reduce mortality, clinical signs – including weight loss – and lesions in lymphoid tissues associated with porcine circovirus diseases (PCVD). In addition, vaccination has been shown to reduce PCV 2 nasal shedding, viral load in blood and lymphoid tissues, and duration of viraemia.
– Infectious respiratory diseases	INGELVAC® PRRS MLV INGELVAC PRRSFLEX® EU REPROCYC® PRRS EU	*attenuated live vaccine (PRRS virus)* *type 2* *type 1* 	Depending on the product, for the active immunisation of pigs at various ages against porcine reproductive and respiratory syndrome virus (PRRSV).
– Infectious respiratory diseases	INGELVAC MYCOFLEX®	*inactivated vaccine (Mycoplasma hyopneumoniae)* 	For the active immunisation of pigs from the age of three weeks to reduce lung lesions following infections with Mycoplasma hyopneumoniae.
– Infectious enteric diseases	ENTERISOL® ILEITIS	*attenuated live vaccine (Lawsonia intracellularis)* 	For the active immunisation of pigs from the age of three weeks against intestinal lesions caused by Lawsonia intracellularis infection and to reduce growth variability and loss of weight gain associated with the disease.

LIVESTOCK - CATTLE

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

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

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

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Internal and external parasites of cattle	IVOMEC®	*ivermectin* 	Depending on formulation, the product is for the treatment of nematodes, lice, mites, ticks, flies, lungworms and liver flukes.
– Internal and external parasites of cattle	LONGRANGE®	*eprinomectin, long-acting* 	The Theraphase™ technology used to develop this formulation of eprinomectin allows a single treatment to last up to 100–150 days – long enough to break the parasite life cycle and effectively reduce parasite burdens on the pasture. LONGRANGE® is effective in the control of most internal and external parasites of cattle: gastrointestinal roundworms, lungworms, grubs, mites.
– Internal and external parasites of ruminants	EPRINEX®	*eprinomectin* 	Depending on formulation, the product is for the treatment of nematodes, lice, mites, ticks, flies and lungworms in cattle and sheep.
– Bacterial causes of respiratory disease and interdigital dermatitis (footrot)	ZACTRAN®	*gamithromycin* 	Depending on species indication (and country of registration), the product is for the treatment and metaphylaxis control of key bacteria causing respiratory disease in cattle (Mannheimia, Pasteurella, Histophilus and Mycoplasma) and key bacteria causing in footrot disease in sheep (fusobacterium and dichelobacter).
– Respiratory and reproductive infectious diseases in cattle	PYRAMID® PRESPONSE®	*family of multivalent vaccine combinations including different modified live viruses: bovine viral diarrhoea (BVD) types 1 and 2, infectious bovine rhinotracheitis (IBR), parainfluenza 3 (PI3) and bovine respiratory syncytial virus (BRSV), and bacteria: Pasteurella multocida, Mannheimia haemolytica, L. canicola, L. grippotyphosa, L. hardjo, L. icterohaemmorrhagiae, and L. pomona* 	The PYRAMID®/PRESPONSE® family of vaccines provides broad coverage for BVD types 1 and 2, IBR, BRSV, PI3 and Mannheimia haemolytica with only a single dose. They contain the MetaStim® adjuvant system to enhance the animal's response for greater protection (US and Canada only).

LIVESTOCK - POULTRY

VOLVAC® is the umbrella brand of our poultry vaccine range. It consists of a wide range of live and inactivated vaccines for broilers and layers. The vaccines provide protection of the birds against various viral and bacterial diseases like avian influenza, infectious bronchitis, Newcastle disease, infectious bursal disease, egg drop syndrome and avian coryza.

With the acquisition of Merial, we have now enlarged our portfolio with additional vaccines that include several leaders in their respective segments.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Various viral and bacterial diseases in poultry	VOLVAC®	*polyvalent attenuated live and inactivated vaccine containing antigens for vaccination against avian influenza, Newcastle disease, avian coryza, egg drop syndrome, infectious bronchitis, infectious bursal disease, gallibacterium anatis* 	For vaccination of healthy chickens against diseases caused by the included antigens. For the prevention of the most common diseases in broiler chickens and of diseases responsible for losses in egg production in layers.
– Vaccine against infectious bursal disease and Marek's disease	VAXXITEK® HVT + IBD	*serotype 3, live Marek's disease vector* *live vHVT013-69 recombinant virus (and diluent)* 	To prevent mortality and to reduce clinical signs and lesions of infectious bursal disease. The onset of protection is from two weeks and the protection extends to nine weeks. To reduce mortality, clinical signs and lesions of Marek's disease. The onset of protection is from four days. A single vaccination is sufficient to provide protection during the risk period.
– Vaccine against Salmonella Enteritidis (SE) and Salmonella Typhimurium (ST)	GALLIMUNE®	*bivalent vaccine with an oily adjuvant* *inactivated Salmonella Enteritidis, strain PT4* *inactivated Salmonella Typhimurium, strain DT 104* 	For active immunisation of layer pullets to reduce Salmonella Enteritidis dissemination in the ovary and to reduce Salmonella Typhimurium and Salmonella Enteritidis dissemination in the intestinal tract.
– Vaccine against Newcastle disease (ND)	AVINEW®	*live Newcastle disease virus, VG/GA-AVINEW strain* 	In broiler chickens from the age of one day: active immunisation against Newcastle disease to reduce mortality and clinical signs associated with the disease. In future layer and future breeder pullets from the age of four weeks: priming for active immunisation against egg drop caused by Newcastle disease before vaccination with an inactivated vaccine (strain Ulster 2C) prior to the beginning of lay.

LIVESTOCK - POULTRY (CONTINUED)

COMPANION ANIMALS - HORSE

Our main horse products focus on the prevention and treatment of parasite infestations, management solutions for chronic diseases, and vaccines. Our equine portfolio also includes a range of flagship products for the treatment of joint disease, colic, respiratory disease, pain management and nutraceuticals.

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

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

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

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

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

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Vaccine against Marek's disease	PREVEXXION®RN	*live herpes virus chimera, serotype 1, strain RN1250* 	This vaccine is recommended for in ovo vaccination of 18 to 19-day-old embryonated chicken eggs to protect against the very virulent Marek's disease.
– Vaccine against Newcastle and Marek's diseases	NEWXXITEK® HVT + ND	*live Marek's disease vectored virus, serotype 3, that contains a gene insert from Newcastle disease.* *The vaccine includes a diluent.* 	The vaccination of 18 to 19-day-old embryos and one-day-old chickens is effective against Marek's disease and Newcastle disease.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Pituitary pars intermedia dysfunction (PPID)	PRASCEND®	*pergolide mesylate* 	Symptomatic treatment of clinical signs associated with pituitary pars intermedia dysfunction (PPID; also known as equine Cushing's disease).
– Combination vaccine against up to nine common diseases in horses	VETERA®	*Eastern, Western and Venezuelan encephalomyelitis, tetanus, West Nile virus, equine herpes virus, equine influenza viruses* 	For vaccination of healthy horses as an aid in the prevention of diseases caused by the included antigens (US and Canada only).
– Treatment and prevention of equine gastric ulcers	GASTROGARD® ULCERGARD®	*omeprazole* 	For treatment and prevention of recurrence of gastric ulcers in horses and foals four weeks of age and older.
– Treatment and prevention of internal parasites of the horse	EQVALAN® ZIMECTERIN® EQVALAN® GOLD EQVALAN® DUO ZIMECTERIN® GOLD	*ivermectin* *ivermectin, praziquantel* 	For treatment of parasitic infestations in horses and donkeys due to large and small strongyles, ascarids. GOLD/DUO includes treatment against tapeworms.

COMPANION ANIMALS - PETS

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

For more than 20 years, FRONTLINE® has been a leader in flea and tick control on dogs and cats, and is one of the most trusted brands in animal health.[1] FRONTLINE® continues to bring innovation to the category, with the recent launch of FRONTLINE TRI-ACT®, which features repellency and insecticidal efficacy on many disease-carrying flying insects, which could decrease the risk of transmission of vector-borne pathogen.[2]

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

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

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

[1] Data on file.
[2] A novel combination of fipronil and permethrin (Frontline Tri-Act®/Frontect®) reduces rick of transmission of Babesia canis by Dermacentor reticulatus and of Ehrlichia canis by Rhipicephalus sanguineus ticks to dogs. Jongejan et al. Parasites & Vectors (2015) 8:602.
[3] Data on file.
[4] Data on file.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Antiparasitic: canine/feline external parasites	FRONTLINE® FRONTLINE COMBO® FRONTLINE PLUS® FRONTLINE TRI-ACT® FRONTECT®	*fipronil* 	FRONTLINE® is indicated for the treatment and prevention of fleas, ticks and chewing lice in dogs and cats, and aids in the control of sarcoptic mange in dogs.
– Antiparasitic: canine external parasites	NEXGARD®	*afoxolaner* 	NEXGARD® is delivered in a highly palatable beef-flavoured chew that kills adult fleas and is indicated for the treatment and prevention of flea infestations and the treatment and control of tick infestations in dogs and puppies for one month.
– Antiparasitic: canine internal and external parasites	NEXGARD SPECTRA®	*afoxolaner, milbemycin oxime* 	NEXGARD SPECTRA® is delivered in a highly palatable beef-flavoured chew that kills adult fleas and is, indicated for the treatment and prevention of flea and tick infestations. Prevents heartworm disease and treats and controls hookworm, roundworm, whipworm, and lungworm infestations in dogs and puppies.
– Antiparasitic: canine internal parasites	HEARTGARD® PLUS	*ivermectin, pyrantel* 	For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae for a month (30 days) after infection, and for the treatment and control of roundworms and hookworms

COMPANION ANIMALS - PETS (CONTINUED)

As the first of a new class of heart treatments termed inodilators, VETMEDIN® has been shown to significantly improve clinical signs and extend life expectancy in dogs with congestive heart failure originating from dilated cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). Recent studies have also shown that when used preclinically in appropriate asymptomatic cases of either dilated cardiomyopathy or valvular insufficiency, VETMEDIN® significantly delays the onset of clinical signs of congestive heart failure.

METACAM® is a non-steroidal anti-inflammatory drug (NSAID). It is available as an oral suspension, tablets and injectable solution for dogs and as an oral suspension and injectable solution for cats. In dogs, the indications include the alleviation of inflammation and pain in both acute and chronic musculoskeletal disorders, as well as the reduction of pain following surgery. In cats, the indications include the alleviation of inflammation and pain in acute and chronic musculoskeletal disorders, as well as for the alleviation of mild to moderate postoperative pain.

The variety of formulations offers veterinarians and owners the flexibility to use the formulation they prefer in individual cases to manage the various levels of inflammation and pain associated with the licensed indications.

Our pet vaccine product portfolio includes the PUREVAX® feline vaccines formulated to provide effective protection without the use of adjuvants.

INDICATIONS	BRAND NAMES	ACTIVE INGREDIENTS	
– Congestive heart failure	VETMEDIN®	*pimobendan* 	Treatment of canine congestive heart failure originating from dilated cardiomyopathy or valvular insufficiency (mitral and/or tricuspid regurgitation). Treatment of dilated cardiomyopathy in the preclinical stage (asymptomatic with an increase in left ventricular end-systolic and end-diastolic diameter) in Doberman Pinschers. Treatment of dogs with myxomatous mitral valve disease (MMVD) in the preclinical stage (asymptomatic with a systolic mitral murmur and evidence of increased heart size) to delay the onset of clinical symptoms of heart failure.
– Pain and inflammatory diseases	METACAM®	*meloxicam* 	In dogs, METACAM® is used to reduce post-operative pain and inflammation following orthopaedic (e.g. fracture operation) and soft tissue surgery. In cats, METACAM® is used to reduce postoperative pain and inflammation, e.g. after ovariohysterectomy (spay operation), orthopaedic and minor soft tissue surgery. Moreover, it is used for the alleviation of pain and inflammation in acute and chronic musculoskeletal disorders (dogs and cats).
– Feline vaccines portfolio	PUREVAX®	*feline herpes virus* *feline calicivirus* *feline panleukopenia virus* *chlamydophila* *FeLV* *rabies* 	PUREVAX® is the only fully adjuvant-free feline vaccine range and provides: • Optimised safety profile with adjuvant-free protection for all components; • Powerful immune response without adjuvant, thanks to its innovative canarypox technology for FeLV and rabies; • An easy fit to all cat lifestyles, allowing compliance with feline vaccination guidelines; • Sustained protection up to three years for the rabies component.

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

COMPARISON OF BALANCE SHEET AND FINANCIAL DATA 2008 – 2017

(in millions of EUR)

Assets (as of December 31)	2008	2009	2010	2011	2012
Intangible assets	539	745	736	710	682
Tangible assets	3,177	3,219	3,314	3,442	3,103
Financial assets	1,739	1,699	3,168	3,953	4,222
Fixed assets	**5,455**	**5,663**	**7,218**	**8,105**	**8,007**
Inventories	1,561	1,801	1,850	1,998	2,095
Accounts receivable and other assets (incl. prepaid expenses and deferred taxes)	3,496	3,663	4,047	4,652	4,814
Liquid funds	1,312	3,877	3,118	3,903	2,374
Current assets (incl. prepaid expenses and deferred taxes)	**6,369**	**9,341**	**9,015**	**10,553**	**9,283**
Total assets	**11,824**	**15,004**	**16,233**	**18,658**	**17,290**

Liabilities and equity (as of December 31)	2008	2009	2010	2011	2012
Shareholders‘ capital	178	178	178	178	178
Group reserves (incl. currency conversion difference)	4,525	5,723	6,296	7,288	6,000
Equity attributable to the parent company	**4,703**	**5,901**	**6,474**	**7,466**	**6,178**
Non-controlling interests	190	179	0	0	0
Group equity	**4,893**	**6,080**	**6,474**	**7,466**	**6,178**
Difference from capital consolidation	**0**	**0**	**0**	**157**	**134**
Provisions (incl. deferred taxes)	5,120	5,731	6,598	7,402	7,749
Accounts payable and loans (incl. prepaid expenses)	1,811	3,193	3,161	3,633	3,229
Liabilities (incl. deferred taxes and deferred charges)	**6,931**	**8,924**	**9,759**	**11,035**	**10,978**
Total liabilities and equity	**11,824**	**15,004**	**16,233**	**18,658**	**17,290**

Summary of selected financial data	2008	2009	2010	2011	2012
Net sales	11,595	12,721	12,586	13,171	14,691
Operating income	1,980	2,239	1,896	2,272	1,853
Operating income as % of net sales	17.1	17.6	15.1	17.3	12.6
Income after taxes	1,428	1,764	888	1,476	1,237
Income after taxes as % of net sales	12.3	13.9	7.1	11.2	8.4
Return on equity (in %)	42.2	37.4	15.0	22.8	16.6
Equity ratio (in %)	39.8	39.3	39.9	40.0	35.7
Financial funds	2,932	5,384	6,113	7,711	6,467
Personnel expenses	3,004	3,221	3,358	3,664	4,024
Personnel expenses as % of net sales	25.9	25.3	26.7	27.8	27.4
Average number of employees	41,300	41,534	42,224	44,094	46,228
Research and development expenses	2,109	2,215	2,453	2,516	2,795
R&D expenses as % of net sales	18.2	17.4	19.5	19.1	19.0
Investments in tangible assets	665	630	519	458	562
Depreciation of tangible assets	453	470	498	535	793

2013	2014	2015	2016	2017
582	592	606	550	5,372
2,887	3,070	3,264	3,045	3,867
4,737	5,312	5,933	6,092	5,830
8,206	**8,974**	**9,803**	**9,687**	**15,069**
2,083	2,237	2,483	2,610	3,087
5,131	5,546	6,463	6,837	7,159
2,879	3,294	4,536	7,005	3,071
10,093	**11,077**	**13,482**	**16,452**	**13,317**
18,299	**20,051**	**23,285**	**26,139**	**28,386**

2013	2014	2015	2016	2017
178	178	178	178	178
6,943	7,931	9,421	11,149	10,480
7,121	**8,109**	**9,599**	**11,327**	**10,658**
1	2	4	0	– 1
7,122	**8,111**	**9,603**	**11,327**	**10,657**
104	**91**	**71**	**52**	**1,729**
7,817	8,840	10,543	12,233	13,482
3,256	3,009	3,068	2,527	2,518
11,073	**11,849**	**13,611**	**14,760**	**16,000**
18,299	**20,051**	**23,285**	**26,139**	**28,386**

2013	2014	2015	2016	2017
14,065	13,317	14,798	15,850	18,056
2,114	2,140	2,269	2,872	3,487
15.0	16.1	15.3	18.1	19.3
1,324	1,046	1,576	1,849	– 229
9.4	7.9	10.7	11.7	– 1.3
21.4	14.7	19.4	19.3	– 2.0
38.9	40.4	41.2	43.3	37.5
7,514	8,507	10,200	11,989	8,130
4,071	4,116	4,518	4,570	4,934
28.9	30.9	30.5	28.8	27.3
47,492	47,743	47,501	45,692	49,610
2,743	2,654	3,004	3,112	3,078
19.5	19.9	20.3	19.6	17.0
558	548	591	645	872
640	449	475	516	521

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