Merck KGaA
Darmstadt, Germany

MERCK KGaA, DARMSTADT, GERMANY
Annual Financial Statements
2017

DISCLAIMER

ALWAYS CURIOUS

IMAGINE
THE NEXT 350 YEARS

We have been demonstrating our innovative strength for 350 years. Curiosity connects us. It drives human progress – and challenges us to imagine the next 350 years.

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The figures presented in the Notes to the Annual Financial Statements have been rounded according to commercial rounding methods. As a consequence, individual values may not add up to totals presented.

COMBINED MANAGEMENT REPORT

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Combined Management Report

The management report of Merck KGaA, Darmstadt, Germany, has been combined with the Group management report. The annual financial statements and the combined management reports of the Group and Merck KGaA, Darmstadt, Germany, for 2017 are being filed with the electronic German Federal Gazette (elektronischer Bundesanzeiger) and are available on the website of the German company register.

Fundamental Information about the Group

The Group

We are a global science and technology company headquartered in Darmstadt, Germany. With a history of nearly 350 years, we are the oldest chemical and pharmaceutical company in the world. In line with our strategic direction, our company comprises three business sectors: Healthcare, Life Science, and Performance Materials.

In Healthcare, we discover, develop and manufacture prescription medicines used to treat cancer, multiple sclerosis, and infertility. Our products help millions of people around the world.

In Life Science, we conduct research for researchers, providing scientists with laboratory materials, technologies and services. Our aim is to make research and biomanufacturing easier, faster and more successful.

Performance Materials develops specialty chemicals and materials for demanding applications – from liquid crystals and OLED materials for displays to effect pigments for coatings and cosmetics up to high-tech materials for the manufacture of integrated circuits.

We operate globally under our corporate brand – the only exceptions are Canada and the United States. In these countries, we operate as EMD Serono in the biopharmaceutical business, as MilliporeSigma in the life science business and as EMD Performance Materials in the high-tech materials business.

Apart from our three business sectors, our financial reporting presents the five regions Europe, North America, Asia-Pacific (APAC), Latin America as well as Middle East and Africa (MEA). As of December 31, 2017, we had 52,941 employees worldwide, which compares with 50,414 on December 31, 2016.[1]

Healthcare

Our Healthcare business sector comprises the three businesses Biopharma, Consumer Health, and Allergopharma. Since 2015, Belén Garijo has been the CEO of our Healthcare business sector and member of the Executive Board. In 2017, Healthcare generated 46% of Group sales and 41% of EBITDA pre (excluding Corporate and Other), making it the largest of our three business sectors. The regions Europe and North America generated 57% of Healthcare's net sales in 2017. In recent years, we have steadily expanded our presence in growth markets. In 2017, Asia Pacific and Latin America accounted for 36% of sales. Our divestment of the Biosimilars business to Fresenius closed on August 31.

BIOPHARMA

Our Biopharma business discovers, develops, manufactures and markets innovative pharmaceutical and biological prescription drugs to treat cancer, multiple sclerosis (MS), infertility, growth disorders as well as certain cardiovascular and metabolic diseases. Biopharma is the largest of our Healthcare businesses. We operate in four franchises: Oncology, Neurology & Immunology, Fertility, and General Medicine & Endocrinology. Our streamlined R&D pipeline positions us with a clear focus on becoming a leading specialty innovator in oncology, immuno-oncology and immunology, including multiple sclerosis.

In 2017, we reinforced our commitment to growing our immunology pipeline to provide new options to better the lives of people with immunological diseases with the receipt of regulatory approvals for Mavenclad® (cladribine tablets) in the 28 member states of the EU as well as Liechtenstein, Iceland and Norway; Canada and Australia. We reached important development milestones for atacicept and sprifermin, reporting our results at key medical meetings around the world.

In June, the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) issued a positive opinion for approval of Mavenclad®. Data from clinical trials indicate that Mavenclad® can lead to high and sustained efficacy through selective modulation of B and T cells, resulting in lasting resolution of inflammation. We have robust data relating to the safety and tolerability profile and consider our unique oral shortcourse treatment to be an important therapeutic option for patients with relapsing multiple sclerosis (RMS) with high disease activity. We view Mavenclad® as a complementary new oral treatment option in our MS product portfolio. Our MS treatment Rebif® is and remains a well-established therapy.

In August, the European Commission (EC) granted marketing authorization for Mavenclad® in the treatment of highly active relapsing multiple sclerosis. In December, the Therapeutic Goods Administration (TGA) in Australia updated the registration including the indication, dosing and safety information of Mavenclad® for the treatment of relapsing-remitting (RRMS), and Health Canada approved Mavenclad® as monotherapy for the treatment of adult patients with RRMS. In January 2018, the Israeli Ministry of Health approved Mavenclad® for the treatment of adult patients with highly active relapsing MS as defined by clinical or imaging features.

[1] The Group also has employees at sites which are not fully consolidated subsidiaries. These figures refer to all people directly employed by the Group and therefore may deviate from figures in the financial section of this report.

We presented data on sprifermin, our investigational treatment for knee osteoarthritis, at the ACR/ARHP Annual Meeting held in November. The study of 549 patients met its primary endpoint, demonstrating statistically significant, dose-dependent increases in MRI total femorotibial joint cartilage thickness from baseline in the two sprifermin groups receiving the highest doses as compared with the placebo group after the two-year treatment period.

We presented a total of 11 abstracts at ACR/ARHP, highlighting the momentum of our various clinical programs in immunology. We presented other data of note on a Phase II post-hoc study analysis of atacicept for SLE patients with high disease activity. In the analysis of ADDRESS II, a 24-week, randomized, placebo-controlled Phase IIb study of 306 people, those who had high disease activity at baseline had three to five times the odds of attaining low disease activity at 24 weeks when treated with atacicept 150 mg dose (n=51) as compared to those treated with placebo (n=52).

Erbitux® (cetuximab) remains the second best-selling drug in the portfolio of our Biopharma business and is our flagship product in oncology. The product is a standard of care for patients with epidermal growth factor receptor (EGFR)-expressing, RAS wild-type metastatic colorectal cancer (mCRC) therapy, as well as both recurrent/metastatic and locally advanced squamous cell carcinoma of the head and neck (SCCHN). We continue to invest in Erbitux® and are committed to making it available to those patients whom it will benefit most.

Together with Pfizer Inc., USA, we are developing much-needed new treatment options for patients with hard-to-treat cancers. In 2017, we made key progress in this area. We have obtained a total of six regulatory approvals for our anti-PD-L1 antibody avelumab under the brand name Bavencio®. The U.S. Food and Drug Administration (FDA) granted two accelerated approvals for Bavencio® for the treatment of adults and pediatric patients 12 years and older with metastatic Merkel cell carcinoma (MCC) and previously treated patients with locally advanced or metastatic urothelial carcinoma (UC). These indications were approved under accelerated approval based on tumor response rate and duration of response. Continued approval for these indications may be contingent upon verification and description of clinical benefit in confirmatory trials. The prognosis for both patient groups is very poor, so for patients around the world this may represent a welcome new treatment option. Furthermore, approvals were granted for Merkel cell carcinoma in Switzerland, Japan, Canada and in the 28 member states of the European Union, as well as Iceland, Liechtenstein and Norway.

Approvals followed in Australia and Israel in early 2018. In addition, Bavencio® was approved for the treatment of patients with urothelial carcinoma in Israel in late January 2018.

The Bavencio® approvals were based on data from our comprehensive clinical development program, JAVELIN, which currently comprises at least 30 clinical programs, including various Phase III trials, and over 7,000 patients evaluated across more than 15 different tumor types. In addition to MCC and urothelial carcinoma, these cancers include breast, gastric/gastro-esophageal junction, head and neck, Hodgkin's lymphoma, melanoma, mesothelioma, non-small cell lung, ovarian, and renal cell carcinoma. Key data from the JAVELIN program were presented at major medical congresses in 2017 to help advance understanding of the field of immuno-oncology, and this will continue in 2018.

In November, we announced that our Phase III JAVELIN Gastric 300 study did not meet its pre-specified primary endpoint of superior overall survival. The study set a high bar for success and although the primary endpoint was not met, we believe that the data will provide valuable insights. We will therefore further examine the data in an effort to better understand the results and intend to present the results at an upcoming medical congress.

In addition, as part of our commitment to developing new treatment options for patients with hard-to-treat cancers who would otherwise have a low chance of survival, we are exploring all potential options and have entered into four new strategic collaborations to evaluate avelumab in combination with a range of complementary oncology medicines (further details can be found under "Research & Development").

An important growth driver for our Biopharma business is our portfolio of fertility products that help couples conceive a child, ranging from drugs to technologies. Infertility has become a key topic globally due to the trend towards delaying childbirth. We see steadily increasing demand in growth markets fueling sales. In addition, we are facing a rapidly changing environment in the fertility market, changes in competitive environment trending towards increased price pressure in the drugs business, more educated patients and an increasing importance of technologies in Fertility. The innovative strategic objective of our Fertility business is to develop from the world market leader in fertility drugs into an integrated fertility treatment partner. We are therefore focusing on turning these trends into opportunities for our company to achieve further growth. The first step to achieve this goal was to complement our existing drug portfolio with a continuously expanding innovative technologies offering.

We are the only company to offer recombinant versions of the three natural hormones needed to treat infertility as well as a complete and clinically tested portfolio for every stage of the reproductive cycle. We are continuously supporting patients on their IVF journey. In November, the FDA approved a new version of the Gonal-f® (follitropin alfa injection) prefilled pen that is easy-to-learn and easy-to-use (please refer to the R&D section for details). Earlier in the year we received regulatory approval for the new Pergoveris® pen in Europe (please refer to the R&D section for details).

Our Fertility Technologies business continues to broaden its footprint. In December, we announced U.S. FDA 510(K) clearance of the benchtop embryo incubator Geri™[1]. This innovative technology, designed to improve processes in fertility laboratories, will be commercially available to IVF clinics in the United States as of the first half of 2018. In early 2017, we announced the release of two advanced Fertility Technologies products for improved efficiency in the assisted reproductive treatment (ART) lab, Eeva® Test 3.0 and Geri™ humidified incubation products.

In January, we opened our first Center of Excellence (CoE) for fertility, an international state-of-the-art facility for high-quality training of healthcare professionals, such as physicians and embryologists, to improve clinical practices, protocols and clinical outcomes.

[1] Geri™ is not yet available in the United States.

Every day, more than 60 million patients around the world use our trusted general medicine and endocrinology (GM&E) medicines. Today, Concor®, Euthyrox®, Glucophage® and Saizen® are high-value brands and market leaders in many key markets around the world. As a result, in terms of sales GM&E is the largest business franchise of our Healthcare business sector, with strong double-digit growth in all major therapeutic areas in 2017, contributing significantly to the overall profitability of Biopharma and Merck KGaA, Darmstadt, Germany. Although no longer patent-protected, the brand equity built over decades makes our flagship products cornerstones for the treatment of chronic cardiovascular, metabolic and endocrine diseases.

Concor®, containing bisoprolol, is the leading beta-blocker for chronic cardiovascular diseases such as hypertension, coronary artery disease and chronic heart failure. With a market share above 40% and double-digit sales growth, Euthyrox® (active ingredient levothyroxine) is the worldwide market leader for treating hypothyroidism, a disease with high prevalence but low diagnosis in most emerging markets. Glucophage®, containing the active ingredient metformin, is the drug of choice for first-line treatment of type 2 diabetes. In May, the Medicines and Healthcare products Regulatory Agency (MHRA) in the United Kingdom authorized Glucophage® SR (sustained release formulation; metformin) for the reduction in the risk or delay of the onset of type 2 diabetes in adult, overweight patients with impaired glucose tolerance (IGT) and/or impaired fasting glucose (IFG), and/or increased glycated hemoglobin (HbA1c), when intensive lifestyle changes for three to six months have failed. In addition to the United Kingdom, we have approvals in the indication of prediabetes in 16 markets and see great potential due to an increasing prevalence of diabetes.

We also help to raise awareness and education in the areas we operate in, such as thyroid diseases and diabetes. For example, we took part in International Thyroid Awareness Week and announced a partnership with the International Diabetes Federation (IDF), which will serve as a basis for joint education and communication activities to raise awareness of the importance of type 2 diabetes prevention.

Saizen® (somatropin) is our main endocrinology product and is indicated for the treatment of growth hormone deficiency (GHD) in children and adults. Saizen® is delivered with the easypod™ electromechanical injection device, the only growth hormone injection device of its kind. easypod™ is able to wirelessly transfer data such as injection times, dates and doses to the web-based software system easypod™ connect, making it easier for healthcare practitioners and patients to ensure adherence and reach their treatment goals.

At the 2017 Pharmaceutical Market Excellence Awards, we won in the category “Excellence in Innovation”. We were awarded for our eHealth ecosystem designed to improve treatment outcomes by working with patients, carers and healthcare professionals.

CONSUMER HEALTH

Our Consumer Health business focuses on consumer-centric innovation under the umbrellas of several strategic brands such as Neurobion®, Bion3®, Seven Seas®, Nasivin®, Femibion® and Dolo-Neurobion®, as well as Vivera®/Floratil®, Sangobion®, Vigantoletten®, Apaisyl®, and Kytta®. The aim is to emotionalize these over-the-counter and food supplement brands so that they become irresistible love brands in the eyes of our consumers and customers alike. Most of these brands are fully aligned with the newly established purpose of the Consumer Health business: “We exist to prepare society for a new era of humans living 100 healthy years.”

Global megatrends favor the future growth of our Consumer Health business. People are becoming more health-conscious and looking after their own physical well-being. Preventive healthcare and minimally invasive treatment are growing in importance in both established and developing markets, the latter characterized by a growing middle class with specific needs. As people and societies are growing older than ever before, Consumer Health has established a movement around its new purpose of actively driving change in the societies it operates in, all under the independent label and motto “WE100®.”

Consumer Health currently ranks among the top 15 players in the global OTC market and already generates more than 50% of its annual sales in developing growth markets. In particular, markets such as Mexico, Brazil, Poland, Greece, South Africa, India, Indonesia, Thailand, and Malaysia are delivering significant growth rates. To further align the regional strategies with the strategic brand strategies and to even better focus on efficient region-brand combinations, the business has reorganized its brand structure into a brand-franchise model leveraging its full expertise and capabilities across functions.

On September 5, we announced that we are preparing strategic options for our Consumer Health business, including a potential full or partial sale of the business as well as strategic partnerships. This is consistent with our focus on our innovation-driven Biopharma pipeline.

ALLERGOPHARMA

Our allergy business Allergopharma is one of the leading companies in the field of allergy immunotherapy (AIT). The Allergopharma portfolio includes a diverse spectrum of approved allergen products that meet high quality standards. AIT (hypo-sensitization, desensitization, specific immunotherapy) is the only causal therapy for treating allergies to unavoidable allergens.

We manufacture products to diagnose and treat type 1 allergies such as hay fever or allergic asthma. Our allergy business offers high-dose, hypoallergenic, standardized products for allergen immunotherapy of pollen and mite allergies. These allergoids have a special focus in Allergopharma's product portfolio and constitute a cornerstone in its integrated health approach for patients suffering from these conditions. For effective treatment, reliable diagnosis is key. Allergopharma offers a broad range of diagnostics in the field of allergies with more than 100 single allergens, providing physicians with the specific tools needed to identify the substances causing an allergy. In addition, Allergopharma provides individual allergen extracts on a named patient basis, which are needed to treat less frequent allergies. Personalized medicine has been a reality for Allergopharma for many years now. Products of Allergopharma are available in 18 countries worldwide.

Life Science

In our Life Science business sector, our purpose is to solve the toughest problems in life science by collaborating with the global scientific community – and through that, we aim to accelerate access to health for people everywhere. Udit Batra has been the CEO of our Life Science business sector since 2014 and a member of our Executive Board since 2016. In 2017, Life Science generated 38% of Group sales as well as 38% of EBITDA pre (excluding Corporate and Other).

We serve customers in academia, biotech and pharma – helping them to deliver the promise of their work better, faster and safer. As a leading player in the life science industry, we offer innovative solutions for scientists and engineers at every stage.

Our 300,000 products range from lab water systems to genome-editing tools, antibodies and cell lines, as well as end-to-end bioprocessing systems to support the manufacturing needs of both emerging biotech and large pharma companies. For example, our Life Science business sector created the first-ever commercially available cell line platform for faster, simpler selection and scale-up of high-producing clones for making recombinant protein drugs. Used to produce biopharmaceuticals, the CHOZN® cell line has been proven to shorten bioproduction times in early development, enabling customers to enhance their speed to market and decrease costs.

Another example is our Life Science business sector's Mobius® single-use bioreactors, which help customers move closer to fully disposable manufacturing. Single-use technology is becoming increasingly popular in the industry. With single-use disposable equipment, customers get improved batch turnaround times, reduced risk of product cross-contamination, decreased capital costs and have less equipment to clean.

After successfully orchestrating the largest integration in the history of our company, our Life Science business sector redesigned its organizational structure in the second quarter of 2017 to capture growth opportunities even more nimbly and to align the entire organization to optimally contribute to, and capitalize on the strength of the Group. Strategic Marketing & Innovation units and commercial teams have been streamlined into three distinct business units – Research Solutions, Process Solutions and Applied Solutions – with each designed to increase agility and drive sustained entrepreneurship to better serve our customers.

Our Life Science business sector generates recurring sales and stable, attractive cash flows in an industry characterized by stringent regulatory requirements. A highly diversified and loyal customer base additionally ensures a low-risk profile. We benefit from a broad and relevant portfolio, a highly efficient supply chain that includes an e-commerce platform and global reach.

Our e-commerce platform, www.sigmaaldrich.com, allows customers in nearly every country to easily find the exact products needed to advance their research. Currently, more than 80% of our Life Science business' legacy products are available on the platform. In 2016, we implemented a centralized initiative to manage all customer acquisition channels and scaled search advertising to include more than two million active keywords to drive increased web traffic to the content customers are seeking. In 2017, we continued to optimize our web channel and streamline the customer experience, resulting in increased user sessions and revenue.

We continued our journey to spark curiosity in the next generation of scientists with a year-long Curiosity Cube™ tour across the United States. The tour was built on the business sector's successful Curiosity Labs™ program, where employee volunteers brought leading-edge science, technology and experiments to tens of thousands of students around the globe – aiming to inspire a future career in Science, Technology, Engineering and Math (STEM). Through 2017, the Curiosity Cube™ – a retrofitted shipping container transformed into a mobile science lab – visited 79 schools, held 54 public events and reached 38,040 students.

The Life Science Research Solutions business unit serves customers focused on identifying and developing new medicines. We offer a broad and relevant portfolio of solutions that enables scientific discovery through collaborative partnerships across the customer journey. This includes more than 200,000 products and services, including molecular platforms, protein and pathway technologies, biochemicals, materials science and cell culture workflow tools.

In May, we acquired Grzybowski Scientific Inventions (GSI) to complement our industry-leading e-commerce platform and chemistry portfolio of more than 400,000 building blocks, catalysts and reagents for chemical synthesis. GSI developed a revolutionary computer-aided retro-synthesis tool, used to advance reaction rules and proprietary algorithms to identify synthesis pathways that meet user-defined constraints. Virtual synthesis significantly reduces the time between chemical target conception and route evaluation by using a lab's preferences to filter millions of data points.

The Process Solutions business unit delivers end-to-end products and expertise to customers who take what is developed in labs and manufacture it. We offer a diverse range of products to pharmaceutical and biotechnology companies that enables customers to develop large- and small-molecule drugs safely, effectively and cost-efficiently. The 15,000-plus products and services in this business unit include single-use manufacturing, filtration, chromatography and purification, virus reduction, pharma and biopharma raw materials, drug delivery compounds and engineering and validation services.

As a leader in single-use technology, we launched an industry-first program that allows more flexibility, better supply predictability and shorter lead times for safer and more efficient drug manufacture through the Mobius® MyWAY portfolio. This is critical to customers ranging from contract manufacturing organizations to large pharma companies, whose biggest challenge is getting custom assembly with fast, reliable lead times for quicker turnarounds and more rapid biomanufacturing.

Our single-use chromatography portfolio was boosted in August with an agreement to acquire Natrix Separations, a provider of hydrogel membrane products based in Ontario, Canada. Natrix is known for its unique technology platform, which delivers high productivity and impurity removal in a single-use format. The acquisition complements our efforts to drive next-generation bioprocessing, ultimately enabling faster and more efficient technology for customers.

In September, China's first BioReliance® End-to-End Biodevelopment Center was opened in Shanghai. The center provides a full range of process development capabilities and services, including cell line development, upstream and downstream process development and non-GMP clinical production. The center is designed to meet the specific needs of customers in the APAC region.

The Applied Solutions business unit supports customers in their efforts to ensure that drugs, food and beverages are safe for consumption. We provide trusted products and comprehensive workflow solutions that streamline processes, lower costs and deliver consistent, reliable results. Our 62,000-plus products and services include analytical separation systems, reference materials, lab water instruments with consumables and services, and microbiology and bio-monitoring testing materials.

Our Life Science business sector reinforced its commitment to food safety with the acquisition of BioControl Systems Inc., offering customers a complete workflow solution for food pathogen testing. BioControl's established rapid-detection technology and third-party-validated testing platforms complement our current portfolio of instruments and consumables. The acquisition strengthens our ability to help customers protect the global food supply by providing an extensive portfolio of state-of-the-art testing technology.

Following the acquisition, we opened our first customer food-safety studio, located in Bellevue, Washington, USA, for manufacturers of all types of food. The new center gives customers access to a complete food-safety workflow, from raw materials testing to finished-product safety testing, to help find, correct and prevent hazards within the food supply chain. The investment brings teams together in a workspace designed to foster open innovation and collaboration aimed at our becoming the leader in food-safety testing.

In March, we marked the 50th anniversary of our first lab water system launch and introduced worldwide the Milli-Q® IQ 7000, the seventh-generation Milli-Q® water purification innovation. There have been tremendous advancements in the lab, and today's scientists continue to seek ways to improve reproducibility and reliability of data. The new lab water system addresses these pain points. Milli-Q® water has become synonymous with ultrapure lab water and is the most cited brand in peer-reviewed publications.

Performance Materials

Our specialty chemicals business is combined in our Performance Materials business sector. The portfolio includes high-tech chemicals for applications in fields such as consumer electronics, lighting, coatings, printing technology, paints, plastics, and cosmetics. Performance Materials comprises four business units: Display Materials, Integrated Circuit Materials, Pigments & Functional Materials, and Advanced Technologies. In September 2017, Kai Beckmann, a member of our Executive Board since April 2011, succeeded Walter Galinat as CEO Performance Materials. In 2017, our Performance Materials business sector's share of Group sales amounted to 16% and its share of EBITDA pre (excluding Corporate and Other) was 21%. The EBITDA pre margin amounted to 40.1% of sales.

Global demand for innovative display solutions has continued to grow in recent years. The demand for high-quality consumer electronics, such as high-resolution televisions and smartphones, will rise further in the coming years. This will be accompanied by the building of new capacities and growth in volume demand, driven primarily by large-screen televisions. In Display Materials, our largest business unit, we observed a normalization of our market shares in the liquid crystals sector in 2017. We want to stabilize this situation by further strengthening our position as market and technology leader. Key to this are new, sophisticated liquid crystal technologies, such as SA-VA (self-aligned vertical alignment) and UB-Plus (ultra brightness). Both new technologies are being intensively tested by customers – initial quantities to manufacture the corresponding display panels have already been sold. The innovative, energy-saving liquid crystal technology UB-FFS (ultra-brightness fringe-field switching) for small and medium-sized displays recorded double-digit growth compared with 2016. In addition, we further enhanced our ability to support customers in solving process technology issues. In 2017, we made further progress in developing new applications for liquid crystals. For example, we opened the first production facility for switchable liquid crystal window modules in Veldhoven, the Netherlands. This is an important milestone for capturing a new market segment for liquid crystals. Frost & Sullivan recognized our liquid crystal window technology with the Technology Innovation Award 2017. We also made good progress in applying liquid crystal technologies to smart antennas and automotive headlight systems, where we expect to generate initial sales in 2018.

In 2017, our annual "Displaying Futures" symposium, which took place in Tokyo, focused on the topic of Digital Transformations. We host this symposium in order to stimulate an interdisciplinary dialogue on the development and potential of technologies and their future impact on society. Experts in robotics, artificial intelligence (AI) and design participated, elucidating digital transformation from the various perspectives. Back in 2016, we launched the Displaying Futures Award to promote young entrepreneurs and researchers. The aim of this year's call for proposals was to identify flexible applications in the field of hybrid electronics. The prize, worth US$ 50,000, was awarded to three teams from Canada and the United Kingdom.

Integrated Circuit Materials is our second-largest business unit and supplies products to manufacture integrated circuits and microelectronic systems, for antireflection coatings, and for the miniaturization of transistor structures. Deposition materials and conductive pastes for semiconductor packaging round off the portfolio. As an important partner to leading global electronics manufacturers, the business unit achieved very strong organic sales growth and gained relevant market shares in an overall positively developing semiconductor market. Particularly strong growth was generated by materials for dielectric insulating layers and metal layers deposited from the gas phase used for advanced processors and latest-generation storage chips. At industry events such as the international trade show for semiconductor technology Semicon Korea, SPIE Photonics West in San Francisco, California, USA, and Semicon Taiwan, we presented our portfolio expanded by the acquisitions of SAFC Hitech and Ormet Circuits. At the International Conference on Atomic Layer Deposition (ALD) in Denver, Colorado, USA, we presented our latest advances in coating technology. In order to support our business expansion in Asia, we opened a new research and application center at our site in Kaohsiung, Taiwan. The center houses two laboratories developing applications for coating materials and semiconductor packaging in order to provide future-oriented support to our customers.

The Pigments & Functional Materials business unit develops and markets a comprehensive product portfolio of decorative effect pigments and functional materials. Our effect pigments are primarily used in automotive and industrial coatings, plastics, printing applications, cosmetics and some foods, in order to give products a unique luster. Functional materials include laser marking, conductive additives, applications for counterfeit protection as well as high-quality cosmetic active ingredients, for example for use in skin care, as well as sun protection and insect repellants. In 2017, we introduced Xirallic® NXT Cougar Red as a new product for coating applications. It belongs to the improved product generation of the well-known high-tech effect pigments and stands out due to an attractive bluish red and very intense glitter. We developed a special clear coat for new effect dimensions in automotive coatings in cooperation with Daimler, the coatings specialist PPG Industries and the Fraunhofer Institute for Manufacturing Engineering and Automation. This new development, which was presented at Sucar, the international conference on automotive body finishing in Cannes, France, can significantly intensify the effect on existing OEM base coats, making it possible to create completely new color tones. For its innovative 3D effect printing technology, our company entered into a strategic partnership with Schmid Rhyner of Switzerland. The aim is to further develop this innovative printing process with effect pigments for various surfaces and markets. We added Tivida® FL 3000 to our portfolio of fluorosurfactants. Its competitive differentiation is based on its favorable ecotoxicological profile, and even in very low concentrations it significantly improves the flow and wetting behavior of coating systems.

At the Laser World of Photonics 2017 exhibition, we presented a new pigment for laser marking in a new application field. Iriotec® 8826 is particularly suitable for dark and high-contrast marking of colored polymers and for the first time enables the laser marking of films. Besides materials for technical applications, we are working on innovative materials for cosmetics. In 2017, two new raw materials complemented our portfolio: RonaCare® Pristine Bright liquid, a liquid variant of an active ingredient that makes the skin appear naturally lighter, and an alcohol-free variant of the anti-aging active ingredient RonaCare® CP5.

In 2017, we opened a new application laboratory in Shanghai, China. It is the first application laboratory for pigments and functional materials in China, through which we offer our customers comprehensive tailored services for our products and at the same time work with them to develop new products. China is one of the fastest-growing markets for our pigments and cosmetics businesses. With the new application laboratory, we are continuing our 20-year commitment in this business in China and Southeast Asia, and are underscoring our leading position in pigments and functional materials.

At the International Symposium on Automotive Lighting (ISAL) in Darmstadt, we presented our functional pigments for lighting applications. With these pigments from the Iriotec® 8000 series, circuit layouts can be integrated into injection-molded components or powder-coated components in laser direct structuring processes. Laser structuring of the components offers tremendous design freedom, especially since these pigments also enable light-colored design in addition to dark modules.

In 2017, the Advanced Technologies business unit invested further, particularly in future-oriented research and development in Performance Materials. A very good example of this are our materials for organic light-emitting diodes (OLEDs). The OLED materials business is one of our fastest-growing businesses. We worked intensively to improve materials for televisions, for instance. Brighter displays and a larger color spectrum were two areas of focus. At our debut at the International Motor Show (IAA) in Frankfurt, Germany, we exhibited rear lights with OLED materials, for instance. As OLEDs are extremely thin and lightweight, the parts require only little space. This allows rear lights in new forms, giving vehicle designers even greater possibilities in the future. OLED materials also permit free-form displays in vehicle interiors, which expands the design possibilities even further. The technology permits particularly vivid contrasts, brilliant colors, sharp images, and pleasant readability. We are continuing to drive OLED technology forward. The capacities at the application laboratory in Korea were doubled in 2017. High-quality phosphors are used for the backlighting of liquid crystal displays. We launched our new full-spectrum phosphors for application in violet chip-based LEDs. They are very luminous and achieve a high color rendering index and a spectrum that comes very close to natural sunlight. Apart from the use of OLED materials in displays, we are continuing to target the lighting market.

In the field of organic photovoltaics, more and more pilot projects demonstrate the manifold applications of the technology in architecture. In initial construction projects in Europe and Brazil, printed solar foils turn glass façades and canopies into active power generators. In 2017, we received the Innovation Award Architecture + Building at the BAU 2017 for our organic photovoltaic modules developed in cooperation with Belectric OPV.

Strategic realignment

In 2018, we want to focus even more strongly on the needs of our customers and markets. Therefore, in December 2017, we announced that we will combine our expertise in three newly created business units aligned with our target markets: Display Solutions, Semiconductor Solutions and Surface Solutions.

Objectives and Strategies

General principles and Group strategy

GENERAL PRINCIPLES

Our company is a vibrant science and technology company. Across Healthcare, Life Science and Performance Materials, we bring expert and high-quality products to the world. Our aim is to achieve technological progress that will improve life and make our customers and business associates more successful. This aspiration is embodied by value-based and economically sustainable corporate governance, and steers the strategic development of the Group.

Our annual strategic development process follows firmly defined principles. Our business portfolio is expected to be adequately balanced at all times so as to reflect an optimum mix between entrepreneurial opportunities and risks and ensure the long-term success of the company. We achieve this through our diversification into three complementary business sectors that make the company as a whole less dependent on economic cycles, as well as by further expanding our presence in global growth markets. This exemplifies the long-term direction of our Group strategy. The company structure of Merck KGaA, Darmstadt, Germany, also contributes to this. The Merck family holds approximately 70% of the capital of Merck KGaA, Darmstadt, Germany, via E. Merck KG, Darmstadt, Germany, the personally liable partner. In addition, the structure requires the Executive Board, whose members are also personally liable partners, to pay special attention to the long-term value creation.

For us, the principle of long-term thinking and actions applies not only to economic aspects, but also encompasses corporate responsibility. We pursue three strategic spheres of activity: health, environment as well as culture and education. The focus is always on the future viability of society and the competitiveness of our company. With our current and future product portfolio, we want to help meet global challenges, from urbanization to aging populations.

GROUP STRATEGY

Over the past decade, our company has transformed itself from a classic supplier of chemicals and pharmaceuticals into a global science and technology company. The main driver was the transformation of our business portfolio, particularly through the divestment of our Generics business (2007) and the acquisitions of Serono (2007), Millipore (2010), AZ Electronic Materials (2014), and Sigma-Aldrich (2015). In addition, we focused our businesses on innovation-driven and highly specialized products, extensively revamped our internal structures and processes, and expanded our presence in global growth markets. In line with this strategy, we completed the divestment of our Biosimilars business in 2017. In addition, we are preparing strategic options for our Consumer Health business, including a potential full or partial sale of the business as well as strategic partnerships.

Today, we hold leading positions in the respective markets of our three business sectors Healthcare, Life Science and Performance Materials, and are working to bolster and expand these. To this end, we are pursuing innovation-driven, organic growth. For instance, by 2022 we are targeting sales of around € 4 billion with new products. New medicines from the pharmaceutical pipeline are to contribute around € 2 billion, with Life Science and Performance Materials innovations each contributing around € 1 billion in sales.

Targeted acquisitions capable of meaningfully complementing or boosting our strengths remain a growth option. However, we continue to rule out major acquisitions of more than € 500 million as long as the debt level expressed as the ratio of net financial debt to EBITDA pre is greater than 2, unless divestments could be used to finance them. By the end of 2018, we aim to reduce our debt level to below 2 again. At Group level, we reduced our net debt by around € 1.4 billion in 2017. At the same time, strict financial discipline supports the rating of the Group. Our dividend policy reflects a sustainable earnings trend.

Our Group strategy aims to resolutely continue the transformation of Merck KGaA, Darmstadt, Germany, into a science and technology company and to position the company as a leading player in a changing market environment. We focus on three areas of key priority, namely “Performance”, “People” and “Technology”.

Priority area "Performance"

The priority area "Performance" encompasses all activities that create sustainable, profitable growth. To this end, we are closely aligning our businesses with the wishes and needs of customers and patients, not only through our products, but also best possible proximity. The basis for this is formed by efficient structures and processes as well as sustainable financial management.

In Healthcare, the strategic direction is to become a global specialty innovator and we aim to maximize growth of existing franchises and to deliver pipeline with an average of one product launch or indication per year from 2017. We intend to keep our base business organically stable until 2022. In 2017, the potential of the pipeline materialized with six approvals for Bavencio®, two in the United States, and one in the EU, in Switzerland, in Japan, and in Canada, as well as for Mavenclad® in the EU, Canada and Australia.

In Life Science we deliver above-market organic growth by having a broad portfolio that addresses the needs of the scientific community, particularly in high-growth areas, for instance bioprocessing. We achieve solid organic sales growth consistently, even during the integration. Our profitability is industry-leading, driven by our e-commerce platform and synergies from the rapid integration of Sigma-Aldrich into our Life Science business sector. By the end of 2018, we expect to realize € 280 million in planned synergies.

In Performance Materials, we expect that our Semiconductor and Surface Solutions business units, which are developing well, will continue to mitigate the consequences of the fiercer competitive environment in our Liquid Crystals business in 2018. Going forward, we want to further enhance our degree of diversification. In addition, new technologies are in the testing phase. Our goal is to achieve innovation and technology leadership in all businesses and to push forward with innovative solutions in applications beyond displays.

From a regional perspective, in view of the importance of the Chinese market and China's ambitious plan to become a global leader in innovation and technology, we are placing further importance on bolstering our positioning in this country. China will remain one of the most strategically important markets for us globally. By focusing on growth contributions from China and driving innovation and digitalization across our business sectors, we are fostering the development and evolution of the Chinese innovation landscape. Our Healthcare business sector continues to aim for very strong growth and is improving the lives of millions of patients in China, in particular with medicines from our General Medicines franchise, for example to treat cardiovascular diseases, as well as our Fertility franchise. Our Life Science and Performance Materials business sectors help Chinese companies and research institutes to become more competitive and efficient. We work with Chinese pharmaceutical companies on manufacturing and research processes and we make materials for Chinese electronic and display manufacturers.

Priority area "People"

The priority area "People" addresses how we as a science and technology company can create a working environment that meets our employees' individual needs and allows curiosity to unfold. Our growth strategy calls for people with diverse experience and backgrounds who work together on the basis of shared values to create innovation and respond flexibly to changing demands.

The basis for this is the ability to identify talented employees within the company early on and to systematically promote them – also across business sectors and countries. Moreover, it is crucial to be perceived as an attractive employer in the market in order to continue to capture the interest of potential employees. The fact that we rank among the world's best employers was also confirmed by the distinction as "Global Top Employer 2017" by the Dutch Top Employers Institute. In addition, we were ranked fourth among biotechnology and pharmaceutical companies worldwide by Science magazine, a leading peer-reviewed international scientific publication.

In the course of our transformation, our leaders play a key role. They are responsible for driving our strategy forward by building the right competencies, thereby enabling innovation. We therefore place great importance on the continuous advanced training and further development of our leaders. This is essential for them to address the diverse needs of their team members and the changing requirements of the businesses and of digitalization.

Based on employee feedback and external benchmarking, we are also continuously further developing our existing programs and processes. Our award-winning people analytics approach, which for example empowers our leaders to make data-driven decisions on matters relating to their functions and people, has been rolled out to all people managers globally. Other pilot initiatives focus on, among other things, strengthening the engagement and innovation potential of our research and development units, and on flexible ways of collaborating across national and departmental boundaries.

Priority area "Technology"

The priority area "Technology" covers the closely interlinked areas of innovation and digitalization. Developing and marketing innovative products and services are at the forefront of our Group strategy and all the business strategies. Our objective is to foster innovations both within the businesses and between them as well as beyond existing businesses into areas in which we are not yet active.

In particular, we want to capture the opportunities that digitalization offers in order to create value for patients, customers and business associates. To us, digitalization means the digital integration of our entire value chain, the digitalization of our products, services and communication interfaces to customers as well as the development of new digital business models. This is supported by state-of-the-art methods to collect and analyze vast amounts of data. For example, we generate additional sales from our e-commerce platform www.sigmaaldrich.com using algorithmic optimization of ads and product recommendations. Other examples include a supply chain project with our partner Palantir Technologies, where we are using

advanced analytics to better forecast drug demand and to optimize our inventories. Within the scope of this partnership, we want to leverage Palantir's advanced data analytics capabilities to more rapidly develop and deliver medicines and commercialize new products. This could also play a part in the development of entirely new therapeutic options for patients in the future. Initially, we will use Palantir's technology in cancer treatment and patient services. Later on it can be used in other areas of the company. Our computer-aided retrosynthesis tool Chematica is also using advanced algorithms to help customers in medicinal chemistry and drug discovery to identify synthesis pathways.

Furthermore, we are working Group-wide to expand the physical and virtual infrastructure for technology-driven growth. The centerpiece is formed by our Innovation Center in Darmstadt. A modular Innovation Center was opened in April 2015 in Darmstadt as a prototype of the new Innovation Center that will be opened in spring 2018. The Innovation Center aims to develop entirely new businesses beyond the current scope, bringing together people, technologies, and skills from different areas under one roof.

We seek to establish projects in various strategic innovation fields of interest that we consider promising. The first such innovation field, "Biosensing and Interfaces", focuses on the vast opportunities created by combining new sensor technology with smart algorithms and Big Data technology. This is expected to lead to new predictive and prescriptive approaches to treat and support patients in the therapeutic areas that we address. We want to offer innovation projects ideal conditions in the Innovation Center to grow into viable new businesses in an environment that provides both entrepreneurial freedom and dedicated support.

Additionally, the Innovation Center establishes strong connections to the start-up community, scientific centers of excellence, and external partners across industries, for example via our Accelerator program, that supports early-stage start-ups for a period of three months. The start-ups receive financial support, training and coaching as well as access to our experts from the businesses. Since the program began in September 2015, we have received more than 2,000 applications from over 70 countries and have mentored 30 start-ups.

Within the scope of our innovation strategy, we have established our strategic corporate venture capital fund with a total volume of € 300 million to manage funds focused on Healthcare, Life Science, Performance Materials and New Businesses. Our corporate venture capital fund invests globally in transformational ideas driven by strong entrepreneurs. We take an active role in our portfolio companies and team up with entrepreneurs and co-investors to translate innovation into commercial success. We have a significant focus on early-stage investing and company creation, including the formation of spin-offs to leverage our science and technology base. Our corporate venture capital fund currently has an active portfolio of 30 companies.

Building on our 350-year history, the Darmstadt site is making a vital contribution to the company's future in research-based specialty businesses. It serves as a key site for R&D and high-quality production for all our business sectors in their global markets, as the heart of our company, as our global headquarters as well as the base for the family boards, executive management and our Group functions.

Business strategies

HEALTHCARE

Our Healthcare business sector comprises the three businesses Biopharma, Consumer Health and Allergopharma. The diversity and profound medical expertise we have in these businesses are core strengths and key differentiators in the market. Within each business, we specialize in key therapeutic areas and specific diseases.

Global megatrends such as a growing world population and an increase in average life expectancy are driving the demand for our healthcare products. To meet these demands and respond appropriately to the dynamics of our healthcare markets, we have significantly transformed our Healthcare business sector in recent years. Following on our successes of the past year, we continue to drive pipeline projects with the aim of bringing groundbreaking medicines to patients, maximizing our existing portfolio and continuing our expansion in growth markets.

The ambition of our Healthcare business sector is to become a global specialty innovator, to operate in therapeutic areas with significant unmet medical need and to bring high value to patients and consumers. Therefore, we invest heavily in research and development to discover new treatment options and improve existing ones. Together with our stakeholders and partners, we want to ensure that people can access the medicines they need to stay healthy and live longer.

The first pillar of our strategy is to reinforce our global footprint by developing our tailored portfolio to address unmet medical needs in all regions worldwide. While developed markets such as the United States, Japan and Europe are key strategic markets for our specialty products, sales in growth markets such as China will be driven by both our biologics and broad general medicine and cardiometabolic care portfolios. At the same time, it will be essential for us to continue to focus our efforts on growing in the United States in order to realize our ambition of becoming a truly global leader.

The second pillar of our strategy is the focus on specialty medicine therapeutic areas. Here, we are concentrating our efforts on oncology, immuno-oncology, as well as neurology and immunology. For example, we have made significant investments in R&D, especially in areas of unmet medical need, and refined our focus on mechanisms of action and molecules that are expected to lead to transformative innovations in cancer care and immunological disorders. Our aim is to turn cancer patients into cancer survivors by being at the forefront of changing the future of cancer care. Further development programs for neurology and immunology include evobrutinib as a potential treatment for multiple sclerosis, systemic lupus erythematosus as well as rheumatoid arthritis; atacicept as a potential treatment option for lupus patients with high disease activity; and sprifermin as a potential therapy for patients with osteoarthritis of the knee.

Our aspiration is to develop high-quality, first-to-market and best-in-disease assets, and to build a portfolio in each of our therapeutic areas. We have streamlined our pipeline and expanded our innovation capabilities with strong investigational drug candidates. In order to maximize the impact of our R&D investments and increase our chances of success in discovering and developing new therapies, we focus our expertise on specific therapeutic areas and are exploiting synergies in disease mechanisms and biological pathways.

In this context, strategic collaborations are an integral part of delivering on our commitment to transforming the lives of patients living with serious unmet medical needs. We recognize the value of collaboration in the research and development of breakthrough therapies, as well as in strengthening our current portfolio. Here, we focus on balancing the right blend of internal capabilities and external partnerships, building strong collaborations with other leaders in industry, including Pfizer, Genea Biomedx and Vertex Pharmaceuticals.

We are innovating beyond our pipeline projects with our Medical Devices and Services unit and our Fertility Technologies. In addition to innovative therapeutic approaches, the way in which we engage with patients will be vital to achieving our objective of becoming a global specialty innovator.

Our divestment of the Biosimilars business to Fresenius closed on August 31. On September 5, we announced that we are preparing strategic options for our Consumer Health business, including a potential full or partial sale of the business as well as strategic partnerships. The Biosimilars divestment as well as the decision to examine strategic options for Consumer Health were both aligned with our strategy to focus on our pipeline of innovative medicines.

LIFE SCIENCE STRATEGY

As a leader in the large and growing life science industry, our purpose is to solve the toughest problems in life science by collaborating with the global scientific community.

We have a portfolio of more than 300,000 products, in order to support a broad customer base – including academia, pharma and biotech labs, pharma manufacturing, biotech manufacturing, clinical diagnostics, environmental testing, food and beverage and industrial. We have an industry leading e-commerce platform, www.sigmaaldrich.com, which offers life science solutions, services and expertise across the entire biopharma value chain.

To create sustainable value for the future, Life Science has set a strategy to:

- Deliver the integration to combine the strengths of our legacy life science business and Sigma-Aldrich
- Strengthen the core business by investing in high growth areas, addressing our customer needs and enhancing capabilities
- Place bold bets in areas with transformative potential in order to establish new pillars of growth

The Sigma-Aldrich integration has been ahead of plan and we continue to be on track as we begin year three of the integration. The synergy estimate was raised from € 260 million to € 280 million. We will leverage best practices from both organizations, combine our sales force for one face to the customer, and continue to harmonize processes for employees and customers.

We have tailored our strategy and will continue to manage our business based on scale and growth to optimize the overall performance and portfolio of our Life Science business sector. We have further streamlined our organizational structure to capture growth opportunities even more strongly. Strategic Marketing & Innovation units and commercial teams are now reorganized into three distinct, vertically integrated business units: Research Solutions, Process Solutions and Applied Solutions, with each designed to increase agility and drive sustained entrepreneurship to better serve our customers. We also announced a number of acquisitions in 2017. These include BioControl Systems to strengthen our leadership in biomonitoring, specifically in the food and beverage sector, as well as Grzybowski Scientific Inventions to boost capability in chemical synthesis, and Natrix Separations to advance in next-generation bioprocessing.

Based on a broad assessment of the market, competitive landscape and key industry trends, in 2016 we identified several strategic initiatives in important growth areas. For example, in genome editing and novel modalities, we have built intellectual property in key areas,

with patents granted in the European Union, Australia, Canada, and Singapore. The patents provide protection of our CRISPR technology, while giving scientists the ability to advance treatment options for the toughest medical challenges. In our BioReliance® End-to-End initiative we work with emerging biotech companies in process development, drug production and facility design services that help biopharmaceutical companies accelerate the progression of molecules into the clinic and towards commercialization.

PERFORMANCE MATERIALS

In our Performance Materials business sector, we want to sustainably secure our market and technology leadership in display materials. In addition, we want to leverage our expertise in liquid crystals beyond the application field of displays. At the same time, we benefit from the trends in the semiconductor industry, continue to lead the market in pearlescent pigments, and share in the growth of the cosmetics industry.

Global demand for innovative display solutions grew further in recent years. We assume that increasing demand for high-quality consumer goods will come from an expanding middle class in growth markets in the coming years, too. Therefore, we aim to continue to strengthen our position as the market and technology leader for liquid crystals. Key to this are new, sophisticated liquid crystal technologies for further asserting our market and technology leadership, especially in the highly competitive Chinese market. In 2017, we sold the first quantity of our eco-friendly, resource-conserving and efficient liquid crystal technology SA-VA (self-aligned vertical alignment) for manufacture of large-area LC displays. In 2017, we opened the first production facility for switchable liquid crystal window modules in Veldhoven, the Netherlands. This is an important milestone for capturing an entirely new and attractive market segment for liquid crystals.

The OLED (organic light-emitting diodes) business contributes significantly to the growth of Performance Materials. It is our declared goal to strengthen our position as a leading global supplier of OLED materials. Continuous investments in research and development at the Darmstadt site as well as application laboratories at the Asian sites make an essential contribution to this. The opening of a new application laboratory in Shanghai is planned for 2018.

The great potential of OLED technology is confirmed by the development of the display market. OLED-based smartphone displays are the standard among all premium suppliers. OLED technology is also showing dynamic growth in the TV segment, bolstered by high investments by the leading OLED TV display manufacturer. The advantages offered by self-luminous OLED displays, such as intense colors, an especially deep black, thin structure, flexible use and low energy consumption are of importance here.

The Integrated Circuit Materials business unit supports the entire semiconductor industry with a portfolio of customized solutions. Increasingly higher storage capacity, faster process performance and lower power consumption are being demanded by the semiconductor industry. In addition, market trends such as mobility, Big Data and the Internet of Things are leading to higher demand for semiconductor materials and higher specialization at the same time. By means of novel materials and innovative technologies, we enable our customers to meet these requirements, produce more powerful chips, and counteract rising costs.

In the Pigments & Functional Materials business unit, we are further expanding our leading position in pearlescent pigments for automotive coatings. We are continuing to defend our good market position in plastics, printing and cosmetics applications. Here we are focusing on high-quality products and innovations. In functional materials, the focus of our growth strategy continues to be on niche applications in cosmetics (such as UV filters, insect repellents and anti-aging substances) as well as technical functional materials. In the latter, we see great growth potential for laser-marking additives and for novel coating materials. With these and further innovative product groups we will drive our growth in segments beyond our established markets.

Our Advanced Technologies business unit aims to develop profitable future businesses – both for Performance Materials and for our other business sectors. Besides a broad portfolio for the innovative LED industry, these also include organic photovoltaics and materials for flexible display technologies. In accordance with the Performance Materials strategy, our projects for future business fields are aligned to megatrends such as miniaturization and the Internet of Things.

Strategic initiatives

The LC 2021 strategic initiative is to significantly contribute to our future growth and continue to generate attractive margins. Under the umbrella of the LC 2021 strategic initiative, we are combining future applications of liquid crystals beyond classic displays. In six fields altogether, we are focusing on improved user experience, on the one hand, and light and data management, on the other. First and foremost, this comprises liquid crystal windows. In Veldhoven, the Netherlands, we opened the first production facility for modules used in LC windows with sun protection and privacy control.

Strategic realignment

In 2018, we want to focus even more strongly on the needs of our customers and markets. Therefore, in December 2017, we announced that we will combine our expertise in three newly created business units, which are aligned to our target markets: Display Solutions, Semiconductor Solutions and Surface Solutions.

Strategic finance and dividend policy

We are pursuing a conservative financial policy characterized by the following aspects:

FINANCIAL FLEXIBILITY AND A CONSERVATIVE FUNDING STRATEGY

We ensure that we meet our obligations at all times and adhere to a conservative and proactive funding strategy that involves the use of various financial instruments.

We have diversified and profitable businesses as the basis for our strong and sustainable cash flow generation capacity. Moreover, we have several funding resources in place. A € 2 billion syndicated loan facility through to 2020 exists to cover any unexpected cash needs. The facility is a pure back-up credit facility and has not been drawn on so far. In addition, we have a commercial paper program with a volume of € 2 billion at our disposal. Within the scope of this program, we can issue short-term commercial paper with a maturity of up to one year.

Furthermore, we are using bilateral bank loan agreements with first-class banks in order to optimize the funding structure and cost. Additionally, the bond market generally represents a key element. However, owing to our focus on deleveraging, no bonds were issued in 2017. The most recent bond issues took place in 2014 and 2015 in connection with the acquisition of Sigma-Aldrich. A hybrid bond, a U.S. dollar bond and a euro bond were issued. The use of various instruments provides a broad financing basis and addresses different investor groups.

MAINTAINING SUSTAINABLE AND RELIABLE BUSINESS RELATIONS WITH A CORE GROUP OF BANKS

We mainly work with a well-diversified, financially stable and reliable group of banks. Due to our long-term-oriented business approach, bank relationships typically last for many years and are characterized by professionalism and trust. The banking group consists of banks with strong capabilities and expertise in various products and geographic regions. We regard these banks as strategic partners. Accordingly, we involve them in important financing transactions.

STRONG INVESTMENT GRADE RATING

The rating of our creditworthiness by external rating agencies is an important indicator of the company's financial stability. A strong investment-grade rating is an important cornerstone of our financial policy, as it safeguards access to capital markets at attractive financial conditions. Our company currently has a Baa1 rating from Moody's, an A rating from Standard & Poor's (S&P) and an A- rating from Scope, each with a stable outlook. Continuing to reduce our debt, as in 2017, is of utmost importance to us.

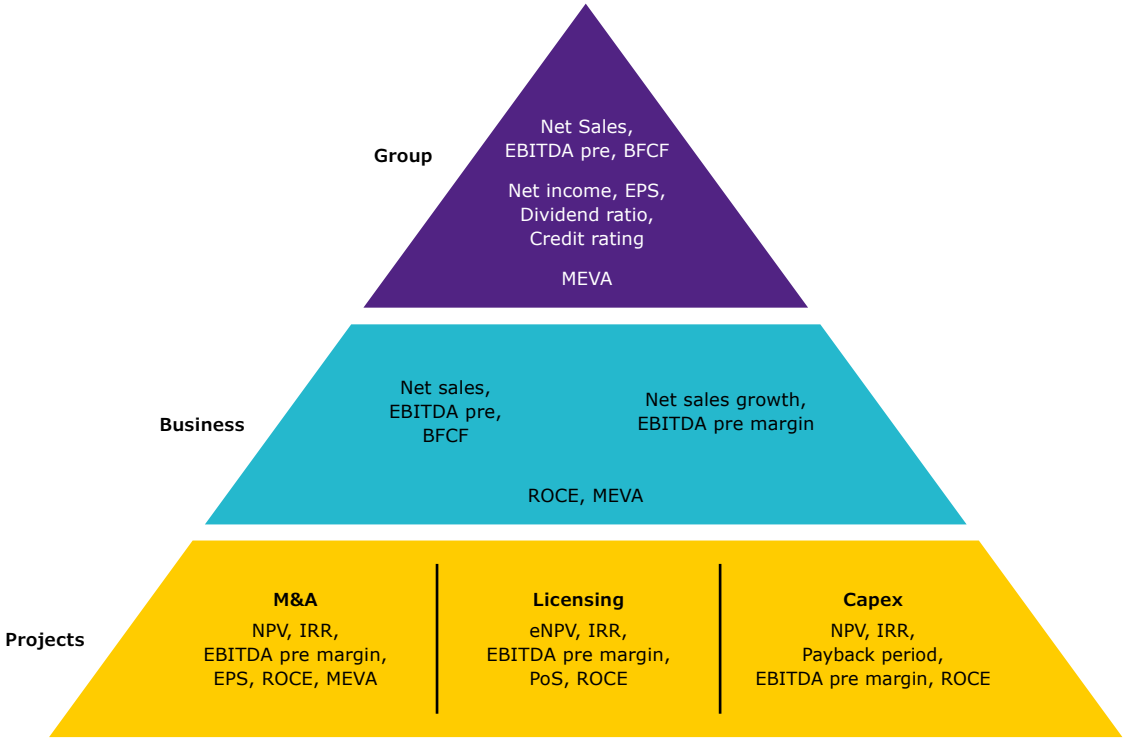
DIVIDEND POLICY

We are pursuing a sustainable dividend policy. Provided that the economic environment develops in a stable manner, the current dividend represents the minimum level for future dividend proposals. The dividend policy is oriented towards the business development and earnings increase of the coming years. However, dividend growth could deviate, for example, within the scope of restructuring or in the event of significant global economic developments. We aim for a target corridor of 20% to 25% of EPS pre.

Internal Management System

As a global company with a diverse portfolio of products and services, we use a comprehensive framework of indicators to manage performance. The most important KPI (key performance indicator) to measure performance is EBITDA pre[1].

The Value Creation and Financial KPI Pyramid, which summarizes the important financial performance measures of the Group, reflects the comprehensive framework of financial KPIs to steer the businesses and prioritize the allocation of cash resources. It consists of three managerial dimensions, namely Group, Business and Projects, each of which require the use of different indicators.



Abbreviations

EBITDA pre = Earnings before interest, income tax, depreciation and amortization as well as adjustments
EPS = Earnings per share
MEVA = Value added of Merck KGaA, Darmstadt, Germany
BFCF = Business free cash flow
ROCE = Return on capital employed
NPV = Net present value
IRR = Internal rate of return
eNPV = expected Net present value
PoS = Probability of success
M&A = Mergers & Acquisitions

[1] Not defined by International Financial Reporting Standards (IFRS).

Key performance indicators of the Group and its businesses

The three key performance indicators net sales, EBITDA pre[1], and business free cash flow[1] are the most important factors for assessing operational performance. Therefore, we refer to these KPIs in the Report on Economic Position, the Report on Risks and Opportunities, and in the Report on Expected Developments. As the most important indicators of financial business performance, the KPIs are key elements of our performance management system.

NET SALES

Net sales are defined as the revenues from the sale of goods, services rendered to external customers, commission income and profit-sharing from collaborations, net of value added tax and after sales deductions such as rebates or discounts. Net sales are the main indicator of our business growth and therefore an important parameter of external as well as internal performance measurement. In addition, acquisition- and currency-adjusted sales are used for internal performance management. Organic sales growth shows the percentage change in net sales versus a comparative period, adjusted for exchange rate and portfolio effects. Exchange rate effects may arise as a result of foreign exchange fluctuation between the functional non-euro currency of a consolidated company and the reporting currency (euro). By contrast, portfolio effects reflect sales changes due to acquisitions and divestments of consolidated companies or businesses.

GROUP

Net sales

			Change	
€ million	**2017**	2016	€ million	in %
Net sales	**15,327**	**15,024**	**303**	**2.0%**

EBITDA PRE

EBITDA pre is the main performance indicator measuring ongoing operational profitability and is used internally and externally. To provide an alternative understanding of the underlying operational performance, it excludes from the operating result depreciation and amortization, impairment losses and reversals of impairment losses as well as adjustments. These adjustments are restricted to the following categories: integration costs, IT costs for selected projects, restructuring costs, gains/losses on the divestment of business, acquisition costs, and other adjustments. The classification of specific income and expenses as adjustments follows clear rules and underlies strict governance at Group level. Within the scope of internal performance management, EBITDA pre allows for the necessary changes or restructuring without penalizing the performance of the operating business.

GROUP

Reconciliation EBIT to EBITDA pre[1]

			Change	
€ million	**2017**	2016	€ million	in %
Operating result (EBIT)[1]	**2,525**	**2,481**	**44**	**1.8%**
Depreciation and amortization	1,758	1,805	–47	–2.6%
Impairment losses/reversals of impairment losses	–1	129	–130	>100.0%
EBITDA[1]	**4,282**	**4,415**	–133	–3.0%
Restructuring costs	84	22	63	>100.0%
Integration costs/IT costs	189	193	–4	–2.2%
Gains (–)/losses (+) on the divestment of businesses	–310	–304	–6	2.1%
Acquisition-related adjustments	63	153	–90	–59.0%
Other adjustments	106	11	96	>100.0%
EBITDA pre[1]	**4,414**	**4,490**	**–76**	**–1.7%**

[1] Not defined by International Financial Reporting Standards (IFRS).

BUSINESS FREE CASH FLOW (BFCF)

Business free cash flow comprises the major cash-relevant items that the operating businesses can influence and are under their full control. It comprises EBITDA pre less investments in property, plant and equipment, software, advance payments for intangible assets, changes in inventories, trade accounts receivable as well as receivables from royalties and licenses. To manage working capital on a regional and local level, the businesses use the two indicators days sales outstanding and days in inventory.

GROUP

Business free cash flow[1]

			Change	
€ million	**2017**	2016	€ million	in %
EBITDA pre[1]	**4,414**	**4,490**	**–76**	**–1.7%**
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–1,047	–859	–188	21.9%
Changes in inventories according to the consolidated balance sheet[2]	–23	1	–24	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses according to the consolidated balance sheet	–24	–177	153	–86.3%
Elimination first-time consolidation of Sigma-Aldrich	–	–149	149	–100.0%
Elimination first-time consolidation of BioControl Systems[2]	–2	12	–14	>100.0%
Business free cash flow[1]	**3,318**	**3,318**	**–**	**–**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see Note (4) "Acquisitions and divestments"

Investments and value management

Sustainable value creation is essential to secure the long-term success of the company. To optimize the allocation of financial resources, we use a defined set of parameters as criteria for the prioritization of investment opportunities and portfolio decisions.

NET PRESENT VALUE

The main criterion for the prioritization of investment opportunities is net present value. It is based on the discounted cash flow method and is calculated as the sum of the discounted free cash flows over the projection period of a project. The weighted average cost of capital (WACC), representing the weighted average of the cost of equity and cost of debt, is used as the discount rate. Depending on the type and location of a project different mark-ups are applied to the WACC.

INTERNAL RATE OF RETURN (IRR)

The internal rate of return is a further important criterion for the assessment of acquisition projects and investments in property, plant and equipment as well as intangible assets. It is the discount rate that makes the present value of all future free cash flows equal to the initial investment or the purchase price of an acquisition. A project adds value if the internal rate of return is higher than the weighted cost of capital including mark-ups.

RETURN ON CAPITAL EMPLOYED (ROCE)

In addition to NPV and IRR, when looking at individual accounting periods, ROCE is an important metric for the assessment of investment projects. It is calculated as the adjusted operating result (EBIT) pre divided by the sum of property, plant and equipment, intangible assets, trade accounts receivable and trade accounts payable, as well as inventories.

PAYBACK PERIOD

An additional parameter to prioritize investments in property, plant and equipment as well as intangible assets is the payback period, which indicates the time in years after which an investment will generate positive net cash flow.

VALUE ADDED OF MERCK KGAA, DARMSTADT, GERMANY (MEVA)

MEVA gives information about the financial value created in a period. Value is created when the return on capital employed (ROCE) of the company or the business is higher than the weighted average cost of capital (WACC). MEVA metrics provide us with a powerful tool to weigh investment and spending decisions against capital requirements and investors' expectations.

Capital market-related parameters

NET INCOME, EARNINGS PER SHARE (EPS) AND EARNINGS PER SHARE PRE (EPS PRE)[1]

Earnings per share are calculated by dividing profit after tax attributable to the shareholders of Merck KGaA, Darmstadt, Germany, (net income) by the weighted average number of theoretical shares outstanding. The use of a theoretical number of shares takes into account the fact that the general partner's capital is not represented by shares. To provide an alternative view, we also report earnings per share pre, in other words after the elimination of the effects of integration costs, IT costs for selected projects, restructuring costs, gains/losses on the divestment of businesses, acquisition costs and other adjustments. Moreover, amortization of acquired intangible assets as well as impairment losses on property, plant and equipment and intangible assets are eliminated. The adjustment excludes impairment losses on intangible assets for acquired research and development (R&D) projects below a threshold value of € 50 million. Income tax is calculated on the basis of the company's underlying tax rate. The following table presents the reconciliation of net income to net income pre for the calculation of EPS pre.

RECONCILIATION OF NET INCOME TO NET INCOME PRE[1]

			Change	
€ million	**2017**	2016	€ million	in %
Net income	**2,600**	**1,629**	**972**	**59.7%**
Income taxes	–386	521	–907	>100.0%
Income taxes on the basis of the underlying tax rate	–849	–855	6	–0.7%
Amortization of acquired intangible assets	1,201	1,218	–16	–1.3%
Adjustments[1]	114	191	–77	–40.4%
Net income pre[1]	**2,680**	**2,703**	**–24**	**–0.9%**
Earnings per share pre (€)[1]	**6.16**	**6.21**	**–0.05**	**–0.8%**

[1] Not defined by International Financial Reporting Standards (IFRS).

CREDIT RATING

The rating of our creditworthiness by external agencies is an important indicator with respect to our ability to raise debt capital at attractive market conditions. The capital market makes use of the assessments published by independent rating agencies in order to assist debt providers in estimating the risks associated with a financial instrument. We are currently assessed by Moody's, Standard & Poor's and Scope. The most important factor for the credit rating is the ability to repay debt, which is determined in particular by the ratio of operating cash flow to (net) financial debt.

DIVIDEND RATIO

With the aim of ensuring an attractive return for our shareholders, we are pursuing a reliable dividend policy with a target payout ratio based on EPS pre (see definition above).

INNOVATION

Innovations are the foundation of our business and will also be the prerequisite for future success in changing markets. We are continuously working to develop new products and service innovations for patients and customers. Indicators for the degree of innovation are defined individually depending on the specifics of the respective businesses.

TALENT RETENTION

Employing a highly qualified and motivated workforce is the basis for achieving our ambitious business goals. Therefore, we put a strong focus on establishing the processes and the environment needed to attract and retain the right talent with the right capabilities at the right time. To measure the success of the related measures, we have implemented talent retention as an important non-financial indicator.

Other relevant/non-financial performance measures

Apart from the indicators of the financial performance of the businesses, non-financial measures also play an important role in furthering the success of the company. From a Group perspective, specifically innovations in the businesses as well as the attraction and retention of highly qualified employees are of central importance.

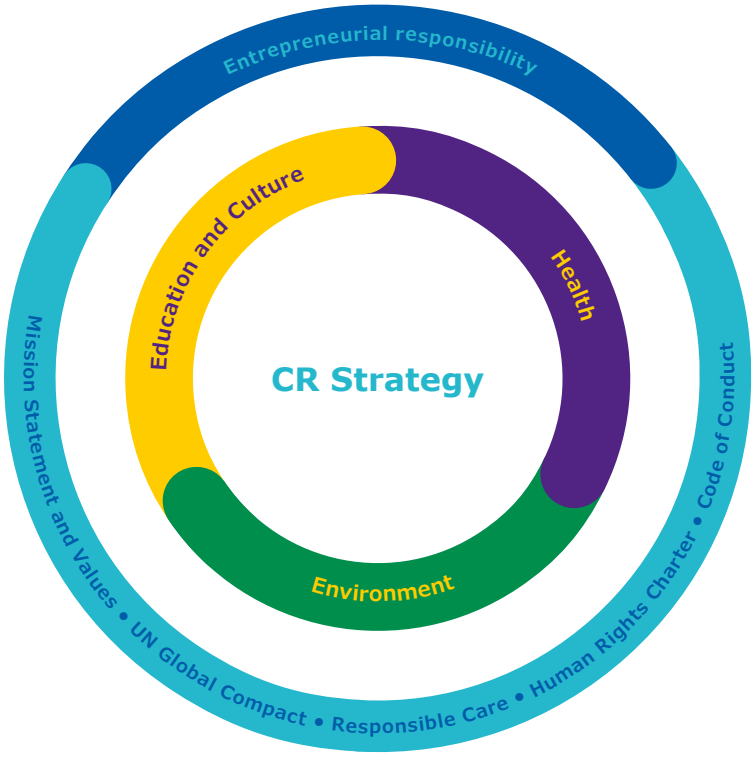
Corporate Responsibility

We take responsibility every day – and have been doing so for 350 years. This commitment is codified in our corporate strategy and values. Responsible conduct with respect to employees, products, the environment, and society is a fundamental prerequisite for our business success.

Strategy and management

Our corporate responsibility (CR) activities are steered by our CR Committee, which consists of representatives from our business sectors and relevant Group functions. Since September 2017, Stefan Oschmann, Chairman of the Executive Board and CEO, has been responsible for the committee, which is chaired by the head of the newly formed Corporate Affairs unit.

Mankind is confronted with global societal challenges such as climate impact, resource scarcity and insufficient access to health in low- to middle-income countries. We believe that we can help resolve these global challenges through our innovative healthcare, life science and performance materials products, as well as through responsible governance. Responsible conduct means looking, listening and doing better. We respect the interests of our employees, customers, investors, and society, and work to minimize ethical, economic and social risks, thereby securing our success. This is an integral part of our corporate strategy, which in turn underpins our CR strategy, the basis for the responsible governance we live each and every day. In realizing our corporate responsibility, we focus our resources on those areas where we can have the greatest impact. We pursue three strategic spheres of activity: namely health, the environment, and culture & education. The focus here is on securing the future of society and our competitiveness.



Health: In low- to middle-income countries, many people lack access to high-quality health solutions. We are applying our expertise here and joining forces with strong partners to develop solutions for patients locally. Our fight against the worm disease schistosomiasis in Africa is a good example.

Environment: We are constantly working to improve the sustainability footprint of our products and are furthermore helping our customers achieve their own sustainability goals. The development of new display technologies both with liquid crystals and organic light-emitting diodes (OLEDs) are an example. They lower the power consumption of televisions, smartphones, and tablet PCs.

Education and culture: Research and development throughout the world thus benefit from curiosity, creativity, and enthusiasm. Cultural offerings inspire people and expand their horizons. Cultural inspiration also opens people up to new ideas. It favorably influences society's acceptance of science, technological progress and innovations. That is why we promote global educational offers and cultural initiatives.

Our commitment to corporate responsibility is aligned with the UN Sustainable Development Goals and we are attempting to contribute to this ambitious agenda by 2030. Furthermore, we support relevant responsible governance initiatives. We are a member of the United Nations Global Compact and are committed to complying with the compact's principles regarding human rights, labor standards, environmental protection, and anti-corruption. Moreover, we also live our corporate responsibility through our commitment to follow the guidelines of the Responsible Care Global Charter, an initiative of the International Council of Chemical Associations (ICCA). Responsible Care aims to drive continuous improvement and achieve excellence in environmental, health, safety, and security performance in the chemical industry. Furthermore, we are also a member of the Chemie[3] initiative in Germany, a collaboration between the German Chemical Industry Association (VCI), the German Employers' Federation of the Chemical Industry (BAVC), and the German Mining, Chemical and Energy Industrial Union (IG BCE). As part of this globally unique alliance, the partners want to make sustainability a core part of the chemical industry's guiding principles and to jointly drive the sector's position within the German economy as a key contributor to sustainable development.

To us, corporate responsibility means taking action and listening. The dialogue with our various stakeholder groups is therefore highly important to us. These stakeholders include employees, business associates, the Merck family, investors, regulatory agencies, and associations. We also engage in this continuous exchange to create transparency and clearly demonstrate how we live our company values.

Thanks to good performance with respect to responsible and sustainable entrepreneurial conduct, we were again included in the FTSE4Good index in 2017. To be included in this leading international sustainability index, a company must demonstrate socially conscientious, ecological and ethical conduct. In 2017, we also maintained our good standing in other major sustainability indices. For instance, we are included in the STOXX Global ESG Leaders index, as well as the Euronext Vigeo Eurozone 120 index and the Ethibel Sustainability Index (ESI) Excellence Europe. In 2017, EcoVadis, an independent rating agency, granted us gold status for our sustainability performance. EcoVadis assesses suppliers from 120 countries across the four categories of Environment, Labor Practices, Fair Business Practices, and Sustainable Procurement.

Strategic sphere of activity: Health

Ensuring access to health for underserved populations and communities in low- and middle-income countries is one of our strategic priorities. Through our A2H approach, which spans all our businesses, we aim to help improve sustainable access to high-quality health solutions. Since we realize that access is a complex and multifaceted challenge with no one-size-fits-all solution, our programs and initiatives are tailored to global, regional and local needs. We consider partnerships, collaboration and dialogue to be key instruments in delivering sustainable results, focusing on four areas known as the "4As": Availability, Affordability, Awareness, and Accessibility. In the Access to Medicine Index, which is published every two years, our company ranked fourth in 2016, moving up two places.

Availability

Availability entails the research, development and refinement of health solutions that address unmet needs and are tailored to local environments.

With our newly formed Global Health Institute, we seek to improve healthcare in developing countries. Our focus is on schistosomiasis, malaria, bacterial infections, and antimicrobial resistance. The Institute's initiatives and programs particularly address key unmet medical needs of women and children. Our objective is not only to develop medicines, but also to improve diagnosis, disease control, and reduce disease transmission, as well as strengthen local health systems. The portfolio also covers the development of a new pediatric formulation of praziquantel to treat the worm disease schistosomiasis in children under the age of six through a public-private partnership. In addition, we are conducting research into innovative schistosomiasis diagnostics in partnership with key international stakeholders to identify vulnerable populations. And we are looking for new schistosomiasis biomarkers as well as new anti-schistosomiasis compounds.

We are developing a new anti-malarial compound that has the strong potential to not only treat, but also prevent malaria reinfection. Through a strategic collaboration with the University of Cape Town in South Africa and the Medicines for Malaria Venture, we are seeking to identify new compounds that are already efficacious in the liver stage and those that can provide long-lasting efficacy to improve post-treatment protection. We are currently developing a kit for malaria diagnosis based on our Muse® cell analyzer. This kit will accurately detect and type the malaria pathogen and identify the stage of infection. In 2017, we achieved promising results in preclinical trials.

Our product IR3535® is used in insect repellents to help protect against infections transmitted by mosquito and tick bites. Products containing this active ingredient stand out due to their particularly good tolerability in young children and pregnant women. They protect against Zika, Chikungunya and Dengue fever. Work is underway on a formulation to fight malaria. In several countries, products formulated with IR3535® were recently approved for head lice prophylaxis in school children.

Affordability

We seek to address affordability challenges through our efforts to provide assistance to those people who are unable to pay for the health solutions they need. To tackle these challenges, we have taken a pro-access approach through our intellectual property initiatives and are engaging in equitable pricing strategies. We provide transparent information about our patents and patent applications in publicly available databases. To strengthen our commitment to the London Declaration to fight neglected tropical diseases, in 2017 we joined the DNDi NTD Drug Discovery Booster consortium and opened our compound library. The objective is to find potential cures for leishmaniasis and Chagas disease. Moreover, we are one of more than 100 members of WIPO Re:Search, an open innovation platform sponsored by the World Intellectual Property Organization (WIPO). Through intellectual property and knowledge sharing, platform partners seek to accelerate early discovery for infectious diseases.

Apart from the collaboration already underway with the University of Buea in Cameroon, in 2017 we started cooperating under the auspices of this program with the University of California in San Diego. The focus is on potential treatments for leishmaniasis, Chagas disease, and African trypanosomiasis (sleeping sickness).

Furthermore, we continue to work with the World Health Organization (WHO) to combat the worm disease schistosomiasis in Africa. Through our Praziquantel Donation program, we are donating Cesol® 600 tablets containing the active ingredient praziquantel to WHO. Since the start of this program, around 150 million patients – primarily school-aged children – have been treated. In total, we have donated nearly 700 million praziquantel tablets to WHO since 2007. As a founding member of the Global Schistosomiasis Alliance, we are helping to eliminate schistosomiasis worldwide.

Through our Global Health Institute, we are also an active member of the Pediatric Praziquantel Consortium, a partnership we initiated. Within this consortium, we are working hand in hand with partners on developing a pediatric formulation of praziquantel to also treat children under six with this medicine.

Awareness

We help to raise awareness by empowering health professionals, communities and patients with the appropriate tools, knowledge and skills to make informed decisions with respect to prevention, diagnostics, treatment, and care. We regularly conduct campaigns to increase awareness of certain diseases globally. Here we are focusing on diseases that we have extensive expertise in, for instance cancer, thyroid disorders, diabetes and multiple sclerosis. In 2017, we established a charitable organization that combines some of our activities in underserved regions of the world. Through our Access Dialogues series, we are promoting discourse on access-to-health challenges with numerous public and private stakeholders. In 2017, the topics of focus were intellectual property and supply chain challenges in developing countries.

Through our Su-Swastha project we are working with various non-governmental organizations and the Indian Health and Family Ministry to improve healthcare in rural India. Among other things, we provide inexpensive medicines while also educating the local population and health professionals on everyday health issues and their treatment. In 2017, more than 11,000 people were reached in 482 community meetings.

The Global Pharma Health Fund (GPHF), a non-profit organization funded by our company, works to combat counterfeit medicines in developing and emerging countries. To date, the GPHF has supplied 836 Minilabs at cost to detect counterfeit medicines to around 100 countries; 41 Minilabs were provided in 2017 alone. According to a report published by WHO at the end of 2017, the Minilab made it possible to identify more than 1,000 counterfeit medicines out of 20,000 tested medicines.

Accessibility

We promote initiatives to strengthen supply chains and to develop localized health solutions in order to deliver and reach out efficiently at the point of care. We are a founding member of the Accessibility Platform, an informal, private-sector initiative that is working on a comprehensive approach to meeting supply chain and distribution challenges in developing countries. The platform promotes information exchanges between the various stakeholders and creates joint options for action.

Together with two other Accessibility Platform members Roche and Novartis, in 2017 we co-hosted a panel session at the World Health Summit. Attendees included the Ghanaian Ministry of Health, the World Health Organization, and the Global Fund to Fight AIDS, Tuberculosis and Malaria. We support training and knowledge sharing with our manufacturing partners in Africa, Asia and Latin America with the aim of strengthening local manufacturing quality standards.

In India, we are cooperating with the non-profit organization known as Narmada Samagra. Our River Ambulance transports health workers and provides healthcare solutions to local populations living in the remote region along the Narmada River. In 2017, we funded the maintenance of the boat donated in the previous year. Additionally, in the northeastern Indian state of Jharkhand, we are funding a health center that gives the region's approximately 20,000 inhabitants access to medical personnel. In 2017, our Global Health Institute sponsored a new gynecology ward in the district hospital of Akonolinga in the African country Cameroon.

Strategic sphere of activity: Environment

Through our products, we are helping overcome global challenges such as climate impact and resource scarcity. In doing so, we are also helping our customers to reduce the negative impacts of their own activities and to achieve their own sustainability goals.

Performance Materials: Increasing the sustainability of manufacturing processes and final products

In 2017, our Performance Materials developed the new liquid crystal technology SA-VA (Self-Aligned Vertical Alignment) to market readiness. We have been developing the materials and process in the scope of close technical partnerships with our customers. SA-VA is an eco-friendly and resource-conserving technology that requires less energy and creates less waste products than conventional technologies during display manufacture. SA-VA also provides a more efficient display manufacturing process and could allow improved design features for display manufacturers. SA-VA can be used in all types of display applications, above all in large-size TVs.

To utilize our market and technological leadership in liquid crystals beyond applications in energy-saving displays, we opened a new production facility for liquid crystal window modules in Veldhoven in the Netherlands. According to initial measurement results, our smart windows can cut energy use in climate-controlled buildings by up to 40% and replace conventional sun shading solutions. In this way, we help builders to save resources and costs. The principle behind this is as follows: These windows can be manually or automatically controlled to darken and provide sun protection – and to do so in a variety of colors. This technology is made possible thanks to the special properties of our liquid crystals. In combination with customized dyes, the liquid crystals control the amount of incident light by either absorbing and blocking electromagnetic waves (dark state) or allowing them to pass through (transparent state). In contrast to competing technologies, our long-lasting licrivision™ materials switch within seconds and are highly color-neutral. Architects and builders can customize the desired color to suit the setting. For the semiconductor industry, we have developed a series of environmentally sustainable specialty chemicals and materials – including PFOS-free antireflective and photoresists. In the cosmetics industry, we are addressing the continuing trend for ingredients that meet stringent sustainability criteria. Our portfolio of fillers dispenses entirely with microplastic particles criticized for polluting waters and marine life enrichment. We are also committed to continuously increasing the energy efficiency of our production processes. Many of our cosmetic raw materials are registered and approved in accordance with the COSMOS standard. COSMOS is an international association that developed and manages the COSMOS standard AISBL, an international standard for organic and natural cosmetics.

Life Science: Reducing environmental impacts in various product life cycle stages

We want to lower the environmental and health impact of our products. This applies to the entire life cycle – from production and use through to the disposal of our products. With our Design for Sustainability (DfS) program implemented in 2014, we have developed a comprehensive approach for more sustainable life science products. It keeps sustainability criteria in the foreground during product development or re-engineering and documents them in a scorecard. Since the acquisition of Sigma-Aldrich, we have expanded the DfS program so that it is now an umbrella concept that encompasses all our portfolio offerings. The objective is to lower environmental impacts of devices and instruments, also during use by customers. Beginning with the concept stage, product teams identify potential environmental impacts and opportunities to make improvements. In 2017, we achieved improvements in 35% of our new Life Science product developments. One of our notable product releases in 2017 was the new Milli-Q® IQ 7000 Ultrapure Lab Water System, which uses mercury-free UV oxidation lamps.

In addition, our researchers are developing innovative solutions in line with the "12 Principles of Green Chemistry" developed by chemists Paul T. Anastas and John C. Warner. The objective is to permit research that is as environmentally compatible as possible, and to minimize adverse effects on human health. With DOZN®, we have developed a web-based quantitative Green Chemistry analysis tool. We are working to make the DOZN® tool available for our customers so that they will also be able to measure their environmental footprint impact for life science research.

We are expanding our portfolio to include greener alternatives, such as the new solvent, Cyrene™. This product was named the "Bio-based Chemical Innovation of 2017" – an accolade that can be attributed to proving that safer, greener alternatives can also offer superior performance. Cyrene™ is derived from waste cellulose and is employed as an alternative to solvents that are widely used but are under increasing regulatory restriction due to their associated toxicity. We not only think about the current life of our products but also look ahead to end-of-life considerations and potential future product lives as well. The application of single-use products – many of which pose a challenge to recycle in the current infrastructure – is growing as life science markets are expanding and adopting new technologies. We have therefore developed innovative recycling programs which have led to the recycling of more than 1,300 tons of our customers' products from 2015 to 2017.

Strategic sphere of activity: Education and culture

Cultural promotion is a core element of our commitment to society, building on our centuries-old tradition of supporting art and culture. We thus further characteristics that are essential to our business activities as a high-tech company: creativity, a passion for discovery, curiosity, as well as the courage to transcend boundaries.

Boosting scientific education

We view education as a key component of culture – and vice versa. Education can help us understand culture. But culture can also build a bridge to education; it can stimulate curiosity and creativity. We therefore support educational projects at many of our sites and grant scholarships, for instance, or help define the curricula of selected classes in schools. We want to spark an interest in science, particularly among young people. This is why we have been supporting the "Jugend forscht" (Young Researchers) competition for more than 30 years. Since 1996, we have been organizing the state-level competition for the German Federal State of Hesse and have also hosted the nationals twice.

Through our Junior Labs, we want young people to enjoy conducting experiments. These learnings labs at the Technical University of Darmstadt combine classroom instruction with trending topics and modern research methods. In 2017, around 2,500 school students used the chemistry laboratory with an extended program and around 1,000 school students experimented in the biology laboratory.

In 2017, we launched our first continuing education program for teachers outside Germany by conducting a project in India. Indian teachers were trained in organic electronics, with a special focus on energy-saving, sustainable technologies. As part of SPARK, our global volunteer program, employees from our Life Science business sector share their skills and experience with students and support our local communities. The program is intended to spark curiosity in science and inspire them to consider a STEM-related career. In 2017, more than 2,500 employees invested more than 13,700 hours in the SPARK program. As part of SPARK, in 2017 we sent a Curiosity Cube™ on a journey through the United States. This is a freight container that transforms into a mobile laboratory and is equipped with state-of-the-art technology. In 2017, the Cube traveled more than 29,000 km across the United States and made stops in over 85 schools and city centers. More than 38,000 students have visited the Cube. Each of the nearly 23,000 experiments conducted were supervised by one of our employees.

The Deutsche Philharmonie, sponsored by Merck KGaA, Darmstadt, Germany

The Deutsche Philharmonie, sponsored by Merck KGaA, Darmstadt, Germany, is our musical ambassador. We consider classical music to be the universal language that brings people together; as such, it is an important part of our culture. The concerts of this professional ensemble represent an integral part of the cultural life in the vicinity of our Group headquarters in Darmstadt and remain highly popular, with around 21,000 people attending them in 2017. In addition, the orchestra again toured internationally. Concerts took place in Austria, the Czech Republic and Morocco in 2017. One particular aim is to make classical music more accessible to young people, for instance through special partnerships for children and adolescents as well as cooperation programs with schools, such as the orchestra workshop.

Promoting literature

Like music, literature is an important mediator between cultures. That is why we support five literary prizes around the world, some of which every two years: the Johann Heinrich Merck Award for Literary Critique and Essay of Merck KGaA, Darmstadt, Germany, in Germany, the Premio Letterario of Merck KGaA, Darmstadt, Germany, in Italy, the Kakehashi Literature Award of Merck KGaA, Darmstadt, Germany, in Japan, the Tagore Award of Merck KGaA, Darmstadt, Germany, in India, and the Translation Award of Merck KGaA, Darmstadt, Germany, in Russia. The awards primarily recognize those authors who build bridges between cultures, as well as between literature and science.

The Johann Heinrich Merck Award for Literary Critique and Essay of Merck KGaA, Darmstadt, Germany, which we have been presenting since 1964 and is worth € 20,000, went to Jens Bisky, a culture editor at the Süddeutsche Zeitung. With the Premio Letterario of Merck KGaA, Darmstadt, Germany, we recognize authors in Italy who build bridges between literature and science with their works. The 2017 prize, worth € 10,000, was awarded to U.S. writer Sam Kean for his work "The Violinist's Thumb". The jury decided on an honorable mention for Italian mathematician, author and professor Paolo Zellini.

Responsibility for our products

The safety of our products is at the core of our corporate responsibility. When used properly, they must pose no risk to customers, patients, consumers, or the environment. Our goal is to ensure a positive benefit/risk profile for our products, which is why we regularly examine safety across their entire life cycle and continuously take steps to minimize risks. We provide patients, consumers and customers with extensive informational material so that they can use our products in a safe, responsible and proper manner.

In our pharmaceutical marketing activities, the focus is always on the health and well-being of patients because we want them to receive effective and high-quality treatment. All guidelines pertaining to marketing and advertising are part of our Group-wide compliance program, which is complemented by our internal guidelines and various voluntary commitments that, in many cases, exceed the applicable statutory regulations.

Safety of our chemical products

Numerous regulations are in place to ensure that chemicals pose no risk to humans or the environment. Compliance with these regulatory requirements is an important part of our work. Through a Group-wide policy, we have established global processes for defining, directing and implementing product safety, as well as the corresponding management structures. We incorporate all relevant national and international chemical regulations into our policies and guidelines and adhere to them. This includes the EU chemicals regulation REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and CLP (Classification, Labelling and Packaging of Substances and Mixtures, EU GHS). Furthermore, we are committed to transparency. For instance, in line with the Global Product Strategy, an international initiative of the chemical industry, we provide our customers with product safety summaries for hazardous materials.

For the final REACH registration phase, we are also working to register all the relevant chemical substances within the stipulated period. We successfully completed the two registration phases in 2010 and in 2013. The next step, or phase III, requires us to evaluate and register by June 2018 all substances annually produced or imported in quantities ranging from one to 100 metric tons. This process also includes substances added to our portfolio from the Sigma-Aldrich acquisition and is on schedule.

Safety of our Healthcare products

Patient and consumer safety has top priority in everything we do. During the entire life cycle of our medicines and consumer health products, we provide patients, consumers and physicians with up-to-date risk-benefit evaluations. To this end, company experts process safety-relevant information from various sources such as clinical trials, adverse reaction reports and scientific literature. Ultimate responsibility for the safety of our biopharmaceuticals is borne by our Global Chief Medical Officer, with support from the Medical Safety and Ethics Board. Our Global Drug Safety unit continuously monitors and evaluates the safety and risk-benefit ratio of our medicines worldwide (pharmacovigilance). For our Consumer Health products, this function is performed by the Global Product Safety unit. Overall responsibility for the safety of our over-the-counter products is borne by the Chief Medical Officer for the Consumer Health business, supported by the Safety & Labelling Committee.

For products in our Allergopharma business, we have also developed comprehensive clinical efficacy and safety profiles that we continuously update. For the safety of patients, we have established a global pharmacovigilance system that we are always working to enhance.

Quality of our products

Our goal is to provide customers and patients with high-quality brand-name products. Through our quality vision – "Quality is embedded in everything we do!" – we remind our employees of their responsibility – across all business sectors, all Group functions and all levels of the company.

Supplier management

We procure many raw materials, packaging materials, technical products, components, and services worldwide. Our overarching goal is to protect the stability of these supply chains and always provide our customers with the best products and services, while offering them optimal quality and service. Our supplier management focuses on compliance with fundamental environmental and social standards, in addition to high quality, delivery reliability and competitive prices. They are primarily derived from the core labor standards of the ILO (International Labour Organisation), from the UN Global Compact, and from the Code of Conduct of the BME (German Federal Association for Materials Management, Purchasing and Logistics). Our Group Procurement Policy and Responsible Sourcing Principles define our procurement practices.

Due to the growing significance of emerging markets as sourcing markets for our company, we have reinforced our efforts to ensure adherence to our supply chain standards. At the end of 2014, we joined the Together for Sustainability (TfS) chemical industry initiative. Since then, we have been utilizing the supplier assessment and audit results shared among all member companies, who in turn abide by all restrictions stipulated within competition law. Through TfS, we so far have access to assessments for more than 730 of our most important suppliers. We initiated assessments of 463 of them in 2017.

Responsibility for our employees

Employees are crucial to the success of a company. They therefore play a central role in our business endeavors. In accordance with our company values, we live a culture of mutual esteem and respect. We seek to further our entrepreneurial success by recruiting, developing and motivating the most suitable employees, which is why we focus our employee strategy on employee development, compensation, and performance management. We furthermore strive to foster diversity among our employees (more information can be found under “People”).

Responsibility for the environment

In the manufacture of our products, we seek to impact the environment as little as possible. This especially includes efficiently conserving resources such as energy, water and raw materials while also continuously reducing our emissions and waste.

Environmental management system

In our Corporate Environment, Health and Safety Policy, which is applicable Group-wide, we have defined our principles and strategies for environment, health and safety. It is an integral component of our EHS management system, which is certified annually by external auditors in accordance with the international standard OHSAS 18001. At all our sites, local EHS managers oversee operational environmental protection measures. These employees continually receive training and obtain additional qualifications. Since our businesses are constantly changing, our environmental management system is subject to internal and external audits on a regular basis to ensure that the ISO 14001 requirements are still being met. In 2017, we obtained an ISO 14001 group certificate for the ninth consecutive year. This certificate covers 83 sites around the world. Additionally, our environmental management system was successfully adapted to the new ISO standard 14001:2015. Our spending on environmental protection, health and safety efforts totaled € 200 million in 2017, which also includes investments made during the year.

Focus areas: Energy efficiency, greenhouse gas emissions, water, waste and recycling

Climate impact and resource scarcity are key challenges facing society in the 21st century. As a responsible company, it is especially important for us to do our part. We have therefore set ourselves the goal of reducing total direct and indirect greenhouse gas emissions by 20% by 2020 (2006 baseline), irrespective of production growth. In 2017, the CDP (formerly the Carbon Disclosure Project) gave our efforts to conserve water a “B” rating (2016: A–). The CDP assesses companies in terms of their performance and transparency in climate impact and water management.

To achieve our climate impact mitigation goals, we have launched the EDISON program that consolidates all our climate impact mitigation and energy efficiency activities. Through the more than 300 EDISON projects initiated since 2012, we aim to annually save around 98 metric kilotons of CO_2 in the medium term. Overall, thanks to the EDISON projects we have saved approximately 75,000 megawatt hours of energy since 2012.

At the same time, we are pushing forward with the changeover to regenerative power generation. In 2017, we installed solar power panels at the Jigani and Peenya sites of our Life Science business sector in Bangalore, India. These generate a total of 1,265,000 kilowatt hours of power per year. Since each of the installations covers approximately 30% of the sites’ power requirements, we will lower our annual emissions by around 1,200 metric tons. We also installed a solar voltaic system in Burlington, Massachusetts (USA). With an output of 182 kilowatts, this is to generate 218,000 kilowatt hours of power annually, thus reducing our emissions by around 60 metric tons.

ENERGY CONSUMPTION[1]

in gigawatt hours	2014	2015	2016	**2017**
Total energy consumption	**2,162**	**2,260**	**2,241**	**2,270**
Direct energy consumption	**1,354**	**1,452**	**1,445**	**1,386**
Natural gas	1,207	1,206	1,267	1,256
Liquid fossil fuels[2]	120	111	37	34
Biomass and self-generated renewable energy	27	135	141	96
Indirect energy consumption	**808**	**808**	**796**	**884**
Electricity	711	712	701	740
Steam, heat, cold	97	96	95	144
Total energy sold	**0.6**	**0.5**	**0.5**	**0.3**
Electricity	0.6	0.5	0.5	0.3
Steam, heat, cold	0	0	0	0

in terajoules	2014	2015	2016	**2017**
Total energy consumption	**7,783**	**8,137**	**8,068**	**8,172**
Direct energy consumption	**4,874**	**5,228**	**5,202**	**4,990**
Natural gas	4,345	4,342	4,561	4,522
Liquid fossil fuels[2]	432	400	133	122
Biomass and self-generated renewable energy	97	486	508	346
Indirect energy consumption	2,909	2,909	2,866	3,182
Electricity	2,560	2,563	2,524	2,664
Steam, heat, cold	349	346	342	518
Total energy sold	**2.2**	**1.8**	**1.8**	**1.1**
Electricity	2.2	1.8	1.8	1.1
Steam, heat, cold	0	0	0	0

[1] In line with the Greenhouse Gas Protocol, for all previous years (up to the 2006 baseline) the energy consumption has been calculated based on the current corporate structure of the reporting year and retroactively adjusted for acquisitions or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).

[2] Light and heavy fuel oil, liquefied petroleum gas (LPG), diesel and gasoline.

TOTAL GREENHOUSE GAS EMISSIONS (SCOPE 1 AND 2 OF THE GHG PROTOCOL)[1]

in metric kilotons	2006[2]	2014	2015	2016	**2017**
Total CO_2eq[3] emissions	**793**	**731**	**726**	**711**	**731**
thereof					
direct CO_2eq emissions	379	390	393	387	374
Indirect CO_2eq emissions	414	341	333	324	357
Biogenic CO_2 emissions	**6**	**11**	**54**	**56**	**38**

[1] In line with the Greenhouse Gas Protocol, for all previous years (up to the 2006 baseline) the greenhouse gas emissions have been calculated based on the current corporate structure of the reporting year and retroactively adjusted for acquisitions (e.g. Sigma-Aldrich in 2015) or divestments of (parts of) companies, or for changes in emission factors (portfolio-adjusted).
[2] Baseline for our emission targets is 2006.
[3] eq = equivalent.

Energy management plays a key role in our efforts for energy efficiency and climate impact mitigation. Our production sites in Darmstadt and Gernsheim account for around 28% of our global energy consumption. Both these facilities have fulfilled the international energy management standard ISO 50001 since 2012. Currently, 12 of our production sites have a certified energy management system. We intend to maintain our climate targets in the future. In 2017, the Executive Board confirmed the greenhouse gas reduction target and the required measures to achieve it, for instance through projects to raise energy efficiency levels and to reduce process-related greenhouse gas emissions.

In addition to energy, we also focused on the topic of water in 2017. Since 2016, we have been pursuing the goal of implementing a sustainable water management system at sites with high consumption levels by 2020. At sites with relevant water use located in areas of high water stress, we are aiming to cut our water consumption by 10% by 2020 (2014 baseline). At the end of 2017, we had lowered our water consumption at the relevant sites by around 9% in comparison with 2014. In 2017, the CDP gave our efforts to conserve water a “B”, two scores better than in the previous year.

Natural resources are becoming scarcer. We therefore want to use raw materials as efficiently as possible and to limit the loss of raw materials. Consequently, we intend to minimize the environmental impacts of our waste as far as possible. In 2016, we developed a company Waste Score, which allows us to compare the amount of waste our sites are producing and monitor the development of the amount of waste we produce. In 2017, the Executive Board resolved for the first time to reduce the environmental impact of our waste by 5% by 2025 (2016 baseline). For this purpose, we are analyzing the improvement potential of production processes and disposal routes employed by our sites. In principle, all sites are to contribute to the waste reduction efforts.

Responsibility for society

We see ourselves as part of society – both at our individual sites and worldwide. Taking responsibility towards society is an integral part of our entrepreneurial approach. We believe that we can make an important contribution to the community through our knowledge, our skills and our products.

Our social responsibility activities are primarily focused on those areas in which we have problem-solving expertise stemming from our core businesses. We are thus engaged in health and environmental projects and furthermore support education, especially in the natural sciences. We provide disaster relief in emergency situations, particularly in those regions in which we operate.

Our subsidiaries are engaged in a wide variety of local projects. We have defined a general set of criteria for selecting projects, and the decisions concerning specific projects are made by our subsidiaries. In 2017, we spent a total of € 34 million on community engagement activities.

Research and Development

We conduct research and development (R&D) worldwide in order to develop new products and services designed to improve the quality of life of patients and to satisfy the needs of our customers. Further optimizing the relevance and efficiency of our research and development activities – either on our own or in cooperation with third parties – is one of our top priorities.

Approximately 6,800 employees work for our company researching innovations to serve long-term health and technology trends in both established and growth markets.

Our company spent around € 2.1 billion on research and development in 2017. In our research and development activities, we focus on both in-house research and external collaborations which enable us to increase the productivity of our research while simultaneously reducing financial outlay. The organizational set-up of our research and development activities reflects the structure of our company with three business sectors.

Healthcare

BIOPHARMA

Oncology and Immuno-Oncology

In 2017, we achieved a number of significant milestones with avelumab, an anti-PD-L1 antibody that we are co-developing and co-commercializing with Pfizer. The first regulatory milestone took place in March, when the U.S. Food and Drug Administration (FDA) granted accelerated approval for avelumab under the brand name Bavencio® for the treatment of adults and pediatric patients 12 years and older with metastatic Merkel cell carcinoma (MCC), based on tumor response and duration of response. Continued approval for this indication may be contingent on verification and description of clinical benefit in confirmatory trials. Metastatic MCC is a rare and aggressive skin cancer that previously had no approved treatment options, making this the first indication for Bavencio® and the first FDA-approved treatment and immunotherapy for metastatic MCC. Since fewer than half of patients with metastatic MCC survive more than one year and less than 20% survive beyond five years, Bavencio® offers patients a much-needed treatment option that could make a meaningful difference in the treatment of this.

The FDA in 2015 granted avelumab Orphan Drug Designation for MCC, as well as Fast Track and Breakthrough Therapy Designations for the treatment of patients with metastatic MCC whose disease has progressed after at least one previous chemotherapy regimen. Breakthrough Therapy Designation is intended to expedite the development and review of treatments for serious or life-threatening disease where preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies for one or more endpoints.

This FDA approval was based on data from JAVELIN Merkel 200, an international, multicenter, single-arm, open-label, Phase II study with two parts. The first, part A, included 88 patients with metastatic MCC whose disease had progressed after at least one chemotherapy treatment. The objective response rate was 33%, with 11% of patients experiencing a complete response and 22% of patients experiencing a partial response. At the time of analysis, tumor responses were durable, with 93% of responses lasting at least six months (n=25) and 71% of responses lasting at least 12 months (n=13). Duration of response ranged from 2.8 to more than 24.9 months.

The second, part B, at the time of the data cut-off included 39 patients with histologically confirmed metastatic MCC who were treatment-naïve to systemic therapy in the metastatic setting. The objective response rate was 62%, with 14% of patients experiencing a complete response and 48% of patients experiencing a partial response. 67% of patients experienced a progression-free survival rate of three months.

The next regulatory milestone followed in May, when the FDA granted Bavencio® accelerated approval for the treatment of patients with locally advanced or metastatic urothelial carcinoma (UC) who have disease progression during or following platinum-containing chemotherapy, or who have disease progression within 12 months of neoadjuvant or adjuvant treatment with platinum-containing chemotherapy. This indication was also approved under the Accelerated Approval Program based on tumor response and duration of response, and continued approval for this indication may be contingent upon verification and description of clinical benefit in confirmatory trials.

Advanced urothelial carcinoma is an aggressive disease with a high rate of recurrence. Bladder cancer accounts for approximately 90% of urothelial carcinomas and is the sixth most common cancer in the United States. Despite advances in the treatment of locally advanced or metastatic disease, the prognosis for patients remains poor, with the five-year survival rate at approximately 5%, meaning more treatment options are urgently needed.

The efficacy and safety of Bavencio® in urothelial carcinoma were demonstrated in the corresponding cohorts of the JAVELIN Solid Tumor trial, a Phase I, open-label, single-arm, multicenter study of Bavencio® in the treatment of various solid tumors. These urothelial carcinoma cohorts (n=242) enrolled patients with locally advanced or metastatic urothelial carcinoma with disease progression on or after platinum-containing chemotherapy, or who had disease progression within 12 months of treatment with a platinum-containing neoadjuvant or adjuvant chemotherapy regimen. Patients with six months or more of follow-up experienced an overall response rate of 16.1%. Duration of response was not precisely estimable, with a range of response from 1.4 to 17.4 months.

In September, we gained three further regulatory approvals for Bavencio®. The first was from the regulatory authority in Switzerland (Swissmedic) for the treatment of patients with metastatic MCC whose disease has progressed after at least one chemotherapy treatment. In mid-September, the European Commission granted approval for Bavencio® as a monotherapy for the treatment of adult patients with metastatic MCC, making it the first and only approved treatment for metastatic MCC in the 28 member states of the European Union as well as Liechtenstein, Iceland and Norway. A few days later, the Japanese Ministry of Health, Labour and Welfare (MHLW) granted the first Asian approval for Bavencio®, making it the first-ever treatment indicated for curatively unresectable MCC and the first anti-PD-L1 to become available in Japan. Regulatory approval for the treatment of metastatic MCC followed in December in Canada and in January 2018 in Australia as well as in Israel. In addition, Bavencio® was approved in Israel at the end of January to treat patients with urothelial carcinoma.

Through our strategic alliance with Pfizer, we continue to explore the therapeutic potential of avelumab. Our clinical development program known as JAVELIN involves more than 30 clinical programs, including various Phase III trials and over 7,000 patients being evaluated across more than 15 different tumor types. In addition to MCC and UC, these cancers include breast, gastric/gastro-esophageal junction, head and neck, Hodgkin's lymphoma, melanoma, mesothelioma, non-small cell lung, ovarian, and renal cell carcinoma (RCC).

On December 21, the FDA granted Breakthrough Therapy Designation for avelumab in combination with INLYTA® (axitinib) for treatment-naïve patients with advanced RCC.

In addition to the host of abstracts presented at key congresses in 2017 – including the 2017 American Society of Clinical Oncology (ASCO) Annual Meeting and the 2017 European Society for Medical Oncology (ESMO) Congress – we provided an update on our Phase III JAVELIN Gastric 300 study in November. The study is the first global trial of a checkpoint inhibitor versus an active chemotherapy comparator rather than placebo in patients with pre-treated advanced gastric cancer. The trial did not meet its pre-specified primary endpoint of superior overall survival. The data are being further examined in an effort to better understand the results and we will present them at a medical congress in 2018. We remain committed to our ongoing gastric clinical development program with avelumab.

As part of our commitment to developing new treatment options for patients with hard-to-treat cancers who would otherwise have a low chance of survival and to exploring all potential options, we entered into several strategic collaborations in 2017. The first of these was in March, when our collaboration with EpiThany to evaluate avelumab in combination with EP-101 STEMVAC, an investigational multi-antigen, polyepitope cancer vaccine, in a Phase II trial in women with breast cancer was announced. The second was announced in May, with Swiss/German biotech company VAXIMM AG to evaluate avelumab in combination with VAXIMM's VXM01. VXM01 is an investigational oral T-cell immunotherapy designed to activate T-cells to attack the tumor vasculature, and, in several tumor types, attack cancer cells directly. Under the terms of the agreement, VAXIMM will be responsible for conducting two open-label Phase I/II trials – one in glioblastoma and one in metastatic colorectal cancer (CRC).

In June, we announced a collaboration with eFFECTOR Therapeutics to evaluate a novel immuno-oncology combination in microsatellite stable colorectal cancer. Together we plan to initiate a Phase II, open-label, randomized, non-comparative study to evaluate the safety, tolerability and efficacy of avelumab in combination with eFFECTOR's investigational small molecule MNK1/2 inhibitor, eFT508, in microsatellite stable relapsed or refractory CRC patients.

In September, we entered into a collaboration with Phosplatin Therapeutics to evaluate avelumab in combination with PT-112, a novel small molecule inducer of apoptosis with evidence of downstream immunogenic cell death (ICD) properties, currently in Phase I development in solid tumors and hematological malignancies.

At the 53rd ASCO Annual Meeting (June 2 – 6 in Chicago), we shared results from our increasingly broad oncology portfolio, from immuno-oncology to DNA damage response (DDR) approaches, in a wide range of hard-to-treat cancers. Over 40 abstracts showcased the impact of our commitment to shaping cancer care today and tomorrow, including data for avelumab, Erbitux® (cetuximab), and pipeline updates on the anti-PD-L1/TGF-β trap M7824, the DNA-PK inhibitor M3814, the BTK inhibitor M7583, and tepotinib, an investigational small-molecule inhibitor of the c-Met receptor tyrosine kinase.

Multiple presentations on avelumab at ASCO included data in first-line metastatic Merkel cell carcinoma and previously treated metastatic urothelial carcinoma, as well as results from the Phase Ib trial of avelumab in combination with axitinib in RCC. Beyond metastatic MCC, locally advanced or metastatic UC and RCC, we also presented further avelumab abstracts in non-small cell lung cancer and metastatic castrate-resistant prostate cancer, locally advanced squamous cell carcinoma of the head and neck, and relapsed or refractory diffuse large B-cell lymphoma.

We also featured new research at ASCO on our investigational bifunctional immunotherapy anti-PD-L1/TGF-β trap (M7824), which is thought to have the potential to simultaneously block both PD-L1 and TGF-β. An oral presentation showcased dose escalation Phase I clinical data exploring the potential of M7824 in advanced solid tumors.

Pipeline updates at ASCO also included early clinical results for tepotinib, M7583, an oral, highly selective, covalent inhibitor of Bruton's tyrosine kinase (BTK), and the first clinical data for M3814, an investigational DNA-dependent protein kinase (DNA-PK) inhibitor.

We are investing significant resources in the promising area of DDR. In January, we signed a licensing agreement with Boston-based Vertex Pharmaceuticals that covers the worldwide development and commercialization of four research and development programs that investigate novel approaches to the treatment of cancer. The addition of the DDR portfolio in-licensed from Vertex to our own in-house DDR platform has positioned us as one of the key players in the DDR field. Our broad DDR portfolio includes inhibitors for enzymes of major DDR pathways, such as Ataxia Telangiectasia and Rad3-related kinase (ATR), DNA-PK and Ataxia Telangiectasia Mutated kinase (ATM).

At the ESMO congress (September 8 – 12 in Madrid), we presented a total of 23 abstracts representing five therapeutic agents, which highlighted our company's expanding scientific expertise. Data were presented on the role of established medicine Erbitux® (cetuximab), with quality of life (QoL) data in colorectal cancer and real-world data in both CRC and squamous cell carcinoma of the head and neck. With respect to avelumab, we presented updated efficacy and safety data in metastatic MCC and UC (12-month follow-up data in pre-treated patients with locally advanced or metastatic disease). We also presented new data and updates from our rapidly evolving pipeline, including first stand-alone data in metastatic triple negative breast cancer from potential first-in-class ATR inhibitor M6620. M6620 is currently being investigated in several ongoing Phase I trials across a variety of tumor types. Other pipeline updates included data on the potential first-in-class dual p70S6K/Atk inhibitor M2698 and tepotinib in patients with advanced hepatocellular carcinoma (HCC).

In January, we kicked off a collaboration and licensing agreement with Domain Therapeutics of Strasbourg, France, to explore the potential of adenosine inhibition in the development of novel immuno-oncology agents. Domain Therapeutics is a company focused on the discovery and development of first-in-class compounds against transmembrane targets, and in particular against G protein-coupled receptors (GPCRs). This collaboration strengthens our combination strategy in immuno-oncology and underscores our science-driven approach to discovering and developing novel compounds through both internal capabilities and external collaborations.

Also in January, we announced a three-year strategic collaboration with The University of Texas MD Anderson Cancer Center, the aim of which is to accelerate the development of investigational cancer therapies in four cancers – breast, colorectal, glioblastoma and leukemia. The collaboration will enhance the value of our future oncology/immuno-oncology pipeline, with a goal of starting multiple registration phase studies in novel indications in the next two to three years.

In June, we announced our entry into a new strategic collaboration with the biopharmaceutical company F-star of Cambridge, United Kingdom, for the development and commercialization of five bispecific immuno-oncology antibodies. Beyond these, we will have further rights to replace, as well as to add to these antibodies using F-star's bispecific antibody platform. This collaboration will further strengthen our immuno-oncology pipeline and underscores our commitment to discovering and developing breakthrough cancer therapies that make a meaningful difference to patients' lives.

On July 6, we introduced the winners of our seventh Biopharma Innovation Cup. The winning team received € 20,000 for its innovative idea around the role of natural killer cells in cancer immunology. The Biopharma Innovation Cup is designed to support the professional development of post-graduate students and to foster innovation from a promising new generation of academic talent. It showcases our strong commitment to leveraging innovation, curiosity and collaboration. With more than 1,400 applications from 60 countries, the Biopharma Innovation Cup in 2017 achieved a new level of popularity.

In September, we announced the recipients of the fourth annual Grant for Oncology Innovation (GOI) awards. The three winners of this program shared prize money totaling € 1 million to progress their research. A scientific steering committee of internationally renowned oncology experts selected the winning proposals from around 100 applicants worldwide based on relevance to patient care, innovative approach, scientific impact, feasibility and relevance for the personalization of treatment.

Neurology & Immunology

Multiple sclerosis (MS) is one of the world's most common neurological disorders and there are still significant unmet needs for MS patients, particularly those with highly active relapsing MS (RMS). Following a positive opinion from the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) in June, the European Commission (EC) granted marketing authorization in August for Mavenclad® 10 mg (cladribine tablets) for the treatment of highly active relapsing multiple sclerosis in the 28 countries of the European Union (EU) as well as in Norway, Liechtenstein and Iceland. Mavenclad® is the first oral short-course treatment to have shown efficacy across key measures of disease activity in patients with highly active RMS, including disability progression, annualized relapse rate and magnetic resonance imaging (MRI) activity.

On November 30, Health Canada approved Mavenclad® as monotherapy for the treatment of adult patients with relapsing-remitting multiple sclerosis (RRMS) to reduce the frequency of clinical exacerbations and delay the progression of disability.

On December 7, our company received approval (Updated Registration) for Mavenclad® in Australia. The Therapeutic Goods Administration (TGA) updated the registration including the indication, dosing and safety information of Mavenclad® for the treatment of RRMS in Australia.

In January, the Israeli Ministry of Health approved Mavenclad® for the treatment of adult patients with highly active RMS as defined by clinical or imaging features.

The Mavenclad® marketing authorizations in Europe, Canada, Australia, and Israel are based on more than 10,000 patient-years of data with over 2,700 patients included in the clinical trial program, and up to ten years of observation in some patients. Mavenclad® is the first treatment in relapsing multiple sclerosis (RMS) to show sustained clinical efficacy for up to four years with a maximum of 20 days of oral treatment over two years. The efficacy and safety results of these studies allowed for a detailed characterization of its benefit-to-risk profile. Mavenclad® is a selective immune reconstitution therapy that simplifies treatment administration by giving patients two short annual courses of tablets in four years without the need for frequent monitoring. The most clinically relevant adverse reactions were lymphopenia and herpes zoster.

Several Mavenclad® submissions are currently under review and we plan to conduct additional filings for regulatory approval in other countries, including the United States.

Data for approved multiple sclerosis treatments Mavenclad® and Rebif® (interferon beta-1a) and investigational product evobrutinib were presented at the MSParis 2017, 7th Joint ECTRIMS-ACTRIMS Meeting (October 25 – 28 in Paris). A post hoc analysis in high disease activity sub-groups from the two-year CLARITY study confirmed that Mavenclad® significantly increased the proportion of patients with no evidence of disease activity (NEDA) compared with placebo (43.7% vs 9.0%). Efficacy data from the CLARITY, CLARITY Extension and ORACLE-MS trials highlighted that Mavenclad® delivers and sustains four years of disease control with a maximum of 20 days of oral treatment in the first two years. An additional safety analysis assessing malignancy and infection risk was presented along with data for Mavenclad®, which further detailed how the treatment is thought to selectively target the adaptive immune system.

Additionally, the recipients of the fifth annual Grant for Multiple Sclerosis Innovation (GMSI) were announced during the 7th Joint ECTRIMS-ACTRIMS Meeting. In 2017, 77 proposals from 25 countries were submitted. Three research teams from Canada, Portugal and the United States were selected to share the € 1 million grant.

We presented 11 abstracts in oral and poster sessions for clinical programs in systemic lupus erythematosus (SLE), osteoarthritis (OA), rheumatoid arthritis (RA) and fibrotic diseases, including one late-breaker, at the 2017 American College of Rheumatology/Association of Rheumatology Health Professionals (ACR/ARHP) Annual Meeting held from November 3 – 8, 2017 in San Diego. Noteworthy data included a late-breaking abstract on FORWARD, a five-year Phase II study of sprifermin in OA of the knee, providing insights into its potential disease-modifying properties. The study of 549 patients met its primary endpoint, demonstrating statistically significant, dose-dependent increases in MRI total femorotibial joint cartilage thickness from baseline in the two sprifermin groups receiving the highest doses as compared with the placebo group after the two-year treatment period. Demonstration of an increase in cartilage thickness as opposed to a delay in decreasing cartilage thickness has not been previously reported.

On September 12, we announced that a Phase IIb study of evobrutinib, a Bruton's tyrosine kinase inhibitor (BTKi) discovered by us, had been initiated in rheumatoid arthritis (RA) following a Phase IIa study which met the pre-defined criteria for progressing to a dose-finding study in this disease. Evobrutinib is now in Phase IIb studies in three immunological indications: RA, MS, and SLE. Evobrutinib was discovered in our own laboratories and is an example of the innovation of our R&D activities within Healthcare.

We presented data at the American Academy of Neurology (AAN) 69th Annual Meeting (April 22 – 28 in Boston). A total of 15 abstracts on MS, including studies evaluating Rebif® (interferon beta-1a) and Mavenclad®, were presented.

On June 26, at the European Association of Neurology meeting held in Amsterdam, analyses of data from three clinical studies (CLARITY, CLARITY Extension and ORACLE-MS) were announced which suggest that Mavenclad® selectively and discontinuously reduces both B and T lymphocytes in patients with early and relapsing forms of MS. An early reduction of peripheral blood B cells was seen, with cell numbers reaching a nadir at 13 weeks after treatment, followed by a rapid reconstitution toward baseline. A moderate reduction in T cell counts was also shown, although to a lesser degree than B cells; this reduction was more pronounced in CD4+ than in CD8+ lymphocytes.

Fertility

In early 2017, the CHMP granted a positive opinion for the new Pergoveris® Pen, followed by a European Commission approval in May. The pen addresses an unmet medical need by providing a convenient and ready-to-use fertility combination treatment option for women with severe follicle stimulating hormone (FSH) and luteinizing hormone (LH) deficiency. The liquid version of Pergoveris® was created by evolving the original freeze-dried powder and solvent combination – which required patients to mix the product vials themselves before daily injection – towards a ready-to-use pre-filled Pen solution. The new Pergoveris® Pen is the only premixed combination of human FSH and human LH on the European market available in a pre-filled injection device for self-administration.

We further underscored our commitment to innovation in fertility in July, when we awarded € 1.25 million to external research projects, supporting the advancement of medical science through the Grant for Fertility Innovation (GFI). Launched as the first of our company's Grants for Innovation in 2009, it is dedicated to transforming innovative translational fertility research projects into actual solutions aimed at improving fertility treatment outcomes. In 2017, the GFI Award Ceremony included the announcement of the Lifetime Achievement Award in Fertility Innovation of Merck KGaA, Darmstadt, Germany, granted to Professor Bruno Lunenfeld for his revolutionary work within the fertility field since 1954.

In November, the FDA approved a new version of Gonal-f® (follitropin alfa injection) pre-filled pen. Known as Gonal-f® RFF Redi-ject™ pre-filled pen in the United States and originally approved by the FDA in 2013, the new version of the pen, based on input from people who use the pen, is easy both to learn and to use. Gonal-f® is the only gonadotropin that comes in a pre-filled, ready-to-use pen in the United States. The new Gonal-f® pen, like its predecessor, enables a fine-tuning of treatment allowing for minimum increments of 12.5 IU to titrate a wide range of doses and precisely target the dosing to patient needs. In addition, its new design features include an amendment to the dose display window for enhanced readability.

General Medicine & Endocrinology

In May, the Medicines and Healthcare Products Regulatory Agency (MHRA) in the United Kingdom authorized Glucophage® SR (sustained release formulation; metformin), for the reduction in the risk or delay of the onset of type 2 diabetes in adult, overweight patients with impaired glucose tolerance (IGT) and/or impaired fasting glucose (IFG), and/or increased glycated hemoglobin (HbA1c), when intensive lifestyle changes for 3 to 6 months have failed.

On September 18, we announced the recipients of the Grant for Growth Innovation (GGI) for 2017 during the 10th International Meeting of Pediatric Endocrinology in Washington, D.C. Sixty-five applications were received from 28 countries and reviewed by an independent scientific steering committee consisting of six internationally renowned endocrinologists and researchers. Research groups based in France and Denmark were each awarded a grant for innovation projects in the field of growth and growth disorders.

BIOPHARMA PIPELINE

as of December 31, 2017

Therapeutic area Compound	Indication	Status
Neurology		
Cladribine tablets (lymphocyte-targeting agent)	Relapsing multiple sclerosis	Registration[1]
Evobrutinib (BTK inhibitor)	Multiple sclerosis	Phase II
Oncology		
Tepotinib (c-Met kinase inhibitor)	Non-small cell lung cancer	Phase II
Tepotinib (c-Met kinase inhibitor)	Hepatocellular cancer	Phase II
M2698 (p70S6K and Akt inhibitor)	Solid tumors	Phase I
M3814 (DNA-PK inhibitor)	Solid tumors	Phase I
M9831 (VX-984, DNA-PK inhibitor)	Solid tumors	Phase I
M6620 (VX-970, ATR inhibitor)	Solid tumors	Phase I
M4344 (VX-803, ATR inhibitor)	Solid tumors	Phase I
M3541 (ATM inhibitor)	Solid tumors	Phase I
M8891 (MetAP2 inhibitor)	Solid tumors	Phase I
M7583 (BTK inhibitor)	Hematological malignancies	Phase I

BIOPHARMA PIPELINE

as of December 31, 2017

Therapeutic area Compound	Indication	Status
Immuno-Oncology		
Avelumab (anti-PD-L1 mAb)	Non-small cell lung cancer, 1st line	Phase III
Avelumab (anti-PD-L1 mAb)	Non-small cell lung cancer, 2nd line	Phase III
Avelumab (anti-PD-L1 mAb)	Gastric cancer, 1st line maintenance	Phase III
Avelumab (anti-PD-L1 mAb)	Ovarian cancer platinum-resistant/-refractory	Phase III
Avelumab (anti-PD-L1 mAb)	Ovarian cancer, 1st line	Phase III
Avelumab (anti-PD-L1 mAb)	Urothelial cancer, 1st line maintenance	Phase III
Avelumab (anti-PD-L1 mAb)	Renal cell cancer, 1st line	Phase III
Avelumab (anti-PD-L1 mAb)	Locally advanced head and neck cancer	Phase III
Avelumab (anti-PD-L1 mAb)	Merkel cell cancer, 1st line	Phase II
Avelumab (anti-PD-L1 mAb)	Solid tumors	Phase I
Avelumab (anti-PD-L1 mAb)	Hematological malignancies	Phase I
M9241 (NHS-IL12, cancer immunotherapy)	Solid tumors	Phase I[2]
M7824 (anti-PD-L1/TGFβ trap)	Solid tumors	Phase I
M4112 (cancer immunotherapy)	Solid tumors	Phase I
Immunology		
Sprifermin (fibroblast growth factor 18)	Osteoarthritis	Phase II
Atacicept (anti-BLyS/anti-APRIL fusion protein)	Systemic lupus erythematosus	Phase II
Atacicept (anti-BLyS/anti-APRIL fusion protein)	IgA nephropathy	Phase II
Abituzumab (anti-CD51 mAb)	Systemic sclerosis with interstitial lung disease	Phase II
Evobrutinib (BTK inhibitor)	Rheumatoid arthritis	Phase II
Evobrutinib (BTK inhibitor)	Systemic lupus erythematosus	Phase II
M1095 (ALX-0761, anti-IL-17A/F nanobody)	Psoriasis	Phase I[3]
M6495 (anti-ADAMTS-5 nanobody)	Osteoarthritis	Phase I
General Medicine		
M5717 (PeEF2 inhibitor)	Malaria	Phase I

[1] As announced on August 25, 2017, the European Commission has granted marketing authorization for cladribine tablets for the treatment of highly active relapsing multiple sclerosis in the 28 countries of the European Union in addition to Norway, Liechtenstein and Iceland.
[2] Sponsored by the National Cancer Institute (USA).
[3] As announced on March 30, 2017, in an agreement with Avillion, anti-IL-17 A/F nanobody will be developed by Avillion for plaque psoriasis and commercialized by our company.
More information on the ongoing clinical trials can be found at www.clinicaltrials.gov.
Pipeline products are under clinical investigation and have not been proven to be safe and effective.
There is no guarantee any product will be approved in the sought-after indication.

ADAMTS-5	A disintegrin and metalloproteinase with thrombospondin motifs
Akt	Protein kinase B
APRIL	A proliferation-inducing ligand
ATM	Ataxia Telangiectasia Mutated kinase
ATR	Ataxia Telangiectasia and Rad3-related kinase
BLyS	B-lymphocyte stimulator
BTK	Bruton's tyrosine kinase
IgA	Immunoglobulin A
IL	Interleukin
mAb	Monoclonal antibody
MetAP2	Methionine aminopeptidase 2
PD-L1	Programmed cell death ligand 1
PeEF2	*Plasmodium* eukaryotic elongation factor 2
PK	Protein kinase
TGFβ	Transforming growth factor β

Consumer Health

Our Consumer Health business develops and sells over-the-counter medicines and food supplements as well as several prescription medicines in Europe, in particular in France, Germany and the United Kingdom, and in growth markets in Latin America, the Middle East, Africa, and Southeast Asia. The focus of our research and development activities is on the continuous improvement of existing formulations as well as on the development of new products and line extensions. For example, in 2016/2017 we successfully launched the all-new brand Vivera® across several Latin American markets, containing one of the most researched and most effective probiotics in the world for the treatment of gastro-intestinal upset. We are following a consumer-centric innovation approach based on intensive market research across all our key markets. Since 2014, we have been establishing cooperation agreements with independent third-party research facilities to leverage their specific capabilities and expertise for the development of new products that meet the specific needs of consumers.

Allergopharma

Allergopharma, our allergy business, is one of the leading manufacturers of diagnostics and prescription drugs for allergen immunotherapy. With its own research department and in cooperation with research institutes and other partners, Allergopharma is developing a better understanding of the immunological mechanism that underlies the development of allergies and is working on the next generation of drugs for allergen immunotherapy.

Life Science

Across our three Life Science business units of Research Solutions, Process Solutions and Applied Solutions, our R&D teams are dedicated to finding innovative solutions to our customers' toughest challenges. In our Life Science business sector, we invest significantly in R&D, with more than 1,500 employees working in various R&D functions around the world.

In 2017, we continued to focus on delivering the promise of accelerating access to health for people everywhere. We launched 15,000 products, including nearly 9,000 chemicals, while aiming to:

- Improve and expand our portfolio
- Invest in new and disruptive technologies for the long term
- Partner with the global scientific community
- Meet customer needs

Improve and expand our portfolio

We launched innovations across all segments of our portfolio throughout 2017. In Research Solutions, we introduced a next-generation high-sensitivity protein detection platform, SMCxPRO™ technology, which allows scientists to detect and quantify low-abundance biomarkers that traditional methods cannot measure.

In addition, we introduced the Stericup® Quick Release 500mL vacuum filtration system, a filter bottle system ideally suited for sterile filtration of cell culture media, buffers and reagents. Even routine processes like microfiltration must be reliable and consistent because quality and reproducibility are critical to the cell culture process. The improved liquid sterile filtration system offers ergonomic design updates that optimize user control and streamline the filtration process, while safeguarding results with the proven performance of Millipore® membranes.

In Process Solutions, we launched CAN MultiFlow™ screening services to more accurately predict genotoxic and mode-of-action properties of substances, ingredients and drug compounds. We were the first company to provide this service in the United States. Assessing toxicity is one of the most important steps in the development of chemicals, ingredients and drugs for use in pharmaceuticals, agriculture or consumer goods.

We took a significant step towards increasing manufacturing flexibility and enabling higher productivity with the launch of the Ex-Cell® Advanced™ HD Perfusion Medium. This first off-the-shelf, high-density cell culture medium supports perfusion processes and facilitates high productivity at low perfusion rates, increasing production yield and speed to clinic.

We also introduced Millistak+®HC Pro, the first portfolio of high-capacity, fully synthetic depth filters for non-treated Chinese Hamster Ovary harvest clarification and downstream filtration applications. The product provides a cleaner and more consistent depth filtration process than traditional diatomaceous earth (DE) and cellulose-based filtration processes.

In Applied Solutions, we introduced a new testosterone calibrator kit for in vitro diagnostic use. The certified kit allows users to calibrate assays and verify calibrations and is the first of its kind to receive CE mark approval – indicating compliance with the European Union's Medical Device Directive.

We also launched MC-Media Pads for convenient food and beverage testing. The product offers streamlined, convenient indicator organism testing for robust quality control of food and beverages, helping customers improve their sample-testing workflows by increasing efficiency without compromising quality.

Invest in new and disruptive technologies for the long term

CRISPR genome-editing technology is advancing treatment options for some of the toughest medical challenges faced today, including chronic illnesses and cancers for which there are limited or no treatment options. Our company has a 12-year history in the genome-editing field and was the first company to globally offer custom biomolecules for genome editing (TargeTron™ biomolecules and zinc finger nucleases), driving adoption of these techniques within the worldwide research community.

In 2017, we developed an alternative CRISPR genome-editing tool that makes CRISPR more efficient, flexible and specific, giving researchers more experimental options and faster results, which can accelerate drug development and access to new therapies. Our research on proxy-CRISPR, "Targeted Activation of Diverse CRISPR-Cas Systems for Mammalian Genome Editing via Proximal CRISPR Targeting," was published in the April 7, 2017, edition of *Nature Communications*.

The Australian Patent Office granted our company patent rights relating to the use of CRISPR in a genomic-integration method for eukaryotic cells. With this CRISPR genomic-integration technology, scientists can replace a disease-associated mutation with a beneficial or functional sequence, a method important for creation of disease models and gene therapy. Additionally, scientists can use the method to insert transgenes that label endogenous proteins for visual tracking within cells.

We further strengthened our patent portfolio in August, when the European Patent Office (EPO) issued a "Notice of Intention to Grant" for a patent application covering our CRISPR technology used in a genomic-integration method for eukaryotic cells. The patent provides protection for our CRISPR technology, which gives scientists the ability to advance treatment options for the toughest medical challenges we face today.

In addition, the Canadian Patent Office issued a "Notice of Allowance" for the patent application covering CRISPR technology used in a genomic-integration method for eukaryotic cells. And, in December, we were granted a patent for CRISPR technology by the Singapore Intellectual Property Office. Patents have also been filed for the insertion CRISPR method in the United States, Brazil, China, India, Israel, Japan, and South Korea.

We recognize the potential benefits of conducting properly defined research with genome editing because of the breakthrough therapeutic potential. Therefore, we support research with genome editing under careful consideration of ethical and legal standards. The Group has established the Bioethics Advisory Panel of Merck KGaA, Darmstadt, Germany, to provide guidance for research in which its businesses are involved, including research on or using genome editing.

Beyond basic gene-editing research, our company supports development of gene- and cell-based therapeutics and manufacturing viral vectors.

In October, our Carlsbad, California-based manufacturing facility for the production of BioReliance® viral and gene therapy products completed both a U.S. Food and Drug Administration pre-license inspection and a European Medicines Agency marketing authorization application inspection. As a leading contract manufacturing organization for the production of next-generation gene therapies, the achievement underscores our commitment to bring our customers closer to commercialization of novel therapies. In December, we signed a commercial supply agreement to manufacture viral vectors for bluebird bio for use in potentially transformative gene therapies.

Partner with the global scientific community

In collaboration with Stelis Biopharma, we opened a new joint process scale-up lab in Bengaluru, India, to provide end-to-end solutions – from process development to scale-up manufacturing – for pre-clinical, clinical and commercial supply. Both companies bring technological expertise and an extensive bioprocess development and manufacturing portfolio that will help customers accelerate development of biopharmaceuticals for clinical trials and manufacturing with greater reliability and cost effectiveness.

In 2017, we also formed a strategic alliance with Baylor College of Medicine, Houston, Texas, and its vaccine product development partnership, Texas Children's Hospital Center for Vaccine Development, to advance vaccine research and development for neglected and emerging infections. The collaboration focuses on bringing vaccines through development to efficiently deliver them to societies in need. Together, we are working to optimize the vaccine manufacturing process to increase vaccine stability and yield.

Progress continued within the scope of our participation in Horizon 2020, the EU Framework Program for Research and Innovation, to improve biopharmaceutical downstream processing. The nextBioPharmDSP, a consortium of seven organizations, is developing a more efficient, cost-effective and environmentally friendly downstream process to manufacture monoclonal antibodies and biosimilars. The biopharmaceutical industry faces pressures to reduce manufacturing costs and deliver greater efficiencies while being environmentally responsible. Through the Horizon 2020 program, consortium members are already delivering important advances for downstream processing.

In addition, we extended our strategic alliance with Samsung BioLogics after a memorandum of understanding (MoU) was signed in November. The alliance aims to accelerate process development and clinical material production at small biotech start-ups focusing on novel drug development for which Samsung BioLogics acts as a contract manufacturer. The new MoU is an extension of an MoU signed in 2014 that encompasses a long-term supply agreement under which we provide raw materials for biopharmaceutical manufacturing.

Meet customer needs

We expanded our BioReliance® End-to-End Biodevelopment Centers in North America, China and Europe to meet increasing customer demand for their turnkey portfolio of bioprocessing products, manufacturing capabilities and industry-leading technological expertise. The expansion includes the opening of two new process development centers, located in the United States and China, following the commercial success of our biodevelopment center in Martillac, France. The two new facilities provide a full range of process development capabilities and services, including cell line development services and both upstream and downstream process development, as well as non-GMP clinical production. The United States facility will be open to customers in 2018.

Angiex Inc., Cambridge, Massachusetts, will be the first project undertaken by the new U.S. BioReliance® End-to-End Biodevelopment Center. We formed a collaboration with Angiex Inc. to help accelerate clinical readiness of a new cancer therapy. Our goal is to support the biotechnology start-up's ability to speed its lead oncology antibody drug candidate to clinical use by providing access to end-to-end process development tools, education programs and training.

Performance Materials

We are the undisputed market and technology leader in liquid crystals (LCs) and photoresist materials, which are primarily used in televisions and mobile communication applications. We are also one of the leading suppliers of OLED materials as well as decorative and functional effect pigments. Materials for integrated circuits round off the portfolio.

Display Materials

In 2017, we continued to work with our customers, the display manufacturers, to further develop high-performance liquid crystal technologies. The systematic introduction of new liquid crystal materials and the development of higher-performance liquid crystal mixtures led to numerous newly qualified and commercialized products in all applications, including large-screen TVs, public information displays, as well as mobile devices and automotive applications. We developed and commercialized a number of new photoresist formulations for producing the thin-film transistor backplanes that are used for both LC and OLED display manufacture. Our high-resolution photoresist technology is especially important for the more complex and demanding electronic patterning required in increasingly high-resolution displays. Our innovative liquid crystal technology UB-FFS (ultra-brightness fringe-field switching) also saw growth in the mobile device display sector. UB-FFS is highly attractive for mobile applications. It provides the highest light efficiency as pixel sizes become increasingly smaller due to the demand for higher-resolution smartphones and tablets. We also further developed this energy-saving technology for larger display applications, including TVs and public information displays, where high light efficiency is particularly valuable in the highest-resolution displays, for example 8K.

Our new liquid crystal technology SA-VA (self-aligned vertical alignment) is eco-friendly and resource-conserving; it requires less energy and creates fewer waste products than conventional modes during display manufacture. We have been developing the materials and process within the scope of close technical partnerships. The technology also provides a more efficient display manufacturing process and could offer improved design features for display manufacturers. SA-VA has the potential to be used in all types of display applications, including mobile IT applications, but most importantly large-screen TVs. We expect the first products in mid-sized applications, but extending quickly to large-screen and high-end TV applications. We also made further progress with the development of new liquid crystal technologies to enable free-form LC displays. Here we aimed to enable the use of low-cost plastic substrates rather than the thin glass commonly used in LC displays to date. We are working closely with display makers in Asia to optimize the materials and process for our innovative polymer wall LC technology. This could provide robust and bendable plastic displays without the defect patterns that typically occur when an LC display is pressed or bent.

Beyond classic displays, we have more strongly positioned liquid crystals under the licrivision™ brand as an innovative material for windows in architectural and automotive applications. We are currently focusing on three variants: sun protection, glare protection, and privacy control where the windows switch to opaque. At the end of November, we opened our first production facility for switchable liquid crystal window modules in Veldhoven, the Netherlands. In addition, we presented our liquid crystal window technology for automotive sunroofs at the International Motor Show (IAA) in Frankfurt, Germany. We continued to advance the development of smart antennas, which can also be used in the automotive industry. Thanks to a thin functional layer of liquid crystals, the antenna can be electronically pointed to a satellite without the need to move the device mechanically. Together with Hella, a light and electronics expert, and other partners, we have developed a smart automotive headlight system based on an LC display. With a total of 30,000 pixels, the smart adaptive lighting can be set in a continuously variable manner and in real time to various driving situations. Hella is to bring the developed technology to series production.

To accelerate the development of free-form displays, our company is cooperating with FlexEnable of the United Kingdom. This company is working in the field of conformable, large area, full color and video rate organic liquid crystal displays (LCDs) on polymer substrates. With a bend radius that can go below 30 millimeters, organic LCDs can meet new market requirements, for example in automotive applications, where thin, conformable and shapeable displays are needed. It will soon be possible to curve organic LCDs around complex surfaces and shapes when our innovative polymer wall LC technology is used. In order to develop new digital optical applications with liquid crystals, in May we entered into a five-year collaboration with the University of Leeds. This is one of the United Kingdom's most renowned research institutions for liquid crystal applications and has recently built a reputation in particular for non-display applications such as switchable contact lenses.

Integrated Circuit Materials

Gas-phase deposition materials are a growth area within our semiconductor chemicals business. To meet the constantly growing challenges in chip production, increasingly more chemical elements are being used in advanced semiconductor fabrication processes; this is often enabled by atomic layer deposition technology. For the deposition of layers that often are only a few atoms thick, novel materials such as precursor chemicals are required, which can be applied at lower temperatures and/or selectively to only certain parts of a wafer. Such surface-selective processes automatically carry the target materials to the right position. This provides advantages for our customers as they can eliminate costly photolithography steps and at the same time automatically avoid overlay registration errors.

In order to better support our customers in Asia, in 2017 we opened a new research center in Taiwan, where we are conducting research in atomic layer deposition and gas phase deposition for front-end applications, as well as very thermally conductive, economically sustainable, high-performance sinter pastes for chip packaging applications. At our sites in Shizuoka, Japan, and Darmstadt, Germany, we are developing innovative dielectrics that can be used at lower application temperatures and are thus suitable for novel chip types. Our thick-film photoresist technology found new applications for the production of 3D NAND storage chips that enable higher storage capacity than conventional planar technology with the same surface area. Besides other applications, these new-generation storage chips are increasingly being used in solid-state drives (SSDs), successors of classic hard drives.

Pigments & Functional Materials

The exceptional color saturation and brilliance of Meoxal® effect pigments based on aluminum flakes is finding increasing use in automotive and plastic coatings. In addition, Xirallic® NXT Cougar Red, a pure, bluish red pigment with an extraordinary sparkle, was introduced for automotive coatings as the latest addition to the Xirallic® NXT series. Further pigment developments support the market trend towards achromatic coatings. In the plastics field, the extremely pure, silver-white Iriodin® 6163 WAY was added to the WAY series of weather-proof pigments for outdoor applications. For the cosmetics sector, both new sparkle effects and matte effect pigments were successfully launched as part of the Smart Effects initiative. In the fillers area, new formulations, such as an alcohol-free variant of the anti-aging active ingredient RonaCare® CP5, were added to the portfolio. Based on two-dimensional and three-dimensional skin models, we developed a technology to more efficiently assess new cosmetic actives. Particularly in efficacy testing of natural substances, we expect to already have marketable products in 2018.

In technical applications, we intensified our activities in additives for 3D laser direct structuring with a focus on 3D printing of plastics. Together with our partners, we also developed laboratory prototypes which we presented at the LASER World of Photonics 2017 in Munich, Germany and the International Motor Show (IAA) 2017 in Frankfurt, Germany. Laser additives enable computer-controlled fabrication of three-dimensional components with integrated electronic parts and laser-assisted circuit board bonding. We made good progress in high-voltage technology. Within the scope of the iShield research project, which is funded by the German Federal Ministry of Education and Research (BMBF), we are collaborating with academic and industrial partners to develop and qualify a novel material to shield generators and engines.

We further developed our range of fluorosurfactants, which strongly differentiates itself from competing products owing to its favorable ecotoxicological profile. In early 2017, Tivida® FL 3000 was added to our portfolio of nonionic surfactants. Even in very low concentrations, it significantly improves the flow and wetting behavior of coating systems.

Advanced Technologies

In 2017, we made significant progress with our material and technology developments for flexible displays. At major exhibitions, for example, together with strategic partners we presented prototypes demonstrating the market readiness of our materials and the related technologies. During SID Display Week in May, we additionally reported on the development of printing inks. In 2017, our printed red, green and blue layers demonstrated first-ever efficiency values comparable to those of vacuum evaporation technology. This will allow flexible or rollable screens to be manufactured in the future, such as for automotive applications or large-area displays. Printed displays achieve greater brightness and better energy efficiency. In reflective displays, our partner Clearink Displays won the prestigious Best in Show Award at SID 2017. To respond to the growing demand from the industry for our innovative material solutions, we started investing in our R&D site in Chilworth, United Kingdom, to increase our lab capacity.

In electronic packaging, we strengthened our research activities by participating in a consortium led by the Fraunhofer Institute for Reliability and Microintegration in Berlin. We are further advancing material and technology development in hybrid electronics. At the LOPEC 2017 exhibition in Munich in March, we presented the prototype of a flexible display consisting of a backplane with organic thin-film transistors as well as liquid crystals from Merck KGaA, Darmstadt, Germany. We will continue to focus strongly on the development of these technologies.

In 2017, a number of lighthouse projects demonstrated the diversity of use of printable organic solar cells (OPV). For example, OPV modules integrated into a glass façade in São Paulo, Brazil, provide shade, innovative design and energy efficiency. We presented a novel façade concept combining OLED and OPV module design with functionality at the Biennale of Architecture and Urbanism in Seoul, Korea. The growing interest of architects in this innovative construction material was reflected in the Innovation Award for Architecture and Construction, which went to OPV at BAU 2017, the world's leading exhibition for architecture, materials and systems. The upcoming technology trend in the LED lighting market – human centric lighting (HCL) – places the focus of light planning on people's health and well-being. This trend is impressively confirmed by the 2017 Nobel Prize in Physiology or Medicine, which was awarded for discoveries of molecular mechanisms controlling the circadian rhythm, which is significantly affected by light. Our product developments specifically address this up-and-coming market for HCL LED lighting. Micro-LED displays are also currently attracting great attention. From our broad portfolio for the LED industry, we have already supplied our customers with first materials for this new application.

Strategic realignment

In 2018, we want to focus even more strongly on the needs of our customers and markets. Therefore, in December 2017, we announced that we will combine our expertise in three newly created business units aligned with our target markets: Display Solutions, Semiconductor Solutions, and Surface Solutions. In the future, all activities pertaining to research, business development and external partnerships will be united in a central research and innovation unit.

People

The success of our company depends crucially on the dedication of our employees. We want to offer them framework conditions that meet their individual needs. This encompasses an exciting range of tasks and advanced training possibilities, furthering flexible forms of cooperation and a culture of mutual esteem and respect. Our objective is to create a working environment in which curiosity can best unfold.

A career with Merck KGaA, Darmstadt, Germany, is enriching – both from a professional and a personal perspective. It is important to us to create an inclusive work environment in which all employees have the possibility to maximize their potential. To support our company's growth and innovation course, the focus of our human resources work is on furthering engaged people, capable talents and empowered leaders.

In line with the new development of our corporate brand in 2015, we also adapted our employer brand and launched it globally in May 2017. At the core, it is based on the passion, creativity and curiosity of our employees, through whom our company has become a global science and technology company. We are convinced that curiosity leads to positive outcomes.

Our promise as an employer is thus "Bring Your Curiosity To Life." We have formulated four core messages that characterize our employer brand and are applicable to us as a whole. They determine how we collaborate, how we advance our business, how our employees can develop within the company and who we are:

- Experience the joy of curiosity
- Foster fruitful partnerships
- Fulfill your personal ambitions
- Advance technologies for life

OVERVIEW OF OUR HEADCOUNT FIGURES

As of December 31, 2017, we had 52,941 employees worldwide (2016: 50,414). In 2017, we were represented by a total of 217 legal entities with employees in 66 countries.[1]

DISTRIBUTION OF EMPLOYEES

by region

Driving innovation through engaged people

Our human resources work is founded on a company culture that values and motivates people and promotes the right framework conditions for innovation and engagement.

REGULAR GLOBAL EMPLOYEE SURVEYS

To strengthen employee retention and generate impetus for the future of our company, we pay special attention to honest and continuous feedback. Having used various methods to obtain feedback for many years, in 2016 we reintroduced our global employee survey. Based on the results, strategic focal topics were identified and corresponding initiatives derived. In October 2017, another employee survey was conducted in 22 languages and the status of implementation reviewed. Around 42,100 employees (84%) took part. Our Group-wide score, which shows how attached our employees feel to the company, was 59%. We are thus on a par with other pharmaceutical and chemical companies. As of 2018, these results will be incorporated across the Group.

[1] The Group also has employees at sites which are not fully consolidated subsidiaries. These figures refer to all people directly employed by the Group and therefore may deviate from figures in the financial section of this report.

FOSTERING INNOVATIVE POTENTIAL

Innovation is absolutely essential to the success of a science and technology company. Curiosity and a focus on new ideas provide a fruitful basis for innovation and have a positive impact on company performance. The modular Innovation Center in Darmstadt, which opened in 2015, offers our employees the opportunity to embrace new ideas and work on select projects in an inspiring environment. Sufficient scope and adequate support, also in the form of a suitable working environment, actively promote the innovative strength of our employees. Apart from initiatives to generate ideas and advance projects, the Innovation Center offers our employees various training courses on topics such as innovative methods, creative techniques and developing business models. Internal project teams, start-ups from our Accelerator program as well as many interested colleagues from various areas throughout our company benefit from this offer. Recently, the training courses offered by the Innovation Center were digitalized, making them available to all employees worldwide.

VALUING CULTURAL DIVERSITY

Our success is based on courage, achievement, responsibility, respect, integrity and transparency. These values determine how we perform our work daily, the way in which we approach challenges, as well as our dealings with customers, business associates and colleagues. Openness and respect characterize our company culture. The objective is to create a culture of mutual respect and esteem in which the strengths of a diverse workforce and individual differences are appreciated.

The Chief Diversity Officer and a council of high-ranking executives from all business sectors and select Group functions play a key role in strategically defining and managing our diversity and inclusion policies. Their work focuses on operationalizing the resolutions we passed in 2015 on the topics of diversity and inclusion. Key elements of this are recruiting people representing a breadth of qualifications, skills and experiences, developing and retaining them. In addition, we support specific employee networks in order to foster exchange among like-minded individuals. Apart from our women's networks in various countries, we also support networks that promote the interests of the LGBTIQ community as well as Afro-American and foreign employees.

In September 2017, the Group-wide Diversity Days were held for the sixth time with a campaign entitled "Different Perspectives". Various events and activities took place to heighten awareness of diversity and inclusion among our workforce. Globally, employees in 32 countries across six continents took part in numerous events and shared their experiences on the intranet and in social networks.

As a global employer with intercultural expertise, people from a total of 131 nations work for our company; 23.2% of our employees are German citizens and 74.9% work outside Germany. At our headquarters in Darmstadt, 11% of our staff comes from 89 different countries.

Women currently make up 43.1% of the workforce. However, the ratio of women to men varies widely across the different regions, businesses and functions. We are therefore working to raise the proportion of women wherever they are underrepresented, taking into account the situation typical for the industry as well as regional differences.

Demographic change is posing challenges in Germany as well as several other EU countries, the United States, and Japan. The average age of our employees is slightly more than 41. We assume that this figure will continue to rise in the coming years and are preparing for this situation. As part of our range of "Health and Well-being" offers, we specifically promote employee physical and psychological well-being. These offers vary from country to country and are adapted to local circumstances. In addition, we offer multifaceted continuing education throughout the entire professional careers of our employees.

In Germany, our company signed the Diversity Charter in 2013, the Equal Opportunity Charter in 2015 and the Inclusion Action Plan of the German Mining, Chemical and Energy Industrial Union (IG BCE) in 2017. By joining these initiatives, we underscore our commitment to fairness and tolerance at the workplace.

Furthering and asking more of talent

We endeavor to identify and develop the abilities of our employees early on. Our objective is to extensively further current and future employees and offer them interesting advanced training opportunities in order to prepare them for future and more challenging tasks.

A HOLISTIC RECRUITMENT APPROACH

When filling job vacancies, we pursue a holistic recruitment approach coupled with globally uniform and binding procedures. This starts with an internal job posting before external channels such as job portals and recruitment agencies are used. On the one hand, this process enables us to offer employees better development opportunities, and on the other hand it minimizes the costs of external recruitment. For employees with leadership responsibility, we offer targeted interview coaching to support them in selecting candidates and to establish uniform quality standards.

A globally accessible welcome portal is available to new employees in order to help them prepare for their new job at Merck KGaA, Darmstadt, Germany, and to support their onboarding phase. To further improve the onboarding process, various initiatives were started in 2017. For instance, supervisors, Human Resources and new employees can already exchange information and documents before the employee's first day of work. In addition, all new employees are assigned an experienced colleague who can help them to familiarize themselves with the daily working routine. Our managers are also given detailed information such as onboarding plans and process descriptions to support them with this task.

VOCATIONAL TRAINING TO RECRUIT YOUNG PEOPLE

In 2017, we again maintained a constant, high vocational training rate in Darmstadt, our largest site. A total of 535 young people were enrolled in apprenticeships in 23 different occupations at our headquarters in 2017. We give unlimited employment contracts to all apprentices working in occupations for which we have sustainable demand. On average, the post-apprenticeship hiring rate – taking voluntary terminations into account – was more than 90% over the past five years. We also offer vocational training at other sites in Germany, in which a total of 53 apprentices participated in 2017.

We promote the professional expertise of our apprentices through numerous regional and global project activities. In 2017, these included supporting a center for homeless children in South Africa. Furthermore, through our "Start in die Ausbildung" program, we help prepare young people who have not been able to find an apprenticeship. With a total of 20 young people between the ages of 16 and 25 in 2017, the number of participants was slightly lower than in the previous year. Although they have a school leaving qualification, they had been searching for an apprenticeship for at least one year without success.

Since 2016, we have also been working on a specially developed program to help refugees enter the job market. As part of the "Integrating refugees through training" program, a further group of 12 young people who were forced to flee their home countries started linguistic, technical, cultural, and job-specific training to prepare them for vocational training and thus for the labor market.

TARGETED ADVANCED TRAINING AND MAXIMIZING PERFORMANCE CAPABILITY

Our focus on systematic personnel development allows us to sustainably strengthen the performance potential within our company and to increase the motivation of our people. Only by expanding the abilities of each individual can we count on innovative and curious employees and managers in the future and flexibly respond to different requirements.

Employee development at our company is founded on regular exchanges and a culture in which employees aspire to high levels of performance and engagement. As the basis for internal strategic talent management, the performance and potential management process is globally aligned for all employees in accordance with the same principles and is part of a shared IT system. We systematically combine talent recognition with performance assessments based on employee target agreements, as we are convinced that regular feedback helps all employees to grow in terms of their performance and potential. Regular individual assessments permit us to more readily identify high-potential employees and to further them accordingly. Clear objectives, differentiated and open feedback and individual development plans are thus important prerequisites for both the personal development of every individual and the success of the company. Through software-supported intensive analysis of our personnel data, we can identify the potential of talented employees early on, which helps to optimize our succession planning efforts and find even better matches for internal positions.

Global classroom training courses and workshops developed specifically for teams help our employees develop and build individual abilities in line with new requirements and perspectives. In 2017, more than 5,700 employees participated in global classroom training courses to prepare themselves for new opportunities and challenges. Digital solutions in the form of more than 4,000 e-learning and languages courses are available to our employees. To enable our employees to realize their full potential, we also provide local business- and function-related offers. All measures are documented in a development plan introduced globally.

Individual development opportunities are also supported by a new job architecture, which was introduced in 2017. It applies globally and enables us to harmonize all positions and to simplify their classification. This job architecture defines three fundamental and equivalent career paths: managers, experts and project managers. Employees who wish to advance in their careers and aim for a top position within the company can also do so via the expert and project manager career paths.

Building empowered leaders

One of the major duties of our leaders is to motivate and encourage employees to show their innovative strength. A dialogue in a spirit of partnership, the development of strategic competencies and the continuous further development of our leaders help to build trust and to strengthen our company's success over the long term.

STRATEGIC COMPETENCY DEVELOPMENT

A transparent competency model is a further pillar of our personnel development efforts. Managers and employees should show strategic competence by being purposeful, future-oriented, innovative, results-driven, collaborative, and empowering. By demonstrating these qualities, our leaders can build a strong culture of collaboration based on curiosity, creativity and trust. In addition, our leaders are expected to set an example, for instance by living our company values and taking responsibility for their own decisions. To assess the performance and potential of every individual and to establish an effective leadership culture, regular and differentiated feedback is of utmost importance. This way, employees and supervisors can develop a shared vision, execute the business strategy and further develop a unifying culture.

PERSONNEL DECISIONS BASED ON DATA AND FACTS

Digitalization and data-based decisions are also taking hold in Human Resources management at our company Merck KGaA, Darmstadt, Germany, particularly with respect to the development and use of personnel management tools. With People Analytics, Human Resources has developed a modern, data-supported approach that features greater transparency and deeper insights into relevant personnel information from the businesses and Group functions. It is based on globally integrated data management and state-of-the-art analytics. People Analytics supports our managers with data and facts that can serve as the basis for major personnel decisions. This makes it possible to advise the company management more precisely and purposefully in its decision-making. People Analytics helps Human Resources to build strategic advisory capacities.

Additionally, we introduced predictive analytics based on the data now available, which enables us, for example, to identify factors that have a substantial impact on employee turnover.

DIVERSITY AND MANAGEMENT

In order to manage our global and diverse organization, we need leaders who can build international teams and promote international cooperation so as to contribute to a productive and flexible working atmosphere. We seek managers whose inclusive leadership style also reflects different employee and customer traits. This opens up career opportunities for talented employees from all areas of our company and ensures a broad experience base as well as differentiated decision-making.

At Merck KGaA, Darmstadt, Germany, many teams work across sites and internationally. The diversity of competencies and experiences among the team members offers tremendous potential that our leaders can make use of. Internationality and a global mindset characterize our company culture and are therefore mirrored by our international management team. In 2017, 64.4% of our executives were not German citizens. Altogether, 65 different nationalities are represented in such positions. Our goal for the period until 2021 is to maintain the proportion of female leaders at a stable level of 30%, and we are working to further increase the representation of women in leadership positions and business units where they are still underrepresented. To achieve this objective, in 2017 we formed special teams that are responsible for developing goals and measures at departmental level to help us move female candidates into positions in different areas and hierarchies. At the end of 2017, women occupied 30.3% of leadership roles Group-wide. These figures are steadily increasing across the company as a whole, but not consistently across business units, Group functions and hierarchical levels. The report on stipulations to promote the proportion of women in leadership positions at Merck KGaA, Darmstadt, Germany, pursuant to section 76 (4) and section 111 (5) of the German Stock Corporation Act can be found in the Corporate Governance section of this report.

MANAGEMENT PROGRAM FOR EXECUTIVES

We use targeted advanced training to further the professional career paths of our top talent and senior executives. One of the aims of the nine-month International Management Program is to promote global thinking among aspiring executives and to strengthen their leadership competencies. In cooperation with top international universities, our Company University has been offering a multi-regional, modular program since 1999. To date, 373 members of top management have taken part. Furthermore, our company cooperates globally with universities in order to support employees who wish to study for an MBA. In 2015, we launched the Growth Markets Management program for local people managers in India and Latin America, which focuses on business management and Group-specific topics. This program is also offered in China as well as in Europe for the Middle East and Africa region, with participants from a variety of countries and regions such as Africa, the Middle East, Japan, and Russia. Moreover, in 2017 we ran the Managerial Foundation Program for new people managers in 21 countries with 917 participants, and the Advanced Management Program, which was attended by 179 experienced people managers in four countries.

In 2017, we once again expanded our workforce pool to internally fill management positions when they become vacant. The vast majority of management position vacancies were filled by internal candidates again in 2017. In addition, we recruited highly qualified external executives in order to add new perspectives to our long-standing in-house expertise.

Differentiated solutions to support employee well-being

As an employer, we take on responsibility for the well-being of our people and offer a wide range of opportunities to optimize work-life balance and to protect their health and safety.

FOSTERING WORK-LIFE BALANCE

As a responsible employer, the physical and mental well-being of our employees is extremely important to us. To enable employees to plan their lives independently and to boost their long-term satisfaction, providing a flexible and health-oriented working environment is a special focus of our human resources work.

A healthy work-life balance is a crucial precondition for the performance ability and motivation of our people. That is why we offer our employees at many sites around the world flexible and innovative working models. The Mywork at Merck KGaA, Darmstadt, Germany, working model allows employees at the German sites in Darmstadt and Gernsheim to freely choose their working hours and location in agreement with their teams and supervisors. In addition, we also introduced the Mywork at Merck KGaA, Darmstadt, Germany, for Merck Accounting Solutions & Services Europe GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, Merck Export GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, Merck Schuchardt OHG, Hohenbrunn, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, Merck Selbstmedikation GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, Merck Versicherungsvermittlung GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, and Merck Chemicals GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. Employees no longer record their time electronically and must only document their hours if they exceed their standard working hours within the agreed working time framework. At the end of December 2017, a total of 5,267 employees made use of this model. In 2017, 4.6% of our employees worldwide worked part-time, 10.7% of whom are men.

By offering information, advice and assistance in finding childcare, nursing care, as well as home and garden services, we help employees to reconcile the demands of their professional and personal lives. At various sites, employees benefit from childcare options that we subsidize. A daycare center has been operating at the Darmstadt site, looking after children between the ages of one and twelve for the past 50 years. The adjacent new building houses a nursery for up to 60 children between the ages of one and three years. During the orientation phase, our employees can make use of additional offices for parents at the daycare center premises. In addition, a good ratio of staff to children is important to us to reliably supervise the children.

A TRANSPARENT AND FLEXIBLE EMPLOYEE REWARD SYSTEM

At our company, we reward the performance of every individual through appropriate and competitive total compensation. For years, we have been achieving this through global processes and programs that are supported by digital platforms. We also offer our managers flexible, market- and needs-oriented compensation tools. These support well-informed decisions and thus provide comprehensible, performance- and position-based compensation. Apart from monetary compensation components, we also offer our employees attractive fringe and social benefits. Our “benefits4me” offer comprises three pillars:

- Company benefits including a company pension
- Health and well-being
- Service offers

Worldwide, we offer various benefit packages to meet the different needs of our employees using well-established programs. Focusing more closely on individualized fringe and social benefits in the future will continue to enable our employees to individually choose those benefits that best meet their personal situation and stage of life.

A CONSTANT FOCUS ON HEALTH AND SAFETY

Workplace safety and health protection are a very high priority at Merck KGaA, Darmstadt, Germany. It is especially important to us to do everything in our power to prevent workplace-related illnesses and accidents. We apply the lost time injury rate (LTIR) as an indicator to determine the success of measures aimed at accident prevention as well as occupational health and safety. This key performance indicator describes the number of workplace accidents resulting in lost time of one day or more per one million working hours. After having reached the goal of 2.5 that we had set in 2010, in 2015 we set ourselves a new, ambitious goal: By 2020 we intend to sustainably lower the LTIR to 1.5. With an LTIR of 1.5 in 2017, we attained this goal.

Since 2010, we have been using the “BeSafe!” program to further expand our occupational safety activities. Uniform standards as well as local modules to meet specific safety requirements at individual sites can help to improve conditions. The program focuses on engaging managers in the safety culture and building their buy-in; it aims to make safety an intrinsic value and empower our employees to take responsibility for their own safety. In 2017, we continued to sensitize our employees to workplace hazards through numerous awareness campaigns.

Since 2010, our company has been presenting the Safety Excellence Award annually in order to underscore the importance of safety. It is granted to all production sites with no workplace accidents on record for the year; in 2017, it was awarded to 59 out of 97 sites.

OVERVIEW OF EMPLOYEE FIGURES[1]

			Group (overall) Dec. 31, 2015	Group (overall) Dec. 31, 2016	**Group (overall) Dec. 31, 2017**
Number of employees	global, total		49,613	50,414	52,941
	by region	Asia-Pacific (APAC)	11,096	10,754	11,294
		Europe	23,429	24,438	25,980
		Latin America	4,352	4,140	4,050
		Middle East and Africa (MEA)	942	1,045	1,097
		North America	9,794	10,037	10,520
Number of employees (FTE - full-time equivalents)	global, total		48,911.1	49,652.7	52,223.5
	by region	Asia-Pacific (APAC)	11,068.2	10,725.3	11,272.1
		Europe	22,785.7	23,727.1	25,302.5
		Latin America	4,344.2	4,136.5	4,046.2
		Middle East and Africa (MEA)	940.6	1,041.8	1,096.1
		North America	9,772.4	10,022.0	10,506.7
Number of countries			66	66	66
Number of legal entities	global, total		211	215	217
Number of nationalities	global, total		122[2]	129	131
Number of nationalities working in Germany			77[2]	91	97
Percentage of employees with German citizenship			26.1%[2]	23.1%	23.2%
Percentage of employees working outside Germany			75.9%	75.3%	74.9%
Percentage of employees with global managers			8.1%	9.7%	10.2%
Percentage of women in the workforce	global, total		41.6%	42.8%	43.1%
	in Germany		38.2%	38.6%	39.1%
Percentage of women in leadership positions (= role 4 or higher)[5]	global, total		26.8%[2]	28.8%	30.3%
	in Germany		27.3%[2]	28.7%	29.7%
Percentage of executives (= role 4 or higher)[5]	global, total		5.9%[2]	5.7%	7.9%
	Percentage of executives who are not German citizens		61.0%[2]	64.7%	64.4%
	Number of nationalities		64[2]	70	65
Number of apprentices in Germany			506[3]	576[4]	588[4]
Vocational training rate			5.3%	5.1%	4.4%
Number of employees in the model (Germany) of the Mywork at Merck KGaA, Darmstadt, Germany			4,122	4,507	5,267
Percentage of employees working part-time	global, total		4.7%	4.7%	4.6%
	Men		11.3%	10.6%	10.7%
Percentage of employees aged 17-29 years	global, total		15.2%	14.7%	14.5%
Percentage of employees aged 30-49 years	global, total		62.6%	62.5%	62.1%
Percentage of employees aged 50+	global, total		22.2%	22.8%	23.4%
Average age globally			41.1	41.3	41.4
Average age by region	Asia-Pacific (APAC)		36.7	36.7	36.9
	Europe		42.4	42.4	42.5
	Latin America		39.5	39.9	40.3
	Middle East and Africa (MEA)		39.5	39.3	39.4
	North America		44.2	44.3	44.1
	Germany		43	42.9	43
Average length of service	global, total		10.0	9.9	9.8
Average length of service in Germany			14.4	14.2	14

[1] The Group also has employees at sites which are not fully consolidated subsidiaries. These figures refer to all people directly employed by the Group and therefore may deviate from figures in the financial section of this report.
[2] Excluding Sigma-Aldrich.
[3] Relates only to Merck KGaA, Darmstadt, Germany, (around 19% of the workforce of the entire Group in 2015).
[4] All company sites in Germany (around 25% of the workforce of the entire Group in 2016 and 2017).
[5] Not including Sigma-Aldrich legal entities in Germany or Allergopharma.

Report on Economic Position

Macroeconomic and sector-specific environment

According to the most recently available figures from the International Monetary Fund (IMF), industrial countries faced heightening growth expectations in 2017. In this context, the recovery of the global economy strengthened. In around 120 economies that account for three-quarters of global GDP, growth increased in 2017 compared with the previous year. This has been the most extensive synchronized global growth since 2010.

According to the latest IMF forecasts, global gross domestic product (GDP) rose by 3.7% in 2017, equivalent to an increase of 0.5 percentage points in comparison with 2016. As in the previous year, strong regional differences could be seen. Industrial nations registered an increase in growth to 2.3% (2016: 1.7%). At 4.7% (2016: 4.4%), emerging economies and developing countries again achieved an increase in growth rates. The GDP of the United States, the world's largest economy, grew by 2.3% (2016: 1.5%). The eurozone also registered an increase in GDP growth to 2.4% (2016: 1.8%). The emerging economies of Asia registered an increase in growth to 6.5% (2016: 6.4%). As in 2016, India (6.7%) and China (6.8%) were the strongest growth drivers. In the industrialized countries of Asia, the GDP of Japan grew by 1.8% (2016: 0.9%) and that of Taiwan by 2.0% (2016: 1.5%). Korea registered growth of 3.0% (2016: 2.8%).

In 2017, organic sales growth of the Group was largely attributable to the Asia-Pacific and Latin America regions. While Asia-Pacific accounted for approximately 60% of Group-wide growth, Latin America accounted for 18%. In the aforementioned regions, our Healthcare and Life Science business sectors contributed positively to organic sales growth. By contrast, however, sales of our Performance Materials business sector decreased organically in both regions. While North America still generated around 36% of organic growth in 2016, it accounted for roughly 3.5% in 2017. This was due to declining business in our Healthcare business sector. Healthcare sales in North America decreased organically by –4.5%.

	Development 2017[1]	Development 2016
Healthcare		
Global pharmaceutical market	3.0%	4.7%
Market for multiple sclerosis therapies[2]	7.4%	8.4%
Market for type 2 diabetes therapies[2]	9.6%	11.3%
Market for fertility treatment[2]	7.2%	12.5%
Market for the treatment of colorectal cancer[3]	0.3%	–6.7%
Market for OTC pharmaceuticals	4.6%	4.2%
Life Science		
Market for laboratory products	2.8%	2.4%
Share of biopharmaceuticals in the global pharmaceutical market[2]	25.6%	23.8%
Performance Materials		
Growth of LC display surface area	3.8%	5.2%
Global automobile sales volumes	2.0%	5.3%
Materials for production of cosmetics	1.8%	1.8%
Semiconductor industry sales	19.7%	2.6%

[1] Predicted development. Final development rates for 2017 were not available for all industries when this report was prepared.
[2] Growth rates based on market data in local currency, translated at a constant euro exchange rate. The IQVIA market data on the growth of indications are based on current figures, including the third quarter of 2017. Annual growth based on the values for the past 12 months. The type 2 diabetes market excludes the United States since this market is insignificant to the Group.
[3] Growth rates based on market data stated in U.S. dollars. Market data from EvaluatePharma on the growth of indications are based on published company reports and are subject to exchange rate fluctuations.

HEALTHCARE

In the latest study published in September 2017 by the pharmaceutical market research firm IQVIA entitled "Market Prognosis 2017–2021", the growth of the global pharmaceutical market for 2017 is quantified at 3.0%. By comparison, in 2016, sales growth was still 4.7%. As was already the case in 2016, the EMEA region was a main contributor to growth in 2017. Latin America (excluding Venezuela) also fueled growth. Whereas growth in the United States fell significantly to 1.7%, (2016: 5.2%), at 6.2% the Latin American market (excluding Venezuela) continued to see strong growth (2016: 7.6%). The EMEA region was also robust with growth of 4.0% (2016: 4.7%). At 3.2%, the Asia-Pacific region recorded a decline in growth (2016: 6.2%).

Not only the growth of the pharmaceutical sector as a whole, but also in particular the development of the biopharmaceutical market is relevant for our business. According to IQVIA, the market volume of biological pharmaceuticals was approximately € 222 billion in 2017. In recent years, the share of the global pharmaceutical market accounted for by these products has grown continuously and already amounted to 25.6% in 2017 (2016: 23.8%). Globally, the largest share, or 34.7%, was attributable to the U.S. market.

A look at the therapeutic areas of relevance to Merck KGaA, Darmstadt, Germany, shows the following developments, which reflect robust growth, albeit with a weakening trend. The markets for the therapeutic areas multiple sclerosis grew by 7.4% (2016: 8.4%), type 2 diabetes[1] by 9.6% (2016: 11.3%) and fertility by 7.2% (2016: 12.5%). The market for oncology drugs for the treatment of colorectal cancer showed a positive trend and grew by 0.6% (2016: –6.7%).

According to the market research firm Nicholas Hall, the growth of the global over-the-counter pharmaceutical market was 4.6% in 2017, which represents an increase of 0.4 percentage points in comparison with 2016. At 8.6%, India again fueled growth in 2017 (2016: 8.2%). In Japan, growth was again weak at 0.6% (2016: 0.9%).

[1] Excluding the United States.

LIFE SCIENCE

Our Life Science business sector is a leading supplier of products and services for both research and applied laboratory applications, as well as for formulating, purifying, manufacturing, and quality-assuring drug therapies of biological and chemical origin.

According to the market research firm Frost & Sullivan, the laboratory product market relevant to Research Solutions and Applied Solutions achieved growth of 2.8% in 2017 (2016: 2.4%). Following a slow start to 2017, growth picked up. Growth was primarily driven by biopharmaceutical industry customers, specifically emerging biotech start-ups. In comparison with 2016, European market growth increased to 1.9% (2016: 1.5%), driven by stronger GDP forecasts and easing of the uncertainty over Brexit. The U.S. market grew by 3.2% (2016: 2.5%), with increased National Institutes of Health (NIH) funding and the expected tax reform spurring investment in 2017 and possibly also in 2018. Emerging countries recorded higher growth rates, with growth being mainly driven by China and India. Although the GDP growth of China slowed down, investments in research and development grew as one of the key priorities of the 13th five-year plan. India generated high single-digit growth with laboratory products and is focusing more strongly on supporting academic and government research.

The demand for Process Solutions products depends heavily on the sales of biopharmaceutical companies as well as the productivity of their research & development activities.

According to IQVIA, the market volume of biotechnological pharmaceuticals grew in 2017 to US$ 222 billion (equivalent to 25.6% of the global pharmaceutical market). More than 8,000[1] biotechnological drug candidates were in preclinical and clinical development. In 2016, monoclonal antibodies accounted for 26%[1] of these drug candidates (2015: 25%[1]). Biosimilars are a small, but fast-growing part of the pharmaceutical market. For 2016, annual sales of biosimilars were estimated at US$ 1.8 billion[1]; this figure is expected to increase to US$ 10.8 billion[1] by 2022.

PERFORMANCE MATERIALS

With its Liquid Crystals business, Merck KGaA, Darmstadt, Germany, is the leading producer of liquid crystal mixtures for the display industry. The dynamic growth rates of display surfaces have declined to an average of 4% in recent years according to surveys by the market researchers at IHS DisplaySearch. This growth was mainly attributable to increasing average display size amid slightly declining sales volumes. The display industry remains a growth sector in which the leading display technology is based on liquid crystals. OLED technology, for which Merck KGaA, Darmstadt, Germany, also ranks among the leading material suppliers, is gaining importance in the high-quality display sector.

The markets for automotive coatings and cosmetics are crucial to our Pigments business. As reported by IHS, global automobile sales volumes rose by approximately 2% in 2017. The growth drivers were China and Europe whereas the U.S. market declined slightly for the first time after a long period of growth. According to Euromonitor International, global consumption of materials used to produce cosmetics grew by around 2%.

The semiconductor industry is the most important sales market for the business with integrated circuit materials (IC Materials). The long-term growth of the semiconductor industry has a cyclical demand pattern. According to Gartner, a market research institute specializing in the technology and electronics markets, in 2017 the industry's sales grew by around 20%, above all owing to strong demand for the storage technologies DRAM and NAND.

[1] Evaluate Pharma.

Review of Forecast against Actual Business Developments

NET SALES

For 2017, we had forecast slight to moderate organic net sales growth for the Group. The positive organic development of net sales in our Healthcare and Life Science business sectors more than offset the declining business development in Performance Materials. Overall, we thus generated a moderate organic net sales increase of 3.8%. Furthermore, we expected a neutral exchange rate effect on our net sales. Here we assumed that the positive euro/US$ development would roughly compensate for negative exchange rate developments in various growth markets, yet we expected high volatility of exchange rates owing to political and macroeconomic developments. This assessment was confirmed because as of mid-2017, and in contrast to the previous trend, the euro started to significantly appreciate in value against the U.S. dollar and various emerging market currencies. As a result, for the full year 2017 we saw a slightly negative exchange rate effect of –1.5% on our net sales, contrary to our original forecast.

In 2017, our Healthcare business sector generated solid organic sales growth of 4.7%, thus exceeding our forecast for slight organic growth. Sales growth in 2017 was again driven by the continued good dynamics in our growth markets, which exceeded our expectations, as well as positive effects from the full takeover of the commercialization of the antidiabetic agent Glucophage® in China from BMS. Our other franchises developed as expected. As forecast, a low negative portfolio effect of –1.0% stemmed from the divestment of the business in Pakistan.

For our Life Science business sector, at the beginning of the year we had forecast solid organic growth of net sales; slightly above expected market growth of around 4% per year. In fiscal 2017, the business sector achieved organic growth of 5.3%, in line with our forecast. As expected, Process Solutions was the most dynamic business unit, delivering the largest contribution to organic sales growth within Life Science. As expected, Research Solutions and Applied Solutions also contributed positively to organic sales performance, albeit to a lesser extent than Process Solutions. The low positive portfolio effect of +0.4% met the forecast we gave at the beginning of the year and was mainly due to the acquisition of BioControl Systems.

Contrary to our original expectations of slight organic sales growth, our Performance Materials business sector recorded a slight organic sales decline of –1.7% in 2017. In the first quarter, signs of a normalization of our market shares in the Liquid Crystals business, particularly in China – which had been unusually high in recent years – intensified. This development became increasingly visible in the following quarters, and the price pressure typical in this industry could no longer be offset by corresponding volume growth. The good organic development in the Integrated Circuit Materials and Pigments & Functional Materials business units could not fully offset the decline in the Display Materials business unit.

EBITDA PRE

For the Group, we had forecast an approximately stable EBITDA pre[1] in 2017 with either a slightly positive or negative fluctuation from the year-earlier figure. Due to the difficult foreign exchange environment in the second half of the year and because of the adjustment processes in our Liquid Crystals business, in our report on the second quarter we assumed that our EBITDA pre would be at the lower end of this implied range of € 4.4 billion to € 4.6 billion. For 2017 as a whole, EBITDA pre amounted to € 4,414 million, which was –1.7% below the year-earlier level.

For our Healthcare business sector, we expected a high single-digit percentage decrease in EBITDA pre owing to the continued rise in research and development costs resulting from the ongoing development of our pipeline, particularly in immuno-oncology, a negative product mix due to the continued decline in sales of Rebif®, as well as the absence of one-time income from the previous year. In 2017, Healthcare generated EBITDA pre of € 1,949 million, which corresponded to a decline of –8.4% and was thus in line with our forecast.

For Life Science, we had expected an increase in EBITDA pre in the high-single digit to low teens range due to the expected organic sales growth and the realization of synergies from the acquisition of Sigma-Aldrich as planned. With EBITDA pre of € 1,786 million, the business sector delivered growth of 8.1%, which was within the forecast range we had given at the beginning of the year.

[1] Not defined by International Financial Reporting Standards (IFRS).

For our Performance Materials business sector, at the beginning of the year we still had assumed a slight increase in EBITDA pre compared with the year-earlier level of € 1,106 million. However, the correction in our Liquid Crystals business that materialized in the course of the year as well as the increasingly difficult foreign exchange environment that particularly affects our Performance Materials business sector, required a reassessment of this original assumption. Stringent cost discipline and the good performance in our other business units could only partly offset the decline in the highly profitable Liquid Crystals business. In our report on the second quarter, we assumed that EBITDA pre of Performance Materials would decline in the mid single-digit to mid teens range to between € 950 million and € 1,050 million. For 2017 as a whole, Performance Materials achieved EBITDA pre of € 980 million. This corresponded to a decline of –11.4% compared with the previous year and was thus within the adjusted range we had predicted.

EBITDA pre of Corporate and Other, which had reached a level of € –301 million in 2017, was 24% below the year-earlier level of € –396 million. Our expectation at the beginning of the year of a slight improvement over the previous year was thus exceeded. This development was mainly due to currency hedging losses, which were not as high as we had expected at the beginning of the year owing to the more difficult foreign exchange environment as of the second half of the year. Consequently, in the course of the year we had specified our forecast for EBITDA pre of Corporate and Other at € –300 million to € –350 million, and reached the lower end of this range.

BUSINESS FREE CASH FLOW

For 2017, we expected business free cash flow of the Group to see a single-digit percentage decline. We exceeded this forecast with stable business free cash flow. This was mainly driven by higher EBITDA pre of Corporate and Other as well as the positive development of inventories and receivables.

	Actual results 2016 in € million	**Forecast for 2017 in the Annual Report for 2016**	Main comments
Group			
			Slight organic sales growth in Healthcare
			Solid organic growth slightly above market growth in Life Science
			Slight organic growth in Performance Materials
		Slight to moderate organic growth	Neutral exchange rate effect due to positive €/US$ development and negative foreign exchange developments in various growth markets
Net sales	15,023.5	Neutral exchange rate effect	
			Increasing research and development spending in Healthcare
		Approximately stable compared with the previous year; this comprises a slightly positive or negative percentage fluctuation from the year-earlier figure	Continued realization of synergies from the integration of Sigma-Aldrich in Life Science
EBITDA pre[1]	4,490.4		Slight sales recovery and active cost management in Performance Materials
Business free cash flow[1]	3,318.2	Single-digit percentage decline	Increasing investments in property, plant and equipment, as well as digitalization initiatives
EPS pre[1]	6.21	–	
Healthcare			
			Organic sales growth in growth markets offsets the ongoing decline in Rebif® sales
			Continued price pressure in Europe, Asia-Pacific as well as Middle East and Africa
			Full takeover of the commercialization of the antidiabetic agent Glucophage® in China from BMS contributes slightly to sales growth
Net sales	6,855.0	Slight organic growth	Slightly negative portfolio effect due to the divestment of the business in Pakistan, which had generated sales in the mid double-digit million range in 2016
			Continued rise in research and development spending due to further pipeline development, particularly in immuno-oncology
			Negative product mix effect due to the decline in Rebif® sales
			Absence of exceptional income recorded in 2016, such as the release of provisions for research projects discontinued in prior years and the divestment of a minority interest
			Royalty income for Avonex® due to a patent granted in the United States in 2016
EBITDA pre[1]	2,127.9	High single-digit percentage decrease in EBITDA pre compared with 2016	Agreement on a one-time payment for future license payments
			Decline in EBITDA pre
			Continued investments in property, plant and equipment as well as digitalization within the scope of strategic initiatives
Business free cash flow[1]	1,648.1	Low double-digit percentage decline	

[1] Not defined by International Financial Reporting Standards (IFRS).

Forecast for 2017 in:			
Q1/2017 Interim Report	Q2/2017 Interim Report	Q3/2017 Interim Report	**Results 2017 in € million**
€ ~15,500 million to € 16,600 million	€ ~15,300 million to € 15,700 million	€ ~15,300 million to € 15,700 million	15,326.6 (+2.0%: +3.8% Organic, −0.3% Portfolio, −1.5% Currency)
€ ~4,400 million to € 4,600 million	€ ~4,400 million to € 4,600 million	€ ~4,400 million to € 4,600 million	4,414.5 (−1.7%)
€ ~2,930 million to € 3,150 million	€ ~2,960 million to € 3,260 million	€ ~3,040 million to € 3,340 million	3,318 (0.0%)
6.15 to 6.50	6.15 to 6.50	6.15 to 6.50	6.16
Slight organic growth Low portfolio effect due to the divestment of our business in Pakistan	Slight organic growth	Slight organic growth Low portfolio effect due to the divestment of our business in Pakistan	6,999.0 (+2.1%: +4.7% Organic, −1.0% Portfolio, −1.6% Currency)
€ ~1,900 million to € 2,000 million	€ ~1,900 million to € 2,000 million	€ ~1,900 million to € 2,000 million	1,949.3 (−8.4%)
€ ~1,340 million to € 1,430 million	€ ~1,340 million to € 1,430 million	€ ~1,320 million to € 1,410 million	1,447.9 (−12.1%)

	Actual results 2016 in € million	**Forecast for 2017 in the Annual Report for 2016**	Main comments
Life Science			
			Process Solutions likely to remain the strongest driver of growth
			Research Solutions and Applied Solutions also contribute positively to organic sales development to a smaller extent
Net sales	5,657.9	Solid organic growth, and thus slightly above the expected market growth of approximately 4% per year	Low positive portfolio effect due to the acquisition of BioControl Systems, which generated sales of US$ 34 million in 2015
			Positive development resulting from expected sales growth
EBITDA pre[1]	1,652.3	Percentage growth compared with the previous year in the high single-digit to low teens range	Realization of additional synergies as planned from the Sigma-Aldrich acquisition amounting to € 80 million compared with the previous year
			Higher EBITDA pre
Business free cash flow[1]	1,144.0	Increase in the twenties percentage range	Improved inventory management
Performance Materials			
			Volume increases in all businesses driven, among other things, by a recovery in the display market visible since the end of 2016
			Continued price decline typical for the Liquid Crystals business
Net sales	2,510.7	Slight organic growth	Continued initial signs of a normalization of our high market shares in the Liquid Crystals business cannot be ruled out
EBITDA pre[1]	1,106.4	Slight increase	Recovery in the display market, broader earnings base and active cost management can more than offset the continued price decline in liquid crystals
Business free cash flow[1]	1,010.7	Low double-digit percentage decline	Higher investments in property, plant and equipment, as well as digitalization initiatives
Corporate and Other			
EBITDA pre[1]	–396.2	EBITDA pre of Corporate and Other should improve slightly in 2017 in comparison with the previous year.	
Business free cash flow[1]	–484.7	–	

[1] Not defined by International Financial Reporting Standards (IFRS).

Forecast for 2017 in:			
Q1/2017 Interim Report	Q2/2017 Interim Report	Q3/2017 Interim Report	**Results 2017 in € million**
Solid organic sales growth Low portfolio effect due to the acquisition of BioControl Systems	Solid organic sales growth, slightly above expected market growth of around 4% per year	Solid organic sales growth, slightly above expected market growth of around 4% per year	5,881.5 (+4.0%: +5.3% Organic, +0.4% Portfolio, –1.7% Currency)
€ ~1,780 million to € 1,850 million	€ ~1,780 million to € 1,850 million	€ ~1,780 million to € 1,850 million	1,785.8 (+8.1%)
€ ~1,310 million to € 1,380 million	€ ~1,350 million to € 1,440 million	€ ~1,400 million to € 1,490 million	1,401.7 (+22.5%)
Slight organic sales decline	Slight to moderate organic decline in sales	Slight to moderate organic decline in sales	2,446.0 (–2.6%: –1.7% Organic, 0.0% Portfolio, –0.9% Currency)
€ ~1,050 million to € 1,130 million	€ ~950 million to € 1,050 million	€ ~950 million to € 1,050 million	979.8 (–11.4%)
€ ~820 million to € 890 million	€ ~820 million to € 890 million	€ ~820 million to € 890 million	905.8 (–10.4%)
€ ~–350 million to € –400 million	€ ~–350 million to € –400 million	€ ~–300 million to € –350 million	–300.5 (–24.2%)
€ ~–540 million to € –590 million	€ ~–500 million to € –550 million	€ ~–450 million to € –500 million	–437.4 (–9.8%)

Course of Business and Economic Position

Group

Overview of 2017

- Group net sales increase slightly by 2.0% to € 15.3 billion
- Healthcare and Life Science deliver organic sales growth
- EBITDA pre of € 4.4 billion nearly meets high year-earlier level
- At 28.8%, Group profitability (EBITDA pre margin) remains at a high level (2016: 29.9%).
- U.S. tax reform leads to significant deferred tax income and a corresponding increase in profit after tax as well as earnings per share
- Stable earnings per share pre of € 6.16 (2016: € 6.21).
- Business free cash flow of € 3.3 billion on a par with year-earlier figure
- Net financial liabilities decline by –11.9% to € 10.1 billion (December 31, 2016: € 11.5 billion)

GROUP

Key figures

			Change	
€ million	**2017**	2016	€ million	in %
Net sales	15,327	15,024	303	2.0%
Operating result (EBIT)[1]	2,525	2,481	44	1.8%
Margin (% of net sales)[1]	16.5%	16.5%		
EBITDA[1]	4,282	4,415	–133	–3.0%
Margin (% of net sales)[1]	27.9%	29.4%		
EBITDA pre[1]	4,414	4,490	–76	–1.7%
Margin (% of net sales)[1]	28.8%	29.9%		
Profit after tax	2,610	1,633	977	59.9%
Earnings per share (€)	5.98	3.75	2.23	59.5%
Earnings per share pre (€)[1]	6.16	6.21	–0.05	–0.8%
Business free cash flow[1]	3,318	3,318	–	–

[1] Not defined by International Financial Reporting Standards (IFRS).

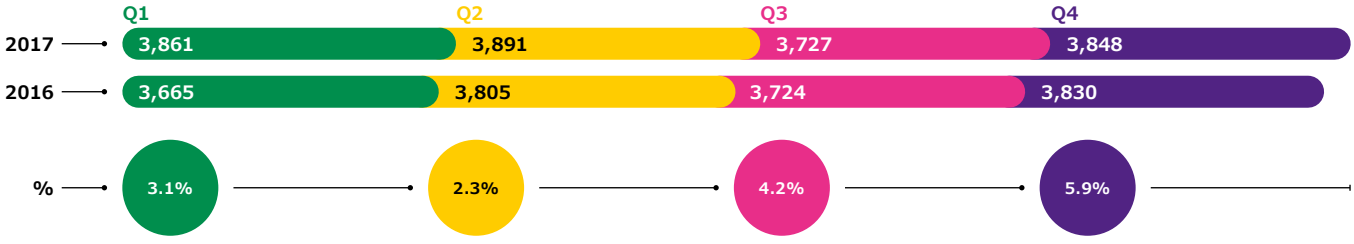
DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2017, net sales of the Group increased by € 303 million or 2.0% to € 15,327 million (2016: € 15,024 million). This increase was mainly attributable to organic sales growth of € 578 million or 3.8%, driven by our Healthcare and Life Science business sectors. In 2017, the stronger euro resulted in negative foreign exchange effects of –1.5%. In particular, this affected North America due to the exchange rate development of the U.S. dollar, as well as Asia-Pacific as a result of negative exchange rate effects from the Chinese renminbi and the Japanese yen. Acquisitions and divestments caused Group net sales to decline by –0.3%. The divestment of the subsidiaries in Pakistan in December 2016 had a negative impact on net sales of our Healthcare business sector, whereas the first-time consolidation of BioControl Systems, Inc., (USA), led to higher sales in Life Science.

The development of net sales in the individual quarters as well as the respective organic growth rates in 2017 are presented in the following overview:

GROUP

Net sales and organic growth[1] by quarter[2]
€ million/organic growth in %

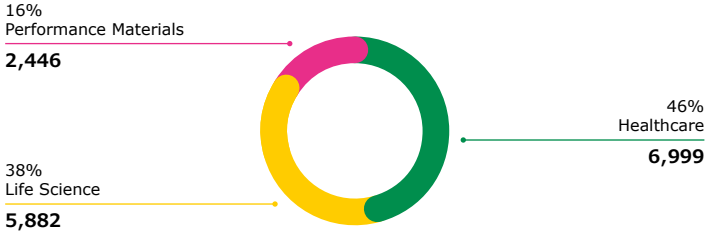


[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

With organic sales growth of 4.7%, our Healthcare business sector achieved an increase in sales of € 144 million to € 6,999 million (2016: € 6,855 million). Consequently, Healthcare remained the strongest business sector in terms of sales with a one percentage point higher share of 46% (2016: 45%) of Group sales. In 2017, Life Science achieved organic sales growth of 5.3%. Including negative foreign exchange effects (–1.7%) and acquisition-related sales increases (+0.4%), sales of this business sector rose by € 224 million to € 5,882 million (2016: € 5,658 million). In 2017, Life Science accounted for an unchanged 38% share of Group sales. Owing to slight organic sales declines (–1.7%) as well as slight negative exchange rate effects (–0.9%), the net sales of Performance Materials amounted to € 2,446 million (2016: € 2,511 million). Consequently, this business sector accounted for 16% (2016: 17%) of Group net sales.

GROUP

Net sales by business sector – 2017
€ million/% of net sales



GROUP

Net sales components by business sector – 2017

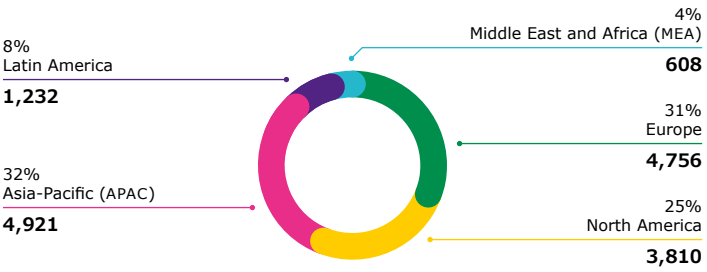
€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Healthcare	6,999	4.7%	–1.6%	–1.0%	2.1%
Life Science	5,882	5.3%	–1.7%	0.4%	4.0%
Performance Materials	2,446	–1.7%	–0.9%	–	–2.6%
Group	**15,327**	**3.8%**	**–1.5%**	**–0.3%**	**2.0%**

[1] Not defined by International Financial Reporting Standards (IFRS).

GROUP

Net sales by region – 2017

€ million/% of net sales



In Asia-Pacific, the Group's largest region in terms of sales, our company generated net sales of € 4,921 million in 2017 (2016: € 4,736 million), which represents an increase of € 185 million or 3.9%. The very strong organic growth of 7.3%, which was due to the business performance of our Healthcare and Life Science business sectors, was partly canceled out by negative foreign exchange effects (–1.8%) and divestment effects (–1.5%). The contribution to Group sales by the Asia-Pacific region rose by one percentage point to 32% (2016: 31%).

In 2017, sales in Europe amounted to € 4,756 million (2016: € 4,735 million), thus remaining at the year-earlier level. The organic growth driven by Life Science and Performance Materials was almost completely offset by negative foreign exchange effects, which were primarily due to the British pound. As a result, Europe's share of Group sales remained unchanged at 31%.

The decrease in net sales in North America by –1.3% to € 3,810 million (2016: € 3,858 million) was mainly due to the exchange rate development of the U.S. dollar. The organic sales growth of Life Science (4.5%) and the decline in sales of Healthcare largely offset each other. Consequently, the share of Group sales attributable to North America declined to 25% (2016: 26%).

The very positive development of net sales in Latin America resulted in sales growth of 8.4% to € 1,232 million (2016: € 1,136 million). This was mainly attributable to the good operating business of Healthcare, which generated double-digit organic growth rates in the region. In 2017, the share of Group sales attributable to Latin America remained unchanged at 8%.

In the Middle East and Africa region, the 8.8% increase in sales to € 608 million (2016: € 559 million) was mainly due to organic growth in Healthcare, which is the most important business sector for the region. The share of Group sales attributable to the region remained unchanged at 4%.

GROUP

Net sales components by region – 2017

€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	4,756	1.1%	–0.8%	0.1%	0.4%
North America	3,810	0.5%	–2.3%	0.5%	–1.3%
Asia-Pacific (APAC)	4,921	7.3%	–1.8%	–1.5%	3.9%
Latin America	1,232	9.1%	–0.9%	0.2%	8.4%
Middle East and Africa (MEA)	608	9.7%	–1.0%	0.1%	8.8%
Group	**15,327**	**3.8%**	**–1.5%**	**–0.3%**	**2.0%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The consolidated income statement of the Group is as follows:

GROUP

Consolidated Income Statement

					Change	
€ million	**2017**	**in %**	2016	in %	€ million	in %
Net sales	**15,327**	**100.0%**	**15,024**	**100.0%**	**303**	**2.0%**
Cost of sales	–5,320	–34.7%	–5,201	–34.6%	–119	2.3%
(of which: amortization of intangible assets)[1]	*(–179)*		*(–181)*		*(2)*	*(–1.0%)*
Gross profit	**10,007**	**65.3%**	**9,823**	**65.4%**	**184**	**1.9%**
Marketing and selling expenses	–4,702	–30.7%	–4,526	–30.1%	–175	3.9%
(of which: amortization of intangible assets)[1]	*(–1,017)*		*(–1,032)*		*(15)*	*(–1.5%)*
Administration expenses	–930	–6.1%	–854	–5.7%	–76	8.8%
Research and development costs	–2,140	–14.0%	–1,976	–13.2%	–165	8.3%
(of which: amortization of intangible assets)[1]	*(–5)*		*(–4)*		*(–1)*	*(10.6%)*
Other operating expenses and income	290	1.9%	14	0.1%	275	>100.0%
Operating result (EBIT)[2]	**2,525**	**16.5%**	**2,481**	**16.5%**	**44**	**1.8%**
Financial result	–300	–2.0%	–326	–2.2%	26	–8.0%
Profit before income tax	**2,224**	**14.5%**	**2,154**	**14.3%**	**70**	**3.2%**
Income tax	386	2.5%	–521	–3.5%	907	>100.0%
Profit after tax	**2,610**	**17.0%**	**1,633**	**10.9%**	**977**	**59.9%**
Non-controlling interests	–10	–0.1%	–4	–0.0%	–6	>100.0%
Net income	**2,600**	**17.0%**	**1,629**	**10.8%**	**972**	**59.7%**

[1] Excluding amortization of internally generated or separately acquired software.
[2] Not defined by International Financial Reporting Standards (IFRS).

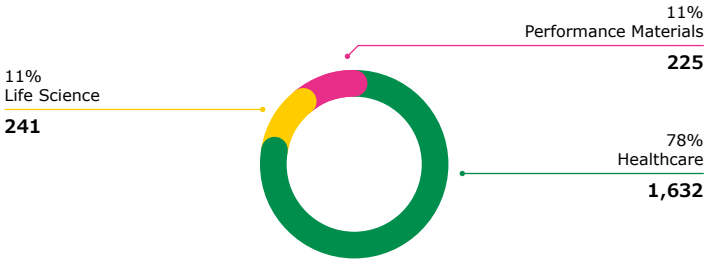
In 2017, gross profit of the Group increased by € 184 million or 1.9% to € 10,007 million (2016: € 9,823 million). This increase was due to our Life Science business sector, where gross profit rose by € 315 million, whereas the other two business sectors did not meet the year-earlier level. The gross margin of the Group, i.e. gross profit as a percentage of net sales, amounted to 65.3% (2016: 65.4%).

The development of marketing and selling expenses was mainly influenced by our Healthcare business sector, which reported higher marketing and selling expenses particularly owing to imminent market launches and higher license expenses.

The increase in Group research and development costs by 8.3% to € 2,140 million, which was primarily attributable to our Healthcare business sector, led to a research spending ratio (research and development costs as a percentage of net sales) of 14.0% (2016: 13.2%). Accounting for 78% of Group R&D spending (2016: 76%), Healthcare was the most research-intensive business sector of the Group.

GROUP

Research and development costs by business sector[1] – 2017
€ million/in %



[1] Not presented: Research and development costs of € 42 million allocated to Corporate and Other.

Other operating expenses and income (net) showed an income balance of € 290 million in 2017 (2016: € 14 million). The strong increase resulted primarily from transactions in our Healthcare business sector. In particular, the gain on the divestment of the Biosimilars business amounting to € 319 million had an impact. This gain was eliminated in the calculation of EBITDA pre. Reversals of impairment losses, the receipt of compensation for future license payments and the receipt of milestone payments also contributed to this (see explanations in the section entitled "Healthcare"). Furthermore, this item also includes expenses in connection with the company's 350th anniversary in 2018. On the occasion of this anniversary, a promise of a one-time payment as well as a gift in the form of shares in Merck KGaA, Darmstadt, Germany, was made to employees. These expenses were also eliminated during the calculation of EBITDA pre. In 2017, a provision in a mid double-digit million amount was set up for an ongoing European Commission antitrust review proceeding relating to the acquisition of Sigma-Aldrich (see Note (27) "Other provisions" in the Notes to the Consolidated Financial Statements). The corresponding negative impact on earnings, which was allocable to our Life Science business sector, was reported under other operating expenses and eliminated during the calculation of EBITDA pre. Detailed information about the development and composition of other operating expenses and income can be found in Note (11) "Other operating income" and Note (12) "Other operating expenses" of the Consolidated Financial Statements.

Overall, the development of income and expenses in the Group income statement led to a 1.8% increase in the operating result (EBIT), which amounted to € 2,525 million (2016: € 2,481 million).

The improvement in the negative financial result by € 26 million to € –300 million (2016: € –326 million) resulted mainly from exchange rate gains in connection with the financing activities of the Group. At € –271 million, the interest result contained in the financial result was on a par with the previous year (2016: € –270 million) (see Note (13) "Financial result" in the Notes to the Consolidated Financial Statements).

The income balance of € 386 million (2016: expense balance of € –521 million) under income taxes was due to one-time effects in connection with tax reform in the United States. The new U.S. tax regulations led in particular to a reduction in the deferred tax liabilities of the Group and thus to corresponding deferred tax income. Further information about income taxes in general and U.S. tax reform in particular can be found in Note (14) "Income taxes" in the Notes to the Consolidated Financial Statements.

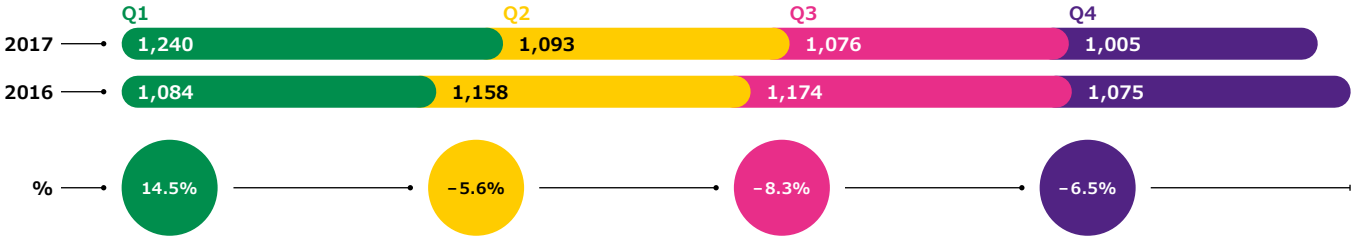
Thanks to the successful operating business and especially owing to the exceptional tax income in connection with the tax reform in the United States, the excellent level of net income rose by € 972 million or 59.7% to a record level of € 2,600 million (2016: € 1,629 million). Earnings per share increased accordingly to € 5.98 (2016: € 3.75).

EBITDA pre, the key financial indicator used to steer operating business, declined slightly by € –76 million or –1.7% to € 4,414 million (2016: € 4,490 million). The resulting EBITDA pre margin thus decreased by around one percentage point to 28.8% (2016: 29.9%). The reconciliation of the operating result (EBIT) to EBITDA pre is presented in the chapter entitled "Internal Management System".

The development of EBITDA pre in the individual quarters in comparison with 2016 as well as the respective growth rates are presented in the following overview:

GROUP

EBITDA pre[1] and change by quarter[2]
€ million/change in %

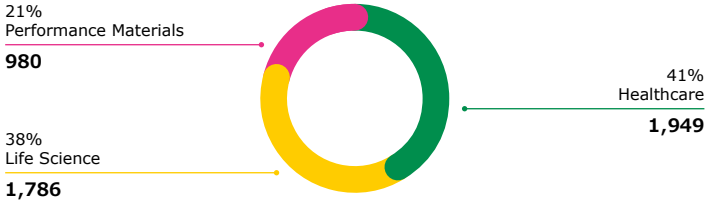


[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

The slight decrease in Group EBITDA pre was attributable to our Healthcare and Performance Materials business sectors. By contrast, the good business performance of Life Science had a positive effect on this earnings indicator. Healthcare, which again was the business sector with the highest EBITDA pre, generated € 1,949 million in 2017 (2016: € 2,128 million), thus contributing 41% (2016: 43%) of Group EBITDA pre (excluding the € –301 million decline due to Corporate and Other). EBITDA pre of our Life Science business sector improved by 8.1% to € 1,786 million (2016: € 1,652 million). Consequently, the business sector's share of Group EBITDA pre rose by 4 percentage points to 38% (2016: 34%). With an EBITDA pre of € 980 million (2016: € 1,106 million), the share of this Group key performance indicator attributable to Performance Materials decreased to 21% (2016: 23%).

GROUP

EBITDA pre[1] by business sector[2] – 2017
€ million/in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not presented: Decline in Group EBITDA pre by € –301 million due to Corporate and Other.

GROUP

Balance sheet structure

	Dec. 31, 2017		Dec. 31, 2016		Change	
	€ million	in %	€ million	in %	€ million	in %
Non-current assets[1]	**28,166**	**79.1%**	**30,589**	**80.0%**	**–2,423**	**–7.9%**
of which:						
Goodwill[1]	13,582		15,015		–1,433	
Other intangible assets[1]	8,317		9,980		–1,663	
Property, plant and equipment[1]	4,512		4,231		281	
Other non-current assets	1,755		1,363		392	
Current assets[1]	**7,455**	**20.9%**	**7,670**	**20.0%**	**–215**	**–2.8%**
of which:						
Inventories[1]	2,632		2,609		23	
Trade accounts receivable	2,923		2,889		34	
Current financial assets	90		145		–55	
Other current assets[1]	1,221		1,087		134	
Cash and cash equivalents	589		939		–350	
Total assets[1]	**35,621**	**100.0%**	**38,258**	**100.0%**	**–2,637**	**–6.9%**
Equity	**14,066**	**39.5%**	**14,050**	**36.7%**	**16**	**0.1%**
Non-current liabilities[1]	**12,919**	**36.3%**	**15,119**	**39.5%**	**–2,200**	**–14.5%**
of which:						
Provisions for pensions and other post-employment benefits	2,257		2,313		–56	
Other non-current provisions	788		834		–46	
Non-current financial liabilities	8,033		8,809		–776	
Other non-current liabilities[1]	1,842		3,163		–1,321	
Current liabilities[1]	**8,635**	**24.2%**	**9,089**	**23.8%**	**–454**	**–5.0%**
of which:						
Current provisions	414		412		2	
Current financial liabilities	2,790		3,788		–997	
Trade accounts payable	2,195		2,048		147	
Other current liabilities[1]	3,234		2,841		393	
Total liabilities and equity[1]	**35,621**	**100.0%**	**38,258**	**100.0%**	**–2,637**	**–6.9%**

[1] Previous year's figures have been adjusted, see Note (4) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements.

The total assets of the Group declined in comparison with December 31, 2016 by € 2,637 million to € 35,621 million (December 31, 2016: € 38,258 million). A significant reason for this was the development of the euro-U.S. dollar exchange rate. In particular, intangible assets, which for the most part are carried in U.S. dollars, declined sharply owing to the weaker U.S. dollar. The development of other non-current liabilities was mainly due to the decline in deferred tax liabilities included in this item. Owing to new U.S. tax reform legislation, deferred taxes were remeasured using modified tax rates. The resulting decrease in deferred tax liabilities led to corresponding tax income and consequently to an improvement in net income (see Note (14) "Income taxes" in the Notes to the Consolidated Financial Statements).

The slight reduction in working capital to € 3,387 million (2016: € 3,488 million) was due mainly to the increase in trade accounts payable.

GROUP

Working capital[1]

€ million	Dec. 31, 2017	Dec. 31, 2016	Change € million	Change in %
Trade accounts receivable	2,923	2,889	34	1.2%
Receivables from royalties and licenses	28	38	–9	–25.0%
Inventories[2]	2,632	2,609	23	0.9%
Trade accounts payable	–2,195	–2,048	–147	7.2%
Working capital[1,2]	**3,387**	**3,488**	**–100**	**–2.9%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see Note (4) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements.

The composition and the development of net financial debt were as follows:

GROUP

Net financial debt[1]

€ million	Dec. 31, 2017	Dec. 31, 2016	Change € million	Change in %
Bonds and commercial paper	8,213	9,650	–1,437	–14.9%
Bank loans	1,653	1,978	–325	–16.4%
Liabilities to related parties	767	758	10	1.3%
Loans from third parties and other financial liabilities	73	80	–7	–8.6%
Liabilities from derivatives (financial transactions)	113	128	–16	–12.2%
Finance lease liabilities	4	4	–0	–1.3%
Financial liabilities	**10,823**	**12,597**	**–1,774**	**–14.1%**
less				
Cash and cash equivalents	589	939	–350	–37.3 %
Current financial assets	90	145	–55	–37.8 %
Net financial debt[1]	**10,144**	**11,513**	**–1,369**	**–11.9 %**

[1] Not defined by International Financial Reporting Standards (IFRS).

GROUP

Reconciliation of net financial debt[1]

€ million	2017	2016
January 1	**11,513**	**12,654**
Currency translation difference	–429	118
Dividend payments to shareholders and to E. Merck KG, Darmstadt, Germany[2]	624	600
Acquisitions[2]	17	156
Payments from the disposal of assets held for sale and from other divestments[2]	–167	–366
Free cash flow[1]	–1,433	–1,693
Other	19	44
December 31	**10,144**	**11,513**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] According to the consolidated cash flow statement.

The equity of the Group rose slightly in 2017 to € 14,066 million (December 31, 2016: € 14,050 million). The very strong level of profit after tax amounting to € 2,610 million (2016: € 1,633 million) was offset by currency translation differences from the translation of assets held in foreign currencies into euro, dividend payments, and the profit transfer to E. Merck KG, Darmstadt, Germany (see "Consolidated Statement of Comprehensive Income" and "Consolidated Statement of Changes in Net Equity" in the Consolidated Financial Statements). The lower level of total assets and the slight increase in equity led to an improvement in the equity ratio by nearly 3 percentage points to 39.5% (December 31, 2016: 36.7%).

The increase in cash inflows from operating activities served among other things to finance the strong investing activity of the Group. Consequently, free cash flow decreased to € 1,433 million (2016: € 1,693 million). The composition as well as the development of the relevant items are presented in the following table:

GROUP

Free cash flow[1]

			Change	
€ million	**2017**	2016	€ million	in %
Cash flow from operating activities according to the cash flow statement	2,696	2,518	178	7.1%
Payments for investments in intangible assets	–392	–132	–260	>100.0%
Payments from the disposal of intangible assets	4	2	2	>100.0%
Payments for investments in property, plant and equipment	–919	–716	–203	28.4%
Payments from the disposal of property, plant and equipment	44	21	23	>100.0%
Free cash flow[1]	**1,433**	**1,693**	**–260**	**–15.4%**

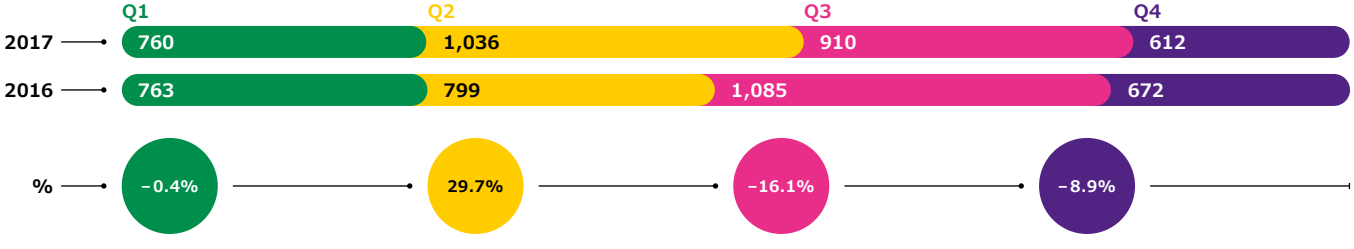
[1] Not defined by International Financial Reporting Standards (IFRS).

Business free cash flow of the Group was € 3,318 million in 2017, which met the previous year's figure. The slight decline in EBITDA pre as well as higher capital spending were primarily offset by the development of receivables. The composition of this financial indicator is presented in the combined management report under "Internal Management System".

The distribution of business free cash flow across the individual quarters and the percentage changes in comparison with 2016 were as follows:

GROUP

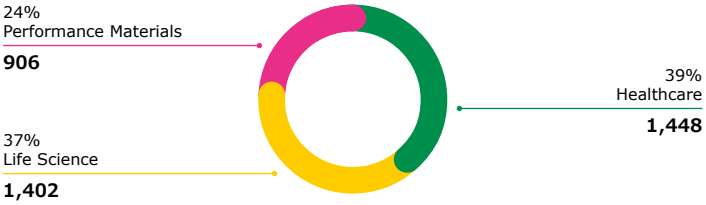
Business free cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

GROUP

Business free cash flow[1] by business sector[2] – 2017
€ million/in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not presented: Decline in Group business free cash flow by € –437 million due to Corporate and Other.

The contributions of the operating business sectors to business free cash flow of the Group developed in 2017 as follows: Healthcare generated business free cash flow amounting to € 1,448 million (2016: € 1,648 million). Consequently, with a 39% share (2016: 43%) of Group business free cash flow (excluding the decline of € –437 million due to Corporate and Other) Healthcare was once again the business sector with the highest cash flows as per the definition of this key performance indicator. In 2017, our Life Science business sector achieved a further increase in the previous year's strong level by 22.5% to € 1,402 million (2016: € 1,144 million), thus increasing its share of Group business free cash flow to 37% (2016: 30%). Performance Materials contributed € 906 million (2016: € 1,011 million) to this Group financial indicator, equivalent to 24% (2016: 27%).

The investments in property, plant, equipment and software as well as advance payments for intangible assets included in the calculation of business free cash flow increased in 2017 by 21.9% to a total of € 1,047 million (2016: € 859 million). The investments in property, plant and equipment included therein amounted to € 936 million in 2017 (2016: € 753 million), of which € 438 million (2016: € 332 million) was attributable to strategic investment projects each with a project volume of more than € 2 million; the remainder was attributable to smaller investment projects.

In 2017, strategic investments of € 212 million were made to expand the Darmstadt site. Of this amount, € 76 million was used to upgrade global headquarters; the projects include an Innovation Center and an employee cafeteria, among other things. In addition, a new sampling center for regulated products was constructed for € 10 million. In our Healthcare business sector, investments included € 33 million in a new laboratory building for pharmaceutical research and € 28 million in a new packaging center.

Outside Germany, high levels of strategic investment were also made. Particularly in China, both our Healthcare and Life Science business sectors invested € 25 million and € 26 million, respectively, in new production facilities. Furthermore, our Performance Materials business sector invested € 12 million in the Netherlands to construct a production facility for the manufacture of liquid crystal window modules.

Our credit ratings from the independent rating agencies did not change in 2017. Our company is currently rated by Standard & Poor's, Moody's and Scope. Standard & Poor's has issued a long-term credit rating of A with a stable outlook, Moody's a rating of Baa1 with a stable outlook, and Scope a rating of A–, likewise with a stable outlook. An overview of the development of our rating in recent years is presented in the Report on Risks and Opportunities.

The development of key balance sheet figures is as follows:

GROUP

Key balance sheet figures

in %		Dec. 31, 2017	Dec. 31, 2016[1]	Dec. 31, 2015	Dec. 31, 2014	Dec. 31, 2013
Equity ratio[2]	Equity / Total assets	39.5%	36.7%	33.8%	45.4%	53.2%
Asset ratio[2]	Non-current assets / Total assets	79.1%	80.0%	80.7%	59.7%	64.5%
Asset coverage[2]	Equity / Non-current assets	49.9%	45.9%	41.8%	76.0%	82.4%
Finance structure[2]	Current liabilities / Liabilities (total)	40.1%	37.5%	37.2%	46.5%	40.0%

[1] Previous year's figures have been adjusted, see Note (4) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements.
[2] Not defined by International Financial Reporting Standards (IFRS).

OVERALL ASSESSMENT OF BUSINESS PERFORMANCE AND ECONOMIC SITUATION

Fiscal 2017 was a year of challenges and one that opened up numerous new opportunities for the future with the approvals of Bavencio® and Mavenclad®. Key strategic intentions were implemented or introduced. The financial targets that we had set ourselves for 2017 were achieved. Moderate organic growth enabled Group net sales to increase to € 15,327 million (2016: € 15,024 million). In 2017, EBITDA pre amounted to € 4,415 million (2016: € 4,490 million), which meant we almost reached the very good year-earlier figure. With an EBITDA pre margin of 28.8% (2016: 29.9%), our profitability remains at a notable level even though our Healthcare and Performance Materials business sectors contended with challenges. We also made progress with the reduction of net financial debt: Despite our high capital spending, we lowered our debt by € –1,369 million. Consequently, net financial debt amounted to € 10,144 million on December 31, 2017 (December 31, 2016: € 11,513 million).

With the approvals of Bavencio® and Mavenclad®, our Healthcare business sector achieved major milestones. The steady further development of the promising pipeline remains a high priority. This was reflected by an above-average increase in research and development costs. In 2017, the divestment of the Biosimilars business closed and the company announced it is reviewing strategic options for the Consumer Health business.

The business performance of Life Science was very successful and we are excellently positioned for the future. Performance Materials was adversely affected by the market development in the Liquid Crystals business. The business sector is intensively working to consolidate our position at a continued high level.

The good key balance sheet figures, which improved further in 2017, illustrate the solid finance policy being pursued by the Group. For instance, the equity ratio rose to 39.5% (2016: 36.7%) and has thus reached a very good level. We will continue to assign high priority to the rapid reduction of our financial liabilities. In 2017, there were no changes to our credit ratings by the independent rating agencies Standard & Poor's (A with a stable outlook), Moody's (Baa1 with a stable outlook) and Scope (A– with a stable outlook).

Based on our solid net assets and financial position as well as successful business performance, the economic position of the Group can be assessed positively overall. It represents a good foundation for the promising further development of our businesses.

Healthcare

HEALTHCARE

Key figures

€ million	2017	2016	Change € million	Change in %
Net sales	6,999	6,855	144	2.1%
Operating result (EBIT)[1]	1,447	1,593	–146	–9.2%
Margin (% of net sales)[1]	20.7%	23.2%		
EBITDA[1]	2,155	2,425	–269	–11.1%
Margin (% of net sales)[1]	30.8%	35.4%		
EBITDA pre[1]	1,949	2,128	–179	–8.4%
Margin (% of net sales)[1]	27.9%	31.0%		
Business free cash flow[1]	1,448	1,648	–200	–12.1%

[1] Not defined by International Financial Reporting Standards (IFRS).

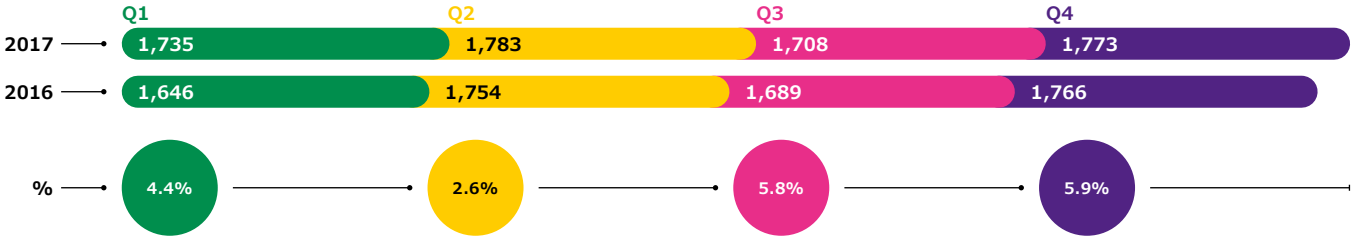
DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2017, our Healthcare business sector generated organic sales growth of 4.7%. Negative foreign exchange effects of –1.6% and a negative portfolio effect of –1.0% resulted in overall sales growth of 2.1%. Consequently, net sales amounted to € 6,999 million (2016: € 6,855 million). In the Biopharma business, organic sales growth was especially attributable to medicines from the General Medicine franchise (including CardioMetabolic Care), first and foremost Glucophage®, Euthyrox® and Concor®. The Consumer Health business also delivered very strong organic growth. By contrast, sales of the two top-selling products, the multiple sclerosis medicine Rebif® and the oncology drug Erbitux®, declined organically. The negative exchange rate effects resulted mainly from the decline in the value of the U.S. dollar, the Chinese renminbi and the British pound. The divestment of the business in Pakistan at the end of 2016, which primarily affected sales in the General Medicine franchise (including CardioMetabolic Care), led to a portfolio effect of –1.0%. Commission income, which is also included in net sales, dropped by –53.4% to € 83 million (2016: € 178 million). This was especially attributable to the takeover of the Glucophage® commercialization rights in China from Bristol-Myers Squibb at the beginning of 2017. In the past, Healthcare recorded exclusively commission income for Glucophage® sales in China. Since the beginning of 2017, the business sector no longer reports commission income for this product, but rather the corresponding sales for Glucophage® in China. In return, license payments are made to Bristol-Myers Squibb.

The development of net sales in the individual quarters as well as the respective organic growth rates in 2017 are presented in the following overview:

HEALTHCARE

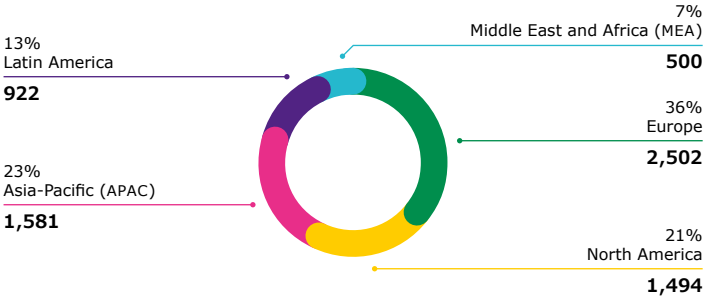
Net sales and organic growth[1] by quarter[2]
€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

HEALTHCARE

Net sales by region – 2017
€ million/% of net sales of the business sector



Europe, which accounts for 36% of Healthcare sales (2016: 37%) and is the business sector's largest region in terms of sales, saw an organic sales decline of –1.4% and generated net sales of € 2,502 million (2016: € 2,555 million). This was particularly due to the difficult competitive situation and further price reductions for Rebif®. Sales of Erbitux® and Gonal-f® also declined organically, the latter being due to the unusually strong growth in 2016. The organic sales growth of the Consumer Health business as well as initial sales of Mavenclad®, which was approved in 2017, could only partly compensate for this development. Overall, net sales decreased by –2.1%.

Asia-Pacific, the second-largest region in terms of sales, generated organic growth of 20.5%, contributing 23% to the business sector's net sales (2016: 21%). This was mainly due to the changed business model for Glucophage® marketing in China as of January 1, 2017. The business with fertility medicines, including Gonal-f®, as well as the Consumer Health business generated double-digit organic growth in some cases. A portfolio effect of –4.7% resulted from the divestment of our business activities in Pakistan. Including currency headwinds of –2.8%, net sales in the region amounted to € 1,581 million (2016: € 1,399 million).

In North America, net sales amounted to € 1,494 million (2016: € 1,601 million). The organic decline of –4.5% was mainly driven by the development of Gonal-f®, which had benefited from a favorable competitive situation in the previous year. Moreover, the difficult competitive situation for Rebif® and the organic sales decline of Saizen® contributed to this development. Besides double-digit organic growth of other fertility medicines, initial sales of Bavencio® also had a positive effect. This immuno-oncology medicine was approved in the United States for the treatment of metastatic Merkel cell carcinoma in March 2017 and advanced bladder cancer in May 2017. Including negative exchange rate effects of –2.2%, the region's share of Healthcare sales was 21% (2016: 23%).

In Latin America, where organic sales growth amounted to 11.1%, net sales of € 922 million significantly exceeded the year-earlier level (2016: € 839 million). Organic sales growth in all businesses and therapeutic areas, especially for Erbitux®, Euthyrox® and with core strategic brands in the Consumer Health business, led to this development. Including negative exchange rate effects of –1.0%, the region's share of Healthcare sales increased to 13% (2016: 12%).

The Middle East and Africa region generated net sales of € 500 million (2016: € 461 million). Organic sales growth of 10.4% resulted mainly from the development of fertility medicines, Euthyrox® and Concor®, as well as double-digit organic sales growth of the Consumer Health business.

HEALTHCARE

Net sales components by region – 2017

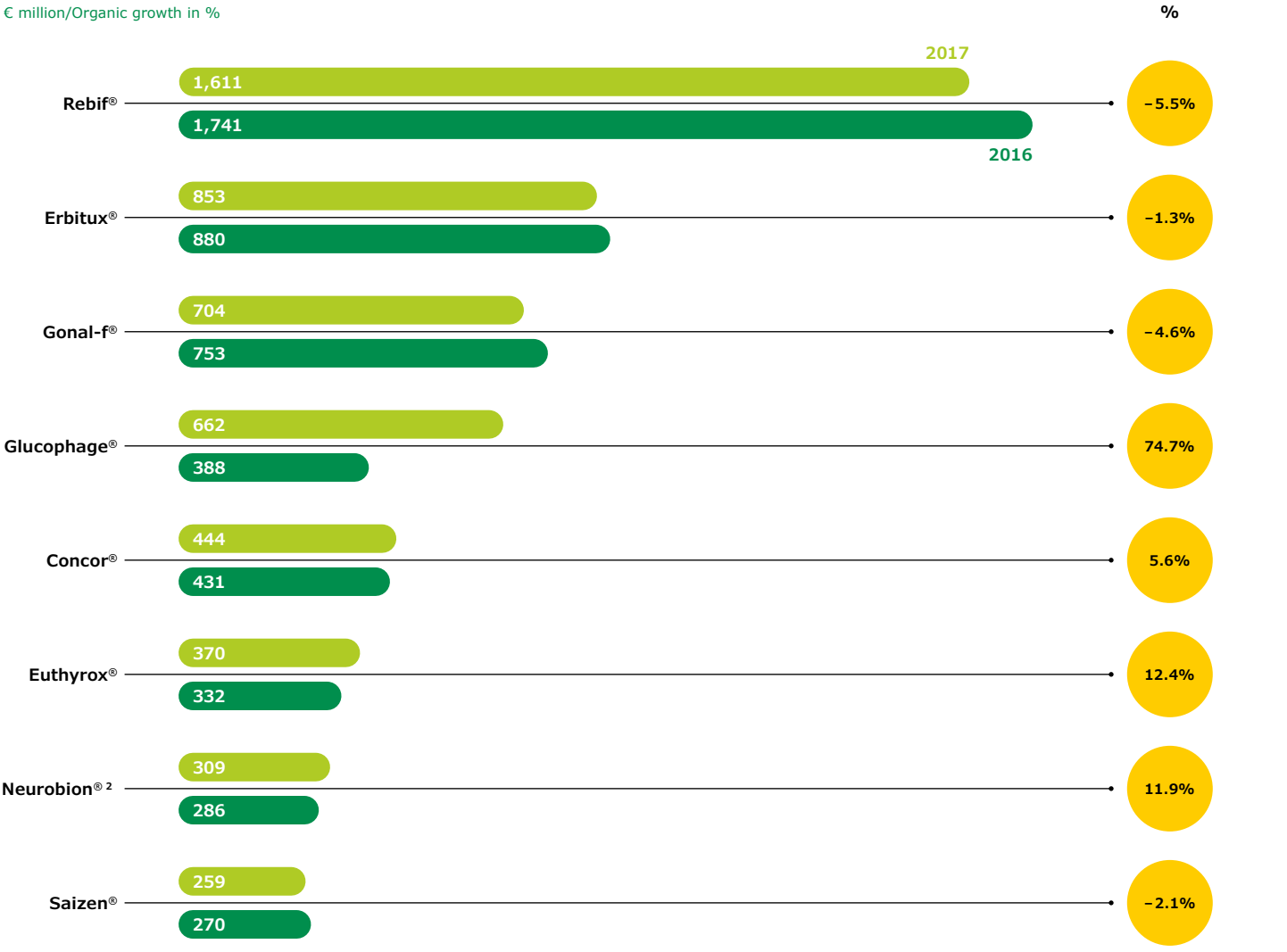
€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	2,502	–1.4%	–0.7%	–0.1%	–2.1%
North America	1,494	–4.5%	–2.2%	–	–6.7%
Asia-Pacific (APAC)	1,581	20.5%	–2.8%	–4.7%	13.0%
Latin America	922	11.1%	–1.0%	–0.1%	10.0%
Middle East and Africa (MEA)	500	10.4%	–1.9%	–	8.5%
Healthcare	**6,999**	**4.7%**	**–1.6%**	**–1.0%**	**2.1%**

[1] Not defined by International Financial Reporting Standards (IFRS)

Net sales and organic growth rates of the key products developed in 2017 as follows:

HEALTHCARE

Product sales and organic growth[1]
€ million/Organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Including Neurobion®, Dolo-Neurobion®, Dexabion® and Gavindo®.

Sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw an organic sales decline of –5.5% in 2017. Including negative exchange rate effects of –2.0%, sales of € 1,611 million were recorded (2016: € 1,741 million). The organic decline was primarily attributable to performance in the main sales markets, namely North America and Europe. Generating 63% of sales (2016: 61%), North America remained the most important sales market for Rebif® despite an organic decline in sales of –3.2%. Price increases in the United States at the beginning of 2017 and in August could not offset declining sales volumes. Including negative foreign exchange effects of –2.3%, sales in the region amounted to € 1,012 million (2016: € 1,071 million). In Europe, both price reductions and continued competitive pressure led to an organic sales decline of –12.1%. This resulted in sales of € 456 million (2016: € 524 million), reflecting a decline in the region's contribution to total Rebif® sales to 28% (2016: 30%). The other regions, namely Latin America, Middle East and Africa, and Asia-Pacific, generated sales of € 142 million (2016: € 145 million). They once again generated a 9% share of Rebif® sales (2016: 9%).

Including a slight organic sales decline of –1.3% and negative exchange rate effects of –1.7%, sales of the oncology medicine Erbitux® amounted to € 853 million (2016: € 880 million). In Europe, the top-selling region for Erbitux®, sales decreased organically by –4.2%. This development was mainly due to compulsory price reductions in several countries as well as to the difficult competitive situation. Sales in Europe amounted to € 447 million (2016: € 470 million). Consequently, the region's share of total Erbitux® sales declined to 52% (2016: 54%). The Asia-Pacific region saw an organic sales decline of –3.3% and contributed 31% to sales (2016: 32%). Together with negative exchange rate effects of –2.5%, sales amounted to € 263 million (2016: € 280 million). Double-digit organic growth of 23.6% in Latin America led to sales of € 87 million (2016: € 73 million), lessening the impact of the sales decline in the other regions despite negative foreign exchange effects of -5.1%. At € 56 million, sales in the Middle East and Africa region were at the previous year's level (2016: € 56 million). Organic growth of 0.6% was canceled out by exchange rate effects of –1.1%.

HEALTHCARE

Sales and organic growth[1] of Rebif® and Erbitux® by region – 2017

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	1,611	456	1,012	14	67	61
	Organic growth[1] in %	–5.5%	–12.1%	–3.2%	–1.9%	12.6%	–7.6%
	% of sales	100%	28%	63%	1%	4%	4%
Erbitux®	€ million	853	447	–	263	87	56
	Organic growth[1] in %	–1.3%	–4.2%	–	–3.3%	23.6%	0.6%
	% of sales	100%	52%	–	31%	10%	7%

[1] Not defined by International Financial Reporting Standards (IFRS).

With Gonal-f®, the leading recombinant hormone used in the treatment of infertility, our Healthcare business sector generated sales of € 704 million and was thus significantly below the year-earlier level (2016: € 753 million). The organic sales decline of –4.6% resulted primarily from performance in North America and Europe. The strong year-earlier sales in North America were due to a favorable competitive situation. Positive, and in some cases double-digit, organic growth in the regions Asia-Pacific as well as Middle East and Africa offset this development. By contrast, exchange rates had a negative impact of –1.8%.

In the Endocrinology franchise, net sales of € 383 million were below the year-earlier level (2016: € 404 million) due to a slight organic sales decline of –2.3% and a negative exchange rate effect of –2.1%. Sales of the growth hormone Saizen®, the top-selling product in the franchise, amounted to € 259 million (2016: € 270 million). This was attributable to both an organic sales decline of –2.1% and a negative exchange rate effect of –2.0%.

The General Medicine franchise (including CardioMetabolic Care), which commercializes products to treat cardiovascular diseases, thyroid disorders and diabetes, among other things, generated organic growth of 16.4%. Including currency headwinds of –1.3% and a negative portfolio effect of –3.2%, net sales amounted to € 1,925 million (2016: € 1,720 million). Double-digit organic growth was due in particular to the performance of Glucophage®, which is used in the treatment of diabetes. Sales of Glucophage® grew organically by 74.7% and included the effect of the takeover of the Glucophage® marketing rights in China from Bristol-Myers Squibb. Including an exchange rate impact of –2.0% and a portfolio effect of –1.8%, net sales of this diabetes treatment increased to € 662 million (2016: € 388 million). Euthyrox®, a medicine to treat thyroid disorders, delivered double-digit organic growth of 12.4% in 2017 and generated sales of € 370 million (2016: € 332 million). Organic growth in all regions, above all the markets in Asia-Pacific and Latin America, contributed to this development. Concor®, a beta-blocker, grew organically by 5.6%. Including currency headwinds (–0.9%) and a portfolio effect (–1.5%), sales amounted to € 444 million (2016: € 431 million). The portfolio effect in General Medicine (including CardioMetabolic Care) resulted mainly from the divestment of our business in Pakistan at the end of 2016.

In 2017, the Consumer Health business, which markets over-the-counter pharmaceuticals, generated organic growth in all main sales regions totaling 7.6%. Including currency headwinds of –0.5% and a portfolio effect of –1.0%, net sales of the business amounted to € 911 million (2016: € 860 million). The global core strategic brands contributed significantly to this development, particularly Neurobion® and Nasivin®, as well as the regional brand Vigantol®, which is primarily marketed in Europe.

The results of operations developed as follows:

HEALTHCARE

Results of operations

					Change	
€ million	**2017**	**in %**	2016	in %	€ million	in %
Net sales	**6,999**	**100.0%**	**6,855**	**100.0%**	**144**	**2.1%**
Cost of sales	–1,587	–22.7%	–1,377	–20.1%	–211	15.3%
(of which: amortization of intangible assets)[1]	*(–2)*		*(–1)*		*(–1)*	*(>100.0%)*
Gross profit	**5,412**	**77.3%**	**5,478**	**79.9%**	**–67**	**–1.2%**
Marketing and selling expenses	–2,722	–38.9%	–2,587	–37.7%	–135	5.2%
(of which: amortization of intangible assets)[1]	*(–558)*		*(–565)*		*(7)*	*(–1.3%)*
Administration expenses	–299	–4.3%	–270	–3.9%	–29	10.7%
Research and development costs	–1,632	–23.3%	–1,496	–21.8%	–136	9.1%
(of which: amortization of intangible assets)[1]	*(–1)*		*(–1)*		*(–)*	*(–)*
Other operating expenses and income	688	9.8%	468	6.8%	220	47.0%
Operating result (EBIT)[2]	**1,447**	**20.7%**	**1,593**	**23.2%**	**–146**	**–9.2%**
Depreciation/amortization/impairment losses/ reversals of impairment losses	708	10.1%	831	12.1%	–123	–14.8%
(of which: adjustments)	*(–51)*		*(71)*		*(–122)*	*(>100.0%)*
EBITDA[2]	**2,155**	**30.8%**	**2,425**	**35.4%**	**–269**	**–11.1%**
Restructuring costs	40		12		28	>100.0%
Integration costs/IT costs	28		18		10	54.3%
Gains (–)/losses (+) on the divestment of businesses	–316		–330		13	–4.1%
Acquisition-related adjustments	–		–		–	–
Other adjustments	42		3		39	>100.0%
EBITDA pre[2]	**1,949**	**27.9%**	**2,128**	**31.0%**	**–179**	**–8.4%**

[1] Excluding amortization of internally generated or separately acquired software.
[2] Not defined by International Financial Reporting Standards (IFRS).

Gross profit of our Healthcare business sector decreased slightly in 2017 and amounted to € 5,412 million (2016: € 5,478 million). At 77.3%, the resulting gross margin was below the previous year's figure (2016: 79.9%).

The increase in marketing and selling expenses related mainly to the market launches of Mavenclad® and Bavencio®. This item again included license expenses payable to Bristol-Myers Squibb as of the beginning of 2017 owing to the takeover of the commercialization rights to Glucophage® in China.

Research and development costs amounted to € 1,632 million (2016: € 1.496 million); the resulting research spending ratio increased to 23.3% (2016: 21.8%). This development was mainly due to higher investments in the Biopharma pipeline. Furthermore, 2016 was positively impacted by the release of provisions amounting to € 57 million. These were originally set up in connection with the termination of clinical development projects in previous years.

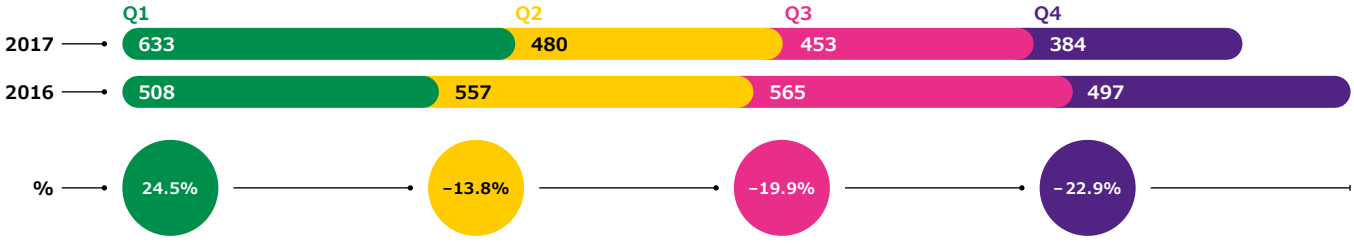
The development of other operating expenses and income was due to multiple effects in both 2017 and 2016. For instance, license income, which is reported under other operating income, included the milestone payments for the approval of Bavencio®. In 2017, the medicine was approved in the indication Merkel cell carcinoma in the United States, the European Union, Switzerland, Iceland, Liechtenstein, Norway, Japan, and Canada, as well as for the treatment of urothelial carcinoma in the United States. This item also still included higher royalty income from Avonex® and Plegridy® (both Biogen Inc.) due to the additional patent granted in the United States in June 2016 as well as income from an agreement on a one-time payment for future license payments at the beginning of 2017. The gain on the divestment of the Biosimilars business in August 2017 amounting to € 319 million also had a significant effect on other operating expenses and income. The previous year was also positively influenced by the gain on returning the rights to Kuvan® to BioMarin Pharmaceutical Inc., USA (€ 330 million). Both effects were eliminated in the calculation of EBITDA pre. The following impairment loss reversals and impairment losses were also included in other operating expenses and income: The reversal of the impairment loss on the intangible asset for cladribine tablets in 2017 owing to the regulatory approval of Mavenclad® amounted to € 17 million. In addition, an impairment loss recorded in 2011 on the biopharmaceutical production facility in Corsier-sur-Vevey, Switzerland, was reversed in the amount of € 69 million. Moreover, 2017 included an impairment loss of € 33 million on the co-commercialization right for Xalkori®. In 2016, this co-commercialization right was already impaired by € 71 million.

After eliminating depreciation, amortization, impairments and reversals of impairment losses as well as adjustments, EBITDA pre decreased to € 1,949 million (2016: € 2,128 million). This led to a margin relative to sales of 27.9% (2016: 31.0%).

The development of EBITDA pre in the individual quarters in comparison with 2016 is presented in the following overview:

HEALTHCARE

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In 2017, business free cash flow amounted to € 1,448 (2016: € 1,648 million). The lower level in comparison with the previous year was mainly due to the decline in EBITDA pre. In addition, higher capital spending contributed to the decline in this key figure, whereas the development of receivables had a positive impact.

HEALTHCARE

Business free cash flow[1]

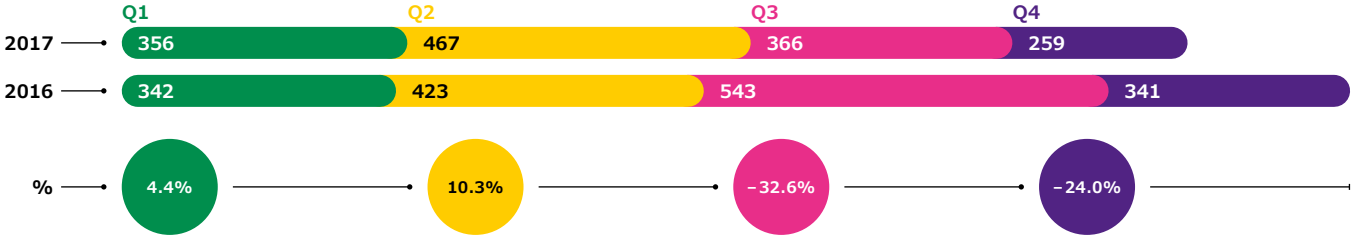
€ million	2017	2016	Change € million	Change in %
EBITDA pre[1]	1,949	2,128	–179	–8.4%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–411	–348	–63	18.0%
Changes in inventories	–39	–38	–2	5.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	–51	–94	43	–45.6%
Business free cash flow[1]	**1,448**	**1,648**	**–200**	**–12.1%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The development of business free cash flow in the individual quarters in comparison with 2016 is presented in the following overview:

HEALTHCARE

Business free cash flow[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Life Science

LIFE SCIENCE

Key figures

€ million	2017	2016	Change € million	Change in %
Net sales	5,882	5,658	224	4.0%
Operating result (EBIT)[1]	834	556	277	49.8%
Margin (% of net sales)[1]	14.2%	9.8%		
EBITDA[1]	1,580	1,378	202	14.6%
Margin (% of net sales)[1]	26.9%	24.4%		
EBITDA pre[1]	1,786	1,652	134	8.1%
Margin (% of net sales)[1]	30.4%	29.2%		
Business free cash flow[1]	1,402	1,144	258	22.5%

[1] Not defined by International Financial Reporting Standards (IFRS).

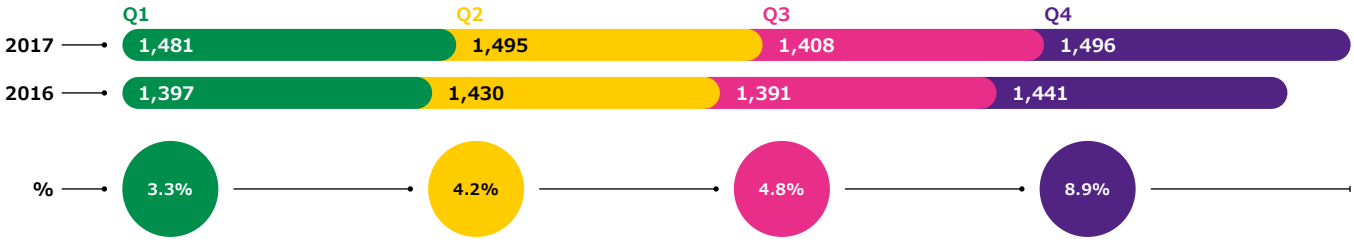
DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2017, Life Science posted organic sales growth of 5.3%, partially offset by negative foreign exchange effects of –1.7%. The acquisition of BioControl Systems in December 2016 contributed 0.4% to net sales. Including these effects, net sales rose overall by 4.0% to € 5,882 million (2016: € 5,658 million). All three business units contributed favorably to the organic sales growth of our Life Science business sector in 2017. Process Solutions generated organic sales growth of 8.0% attributable to high demand across the portfolio and was thus again the main driver of growth in Life Science in 2017. Applied Solutions continued to perform well, posting organic growth of 4.7%. The Research Solutions business unit reported an organic sales increase of 3.0%.

The development of sales in the individual quarters in comparison with 2016 as well as the respective organic growth rates are presented in the following graph:

LIFE SCIENCE

Net sales and organic growth[1] by quarter[2]
€ million/organic growth in %

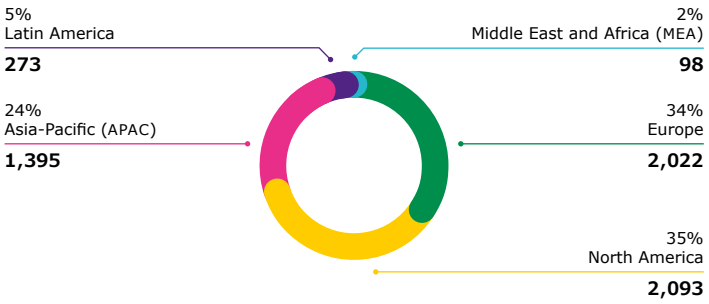


[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

LIFE SCIENCE

Net sales by region – 2017

€ million/% of net sales of the business sector



From a geographic perspective, all regions contributed positively to the organic sales growth of Life Science.

North America remained the largest region for our Life Science business sector, accounting for 35% (2016: 36%) of net sales. It posted organic sales growth of 4.5%, driven by a 6.7% increase in Process Solutions. Research Solutions and Applied Solutions also demonstrated positive growth dynamics with 2.7% and 3.4% growth, respectively. In 2017, Research Solutions benefited from improved customer demand and initial sales synergies from the Sigma-Aldrich acquisition as well as from a weak comparative basis in 2016. Applied Solutions continued its positive development, particularly owing to good demand in Analytics and Biomonitoring. Overall, net sales in North America rose to € 2,093 million (2016: € 2,031 million).

Europe, Life Science's second largest geographic market, generated organic net sales growth of 3.9% in 2017 with positive performance across most of the portfolio. Having already generated strong growth in 2016, Process Solutions and Research Solutions continued to perform well in 2017, generating good organic growth rates of 4.3% and 3.8%, respectively. Overall, sales increased to € 2,022 million (2016: € 1,960 million) equating to a contribution of 34% (2016: 35%) of the business sector's net sales in 2017.

Within Asia-Pacific, sales grew organically by 8.2% with all businesses contributing favorably. The largest contributor was Process Solutions with 17.6% organic sales growth driven by Upstream & Systems as well as Filtration & Chromatography. Net sales in Asia-Pacific rose to € 1,395 million (2016: € 1,324 million) representing an overall contribution of 24% (2016: 23%) to the business sector.

In Latin America, Life Science reported organic growth of 6.3%, primarily driven by the double-digit growth in Applied Solutions, especially Lab Water and Biomonitoring. Net sales in the region increased to € 273 million (2016: € 256 million) accounting for 5% of the business sector's net sales (2016: 4%), a slight increase over 2016.

The Middle East and Africa region posted strong organic sales growth of 8.7%. Net sales in the region grew to € 98 million (2016: € 87 million) representing 2% (2016: 2%) of Life Science net sales in 2017.

LIFE SCIENCE

Net sales components by region – 2017

€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	2,022	3.9%	–1.0%	0.3%	3.2%
North America	2,093	4.5%	–2.5%	1.0%	3.0%
Asia-Pacific (APAC)	1,395	8.2%	–2.3%	–0.5%	5.4%
Latin America	273	6.3%	–0.7%	1.2%	6.8%
Middle East and Africa (MEA)	98	8.7%	3.2%	0.4%	12.3%
Life Science	**5,882**	**5.3%**	**–1.7%**	**0.4%**	**4.0%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, generated organic sales growth of 8.0% in 2017. Following restrained organic sales growth in the first half of the year, demand from several major accounts increased slightly towards year-end. By contrast, demand from regional accounts developed very well throughout 2017.

Net sales for this business unit increased by a total of 6.0% to € 2,241 million (2016[1]: € 2,115 million). The share of sales generated by Process Solutions represented 38% (2016: 37%) of Life Science net sales. All Process Solutions businesses contributed to this strong performance.

[1] Previous year's figures have been adjusted due to an internal realignment.

The Research Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology and academic research laboratories, posted organic sales growth of 3.0% in 2017. In addition to initial sales synergies from the acquisition of Sigma-Aldrich, Lab & Specialty Chemicals was the key driver of net sales growth for Research Solutions, which increased to € 2,066 million (2016[1]: € 2,045 million), representing 35% (2016: 36%) of the business sector's net sales.

[1] Previous year's figures have been adjusted due to an internal realignment.

The Applied Solutions business unit generated organic sales growth of 4.7% with its broad range of products for researchers as well as scientific and industrial laboratories. Including exchange rate and portfolio effects, net sales rose to € 1,575 million (2016[1]: € 1,498 million) representing 27% (2016: 27%) of the business sector's net sales. The sales performance of Applied Solutions was driven by all business fields except Biosystems & Regulated Materials.

LIFE SCIENCE

Net sales components by business unit – 2017

€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Process Solutions	2,241	8.0%	–2.0%	–0.1%	6.0%
Research Solutions	2,066	3.0%	–1.6%	–0.3%	1.0%
Applied Solutions	1,575	4.7%	–1.6%	1.9%	5.1%

[1] Not defined by International Financial Reporting Standards (IFRS).

The results of operations developed as follows:

LIFE SCIENCE

Results of operations

					Change	
€ million	2017	in %	2016	in %	€ million	in %
Net sales	**5,882**	**100.0%**	**5,658**	**100.0%**	**224**	**4.0%**
Cost of sales	–2,588	–44.0%	–2,679	–47.4%	92	–3.4%
(of which: amortization of intangible assets)[1]	*(–60)*		*(–63)*		*(3)*	*(–4.4%)*
Gross profit	**3,294**	**56.0%**	**2,978**	**52.6%**	**315**	**10.6%**
Marketing and selling expenses	–1,734	–29.5%	–1,706	–30.1%	–28	1.6%
(of which: amortization of intangible assets)[1]	*(–445)*		*(–453)*		*(8)*	*(–1.9%)*
Administration expenses	–261	–4.4%	–248	–4.4%	–13	5.4%
Research and development costs	–241	–4.1%	–260	–4.6%	18	–7.0%
(of which: amortization of intangible assets)[1]	*(–1)*		*(–1)*		*(–)*	*(–)*
Other operating expenses and income	–224	–3.8%	–209	–3.7%	–15	7.3%
Operating result (EBIT)[2]	**834**	**14.2%**	**556**	**9.8%**	**277**	**49.8%**
Depreciation/amortization/impairment losses/ reversals of impairment losses	746	12.7%	822	14.5%	–75	–9.2%
(of which: adjustments)	*(3)*		*(27)*		*(–24)*	*(–87.4%)*
EBITDA[2]	**1,580**	**26.9%**	**1,378**	**24.4%**	**202**	**14.6%**
Restructuring costs	5		1		4	>100.0%
Integration costs/IT costs	114		122		–8	–6.6%
Gains (–)/losses (+) on the divestment of businesses	1		–		–	–
Acquisition-related adjustments	63		150		–88	–58.3%
Other adjustments	22		–		22	–
EBITDA pre[2]	**1,786**	**30.4%**	**1,652**	**29.2%**	**134**	**8.1%**

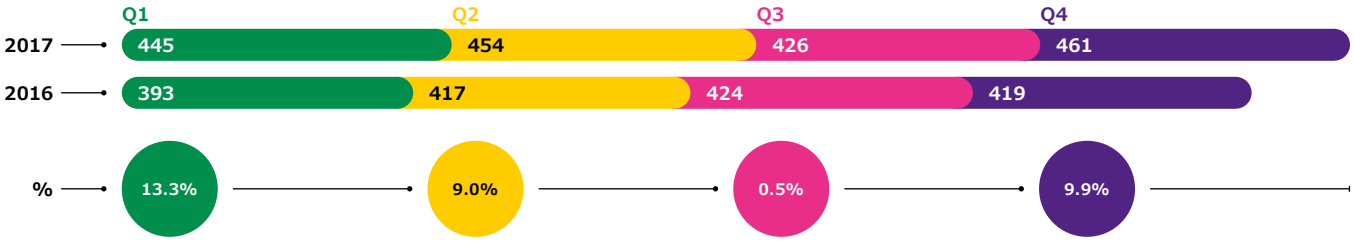
[1] Excluding amortization of internally generated or separately acquired software.
[2] Not defined by International Financial Reporting Standards (IFRS).

In 2017, gross profit increased by 10.6% to € 3,294 million (2016: € 2,978 million). In 2016, cost of sales contained higher expenses from the step-up of inventories as a result of the first-time consolidation of Sigma-Aldrich. In addition, the strong increase in gross profit was attributable to organic sales growth as well as the positive effect from the acquisition of BioControl Systems, which more than offset considerable negative foreign exchange effects. Marketing and selling expenses increased by 1.6% to € 1,734 million (2016: € 1,706 million) while R&D expenses decreased by –7.0% to € 241 million (2016: € 260 million). Other operating expenses and income (net) increased by 7.3% to € –224 million (2016: € –209 million), among other things owing to a provision set up for litigation risks in connection with the antitrust review proceedings for the acquisition of Sigma-Aldrich (see Note (27) "Other provisions" in the Notes to the Consolidated Financial Statements). Within the scope of the calculation of EBITDA pre, these expenses were eliminated accordingly. In comparison with 2016, the operating result (EBIT) of Life Science rose by € 277 million to € 834 million (2016: € 556 million). After depreciation and amortization and adjustments, EBITDA pre rose by 8.1% to € 1,786 million (2016: € 1,652 million). This reflects the strong organic sales performance of the combined Life Science business, which continues to focus on actively managing costs and realizing the planned synergies from the acquisition of Sigma-Aldrich.

The development of EBITDA pre in the individual quarters in comparison with 2016 is presented in the following overview:

LIFE SCIENCE

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In 2017, the business free cash flow of our Life Science business sector rose by 22.5% or € 258 million to € 1,402 million (2016: € 1,144 million). The increase was primarily driven by the positive development of EBITDA pre, inventories, and receivables. This was partly offset by higher capital spending.

LIFE SCIENCE

Business free cash flow[1]

€ million	2017	2016	Change € million	Change in %
EBITDA pre[1]	1,786	1,652	134	8.1%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–371	–313	–59	18.7%
Changes in inventories[2]	28	3	25	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	–41	–64	23	–36.4%
Elimination first-time consolidation of Sigma-Aldrich	–	–146	146	–100.0%
Elimination first-time consolidation of BioControl Systems[2]	–	12	–12	–100.0%
Business free cash flow[1]	**1,402**	**1,144**	**258**	**22.5%**

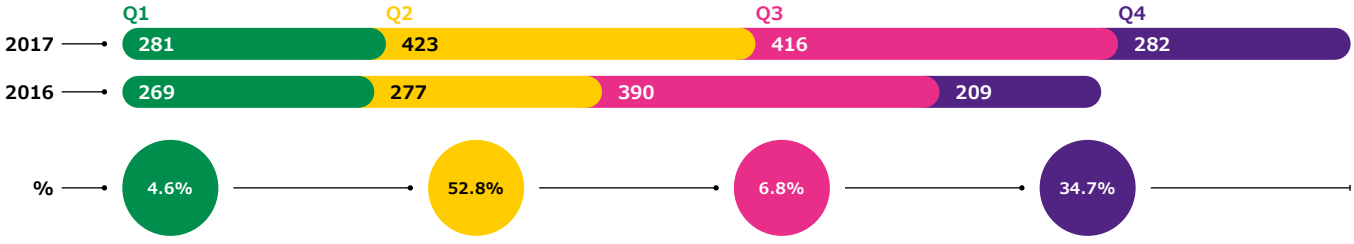
[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see Note (4) "Acquisitions and divestments" in the Notes to the Consolidated Financial Statements.

The development of business free cash flow items in the individual quarters in comparison with 2016 is presented in the following overview:

LIFE SCIENCE

Business free cash flow[1] and change by quarter[2]

€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Performance Materials

PERFORMANCE MATERIALS

Key figures

			Change	
€ million	**2017**	2016	€ million	in %
Net sales	2,446	2,511	–65	–2.6%
Operating result (EBIT)[1]	689	823	–134	–16.3%
Margin (% of net sales)[1]	28.2%	32.8%		
EBITDA[1]	947	1,077	–130	–12.1%
Margin (% of net sales)[1]	38.7%	42.9%		
EBITDA pre[1]	980	1,106	–127	–11.4%
Margin (% of net sales)[1]	40.1%	44.1%		
Business free cash flow[1]	906	1,011	–105	–10.4%

[1] Not defined by International Financial Reporting Standards (IFRS).

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In 2017, net sales of our Performance Materials business sector decreased by –2.6% to € 2,446 million (2016: € 2,511 million). This was mainly due to organic declines in sales (–1.7%) as the Display Materials business did not reach the previous year's level. The stronger euro compared with 2016 also impacted the development of net sales (–0.9%).

The Display Materials business unit, consisting of the Liquid Crystals business and complementary materials, represented more than 50% of the net sales of Performance Materials. This business unit saw an organic decrease in sales, but continued to defend its market leadership position. The decline in sales stemmed from the performance of established liquid crystal technologies, caused by a normalization of the unusually high market shares as well as the price declines customary in this industry. An exception here was the energy-saving UB-FFS technology, which achieved high double-digit growth.

The Integrated Circuit Materials (IC-Materials) business unit recorded very strong organic sales growth, to which all major businesses contributed. Particularly high growth rates were achieved in the businesses with dielectric materials and deposition materials for chip production.

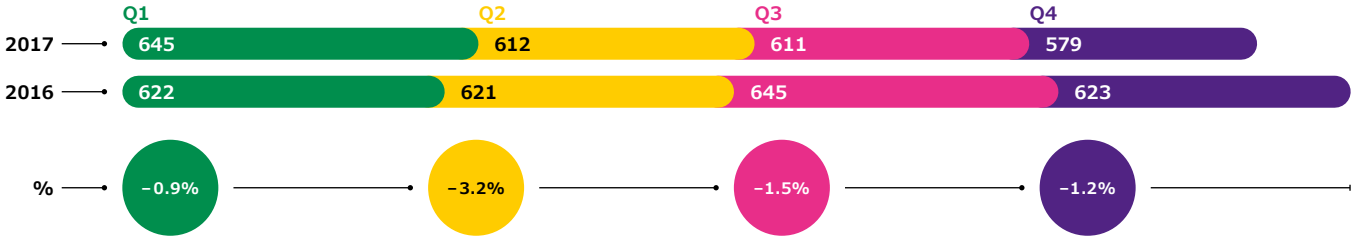
The Pigments & Functional Materials business unit generated a moderate increase in sales. The main driver was demand for materials for decorative applications, such as Xirallic® pigments, which are used particularly in automotive coatings.

In the Advanced Technologies business unit, higher demand for OLED materials led to significant sales growth.

The development of net sales in the individual quarters as well as the respective organic growth rates in 2017 are presented in the following overview:

PERFORMANCE MATERIALS

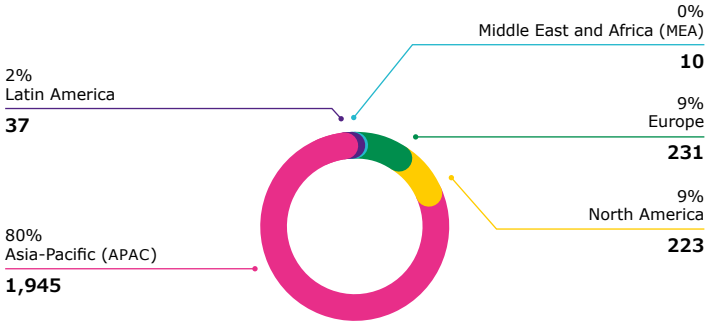
Net sales and organic growth[1] by quarter[2]
€ million/organic growth in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

PERFORMANCE MATERIALS

Net sales by region – 2017
€ million/% of net sales of the business sector



Accounting for 80% (2016: 80%), the Asia-Pacific region again generated the vast majority of the business sector's net sales. This is due to the concentration of customers for display and integrated circuit materials in Asia-Pacific. In this region, sales declined to € 1,945 million (2016: € 2,013 million). Organically, sales decreased by –2.4% owing to the performance of the Display Materials business unit. The good development of the IC Materials and Pigments businesses could not offset this.

In Europe, Performance Materials generated sales of € 231 million (2016: € 220 million). The Pigments & Functional Materials business unit was the main driver of the organic sales increase of 5.6%.

In North America, net sales declined slightly to € 223 million (2016: € 226 million) owing to foreign exchange effects. Organically, sales reached the previous year's level.

Since they account for a low proportion of sales, the two regions Latin America and Middle East and Africa played a subordinate role. They recorded an organic decline in sales since the high level of sales generated with insect repellents in 2016 normalized.

PERFORMANCE MATERIALS

Net sales components by region – 2017

€ million/change in %	Net sales	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	231	5.6%	–0.2%	–	5.3%
North America	223	0.4%	–1.5%	–	–1.1%
Asia-Pacific (APAC)	1,945	–2.4%	–0.9%	–	–3.4%
Latin America	37	–12.1%	–1.0%	–	–13.0%
Middle East and Africa (MEA)	10	–8.5%	0.6%	–	–7.9%
Performance Materials	**2,446**	**–1.7%**	**–0.9%**	**–**	**–2.6%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The results of operations developed as follows:

PERFORMANCE MATERIALS

Results of operations

					Change	
€ million	2017	in %	2016	in %	€ million	in %
Net sales	**2,446**	**100.0%**	**2,511**	**100.0%**	**–65**	**–2.6%**
Cost of sales	–1,145	–46.8%	–1,145	–45.6%	–	–
(of which: amortization of intangible assets)[1]	*(–118)*		*(–118)*		*(–)*	*(–)*
Gross profit	**1,301**	**53.2%**	**1,366**	**54.4%**	**–65**	**–4.7%**
Marketing and selling expenses	–242	–9.9%	–233	–9.3%	–9	4.1%
(of which: amortization of intangible assets)[1]	*(–14)*		*(–13)*		*(–1)*	*(5.8%)*
Administration expenses	–72	–2.9%	–61	–2.4%	–12	19.0%
Research and development costs	–225	–9.2%	–213	–8.5%	–12	5.7%
(of which: amortization of intangible assets)[1]	*(–3)*		*(–2)*		*(–1)*	*(19.9%)*
Other operating expenses and income	–73	–3.0%	–37	–1.5%	–36	97.5%
Operating result (EBIT)[2]	**689**	**28.2%**	**823**	**32.8%**	**–134**	**–16.3%**
Depreciation/amortization/impairment losses/ reversals of impairment losses	258	10.5%	254	10.1%	4	1.5%
(of which: adjustments)	*(26)*		*(16)*		*(9)*	*(56.8%)*
EBITDA[2]	**947**	**38.7%**	**1,077**	**42.9%**	**–130**	**–12.1%**
Restructuring costs	5		1		5	>100.0%
Integration costs/IT costs	20		26		–5	–21.2%
Gains (–)/losses (+) on the divestment of businesses	1		–		1	–
Acquisition-related adjustments	–		3		–3	–100.0%
Other adjustments	7		–		7	–
EBITDA pre[2]	**980**	**40.1%**	**1,106**	**44.1%**	**–127**	**–11.4%**

[1] Excluding amortization of internally generated or separately acquired software.
[2] Not defined by International Financial Reporting Standards (IFRS).

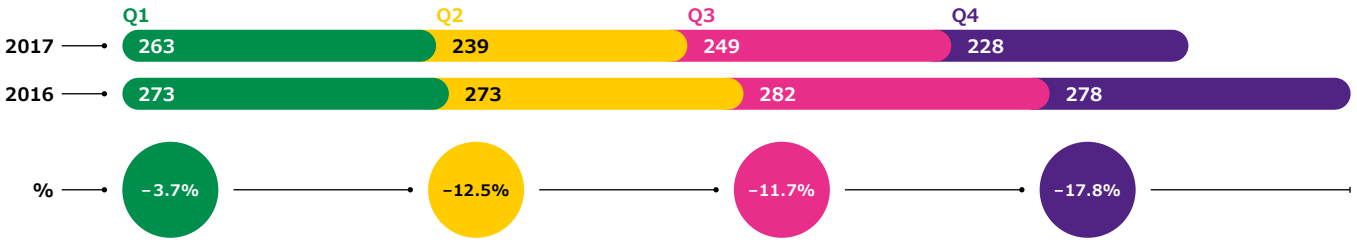
In 2017, gross profit was € 65 million below the previous year's level, resulting in a gross margin of 53.2% (2016: 54.4%). The operating result (EBIT) decreased by € 134 million to € 689 million in 2017 (2016: € 823 million). Apart from the sales-related decline in gross profit, the main reasons were higher marketing and selling expenses as well as additional research costs in order to press ahead further in growth markets, for example the development of liquid crystal window modules and OLED materials.

EBITDA pre amounted to € 980 million, which was € 127 million lower than in the previous year (2016: € 1,106 million). The EBITDA pre margin declined to 40.1% (2016: 44.1%).

The development of EBITDA pre in the individual quarters in comparison with 2016 is presented in the following overview:

PERFORMANCE MATERIALS

EBITDA pre[1] and change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

At € 906 million, the business free cash flow of our Performance Materials business sector fell short of the high year-earlier figure (2016: € 1,011 million). This resulted from the lower EBITDA pre, which could not be offset by the release of capital from the decrease in receivables.

PERFORMANCE MATERIALS

Business free cash flow[1]

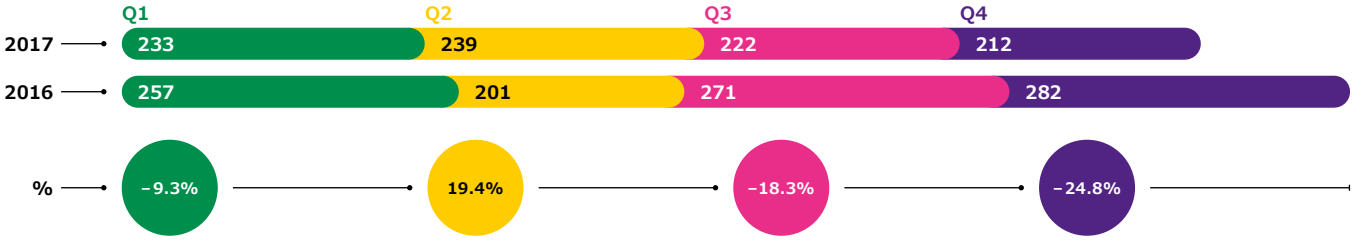
			Change	
€ million	**2017**	2016	€ million	in %
EBITDA pre[1]	980	1,106	–127	–11.4%
Investments in property, plant and equipment, software as well as advance payments from intangible assets	–125	–109	–16	14.5%
Changes in inventories	–14	35	–49	>100.0%
Changes in trade accounts receivable and receivables from royalties and licenses	65	–19	84	>100.0%
Elimination first-time consolidation of Sigma-Aldrich	–	–3	3	–100.0%
Business free cash flow[1]	**906**	**1,011**	**–105**	**–10.4%**

[1] Not defined by International Financial Reporting Standards (IFRS).

The development of business free cash flow in the individual quarters in comparison with 2016 is presented in the following overview:

PERFORMANCE MATERIALS

Business free cash flow[1] change by quarter[2]
€ million/change in %



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Quarterly breakdown unaudited.

Corporate and Other

Corporate and Other comprises Group administration expenses for Group functions that cannot be directly allocated to the business sectors, such as Finance, Procurement, Legal, Communications, and Human Resources. Corporate costs additionally encompass expenses for central, non-allocated IT functions, including expenses related to the expansion and harmonization of IT systems within the Group, as well as research and development costs not allocable to a single business sector.

CORPORATE AND OTHER

Key figures

			Change	
€ million	**2017**	2016	€ million	in %
Operating result (EBIT)[1]	–445	–492	47	–9.5%
EBITDA[1]	–400	–465	65	–14.0%
EBITDA pre[1]	–301	–396	96	–24.2%
Business free cash flow[1]	–437	–485	47	–9.8%

[1] Not defined by International Financial Reporting Standards (IFRS).

In 2017, administration expenses reported under Corporate and Other increased to € 298 million (2016: € 276 million). Research and development costs allocated to Corporate and Other amounted to € 42 million (2016: € 7 million) and included expenses for the Innovation Center (management of ideation), costs of the New Business Builder, unit (entering innovation fields and conducting innovation projects) as well as costs of the Global Health Institute, which is responsible for developing health solutions in developing countries. These projects are initiatives with benefits for us as a whole. Other operating expenses (net) improved to € –101 million (2016: € –207 million). Among other things, this was attributable to lower currency losses. The operating result (EBIT) attributable to Corporate and Other amounted to € –445 million (2016: € –492 million) and EBITDA totaled € –400 million (2016: € –465 million). After eliminating adjustments, EBITDA pre amounted to € –301 million (2016: € –396 million).

The development of business free cash flow was positively impacted by the improvement in EBITDA pre. However, higher capital spending led to cash outflows, which negatively affected this key performance indicator. Overall, negative business free cash flow improved to € –437 million (2016: € –485 million).

Report on Risks and Opportunities

Risks and opportunities are inherent to entrepreneurial activity. We have put systems and processes in place to identify risks at an early stage and to counteract them by taking appropriate action. Within the company, opportunity management is an integral component of internal decision-making processes such as short- and medium-term planning and intra-year business plans.

Risk and opportunity management

Merck KGaA, Darmstadt, Germany, is part of a complex, global business world and is therefore exposed to a multitude of external and internal influences. Every business decision is therefore based on the associated risks and opportunities.

In our internal risk reporting, risks are defined as potential future events or developments that could lead to a negative deviation from our (financial) targets. In parallel, opportunities are defined as potential events or developments that imply a positive deviation from our planned (financial) targets. Identified future events and expected developments are taken into account in internal planning provided that it can be assumed that their occurrence is likely in the planning period. The risks and opportunities presented in the following risk and opportunities report are those potential future events that could respectively lead to a negative or positive deviation from the topics covered by planning.

RISK MANAGEMENT PROCESS

The objective of our risk management activities is to recognize, assess and manage risks early on and to implement appropriate measures to minimize them. The responsibilities, objectives and processes of risk management are described in our internal risk management guidelines. The business heads, managing directors of our subsidiaries, and the heads of Group functions are specified as employees with responsibility for risks. The group of consolidated companies for risk reporting purposes is the same as the group of consolidated companies for the consolidated financial statements. Every six months, the risk owners assess their risk status and report their risk portfolio to Risk Management. We use special risk management software in the context of these activities.

Likewise, risk-mitigating measures are reported and assessed. The effectiveness of these measures and the planned implementation time frame are monitored by Group Risk Management.

The residual risk after the implementation of these measures is presented in the internal risk report as net risk.

Group Controlling & Risk Management forms the organizational framework for risk management and reports directly to the Group Chief Financial Officer. Group Risk Management uses the information reported to determine the current risk portfolio for the Group, presenting this in a report to the Executive Board, the Supervisory Board and the Finance Committee with detailed explanations twice per year. This also encompasses a probability-weighted aggregation of risks at Group level using a Monte Carlo simulation. Furthermore, significant changes in the assessment of the risks already known and new significant risks can be reported at any time and are communicated to the corporate bodies on an ad hoc basis.

For reporting risks with a potential negative impact on our EBIT, a threshold is set at a value of € 5 million in the standard process and at a value of € 25 million in the ad hoc process. Risks below these thresholds are steered independently within the business sectors. The relevant timeframe for internal risk reporting is five years. The effects of risks described in this report on risks and opportunities are presented as annual values. The assessment of the risks presented relates to December 31, 2017. There were no relevant changes after the balance sheet date that would have necessitated an amended presentation of the risk situation of the Group.

Within the scope of audits, Group Internal Auditing regularly reviews the performance of risk management processes within the units and, at the same time, the communication of relevant risks from the operating businesses to Group Risk Management.

OPPORTUNITY MANAGEMENT PROCESS

The risk management system described concentrates on business risks, and not on opportunities at the same time. The opportunity management process is integrated into our internal controlling processes and carried out in the operating units on the basis of the Group strategy. The businesses analyze and assess potential market opportunities as part of strategy and planning processes. In this context, investment opportunities are examined and prioritized primarily in terms of their potential value proposition in order to ensure an effective allocation of resources. We selectively invest in growth markets to leverage the opportunities of dynamic development and customer proximity at a local level.

If the occurrence of the identified opportunities is rated as likely, they are incorporated into the business plans and the short-term forecasts. Trends going beyond this or events that could lead to a positive development in the net assets, financial position and results of operations are presented in the following report as opportunities. These could have a positive effect on our medium-term prospects.

Risk and opportunity assessment

RISKS

The significance of risks is calculated on the basis of their potential negative impact on the forecast financial targets in conjunction with the probability of occurrence of the respective risk. In line with these two factors, risks are classified as "high", "medium" or "low".

The underlying scales for measuring these factors are shown below:

PROBABILITY OF OCCURRENCE

Probability of occurrence	Explanation
< 20%	Unlikely
20 – 50%	Possible
51 – 80%	Likely
> 80%	Very likely

DEGREE OF IMPACT

Degree of impact	Explanation
> € 50 million	Substantial negative impact on the net assets, financial position and results of operations
€ 20 – 50 million	Moderate negative impact on the net assets, financial position and results of operations
€ 5 – 20 million	Immaterial negative impact on the net assets, financial position and results of operations
< € 5 million	Critical negative impact on the net assets, financial position and results of operations

The combination of the two factors results in the risk matrix below, which shows the individual risks and their significance to the Group.

RISK MATRIX

> € 50 million	Medium	Medium	High	High
€ 20 – 50 million	Medium	Medium	Medium	High
€ 5 – 20 million	Low	Medium	Medium	Medium
< € 5 million	Low	Low	Low	Low
Impact / Probability of occurrence	< 20%	20 – 50%	51 – 80%	> 80%

OPPORTUNITIES

Opportunities are assessed in their respective specific business environment. General measures of the business functions are quantified during operational planning in relation to sales, EBITDA pre and business free cash flow. Net present value, internal rate of return, the return on capital employed (ROCE), and the amortization period of the investment are primarily used to assess and prioritize investment opportunities. Similarly, scenarios are frequently set up to simulate the influence of possible fluctuations and changes in the respective factors on results. There is no overarching, systematic classification of the probability of occurrence and impact of opportunities.

Internal control system for the Group accounting process

The objective of the internal control system for the accounting process is to implement controls that provide assurance that the financial statements are prepared in compliance with the relevant accounting laws and standards. This system covers measures designed to ensure the complete, correct and timely conveyance and presentation of information that is relevant for the preparation of the consolidated financial statements and the combined management report.

KEY TOOLS

The internal control system aims to ensure the accuracy of the consolidated accounting process through functioning internal controls with reasonable assurance. The Group Accounting function centrally steers the preparation of the consolidated financial statements of Merck KGaA, Darmstadt, Germany, as the parent company of the Group. This Group function defines the reporting requirements that all our subsidiaries must meet. At the same time, this function steers and monitors the scheduling and process-related requirements of the consolidated financial statements. Group Accounting centrally manages all changes to the equity holding structure and correspondingly adapts the Group's scope of consolidation. The proper elimination of intragroup transactions within the scope of the consolidation process is ensured. Group-wide accounting guidelines form the basis for the preparation of the statutory financial statements of the parent company and of the subsidiaries, which are reported to Group Accounting; the guidelines are adapted in a timely manner to reflect changes in the financial regulatory environment and are updated in accordance with internal reporting requirements. For special issues, such as the accounting treatment of intangible assets within the scope of company acquisitions or pension obligations, external experts are additionally involved where necessary.

The individual companies have a local internal control system. Where financial processes are handled by a Shared Service Center, the internal control system of the Shared Service Center is additionally applied. Both ensure that accounting complies with IFRS (International Financial Reporting Standards) and with the Group accounting guidelines.

Group Accounting provides support to the local contacts and ensures a consistently high quality of reporting throughout the entire reporting process.

For Group financial reporting purposes, most of our subsidiaries use standard SAP software. Consolidation software from SAP is also used for the elimination of intragroup transactions. A detailed authorization concept ensures the separation of duties with respect to both single-entity reporting and the consolidated financial statements. In principle, the accounting process is designed to ensure that all units involved adhere to the principle of dual control.

The effectiveness of our internal control system with regard to accounting and the compliance of financial reporting by the individual companies is confirmed by both the local managing director and the local chief financial officer when they sign the single-entity reporting. For the accounting treatment of balance sheet items, Group Accounting closely cooperates with Group Risk Management in order to correctly present potential balance sheet risks. All the structures and processes described are subject to regular review by Group Internal Auditing based on an annual audit plan set out by the Executive Board. The results of these audits are dealt with by the Executive Board, the Supervisory Board and the Finance Committee. The internal control system at our company makes it possible to lower the risk of material misstatements in accounting to a minimum. However, no internal control system – regardless of its design – can entirely rule out a residual risk.

Business-related risks and opportunities

POLITICAL AND REGULATORY RISKS AND OPPORTUNITIES

As a global company, we face political and regulatory changes in a large number of countries and markets.

Risk of more restrictive regulatory requirements regarding drug pricing, reimbursement and approval

In our Healthcare business sector, the known trend towards increasingly restrictive requirements in terms of drug pricing, reimbursement and approval is continuing. These requirements can negatively influence the profitability of our products, also through market referencing between countries, and jeopardize the success of market launches and new approvals. Foreseeable effects are taken into account as far as possible in the business sector's plans. Close communication with health and regulatory authorities serves as a preventive measure to avert risks. Remaining risks beyond the current plans resulting from restrictive regulatory requirements are classified as a medium risk owing to the possible critical negative impact.

Risk of stricter regulations for the manufacturing, testing and marketing of products

Likewise, in our Life Science and Performance Materials business sectors, we must adhere to a multitude of regulatory specifications regarding the manufacturing, testing and marketing of many of our products. Specifically in the European Union, we are subject to the European chemicals regulation REACH. It demands comprehensive tests for chemical products. Moreover, the use of chemicals in production could be restricted, which would make it impossible to continue manufacturing certain products. We are constantly pursuing research and development in substance characterization and the possible substitution of critical substances so as to reduce the occurrence of this risk, and therefore view it as unlikely. Nevertheless, it is classified as a medium risk given its critical negative impact on the net assets, financial position and results of operations.

Risk of negative political and macroeconomic developments

The destabilization of political systems (as for example in Turkey or the Middle East), the possible establishment of trade barriers as well as foreign exchange policy changes can lead to declines in sales in certain countries and regions. These risks are taken into account as far as possible in the business plans of the affected countries and regions and mitigated through product, industry and regional diversification.

Potential negative macroeconomic developments, for example in Argentina and Brazil, can also impact our business. To minimize these impacts, corresponding measures pertaining to the sales strategy have been initiated in these countries.

The United Kingdom's imminent exit from the European Union ("Brexit") gives rise to risks for our existing business in that country (2017: sales of € 429 million, 1,514 employees and five production sites) such as the decline in the value of the British pound, a weakening of economic activity in the United Kingdom, regulatory changes, and the creation of trade barriers such as import duties, which could have an impact on our profitability. To analyze these risks and to counteract them in a timely and targeted manner, internal working groups have been set up.

The net risk of negative political and macroeconomic developments is seen as possible and has critical negative effects on the net assets, financial position and results of operations. We thus rate this as a medium risk.

MARKET RISKS AND OPPORTUNITIES

We compete with numerous companies in the pharmaceutical, chemical and life science sectors. Rising competitive pressure can have a significant impact on the quantities sold and prices attainable for our products.

Opportunities due to new technologies in the manufacturing of displays

We see opportunities in the medium-to long-term possibilities of significant market growth of OLED applications in high-quality display applications. We are building on more than ten years of experience in manufacturing organic light-emitting diode (OLED) materials as well as a strong portfolio of worldwide patents in order to develop ultrapure and extremely stable materials that are precisely tailored to customer requirements. The development in the OLED market is being driven by the diversification of applications for OLED displays. OLED technology is an established alternative to LCDs in small-area displays, for instance smartphones. However, owing to technological advances, OLED technology is being used in more and more large-area displays, such as televisions. High-quality lighting applications, for example for automobiles, offer further growth potential for OLEDs. In order to make the mass production of large-area OLED displays more efficient, we have been cooperating since the end of 2012 with Seiko Epson Corporation to enable printing processes for OLED displays. At the beginning of the second quarter of 2017, the HyperOLED project started within the scope of the Horizon 2020 initiative, an EU-based program. As part of this project, together with four other partners, we will be developing high-performance, hyperfluorescence OLEDs for display and lighting applications over the next three years.

To expand our expertise in the field of high-quality display applications, we entered into a development agreement with CLEARink Displays. Together, we plan to launch an innovative, patented and reflecting display technology for mobile devices. Our objective is to commercialize the first video-enabled reflecting color displays in 2018.

Opportunities due to new application possibilities for liquid crystals

We are pursuing a strategy of leveraging our expertise as the global market leader in liquid crystals in order to develop new fields of application for innovative liquid crystal technologies. For instance, we are pressing ahead to capture the future markets for liquid crystal windows (LCWs) and mobile antennas. Thanks to licrivision™ technology, LCWs create new architectural possibilities.

Through continuously variable brightness control, they can for example increase a building's energy efficiency. To drive forward the market penetration of liquid crystal windows, we are investing around € 19 million in the construction of a production facility for window modules. Initial sales, albeit at a low level, are expected in 2018 with greater medium-term potential. Antennas that can receive signals transmitted in the high frequency range can also be realized with the aid of corresponding liquid crystal mixtures. As a result, mobile data exchange could improve significantly in a wide variety of fields of application. Since novel liquid crystal materials for antennas are currently being developed, the market launch of liquid crystal antennas could still take a few years. New application opportunities for liquid crystals could have medium- to long-term positive effects on the financial indicators of our Performance Materials business sector.

Opportunities offered by the increased importance of the automotive platform

In the future, topics such as data transmission, individual design, smart lighting and autonomous driving will play an important role in the automotive industry, thus expanding our opportunities in smart technologies.

In 2017, we presented our automotive innovations at our own exhibition stand at the International Motor Show (IAA) in Frankfurt am Main, Germany, for the first time. With our products and displays in the New Mobility World, we offered visitors the opportunity to familiarize themselves with the broad range of future applications and with our company.

Opportunities from leveraging the e-commerce and distribution platform

With the acquisition of Sigma-Aldrich in 2015 we have gained access to the leading life science e-commerce platform. Our customers are already benefiting from an offering of more than 300,000 products including highly respected brands distributed via this e-commerce platform. We are further expanding this platform in order to continuously increase the number of products available on it. Making ordering processes faster and more convenient for our customers and offering support through individualized product recommendations could lead to higher sales volumes and enable us to win new customers. Consequently, this distribution channel could lead to an above-average development of sales in the medium term.

This is being expanded through the collaboration with Elsevier. Our products are now listed in Reaxys, a chemicals database. Users can now conveniently find and purchase the products we develop and supply.

The acquisition of Grzybowski Scientific Inventions complements our e-commerce platform. The retro-synthesis software from this acquisition offers the possibility to identify and select synthesis methods.

Risk due to increased competition and customer technology changes

In our Healthcare business sector, both our biopharmaceutical products and classic pharmaceutical business are exposed to increased competition from rival products (in the form of biosimilars and generics). In the Life Science and Performance Materials business sectors, risks are posed by not only cyclical business fluctuations but also changes in the technologies used or customer sourcing strategies, particularly with respect to liquid crystals. We use close customer relationships and in-house further developments as well as market proximity, including precise market analyses as mitigating measures. Overall, owing to its possible occurrence with a critical negative impact, the market risk is classified as a medium risk.

Opportunities offered by digitalization and activities to boost innovative strength

Digital technologies are becoming increasingly important for our markets and our world of work. Therefore, in 2015, we launched strategic digital initiatives geared to improving the efficiency of our internal processes and to evaluating the opportunities of digitalization with regard to our products and customers. In addition to collaborations with external partners to expand e-health solutions for patients, e.g. our MSdialog platform, the Accelerator program, which is being driven by our Innovation Center, is one component of our innovation strategy. We achieved a record number of applicants, with the number of applications increasing by 82% over the previous round. The program comprises support for and access to start-up companies that offer innovative digital solutions in the fields of healthcare, life science and performance materials. With corporate venture capital fund, we are also strengthening our collaboration with and access to highly innovative start-ups. The expansion of these activities could lead to new market opportunities for us. In the medium term, these could have a positive impact on the development of our sales.

Furthermore, we are expanding our expertise through a PMatX incubator for next-generation electronics in Israel. With a focus on start-up companies for state-of-the-art electronics, the topics being addressed are closely related to Performance Materials.

RISKS AND OPPORTUNITIES OF RESEARCH AND DEVELOPMENT

For us, innovation is a major element of the Group strategy. Research and development projects can experience delays, expected budgets can be exceeded, or targets can remain unmet. Research and development activities are of special importance to our Healthcare business sector. In the course of portfolio management, we regularly evaluate and, if necessary, refocus research areas and all R&D pipeline projects.

Special mention should be made of the strategic alliance formed in 2014 between our company and Pfizer Inc. as a research and development opportunity in our Healthcare business sector. In 2017, the European Commission approved Bavencio®, an anti- PD-L1 antibody we are co-developing with Pfizer, in 28 countries of the European Union, Iceland, Liechtenstein and Norway as well as in Canada and Japan. This builds on the previous approvals in the United States and Switzerland. Bavencio® is thus the first immunotherapy for patients with metastatic Merkel cell carcinoma.

Additionally, Bavencio® was approved by the FDA for the treatment of patients with locally advanced or metastatic urothelial cancer.

In addition, Mavenclad® was approved in 2017 in the European Union by the European Commission. Approvals were also granted in Canada and Australia. It is the first short-course oral treatment approved in Europe for the treatment of relapsing multiple sclerosis in patients with high disease activity. The first market launch will take place in Germany, followed by the United Kingdom and the remaining EU member states.

We plan to submit Mavenclad® for regulatory review in the United States and both drugs in Asia.

Apart from these regulatory submissions, we are pushing ahead with research projects in further important indications and are actively pursuing new opportunities through in- and outlicensing.

The expenses currently being incurred, especially in our Healthcare research and development, are already reflected in the current plans. The same applies to net sales generated by the products Bavencio® and Mavenclad®. If approved in further countries, the estimated sales potential could increase.

Moreover, we in-licensed four oncology research and development programs from Vertex. With this strategic portfolio acquisition, we are strengthening our oncology pipeline in two attractive areas where we already possess substantial expertise: DNA damage response as well as immuno-oncology. These areas offer highly promising therapeutic synergies.

Risks of discontinuing development projects and regulatory approval of developed medicines

Sometimes development projects are discontinued after high levels of investment at a late phase of clinical development. Decisions – such as those relating to the transition to the next clinical phase – are taken with a view to minimizing risk. Furthermore, there is the risk that regulatory authorities either do not grant or delay approval, which can have an impact on earnings, for example by lower sales or missed milestone payments from collaboration agreements. Additionally, there is the danger that undesirable side effects of a pharmaceutical product could remain undetected until after approval or registration, which could result in a restriction of approval or withdrawal from the market. We are currently not aware of any risks beyond general development risks that could significantly affect the net assets, financial position and results of operations.

PRODUCT-RELATED RISKS AND OPPORTUNITIES

Risk of a temporary ban on products/production facilities or of non-registration of products due to non-compliance with quality standards

We are required to comply with the highest standards of quality in the manufacturing of pharmaceutical products (Good Manufacturing Practice). In this regard we are subject to the supervision of the regulatory authorities. Conditions imposed by national regulatory authorities could result in a temporary ban on products/production facilities, and possibly affect new registrations with the respective authority. We take the utmost effort to ensure compliance with regulations, regularly perform our own internal inspections and also carry out external audits. Thanks to these quality assurance processes, the occurrence of a risk is unlikely, however cannot be entirely ruled out. Depending on the product concerned and the severity of the objection, such a risk can have a critical negative impact on the net assets, financial position and results of operations. Therefore, we rate this as a medium risk.

Operational failure risks

Further risks include operational failures due to fire or force majeure, for example natural disasters such as floods or earthquakes, which could lead to a substantial interruption or restriction of business activities. Insofar as it is possible and economically viable, the Group limits its damage risks with insurance coverage, the nature and extent of which is constantly adapted to current requirements. Likewise, we are exposed to risks of production outages and the related supply bottlenecks that can be triggered by technical problems in production facilities with very high capacity utilization. We are working to continuously mitigate the risks by making regular investments, setting up alternative sourcing options and maintaining inventory levels.

Although the occurrence of these risks is considered unlikely, an individual event could have a critical negative effect on the net assets, financial position and results of operations and are therefore classified as a medium risk.

Risks of dependency on suppliers

Quality controls along the entire value chain reduce the risks related to product quality and availability. This starts with the qualification of our suppliers. Quality controls also include comprehensive quality requirements for raw materials, purchased semi-finished products and plants. We are dependent on individual suppliers for a number of precursor products, packaging materials and finished goods. In the event that one of these suppliers curtails or discontinues production, or supply is disrupted, this could potentially have a critical impact on the business concerned. With long-term strategic alliances for precursor products critical to supply and price as well as alternative sourcing strategies, we reduce the probability of occurrence of these risks and rate them as unlikely. Overall, these are classified as medium risks.

Product liability risks
Companies in the chemical and pharmaceutical industries are exposed to product liability risks in particular. Product liability risks can lead to considerable claims for damages, loss of reputation and costs to avert damages. We have taken out the liability insurance that is standard in the industry for such risks. However, it could be that the insurance coverage available is insufficient for individual cases. Although the occurrence of product liability claims in excess of the existing insurance coverage is considered unlikely, individual cases could still have a critical negative effect on the net assets, financial position and results of operations. We therefore rate a potential product liability risk as a medium risk.

Risks due to product-related crime and espionage
Owing to our portfolio, we are exposed to a number of sector-specific crime risks. This relates primarily to products, including among other things, counterfeiting, illegal channeling, misuse as well as all types of property crime, including attempts at these crimes. Crime phenomena such as cybercrime and espionage could equally affect our innovations or innovation abilities as such.

To combat product-related crime, an internal coordination network covering all functions and businesses ("Anti-Counterfeiting Operational Network") was set up several years ago. In addition, security measures are in use to protect products against counterfeiting. Innovative technical security solutions and defined preventive approaches are used to ward off dangers relating to cybercrime and espionage. Measures to prevent risks and to prosecute identified offenses are conducted in all the relevant crime areas in close and trustworthy cooperation with the responsible authorities. The impact of these risks on business operations depends on the respective individual case, product-specific factors, the value chain, as well as on regional aspects in particular. Our Corporate Security department is responsible for the overall coordination of all measures in this area. Overall, the threat resulting from crime in general is seen as being possible and is classified as a medium risk.

Opportunities due to an expanding local presence in high-growth markets
For numerous markets in Asia, the Middle East, Latin America and Africa, we expect that in the coming years all business sectors will continue to make above-average contributions to growth. In order to further expand this potential for our businesses, we have moved forward with several investment projects in recent years. For instance, in 2017 we invested around € 25 million in China to further expand the capacity of a pharmaceutical manufacturing facility as well as a further € 26 million in a manufacturing plant for our Life Science business sector. Moreover, we are continuing our engagement in Africa. The greater local presence and customer proximity could give us a key competitive edge and, in the medium to long term, offers the opportunity for significant growth in sales and EBITDA pre.

RISKS AND OPPORTUNITIES FROM THE USE OF SOCIAL MEDIA

Our company and its employees are active on numerous social media channels. The consistent and legally compliant use of the channels and their content is important in terms of increasing awareness of our brand, among other things. We take precautions and implement processes to ensure awareness of the proper handling of social media, controlling publication and actively managing communication.

Nevertheless, reputational risks could result, for instance through public dialogues in social media. Overall, we rate this as a low risk.

Financial risks and opportunities

As a corporate group that operates internationally and due to our presence in the capital market, we are exposed to various financial risks and opportunities. Above all, these are liquidity and counterparty risks, financial market risks and opportunities, risks of fluctuations in the market values of operational tangible and intangible assets, as well as risks and opportunities from pension obligations.

RISK AND OPPORTUNITY MANAGEMENT IN RELATION TO THE USE OF FINANCIAL INSTRUMENTS

In the area of financial risks and opportunities, we use an active management strategy to reduce the effects of fluctuations in exchange and interest rates. The management of financial risks and opportunities by using derivatives in particular is regulated by extensive guidelines. Speculation is prohibited. Derivative transactions are subject to constant risk controls. A strict separation of functions between trading, settlement and control functions is ensured.

LIQUIDITY RISKS

In order to ensure its continued existence, a company must be able to fulfill its commitments from operating and financial activities at all times. To reduce potential liquidity risks, we have a central Group-wide liquidity management system in place and a balanced maturity profile. The maturities of our financial liabilities are aligned with our planned free cash flow. Furthermore, we have a multicurrency revolving credit facility of € 2 billion with a term until 2020, which ensures continuing solvency if any liquidity bottlenecks occur. As our loan agreements do not contain any financial covenants, these agreed lines of credit can be accessed even if our credit rating should deteriorate. Additionally, we have a commercial paper program with a maximum volume of € 2 billion.

Overall, the liquidity risk is unlikely and rated as low.

COUNTERPARTY RISKS

Counterparty risks arise from the potential default by a partner in connection with financial investments, loans and financing commitments on the one hand and receivables in operating business on the other.

As for counterparty risks from financial transactions, we review all positions relating to trading partners and their credit ratings on a daily basis. We manage financial risks of default by diversifying our financial positions and through the related active management of our trading partners. Significant financial transactions involving credit risk are entered into with banks and industrial companies that have a good credit rating. Moreover, our large banking syndicate – the multi-currency revolving credit facility of € 2 billion was syndicated by 19 banks – reduces possible losses in the event of default.

The solvency and operational development of trading partners is regularly reviewed as part of the management of operational counterparty risks. Sovereign risks are also analyzed. The volume of receivables of each customer is capped in line with their credit ratings. Risk-mitigating measures, such as credit insurance, are utilized as appropriate. Nevertheless, defaults by isolated trading partners, even those with outstanding credit ratings, cannot be entirely ruled out, although rated as unlikely (further information can be found in "Credit risks" in Note (38) "Management of financial risks" in the Consolidated Financial Statements).

Counterparty risk is classified as a medium risk overall owing to the unlikely probability of occurrence with a potential critical negative effect.

FINANCIAL MARKET OPPORTUNITIES AND RISKS

As a result of our international business activities and global corporate structure, we are exposed to risks and opportunities from fluctuations in exchange rates. These result from financial transactions, operating receivables and liabilities, as well as forecast future cash flows from sales and costs in foreign currency. We use derivatives to manage and reduce the aforementioned risks and opportunities (further information can be found in "Derivative financial instruments" in the Notes to the Consolidated Financial Statements). Due to their possible occurrence with a potentially critical negative effect on the net assets, financial position and results of operations, foreign exchange rate risks are rated as medium risk.

Variable interest and current financial liabilities are exposed to the risks and opportunities of interest rate fluctuations. These are also managed and reduced using derivatives. Interest rate risks have a potentially moderate negative impact, are considered unlikely and pose low risks overall.

RISKS OF IMPAIRMENT OF BALANCE SHEET ITEMS

The carrying amounts of individual balance sheet items are subject to the risk of changing market and business conditions and thus to changes in fair values as well. Necessary impairments could have a significant negative non-cash impact on earnings and affect the accounting ratios.

This applies in particular to the high level of intangible assets including goodwill, which mainly derive from the purchase price allocations made in connection with past acquisitions (further information can be found under "Goodwill" and "Other intangible assets" in the Notes to the Consolidated Financial Statements). All relevant risks were assessed during the preparation of the consolidated financial statements and taken into account accordingly. We rate risks beyond this as unlikely with a critical negative impact. Therefore, this is seen as a medium risk.

RISKS AND OPPORTUNITIES FROM PENSION OBLIGATIONS

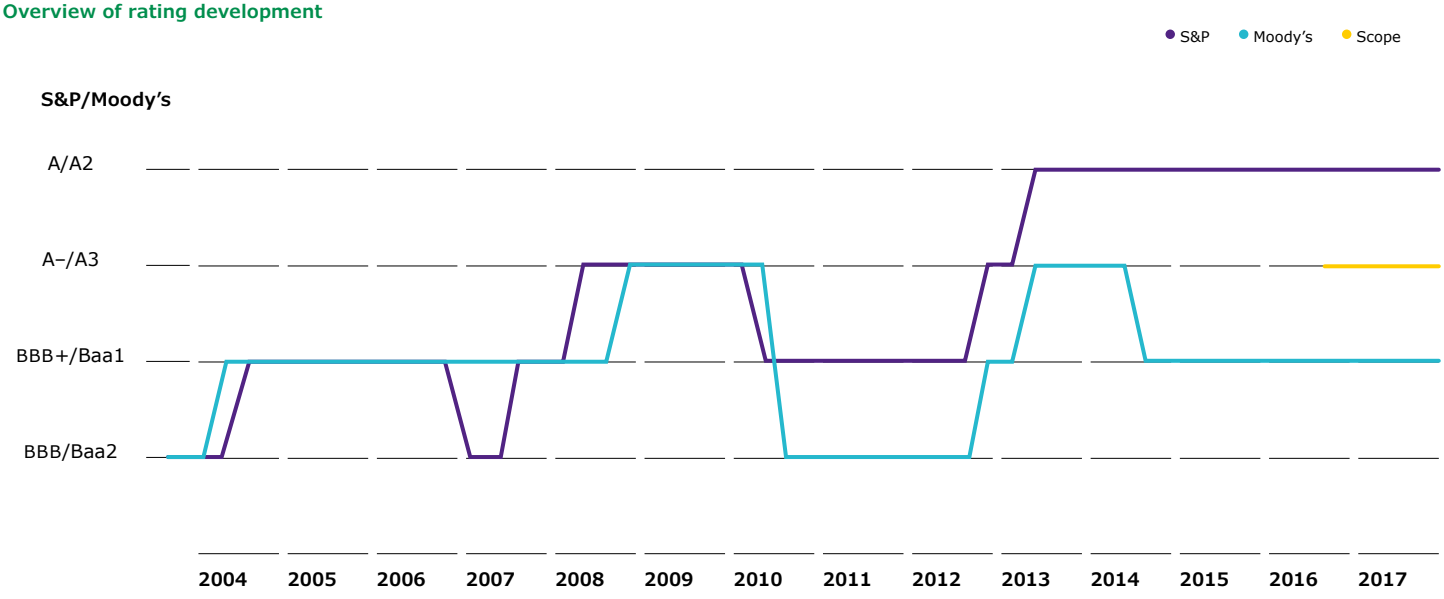
We have commitments in connection with pension obligations. The present value of defined benefit obligations can be significantly increased or reduced by changes in the relevant valuation parameters, for example the interest rate or future salary increases. Pension obligations are regularly assessed as part of annual actuarial reports. The obligations are covered by the pension provisions reported in the balance sheet based on the assumptions as of the balance sheet date. Some of these obligations are funded by plan assets (further information can be found under "Provisions for pensions and other post-employment benefits" in the Notes to the Consolidated Financial Statements). To the extent that pension obligations are covered by plan assets consisting of interest-bearing securities, shares, real estate, and other financial assets, decreasing or negative returns on these assets can adversely affect the fair value of plan assets and thus result in further additions to pension provisions. By contrast, rising returns increase the value of plan assets, thereby resulting in excess cover of plan liabilities. We increase the opportunities of fluctuations in the market value of plan assets on the one hand and reduce the risks on the other by using a diversified investment strategy. The unlikely risk due to pension obligations could have moderate negative effects on the net assets, financial position and results of operations, and is to be classified as low.

ASSESSMENTS BY INDEPENDENT RATING AGENCIES

The capital market uses the assessments published by rating agencies to help lenders assess the risks of a financial instrument used by our company. We are currently rated by Standard & Poor's, Moody's and Scope. Standard & Poor's has issued a long-term credit rating of A with a stable outlook, Moody's a rating of Baa1 with a stable outlook, and Scope a rating of A-, likewise with a stable outlook. In line with market procedures, our financing conditions are closely tied to our rating. The better a rating, the more favorably we can generally raise funds on the capital market or from banks.

REPORT ON RISKS AND OPPORTUNITIES

Overview of rating development



Legal risks

Generally, we strive to minimize and control our legal risks. To this end, we have taken the necessary precautions to identify threats and defend our rights where necessary.

Nevertheless, we are still exposed to litigation risks or legal proceedings. In particular, these include risks in the areas of product liability, competition and antitrust law, pharmaceutical law, patent law, trademark law, tax law, and environmental protection. As a research-based company, we have a valuable portfolio of industrial property rights, patents and brands that could become the target of attacks and infringements. The outcome of future proceedings or those currently pending is difficult to foresee.

For instance, we are currently involved in litigation with Merck & Co. Inc., Kenilworth, NJ, USA (outside the United States and Canada: Merck Sharp & Dohme Corp. (MSD)), against whom we have filed lawsuits in various countries. This company has also sued us in the United States for trademark infringement, among other things.

Due to long statutes of limitations or in some cases the absence thereof, it is not possible to rule out that we will face third-party claims arising from the same issue despite the conclusion of legal proceedings. Court or official rulings or settlements can lead to expenses with a significant impact on our business and earnings.

Despite extensive precautionary measures, non-compliance with laws and regulations leading to related consequences can never be completely excluded.

Tax risks are reviewed regularly and systematically by Group Tax. Corresponding standards and guidelines are used in order to identify tax risks at an early stage as well as to review, evaluate and correspondingly minimize them. Risk reduction measures are coordinated by Group Tax together with the subsidiaries abroad.

In our opinion, the lawsuits described below constitute the most significant legal risks. This should not be seen as an exhaustive list of all legal disputes currently ongoing.

RISKS FROM PRODUCT-RELATED AND PATENT LAW DISPUTES

We are involved in a patent dispute in the United States with Biogen Inc. (Massachusetts, USA) ("Biogen"). Biogen claims that the sale of Rebif® in the United States infringes on a Biogen patent. The disputed patent was granted to Biogen in 2009 in the United States. Subsequently, Biogen sued our company and other pharmaceutical companies for infringement of this patent. Our company defended itself against all allegations and brought a countersuit claiming that the patent is invalid and not infringed on by our actions. A Markman hearing took place in January 2012, leading to a decision in the first quarter of 2016. A first-instance ruling is now expected for 2018. A court-ordered mediation proceeding did not lead to an agreement between the parties. We have taken appropriate accounting measures.

Nevertheless, potentially critical negative impacts of the litigation on the financial position cannot be ruled out.

In our Performance Materials business sector, we are involved in a legal dispute with JNC Corporation, Japan, (JNC). JNC claims that by manufacturing and marketing certain liquid crystals mixtures, our company has infringed JNC patents. We maintain that JNC's patent infringement assertion is invalid owing to relevant prior art and has filed the corresponding nullity actions, which in three cases were already successful in first-instance proceedings. JNC has filed complaints in each case. In a correction trial, a decision in favor of JNC was issued in the second instance. Both our company and the Korean Patent Office have filed complaints with the Korean Supreme Court. In parallel, JNC filed two patent infringement suits. In 2017, a first-instance decision was issued in favor of our company, which JNC then appealed. Our company has taken appropriate accounting measures. Nevertheless, a potentially critical negative impact of the litigation on the financial position cannot be ruled out.

In July, Bristol-Myers Squibb Co., USA, E.R. Squibb & Sons L.L.C., USA, Ono Pharmaceutical Co., Ltd., Japan, and a private individual filed suit in the United States District Court of Delaware against our company and Pfizer Inc., USA, (Pfizer) based on the allegation that Bavencio® infringes a U.S. patent. The plaintiffs accuse multiple companies of infringing a U.S. patent relating to methods of treating tumors with anti-PD-L1 antibodies. Both our company and Pfizer have initiated legal steps to defend themselves. A potentially critical negative impact of the litigation on the financial position cannot be ruled out.

RISKS DUE TO ANTITRUST AND OTHER GOVERNMENT PROCEEDINGS

Raptiva®: In December 2011, the federal state of São Paulo, Brazil, sued us for damages because of alleged collusion between various pharmaceutical companies and an association of patients suffering from psoriasis and vitiligo. This collusion is alleged to have been intended to increase sales of the medicines from the companies involved to the detriment of patients and state coffers. Moreover, patients are also suing for damages in connection with the product Raptiva®.

We have taken appropriate accounting measures for these issues. Risks in excess of this with a substantial negative effect on the net assets, financial position and results of operations cannot be ruled out, but are considered unlikely. This is rated as a medium risk.

On July 6, 2017, we received notice from the European Commission (EU Commission), in which the EU Commission informed our company of its preliminary conclusion that our company and Sigma-Aldrich allegedly transmitted incorrect and/or misleading information within the scope of the acquisition of Sigma-Aldrich. The EU Commission received registration of the merger on April 21, 2015 and granted clearance on June 15, 2015 subject to the condition that our company and Sigma-Aldrich divest parts of the European solvents and inorganic chemicals businesses of Sigma-Aldrich in order to resolve antitrust concerns. According to the preliminary viewpoint of the EU Commission communicated in the letter dated July 6, 2017, our company and Sigma-Aldrich withheld in this connection important information about an innovation project allegedly relevant for certain laboratory chemicals of significance to the analysis by the EU Commission. According to the EU Commission, the innovation project should have been included in the remedies package. A meeting of the cooperation procedure between the EU Commission and our company took place on February 5, 2018. The ongoing investigations are limited to the examination of violations of EU merger control procedures and do not affect the validity of the EU Commission's decision to approve the merger. The risk is considered likely with a critical negative impact on the net assets, financial position and results of operations and is thus classified as high. Appropriate accounting measures have been taken.

RISKS OWING TO A SETTLEMENT AGREEMENT OF THE DIVESTED GENERICS GROUP

Paroxetine: In connection with the divested generics business, we are subject to antitrust investigations by the British Competition and Market Authority (CMA) in the United Kingdom. In March 2013, the authorities informed us of the assumption that a settlement agreement entered into in 2002 between Generics (UK) Ltd. and several subsidiaries of GlaxoSmithKline plc, (UK) in connection with the antidepressant drug paroxetine violates British and European competition law. Our company, the then owner of Generics (UK) Ltd., was allegedly involved in the negotiations for the settlement agreement and is therefore liable. The investigations into Generics (UK) Ltd. started in 2011, without this being known to us. On February 11, 2016, the CMA imposed a fine in this matter. We have taken legal action against this fine. Appropriate accounting measures have been taken. This is currently classified as a medium risk with a moderate negative impact on the financial position.

Human resources risks

Our future growth is highly dependent on our innovative strength. Therefore, the expertise and engagement of employees in all sectors in which we operate are crucial to the success of the company. The markets relevant to the company are characterized by intensive competition for qualified specialists and by the challenge of being perceived by the public as an attractive employer. Fluctuation risks specific to countries and industries have to be identified ahead of time and specifically addressed in order to keep the skills and expertise critical to success and business within the company.

Recruiting and retaining specialists and talent is therefore one of the key priorities for the company and is managed through the targeted use of, for instance, employer branding initiatives, global talent and succession management processes as well as competitive compensation packages. Nevertheless, employee-related risks that affect business activities are possible, even though their impact is difficult to assess. We rate this as a medium risk.

Information technology risks

We use a variety of IT systems and processes in order to optimally support our globalization. Trends in information technology offer various opportunities but also harbor risks.

Risks due to cybercrime and the failure of business-critical IT applications

Increasing international networking and the related possibility of IT system abuse are resulting in cybercrime risks for our company, such as the failure of central IT systems, the disclosure or loss of the data integrity of confidential data from research and business activities, the manipulation of IT systems in chemical process control, or an increased burden or adverse impact on IT systems as a result of virus attacks.

The Group operates an information protection management system based on ISO 27001 comprising security guidelines as well as organizational and technical measures to prevent and address IT security incidents. Globally used IT applications form the basis for the contractual delivery of products and solutions. The failure of business-critical IT applications could therefore have a direct influence on our ability to deliver and the quality of our products. This also applies to the failure of a data center. To achieve the required service quality, we use a quality management system certified to ISO 9001 that also applies to the provision of IT.

In addition, to reduce the risk of failure, we operate several redundantly designed data centers. Likewise, complications with the changeover of IT systems could negatively impact the earnings situation. Close monitoring of critical IT projects serves to mitigate this risk.

Despite the mitigating measures taken and functional continuity plans, the effects of cybercrime or the failure of business-critical IT applications and their influence on the net assets, financial position and results of operations are considered high risks owing to likely and potentially critical negative impacts.

Environmental and safety risks

As a company with global production operations, we are exposed to risks of possible damage to people, goods and our reputation. Audits, consulting and training on environmental protection and occupational health and safety minimize these risks to people and the environment. In order to ensure the continuity of plant and equipment, we monitor these risks both at our own sites as well as at suppliers and contract manufacturers. By adhering to high technical standards, our rules of conduct and all legal requirements in environmental protection and occupational health and safety, we ensure the preservation of goods and assets. We have taken sufficient appropriate accounting measures for the environmental risks known to us. Nevertheless, we classify these as a high risk since a critical negative impact on the financial position cannot be ruled out.

Risks of the divestment, acquisition and integration of companies and businesses

Irrespective of the fact that acquisitions made in the past have been successfully completed, the risk of conducting the acquisition and integration exists for future transactions. This includes, among other things, the inability to meet sales volume targets and higher integration costs than expected, as well as the failure to meet synergy goals. The divestment of companies and businesses can lead to liability vis-à-vis the buyer, for instance through indemnity clauses and guarantee commitments. Through strong due diligence processes and closely managed integration processes, we seek to reduce the probability of occurrence of this risk. Therefore, we classify this as a low risk with an unlikely probability of occurrence and potentially moderate negative effects on the net assets, financial position and results of operations.

Overall view of the risk and opportunity situation and management assessment

Although the number of risks reported is higher than the specific opportunities identified, we consider the distribution of risks and opportunities to be balanced. A balanced overall view is also supported by the fact that net sales and business success are built on a diverse range of pharmaceutical and chemical products for a variety of industries. As the markets differ in their structure and economic cycles, this diversification helps to lower risk.

The most significant individual risks in the businesses have been named in the report above, with business-related risks being the most significant alongside legal risks.

With respect to high and medium risks, certain changes have resulted as the assessment of the individual risks has of course altered over the fiscal year due to changing external and internal conditions, while the overall risk profile remained stable. Thanks to the risk reduction measures taken – such as the consistent implementation of management action (organizational responsibility and process improvements), existing insurance coverage and accounting precautions – we take counteraction, in particular against significant risks.

The overall risk of the Group, which is derived from the probability-weighted aggregation of the identified risks, leads to the assessment that we are not exposed to risk scenarios of a nature to threaten the existence of the Group as a going concern or for which coverage and financing of the losses is questionable. We are confident that we will continue to successfully master the challenges arising from the above risks in the future as well.

In our view, business-related opportunities offer the greatest potential. An important element here is the continuous expansion of our businesses in Asia, Latin America, Africa, and the Middle East. With the successful focusing and continued intensification of our research and development activities, we want to be able to continue to offer our customers innovative products and help shape markets. Moreover, we also consolidate our expertise in numerous alliances with industrial partners as well as various universities and international organizations. We are making targeted investments in future-oriented companies and start-ups via our corporate venture capital Fund and our Accelerator programs. The topic of innovation is at the forefront of all our activities. Externally, this is becoming particularly apparent through our new Innovation Center at Group headquarters in Darmstadt, which is to develop into a nucleus of creativity at our company. The activities listed hold significant opportunities for us in the medium to long term, beyond the underlying forecast period.

We pursue the opportunities that arise and specify their expected effects in the forecast development of our key performance indicators – net sales, EBITDA pre and business free cash flow. Furthermore, we will actively seek new opportunities, examine their implementation and drive them forward where appropriate. If opportunities arise in addition to the forecast developments, or these occur more quickly than anticipated, this could have correspondingly positive effects on our net assets, financial position and results of operations.

Report on Expected Developments

The following report provides a forecast for fiscal 2018 of the development of Merck KGaA, Darmstadt, Germany, and its three business sectors: Healthcare, Life Science and Performance Materials. The forecast again covers our key performance indicators as in the previous year, namely net sales, EBITDA pre and business free cash flow. On September 5, 2017, we announced that strategic options for the Consumer Health business are being examined. This analysis of strategic options had not yet been completed when this report was prepared, and on December 31, 2017 the Executive Board came to the conclusion that a divestment of the Consumer Health business within 12 months is not to be considered as very likely. Therefore, our forecast is based on an unchanged portfolio compared with fiscal 2017.

FORECAST FOR THE GROUP

€ million	Actual results 2017	Forecast for 2018	Key assumptions
Net sales	15,326.6	– Moderate organic growth – Moderately negative foreign exchange effect	– Moderate organic growth in Healthcare due to strong dynamics in growth markets as well as increasing sales of Mavenclad® and Bavencio® – Solid organic growth in Life Science, slightly above expected market growth – Slight to moderate organic decrease in Performance Materials owing to the ongoing adjustment processes in the Liquid Crystals business – Negative foreign exchange effect, driven primarily by the exchange rate of the U.S. dollar and currencies of various growth markets
EBITDA pre	4,414.5	– Slight organic decline – Negative foreign exchange effect of –4% to –6%	– In Healthcare continued high investments in research and development as well as in marketing and sales; absence of positive one-time effects from the previous year – Organic sales growth and continued realization of planned synergies from the integration of Sigma-Aldrich in Life Science – Ongoing adjustment processes in the Liquid Crystals business that will not be offset despite the enhanced diversification of Performance Materials and active cost management – Negative foreign exchange effect, particularly owing to the development of the U.S. dollar and currencies of various growth markets
Business free cash flow	3,318.0	– Low double-digit percentage decline	– Lower EBITDA pre and investments in property, plant and equipment as well as digitalization initiatives, higher inventory levels due to a changed product mix and volume increases

NET SALES

For the Group, in 2018 we expect moderate organic sales growth in comparison with the previous year. With regard to foreign exchange rates, we continue to expect a volatile environment due to political and macroeconomic developments. For the full year, we forecast a moderately negative exchange rate effect on our net sales compared with the previous year, with a greater impact in the first half than in the second half of the year. The estimation for 2018 is based on a €/US$ exchange rate in the range of 1.18–1.22 and further declines in the value of the currencies of various growth markets.

For our Healthcare business sector, we forecast a moderate organic increase in net sales in 2018. Again in 2018, this is expected to be driven mainly by strong dynamics in our growth markets, which should offset the still challenging market environment for Rebif® and continued price pressure in numerous markets. Furthermore, we expect sales of Mavenclad® in the high double-digit million range and of Bavencio® in the mid double-digit million range.

In our Life Science business sector, for 2018 we again predict solid organic growth of net sales, which should be slightly above expected market growth. We see medium-term growth at around 4% per year. We assume that Process Solutions will be the largest growth driver. The expected topline synergies from the Sigma-Aldrich acquisition will contribute to sales growth as planned.

We forecast a slight to moderate organic decline in net sales for our Performance Materials business sector in 2018 compared with 2017. The adjustment processes in our Liquid Crystals business will, as expected, also continue in 2018, leading to significant sales declines. We assume that the expected good sales growth of the other business units will not be able to compensate for this development.

EBITDA PRE

EBITDA pre is our key financial indicator to steer operating business. On a currency-adjusted basis, we forecast a slight percentage decline in EBITDA pre for the Group in 2018 compared with 2017. In addition, based on the above-described currency scenario, however, foreign exchange rates are expected to impact our EBITDA pre by approximately –4% to –6% compared with 2017, which will affect all three business sectors.

For our Healthcare business sector, we forecast a slight percentage decline in organic EBITDA pre; the foreign exchange environment is expected to have a moderately negative impact on EBITDA pre. Owing to the continuous further development of our research pipeline, we are budgeting higher research and development costs compared with 2017. However, this is subject to the development of clinical data and prioritization decisions. Furthermore, the absence of positive one-time effects from the previous year amounting to approximately € 200 million (milestone payments for Bavencio®; one-time payment for future license payments) will have a negative impact.

For our Life Science business sector, in fiscal 2018 we expect a similar dynamic for currency-adjusted growth of EBITDA pre as in the previous year (2017: +8%). Both the expected sales development and the further planned realization of synergies from the Sigma-Aldrich acquisition will contribute to this. However, organic EBITDA pre growth of our Life Science business sector is likely to be lowered by a moderately negative foreign exchange effect.

We assume that in our Performance Materials business sector, the expected good development of the other business units as well as disciplined cost management will once again in 2018 not be able to offset the expected sales and earnings decline in the highly profitable Liquid Crystals business. Consequently, we expect that organic EBITDA pre will decline in the mid-teens percentage range in comparison with 2017. The difficult foreign exchange environment, which hits the Performance Materials business especially hard due to its regional positioning, will have an additional negative impact on the earnings situation.

In our estimation, negative EBITDA pre of Corporate and Other will increase in the low double-digit percentage range in 2018. This development relates to investments in innovation and digitalization initiatives. Previously, these costs were incurred in the business sectors and are now recorded centrally under Corporate and Other. By contrast, expected currency hedging gains should have a compensating effect in 2018.

BUSINESS FREE CASH FLOW

For the business free cash flow of the Group in 2018, we forecast a decline in the low double-digit percentage range, driven by lower EBITDA pre, continued high investments in property, plant and equipment, and higher inventories owing to a changed product mix and higher volumes.

FORECAST FOR OUR HEALTHCARE BUSINESS SECTOR

€ million	Actual results 2017	Forecast for 2018	Key assumptions
Net sales	6,999.0	– Moderate organic growth – Moderately negative foreign exchange effect	– Organic sales growth in growth markets will compensate for the organic decline in Rebif® sales, which is expected to be in the high single-digit percentage range – Continued price pressure in Europe and also in the Asia-Pacific as well as Middle East and Africa regions – Bavencio® and Mavenclad® will contribute visibly to sales growth – Solid organic growth of our Consumer Health business – Negative foreign exchange effect, driven primarily by the exchange rate of the U.S. dollar and currencies of various growth markets
EBITDA pre	1,949.3	– Slight organic decline – Moderately negative foreign exchange effect	– Continued rise in research and development spending due to expected further pipeline development, particularly in immuno-oncology – Increasing marketing and selling expenses – Negative product mix effect due to a decline in sales of Rebif® – Absence of positive one-time effects from 2017 amounting to approximately € 200 million (milestone payments for Bavencio®; one-time payment received for future license payments) – Cost savings owing to the divestment of our Biosimilars business – Increasing earnings contributions from Bavencio® and Mavenclad® – Negative foreign exchange effect, driven primarily by the exchange rate of the U.S. dollar and currencies of various growth markets
Business free cash flow	1,447.9	– Single-digit percentage decline	– Decline in EBITDA pre – Increase in working capital due to product mix effects

NET SALES

For our Healthcare business sector, we expect moderate organic sales growth in 2018. The development of our growth markets in the Latin America, Middle East and Africa, as well as Asia-Pacific regions is expected to contribute to this growth to a large extent. We also assume that the products newly approved in 2017, namely Bavencio® and Mavenclad®, will contribute significantly to growth with sales in the mid double-digit million range and high double-digit million range, respectively. These positive effects should be able to more than offset the expected decline in sales of Rebif® as well as continued price pressure in key markets in Europe, Asia-Pacific, as well as Middle East and Africa. Furthermore, we assume that our Consumer Health business will also contribute to the positive organic sales development. In particular, the U.S. dollar exchange rate and foreign exchange developments in various growth markets should lead to a moderately negative exchange rate effect.

EBITDA PRE

For 2018, we forecast currency-adjusted EBITDA pre of our Healthcare business sector to see a slight percentage decline compared with the previous year. However, the expected negative foreign exchange environment will additionally adversely affect EBITDA pre. Positive one-time effects amounting to approximately € 200 million, which we realized in 2017, will not be incurred in 2018. This includes Bavencio® milestone payments from Pfizer and a one-time payment for future license payments. Continuously rising research and development costs for further pipeline development, particularly in immuno-oncology, will be an additional key driver of the forecast organic development of EBITDA pre. However, this budgeted cost increase will be further updated in the course of the year depending on clinical data and prioritization decisions. We also expect our marketing and selling costs to increase further. In addition, we assume that our product mix will develop unfavorably owing to the expected decline in sales of Rebif®. The divestment of our Biosimilars business in 2017 and the resulting absence of research and development costs as well as increasing contributions from our newly approved products Bavencio® and Mavenclad® will partly offset the expected decline in organic EBITDA pre.

BUSINESS FREE CASH FLOW

In 2018, we expect business free cash flow of our Healthcare business sector to show a single-digit percentage decline. This will be primarily driven by the expected decline in EBITDA pre and the increase in working capital due to product mix effects.

FORECAST FOR OUR LIFE SCIENCE BUSINESS SECTOR

€ million	Actual results 2017	Forecast for 2018	Key assumptions
Net sales	5,881.5	– Solid organic growth, slightly above expected market growth – Moderately negative foreign exchange effect	– Process Solutions is likely to remain the strongest growth driver, followed by Applied Solutions – Research Solutions will also contribute positively to organic sales development, albeit to a smaller extent – No significant portfolio effect from the acquisition of Natrix Separations – Negative foreign exchange effect, particularly owing to the development of the U.S. dollar
EBITDA pre	1,785.8	– Organic earnings growth with a similar dynamic as in 2017 – Moderately negative foreign exchange effect	– Positive development resulting from expected sales growth – Continuation of the planned realization of synergies from the Sigma-Aldrich acquisition – Negative foreign exchange effect, particularly owing to the development of the U.S. dollar
Business free cash flow	1,401.7	– Slightly below the prior-year level	– Improved EBITDA pre – Higher inventories reflect the expected sales growth and changed product mix

NET SALES

For our Life Science business sector, compared with 2017 we forecast further solid organic net sales growth in 2018, which should be slightly above expected market growth. In the medium term, we see annual market growth at approximately 4%. We assume that all business units will contribute positively to organic growth. In 2018, the Process Solutions business unit is again likely to remain the strongest driver of organic growth, followed by Applied Solutions. The Research Solutions business unit should also contribute to the positive sales development, yet to a lesser extent. Additionally, the topline synergies from the Sigma-Aldrich acquisition will contribute to growth as planned. At the end of 2017, we acquired Natrix Separations. The consolidation will not lead to a significant portfolio effect. We assume a moderately negative foreign exchange effect primarily owing to the development of the U.S. dollar.

EBITDA PRE

EBITDA pre of our Life Science business sector in 2018 is likely to see dynamic growth similar to 2017 on a currency-adjusted basis (2017: +8%). This development is in line with the expected development of sales. Furthermore, in 2018 we will assign high priority to continuing the planned realization of cost and sales synergies from the Sigma-Aldrich acquisition. After already having realized synergies of around € 185 million up until 2017, for 2018 we expect further synergies as planned that are likely to have an additional effect of around € 95 million on earnings. We assume that in 2018 we will achieve our planned synergy target of € 280 million for the Sigma-Aldrich acquisition. However, in 2018 organic growth of EBITDA pre of our Life Science business sector is expected to be lowered by moderately negative foreign exchange effects.

BUSINESS FREE CASH FLOW

We expect our Life Science business free cash flow to be slightly below the previous year's level. The higher EBITDA pre will be more than offset by higher inventory levels. These result primarily from expected dynamic sales growth and a changed product mix.

FORECAST FOR OUR PERFORMANCE MATERIALS BUSINESS SECTOR

€ million	Actual results 2017	Forecast for 2018	Key assumptions
Net sales	2,446.0	– Organically slightly to moderately below the year-earlier level – Moderately negative foreign exchange effect	– Volume increase in all businesses; strong dynamics particularly in Advanced Technologies and IC Materials – Market share adjustment and price decline in the Liquid Crystals business – Negative exchange rate effect, especially due to the forecast development of the U.S. dollar and currencies in key Asian markets
EBITDA pre	979.8	– Organic percentage decline in the mid teens range – Moderately negative foreign exchange effect	– The decline in market shares and prices in the Liquid Crystals business cannot be offset by growth of the other businesses and active cost management – Negative foreign exchange effect, particularly owing to the development of the U.S. dollar and currencies in key Asian markets
Business free cash flow	905.8	– Double-digit percentage decline	– Decline in EBITDA pre, sustained high investments in property, plant and equipment and higher inventory levels due to volume increases

NET SALES

We forecast a slight to moderate organic sales decline in our Performance Materials business sector in 2018 compared with 2017. In our estimation, the adjustment processes in our Liquid Crystals business will continue unabated in 2018. This is attributable to the normalization of our market shares, especially in China, which had been unusually high in recent years. This has been recognizable since 2017. Therefore, it is to be expected that the pricing pressure customary in this industry will once again not be offset by the corresponding volume growth in 2018. Despite the meanwhile high degree of diversification of our Performance Materials business sector, in our estimation this development will not be offset by good organic growth in our other business fields. OLED technology (Advanced Technologies) and the semiconductor materials business are expected to show a dynamic development. Due to unfavorable foreign exchange developments, in Performance Materials in 2018 we expect to see a moderately negative foreign exchange effect stemming mainly from the U.S. dollar exchange rate, as well as declines in the value of key Asian currencies.

EBITDA PRE

In 2018, our Performance Materials business sector will probably again be unable to compensate for the expected sales decline in the highly profitable Liquid Crystals business despite the expected good performance of the other business fields as well as high cost discipline. Consequently, we expect that organic EBITDA pre will decline in the mid-teens percentage range in comparison with 2017. The difficult foreign exchange environment, which hits the Performance Materials business especially hard due to its regional positioning, will additionally have a moderately negative impact on the earnings situation.

BUSINESS FREE CASH FLOW

For our Performance Materials business sector, we forecast a decline in business free cash flow in the mid double-digit percentage range. Besides the negative development of EBITDA pre, we expect higher investments in property, plant and equipment as well as high inventory levels due to volume increases.

Summary

For 2018, we expect moderate organic growth of net sales for the Group, which is likely to be driven by the Healthcare and Life Science business sectors. In addition, we assume a moderately negative foreign exchange effect due to the current weakness of the U.S. dollar as well as the development forecast for various currencies in our growth markets. EBITDA pre of the Group is expected to decrease slightly on a currency-adjusted basis in comparison with the previous year. In our Healthcare business sector, we expect a slight organic percentage decline in EBITDA pre. For our Life Science business sector, on a currency-adjusted basis we expect similar growth dynamics of EBITDA pre as in the previous year. For our Performance Materials business sector, we forecast EBITDA pre to decline in the mid-teens percentage range on a currency-adjusted basis. We assume that the currently difficult foreign exchange environment in all three business sectors will lead to a decline in EBITDA pre of between –4% and –6%.

Business free cash flow of the Group is expected to decline in the low double-digit percentage range, above all due to lower EBITDA pre, continuing investments in property, plant and equipment and in digitalization initiatives, as well as higher inventories.

Report in accordance with section 315 (4) of the German Commercial Code (HGB)

The following information is provided in accordance with section 315 (4) of the German Commercial Code and the explanatory report pursuant to section 176 (1) sentence 1 of the German Stock Corporation Act (AktG).

As of the balance sheet date, the company's subscribed capital is divided into 129,242,251 no-par value bearer shares plus one registered share. Each share therefore corresponds to € 1.30 of the share capital. The holder of the registered share is E. Merck Beteiligungen KG, Darmstadt, Germany, a related party of Merck KGaA, Darmstadt, Germany. It is entitled and obliged to appoint one-third of the members of the Supervisory Board representing the limited liability shareholders. If the holder of the registered share is a general partner, he or she has no such right of appointment. The transfer of the registered share requires the company's approval. The approval is granted at the sole discretion of the personally liable general partner with an equity interest, namely E. Merck KG, Darmstadt, Germany.

Pursuant to the information on voting rights submitted to us in accordance with the German Securities Trading Act (WpHG), on December 31, 2017 no shareholders owned direct or indirect investments exceeding more than 10% of the voting rights.

According to the Articles of Association of Merck KGaA, Darmstadt, Germany, the general partners not holding an equity interest who form the Executive Board are admitted by E. Merck KG, Darmstadt, Germany, with the consent of a simple majority of the other general partners. A person may only be a general partner not holding an equity interest if he or she is also a general partner of E. Merck KG, Darmstadt, Germany. In addition, at the proposal of E. Merck KG, Darmstadt, Germany, and with the approval of all general partners not holding an equity interest, further persons who are not general partners not holding an equity interest may be appointed to the Executive Board.

The Articles of Association can be amended by a resolution by the Annual Meeting that requires the approval of the general partners. The resolutions of the General Meeting are, notwithstanding any statutory provisions to the contrary, adopted by a simple majority of the votes cast. Where the law requires a capital majority in addition to the voting majority, resolutions are adopted by a simple majority of the share capital represented in the vote. The Articles of Association of the company encompass authorized and contingent capital.
The Executive Board is authorized to increase the company's share capital with the approval of the Supervisory Board and of E. Merck KG, Darmstadt, Germany, once or repeatedly up to and including April 27, 2022 by up to a total of € 56,521,124.19 by issuing new no-par value bearer shares against cash and/or non-cash contributions ("Authorized Capital 2017"). Limited liability shareholders shall be generally granted the statutory right to subscribe to the new shares.

However, the Executive Board is authorized, with the approval of the Supervisory Board, to exclude the limited liability shareholders' subscription right in full or in part in case of a capital increase against cash contributions pursuant to or by analogous application of section 186 (3) sentence 4 AktG, if the issue price of the new shares is not substantially lower than the stock exchange price of the company's shares already listed and if the new shares which are issued under exclusion of the subscription right do not exceed a proportional amount of 10% of the share capital either at the time of the Authorized Capital 2017 taking effect or at the time of the Authorized Capital 2017 being utilized. This restriction to 10% of the share capital shall include the proportional amount of the share capital that is attributable to shares which are issued under exclusion of the subscription right or sold during the term of the Authorized Capital 2017 based on an authorization to issue new shares or sell own shares by direct or analogous application of section 186 (3) sentence 4 AktG. Further, this restriction shall also include the proportional amount of the share capital that is attributable to shares which may or must be issued in order to service bonds carrying a conversion or option right or a conversion or option obligation, if the bonds are issued during the term of the Authorized Capital 2017 under exclusion of the limited liability shareholders' subscription right by analogous application of section 186 (3) sentence 4 AktG.

It is likewise possible to exclude the subscription right of the limited liability shareholders with the approval of the Supervisory Board in the case of capital increases through non-cash contributions, particularly for the purpose of acquiring enterprises, parts of enterprises or interests in enterprises.

In addition, with the approval of the Supervisory Board, the limited liability shareholders' subscription rights can be excluded in order to enable E. Merck KG, Darmstadt, Germany, to exercise its right pursuant to Article 32 (3) of the Articles of Association of the company to participate in a capital increase by issuing shares or freely transferable share subscription rights.
It is likewise possible to exclude, with the approval of the Supervisory Board, the subscription right of the limited liability shareholders in order to enable E. Merck KG, Darmstadt, Germany, to exercise its right pursuant to Article 33 of the Articles of Association to convert, in full or in part, its equity interest into share capital.

Moreover, with the approval of the Supervisory Board, the subscription right of the limited liability shareholders can be excluded if and to the extent this is necessary to grant the holders or creditors of conversion or option rights and/or the holders or creditors of financing instruments carrying conversion or option obligations, which were or are issued by the company or by a domestic or foreign company in which the company directly or indirectly holds the majority of the votes and capital, a subscription right to the extent to which they would be entitled after the exercise of the conversion or option rights or after the performance of a conversion or option obligation.

Lastly, with the approval of the Supervisory Board, the subscription right of the limited liability shareholders can be excluded in order to exclude fractional amounts from the subscription right.

The sum of shares issued on the basis of the Authorized Capital 2017 under exclusion of the limited liability shareholders' subscription right must not exceed a proportional amount of 20% of the share capital, by taking into account other shares of the company which, during the term of the Authorized Capital 2017, are sold or issued under exclusion of the subscription right or are to be issued under bonds issued after April 28, 2017 under exclusion of the subscription right; this limitation shall apply both at the time of this authorization taking effect and at the time of this authorization being exercised.

To the extent that the subscription right is not excluded under the above provisions, it may also be granted to the limited liability shareholders by way of an indirect subscription right pursuant to section 186 (5) AktG or, in part, by way of a direct subscription right, and otherwise by way of an indirect subscription right pursuant to section 186 (5) AktG.

Furthermore, the Executive Board is authorized, with the approval of the Supervisory Board, to determine the additional details of the capital increase and its implementation, including the content of rights attached to the shares as well as the terms and conditions of the share issue.

The Articles of Association also encompass contingent capital. The share capital is contingently increased by up to € 66,406,298.40 divided into 51,081,768 shares (Contingent Capital I). The contingent capital increase serves to grant exchange rights to E. Merck KG, Darmstadt, Germany, in accordance with Article 33 of the Articles of Association to enable the conversion of its equity interest. The shares carry dividend rights from the beginning of the fiscal year following the year in which the conversion option is exercised.

Moreover, the share capital is contingently increased by up to € 16,801,491.20 composed of up to 12,924,224 no par value bearer shares (Contingent Capital II). This increase in contingent capital is only to be implemented insofar as the bearers or creditors of option or conversion rights or the conversion obligations on warrant bonds, option participation certificates, option participation bonds, convertible bonds, convertible participation certificates or convertible participation bonds issued against contributions that are issued or guaranteed by the company or a subordinate Group company on the basis of the authorization resolution of the Annual General Meeting of May 9, 2014 to May 8, 2019, utilize their option or conversion rights or, to fulfill their conversion obligation insofar as they are obliged to fulfill their conversion obligation, or insofar as the company exercises an option, wholly or in part, of granting shares in the company instead of paying the sum of money due and to the extent that in each case a cash settlement is not granted, or own shares or other forms of fulfillment are used. Each issue of new shares shall take place at the determined option or conversion price, pursuant to the aforementioned authorization resolution. The new shares participate in the profit from the beginning of the fiscal year in which they are created; insofar as this is legally permissible, the Executive Board may, with the approval of the Supervisory Board, and in deviation from section 60 (2) AktG, stipulate that the new shares also participate in the profit for a past fiscal year. The Executive Board is authorized, with the approval of the Supervisory Board and of E. Merck KG, Darmstadt, Germany, to stipulate the further details of the implementation of the increase in contingent capital.

The company is not authorized to acquire its own shares.

The company has not entered into any material agreements subject to a change of control pursuant to a takeover offer nor has it entered into any compensation agreements with the members of the Executive Board or employees in the event of a takeover offer.

Additional information in accordance with the German Commercial Code (HGB)

The management report of Merck KGaA, Darmstadt, Germany, has been combined with the Group management report. The annual financial statements and the combined management reports of the Group and Merck KGaA, Darmstadt, Germany, for 2017 are being filed with the electronic German Federal Gazette (elektronischer Bundesanzeiger) and are available on the website of the German company register.

Statement on Corporate Governance

The Statement on Corporate Governance according to section 289a HGB is contained in the Corporate Governance section of this report.

Effects of company agreements on the net assets, financial position and results of operations

OPERATING ACTIVITIES OF THE BUSINESS SECTORS

As part of the strategic further development of Merck KGaA, Darmstadt, Germany, it is planned to spin off the existing operating activities of the Healthcare, Performance Materials and Life Science business sectors into three separate companies with the legal form of a GmbH or German limited liability corporation (hereinafter: "OpCo" or plural "OpCos"). The spin-off of the business sectors to these OpCo target companies domiciled in Darmstadt must be approved by the General Meeting of Merck KGaA, Darmstadt, Germany, in April 2018. Following approval by the General Meeting, the three business sectors are to be spun off with retroactive effect from January 1, 2018.

Combined control and profit and loss transfer agreements already exist between the respective OpCos. Going forward, these agreements are to remain in effect. Consequently, in the future there will still be one company for corporation tax, trade tax and turnover tax purposes. In the future, each OpCo will be owned by a business-sector-relevant intermediate holding company, each of which is a wholly owned subsidiary of Merck KGaA, Darmstadt, Germany.

Since the technical system requirements to report the business sectors spun off as regards the OpCos are not yet in place, the business sectors spun off are to be temporarily leased back to the Group until the ERP systems of the respective OpCos are introduced. For this purpose, Merck KGaA, Darmstadt, Germany, is entering into a business leasing contract with the respective OpCo with retrospective effect from January 1, 2018. Until the technical system requirements have been implemented, owing to the business lease Merck KGaA, Darmstadt, Germany, will record business transactions in its own name and on its own behalf. Once the ERP systems have been introduced for each OpCo, the business lease will be terminated and the business will be taken over in full.

BUSINESS SPLIT AND TRANSFER TO MERCK REAL ESTATE GMBH, DARMSTADT, GERMANY, A SUBSIDIARY OF MERCK KGAA, DARMSTADT, GERMANY

The real estate and properties of Merck KGaA, Darmstadt, Germany, are rented based on a general rental agreement with effect on December 15, 2017 from Merck KGaA, Darmstadt, Germany to Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. A combined control and profit and loss transfer agreement exists between Merck KGaA, Darmstadt, Germany, and Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. Therefore, Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, is one of the companies in fiscal unity with Merck KGaA, Darmstadt, Germany.

Within the scope of this reorganization, 111 employees of Merck KGaA, Darmstadt, Germany, were taken on by Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. The transferred assets and liabilities are presented in the overview at the end of this section. The impact on the income statement of Merck KGaA, Darmstadt, Germany, was only immaterial in 2017.

SEPARATION OF THE CONSUMER HEALTH BUSINESS

By way of the transfer agreement dated August 31, 2017, Merck KGaA, Darmstadt, Germany, transferred to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, with retroactive effect from January 1, 2017 and via Merck Consumer Health Holding Germany GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, its Consumer Health business along with all the allocable business assets, rights and duties in the course of a so-called chain transfer. The separation serves to prepare the strategic repositioning of the Consumer Health business within the Group.

The operations of Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, were immediately leased back to Merck KGaA, Darmstadt, Germany, after the transfer to Merck KGaA, Darmstadt, Germany. The lease fee amounted to € 1.3 million in 2017. Additionally, the effects on the income statement of the company are not material. Employees were not transferred to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany.

The following overview presents the assets and liabilities transferred from Merck KGaA, Darmstadt, Germany, to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, with retroactive effect from January 1, 2017.

€ million	Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany	Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany
Transferred assets		
A. Tangible assets		
Software	–	0.0
Buildings	1.4	–
Plant and machinery, other facilities	4.6	0.4
Construction in progress	1.5	–
	7.5	**0.4**
B. Current assets		
Inventories	4.4	–
Trade accounts receivable	0.5	–
Other receivables and other assets	1.4	–
	6.3	**–**
Total assets	**13.8**	**0.4**
Transferred liabilities		
A. Provisions		
Provisions for pensions and other post-employment benefits	–	0.6
Other provisions	1.5	1.4
	1.5	**2.0**
B. Liabilities		
Trade accounts payable	1.0	–
Other liabilities	–	–
	1.0	**–**
Total liabilities	**2.5**	**2.0**
Total transferred assets less liabilities	**11.3**	**–1.6**

Business development

In 2017, Merck KGaA, Darmstadt, Germany, sales increased by € 342 million. The increase resulted from the Healthcare and Life Science business sectors as well as other sales. By contrast, sales of the Performance Materials business sector declined slightly:

			Change	
€ million	**2017**	2016	€ million	in %
Healthcare	2,404	2,232	172	7.7%
Life Science	777	710	67	9.4%
Performance Materials	1,399	1,407	–8	–0.6%
Other sales	228	116	112	96.5%
Total sales	**4,807**	**4,465**	**342**	**7.7%**

Other sales mainly included intragroup cross-charging for IT services and other administration services. The increase was due to higher ongoing costs for IT projects.

The share of sales with other Group companies (Group sales) amounted to 93.6% in 2017 (2016: 91.0%).

			Change	
€ million	**2017**	2016	€ million	in %
Group sales	4,500	4,063	437	10.8%
Sales to third parties	307	402	–95	–23.6%
Total	**4,807**	**4,465**	**342**	**7.7%**

At 90.3% (2016: 89.4%), the share of exports in 2017 was slightly above the previous year's level.

			Change	
€ million	**2017**	2016	€ million	in %
Outside Germany	4,341	3,990	351	8.8%
Germany	467	475	–8	–1.7%
Total	**4,807**	**4,465**	**342**	**7.7%**

In the Healthcare business sector, the increase in sales was primarily due to an agreement on a one-time payment for future license payments. Sales of products, on the other hand, remained almost unchanged. The increase in sales of cardiovascular therapies (+14.8%) was approximately offset by a decline in sales of the oncology drug Erbitux (–7.5%). Thyroid therapies generated a slight rise in sales (+2.5%). Overall, the business sector recorded sales declines in the region of Europe, offset by a sales increase in the Asia-Pacific region.

In Performance Materials, sales by the Display Materials business unit did not reach the previous year's level. The sales increases in the other two business units Pigments & Functional Materials (+10.6%) and Advanced Technologies (+8.3%) did not compensate for this. Sales declines were recorded particularly in the Asia-Pacific region. This was offset by a slight increase in the regions of Europe and North and Latin America.

In 2017, sales by the Life Science business sector increased by 9.4%. Growth was generated by all three business units, whereby Process Solutions accounted for the largest share of growth (+14%). The largest sales increases were recorded in the regions of Europe, North and Latin America, as well as Asia-Pacific.

RESULTS OF OPERATIONS

			Change	
€ million	**2017**	2016	€ million	in %
Sales	4,807	4,465	343	7.7%
Other income	212	185	27	14.3%
Cost of materials	–1,505	–1,488	–17	1.1%
Personnel expenses	–1,258	–1,055	–203	19.2%
Depreciation, amortization, write-downs and impairment losses	–183	–176	–7	4.2%
Other operating expenses	–1,801	–1,726	–75	4.3%
Investment income/Write-downs of financial assets	847	659	188	28.6%
Financial result	–201	–243	41	–17.1%
Profit before profit transfers and taxes	**917**	**621**	**296**	**47.7%**
Profit transfers	–533	–400	–153	38.2%
Taxes	–193	–65	–128	196.9%
Profit after profit transfers and taxes/Net income	**171**	**156**	**15**	**9.8%**

The increase in **other income** was mainly attributable to higher income from increased inventories of work in progress and finished goods.

The **cost of materials** increased slightly. The cost of materials in relation to sales amounted to 31.3% (2016: 33.3%).

The increase in **personnel expenses** was due to higher pension expenses, on the one hand. The increase in pension expenses resulted from an adjustment in 2016 of the actuarial interest rate used for the measurement of pension provisions. Due to the law on implementation of the directive on credit agreements relating to residential immovable property and on the amendment of provisions of commercial law, in 2016 the specified period for measurement of the average market interest rate was extended from seven to ten years. This resulted in lower pension expenses in 2016. On the other hand, wages and salaries increased as a result of the collectively agreed pay increase and the higher number of employees.

Depreciation, amortization, write-downs and impairment losses increased slightly by 4.2% as a result of higher fixed assets.

The rise in **other operating expenses** was due to increased sales and marketing activities as well as higher expenses in connection with provisions for litigation risks.

Investment income improved mainly as a result of a higher dividend payment from Merck Holding GmbH, Gernsheim, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany.

The **financial result** improved overall owing to higher interest income from plan assets, which are offset against the interest component of the addition to pension provisions.

NET ASSETS AND FINANCIAL POSITION

ASSETS

€ million	Dec. 31, 2017	Dec. 31, 2016	Change € million	Change in %
Fixed assets	**18,148**	**17,563**	**585**	**3.3%**
Intangible assets	490	250	240	95.9%
Tangible assets	1,173	1,003	170	16.9%
Financial assets	16,486	16,310	176	1.1%
Current assets	**1,763**	**1,504**	**259**	**17.2%**
Inventories	688	635	53	8.4%
Trade accounts receivable	181	291	–110	–37.7%
Receivables and other assets	892	576	316	54.8%
Cash and cash equivalents	1	2	–1	–50.0%
Prepaid expenses	**28**	**28**	**0**	**0.0%**
	19,940	**19,095**	**845**	**4.4%**

LIABILITIES

€ million	Dec. 31, 2017	Dec. 31, 2016	Change € million	Change in %
Net equity	**5,328**	**5,290**	**38**	**0.7%**
Provisions	**1,312**	**1,034**	**278**	**26.9%**
Provisions for pensions and other post-employment benefits	200	80	120	150.5%
Other provisions	1,112	954	158	16.6%
Liabilities	**13,281**	**12,769**	**512**	**4.0%**
Financial obligations	1,500	1,500	–	0.0%
Trade accounts payable	292	260	32	12.3%
Other liabilities	11,489	11,009	480	4.4%
Deferred income	**18**	**2**	**16**	**800.0%**
	19,940	**19,095**	**845**	**4.4%**

The net assets and financial position of Merck KGaA, Darmstadt, Germany, changed only slightly in comparison with the previous year. With a 4.4% increase in total assets, the equity ratio amounted to 26.7% (2016: 27.7%).

At the Darmstadt site, the construction project to expand global headquarters made further progress. This significantly contributed to the increase in tangible assets.

The increase in financial assets was due to a payment made to the capital reserve of Merck 12. Allgemeine Beteiligungs-GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, in 2017.

The increase in current assets (+€ 259 million) was mainly attributable to higher receivables from affiliates for short-term loans. By contrast, tax receivables declined.

The increase in other provisions (+€ 158 million) was mainly due to higher provisions for income taxes and for legal risks.

The rise in other liabilities resulted primarily from the clearing account with Merck Financial Services GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany.

Research and development

In 2017, research and development spending on projects of Merck KGaA, Darmstadt, Germany, and other Group companies totaled € 685 million (2016: € 751 million). A large portion was also incurred by companies outside the Group. In Darmstadt, Healthcare mainly focuses on oncology as well as autoimmune and inflammatory diseases. The decline of € 75 million in R&D spending by the Healthcare business sector was reflected in the decline of € 66 million in overall R&D spending (–8.8%). At the same time, the Healthcare business sector accounted for 59.6% (2016: 64.3%) and thus the largest proportion of research and development spending. The Performance Materials business sector focuses its research activities on developing new and improved basic materials and mixtures for LC displays, as well as for innovative OLED applications. To strengthen the Pigments business, new effect pigments for the automotive, cosmetics and printing ink sectors have been developed. In the Life Science business sector, research activities focused in particular on technologies for laboratory and life science applications, and new developments were driven forward. These included improved test kits, chromatography methods, substrates for separating active substances, and innovations in the fields of microbiology and hygiene monitoring.

			Change	
€ million	**2017**	2016	€ million	in %
Healthcare	408	483	–75	–15.5%
Life Science	35	39	–4	–10.3%
Performance Materials	220	223	–3	–1.3%
Other R&D spending that cannot be allocated to the individual business sectors	22	6	16	266.7%
Total	**685**	**751**	**–66**	**–8.8%**

The ratio of research and development spending to sales was 14.3% (2016: 16.8%). Overall, the average number of employees working in research and development was 2,515. Merck KGaA, Darmstadt, Germany, is one of the main research sites of the Group, accounting for a share of 32.0% (2016: 38.0%) of total Group research and development spending. The decrease in this share was due on the one hand to lower research and development costs of Merck KGaA, Darmstadt, Germany, and on the other hand to higher research and development costs of the Group.

Dividend

For 2017, we are proposing to the General Meeting the payment of a dividend of € 1.25 per share.

Personnel

As of December 31, 2017, Merck KGaA, Darmstadt, Germany, had 10,677 employees, which was an increase over the previous year (2016: 9,988).

Average number of employees by functional area:

PERSONNEL

Average number of employees during the year	**2017**	2016
Production	3,536	3,270
Administration	3,072	2,881
Research	2,515	2,320
Logistics	648	624
Sales and marketing	574	531
Other	128	118
Total	**10,473**	**9,744**

Risks and opportunities

Merck KGaA, Darmstadt, Germany, is largely subject to the same opportunities and risks as the Group. More information can be found in the Report on Risks and Opportunities.

Forecast for Merck KGaA, Darmstadt, Germany

DEVIATIONS OF ACTUAL BUSINESS DEVELOPMENTS IN 2017 FROM THE PREVIOUSLY REPORTED GUIDANCE:

In 2016, sales were forecast to increase slightly in all three business sectors in fiscal 2017.

The sales increase in the Healthcare business sector (+7.7%) was mainly the result of higher license income. Sales of products increased slightly over the previous year's level as additional sales of cardiovascular therapies (+14.8%) offset the decline in sales of the oncology drug Erbitux (−7.5%).

Sales by the Life Science business sector increased significantly (+9.4%). All business units, Research Solutions (+6.6%), Applied Solutions (+6.7%) and Process Solutions (+14.0%), contributed to sales growth.

Continued high competitive pressure in the Liquid Crystals business led to a slight decline in Performance Materials sales (−0.6%). The decline in the Display Materials business unit (−4.8%) was not fully offset by sales increases in the Pigments & Functional Materials (+10.6%) and Advanced Technologies (+8.3%) business units.

A further rise in net income was mainly due to higher sales and improved investment income. The increase in investment income was mainly attributable to a higher dividend payment from Merck Holding GmbH, Gernsheim, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. On the expenses side, this was offset by higher expenses in connection with legal risks, resulting in an overall increase in net income of 9.8%.

The financial resources for the company continue to be provided by Merck Financial Services GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany.

Forecast 2018

For fiscal 2018, slight sales increases are expected for the Life Science and Healthcare business sectors. Sales by the Performance Materials business sector, however, are expected to decline slightly.

As in 2016, the financing costs of the Sigma-Aldrich acquisition continue to adversely affect net income. Nevertheless, positive investment income and dividend payments from subsidiaries will lead again to a slight increase in net income. Merck Financial Services GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany will provide the company with sufficient financial resources and thus ensure liquidity.

Currently no risks can be identified that could jeopardize the continued existence of the company.

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Balance Sheet as of December 31, 2017

ASSETS

€ million	Note	Dec. 31, 2017	Dec. 31, 2016
Fixed assets			
Intangible assets	→ 1	489.7	249.7
Tangible assets	→ 2	1,173.0	1,002.9
Financial assets	→ 3	16,485.7	16,310.1
		18,148.4	**17,562.7**
Current assets			
Inventories	→ 4	**688.3**	**635.4**
Receivables and other assets			
Trade accounts receivable	→ 5	181.3	290.9
Other receivables and other assets	→ 6	891.6	576.3
Cash and cash equivalents	→ 7	1.4	1.9
		1,074.3	**869.1**
		1,762.6	**1,504.5**
Prepaid expenses	→ 8	**28.5**	**27.7**
		19,939.5	**19,094.9**

EQUITY AND LIABILITIES

€ million	Note	Dec. 31, 2017	Dec. 31, 2016
Net equity	→ 9		
Subscribed capital		168.0	168.0
General partner's capital		397.2	397.2
Capital reserves		3,813.7	3,813.7
Retained earnings		701.6	701.6
Profit carried forward: E. Merck KG, Darmstadt, Germany		60.3	38.5
Net retained profit: shareholders		187.1	171.3
		5,327.9	**5,290.3**
Provisions	→ 10		
Provisions for pensions and other post-employment benefits		200.4	80.1
Other provisions		1,112.1	953.6
		1,312.5	**1,033.7**
Liabilities	→ 11		
Financial obligations	→ 12	1,500.0	1,500.0
Trade accounts payable	→ 13	292.1	260.2
Other liabilities	→ 14	11,489.1	11,008.7
		13,281.3	**12,768.9**
Deferred income		**17.9**	**2.0**
		19,939.5	**19,094.9**

Income Statement for the period from January 1 to December 31, 2017

€ million	Note	2017	2016
Sales	→ 15	**4,807.2**	**4,464.7**
Changes in inventories		21.2	8.6
Other own work capitalized		33.9	32.7
Other operating income	→ 16	157.0	144.1
Total operating income		**5,019.3**	**4,650.1**
Cost of materials	→ 17	–1,505.5	–1,488.1
Personnel expenses	→ 18	–1,258.3	–1,055.4
Depreciation, amortization, write-downs and impairment losses		–183.2	–175.8
Other operating expenses	→ 19	–1,800.7	–1,725.4
Total operating expenses		**–4,747.7**	**–4,444.7**
Income/Expenses from investments	→ 20	846.8	658.5
Write-downs of financial assets	→ 21	–0.2	–
Financial result	→ 22	–201.4	–242.8
Profit transferred to E. Merck KG, Darmstadt, Germany	→ 23	–547.9	–398.5
Profit transferred from E. Merck KG, Darmstadt, Germany	→ 23	–4.7	–1.6
Income tax	→ 24	–193.3	–65.1
Profit after tax/Net income		**170.9**	**155.9**

Statement of Changes in Fixed Assets

€ million	Intangible assets	Tangible assets	Financial assets	**Total**
Accumulated acquisition cost as of Jan. 1, 2017	**945.9**	**3,332.2**	**16,346.2**	**20,624.3**
Additions	301.7	302.6	176.9	781.2
Disposals	–4.3	–144.3	–1.1	–149.7
Transfers	0.6	–0.6	–	–
Accumulated acquisition cost as of Dec. 31, 2017	**1,243.9**	**3,489.9**	**16,522.0**	**21,255.8**
Accumulated depreciation, amortization, write-downs and impairment losses as of Jan. 1, 2017	**696.2**	**2,329.3**	**36.1**	**3,061.6**
Depreciation, amortization, write-downs and impairment losses	62.2	121.0	0.2	183.4
Disposals	–4.2	–133.4	–	–137.6
Write-ups	–	–	–	–
Accumulated depreciation, amortization, write-downs and impairment losses as of Dec. 31, 2017	**754.2**	**2,316.9**	**36.3**	**3,107.4**
Net carrying amount as of Dec. 31, 2017	**489.7**	**1,173.0**	**16,485.7**	**18,148.4**

Notes to the Annual Financial Statements

General Disclosures

The annual financial statements of MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany, have been prepared in accordance with the provisions of the German Commercial Code (Handelsgesetzbuch, HGB) applicable to large corporations, the German Stock Corporation Act (Aktiengesetz, AktG) and the supplementary provisions of the Articles of Association.

The income statement has been prepared in accordance with the total cost (nature of expense) method. Deferred taxes have not been reported as there is an excess of deferred tax assets. Plan assets are offset against the relevant provisions in accordance with section 246 HGB. For details, please see the Notes to the items of the balance sheet and the income statement. Merck KGaA, Darmstadt, Germany, prepares consolidated financial statements, which are contained in the Annual Report of the Group. In addition, Merck KGaA, Darmstadt, Germany, is included in the consolidated financial statements of E. Merck KG, Darmstadt, Germany. Both sets of financial statements are filed with the German Federal Gazette (Bundesanzeiger) and are available at www.bundesanzeiger.de.

Certain items of the balance sheet and income statement have been combined in order to enhance the clarity of presentation. These items are shown separately in the Notes.

Effects of company agreements on the net assets, financial position and results of operations

OPERATING ACTIVITIES OF THE BUSINESS SECTORS

As part of the strategic further development of Merck KGaA, Darmstadt, Germany, it is planned to spin off the existing operating activities of the Healthcare, Performance Materials and Life Science business sectors into three separate companies with the legal form of a GmbH or German limited liability corporation (hereinafter: "OpCo" or plural "OpCos"). The spin-off of the business sectors to these OpCo target companies domiciled in Darmstadt must be approved by the General Meeting of Merck KGaA, Darmstadt, Germany, in April 2018. Following approval by the General Meeting, the three business sectors are to be spun off with retroactive effect from January 1, 2018.

Combined control and profit and loss transfer agreements already exist between the respective OpCos. Going forward, these agreements are to remain in effect. Consequently, in the future there will still be a company for corporation tax, trade tax and turnover tax purposes. In the future, each OpCo will be owned by a business-sector-relevant intermediate holding company, each of which is a wholly owned subsidiary of Merck KGaA, Darmstadt, Germany.

Since the technical system requirements to report the business sectors spun off as regards the OpCos are not yet in place, the business sectors spun off are to be temporarily leased back to the Group until the ERP systems of the respective OpCos are introduced. For this purpose, Merck KGaA, Darmstadt, Germany, is entering into a business leasing contract with the respective OpCo with retrospective effect from January 1, 2018. Until the technical system requirements have been implemented, owing to the business lease, Merck KGaA, Darmstadt, Germany, will record business transactions in its own name and on its own behalf. Once the ERP system have been introduced for each OpCo, the business lease will be terminated and the business will be taken over in full.

BUSINESS SPLIT AND TRANSFER TO MERCK REAL ESTATE GMBH, DARMSTADT, GERMANY, A SUBSIDIARY OF MERCK KGAA, DARMSTADT, GERMANY

The real estate and properties of Merck KGaA, Darmstadt, Germany, are rented based on a general rental agreement with effect on December 15, 2017, from Merck KGaA, Darmstadt, Germany. to Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. A combined control and profit and loss transfer agreement exists between Merck KGaA, Darmstadt, Germany, and Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. Therefore, Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, is one of the companies in fiscal unity with Merck KGaA, Darmstadt, Germany.

Within the scope of this reorganization, 111 employees of Merck KGaA, Darmstadt, Germany, were taken on by Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany. The transferred assets and liabilities are presented in the overview at the end of this section. The impact on the income statement of Merck KGaA, Darmstadt, Germany, was only immaterial in 2017.

SEPARATION OF THE CONSUMER HEALTH BUSINESS

By way of the transfer agreement dated August 31, 2017, Merck KGaA, Darmstadt, Germany, transferred to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, with retroactive effect from January 1, 2017 and via Merck Consumer Health Holding Germany GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, its Consumer Health business along with all the allocable business assets, rights and duties in the course of a so-called chain transfer. The separation serves to prepare the strategic repositioning of the Consumer Health business within the Group.

The operations of Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, were immediately leased back to Merck KGaA, Darmstadt, Germany, after the transfer to Merck KGaA, Darmstadt, Germany. The lease fee amounted to € 1.3 million in 2017. Additionally, the effects on the income statement of the company are not material. Employees were not transferred to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany.

The following overview presents the assets and liabilities transferred from Merck KGaA, Darmstadt, Germany, to Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, with retroactive effect from January 1, 2017.

€ million	Merck Consumer Health GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany	Merck Real Estate GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany
Transferred assets		
A. Tangible assets		
Software	–	0.0
Buildings	1.4	–
Plant and machinery, other facilities	4.6	0.4
Construction in progress	1.5	–
	7.5	**0.4**
B. Current assets		
Inventories	4.4	–
Trade accounts receivable	0.5	–
Other receivables and other assets	1.4	–
	6.3	**–**
Total assets	**13.8**	**0.4**
Transferred liabilities		
A. Provisions for pensions and similar obligations	–	0.6
B. Other provisions	1.5	1.4
	1.5	**2.0**
C. Liabilities		
Trade accounts payable	1.0	–
Other liabilities	–	–
	1.0	**–**
Total liabilities	**2.5**	**2.0**
Total transferred assets less liabilities	**11.3**	**–1.6**

Notes to the Balance Sheet

(1) Intangible assets

€ million	Concessions, industrial property rights and similar rights and assets, as well as licenses to such rights and assets	Goodwill	Advance payments	**Total**
Accumulated acquisition cost as of Jan. 1, 2017	**843.7**	**13.5**	**88.7**	**945.9**
Additions	264.2	–	37.5	**301.7**
Disposals	–4.3	–	–	**–4.3**
Transfers	71.9	–	–71.3	**0.6**
Accumulated acquisition cost as of Dec. 31, 2017	**1,175.5**	**13.5**	**54.9**	**1,243.9**
Accumulated amortization, write-downs and impairment losses as of Jan. 1, 2017	**682.7**	**13.5**	–	**696.2**
Amortization, write-downs and impairment losses	62.2	–	–	**62.2**
Disposals	–4.2	–	–	**–4.2**
Write-ups	–	–	–	**–**
Accumulated amortization, write-downs and impairment losses as of Dec. 31, 2017	**740.7**	**13.5**	**–**	**754.2**
Net carrying amount as of Dec. 31, 2017	**434.8**	**–**	**54.9**	**489.7**

Acquired intangible assets are carried at cost less straight-line amortization. In the case of concessions, industrial property rights, licenses, patents and software, the useful life is between 3 and 15 years. Goodwill acquired indirectly is amortized over a period of 5 years. Write-downs are charged in the event of expected lasting impairment.

In 2017, impairment losses on intangible assets totaled € 14.3 million (2016: € 12.0 million), mainly relating to licenses and rights of use in the Healthcare business sector.

(2) Tangible assets

€ million	Land, land rights and buildings, including buildings on third-party land	Plant and machinery	Other facilities, operating and office equipment	Construction in progress and advance payments to vendors and contractors	Total
Accumulated acquisition and production costs as of Jan. 1, 2017	**821.1**	**1,618.4**	**695.7**	**197.0**	**3,332.2**
Additions	2.9	16.2	34.0	249.5	302.6
Disposals[1]	−14.0	−105.5	−20.8	−4.0	−144.3
Transfers	3.9	35.1	19.8	−59.4	−0.6
Accumulated acquisition and production costs as of Dec. 31, 2017	**813.9**	**1,564.2**	**728.7**	**383.1**	**3,489.9**
Accumulated depreciation, write-downs and impairment losses as of Jan. 1, 2017	**432.2**	**1,341.5**	**553.9**	**1.7**	**2,329.3**
Depreciation, write-downs and impairment losses	23.2	49.5	48.3	–	121.0
Disposals[1]	−12.8	−101.2	−19.4	–	−133.4
Write-ups	–	–	–	–	–
Accumulated depreciation, write-downs and impairment losses as of Dec. 31, 2017	**442.6**	**1,289.8**	**582.8**	**1.7**	**2,316.9**
Net carrying amount as of Dec. 31, 2017	**371.3**	**274.4**	**145.9**	**381.4**	**1,173.0**

[1] Includes transfers to Merck Real Estate and Merck Consumer Health, both susidiaries of Merck KGaA, Darmstadt, Germany.

Tangible assets are carried at the cost of acquisition or manufacture less depreciation for wear and tear. In the case of internally generated tangible assets, the cost of manufacture is calculated on the basis of directly attributable unit costs plus an appropriate share of overheads.

Production facilities are depreciated over a period of 25 years, administrative and social buildings over 33 and 40 years. The useful life of plant is mainly between 10 and 15 years. The useful life of other tangible assets is between 2 and 20 years. Impairment losses are charged in the event of expected lasting impairment. In 2017, they totaled € 0.4 million (2016: € 3.5 million).

(3) Financial assets

	Investments in:		Loans to:		
€ million	affiliates	other companies	affiliates	Other	**Total**
Accumulated acquisition cost as of Jan. 1, 2017	**16,340.0**	**1.3**	**–**	**5.0**	**16,346.2**
Additions	176.4	0.4	–	0.1	176.9
Disposals	–	–	–	–1.1	–1.1
Transfers	–	–	–	–	–
Accumulated acquisition cost as of Dec. 31, 2017	**16,516.3**	**1.7**	**–**	**4.0**	**16,522.0**
Accumulated amortization, write-downs and impairment losses as of Jan. 1, 2017	**35.3**	**0.8**	**–**	**–**	**36.1**
Depreciation, write-downs and impairment losses	0.1	0.1	–	–	0.2
Disposals	–	–	–	–	–
Write-ups	–	–	–	–	–
Accumulated amortization, write-downs and impairment losses as of Dec. 31, 2017	**35.4**	**0.9**	**–**	**–**	**36.3**
Net carrying amount as of Dec. 31, 2017	**16,480.9**	**0.8**	**–**	**4.0**	**16,485.7**

Financial assets are carried at cost less any write-downs required to the lower fair value. The list of shareholdings can be found in the section “List of Shareholdings of Merck KGaA, Darmstadt, Germany“ in the Notes to the Annual Financial Statements on pages 142 to 161.

In 2017, a payment of € 164.6 million was made to the capital reserve of Merck 12. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany.

(4) Inventories

€ million	Dec. 31, 2017	Dec. 31, 2016
Raw materials and production supplies	143.5	149.9
Work in progress	161.2	129.1
Finished goods and goods purchased for resale	378.4	354.0
Advance payments	5.2	2.4
	688.3	**635.4**

Work in progress and finished goods are carried at the cost of manufacture, which includes materials and production overheads, as well as appropriate amounts of depreciation charges on production facilities and directly attributable unit costs. Other inventories are carried at cost in compliance with the principle of the lower of cost or market. Where necessary, inventories are written down to the lower fair value.

(5) Trade accounts receivable

€ million	Total Dec. 31, 2017	thereof due after more than 1 year	Total Dec. 31, 2016	thereof due after more than 1 year
Receivables from affiliates	110.2	–	211.2	–
Receivables from other companies	71.1	–	79.7	–
	181.3	–	**290.9**	–

Trade accounts receivable are carried at their principal amount. Adequate specific and global valuation allowances are charged for default and transfer risks unless these are covered by insurance. Short-term receivables denominated in foreign currencies were translated at the closing rates.

(6) Other receivables and other assets

€ million	Total Dec. 31, 2017	thereof due after more than 1 year	Total Dec. 31, 2016	thereof due after more than 1 year
Receivables from affiliates	587.2	–	242.5	–
– thereof from the general partner E. Merck KG, Darmstadt, Germany	(–)	(–)	(–)	(–)
Receivables from other companies	164.0	–	151.2	–
Tax receivables	131.8	–	180.9	–
Other assets	8.6	–	1.7	–
	891.6	–	**576.3**	–

Other receivables and other assets are carried at their principal amount. Any default or other risks are covered by appropriate valuation allowances. Short-term receivables denominated in foreign currencies were translated at the closing rates. This item principally relates to clearing accounts and short-term loans with other companies of the Group, recoverable taxes, and other advance payments.

(7) Cash and cash equivalents

Cash and cash equivalents relate principally to credit balances at various banks in a variety of currencies. Foreign currency amounts are measured at the closing rate.

(8) Prepaid expenses

Prepaid expenses comprise amounts that will only be expensed after the end of the reporting period. This item mainly includes IT services as well as a discount of € 4.0 million (2016: € 5.1 million).

(9) Net equity

The share capital is reported under subscribed capital. The total capital consists of the share capital (Article 5 (1) of the company's Articles of Association) of € 168,014,927.60, composed of shares, and the equity interest held by the general partner E. Merck KG, Darmstadt, Germany, Frankfurter Strasse 250, 64293 Darmstadt, Germany (Article 8 (1) of the company's Articles of Association) of € 397,196,314.35. The company's share capital is composed of 129,242,251 shares and one registered share. The accounting par value of one share is € 1.3.

The Executive Board is authorized, with the approval of the Supervisory Board and of E. Merck KG, Darmstadt, Germany, to increase the share capital on one or several occasions until April 27, 2022 by up to a total of € 56,521,124.19 by issuing new shares against cash and/or contributions in kind (Authorized Capital 2017). The new shares may be assumed by certain banks appointed by the Executive Board with the obligation to offer them to the limited liability shareholders (indirect subscription right).

The Executive Board is authorized, with the approval of the Supervisory Board, to exclude the legal subscription right of the limited liability shareholders, in the following cases:

- Capital increases against cash contributions if the issue price of the new shares is not significantly lower than the stock exchange price of already listed shares carrying the same rights, as defined in section 203 (1) and (2) and section 186 (3) sentence 4 AktG, at the time when the Executive Board finally fixes the issue price, and if the proportion of the share capital represented by the new shares for which the subscription right is excluded does not exceed 10% of the share capital available at the time of the resolution of the Annual General Meeting or – if this amount is lower – of the share capital available at the time of exercising this authorization. The upper limit of 10% of the share capital shall be reduced by the prorated amount of shares that are sold during the term of the authorized capital 2017 under exclusion of shareholders' subscription rights in accordance with section 71 (1) no. 8 sentence 5 and section 186 (3) sentence 4 of the German Stock Corporation Act, as well as shares that must be issued to redeem option or convertible bonds with option or conversion privileges or to fulfill an option or conversion obligation, as long as the bonds have been issued during the term of this authorization under exclusion of subscription rights in accordance with section 221 (4) and section 186 (3) sentence 4 of the German Stock Corporation Act;
- To enable E. Merck KG, Darmstadt, Germany, to exercise its right in accordance with Article 32 (3) of the company's Articles of Association to participate in a capital increase by issuing shares or freely transferable share subscription rights;
- To enable E. Merck KG, Darmstadt, Germany, to exercise its right in accordance with Article 33 of the company's Articles of Association to convert its equity interest into share capital;
- As far as this is necessary, to grant subscription rights for new shares to holders of warrants and convertible bonds issued by the company or its subsidiaries, to the extent to which they would be entitled after exercising their option and conversion rights or fulfilling their option and conversion obligations; and
- To exclude fractional amounts from the subscription right.

The Executive Board is authorized, with the approval of the Supervisory Board, to determine the additional details of the capital increase and its execution, including the content of the share rights as well as the terms and conditions of the share issue. The Supervisory Board is authorized to amend Article 5 (3) of the Articles of Association according to the respective utilization of authorized capital 2017 or after expiration of the authorization period.

The share capital is contingently increased by up to € 66,406,298.40, divided into 51,081,768 shares (Contingent Capital I). The contingent capital increase serves to grant exchange rights to E. Merck KG, Darmstadt, Germany, in accordance with Article 33 of the company's Articles of Association to enable it to convert its equity interest into shares. The shares carry dividend rights from the beginning of the fiscal year following the year in which the conversion option is exercised.

The share capital is contingently increased by up to € 16,801,491.20, divided into 12,924,224 no-par value bearer shares (Contingent Capital II). This increase in contingent capital is only to be implemented insofar as the bearers or creditors of option or conversion rights or the holders of conversion obligations on warrant bonds, option participation certificates, option participation bonds, convertible bonds, convertible participation certificates or convertible participation bonds that are issued against cash contributions and that are issued or guaranteed by the company or a subordinate Group company on the basis of the authorization resolution of the Annual General Meeting of May 9, 2014 up to May 8, 2019, utilize their option or conversion rights, or fulfill their conversion obligation insofar as they are obliged to fulfill their conversion obligation, or insofar as the company exercises an option, wholly or in part, of granting shares in the company instead of paying the sum of money due, and to the extent that in each case a cash settlement is not granted, or own shares or other forms of fulfillment are used. Each issue of new shares shall take place at the determined option or conversion price, pursuant to the aforementioned authorization resolution. The new shares issued participate in the

profit from the beginning of the fiscal year in which they are created; insofar as this is legally permissible, the Executive Board may, with the approval of the Supervisory Board, and in deviation from section 60 (2) AktG, stipulate that the new shares also participate in the profit for a past fiscal year. The Executive Board is authorized, with the approval of the Supervisory Board and of E. Merck KG, Darmstadt, Germany, to stipulate the further details of the implementation of the increase in contingent capital.

€ million	Jan. 1, 2017	Capital ratios Jan. 1, 2017	Dividend distribution 2017	Net income 2017	Allocation to profit carried forward	Dec. 31, 2017	Dividend distribution (proposal)	Expected status: April 27, 2018	**Capital ratios April 27, 2018**
Share capital	168.0	(29.726%)	–	–	–	168.0	–	–	(29.726%)
General partner's capital E. Merck KG, Darmstadt, Germany	397.2	(70.274%)	–	–	–	397.2	–	–	(70.274%)
Total capital	565.2	(100%)	–	–	–	565.2	–	565.2	(100%)
Capital reserves	3,813.7		–	–	–	3,813.7	–	3,813.7	
Retained earnings	701.6		–	–	–	701.6	–	701.6	
Profit carried forward E. Merck KG, Darmstadt, Germany	38.5		–	–	21.8	60.3	–	60.3	
Net retained profit shareholders	171.3		–155.1	170.9	–	187.1	–161.6	25.5	
Total	**5,290.3**		**–155.1**	**170.9**	**21.8**	**5,327.9**	**–161.6**	**5,166.3**	

The general partners and the Supervisory Board will propose to the General Meeting the payment of a dividend of € 1.25 per share from the reported net retained profit of € 187.1 million. Based on the existing share capital, this corresponds to a total dividend payment of € 161.6 million. The remaining net retained profit of € 25.5 million is to be carried forward to new account. In the expectation that the General Meeting will resolve that the net retained profit established as of December 31, 2017 in accordance with Article 31 (3) in conjunction with Article 31 (1) of the company's Articles of Association shall be utilized to distribute a dividend of € 1.25 per share, E. Merck KG, Darmstadt, Germany, will transfer an amount of € 21.8 million to the profit carried forward, in accordance with its equity interest. This contribution was already recognized in the balance sheet in the reporting period. In the event that, contrary to this expectation, the General Meeting passes a different resolution on the utilization of the net retained profit, the above-mentioned contribution by E. Merck KG, Darmstadt, Germany, will be adjusted accordingly.

(10) Provisions

€ million	Provisions for pensions and other post-employment benefits	Provisions for tax liabilities	Obligations relating to personnel expenses	Provisions for licenses, commissions and rebates	Provisions for outstanding supplier invoices	Provisions for litigation	Other provisions	**Total**
Jan. 1, 2017	**80.1**	**76.7**	**243.1**	**30.3**	**296.3**	**146.4**	**160.8**	**1,033.7**
Utilization[1]	–12.4	–	–152.6	–29.4	–262.5	–10.2	–30.1	–497.2
Release	–	–	–7.9	–0.9	–16.1	–32.8	–31.9	–89.6
Additions	132.7	124.7	142.2	30.2	279.0	80.1	76.7	865.6
Dec. 31, 2017	**200.4**	**201.4**	**224.8**	**30.2**	**296.7**	**183.5**	**175.5**	**1,312.5**

[1] Includes transfers to Merck Real Estate and Merck Consumer Health, both susidiaries of Merck KGaA, Darmstadt, Germany.

The pension provisions are based on actuarial calculations. Pension obligations are calculated using the internationally recognized projected unit credit method.

The carrying values in the financial statements under German commercial law are based on the 2005 G Heubeck mortality tables. The amount calculated is discounted lump sum using the average market interest rate for an assumed term of 15 years. The discount rate was determined using a ten-year average of 3.68% (2016: 4.01%) in accordance with Deutsche Bundesbank. The difference in the discount rate resulting from the change in 2016 from a seven-year average to a ten-year average amounted to € 295.9 million as of December 31, 2017 (2016: € 223.8 million) and according to law is barred from distribution.

Other key parameters are, as in 2015, a salary trend of 3% for exempt employees and 2.5% for non-exempt employees, as well as a pension trend of 1% for obligations under the Pension Plan 2005 and 1.75% for obligations prior to that.

An amount of € 958.4 million has been paid by Merck KGaA, Darmstadt, Germany, to Merck Pensionstreuhand e.V., Darmstadt, Germany, under a trust agreement in order to secure employees' future pension entitlements. These contributions qualify as plan assets, which must be offset against pension provisions in accordance with section 246 (2) sentence 2 HGB. The plan assets mainly consist of exchange-traded securities and were measured at current fair value. They had a fair value of € 1,163.5 million as of December 31, 2017 (2016: € 1,113.6 million), were offset against pension provisions. The difference between the fair value at the end of 2016 and the fair value as of December 31, 2017 amounted to € 60.5 million (2016: € 11.9 million) and was deducted from the interest expense resulting from the additions to pension provisions. This is an unrealized gain under German commercial law. In accordance with section 268 (8) HGB, an amount of € 205.1 million (2016: € 144.6 million) is barred from distribution. The effect of deferred taxes is already taken into account. The settlement amount of pension obligations disclosed in the balance sheet amounted to € 1,363.9 million (2016: € 1,193.6 million).

The other provisions cover all identifiable risks and uncertain obligations. These are carried in the settlement amount dictated by prudent business practice, taking into account any price and cost increases. Long-term provisions are discounted at the average market interest rate for the preceding seven years in line with their maturity.

Obligations relating to personnel expenses include provisions of € 155.1 million (2016: € 145.9 million) for bonus payments, anniversaries and vacation as well as working time credits. Also reported in this item are provisions of € 27.2 million (2016: € 52.1 million) for obligations under the partial retirement program.

The provisions for obligations under the partial retirement program relate to outstanding obligations for work performed, the top-up amount and severance payments to compensate for pension reductions due to early retirement. The provisions for partial retirement and anniversaries are based on actuarial calculations.

A demography fund was set up for all non-exempt employees on the basis of the "Lebensarbeitszeit und Demografie Chemie" (Working Life and Demographic Change – Collective Agreement for the German Chemical Industry) dated April 16, 2008. Payments are regularly made into this fund and are invested with a trust under a trust agreement. The corresponding provisions were offset against associated receivables from the trust arising from the amounts invested (plan assets) in accordance with section 246 (2) sentence 2 HGB. The cost of the offset plan assets, which were calculated by the weighted average method in the case of investments in securities, is € 59.2 million (2016: € 47.5 million); the fair value is € 60.5 million (2016: € 47.7 million). The settlement amount of the offset liabilities is € 60.5 million (2016: € 47.7 million).

The remaining obligations of € 7.6 million (2016: € 6.1 million) reported in this item related to vacation entitlements of employees within the framework of the future use of long-term time accounts.

The provisions for legal disputes include the following issues:

PS-VA liquid crystals mixtures: In the Performance Materials business sector, the Group is involved in a legal dispute with JNC Corporation, Japan, (JNC). JNC claims that by manufacturing and marketing certain liquid crystals mixtures, the Group has infringed JNC patents. The Group maintains that JNC's patent infringement assertion is invalid owing to relevant prior art and has filed the corresponding nullity actions, which in three cases were already successful in first-instance proceedings. JNC has filed complaints in each case. In a correction trial, a decision in favor of JNC was issued in the second instance. Both the Group and the Korean Patent Office have filed complaints with the Korean Supreme Court. In parallel, JNC filed two patent infringement suits. In 2017, a first-instance decision was issued in favor of the Group, which JNC then appealed. The Group has taken appropriate accounting measures. Based on current judgment, an outflow of resources is not likely to occur within the next 12 months.

Antitrust review proceedings for the Sigma-Aldrich acquisition: On July 6, 2017, the Group received notice from the European Commission (EU Commission), in which the EU Commission informed the Group of its preliminary conclusion that the Group and Sigma-Aldrich allegedly transmitted incorrect and/or misleading information within the scope of the acquisition of Sigma-Aldrich. The EU Commission had received registration of the merger on April 21, 2015 and granted clearance on June 15, 2015 subject to the condition that the Group and Sigma-Aldrich divest parts of the European solvents and inorganic chemicals businesses of Sigma-Aldrich in order to resolve antitrust concerns. According to the preliminary viewpoint of the EU Commission communicated in the letter dated July 6, 2017, the Group and Sigma-Aldrich withheld in this connection important information about an innovation project allegedly relevant for certain laboratory chemicals of significance to the analysis by the EU Commission. According to the EU Commission, the innovation project should have been included in the remedies package. A meeting of the cooperation procedurebetween the EU Commission and the Group took place on February 5, 2018. (see Note "Subsequent events"). The ongoing investigations are limited to the examination of violations of EU merger control procedures and do not affect the validity of the EU Commission's decision to approve the merger. Based on the estimations by the Executive Board, a provision was set up. An outflow of resources is expected in 2018.

Paroxetine: In connection with the divested generics business, the Group is subject to antitrust investigations by the British Competition and Market Authority ("CMA") in the United Kingdom. In March 2013, the CMA informed the Group of the assumption that a settlement agreement entered into in 2002 between Generics (UK) Ltd. and several subsidiaries of GlaxoSmithKline plc., United Kingdom, in connection with the antidepressant drug paroxetine violates British and European competition law. As the owner of Generics (UK) Ltd. at the time, the Group was allegedly involved in the settlement negotiations and is therefore liable. The investigations into Generics (UK) Ltd. started in 2011, without this being known to the Group. On February 11, 2016, the CMA imposed a fine in this matter. The Group took legal action against this fine. The Group has taken appropriate accounting measures. According to current estimation, a decision and outflow of resources are considered likely in 2018..

Trademark rights/breach of agreement: The Group is involved in various legal disputes with Merck & Co., Inc. of the United States (outside the United States and Canada: Merck Sharp & Dohme Corp. (MSD)), among other things due to breach of the co-existence agreement between the two companies and/or trademark/name right infringement regarding the use of the designation "Merck". In this context, the Group has sued MSD in various countries and has been sued by MSD in the United States. As in 2016, the Group did not consider recourse and a related outflow of resources to be likely as of the balance sheet date. The Group has taken appropriate accounting measures solely for any costs of legal defense. An outflow of resources solely for the costs of external legal counsel is expected for 2018.

The remaining provisions mainly relate to levies and contributions, insurance premiums, financial risks from development projects, provisions for future environmental measures at the Darmstadt and Gernsheim sites, as well as other uncertain obligations.

(11) Liabilities

Liabilities are generally carried at their settlement amount; with pension and installment liabilities carried at their present value. Short-term liabilities denominated in foreign currencies were translated at the closing rates. No security has been provided other than standard retention of title.

(12) Financial liabilities

€ million	Remaining maturity up to 1 year	Remaining maturity 1 to 5 years	Remaining maturity more than 5 years	**Total Dec. 31, 2017**	**Dec. 31, 2016**
Bonds	–	–	1,500.0	1,500.0	1,500.0

In 2014, the company issued a hybrid bond in a volume of € 1,500 million for the financing of the Sigma-Aldrich acquisition. The bond was issued in two tranches, each with a maturity of 60 years. The first tranche with a volume of € 1,000 million pays a coupon of 2.625% and contains an early bond redemption option after 6.5 years. The second tranche, with a nominal volume of € 500 million and carrying coupon of 3.375%, includes an early redemption right for the Group after ten years.

(13) Trade accounts payable

€ million	Remaining maturity up to 1 year	Remaining maturity 1 to 5 years	Remaining maturity more than 5 years	Total Dec. 31, 2017	Dec. 31, 2016
to affiliates	15.1	–	–	15.1	1.9
to other companies	274.2	2.8	–	277.0	258.3
	289.3	**2.8**	**–**	**292.1**	**260.2**

(14) Other liabilities

€ million	Remaining maturity up to 1 year	Remaining maturity 1 to 5 years	Remaining maturity more than 5 years	Total Dec. 31, 2017	Dec. 31, 2016
to affiliates	11,430.2	–	–	11,430.2	10,956.7
– thereof to the general partner E. Merck KG, Darmstadt, Germany	(530.8)	–	–	(530.8)	(398.2)
Advance payments from customers	0.9	–	–	0.9	0.9
Other liabilities	58.0	–	–	58.0	51.1
– thereof tax liabilities	(31.2)	–	–	(31.2)	(21.1)
– thereof social security liabilities	(0.1)	–	–	(0.1)	(0.1)
	11,489.1	**–**	**–**	**11,489.1**	**11,008.7**

The liabilities to affiliates relate to short-term loans amounting to € 8.5 billion as well as liabilities of € 2.3 billion from the clearing account with Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany. The other liabilities include obligations of € 3.6 million (2016: € 4.5 million) from recourse factoring.

Employee loans were transferred, with Merck KGaA, Darmstadt, Germany, maintaining a contingent liability. These liabilities are secured in this respect by receivables from employees.

Notes to the Income Statement

(15) Sales

€ million	2017	2016
By sales market		
Germany	466.7	474.9
Rest of Europe	1,971.6	1,765.9
Asia-Pacific	1,759.8	1,716.9
North and Latin America	444.1	356.0
Rest of World	165.0	151.0
	4,807.2	**4,464.7**
By business sector		
Healthcare	2,403.6	2,231.9
Life Science	776.9	709.9
Performance Materials	1,399.2	1,406.6
	4,579.7	**4,348.4**
Other sales	227.5	116.3
	4,807.2	**4,464.7**

Other sales mainly include internal cross-charging for IT and research services as well as other administration expenses.

(16) Other operating income

€ million	2017	2016
Exchange rate gains from operating activities	37.1	30.5
Gains from the disposal of fixed assets	0.1	5.9
Grants received	6.1	2.7
Income from the release of provisions	89.6	88.6
Other income	24.1	16.4
	157.0	**144.1**

Income from other accounting periods relates almost exclusively to income from the release of provisions and gains from the disposal of fixed assets. In 2017, provisions were mainly released for litigation and environmental risks.

(17) Cost of materials

€ million	2017	2016
Cost of raw materials, supplies and goods purchased for resale	864.9	846.6
Cost of purchased services	640.6	641.5
	1,505.5	**1,488.1**

(18) Personnel expenses and employees

€ million	2017	2016
Wages and salaries	968.3	873.5
Pension expenses	155.3	58.7
Compulsory social security contributions and special financial assistance	134.7	123.2
	1,258.3	**1,055.4**
Average number of employees during the year		
Production	3,536	3,270
Administration	3,072	2,881
Research	2,515	2,320
Logistics	648	624
Sales and marketing	574	531
Other	128	118
	10,473	**9,744**

The increase in personnel expenses is mainly due to higher wages and salaries as well as pension expenses. The increase in wages and salaries mainly results from the collectively agreed pay increase as of September 1, 2017 and the higher number of employees. The increase in pension provisions results from the adjustment in 2016 of the actuarial interest rate used for the measurement of pension provisions. Due to the law on implementation of the directive on credit agreements relating to residential immovable property and on the amendment of provisions of commercial law, in 2016 the specified period for measurement of the average market interest rate was extended from seven to ten years. This resulted in lower pension expenses in 2016.

The reported employee figures do not include apprentices. In 2017, an average number of 535 (2016: 468) apprentices were enrolled in vocational training.

(19) Other operating expenses

€ million	2017	2016[1]
Purchased sales and advertising services	565.4	517.1
Purchased repair services	75.3	57.9
Purchased research services	295.9	360.4
Other purchased services and procurements	467.8	434.0
Fees, contributions and insurance premiums	228.0	214.4
Exchange rate losses from operating activities	36.1	27.8
Losses from the disposal of fixed assets	1.6	57.9
Addition to provisions for litigations	80.1	16.1
Other	50.5	39.8
	1,800.7	**1,725.4**

[1] Previous year's figures adjusted.

The increase resulted from higher purchased sales and advertising services as well as from higher expenses related to risk provisioning for litigations. The disposal of Merck Performance Materials Co. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany, to Chemitra GmbH, Darmstadt, in 2016 resulted in losses from the disposal of fixed assets, with no corresponding expenses in in the prior year.

(20) Income/Expense from investments

€ million	2017	2016
Income from profit and loss transfer agreements	140.8	136.2
Investment income from affiliates	742.5	545.7
Expenses from profit and loss transfer agreements	– 36.5	– 23.4
	846.8	**658.5**

The increase in investment income is primarily attributable to a dividend payment from Merck Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany, amounting to € 700.0 million (2015: € 500.0 million).

(21) Write-downs of financial assets

In 2017, financial assets amounting to € 0.2 million were written down due to expected lasting impairment.

(22) Financial result

€ million	2017	thereof affiliates	2016	thereof affiliates
Other interest and similar income	16.4	16.4	18.4	16.3
Interest and similar expenses	–219.9	–165.3	–229.8	–172.4
Net interest	–203.5	–148.9	–211.4	–156.1
Exchange rate differences from financing activities	–0.7	–	1.6	–
Interest component of the addition to pension provisions and of other long-term provisions	2.8	–	–33.0	–
	–201.4	**–148.9**	**–242.8**	**–156.1**

Interest income mainly includes payments for a credit default guarantee provided within the Group, also in connection with the acquisition of Sigma-Aldrich. The interest component of the addition to pension provisions is offset against interest income from plan assets.

(23) Profit transfers between Merck KGaA, Darmstadt, Germany, and E. Merck KG, Darmstadt, Germany

In accordance with Articles 26 to 30 of the Articles of Association, the profit of Merck KGaA, Darmstadt, Germany, is attributed between E. Merck KG, Darmstadt, Germany, and the limited liability shareholders as follows:

PROFIT TRANSFER TO E. MERCK KG, DARMSTADT, GERMANY

Net income of Merck KGaA, Darmstadt, Germany (before reciprocal profit transfers)	723,432,187.23
Less corporation tax	56,238,389.48
Basis for calculating the profit transferred between Merck KGaA, Darmstadt, Germany, and E. Merck KG, Darmstadt, Germany	779,670,576.71
The share of E. Merck KG, Darmstadt, Germany, in the profit of Merck KGaA, Darmstadt, Germany, is (397,196,314/565,211,242)	547,905,378.54

PROFIT TRANSFER FROM E. MERCK KG, DARMSTADT, GERMANY

Net loss of E. Merck KG, Darmstadt, Germany (before reciprocal profit transfers, adjusted for trade income tax) Basis for calculating the profit transferred between E. Merck KG, Darmstadt, Germany, and Merck KGaA, Darmstadt, Germany	–15,926,202.99
The share of Merck KGaA, Darmstadt, Germany, in the profit of E. Merck KG, Darmstadt, Germany, is (168,014,928/565,211,242)	–4,734,229.69

(24) Income tax

Income tax consists of trade tax expense of € 137.1 million and corporate tax expense of € 56.2 million. The carrying amounts of assets, liabilities and deferred items under commercial and tax law resulted in an excess of deferred tax assets. The company exercised its option in accordance with section 274 (1) sentence 2 HGB not to recognize this excess. Material differences occur in the carrying amounts of assets and liabilities regarding the items intangible assets, inventories, other assets, pension provisions and other provisions (deferred tax assets) as well as tangible assets (deferred tax liabilities). If recognized, a tax rate of 20.25% would largely be applied. For financial assets, a tax rate of 1.01% would apply as a result of special tax treatment.

Other Disclosures

CONTINGENT LIABILITIES

€ million	Dec. 31, 2017	thereof affiliates	Dec. 31, 2016	thereof affiliates
Guarantees	11,200.4	11,200.4	11,802.7	11,802.7
Warranties	–	–	–	–
	11,200.4	**11,200.4**	**11,802.7**	**11,802.7**

In order to fully ensure the Group financing activity of Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany, Merck KGaA, Darmstadt, Germany, provided guarantees for Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany, to financing partners of our Group. The type and scope of these are in line with the financial obligations actually entered into by Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany.. On account of the Group's good credit rating, the probability of the guarantees and warranties being utilized is estimated as very low. Guarantees include warranties amounting to US$ 3.7 billion (€ 3.1 billion) for EMD Finance LLC, USA, and amounting to € 7.4 billion for Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany, which are primarily in connection with the acquisition of Sigma-Aldrich.

OTHER FINANCIAL OBLIGATIONS

€ million	Dec. 31, 2017	thereof affiliates	Dec. 31, 2016	thereof affiliates
Purchase commitments	166.5	–	194.1	–
Rental and lease obligations	33.3	0.1	26.4	0.1
Acceptance obligations from orders	34.4	–	32.8	–
Obligations to acquire intangible assets	568.7	–	602.7	–
	802.9	**0.1**	**856.0**	**0.1**

Obligations to acquire intangible assets exist in particular within the scope of research and development collaborations in the Healthcare business sector of the Group. Here Merck KGaA, Darmstadt, Germany, has obligations to make milestone payments when certain objectives are achieved. In the unlikely event that all contract partners achieve all the milestones, Merck KGaA, Darmstadt, Germany, would be obliged to pay up to € 568.7 million (2016: € 602.7 million) for the acquisition of intangible assets.

CORPORATE GOVERNANCE

The latest version of the Declaration of Conformity in accordance with section 161 of the German Stock Corporation Act (Aktiengesetz, AktG) has been published on our website (www.emdgroup.com/investors/corporate_governance) and thus made permanently available.

FINANCIAL INSTRUMENTS

We use derivative financial instruments solely to hedge currency and interest rate positions, so as to minimize currency risks and financing costs caused by exchange rate or interest rate fluctuations. The instruments used are standard market forward exchange transactions and currency options. Corresponding valuation units were designated. The value changes of the derivatives are reported under the Balance sheet item "other assets", respectively under "provisions for valuation units". The use of such derivatives is governed by internal regulations. Derivative transactions are subject to constant risk controls. The trading, settlement and control functions are strictly separated, and this separation is monitored by our internal audit department. Derivative contracts are only entered into with banks with good credit ratings and are restricted to the hedging of our business operations and related financing transactions.

The following derivative financial positions were held as of December 31, 2017:

	Nominal volume		Fair value	
€ million	**Dec. 31, 2017**	Dec. 31, 2016	**Dec. 31, 2017**	Dec. 31, 2016
Forward exchange contracts	48.0	75.6	–0.4	0.4
– therof operating	**(48.0)**	**(75.6)**	**(–0.4)**	**(0.4)**

€ million	Remaining maturity up to 1 year	Remaining maturity more than 1 year	**Total Dec. 31, 2017**	Remaining maturity up to 1 year	Remaining maturity more than 1 year	Total Dec. 31, 2016
Forward exchange contracts	**48.0**	**–**	**48.0**	**75.6**	**–**	**75.6**

The nominal volume is the aggregate of all buy and sell amounts relating to derivative financial transactions.

The "thereof operating" item comprises the derivative exposures used to hedge probable future cash flows, which mainly consist of expected future sales and receivables disclosed in the balance sheet (excluding loans granted to affiliates). As of December 31, 2017, no derivative financial instruments were being used to hedge pending transactions against foreign exchange risks.

The fair values are determined by valuing open positions at market prices, ignoring any opposite movements in the value of the underlyings. They correspond to the income or expenses that would result if the derivatives were closed out at the balance sheet date. The fair values are calculated on the basis of quoted prices or from current market data provided by a recognized information service. They are measured with the aid of middle spot rates that are observable in the market and maturity-specific interest premiums to or discounts on the traded market prices.

The reported operating forward exchange transactions are used to hedge exchange rate fluctuations in respect of future sales in the following currencies: USD (39.4 million), GBP (11.8 million), CHF (2.7 million), IDR (30.0 billion), JPY (125.2 million).

A theoretical default risk for the existing derivative financial instruments exists up to the amount of the positive fair values. As of December 31, 2017, these amounted to € 0.4 million (2016: € 0.4 million) and exist solely with companies of the Group.

FURTHER INFORMATION

Merck KGaA, Frankfurter Strasse 250, 64293 Darmstadt, Germany, is registered with the German Commercial Register under No. HRB 6164. The competent register court is Darmstadt district court.

In accordance with the provisions of the German financial reporting disclosure law (Publizitätsgesetz), as the ultimate parent company within the Group, E. Merck Kommanditgesellschaft, Darmstadt, Germany, (E. Merck KG, Darmstadt, Germany) prepares consolidated financial statements, which include Merck KGaA, Darmstadt, Germany, and its subsidiaries. Merck KGaA, Darmstadt, Germany, which manages the operations of the Group, prepares consolidated financial statements for the smallest group of companies within the Group. Both sets of consolidated financial statements as of December 31, 2017 are available at www.bundesanzeiger.de.

The information relating to the German Securities Trading Act (Wertpapierhandelsgesetz, WpHG), the Executive Board and the Supervisory Board is published in the Notes to the Annual Financial Statements of Merck KGaA, Darmstadt, Germany, on pages 138 to 141.

COMPENSATION OF THE EXECUTIVE BOARD

The compensation of the Executive Board of Merck KGaA, Darmstadt, Germany, is paid by the general partner, E. Merck KG, Darmstadt, Germany. For the period from January to December 2017, for members of the Executive Board of Merck KGaA, Darmstadt, Germany, fixed salaries of € 6.0 million (2016: € 6.6 million), variable compensation of € 16.3 million (2016: € 16.8 million), and additional benefits of € 0.3 million (2016: € 0.2 million) from E. Merck KG, Darmstadt, Germany, and the other companies of the Group were recorded. For the Long-term Incentive Plan, for members of the Executive Board of Merck KGaA, Darmstadt, Germany, releases of provisions included income of € 1.8 million (2016: expense from the addition to provisions of € 12.5 million), and the additions to the pension provisions for members of the Executive Board of Merck KGaA, Darmstadt, Germany, included current service costs of € 3.2 million (2016: € 2.8 million) and past service costs of € 0.9 million (2016: € 3.5 million).

TOTAL COMPENSATION OF THE SUPERVISORY BOARD

The compensation of the Supervisory Board amounting to € 868.3 thousand (2016: € 869.0 thousand) consisted of a fixed portion of € 822.5 thousand (2016: € 822.5 thousand) and meeting attendance compensation of € 45.8 thousand (2016: € 46.5 thousand).

Further individualized information and details can be found in the Compensation Report on pages 172 et seq of the Annual Report.

AUDITORS' FEES

Information on the statutory auditors' fees is contained in the Consolidated Financial Statements of the Group. In addition to the audit of the financial statements, other audit-related services, tax consultancy services and other services for the company and/or controlled companies were provided by the auditor. Other audit-related services pertain to various statutory or contractually agreed audits. Tax consultancy services encompass services in connection with the preparation of tax returns, also for employees delegated abroad. Other services comprise particularly advisory services for employees delegated abroad.

SUBSEQUENT EVENTS

In connection with the antitrust review proceedings for the Sigma-Aldrich acquisition, on July 6, 2017, the Group received notice from the European Commission (EU Commission), in which the EU Commission informed the Group of its preliminary conclusion that the Group and Sigma-Aldrich allegedly transmitted incorrect and/or misleading information within the scope of the acquisition of Sigma-Aldrich. The EU Commission received registration of the merger on April 21, 2015 and granted clearance on June 15, 2015 subject to the condition that the Group and Sigma-Aldrich divest parts of the European solvents and inorganic chemicals businesses of Sigma-Aldrich in order to resolve antitrust concerns. According to the preliminary viewpoint of the EU Commission communicated in the letter dated July 6, 2017, the Group and Sigma-Aldrich withheld in this connection important information about an innovation project allegedly relevant for certain laboratory chemicals of significance to the analysis by the EU Commission. According to the EU Commission, the innovation project should have been included in the remedies package. A meeting of the cooperation procedure between the EU Commission and the Group took place on February 5, 2018. Based on management's updated assessment, the existing provision was increased to a mid double-digit million amount. The expense was recorded under other operating expenses and allocated to the Life Science business sector. The ongoing investigations are limited to the examination of violations of EU merger control procedures and do not affect the validity of the EU Commission's decision to approve the merger. Subsequent to the balance sheet date, no further events of special importance occurred that could have a material impact on the net assets, financial position and results of operations.

No further events of special importance occurred that could be expected to have a material impact on the net assets, financial position or results of operations.

PROPOSAL FOR THE APPROPRIATION OF NET RETAINED PROFIT

A proposal will be made to the General Meeting for payment of a dividend of € 1.25 per no par value share from the portion of net retained profit to which limited liability shareholders are entitled, amounting to € 187,045,271.48 (see Note [9]). Based on the current share capital, the resulting total dividend payment for fiscal 2017 is thus € 161,552,815.00.

It is also proposed to carry forward to new account the remaining portion of the shareholders' net retained profit in the amount of € 25,492,456.48.

Darmstadt, February 14, 2018

Stefan Oschmann

Udit Batra

Kai Beckmann

Walter Galinat

Belén Garijo

Marcus Kuhnert

Members of the Executive Board of Merck KGaA, Darmstadt, Germany

Notes on memberships of statutory supervisory boards and comparable German and foreign supervisory bodies (section 285, no. 10 HGB in conjunction with section 125 (1) sentence 5 AktG)

Member	Memberships of (a) statutory supervisory boards and (b) comparable German and foreign supervisory bodies of corporations
Stefan Oschmann Munich, Chairman	no board positions
Udit Batra Wellesley, Massachusetts (USA), CEO Life Science	(b) – EMD Millipore Corporation, Billerica, Massachusetts (USA) (President)
Kai Beckmann Darmstadt, CEO Performance Materials	(a) – Bundesdruckerei GmbH, Berlin
Walter Galinat Eppertshausen, Member of the Executive Board	no board positions
Belén Garijo Frankfurt am Main, CEO Healthcare	(b) – Banco Bilbao Vizcaya Argentaria S.A., Bilbao, Spain – L'Oréal S.A., Clichy, France
Marcus Kuhnert Königstein, Chief Financial Officer	no board positions

Supervisory Board

Notes on memberships of statutory supervisory boards and comparable German and foreign supervisory bodies (section 285, no. 10 HGB in conjunction with section 125 (1) sentence 5 AktG)

Member	Memberships of (a) other statutory supervisory boards and (b) comparable German and foreign supervisory bodies of corporations
Wolfgang Büchele Munich, Managing Director M+W Group GmbH, Stuttgart	(b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1] – Kemira Oyj, Helsinki, Finland
Michael Fletterich Gernsheim, Chairman of the Works Council of Merck KGaA, Darmstadt, Germany, Darmstadt/Gernsheim, Vice Chairman	no board positions
Crocifissa Attardo Darmstadt, Full-time member of the Works Council of Merck KGaA, Darmstadt, Germany, Darmstadt/Gernsheim	b) – BKK of Merck KGaA, Darmstadt, Germany (rotating chairperson)
Mechthild Auge Wehrheim, Full-time member of the Works Council of Merck KGaA, Darmstadt, Germany, Darmstadt/Gernsheim	no board positions
Gabriele Eismann Seeheim-Jugenheim, Senior Operational Product Manager	no board positions
Edeltraud Glänzer Hannover, Vice Chairperson of IG Bergbau, Chemie, Energie (IG BCE), Hannover	(a) – B. Braun Melsungen AG, Melsungen – Evonik Industries AG, Essen (Vice Chairperson)
Michaela Freifrau von Glenck Zurich, Switzerland, Retired teacher	no board positions
Siegfried Karjetta[2] Darmstadt, Physician	(b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1]
Albrecht Merck Schriesheim, Commercial Director of the Castel Peter Winery, Bad Dürkheim	(b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1]
Dietmar Oeter Seeheim-Jugenheim, Vice President Corporate Quality Assurance	no board positions
Alexander Putz Michelstadt, Full-time member of the Works Council of Merck KGaA, Darmstadt, Germany, Darmstadt/Gernsheim	no board positions
Helga Rübsamen-Schaeff Langenburg, Chairperson of the Advisory Board of AiCuris Antiinfective Cures GmbH, Wuppertal	(a) – 4SC AG, Martinsried – Supervisory Board of Bonn University Hospital (b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1]
Gregor Schulz Umkirch, Pediatrician	(b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1]

Member	Memberships of (a) other statutory supervisory boards and (b) comparable German and foreign supervisory bodies of corporations
Theo Siegert Düsseldorf, Managing Partner of de Haen-Carstanjen & Söhne, Düsseldorf	(a) – E.ON SE, Düsseldorf – Henkel AG & Co KGaA, Düsseldorf (b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1] – DKSH Holding Ltd., Zurich, Switzerland
Tobias Thelen[2] Munich, Managing Partner of Altmann Analytik GmbH & Co. KG, Munich	(b) – E. Merck KG, Darmstadt, Germany, Darmstadt[1]
Veit Ulshöfer Sachsenheim, Global Head of Research and Bioinformatics	no board positions

[1] Internal board position.
[2] Members appointed according to Article 6 (5) of the Articles of Association.

Disclosures in accordance with section 160 (1) no. 8 of the German Stock Corporation Act (Aktiengesetz, AktG)

In accordance with the German Securities Trading Act (Wertpapierhandelsgesetz, WpHG), any shareholder whose equity interest reaches, exceeds, or falls below the thresholds of 3, 5, 10, 15, 20, 25, 30, 50, or 75 percent of the voting rights in a listed company must notify the company and the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) of this without delay. The Company was informed of the existence of the following equity interests until the preparation of the annual financial statements (the number of shares or the percentage equity interest is taken from the most recent voting rights notification sent to the Group and may therefore no longer be correct):

Sun Life Financial Inc., Toronto, Ontario, Canada notified us that on March 24, 2017 its share of the voting rights fell below the threshold of 3% of the voting rights due to the disposal of shares and amounted to 0.003% on that date. 0.003% of the voting rights (3,818 voting rights) are attributed to Sun Life Financial Inc. in accordance with section 22 WpHG[1].

We received the following notification on July 17, 2015 in accordance with section 21 (1) WpHG:

On July 16, 2015, the share of the voting rights of Sun Life Global Investments Inc., Toronto, Ontario, Canada in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

4.91% of the voting rights (6,342,586 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

On July 16, 2015, the share of the voting rights of Sun Life Assurance Company of Canada – U.S. Operations Holdings, Inc., Wellesley Hills, Massachusetts, USA in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

4.91% of the voting rights (6,342,586 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

[1] Obsolete version; as of January 3, 2018, the numbering of WPHG has changed. The sections of the obsolete version correspond to the following sections of the current version:
section 21 WpHG corresponds to section 33 WpHG
section 22 WpHG corresponds to section 34 WpHG
section 25 WpHG corresponds to section 38 WpHG

On July 16, 2015, the share of the voting rights of Sun Life Financial (U.S.) Holdings, Inc., Wellesley Hills, Massachusetts, USA in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

4.91% of the voting rights (6,342,586 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

On July 16, 2015, the share of the voting rights of Sun Life Financial (U.S.) Investments LLC, Wellesley Hills, Massachusetts, USA in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

4.91% of the voting rights (6,342,586 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

On July 16, 2015, the share of the voting rights of Sun Life of Canada (U.S.) Financial Services Holdings, Inc., Boston, Massachusetts, USA in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

4.91% of the voting rights (6,342,586 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

On July 16, 2015, the share of the voting rights of Massachusetts Financial Services Company (MFS), Boston, Massachusetts, USA in Merck KGaA, Darmstadt, Germany, fell below the threshold of 5% of the voting rights due to the disposal of shares and amounted to 4.91% (6,342,586 voting rights) on that date[1].

3.20% of the voting rights (4,138,232 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG in conjunction with section 22 (1) sentence 2 WpHG[1].

1.71% of the voting rights (2,204,354 voting rights) are attributed to the Company in accordance with section 22 (1) sentence 1 no. 6 WpHG[1].

Allianz Global Investors GmbH, Frankfurt am Main, Germany, notified us that on October 17, 2017, its share of the voting rights fell below the threshold of 3% of the voting rights due to the disposal of shares and amounted to 2.79% on that date. 2.79% of the voting rights (3,604,153 voting rights) are attributed to Allianz Global Investors GmbH in accordance with section 22 WpHG[1].

Janus Henderson Group plc, St. Helier, Jersey, Channel Islands, notified us that on October 23, 2017 its share of the voting rights fell below the threshold of 3% of the voting rights due to the disposal of shares and amounted to 2.99% on that date. 2.99% of the voting rights (3,864,527 voting rights) are attributed to Janus Henderson Group plc in accordance with section 22 WpHG[1].

BlackRock, Inc., Wilmington, DE, U.S.A., notified us that on November 10, 2017 its share of the voting rights amounted to 7.20%. 7.20% of the voting rights (9,303,989 voting rights) are attributed to BlackRock, Inc. in accordance with section 22 WpHG. 0.03% of the voting rights (37,444 voting rights) are attributed to BlackRock, Inc. as instruments pursuant to section 25 (1) no. 1 WpHG (Securities Lending). 0.18% of the voting rights (230,800 voting rights) were attributed to BlackRock, Inc. as instruments pursuant to section 25 (1) no. 2 WpHG (Contract for Difference)[1].

Templeton Global Advisors Limited, Nassau, Bahamas notified us that on January 3, 2018, its share of the voting rights exceeded the threshold of 3% of the voting rights due to the acquisition of shares and amounted to 3.0362% on that date. 3.0362% of the voting rights (3,924,094 voting rights) were attributed to Templeton Global Advisors Limited in accordance with section 22 WpHG[1].

[1] Obsolete version; as of January 3, 2018, the numbering of WPHG has changed. The sections of the obsolete version correspond to the following sections of the current version:
section 21 WpHG corresponds to section 33 WpHG
section 22 WpHG corresponds to section 34 WpHG
section 25 WpHG corresponds to section 38 WpHG

List of Shareholdings of Merck KGaA, Darmstadt, Germany, as of December 31, 2017

Country	Company	Registered office
Germany		
Germany	AB Allgemeine Pensions GmbH & Co. KG	Zossen
Germany	AB Pensionsverwaltung GmbH	Zossen
Germany	Alcan Systems GmbH	Darmstadt
Germany	Allergopharma GmbH & Co. KG	Reinbek
Germany	Allergopharma Verwaltungs GmbH	Darmstadt
Germany	Azelis Deutschland Kosmetik GmbH	Moers
Germany	Biochrom GmbH	Berlin
Germany	Chemitra GmbH	Darmstadt
Germany	Emedia Export Company mbH	Gernsheim
Germany	IHS – Intelligent Healthcare Solutions GmbH	Darmstadt
Germany	InfraServ GmbH & Co. Wiesbaden KG	Wiesbaden
Germany	IOmx Therapeutics AG	Martinsried
Germany	Kooperation Phytopharmaka GbR	Bonn
Germany	Litec-LLL GmbH	Greifswald
Germany	Merck 12. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 13. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 15. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 16. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 18. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 19. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 20. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 21. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 23. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 24. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 25. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 26. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 27. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 28. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00	100.00	EUR	115,029.44	–595.68	115,029.44	–595.68
100.00	100.00	b)	b)	b)	b)	b)
2.13	2.13	b)	b)	b)	b)	b)
100.00		EUR	–5,058.88	–5,425.74	–5,058.88	–5,425.74
100.00	100.00	EUR	23.40	0.00	23.40	0.00
10.00	10.00	b)	b)	b)	b)	b)
100.00		EUR	7,878.70	88.11	7,878.70	88.11
100.00	100.00	EUR	631,870.87	7,000.00	631,870.87	7,000.00
100.00		EUR	25.60	0.00	25.60	0.00
100.00		EUR	821.30	–3,464.61	821.30	–3,464.61
15.00		b)	b)	b)	b)	b)
8.28		b)	b)	b)	b)	b)
1.77		b)	b)	b)	b)	b)
100.00	100.00	EUR	1,899.18	–53.10	1,899.18	–53.10
100.00	100.00	EUR	12,473,687.20	0.00	12,473,687.20	0.00
100.00		EUR	12,966,095.68	494,572.14	12,966,095.68	494,572.14
100.00		EUR	1,121,531.14	0.00	1,121,531.14	0.00
100.00		EUR	3,740,596.88	0.00	3,740,596.88	0.00
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00		EUR	4,034,931.81	0.00	4,034,931.81	0.00
100.00		EUR	4,089,767.68	54,880.63	4,089,767.68	54,880.63
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)

Country	Company	Registered office
Germany	Merck 29. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 30. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 31. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 33. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 36. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 38. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 40. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck 41. Allgemeine Beteiligungs-GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Accounting Solutions & Services Europe GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Chemicals GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck China Chemicals Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Consumer Health GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Consumer Health Holding Germany GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Consumer Health Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Export GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Financial Services GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Financial Trading GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Gernsheim
Germany	Merck Healthcare Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Gernsheim
Germany	Merck International GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Internationale Beteiligungen GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Life Science GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Eppelheim
Germany	Merck Life Science Holding GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Patent GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Performance Materials GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Wiesbaden
Germany	Merck Real Estate GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Schuchardt OHG, a subsidiary of Merck KGaA, Darmstadt, Germany	Hohenbrunn
Germany	Merck Selbstmedikation GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Serono GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Merck Versicherungsvermittlung GmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	EUR	−3,356.58	3,022.02	−3,356.58	3,022.02
100.00		EUR	−1,081.57	2,201.65	−1,081.57	2,201.65
100.00		EUR	5,617.55	5,566.50	5,617.55	5,566.50
100.00		EUR	11,442.17	−67.34	11,442.17	−67.34
100.00	100.00	EUR	11,299.73	−3.83	11,299.73	−3.83
100.00	100.00	EUR	45,828.40	338.93	45,828.40	338.93
100.00	100.00	EUR	−16,019.70	16,349.28	−16,019.70	16,349.28
100.00	100.00	EUR	370,840.40	−10,099.34	370,840.40	−10,099.34
100.00	100.00	EUR	202,076.98	5,315.67	202,076.98	5,315.67
100.00	100.00	b)	b)	b)	b)	b)
100.00	100.00	EUR	7,732,122.93	847,438.94	7,732,122.93	847,438.94
100.00	100.00	EUR	3,716,224.22	201,117.82	3,716,224.22	201,117.82
100.00		EUR	3,374,009.16	0.00	3,374,009.16	0.00
100.00	100.00	EUR	31,448.59	−2,404.19	31,448.59	−2,404.19
100.00	100.00	b)	b)	b)	b)	b)
100.00		EUR	25.60	0.00	25.60	0.00
100.00		EUR	48,517.26	−1,549.44	48,517.26	−1,549.44
100.00	100.00	EUR	−4,444.63	−677.85	−4,444.63	−677.85
100.00	100.00	EUR	c)	c)	c)	c)
100.00		EUR	−160,272.16	−158,328.49	−160,272.16	−158,328.49
100.00	100.00	EUR	5,061.15	2,727.32	5,061.15	2,727.32
100.00	100.00	EUR	−340.80	78.21	−340.80	78.21

Country	Company	Registered office
Germany	Merck Vierte Allgemeine Beteiligungsgesellschaft mbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Gernsheim
Germany	Merck Wohnungs- und Grundstücksverwaltungsgesellschaft mbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Darmstadt
Germany	Mobile Chamber Experts GmbH	Berlin
Germany	pharma mall Gesellschaft für Electronic Commerce mbH	Sankt Augustin
Germany	PharmLog Pharma Logistik GmbH	Boehnen
Germany	PrintCity GmbH & Co. KG	Neuried
Germany	Sigma-Aldrich Biochemie GmbH	Steinheim
Germany	Sigma-Aldrich Chemie GmbH	Steinheim
Germany	Sigma-Aldrich Chemie Holding GmbH	Taufkirchen
Germany	Sigma-Aldrich Grundstücks GmbH & Co. KG	Steinheim
Germany	Sigma-Aldrich Logistik GmbH	Steinheim
Germany	Sigma-Aldrich Produktions GmbH	Steinheim
Germany	Sigma-Aldrich Verwaltungs GmbH	Steinheim
Rest of Europe		
Belgium	Merck Chemicals N.V./S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Overijse
Belgium	Merck Consumer Healthcare N.V.-S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Overijse
Belgium	Merck N.V.-S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Overijse
Belgium	ReWind Therapeutics N.V.	Leuven-Heverlee
Belgium	Sigma-Aldrich BVBA/SPRL	Overijse
Bulgaria	Merck Bulgaria EAD, a subsidiary of Merck KGaA, Darmstadt, Germany	Sofia
Denmark	Merck A/S, a subsidiary of Merck KGaA, Darmstadt, Germany	Soborg
Denmark	Merck Life Science A/S, a subsidiary of Merck KGaA, Darmstadt, Germany	Soborg
Denmark	Sigma-Aldrich Denmark ApS	Soborg
Denmark	Survac ApS	Frederiksberg
Estinia	Merck Serono OÜ, a subsidiary of Merck KGaA, Darmstadt, Germany	Tallinn
Finland	Abacus Diagnostica OY	Turku
Finland	Forendo Pharma OY	Turku
Finland	Merck Life Science OY, a subsidiary of Merck KGaA, Darmstadt, Germany	Espoo
Finland	Merck OY, a subsidiary of Merck KGaA, Darmstadt, Germany	Espoo
Finland	Sigma-Aldrich Finland OY	Helsinki
France	Aveni S.A.S.	Massy
France	BioControl Systems S.a.r.l.	Lyon
France	DNA Script S.A.S.	Paris
France	Gonnon S.A.S.	Lyon
France	Laboratoire Médiflor S.A.S.	Lyon
France	Merck Biodevelopment S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany	Lyon
France	Merck Chimie S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany.	Fontenay s/Bois
France	Merck Médication Familiale S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany	Lyon
France	Merck Performance Materials S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany	Trosly Breuil
France	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany.	Lyon
France	Merck Santé S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany	Lyon
France	Merck Serono S.A.S., a subsidiary of Merck KGaA, Darmstadt, Germany	Lyon
France	Millipore S.A.S..	Molsheim
France	Sigma-Aldrich Chimie S.a.r.l.	Saint Quentin Fallavier

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		EUR	7,577,243.42	0.00	7,577,243.42	0.00
100.00	100.00	EUR	13,063.52	–193.75	13,063.52	–193.75
25.00		b)	b)	b)	b)	b)
16.67		b)	b)	b)	b)	b)
16.67	16.67	b)	b)	b)	b)	b)
1.76	1.76	b)	b)	b)	b)	b)
100.00		EUR	43,738.77	161.92	43,738.77	161.92
100.00		EUR	55,721.47	7,052.53	55,721.47	7,052.53
100.00		EUR	44,869.94	10,047.71	44,869.94	10,047.71
100.00		EUR	30,419.91	2,566.45	30,419.91	2,566.45
100.00		EUR	318.03	–3,264.93	318.03	–3,264.93
100.00		EUR	7,989.82	–446.99	7,989.82	–446.99
100.00	100.00	EUR	342.40	6.77	342.40	6.77
100.00		EUR	10,052.99	1,223.73	10,052.99	1,223.73
100.00		EUR	21,332.20	1,692.36	21,332.20	1,692.36
100.00		EUR	29,647.06	2,428.76	29,647.06	2,428.76
15.90		b)	b)	b)	b)	b)
100.00		EUR	49,124.25	1,084.38	49,124.25	1,084.38
100.00		BGN	4,457.90	655.13	8,719.20	1,281.45
100.00		DKK	2,719.52	1,311.61	20,247.65	9,756.57
100.00		DKK	4,018.49	1,681.72	29,918.87	12,509.69
100.00		DKK	7,127.62	1,072.38	53,067.26	7,977.00
100.00	100.00	DKK	472.77	–49.43	3,519.90	–367.68
100.00		EUR	251.00	33.00	251.00	33.00
9.60		b)	b)	b)	b)	b)
7.34		b)	b)	b)	b)	b)
100.00		EUR	986.88	420.57	986.88	420.57
100.00		EUR	3,347.99	746.62	3,347.99	746.62
100.00		EUR	1,203.77	362.67	1,203.77	362.67
7.16		b)	b)	b)	b)	b)
100.00		EUR	357.51	28.43	357.51	28.43
7.20		b)	b)	b)	b)	b)
100.00		EUR	3,170,285.68	182,260.44	3,170,285.68	182,260.44
100.00		EUR	737.82	628.63	737.82	628.63
100.00		EUR	152,564.89	5,140.70	152,564.89	5,140.70
100.00		EUR	83,770.27	6,035.84	83,770.27	6,035.84
100.00		EUR	66,754.10	10,422.55	66,754.10	10,422.55
100.00		EUR	25,782.05	2,317.91	25,782.05	2,317.91
99.84		EUR	2,848,579.80	17,677.03	2,848,579.80	17,677.03
100.00		EUR	269,280.06	34,204.87	269,280.06	34,204.87
100.00		EUR	53,301.17	7,140.46	53,301.17	7,140.46
100.00		EUR	356,710.47	92,944.71	356,710.47	92,944.71
100.00		EUR	38,305.09	2,532.48	38,305.09	2,532.48

Country	Company	Registered office
France	Sigma-Aldrich Chimie SNC	Saint Quentin Fallavier
France	Sigma-Aldrich Holding S.a.r.l.	Saint Quentin Fallavier
Greece	Merck A.E., a subsidiary of Merck KGaA, Darmstadt, Germany	Maroussi, Athens
Greece	Sigma-Aldrich (OM) Ltd.	Athens
United Kingdom	Aldrich Chemical Co. Ltd.	Gillingham
United Kingdom	Artios Pharma Limited	London
United Kingdom	AZ Electronic Materials (UK) Ltd.	Feltham
United Kingdom	BioControl Systems Limited	London
United Kingdom	BioReliance Limited	Aberdeen
United Kingdom	BioReliance U.K. Acquisition Limited	London
United Kingdom	B-Line Systems Limited	Gillingham
United Kingdom	Bristol Organics Ltd.	Gillingham
United Kingdom	Canbex Therapeutics Ltd.	London
United Kingdom	EiRx Therapeutics plc	London
United Kingdom	Epichem Group Limited	Gillingham
United Kingdom	Fluka Chemicals Ltd.	Gillingham
United Kingdom	F-Star Alpha Limited	Cambridge
United Kingdom	F-Star Beta Limited	Cambridge
United Kingdom	F-Star Delta Limited	Cambridge
United Kingdom	F-Star Gamma Limited	Cambridge
United Kingdom	Lamberts Healthcare Ltd.	Tunbridge Wells
United Kingdom	Macrophage Pharma Limited	Windsor
United Kingdom	Merck Chemicals Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Nottingham
United Kingdom	Merck Consumer Health Care Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Cross Border Trustees Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Holding Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Investments Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Pension Trustees Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Performance Materials Services UK Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Merck Serono Europe Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	London
United Kingdom	Merck Serono Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Feltham
United Kingdom	Millipore (U.K.) Ltd.	Feltham
United Kingdom	Millipore UK Holdings LLP	Feltham
United Kingdom	Nature´s Best Health Products Ltd.	Tunbridge Wells
United Kingdom	Peratech HoldCo Limited	Brompton-on-Swale
United Kingdom	SAFC Biosciences Limited	Gillingham
United Kingdom	SAFC Hitech Limited	Gillingham
United Kingdom	Scancell Ltd.	Oxford
United Kingdom	Seven Seas Limited	Feltham
United Kingdom	Sigma Chemical Co. Ltd.	Gillingham
United Kingdom	Sigma Entity One Limited	Gillingham
United Kingdom	Sigma-Aldrich Company Limited	Gillingham
United Kingdom	Sigma-Aldrich Financial Services Limited	Gillingham
United Kingdom	Sigma-Aldrich Holdings Ltd.	Gillingham
United Kingdom	Sigma-Genosys Limited	Gillingham
United Kingdom	Storm Therapeutics Limited	London

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		EUR	12,487.67	–78.46	12,487.67	–78.46
100.00		EUR	6.28	–1.34	6.28	–1.34
100.00		EUR	17,884.90	913.46	17,884.90	913.46
100.00		b)	b)	b)	b)	b)
100.00		GBP	0.23	0.00	0.20	0.00
12.81		b)	b)	b)	b)	b)
100.00		USD	–10.03	–16.34	–11.99	–18.46
100.00		GBP	1,373.99	311.57	1,219.28	272.34
100.00		GBP	99,347.67	25,499.65	88,161.12	22,288.73
100.00		GBP	23,965.94	48,350.91	21,267.38	42,262.56
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
16.20		b)	b)	b)	b)	b)
4.11		b)	b)	b)	b)	b)
100.00		GBP	36,980.08	32,906.57	32,816.12	28,762.98
100.00		b)	b)	b)	b)	b)
6.87		b)	b)	b)	b)	b)
6.82		b)	b)	b)	b)	b)
7.06		b)	b)	b)	b)	b)
7.02		b)	b)	b)	b)	b)
100.00		GBP	23,245.14	5,606.90	20,627.74	4,900.88
14.60		b)	b)	b)	b)	b)
100.00		GBP	6,146.12	–229.79	5,454.07	–200.86
100.00		GBP	–49,822.73	–27.86	–44,212.69	–24.36
100.00		b)	b)	b)	b)	b)
100.00		EUR	1,272,914.18	–4,144.24	1,272,914.18	–4,144.24
100.00		GBP	–73.25	0.00	–65.00	0.00
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		USD	17,252.83	883.73	20,622.31	998.41
100.00		GBP	572.59	84.32	508.12	73.70
100.00		GBP	23,842.58	–4,452.16	21,157.91	–3,891.54
100.00		GBP	164,345.25	–3,005.76	145,839.98	–2,627.28
100.00		GBP	353,743.29	4,626.96	313,911.80	4,044.33
100.00		b)	b)	b)	b)	b)
11.46		b)	b)	b)	b)	b)
100.00		GBP	27,969.67	925.11	24,820.29	808.62
100.00		GBP	10,570.68	1,615.50	9,380.42	1,412.07
0.93		b)	b)	b)	b)	b)
100.00		GBP	–29,520.95	128.49	–26,196.89	112.31
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		GBP	647,896.33	31,777.35	574,943.21	27,775.95
100.00		GBP	32,059.60	1,442.72	28,449.69	1,261.05
100.00		GBP	22,399.99	0.00	19,877.76	0.00
100.00		GBP	5,286.42	0.00	4,691.17	0.00
15.80		b)	b)	b)	b)	b)

Country	Company	Registered office
United Kingdom	UFC Ltd.	Gillingham
United Kingdom	Ultrafine Limited	Gillingham
United Kingdom	Webnest Ltd.	Gillingham
United Kingdom	Wessex Biochemicals Ltd.	Gillingham
Ireland	Merck Millipore Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Carrigtwohill
Ireland	Merck Serono (Ireland) Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Dublin
Ireland	Millipore Cork Unlimited Company	Carrigtwohill
Ireland	SAFC Arklow Ltd.	Arklow
Ireland	Shrawdine Limited	Arklow
Ireland	Sigma-Aldrich Ireland Ltd.	Arklow
Ireland	Silverberry Limited	Arklow
Italy	Allergopharma S. p. A.	Rome
Italy	BioControl Italia S. r. l.	Rome
Italy	BioControl Systems S. r. l.	Rome
Italy	H-BIO Puglia S.c.r.l.	Bari
Italy	Istituto di Ricerche Biomediche Antoine Marxer RBM S. p. A.	Colleretto Giacosa
Italy	Merck S. p. A., a subsidiary of Merck KGaA, Darmstadt, Germany	Vimodrone
Italy	Merck Serono S.p.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Rome
Italy	Sigma-Aldrich S. r. l.	Milan
Italy	Tecnofarmaci S. p. A.	Pomezia
Croatia	Merck d.o.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Zagreb
Latvia	Merck Serono SIA, a subsidiary of Merck KGaA, Darmstadt, Germany	Riga
Lithuania	Merck Serono, UAB, a subsidiary of Merck KGaA, Darmstadt, Germany	Vilnius
Luxembourg	AZ Electronic Materials (Luxembourg) S. a. r. l.	Luxembourg
Luxembourg	AZ Electronic Materials S. a. r. l.	Luxembourg
Luxembourg	Mats Finance S. a. r. l.	Luxembourg
Luxembourg	Merck Chemicals Holding S.a.r.l., a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Merck Finance S.a.r.l., a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Merck Finanz S.a.r.l., a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Merck Holding S.a.r.l., a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Merck Invest SCS, a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Merck Re S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Luxembourg
Luxembourg	Millilux S. a. r. l.	Luxembourg
Luxembourg	Millipart S. a. r. l.	Luxembourg
Luxembourg	Millipore International Holdings, S. a. r. l.	Luxembourg
Luxembourg	Ridgefield Acquisition S. a. r. l.	Luxembourg
Luxembourg	Sigma-Aldrich Global S. a. r. l.	Luxembourg
Luxembourg	Sigma-Aldrich S. a. r. l.	Luxembourg
Malta	Merck Capital Holding Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Pietà
Malta	Merck Capital Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Pietà
Netherlands	BioControl Systems B. V.	Nieuwerkerk Ad Ijssel
Netherlands	Calypso Biotech B. V.	Amsterdam
Netherlands	Merck B.V., a subsidiary of Merck KGaA, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany	Schiphol-Rijk
Netherlands	Merck Chemicals B.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Amsterdam Zuidoost
Netherlands	Merck Holding Netherlands B.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Schiphol-Rijk
Netherlands	Merck Ventures B.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Amsterdam

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		EUR	432,442.89	49,976.61	432,442.89	49,976.61
100.00		EUR	5,540.65	–128.01	5,540.65	–128.01
100.00		EUR	219,124.03	–34.58	219,124.03	–34.58
100.00		b)	b)	b)	b)	b)
100.00		EUR	34,088.62	0.00	34,088.62	0.00
100.00		EUR	29,297.53	2,789.09	29,297.53	2,789.09
100.00		EUR	0.00	0.00	0.00	0.00
100.00		EUR	158.69	–176.58	158.69	–176.58
100.00		EUR	101.65	24.43	101.65	24.43
100.00		b)	b)	b)	b)	b)
2.50		b)	b)	b)	b)	b)
100.00		EUR	12,768.23	588.29	12,768.23	588.29
100.00		EUR	44,718.40	5,742.78	44,718.40	5,742.78
99.74		EUR	407,307.53	24,179.76	407,307.53	24,179.76
100.00		EUR	24,316.00	1,588.29	24,316.00	1,588.29
4.18		b)	b)	b)	b)	b)
100.00		HRK	1,153.88	152.06	8,609.88	1,135.21
100.00		EUR	4,824.41	102.97	4,824.41	102.97
100.00		EUR	208.06	42.68	208.06	42.68
100.00		USD	29,864.18	685,746.87	35,696.65	774,736.24
100.00		USD	588,919.86	186,260.21	703,935.91	210,431.20
100.00		USD	8,405.36	3,336.29	10,046.92	3,769.24
100.00		EUR	1,517,920.99	–55.90	1,517,920.99	–55.90
100.00		USD	–677,634.78	12,884.54	–809,976.85	14,556.57
100.00		EUR	4,037,982.86	59,082.92	4,037,982.86	59,082.92
100.00		EUR	485,990.48	–74.45	485,990.48	–74.45
100.00		USD	47,366.12	3,865.21	56,616.72	4,366.80
100.00		EUR	48,234.00	6,010.00	48,234.00	6,010.00
100.00		EUR	711,462.45	–46.45	711,462.45	–46.45
100.00		EUR	909,539.82	–58.97	909,539.82	–58.97
100.00		EUR	1,938,513.95	742,795.97	1,938,513.95	742,795.97
100.00		USD	1,005,892.06	737,654.59	1,202,342.78	833,380.03
100.00		EUR	122.30	–67.84	122.30	–67.84
100.00		USD	15,648.79	1,537.97	18,705.00	1,737.55
100.00		EUR	2,095,136.79	313,556.63	2,095,136.79	313,556.63
100.00		EUR	1,782,722.23	103,508.47	1,782,722.23	103,508.47
100.00		EUR	2,289.62	218.08	2,289.62	218.08
75.00		b)	b)	b)	b)	b)
100.00		EUR	915,846.12	249,087.54	915,846.12	249,087.54
100.00		EUR	2,793,764.35	112,579.20	2,793,764.35	112,579.20
100.00		EUR	3,743,847.88	–1,532.95	3,743,847.88	–1,532.95
100.00		EUR	57,778.76	–3,698.83	57,778.76	–3,698.83

Country	Company	Registered office
Netherlands	Merck Window Technologies B.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Eindhoven
Netherlands	Serono Tri Holdings B. V.	Schiphol-Rijk
Netherlands	Sigma-Aldrich B. V.	Zwijndrecht
Netherlands	Sigma-Aldrich Chemie N. V.	Zwijndrecht
Netherlands	SynAffix B. V.	Nijmegen
Norway	Merck Life Science AS, a subsidiary of Merck KGaA, Darmstadt, Germany	Oslo
Norway	Sigma-Aldrich Norway AS	Oslo
Austria	Allergopharma Vertriebsgesellschaft mbH	Vienna
Austria	f-star Biotechnologische Forschungs- und Entwicklungsgesellschaft mbH	Vienna
Austria	Merck Chemicals and Life Science GesmbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Vienna
Austria	Merck Gesellschaft mbH, a subsidiary of Merck KGaA, Darmstadt, Germany	Vienna
Austria	Merck KGaA & Co. Werk Spittal, a subsidiary of Merck KGaA, Darmstadt, Germany	Spittal
Austria	Sigma-Aldrich Handels GmbH	Vienna
Poland	Merck Business Solutions Europe Sp.z.o.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Wroclaw
Poland	Merck Sp.z o.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Warsaw
Poland	Sigma-Aldrich Sp.z.o.o.	Posen
Portugal	Laquifa Laboratorios S. A.	Algés
Portugal	Merck, S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Algés
Romania	Merck Romania S.R.L., a subsidiary of Merck KGaA, Darmstadt, Germany	Bucharest
Russia	Chemical Trade Limited LLC	Moscow
Russia	MedChem Limited	Moscow
Russia	Merck LLC, a subsidiary of Merck KGaA, Darmstadt, Germany	Moscow
Russia	SAF-LAB LLC	Moscow
Russia	Sigma-Aldrich Rus LLC	Moscow
Sweden	Galecto Biotech AB	Lund
Sweden	Merck AB, a subsidiary of Merck KGaA, Darmstadt, Germany	Solna
Sweden	Merck Chemicals and Life Science AB, a subsidiary of Merck KGaA, Darmstadt, Germany	Solna
Sweden	Sigma-Aldrich Sweden AB	Stockholm
Switzerland	Allergopharma AG	Therwil
Switzerland	Ares Trading SA	Aubonne
Switzerland	Asceneuron SA	Lausanne
Switzerland	CAMAG Chemie-Erzeugnisse und Adsorptionstechnik AG	Muttenz
Switzerland	Cridec SA	Eclepens
Switzerland	Inthera Bioscience AG	Schlieren
Switzerland	iOnctura SA	Plan-les-Ouates
Switzerland	Merck & Cie, a subsidiary of Merck KGaA, Darmstadt, Germany	Altdorf
Switzerland	Merck (Schweiz) AG, a subsidiary of Merck KGaA, Darmstadt, Germany	Zug
Switzerland	Merck Biosciences AG, a subsidiary of Merck KGaA, Darmstadt, Germany	Schaffhausen
Switzerland	Merck Performance Materials (Suisse) SA, a subsidiary of Merck KGaA, Darmstadt, Germany	Coinsins
Switzerland	Merck Serono SA, a subsidiary of Merck KGaA, Darmstadt, Germany	Coinsins
Switzerland	ObsEva SA	Cologny
Switzerland	Prexton Therapeutics SA	Plan-les-Ouates
Switzerland	SeroMer Holding SA	Coinsins

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00	100.00	EUR	5,137.53	–1,090.10	5,137.53	–1,090.10
100.00		EUR	443,281.04	299,983.48	443,281.04	299,983.48
100.00		EUR	75,704.47	–6.86	75,704.47	–6.86
100.00		EUR	280,363.64	3,386.22	280,363.64	3,386.22
14.12		b)	b)	b)	b)	b)
100.00		NOK	577.99	142.55	5,693.49	1,332.35
100.00		NOK	1,965.64	214.15	19,362.52	2,001.55
100.00		EUR	553.94	67.39	553.94	67.39
5.01		b)	b)	b)	b)	b)
100.00		EUR	13,834.07	4,629.75	13,834.07	4,629.75
100.00		EUR	15,454.21	6,158.75	15,454.21	6,158.75
100.00	99.00	EUR	43,228.55	3,305.39	43,228.55	3,305.39
100.00		EUR	2,064.41	286.07	2,064.41	286.07
100.00		PLN	1,377.61	363.73	5,756.76	1,548.81
100.00		PLN	26,071.02	1,867.34	108,945.59	7,951.43
100.00		PLN	2,382.97	456.30	9,957.94	1,943.01
100.00		EUR	78.24	0.23	78.24	0.23
100.00		EUR	35,156.46	6,491.54	35,156.46	6,491.54
100.00		RON	3,133.76	830.38	14,603.00	3,795.92
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		RUB	43,417.75	–5,745.13	2,992,472.62	–378,712.13
100.00		b)	b)	b)	b)	b)
100.00		RUB	1,228.08	1,120.89	84,642.60	73,888.06
21.85		b)	b)	b)	b)	b)
100.00		SEK	12,140.84	1,634.64	119,697.76	15,755.51
100.00		SEK	111,814.74	23,111.38	1,102,392.70	222,759.25
100.00		SEK	2,614.54	–662.61	25,776.99	–6,386.59
100.00		CHF	1,858.56	555.62	2,170.80	618.09
100.00		EUR	2,918,606.57	774,081.40	2,918,606.57	774,081.40
40.26		b)	b)	b)	b)	b)
39.11		b)	b)	b)	b)	b)
0.15		b)	b)	b)	b)	b)
23.28		b)	b)	b)	b)	b)
73.60		b)	b)	b)	b)	b)
51.63	51.63	CHF	–60,905.84	62,426.92	–71,138.02	69,445.58
100.00		CHF	8,777.09	1,333.56	10,251.64	1,483.49
100.00		CHF	10,299.89	–2.10	12,030.27	–2.33
100.00		CHF	204,461.95	94,854.83	238,811.56	105,519.36
100.00		EUR	1,176,697.86	1,027,084.03	1,176,697.86	1,027,084.03
7.05		b)	b)	b)	b)	b)
28.36		b)	b)	b)	b)	b)
100.00		EUR	3,276,466.02	912,069.85	3,276,466.02	912,069.85

Country	Company	Registered office
Switzerland	Sigma-Aldrich (Switzerland) Holding AG	Buchs
Switzerland	Sigma-Aldrich Chemie GmbH	Buchs
Switzerland	Sigma-Aldrich International GmbH	St. Gallen
Switzerland	Sigma-Aldrich Production GmbH	Buchs
Switzerland	Vaximm AG	Basel
Serbia	Merck d.o.o. Beograd, a subsidiary of Merck KGaA, Darmstadt, Germany	Belgrade
Slovakia	Merck spol.s.r.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Bratislava
Slovakia	Sigma-Aldrich, spol.s.r.o.	Bratislava
Slovenia	Merck d.o.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Ljubljana
Spain	Merck Chemicals and Life Science S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Madrid
Spain	Merck, S.L.U., a subsidiary of Merck KGaA, Darmstadt, Germany	Madrid
Spain	Sigma-Aldrich Quimica S.L.	Madrid
Czech Republic	Merck spol.s.r.o., a subsidiary of Merck KGaA, Darmstadt, Germany	Prague
Czech Republic	Sigma-Aldrich spol.s.r.o.	Prague
Turkey	Merck Ilac Ecza ve Kimya Ticaret AS, a subsidiary of Merck KGaA, Darmstadt, Germany	Istanbul
Hungary	Merck Kft., a subsidiary of Merck KGaA, Darmstadt, Germany	Budapest
Hungary	Sigma-Aldrich Kft.	Budapest
North America		
Canada	EMD Chemicals Canada Inc.	Toronto
Canada	EMD Crop BioScience Canada Inc.	Toronto
Canada	EMD Inc.	Mississauga
Canada	Millipore (Canada) Ltd.	Toronto
Canada	Natrix Separations, Inc.	Burlington
Canada	Sigma-Aldrich Canada Co.	Oakville
United States	Akili Interactive Labs, Inc.	Boston
United States	Aldrich Chemical Co. LLC	Milwaukee
United States	Aldrich Chemical Foreign Holding LLC	St. Louis
United States	Aldrich-APL, LLC	Urbana
United States	Allozyne, Inc.	Seattle
United States	Amnis Corp.	Seattle
United States	Archemix Corporation	Cambridge
United States	BioControl Systems International, Inc.	Seattle
United States	BioControl Systems, Inc.	Bellevue
United States	Biolinq Inc.	San Diego
United States	BioReliance Corporation	Rockville
United States	BioVascular, Inc.	La Jolla
United States	Bird Rock Bio, Inc.	La Jolla
United States	Cascadian Therapeutics, Inc.	Seattle
United States	Cell Marque Corporation	Rocklin
United States	Cerilliant Corporation	Round Rock
United States	Deltanoid Pharmaceuticals, Inc.	Madison
United States	Dynamis Therapeutics, Inc.	Jenkintown
United States	EMD Accounting Solutions & Services America, Inc.	Rockland
United States	EMD Finance LLC	Wilmington
United States	EMD Holding Corp.	Rockland
United States	EMD Millipore Corporation	Burlington
United States	EMD Performance Materials Corp.	Philadelphia

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		CHF	5,350,188.65	161,683.50	6,249,020.35	179,861.58
100.00		CHF	170,486.44	43,838.52	199,128.16	48,767.29
100.00		USD	4,880,855.43	47,257.06	5,834,086.50	53,389.61
100.00		CHF	55,368.61	6,920.98	64,670.54	7,699.10
24.07		b)	b)	b)	b)	b)
100.00		RSD	5,390.87	437.29	638,044.49	53,062.44
100.00		EUR	12,722.76	769.32	12,722.76	769.32
100.00		b)	b)	b)	b)	b)
100.00		EUR	1,597.50	118.95	1,597.50	118.95
100.00		EUR	27,928.18	5,862.53	27,928.18	5,862.53
100.00		EUR	185,778.51	12,888.80	185,778.51	12,888.80
100.00		EUR	9,081.87	164.72	9,081.87	164.72
100.00		CZK	26,327.17	1,915.97	673,635.91	50,540.11
100.00		CZK	3,275.91	267.94	83,821.12	7,067.84
100.00		TRY	21,287.22	−1,081.97	96,309.78	−4,443.62
100.00		HUF	18,403.28	2,502.46	5,712,075.91	774,469.09
100.00		HUF	3,023.94	125.66	938,582.71	38,888.17
100.00		CAD	148.50	−29.85	222.86	−43.79
100.00		CAD	6,284.11	15.09	9,430.56	22.14
100.00		CAD	11,229.88	1,898.44	16,852.67	2,784.99
100.00		CAD	3,776.35	900.57	5,667.17	1,321.13
100.00		CAD	−145.53	−839.70	−222.35	−1,229.48
100.00		CAD	11,504.10	771.54	17,264.21	1,131.84
3.06		b)	b)	b)	b)	b)
100.00		USD	64,409.38	15,315.88	76,988.53	17,303.42
100.00		USD	0.42	0.00	0.50	0.00
100.00		USD	4,052.64	962.40	4,844.12	1,087.29
5.21		b)	b)	b)	b)	b)
100.00		USD	74,703.74	−2,648.55	89,293.38	−2,992.26
10.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		USD	64,569.52	7,638.01	77,179.94	8,629.20
8.83		b)	b)	b)	b)	b)
100.00		USD	96,083.59	34,144.00	114,848.71	38,574.87
6.76	6.76	b)	b)	b)	b)	b)
4.64		b)	b)	b)	b)	b)
0.75		b)	b)	b)	b)	b)
100.00		USD	51,821.00	4,303.82	61,941.64	4,862.33
100.00		USD	103,066.70	25,153.10	123,195.62	28,417.22
6.80		b)	b)	b)	b)	b)
0.59	0.59	b)	b)	b)	b)	b)
100.00		USD	−1,243.10	−245.93	−1,485.88	−277.84
100.00		USD	33,722.55	13,049.63	40,308.56	14,743.08
100.00		USD	13,388,802.42	1,556,096.27	16,003,635.53	1,758,030.89
100.00		USD	3,111,951.69	713,884.46	3,719,715.86	806,570.91
100.00		USD	313,054.00	−1,734.54	374,193.44	−1,959.63

Country	Company	Registered office
United States	EMD Serono Holding, Inc.	Rockland
United States	EMD Serono Research & Development Institute, Inc.	Billerica
United States	EMD Serono, Inc.	Rockland
United States	Fluka Chemical Corp.	St. Louis
United States	Grzybowski Scientific Inventions Ltd.	Evanston
United States	Indi Molecular, Inc.	Culver City
United States	KL Acquisition Corp.	St. Louis
United States	Kraig Biocraft Laboratories, Inc.	Ann Arbor
United States	Millipore Asia Ltd.	Wilmington
United States	Millipore UK Holdings I, LLC	Wilmington
United States	Millipore UK Holdings II, LLC	Wilmington
United States	Nysa Membranes USA, Inc.	Acton
United States	Ormet Circuits, Inc.	San Diego
United States	Progyny, Inc.	Menlo Park
United States	Prolog Healthy Living Fund II, L.P.	St. Louis
United States	Prolog Healthy Living Fund, L.P.	St. Louis
United States	Raze Therapeutics, Inc.	Cambridge
United States	Research Organics, LLC	Cleveland
United States	Robert W. Baird & Co.	Chicago
United States	SAFC Biosciences, Inc.	Lenexa
United States	SAFC Carlsbad, Inc.	Carlsbad
United States	SAFC Hitech, Inc.	Haverhill
United States	SAFC, Inc.	Madison
United States	Serono Laboratories, Inc.	Rockland
United States	Sigma Chemical Foreign Holding LLC	St. Louis
United States	Sigma Redevelopment Corporation	St. Louis
United States	Sigma-Aldrich Co. LLC	St. Louis
United States	Sigma-Aldrich Corporation	St. Louis
United States	Sigma-Aldrich Finance Co.	St. Louis
United States	Sigma-Aldrich Foreign Holding Co.	St. Louis
United States	Sigma-Aldrich Lancaster, Inc.	St. Louis
United States	Sigma-Aldrich Manufacturing LLC	St. Louis
United States	Sigma-Aldrich Missouri Insurance Company	St. Louis
United States	Sigma-Aldrich Research Biochemicals, Inc.	Natick
United States	Sigma-Aldrich RTC, Inc.	Laramie
United States	Sigma-Aldrich, Inc.	Milwaukee
United States	Sigma-Genosys of Texas LLC	The Woodlands
United States	Supelco, Inc.	Bellefonte
United States	Techcare Systems, Inc.	St. Louis
United States	Tioga Pharmaceuticals, Inc.	San Diego
United States	TocopheRx, Inc.	Groton
United States	Translate Bio, Inc.	Cambridge
United States	ViuRx Pharmaceuticals, Inc.	Boston
Asia-Pacific (APAC)		
Australia	Biochrom Australia Pty. Ltd.	Bayswater
Australia	Merck Pty. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Bayswater
Australia	Merck Serono Australia Pty. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Sydney
Australia	Prima BioMed Ltd.	Sydney

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		USD	749,970.45	302,062.06	896,439.68	341,260.65
100.00		USD	45,947.59	22,415.25	54,921.16	25,324.08
100.00		USD	62,567.20	55,261.07	74,786.57	62,432.29
100.00		b)	b)	b)	b)	b)
100.00		USD	318.12	100.07	380.25	113.06
18.00		b)	b)	b)	b)	b)
100.00		USD	1,324.62	12.80	1,583.31	14.46
0.52		b)	b)	b)	b)	b)
100.00		USD	5,929.53	23.14	7,087.56	26.15
100.00		EUR	671,324.51	0.00	671,324.51	0.00
100.00		EUR	0.00	0.00	0.00	0.00
100.00		b)	b)	b)	b)	b)
100.00		USD	16,253.92	–6,494.07	19,428.31	–7,336.80
9.59		b)	b)	b)	b)	b)
50.58		b)	b)	b)	b)	b)
38.32		b)	b)	b)	b)	b)
12.34		b)	b)	b)	b)	b)
100.00		USD	21,790.11	2,045.21	26,045.72	2,310.62
0.21		b)	b)	b)	b)	b)
100.00		USD	153,228.50	13,524.88	183,154.03	15,280.00
100.00		USD	18,002.54	3,984.99	21,518.43	4,502.13
100.00		USD	175,012.68	–4,676.41	209,192.66	–5,283.27
100.00		USD	82,269.34	1,152.41	98,336.54	1,301.96
100.00		USD	137.97	0.00	164.92	0.00
100.00		USD	0.42	0.00	0.50	0.00
100.00		USD	67,393.98	–3,940.81	80,556.03	–4,452.20
100.00		USD	4,755,488.96	–125,092.82	5,684,235.95	–141,326.12
100.00		USD	1,244,700.74	377,184.89	1,487,790.80	426,132.17
100.00		USD	555,236.38	16,947.98	663,674.04	19,147.32
100.00		USD	–10,241.88	–546.29	–12,242.12	–617.18
100.00		USD	–1,901.45	–3,634.70	–2,272.80	–4,106.38
100.00		USD	74,973.81	12,689.58	89,616.19	14,336.30
100.00		USD	11,273.49	495.77	13,475.21	560.10
100.00		USD	15,225.96	4,930.80	18,199.58	5,570.67
100.00		USD	12,641.71	–270.35	15,110.64	–305.43
100.00		USD	–17,123.28	21,609.84	–20,467.46	24,414.15
100.00		USD	5,503.04	1,169.44	6,577.79	1,321.20
100.00		USD	204,146.52	–3,817.69	244,016.34	–4,313.11
100.00		b)	b)	b)	b)	b)
16.58	16.58	b)	b)	b)	b)	b)
62.83		b)	b)	b)	b)	b)
3.81		b)	b)	b)	b)	b)
8.03		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		AUD	4,492.42	1,264.67	6,890.92	1,866.39
100.00		AUD	15,751.28	3,281.23	24,160.88	4,842.45
0.11		b)	b)	b)	b)	b)

Country	Company	Registered office
Australia	Proligo Australia Pty. Ltd.	Castle Hill
Australia	SAFC Biociences Pty. Ltd.	Castle Hill
Australia	Sigma-Aldrich Oceania Pty. Ltd.	Castle Hill
Australia	Sigma-Aldrich Pty. Ltd.	Castle Hill
China	Beijing Skywing Technology Co., Ltd.	Beijing
China	Merck Chemicals (Shanghai) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Shanghai
China	Merck Display Materials (Shanghai) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Shanghai
China	Merck Electronic Materials (Suzhou) Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Suzhou
China	Merck Holding (China) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Shanghai
China	Merck Life Science Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Hong Kong
China	Merck Life Science Technologies (Nantong) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Nantong
China	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Hong Kong
China	Merck Millipore Lab Equipment (Shanghai) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Shanghai
China	Merck Performance Materials Hong Kong Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Hong Kong
China	Merck Performance Materials Hong Kong Services Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Hong Kong
China	Merck Pharmaceutical (HK) Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Hong Kong
China	Merck Pharmaceutical Manufacturing (Jiangsu) Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Nantong
China	Merck Serono (Beijing) Pharmaceutical Distribution Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Beijing
China	Merck Serono (Beijing) Pharmaceutical R & D Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Beijing
China	Merck Serono Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Beijing
China	SAFC Hitech (Shanghai) Co., Ltd.	Shanghai
China	Sigma-Aldrich (Shanghai) Trading Co., Ltd.	Shanghai
China	Sigma-Aldrich (Wuxi) Life Science & Technology Co., Ltd.	Wuxi
India	Merck Life Science Pvt. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Mumbai
India	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Mumbai
India	Merck Performance Materials Pvt. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Mumbai
India	Merck Specialities Pvt. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Mumbai
India	Sigma-Aldrich Chemicals Private Limited	Bangalore
Indonesia	P.T. Merck Chemicals and Life Sciences, a subsidiary of Merck KGaA, Darmstadt, Germany	Jakarta
Indonesia	P.T. Merck Tbk., a subsidiary of Merck KGaA, Darmstadt, Germany	Jakarta
Japan	BioReliance KK	Tokyo
Japan	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Tokyo
Japan	Merck Performance Materials G.K., a subsidiary of Merck KGaA, Darmstadt, Germany	Tokyo
Japan	Merck Serono Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Tokyo

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		AUD	1,926.88	28.65	2,955.64	42.28
100.00		AUD	13,276.55	1,741.46	20,364.89	2,570.05
100.00		AUD	33,691.33	195.67	51,679.14	288.77
100.00		AUD	16,527.50	−569.35	25,351.54	−840.24
100.00		CNY	1,143.90	−1,855.97	8,911.80	−14,144.35
100.00		CNY	26,304.05	2,951.85	204,926.97	22,496.09
100.00		CNY	32,879.58	653.41	256,154.96	4,979.68
100.00		CNY	56,423.91	265.18	439,581.72	2,020.91
100.00		CNY	74,476.98	−55.83	580,227.84	−425.46
100.00		USD	30,754.26	−10.99	36,760.57	−12.41
100.00		CNY	1,124.62	−1,520.00	8,761.60	−11,583.96
100.00		HKD	20,897.77	2,726.67	195,233.26	24,004.47
100.00		CNY	37.64	893.05	293.27	6,805.98
100.00		HKD	55,386.57	−6,827.95	517,437.92	−60,110.43
100.00		USD	1,181.32	−72.40	1,412.03	−81.80
100.00		HKD	8,119.50	267.20	75,854.84	2,352.32
100.00		CNY	24,088.81	−18,846.16	187,668.72	−143,626.96
100.00		CNY	4,526.70	4,099.81	35,266.17	31,244.74
100.00		CNY	3,555.05	701.95	27,696.36	5,349.56
100.00		CNY	62,266.90	41,047.65	485,102.71	312,824.95
100.00		CNY	7,796.16	191.81	60,737.52	1,461.80
100.00		CNY	43,091.33	4,567.15	335,711.65	34,806.31
100.00		CNY	46,402.34	9,171.58	361,506.68	69,896.78
100.00		INR	14,600.81	6,859.84	1,115,903.41	504,863.79
51.80		INR	99,007.99	15,460.26	7,566,933.33	1,137,828.37
100.00		INR	3,018.42	−13.49	230,690.09	−992.56
100.00		INR	46,582.73	3,505.11	3,560,201.45	257,965.25
100.00		INR	35,431.13	6,962.87	2,707,912.99	512,446.17
100.00		IDR	−2,740.86	−1,113.38	−44,427,920.11	−16,859,060.01
86.65		IDR	39,072.25	10,546.60	633,341,621.98	159,698,754.27
100.00		JPY	456.41	83.94	61,463.74	10,653.96
100.00		JPY	309,982.89	32,571.42	41,744,930.16	4,134,007.94
100.00		JPY	407,511.11	70,376.12	54,878,909.38	8,932,231.76
100.00		JPY	39,920.21	2,314.07	5,375,994.39	293,704.71

Country	Company	Registered office
Japan	Sigma-Aldrich Japan G.K.	Tokyo
Malaysia	Merck Sdn Bhd, a subsidiary of Merck KGaA, Darmstadt, Germany	Petaling Jaya
Malaysia	Sigma-Aldrich (M) Sdn Bhd	Kuala Lumpur
New Zealand	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Palmerston North
New Zealand	Sigma-Aldrich New Zealand Co.	Christchurch
Philippines	Merck Business Solutions Asia Inc., a subsidiary of Merck KGaA, Darmstadt, Germany	Bonifacio Global City
Philippines	Merck Inc., a subsidiary of Merck KGaA, Darmstadt, Germany	Makati City
Singapore	Merck Performance Materials Pte. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Singapore
Singapore	Merck Pte. Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Singapore
Singapore	Sigma-Aldrich Pte. Ltd.	Singapore
South Korea	Merck Electronic Materials Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Seoul
South Korea	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Seoul
South Korea	Merck Performance Materials Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Pyeongtaek-shi
South Korea	Sigma-Aldrich Korea Ltd.	Yongin City
South Korea	SAFC Hitech Korea Ltd.	Yongin City
Taiwan	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Taipeh
Taiwan	Merck Performance Materials Co., Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Taipeh
Taiwan	SAFC Hitech Taiwan Co. Ltd.	Kaohsiung
Thailand	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Bangkok
Vietnam	Merck Vietnam Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Ho Chi Minh City
Latin America		
Argentina	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Buenos Aires
Argentina	Sigma-Aldrich de Argentina S.r.l.	Buenos Aires
Brazil	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Rio de Janeiro
Brazil	Sigma-Aldrich Brasil Ltda.	São Paulo
Chile	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Santiago de Chile
Chile	Sigma-Aldrich Quimica Ltda.	Santiago de Chile
Dominican Republic	Merck Dominicana, S.R.L., a subsidiary of Merck KGaA, Darmstadt, Germany	Santo Domingo
Ecuador	Merck C.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Quito
Guatemala	Merck, S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Guatemala City
Colombia	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Bogota
Mexico	Consumer Health Distribution S.A. de C.V.	Mexico City
Mexico	Merck Biopharma Distribution S.A. de C.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Mexico City
Mexico	Merck, S.A. de C.V., a subsidiary of Merck KGaA, Darmstadt, Germany	Mexico City
Mexico	Sigma-Aldrich Quimica, S. de R.L. de C.V.	Toluca
Panama	Mesofarma Corporation	Panama City
Peru	Merck Peruana S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Lima
Uruguay	ARES Trading Uruguay S.A.	Montevideo
Venezuela	Merck S.A., a subsidiary of Merck KGaA, Darmstadt, Germany	Caracas
Venezuela	Representaciones MEPRO S.A.	Caracas

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		JPY	55,890.35	3,677.07	7,526,670.23	466,699.18
100.00		MYR	10,658.24	26.89	51,653.03	130.35
100.00		MYR	1,777.29	164.35	8,613.30	796.67
100.00		NZD	1,702.06	172.61	2,864.57	274.55
100.00		NZD	785.47	67.55	1,321.94	107.44
99.99		PHP	1,703.50	506.88	101,620.39	28,834.98
100.00		PHP	7,937.05	5,085.46	473,475.47	289,299.13
100.00		USD	38,550.84	−3,758.43	46,079.82	−4,246.16
100.00		SGD	244,375.70	1,083.90	390,512.37	1,688.37
100.00		SGD	168,142.63	1,528.76	268,691.92	2,381.32
100.00		KRW	212,087.88	−4,056.29	270,607,808.27	−5,172,347.40
100.00		KRW	62,569.55	7,399.77	79,833,933.42	9,435,765.59
100.00		USD	78,546.38	8,386.78	93,886.49	9,475.13
100.00		KRW	35,227.76	−1,358.33	44,947,908.72	−1,732,069.17
100.00		b)	b)	b)	b)	b)
100.00		TWD	22,308.11	2,501.70	792,774.62	86,052.38
100.00		TWD	352,750.00	29,100.55	12,535,853.23	1,000,990.03
100.00		TWD	52,545.35	18,522.71	1,867,330.24	637,137.24
45.11		THB	23,843.81	3,680.13	929,486.58	140,944.08
100.00		VND	3,586.14	228.15	97,342,418.67	5,855,966.55
100.00		ARS	32,143.11	2,258.48	736,951.58	42,882.03
100.00		ARS	1,113.90	299.63	25,538.63	5,689.02
100.00		BRL	191,612.40	10,276.42	758,708.47	37,249.96
100.00		BRL	−4,017.76	−3,479.72	−15,908.71	−12,613.30
100.00		CLP	47,531.18	2,496.87	34,925,282.16	1,831,756.92
100.00		CLP	903.72	365.43	664,041.89	268,086.87
100.00		b)	b)	b)	b)	b)
100.00		USD	18,286.28	2,703.62	21,857.59	3,054.47
100.00		GTQ	13,744.92	520.10	120,669.44	4,322.58
100.00		COP	26,961.60	7,338.34	96,257,833.62	24,574,429.99
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		MXN	39,242.77	185,088.18	924,857.89	3,970,017.46
100.00		MXN	4,879.19	247.67	114,990.80	5,312.44
100.00		USD	57,197.99	15,973.85	68,368.76	18,046.78
100.00		PEN	21,184.20	3,768.91	82,016.75	13,867.17
100.00		USD	27,723.28	7,567.95	33,137.63	8,550.04
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)

Country	Company	Registered office
Middle East and Africa (MEA)		
Egypt	Merck Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Cairo
Algeria	Novapharm Production SARL	Wilaya de Tipiza
Israel	ARTSaVIT Ltd.	Yavne
Israel	Inter-Lab Ltd.	Yavne
Israel	InterPharm Industries Ltd.	Yavne
Israel	InterPharm Laboratories Ltd.	Yavne
Israel	MediSafe Project Ltd.	Haifa
Israel	Merck Serono Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Herzliya Pituach
Israel	Metabomed Ltd.	Yavne
Israel	Neviah Genomics Ltd.	Yavne
Israel	PMatX Ltd.	Yavne
Israel	QLight Nanotech Ltd.	Jerusalem
Israel	Sigma-Aldrich Israel Ltd.	Rehovot
Kenya	Merck Healthcare and Life Science Limited, a subsidiary of Merck KGaA, Darmstadt, Germany	Nairobi
Marocco	Merck Maroc S.A.R.L., a subsidiary of Merck KGaA, Darmstadt, Germany	Casablanca
Mauritius	Millipore Mauritius Ltd.	Cyber City
Nigeria	Merck Pharmaceutical and Life Sciences Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Lagos
South Africa	Merck (Pty) Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Halfway House
South Africa	Merck Pharmaceutical Manufacturing (Pty) Ltd., a subsidiary of Merck KGaA, Darmstadt, Germany	Wadeville
South Africa	Sigma-Aldrich (Pty) Ltd.	Kempton Park
South Africa	Serono South Africa Ltd.	Johannesburg
Tunisia	Merck Promotion SARL, a subsidiary of Merck KGaA, Darmstadt, Germany	Tunis
Tunisia	Merck SARL, a subsidiary of Merck KGaA, Darmstadt, Germany	Tunis
United Arab Emirates	Merck Serono Middle East FZ-LLC, a subsidiary of Merck KGaA, Darmstadt, Germany	Dubai

a) Profit and loss transfer agreement.
b) Not disclosed owing to minor significance acc. to section 286 (3) no. 1 HGB.
c) Operational site of Merck KGaA, Darmstadt, Germany.

Equity interest (%)	thereof Merck KGaA, Darmstadt, Germany (%)	Reporting currency (ISO Code)	IFRS net equity in thousand €	IFRS profit after tax in thousand €	IFRS net equity in thousand reporting currency	IFRS profit after tax in thousand reporting currency
100.00		EGP	3,076.28	150.09	65,365.21	3,018.90
20.00		b)	b)	b)	b)	b)
9.40		b)	b)	b)	b)	b)
100.00		USD	22,709.09	4,465.31	27,144.18	5,044.78
100.00		USD	–291.97	–314.05	–348.99	–354.81
100.00		USD	141,419.60	243,866.32	169,038.85	275,512.85
6.45		b)	b)	b)	b)	b)
100.00		USD	13,316.58	216.64	15,917.31	244.75
16.35		b)	b)	b)	b)	b)
69.00	7.75	b)	b)	b)	b)	b)
90.00		b)	b)	b)	b)	b)
100.00		ILS	246.90	–3,988.64	1,024.66	–16,185.13
100.00		ILS	64,212.07	2,040.83	266,486.53	8,281.29
100.00		KES	4,023.92	–23.12	497,092.26	–2,699.83
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		b)	b)	b)	b)	b)
100.00		ZAR	28,485.32	5,458.47	420,329.34	81,847.41
100.00		ZAR	17.35	0.00	255.97	0.00
100.00		ZAR	1,955.19	378.13	28,850.77	5,669.94
100.00		b)	b)	b)	b)	b)
100.00		TND	20.07	–23.85	59.59	–65.18
100.00		TND	–895.45	129.53	–2,659.03	354.00
100.00		AED	18,512.25	–14,539.93	81,272.48	–60,333.29

Independent Auditor's Report

To MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany

Report on the Audit of the Annual Financial Statements and of the Combined Management Report

Opinions

We have audited the annual financial statements of MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany, which comprise the balance sheet as at December 31, 2017, and the statement of profit and loss for the financial year from January 1, 2017 to December 31, 2017, and notes to the financial statements, including the recognition and measurement policies presented therein. In addition, we have audited the combined management report of MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany, for the financial year from January 1, 2017 to December 31, 2017.

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

- the accompanying annual financial statements comply, in all material respects, with the requirements of German commercial law applicable to business corporations and give a true and fair view of the assets, liabilities and financial position of the Company as at December 31, 2017 and of its financial performance for the financial year from January 1, 2017 to December 31, 2017 in compliance with German Legally Required Accounting Principles, and
- the accompanying combined management report as a whole provides an appropriate view of the Company's position. In all material respects, this combined management report is consistent with the annual financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to Section 322 (3) sentence 1 HGB [Handelsgesetzbuch: German Commercial Code], we declare that our audit has not led to any reservations relating to the legal compliance of the annual financial statements and of the combined management report.

Basis for the Opinions

We conducted our audit of the annual financial statements and of the combined management report in accordance with Section 317 HGB and the EU Audit Regulation No. 537/2014 (referred to subsequently as "EU Audit Regulation") 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 Annual Financial Statements and of the Combined Management Report" section of our auditor's report. We are independent of the Company in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the annual financial statements and on the combined management report.

Key Audit Matters in the Audit of the Annual Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the annual financial statements for the financial year from January 1, 2017 to December 31, 2017. These matters were addressed in the context of our audit of the annual financial statements as a whole, and in forming our opinion thereon, we do not provide a separate opinion on these matters.

VALUATION OF INVESTMENTS IN AFFILIATED COMPANIES

Information on financial assets can be found in the notes to the financial statements under note 3.

Financial statement risk

As of December 31, 2017, the Company reported investments in affiliated companies of EUR 16,481 million as part of financial assets. This amount represents 83% of total assets and thus a significant share of the Company's assets.

Investments in affiliated companies are recognized at cost or, if they are expected to be permanently impaired, at their lower fair value.

The evaluation of whether investments in affiliated companies are impaired to a considerable extent depends on the Company's estimates and judgment.

The Company recorded impairment losses in the amount of EUR 0.1 million on investments in affiliated companies in the fiscal year 2017. There is a risk for the financial statements that a potential impairment of investments in affiliated companies is not recorded in the financial statements.

Our audit approach
We applied a risk-based approach to our audit. In a first step, we obtained explanations from the Company's accounting department and evaluated underlying documentation to obtain an understanding of the Company's process for testing investments in affiliated companies for impairment. In doing this, we analyzed the Company's approach to determining potentially impaired investments in affiliated companies and, based on the information obtained in the course of our audit, assessed whether there were any indicators for impairment that were not identified by the Company.

In a second step, we assessed the calculation model used by the Company to determine the value of investments and reconciled the assumptions concerning the discount rate to external information. For individual investments in affiliated companies that were selected by us using a risk based approach, we scrutinized the revenue and earnings forecasts as well as underlying assumptions prepared by the respective CFO (or other individuals, as applicable), whereby we used the current earnings situation as a starting point for our analysis. In addition, we reconciled these projections and assumptions with other internally available data, e.g. for tax purposes. For selected investments in affiliated companies, we also assessed the accuracy of the Company's forecasting process by comparing the budgets prepared in previous years with actual results and by analyzing deviations, if any.

Our conclusions
The Company's assumptions and estimates regarding the valuation of participations in affiliated companies are appropriate.

RECOGNITION AND MEASUREMENT OF PROVISIONS FOR TAX LIABILITIES

For changes in provisions for tax liabilities, please refer to note 10 in the notes to the financial statements.

Financial statement risk
As of December 31, 2017, the Company recorded provisions for tax liabilities in the amount of EUR 201 million.

The application of local regulations on income tax and tax incentives is complex and subject to risks. The recognition and measurement of income tax liabilities requires the company to exercise judgment in assessing tax matters and to make estimates regarding tax risks the company regularly engages external experts to support its own risk assessment with expert opinions from tax specialists.

There is a risk for the financial statements that provisions for tax liabilities are not fully recognized or not appropriately measured.

Our audit approach
We involved our own specialists in international tax law into the audit team in order to evaluate both the company's assessment of tax risks as well as the related opinions of external experts engaged by the company.

We obtained an understanding of existing tax risks through inquiry of management and employees of the tax department. We assessed the competence, capabilities and objectivity of the external experts and evaluated their expert opinions.

In addition, we analyzed correspondence with the relevant tax authorities and assessed the assumptions underlying the determination of tax liabilities based on our knowledge and experience of how the relevant legal requirements are currently applied by the tax authorities and courts.

Our conclusions
The assumptions applied by the company for recognition and measurement of provisions for tax liabilities are reasonable.

VALUATION OF PROVISIONS FOR PATENT DISPUTES

For changes in and explanations related to provisions for patent disputes, please refer to note 10 in the notes to the financial statements.

Financial statement risk
As of December 31, 2017, provisions for legal disputes amount to EUR 184 million, which among others include provisions for patent disputes.

The amount of provisions for patent disputes is determined based on the expenditure deemed necessary to settle the obligation according to prudent commercial judgment. Consequently, the measurement of the related provisions is based on estimates and judgement of external lawyers and management.

There is a risk for the financial statements that the provisions for patent disputes were not measured appropriately as of the balance sheet date.

Our audit approach
As supporting evidence for the estimated expenditure deemed necessary to settle the obligation according to prudent commercial judgment, we obtained written confirmations from external legal counsel engaged by the company to obtain an understanding of the current status of the pending legal proceedings, reviewed correspondence with the plaintiffs and relevant courts and other authorities, and also assessed underlying documents and minutes. In this context, we also interviewed the Company's in-house patent counsel, employees in the company's controlling and accounting departments, and verified the plausibility and consistency of the explanations obtained with the determination of the estimated expenditure deemed necessary to settle the obligation according to prudent commercial judgment.

To ensure arithmetical accuracy of the valuation model used, we used a risk-based audit approach to recalculate the Company's calculations on a sample basis.

Our conclusions
The assumptions for the measurement of the provisions for patent disputes are appropriate.

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

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

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information
- is materially inconsistent with the annual financial statements, with the combined management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of Management and the Supervisory Board for the Annual Financial Statements and the Combined Management Report
The supervisory board is responsible for overseeing the Company's financial reporting process for the preparation of the financial statements and of the combined management report.

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

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

Furthermore, management is responsible for the preparation of the combined management report that as a whole provides an appropriate view of the Company's position and is, in all material respects, consistent with the annual financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, management is responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a combined 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 combined management report.

The supervisory board is responsible for overseeing the Company's financial reporting process for the preparation of the annual financial statements and of the combined management report.

Auditor's Responsibilities for the Audit of the Annual Financial Statements and of the Combined Management Report
Our objectives are to obtain reasonable assurance about whether the annual financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the combined management report as a whole provides an appropriate view of the Company's position and, in all material respects, is consistent with the annual financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the annual financial statements and on the combined management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and the EU Audit Regulation 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 annual financial statements and this combined 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 annual financial statements and of the combined management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.
- Obtain an understanding of internal control relevant to the audit of the annual financial statements and of arrangements and measures (systems) relevant to the audit of the combined management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems of the Company.
- Evaluate the appropriateness of accounting policies used by management and the reasonableness of estimates made by management and related disclosures.
- Conclude on the appropriateness of the management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company'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 annual financial statements and in the combined management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the annual financial statements, including the disclosures, and whether the annual financial statements present the underlying transactions and events in a manner that the annual financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Company in compliance with German Legally Required Accounting Principles.
- Evaluate the consistency of the combined management report with the annual financial statements, its conformity with [German] law, and the view of the Company's position it provides.
- Perform audit procedures on the prospective information presented by management in the combined management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by management as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

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

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

Other Legal and Regulatory Requirements

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as auditor by the annual general meeting on April 28, 2017 We were engaged by the supervisory board on June 1, 2017. We have been the auditor of the MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany, without interruption since the financial year 1995.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

German Public Auditor Responsible for the Engagement

The German Public Auditor responsible for the engagement is Bodo Rackwitz

Frankfurt am Main, February 15, 2018

Braun
[German Public Auditor]

Rackwitz
[German Public Auditor]

Responsibility Statement in accordance with section 264 (2) sentence 3 HGB and section 289 (1) sentence 5 HGB

To the best of our knowledge, and in accordance with the applicable reporting principles, the annual financial statements of Merck KGaA, Darmstadt, Germany, give a true and fair view of the assets, liabilities, financial position, and profit or loss of Merck KGaA, Darmstadt, Germany, and the management report includes a fair review of the development and performance of the business and the position of the company, together with a description of the principal opportunities and risks associated with the expected development of Merck KGaA, Darmstadt, Germany.

Darmstadt, February 14, 2018

Stefan Oschmann

Udit Batra

Kai Beckmann

Walter Galinat

Belén Garijo

Marcus Kuhnert

Report of the Supervisory Board

The Supervisory Board again properly executed its duties in 2017 in accordance with the law as well as the company's Articles of Association and rules of procedure. In particular, the Supervisory Board monitored the work of the Executive Board diligently and regularly.

COOPERATION WITH THE EXECUTIVE BOARD

The cooperation with the Executive Board was characterized by intensive, trustworthy exchange. During fiscal 2017, the Executive Board provided the Supervisory Board with regular written and verbal reports on the business development of Merck KGaA, Darmstadt, Germany, and the Group. In particular, the Supervisory Board was informed about the market and sales situation of the company against the background of macroeconomic development, the financial position of the company and its subsidiaries, along with their earnings development, as well as corporate planning. Within the scope of quarterly reporting, the sales and operating results were presented for the Group as a whole, and broken down by business sector. Aside from the Supervisory Board meetings, the Chairman of the Supervisory Board also maintained and continues to maintain a regular exchange of information with the Chairman of the Executive Board.

KEY TOPICS OF THE SUPERVISORY BOARD MEETINGS

Four Supervisory Board meetings were held in fiscal 2017. At these meetings, the Supervisory Board intensely discussed the reports of the Executive Board and company developments and strategic issues together with the Executive Board.

At the meeting held on February 24, 2017, the Executive Board first intensively addressed the annual financial statements and consolidated financial statements for 2016, the combined management report as well as the proposal for the appropriation of the net retained profit. The auditor explained the audit report, including the focus areas of the audit. The Executive Board reported on the financial statements. Furthermore, the Supervisory Board resolved upon the report and the objectives of the Supervisory Board with respect to its composition, the Declaration of Conformity with the German Corporate Governance Code as well as the Statement on Corporate Governance, which simultaneously includes the joint report on Corporate Governance of the Executive Board and Supervisory Board. The Supervisory Board also approved the proposals to be made to the General Meeting. The Executive Board reported on business performance in 2016 and presented the plans for fiscal 2017. The Supervisory Board also took note of the written risk report as well as the report from Group Internal Auditing for 2016 and approved the performance of certain non-audit services by the auditor of the annual financial statements.

The meeting held on May 12, 2017 focused on current business developments in the first quarter of 2017. The report of the Research and Development Committee Life Science/Performance Materials of the Board of Partners of E. Merck KG, Darmstadt, Germany, was a further focus of the meeting. The Supervisory Board also dealt with the Compliance and Data Protection Report for 2016. In conclusion, the Executive Board presented the "Vision and Future Darmstadt" project, regarding the plans for the future of the Darmstadt site.

At its meeting on July 28, 2017, the Supervisory Board focused intensively on the report of the Executive Board on business performance in the second quarter of 2017. In addition, the auditor explained the half-year financial report. Risk management within the company was a further topic. The Head of Risk Management presented the status report for the first half of 2017. No risks that threaten the continued existence of the company were identified. In addition, the list of permitted non-audit services was updated, an external audit of the non-financial declaration was resolved upon and various developments in the Corporate Governance area were discussed.

At its fourth meeting on November 8, 2017, the Supervisory Board dealt with the report of the Executive Board on the third quarter of 2017. Additional topics of focus were the 2017 status reports of Group Internal Auditing and on compliance and data protection as well as the report of the Research and Development Committee Healthcare. Furthermore, the Group Executive Conference and the results of the efficiency review of the Supervisory Board were reported on and discussed. In addition, the implementation of new Corporate Governance requirements was discussed and the performance of various non-audit services by the auditor of the annual financial statements was approved.

ANNUAL FINANCIAL STATEMENTS

The annual financial statements of Merck KGaA, Darmstadt, Germany, the consolidated financial statements of the Group, and the combined management report for Merck KGaA, Darmstadt, Germany, and the Group, including the accounts, were audited by KPMG AG Wirtschaftsprüfungsgesellschaft, Berlin.

The auditors issued an unqualified audit opinion on the annual financial statements of Merck KGaA, Darmstadt, Germany, in accordance with German Auditing Standards. The audit opinion for the annual financial statements contained the following key audit matters, in other words those matters that, in the professional judgment of the auditor, were of most significance in the audit of the annual financial statements:

- Impairment testing of interests in associates
- Recognition and measurement of provisions for tax liabilities
- Measurement of provisions for patent disputes

For the consolidated financial statements prepared in accordance with International Financial Reporting Standards, as well as the combined management report, the auditors issued the unqualified auditor's report reproduced in the Annual Report of the Group. The audit opinion for the consolidated financial statements contained the following audit topics of special importance:

- Goodwill impairment tests
- Recognition and measurement of income tax liabilities and deferred tax liabilities
- Measurement of provisions for patent disputes
- Measurement of the variable purchase price receivable from the divestment of the Biosimilars business activities.

In addition, the auditor audited the calculation of participation of Merck KGaA, Darmstadt, Germany, in the profit of E. Merck KG, Darmstadt, Germany, in accordance with Article 27 (2) of the Articles of Association as well as the separate combined non-financial (Group) report. The annual financial statements of Merck KGaA, Darmstadt, Germany, the consolidated financial statements of the Group, the combined management report for Merck KGaA, Darmstadt, Germany, and the Group, the proposal by the Executive Board for the appropriation of the net retained profit, as well as the separate combined non-financial (Group) report were presented and distributed to the Supervisory Board, together with the auditor's reports.

In accordance with Article 14 (2) of the Articles of Association, the Supervisory Board also examined the annual financial statements of Merck KGaA, Darmstadt, Germany, the proposal for the appropriation of net retained profit and the auditor's report presented in accordance with Article 27 (2) of the Articles of Association. It also examined the consolidated financial statements of the Group as well as the combined management report for Merck KGaA, Darmstadt, Germany, and the Group, and took note of the auditor's report of KPMG AG Wirtschaftsprüfungsgesellschaft, Berlin. The Supervisory Board paid special attention to the aforementioned key audit matters contained in the respective audit opinion, to the respectively resulting risks for the financial statements, to the respectively described audit procedure as well as the to the respective conclusions drawn by the auditors. Furthermore, the Supervisory Board also examined the separate combined non-financial (Group) report and the memorandum on a limited assurance engagement prepared by the auditor on behalf of the Supervisory Board. The discussion of the relevant agenda item at the Supervisory Board's meeting on February 28, 2018 to approve the financial statements was also attended by the auditors who sign the audit opinion on the annual financial statements of Merck KGaA, Darmstadt, Germany, and the consolidated financial statements of the Group as well as the separate combined non-financial (Group) report. These auditors furthermore reported on their audit at this meeting.

The Supervisory Board took note of and approved the results of the audit. On completion of its examination, the Supervisory Board raised no objections and thus approved the annual financial statements for Merck KGaA, Darmstadt, Germany, the consolidated financial statements of the Group and the combined management report of Merck KGaA, Darmstadt, Germany, and the Group prepared by the Executive Board, the report presented by the auditor in accordance with Article 27 (2) of the Articles of Association as well as the separate combined non-financial (Group) report. The Supervisory Board gave its consent to the proposal of the Executive Board for the appropriation of net retained profit.

CORPORATE GOVERNANCE AND DECLARATION OF CONFORMITY

Corporate governance is a topic of high priority for the Supervisory Board. In its own estimation, the Supervisory Board has an adequate number of independent members. There were no conflicts of interest, as defined by the German Corporate Governance Code, involving Supervisory Board members during 2017.

After addressing corporate governance topics in detail, the Executive Board and Supervisory Board resolved to adopt and issue the updated Declaration of Conformity on February 14, 2018 (Executive Board) and on February 28, 2018 (Supervisory Board) and jointly issued it on February 28, 2018 in accordance with section 161 of the German Stock Corporation Act. The statement is permanently available on the website of Merck KGaA, Darmstadt, Germany (https://www.emdgroup.com/en/investors/corporate-governance.html). More information about corporate governance at Merck KGaA, Darmstadt, Germany, including the compensation of the Executive Board and Supervisory Board, is given in the Statement on Corporate Governance on pages 170 et seq. of the Annual Report.

COMMITTEES

Apart from the Nomination Committee, the Supervisory Board of Merck KGaA, Darmstadt, Germany, currently has no further committees on account of the special features that apply to the Supervisory Board of a corporation with general partners (KGaA) under German company law and because a corresponding need for this has not emerged to date. The members of the Nomination Committee did not convene in fiscal 2017. No report is given on the work of further committees.

PERSONNEL MATTERS

With the exception of Helga Rübsamen-Schaeff, who was excused and absent from the meeting on February 24, 2017, Edeltraud Glänzer, who was excused and absent from the meeting on May 12, 2017, and Alexander Putz, who was excused and absent from the meeting on July 28, 2017, all the Supervisory Board members attended all the Supervisory Board meetings.

Darmstadt, February 28, 2018

The Supervisory Board of Merck KGaA, Darmstadt, Germany

Wolfgang Büchele
Chairman

FINANCIAL CALENDAR
for 2018

March
3/8/2018
Annual Press Conference

August
8/9/2018
Report on the second quarter

April
4/27/2018
Annual General Meeting

November
11/14/2018
Report on the third quarter

May
5/15/2018
Report on the first quarter