MERCK

HALF-YEARLY FINANCIAL REPORT 2019

Table of Contents

This half-yearly financial report contains certain financial indicators such as operating result (EBIT), EBITDA, EBITDA pre, business free cash flow (BFCF), free cash flow, net financial debt and earnings per share pre, which are not defined by International Financial Reporting Standards (IFRS). These financial indicators should not be taken into account in order to assess the performance of Merck in isolation or used as an alternative to the financial indicators presented in the consolidated financial statements and determined in accordance with IFRS.

The figures presented in this half-yearly financial report have been rounded. This may lead to individual values not adding up to the totals presented.

The Annual Report for 2018 has been optimized for mobile devices and is available on the Web at **ar.merckgroup.com/2018/**.

Merck – In brief

MERCK GROUP

Key figures

€ million	Q2 2019	Q2 2018	Change	Jan.–June 2019	Jan.-June 2018	Change
Net sales	3,971	3,714	6.9%	7,717	7,199	7.2%
Operating result (EBIT)[1]	618	392	57.6%	997	895	11.5%
Margin (% of net sales)[1]	15.6%	10.6 %		12.9%	12.4 %	
EBITDA[1]	1,074	840	27.8%	1,927	1,764	9.2%
Margin (% of net sales)[1]	27.0%	22.6 %		25.0%	24.5 %	
EBITDA pre[1]	1,139	920	23.8%	2,068	1,887[2]	9.6%
Margin (% of net sales)[1]	28.7%	24.8 %		26.8%	26.2 %	
Profit after tax	471	251	87.9%	660	593	11.4%
Earnings per share (€)	1.08	0.57	89.5%	1.52	1.35	12.6%
Earnings per share pre (€)[1]	1.54	1.23	25.2%	2.67	2.56	4.3%
Business free cash flow[1]	701	514	36.4%	1,246	1,232[2]	1.1%

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

MERCK GROUP

Net sales by quarter

MERCK GROUP

EBITDA pre[1] by quarter

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

Developments within the Group and R&D

Merck

Summary of the first half of 2019

We are Merck, a vibrant science and technology company. Science is at the heart of everything we do. It drives the discoveries we make and the technologies we create. Our work makes a positive difference to millions of people's lives every day.

In Healthcare, we discover unique ways to treat the most challenging diseases such as multiple sclerosis and cancer. Our Life Science experts empower scientists by developing tools and solutions that help deliver breakthroughs more quickly. And in Performance Materials, we develop science that sits inside technologies and changes the way we access and display information.

Everything we do is fueled by a belief in science and technology as a force for good. A belief that has driven our work since 1668, and will continue to inspire us to find more joyful and sustainable ways to live. Progress thrives on curious minds.

We hold the global rights to the Merck name and brand. The only exceptions are Canada and the United States. In these countries, we operate as EMD Serono in the Biopharma business, as MilliporeSigma in the Life Science business and as EMD Performance Materials in the high-tech materials business.

We had 53,051 employees worldwide on June 30, 2019 compared with 54,009 on June 30, 2018.

This section of the present half-yearly report summarizes the highlights of the first half of 2019 at Merck including those in research in development. A detailed description of Merck and its business sectors can be found in the Annual Report for 2018 (ar.merckgroup.com/2018).

Healthcare

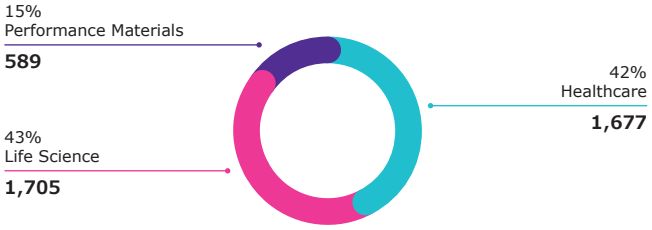
BIOPHARMA

Collaborations

- On January 23, we signed a strategic collaboration agreement with Tencent, a leading provider of Internet services. The collaboration will primarily focus on increasing public disease awareness and providing more accessible healthcare services via digital platforms in China.
- On February 5, together with GlaxoSmithKline (GSK) we announced a global strategic alliance to jointly develop and commercialize bintrafusp alfa. This investigational bifunctional fusion protein immunotherapy is currently in clinical development, including potential registrational studies, for multiple difficult-to-treat cancers. The development program includes a Phase II trial to investigate bintrafusp alfa compared with pembrolizumab as a first-line treatment in patients with PD-L1-expressing advanced non-small cell lung cancer. In addition to use as a single agent, bintrafusp alfa

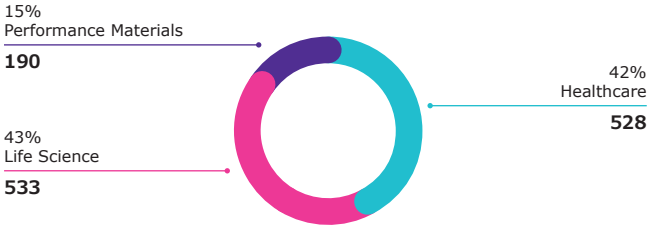
MERCK GROUP

Net sales by business sector – Q2 2019
€ million/in % of net sales



MERCK GROUP

EBITDA pre[1] by business sector[2] – Q2 2019
€ million/in %



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

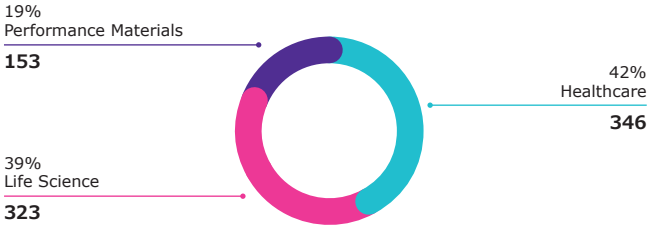
[2] Not presented: Decline in Group EBITDA pre by € –112 million due to Corporate and Other.

is also being considered for use in combination with other assets from the pipelines of both companies.
- According to the agreement with GSK, Merck received an upfront payment of € 300 million and is eligible for potential development milestone payments of up to € 500 million to be triggered by clinical data. Merck will also be eligible for further payments of up to € 2.9 billion upon successful achievement of future approval and commercial milestones. The total potential deal value is up to € 3.7 billion. Both companies will jointly conduct development and commercialization. In the event of regulatory approval, net sales will be realized by Merck in the United States and by GSK in all other countries whereas net profits from sales and defined expense components will be shared equally by the alliance partners.
- On March 19, we entered a collaboration agreement with Iktos, a French start-up company specialized in the development of artificial intelligence (AI) solutions applied to chemical research. The collaboration will comprise the use of Iktos' generative modelling AI technology to facilitate the rapid and cost-effective discovery and design of promising new compounds.

Oncology and Immuno-Oncology
- On March 8, we and our alliance partner Pfizer Inc. announced that the European Medicines Agency had validated for review the Type II variation application for Bavencio® (avelumab) in combination with axitinib for the treatment of patients with advanced renal cell carcinoma (RCC). A supplemental application for the combination in unresectable or metastatic RCC has also been submitted in Japan.
- On May 15, we and our alliance partner Pfizer Inc. announced that the U.S. Food and Drug Administration (FDA) had approved Bavencio® in combination with axitinib for the first-line treatment of patients with advanced RCC.
- The above applications were based on results from the pivotal Phase III JAVELIN Renal 101 trial, which were published in the New England Journal of Medicine on February 16. The combination of Bavencio® and axitinib significantly extended median progression-free survival by more than five months compared with sunitinib as a first-line treatment for patients with advanced RCC.
- On March 19, we and our alliance partner Pfizer Inc. reported the discontinuation of the ongoing Phase III JAVELIN Ovarian PARP 100 study evaluating the efficacy and safety of avelumab in combination with chemotherapy followed by maintenance therapy of avelumab in combination with talazoparib, a poly (ADP-ribose) polymerase (PARP) inhibitor, versus an active comparator in treatment-naïve patients with locally advanced or metastatic ovarian cancer (Stage III or Stage IV). The decision was based on several emerging factors since the trial's initiation, including the previously announced interim results from JAVELIN Ovarian PARP 100 as well as the rapidly changing treatment landscape. The discontinuation of the trial was not based on safety results.
- At the 2019 American Society of Clinical Oncology (ASCO) Annual Meeting, May 31 – June 4 in Chicago, we presented new data:
  - For avelumab, we shared data from five studies across tumor types including Merkel cell carcinoma, RCC, hepatocellular carcinoma and urothelial carcinoma. These included an oral presentation of biomarker analyses of baseline tumor samples from the Phase III JAVELIN Renal 101 trial in previously untreated patients with advanced RCC.
  - Erbitux® (cetuximab) data from a retrospective analysis of overall survival (OS) by subsequent therapy in patients with RAS wild-type metastatic colorectal cancer from the Phase III EPIC study were presented. The analysis evaluated the effect of post-study therapies (with Erbitux®, without Erbitux®, or no subsequent therapy) on OS following treatment with Erbitux® plus chemotherapy or chemotherapy alone.
  - For the investigational targeted therapy tepotinib, updated results from the potentially registrational Phase II VISION study showed anti-tumor clinical activity across different lines of treatment in advanced non-small cell lung cancer (NSCLC) patients harboring MET exon 14 skipping mutations detected by liquid biopsy or tissue biopsy.
  - Abstracts also showcased the scientific innovation and diversity of our pipeline, with results from a number of high-priority clinical development programs, including tepotinib, bintrafusp alfa and our comprehensive DNA Damage Response (DDR) portfolio.

MERCK GROUP

Business free cash flow[1] by business sector[2] – Q2 2019
€ million / in %



MERCK GROUP

Employees by region as of June 30, 2019
Number / in %

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

[2] Not presented: Decline in Group business free cash flow by € –121 million due to Corporate and Other.

Neurology and Immunology

- At the end of March 2019, Mavenclad® was approved in the United States, now the largest single regional market for this medicine. Mavenclad® (cladribine tablets) was approved for the treatment of adults with relapsing-remitting multiple sclerosis (RRMS) and active secondary progressive multiple scleroris (SPMS). Mavenclad® is the first and only FDA-approved treatment for RRMS and SPMS that provides two years of proven efficacy with a maximum of 20 days of oral treatment, during a two-year period. The FDA approval is based on a clinical program in which 1,976 patients received therapy for a total of 9,509 patient years, of which the mean time on study including follow-up was approximately 4.8 years and 24% of the follow-up was for eight years. Mavenclad® has demonstrated clinical efficacy across key measures of disease activity, such as annualized relapse rate, disability progression, and magnetic resonance imaging (MRI) activity.
- With U.S. approval, Mavenclad® is now approved in 56 countries, including those of the European Union, Australia, Canada and Switzerland.
- In the second quarter, we decided to advance the investigational therapy evobrutinib (an oral, highly selective Bruton's tyrosine kinase inhibitor) into Phase III for patients with relapsing multiple sclerosis (RMS). We hope to enroll the first patients in the coming months. Evobrutinib was developed within our laboratories and is an example of our innovative drug discovery.
- At the American Academy of Neurology (AAN) 2019 Annual Meeting, May 4–10 in Philadelphia, we presented a total of 20 abstracts (18 posters and two platform presentations), including data on Mavenclad®, the investigational therapy evobrutinib and Rebif® (interferon beta-1a).
- Key Mavenclad® data included:
  - a post-hoc analysis of the CLARITY Extension study to examine the durability of no evidence of disease activity-3 (NEDA-3) in RMS patients receiving cladribine tablets.
  - an integrated analysis of pooled long-term safety data of cladribine tablets in patients with multiple sclerosis (MS) collated from the CLARITY, CLARITY Extension, ORACLE-MS studies and the PREMIERE registry.
  - a new analysis of the speed of onset of the MRI effect. At 3 months the effect on new inflammatory lesions was apparent in the ORACLE-MS study. In the same study consistency in clinical outcomes was observed across different patient subgroups defined by patient and disease characteristics at baseline.
  - abstracts from the ORACLE-MS study describing the effect of cladribine tablets on early MS.
  - results from studies investigating the biological effects of cladribine tablets, including the effect on lymphocyte proliferation, and endothelial responsiveness to tumor necrosis factor and its effect on hematopoietic precursors and immune cells, to offer further insights on the potential mode of action of cladribine tablets.
- Key evobrutinib data included:
  - new 48-week results of the double-blind, randomized, placebo-controlled, Phase II study in patients with RMS. The new data showed that the effect on T1 gadolinium-enhancing lesions reduction seen at week 12 was maintained through 48 weeks with evobrutinib 75 mg QD and 75 mg BID.
  - The results were simultaneously published in the New England Journal of Medicine.
- Key Rebif® data included:
  - the results of an investigation from the European Interferon Beta (IFNβ) pregnancy registry and Nordic health study into the prevalence of pregnancy outcomes in IFNβ-exposed women.
  - results from the IMPROVE study on the dynamics of pseudo-atrophy in RMS patients treated with IFNβ-1a as assessed by monthly brain MRI.

General Medicine and Endocrinology

- Our new formulation of Euthyrox® (levothyroxine) for the treatment of hypothyroidism received further regulatory approvals in the second quarter, resulting in a total of 26 countries in which it has been approved.
- Glucophage®, containing the active ingredient metformin, is now approved in 50 countries for prediabetes when lifestyle intervention is not enough to control the condition.
- We continued to pursue patient solutions that go beyond the pill, including via our collaboration with U.S.-based Medisafe to help cardiometabolic patients better manage medication intake and adhere to prescribed treatment regimens. The successful pilots of this collaboration in Mexico, Brazil and Russia resulted in an up to 21% increase in the adherence rates of participating patients to their prescribed treatment regimens.

- In the second quarter, the number of new patients using the Easypod® electromechanical injection device for treatment with Saizen® (somatropin) continued to grow, bringing the total number of patients to 19,228. Saizen® is our main endocrinology product and is indicated for the treatment of growth hormone deficiency in children and adults.
- Aluetta®, our new pen for the injection of Saizen®, was approved in two additional countries in the second quarter, taking the total number of countries where it is approved to 18.

Fertility

- To date, an estimated three million babies have been born with the help of our Fertility portfolio.
- The Pergoveris® Pen, a convenient and ready-to-use fertility combination treatment option for women with severe follicle-stimulating hormone and luteinizing hormone deficiency, was successfully introduced in several countries in Europe, Asia-Pacific and Latin America in the second quarter. Additional launches in other countries are planned.
- Fertility Technologies continued to expand its footprint in Asia-Pacific, successfully launching the fertility lab devices Geri®, Gavi®, Gems®, and Gidget® in Korea on May 9. The first sale was achieved only four days after the launch event.

Life Science

- In the first half of 2019, we continued to focus on meeting customer needs by launching some 9,370 products across the Research Solutions, Process Solutions and Applied Solutions business units. The launch highlights include:
  - BioContinuum™ Buffer Delivery Platform, a new building block for streamlined buffer management, and part of the BioContinuum™ Platform for next-generation processing.
  - Cyrene™ solvent, a safer, more sustainable bioderived alternative to solvents under regulatory restrictions. It was created in response to the need for solvents to meet stricter regulation requirements for both employee safety and environmental sustainability.
  - Milli-Q® Connect, our new cloud-based, remote lab water service and monitoring capability for use with our Milli-Q® CLX 7000 clinical water purification systems.
- On February 19, we announced receipt of the first U.S. patent for an improved CRISPR genome-editing method, for our proxy-CRISPR technology.
- On March 4, we announced the Canadian patent award for our technology directed toward the use of paired CRISPR nickases in eukaryotic cells. We have been awarded 18 CRISPR-related patents to date.
- On March 20, we opened the first M Lab™ Collaboration Center in Europe. Located in Molsheim, France, the center offers a fully equipped, non-GMS pilot and bench scale lab where customers work alongside company experts to solve processing development challenges.
- Also in March, we announced a collaboration with Chinese biotech company GenScript for viral vector manufacturing.
- In April, Life Science launched its new SMASH Packaging Plan, a four-year approach to drive packaging sustainability as part of the company's commitment to reduce its environmental impact. The business is setting new standards to shrink, switch and save packaging while meeting performance requirements.
- On April 30, we announced a partnership with India's Food Safety and Standards Authority (FSSAI) on food safety skill development, with the development of a fully equipped microbiological testing lab. There, food safety scientists from government labs and FSSAI-ratified private labs will be trained by the Center for Microbiological Analysis Training on the latest microbiological testing technology.
- In May, we joined TRANSVAC2, a program to advance vaccine development and manufacturing, in collaboration with the Vaccine Formulation Institute and the European Vaccine Initiative.
- Also in May, we completed a £2.7 million expansion of our cell culture media facility in Irvine, Scotland.
- That same month, we won the prestigious INTERPHEX Exhibitor Award for Best New Product, for our Pellicon® Capsule with Ultracel® Membrane, a first-of-its kind single-use tangential flow filtration capsule for bioprocessing of antibody-drug conjugates and monoclonal antibodies. The product allows biomanufacturers to realize benefits of process intensification throughout the entire bioprocess.
- In June, we, along with the other Boston-based business sectors of Merck (Healthcare and Performance Materials), were named to the Boston Business Journal's "Best Places to Work" list.

Performance Materials

- Our Performance Materials business sector, a leading player in the electronic materials market, comprises the specialty chemicals business of Merck and supplies solutions for displays, computer chips and surfaces of every kind.
- We are currently transforming the Performance Materials business sector in order to adapt to new market realities and customer requirements. The implementation of the Bright Future transformation program is well on track. It builds the foundations for returning to sustainable growth, ensuring an attractive margin and remaining competitive.
- On April 12, Merck signed a definitive agreement to acquire Versum Materials, Inc. for US$ 53 per share in cash. Versum is one of the world's leading suppliers of innovation-driven, high-purity process chemicals, gases and equipment for semiconductor manufacturing. The company reported annual sales of approximately 1.2 billion (US$ 1.4 billion) in fiscal 2018, has approximately 2,300 employees, and operates 14 manufacturing and seven research and development facilities throughout Asia and North America. The business combination is expected to significantly strengthen our Performance Materials business sector, creating a leading electronic materials player focused on the semiconductor and display industries. On June 17, the transaction was approved at a special meeting of Versum's shareholders. The transaction is expected to close in the second half of 2019, subject to regulatory clearances and the satisfaction of other customary closing conditions.
- On May 6, Merck signed a definitive agreement to acquire Intermolecular, Inc. for US$ 1.20 per share in an all cash transaction, representing an equity value of approximately US$ 62 million. Intermolecular is a California-based company leading in advanced materials innovation. The company has application specific materials expertise, accelerated learning and experimentation platforms with powerful analytics infrastructure that perfectly complement our business and technology portfolio. On July 17, the transaction was approved at a special meeting of Intermolecular's shareholders. The transaction is expected to close in the second half of 2019, subject to regulatory clearance and the satisfaction of other customary closing conditions.
- The integration planning for Versum and Intermolecular is on track and making good progress. The teams are currently preparing for a smooth and seamless transition while ensuring business continuity throughout the entire process.
- As part of our Bright Future transformation program, we are adapting to changing market conditions and are re-allocating our resources in Research & Development. In this connection, we conducted a strategic review of our R&D site in Chilworth, United Kingdom. After thoroughly assessing all strategic options, we decided to close down the main site by the end of September 2019.
- With respect to our Atsugi site in Japan, we announced that we will be transferring our activities there to other sites in Asia. The transfer will lead to a closure of the Atsugi site by mid-2021.

Semiconductor Solutions

- Our Semiconductor Solutions business unit supplies innovative material-based solutions for the production of semiconductor chips, which are the building units of electronic devices such as smartphones, PCs and wearables. The portfolio includes patterning, deposition, dielectric and chemical mechanical planarization (CMP) materials for wafer processing. Conductive pastes, thick film resists and dielectric materials for semiconductor packaging round off the portfolio.
- Our R&D team has made good progress with KrF (krypton fluoride) resists and solid cleaning materials. Our KrF resists for contact image sensor devices and 3D-NAND have Process of Record positions at a leading customer and our solid cleaning materials have been installed by multiple customers in their R&D lines.
- We are also making good progress in the dielectric area with silicon-based precursor molecules. The team is working with key customers to define R&D projects.
- The first generation of Directed Self Assembly (DSA) products is getting closer to commercialization. We are seeing an increase in interest and exponential growth in DSA research activities among our customers, in fact implementation of DSA process into semiconductor device manufacturing is getting evaluated.
- We are witnessing an increase in demand for our EUV (Extreme Ultraviolet) rinse material, we are working on increasing manufacturing production capacity to meet demand.

- In the non-memory market, sensors for imaging and non-imaging applications as well as 5G signal filters, Microelectromechanical Systems, and Power-Management-ICs continue to be industry drivers. Our material development process is ongoing to meet the needs of these markets.
- We continue to invest in the development of advanced removers used in photolithographic processes to provide customers with innovative alternative materials that ensure compliance with future environmental regulations.
- Our conductive paste technology has qualified for high performance computing in 5G server applications and high frequency beam forming antennas for commercial and aerospace applications. Advanced chip-scale-packaging materials are being marketed to power device customers along with assembly materials for automotive smart brake pad sensors. We are continuously working to diversify our packaging product portfolio and are currently in the test marketing stage with select partners.
- The current economic backdrop for semiconductors is weak with the market experiencing a slowdown owing to a high degree of geopolitical and economic uncertainties following three years of successive growth.

Display Solutions

- Our Display Solutions business unit consists of our Liquid Crystals, Organic Light-Emitting Diodes (OLED), Photoresists and Liquid Crystal Windows businesses.
- In Liquid Crystals, our newest materials are helping us maintain our position as the market and technology leader. With our XtraBright™ products, we were able to win new projects for large-area displays as well as high-resolution mobile devices.
- For liquid crystal window modules, four projects are in the installation phase. These innovative solar shading solution projects demonstrate superior aesthetics and design implementation. In parallel, the ramp up of our commercial manufacturing at our Veldhoven site is running as planned with the integration of a new lamination unit that will further optimize overall production yield.
- Our Photoresists business continues to perform well based on our proven technological competence. This is evidenced by a strong position in new display production lines in the growing Chinese market.
- Ongoing and significant efficiency and lifetime performance improvements in our OLED materials offerings were successfully qualified in a number of upcoming devices.
- In May, we showcased our broad display portfolio at Display Week, one of the most important events in the industry hosted by the Society for Information Display (SID), highlighting our position as technology and market leader in the industry.

Surface Solutions

- The core markets for Surface Solutions are automotive coatings and cosmetics, which we are serving with functional and decorative solutions. The global automotive market is currently under pressure owing to a global decline in car sales. Our Surface Solutions business has analyzed the changing market environment and market needs. This resulted in an adjustment of the strategic priorities as well as an updated organizational setup.
- One focus is the continuous extension of our portfolio of pigments in automotive coatings and cosmetics. In line with market trends, we develop innovative pigments to enhance styling opportunities. The market response to our most recent product launches in our core segments was very positive. Especially new styling opportunities with Xirallic® NXT Amur black, allowing clean, deep blacks for new dark achromatic formulations, and Meoxal® Victoria Red for high chromatic reds are resonating well with key industry customers.
- In addition to the product launches, we introduced new digital tools, further driving the digitalization of our business. The “Colors4Beauty” app, for example, features not only our broad range of effect pigments, but also more than 100 blends to inspire new trends and colors in decorative cosmetics applications.

Course of Business and Economic Position

Merck

Overview – Q2 2019

- All business sectors contribute to Group net sales increase of 6.9% to € 4.0 billion
- Group net sales show organic growth of 5.6%, supported by positive exchange rate effects (1.5%)
- Group EBITDA pre up by 23.8% to € 1,139 million; EBITDA pre margin improves to 28.7% (Q2 2018: 24.8%)
- Net financial debt amounts to € 7.8 billion on June 30, 2019 (December 31, 2018: € 6.7 billion).

MERCK GROUP

Key figures

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
Net sales	3,971	3,714	6.9%	7,717	7,199	7.2%
Operating result (EBIT)[1]	618	392	57.6%	997	895	11.5%
Margin (% of net sales)[1]	15.6%	10.6%		12.9%	12.4%	
EBITDA[2]	1,074	840	27.8%	1,927	1,764	9.2%
Margin (% of net sales)[1]	27.0%	22.6%		25.0%	24.5%	
EBITDA pre[2]	1,139	920	23.8%	2,068	1,887[2]	9.6%
Margin (% of net sales)[1]	28.7%	24.8%		26.8%	26.2%	
Profit after tax	471	251	87.9%	660	593	11.4%
Earnings per share (€)	1.08	0.57	89.5%	1.52	1.35	12.6%
Earnings per share pre (€)[1]	1.54	1.23	25.2%	2.67	2.56	4.3%
Business free cash flow[1]	701	514	36.4%	1,246	1,232[2]	1.1%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

Net sales of the Merck Group rose by 6.9% or € 258 million to € 3,971 million in the second quarter of 2019 (Q2 2018: € 3,714 million). All three business sectors contributed to this positive development. Organic sales growth amounted to 5.6% or € 209 million, and was supported by positive exchange rate effects of 1.5% or € 57 million. The Life Science business sector contributed in particular to organic sales growth (9.0%). Currency-driven sales increases were primarily due to the U.S. dollar and the Japanese yen. Foreign exchange developments in the Latin America region had a negative impact. The effect on Group sales of the December 2018 divestment of the Flow Cytometry business, which was part of the Life Science business sector, was –0.2% in the second quarter of 2019.

In the second quarter of 2019, the Life Science business sector generated a double-digit sales increase of 10.5% to € 1,705 million (Q2 2018: € 1,543 million), which was mainly due to organic sales growth (9.0%). Accounting for a 43% share (Q2 2018: 41%) of Group sales in the second quarter of 2019, Life Science was the Group's largest business sector in terms of sales. In the second quarter of 2019, net sales of the Healthcare business sector increased by 5.9% to € 1,677 million (Q2 2018: € 1,584 million). Healthcare's share of Group net sales declined slightly to 42% (Q2 2018: 43%). At € 589 million, net sales of the Performance Materials business sector were at the level of the year-earlier quarter (Q2 2018: € 587 million). Positive foreign exchange effects of 2.4% offset the organic decline in sales (–2.0%). The percentage contribution of the Performance Materials business sector to Group net sales decreased to 15% (Q2 2018: 16%).

MERCK GROUP

Net sales by business sector

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018	Share
Healthcare	1,677	42%	5.2%	0.7%	–	5.9%	1,584	43%
Life Science	1,705	43%	9.0%	2.1%	–0.6%	10.5%	1,543	41%
Performance Materials	589	15%	–2.0%	2.4%	–	0.4%	587	16%
Merck Group	**3,971**	**100%**	**5.6%**	**1.5%**	**–0.2%**	**6.9%**	**3,714**	**100%**

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

In the second quarter of 2019, the regional sales development of the Merck Group was as follows:

MERCK GROUP

Net sales by region

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018	Share
Europe	1,174	30%	3.6%	–0.3%	–0.2%	3.1%	1,139	31%
North America	1,037	26%	2.5%	5.3%	–0.3%	7.4%	966	26%
Asia-Pacific (APAC)	1,367	34%	10.0%	1.5%	–0.2%	11.3%	1,229	33%
Latin America	256	6%	4.9%	–4.4%	–	0.5%	254	7%
Middle East and Africa (MEA)	137	4%	6.7%	2.2%	–	9.0%	126	3%
Merck Group	**3,971**	**100%**	**5.6%**	**1.5%**	**–0.2%**	**6.9%**	**3,714**	**100%**

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

In the first six months of 2019, net sales of the Merck Group increased by 7.2% to € 7,717 million (January-June 2018: € 7,199 million). This positive sales development was primarily due to organic sales increases. The following table presents the net sales development of the business sectors in the first half of 2019:

MERCK GROUP

Net sales by business sector

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018	Share
Healthcare	3,158	41%	4.1%	0.5%	–	4.6%	3,019	42%
Life Science	3,366	44%	9.2%	2.5%	–0.5%	11.1%	3,030	42%
Performance Materials	1,193	15%	0.6%	3.1%	–	3.7%	1,151	16%
Merck Group	**7,717**	**100%**	**5.7%**	**1.8%**	**–0.2%**	**7.2%**	**7,199**	**100%**

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

Sales by region from January to June 2019 were as follows:

MERCK GROUP

Net sales by region

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018	Share
Europe	2,351	31%	4.4%	–0.5%	–0.2%	3.6%	2,268	31%
North America	1,972	26%	0.7%	6.1%	–0.3%	6.4%	1,852	26%
Asia-Pacific (APAC)	2,654	34%	10.1%	2.2%	–0.2%	12.2%	2,367	33%
Latin America	486	6%	10.1%	–7.1%	–	2.9%	472	7%
Middle East and Africa (MEA)	255	3%	3.7%	2.4%	–	6.1%	240	3%
Merck Group	**7,717**	**100%**	**5.7%**	**1.8%**	**–0.2%**	**7.2%**	**7,199**	**100%**

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

The consolidated income statement of the Merck Group is as follows:

MERCK GROUP

Consolidated Income Statement[1]

€ million	Q2 2019	Q2 2018	Change	Jan.–June 2019	Jan.–June 2018	Change
Net sales	**3,971**	**3,714**	**6.9%**	**7,717**	**7,199**	**7.2%**
Cost of sales	–1,454	–1,321	10.1%	–2,838	–2,581	9.9%
Gross profit	**2,517**	**2,392**	**5.2%**	**4,879**	**4,618**	**5.7%**
Marketing and selling expenses	–1,157	–1,109	4.3%	–2,248	–2,129	5.5%
Administration expenses	–269	–275	–2.1%	–552	–532	3.8%
Research and development costs	–553	–538	2.8%	–1,080	–1,046	3.2%
Impairment losses and reversals of impairment losses on financial assets (net)	2	–6	> 100.0%	–2	–8	–78.4%
Other operating expenses and income	79	–72	> 100.0%	–1	–8	–92.8%
Operating result (EBIT)[2]	**618**	**392**	**57.6%**	**997**	**895**	**11.5%**
Financial result	–61	–65	–5.4%	–174	–126	38.1%
Profit before income tax	**557**	**328**	**70.0%**	**824**	**769**	**7.1%**
Income tax	–136	–84	62.8%	–203	–192	6.1%
Profit after tax from continuing operations	**421**	**244**	**72.5%**	**620**	**577**	**7.5%**
Profit after tax from discontinued operation	**50**	**7**	**> 100.0%**	**40**	**16**	**> 100.0%**
Profit after tax	**471**	**251**	**87.9%**	**660**	**593**	**11.4%**
Non-controlling interests	–	–4	–	–1	–5	–80.2%
Net income	**471**	**247**	**90.8%**	**659**	**588**	**12.2%**

[1] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".
[2] Not defined by International Financial Reporting Standards (IFRS).

The positive development of sales in the second quarter of 2019 led to a 5.2% increase in gross profit to € 2,517 million (Q2 2018: € 2,392 million). The resulting gross margin of the Group, i.e. gross profit as a percentage of sales, slipped slightly to 63.4% (Q2 2018: 64.4%). Research and development costs rose by 2.8% to € 553 million (Q2 2018: € 538 million), which led to a Group research spending ratio (research and development costs as a percentage of sales) of 13.9% (Q2 2018: 14.5%). Accounting for a 73% (Q2 2018: 77%) share of research and development expenses of all business sectors, Healthcare is the most research-intensive business sector of Merck.

Other operating expenses and income (net) showed an income balance of € 79 million in the second quarter of 2019;

in the year-earlier quarter this item showed an expense balance of € –72 million. This strong change was largely due to developments in the Healthcare business sector (see explanations in the section entitled "Healthcare").

In comparison with the year-earlier quarter, the financial result improved by 5.4% to € –61 million (Q2 2018: € –65 million). While higher interest expenses adversely affected the financial result in the second quarter of 2019, this was more than offset by income owing to the development of the time value of Merck Share Units within the scope of the Merck Long-Term Incentive Plan.

Income tax expenses of € 136 million (Q2 2018: € 84 million) led to an effective tax rate of 24.4% (Q2 2018: 25.5%).

Profit after tax from discontinued operation comprised the divested Consumer Health business (see explanations under "Purchase price adjustment from the divestment of the Consumer Health business" in the Notes to the Consolidated Half-Year Financial Statements).

Net income, i.e. profit after tax attributable to Merck KGaA shareholders, rose to € 471 million (Q2 2018: € 247 million), yielding earnings per share of € 1.08 (Q2 2018: € 0.57).

The following table presents the composition of EBITDA pre for the reporting period in comparison with the year-earlier quarter. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

MERCK GROUP

Reconciliation EBITDA pre[1]

	Q2 2019			Q2 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,971**	**–**	**3,971**	**3,714**	**–**	**3,714**	**6.9%**
Cost of sales	–1,454	3	–1,451	–1,321	3	–1,318	10.1%
Gross profit	**2,517**	**3**	**2,520**	**2,392**	**3**	**2,396**	**5.2%**
Marketing and selling expenses	–1,157	5	–1,152	–1,109	2	–1,107	4.1%
Administration expenses	–269	11	–258	–275	39	–236	9.5%
Research and development costs	–553	17	–536	–538	–	–538	–0.4%
Impairment losses and reversals of impairment losses on financial assets (net)	2	–	2	–6	–	–6	> 100.0%
Other operating expenses and income	79	29	108	–72	53	–19	> 100.0%
Operating result (EBIT)[1]	**618**			**392**			
Depreciation/amortization/impairment losses/reversals of impairment losses	455	–	455	448	–17	430	5.8%
EBITDA[1]	**1,074**			**840**			
Restructuring expenses	39	–39	–	11	–11	–	
Integration expenses/IT expenses	22	–22	–	21	–21	–	
Gains (–)/losses (+) on the divestment of businesses	–2	2	–	37	–37	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	6	–6	–	11	–11	–	
EBITDA pre[1]	**1,139**	**–**	**1,139**	**920**	**–**	**920**	**23.8%**
of which: organic growth[1]							20.3%
of which: exchange rate effects							3.3%
of which: acquisitions/divestments							0.3%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

EBITDA pre, the most important financial indicator used to steer operating business, increased by 23.8% to € 1,139 million (Q2 2018: € 920 million). The organic increase in this key performance indicator amounted to 20.3% and was supported by positive foreign exchange effects (3.3%) and portfolio effects (0.3%). Relative to net sales, the EBITDA pre margin was 28.7% in the second quarter of 2019 (Q2 2018: 24.8%). Earnings per share pre (earnings per share after net of tax effect of adjustments and amortization of purchased intangible assets) improved by 25.2% to € 1.54 (Q2 2018: € 1.23).

The following table presents the composition of EBITDA pre for the first half of 2019 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

MERCK GROUP

Reconciliation EBITDA pre[1]

	Jan.–June 2019			Jan.–June 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**7,717**	**–**	**7,717**	**7,199**	**–**	**7,199**	**7.2%**
Cost of sales	–2,838	19	–2,819	–2,581	6	–2,575	9.5%
Gross profit	**4,879**	**19**	**4,899**	**4,618**	**6**	**4,624**	**5.9%**
Marketing and selling expenses	–2,248	8	–2,240	–2,129	2	–2,127	5.3%
Administration expenses	–552	47	–505	–532	75	–457	10.4%
Research and development costs	–1,080	33	–1,047	–1,046	–	–1,046	0.1%
Impairment losses and reversals of impairment losses on financial assets (net)	–2	–	–2	–8	–	–8	78.4%
Other operating expenses and income	–1	34	33	–8	56	49	–31.7%
Operating result (EBIT)[1]	**997**			**895**			
Depreciation/amortization/impairment losses/reversals of impairment losses	929	–	929	870	–17	852	9.0%
EBITDA[1]	**1,927**			**1,764**			
Restructuring expenses	100	–100	–	16	–16	–	
Integration expenses/IT expenses	35	–35	–	42	–42	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	39	–39	–	
Acquisition-related adjustments	–	–	–	1	–1	–	
Other adjustments	5	–5	–	25	–25	–	
EBITDA pre[1]	**2,068**	**–**	**2,068**	**1,887**	**–**	**1,887**	**9.6%**
of which: organic growth[1]							8.9%
of which: exchange rate effects							0.8%
of which: acquisitions/divestments							–

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

[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

In the first six months of 2019, EBITDA pre rose by 9.6% and amounted to € 2,068 million (January-June 2018: € 1,887 million). This increase was mainly organic (8.9%). The EBITDA pre margin increased slightly to 26.8% (January-June 2018: 26.2%). Earnings per share pre rose by 4.3% to € 2.67 (January-June 2018: € 2.56).

NET ASSETS AND FINANCIAL POSITION

MERCK GROUP

Balance sheet structure

	June 30, 2019		Dec. 31, 2018[1]		Change	
	€ million	**in %**	€ million	in %	€ million	in %
Non-current assets	**27,874**	**70.4%**	**27,652**	**75.0%**	**222**	**0.8%**
of which:						
Goodwill	13,841		13,764		77	
Other intangible assets	6,770		7,237		–467	
Property, plant and equipment[2]	5,251		4,811		439	
Other non-current assets	2,013		1,840		173	
Current assets	**11,694**	**29.6%**	**9,236**	**25.0%**	**2,458**	**26.6%**
of which:						
Inventories	3,033		2,764		269	
Trade and other current receivables	3,468		3,226		242	
Other current financial assets	154		29		125	
Other current assets	1,589		1,048		541	
Cash and cash equivalents	3,451		2,170		1,280	
Total assets	**39,568**	**100.0%**	**36,888**	**100.0%**	**2,680**	**7.3%**
Equity	**17,574**	**44.4%**	**17,233**	**46.7%**	**341**	**2.0%**
Non-current liabilities	**11,499**	**29.1%**	**11,138**	**30.2%**	**362**	**3.2%**
of which:						
Provisions for pensions and other post-employment benefits	2,751		2,336		414	
Other non-current provisions	829		780		49	
Non-current financial debt[2]	6,497		6,681		–184	
Other non-current liabilities	1,422		1,340		82	
Current liabilities	**10,494**	**26.5%**	**8,517**	**23.1%**	**1,977**	**23.2%**
of which:						
Current provisions	545		600		–55	
Current financial debt[2]	4,933		2,215		2,718	
Trade and other current payables/Refund liabilities	2,302		2,238		64	
Other current liabilities	2,715		3,464		–749	
Total liabilities and equity	**39,568**	**100.0%**	**36,888**	**100.0%**	**2,680**	**7.3%**

[1] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

[2] The first-time application of IFRS 16 led to an increase in property, plant and equipment as well as financial debt as of January 1, 2019, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

In the first six months of 2019, total assets of the Merck Group increased by 7.3% to € 39,568 million (December 31, 2018: € 36,888 million). Since the beginning of 2019, working capital has risen by 10.9% to € 3,866 million (December 31, 2018: € 3,486 million), mainly owing to an increase in trade accounts receivable and inventories.

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

MERCK GROUP

Net financial debt[1]

	June 30, 2019	Dec. 31, 2018	Change	
	€ million	€ million	€ million	in %
Bonds and commercial paper	8,814	7,286	1,528	21.0%
Bank loans	691	620	71	11.5%
Liabilities to related parties	1,230	824	406	49.3%
Loans from third parties and other financial liabilities	63	72	–8	–11.4%
Liabilities from derivatives (financial transactions)	201	90	112	> 100.0%
Lease liabilities[2]	430	4	426	> 100.0%
Financial debt	**11,430**	**8,896**	**2,535**	**28.5%**
less:				
Cash and cash equivalents	3,451	2,170	1,280	59.0%
Current financial assets[3]	150	24	126	> 100.0%
Net financial debt[1]	**7,829**	**6,701**	**1,129**	**16.8%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] The first-time application of IFRS 16 led to an increase of € 465 million as of January 1, 2019.
[3] Excluding current derivatives (operational).

MERCK GROUP

Reconciliation of net financial debt[1]

€ million	2019
January 1	**6,701**
Currency translation difference	18
Lease liabilities owing to the first-time application of IFRS 16	465
Dividend payments[2]	689
Acquisitions[2]	10
Payments from other divestments[2]	92
Payments for the purchase of non-financial assets[2]	500
Free cash flow[1]	–792
Other	146
June 30	**7,829**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] As reported in the Consolidated Cash Flow Statement.

Equity rose in the first half of 2019 by 2.0% to € 17,574 million (December 31, 2018: € 17,233 million). Owing to the increase in the balance sheet total, the equity ratio decreased to 44.4% (December 31, 2018: 46.7%). More information on the development of equity can be found in the Consolidated Statement of Changes in Net Equity in the Consolidated Half-Year Financial Statements.

The composition of free cash flow as well as the development of the relevant items are presented in the following table:

MERCK GROUP

Free cash flow[1]

in Mio. €	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
Cash flow from operating activities as reported in the consolidated cash flow statement	743	367	> 100.0%	1,235	748	65.2%
Payments for investments in intangible assets	–83	–34	> 100.0%	–93	–55	68.1%
Payments from the disposal of intangible assets	–	1	–	17	7	> 100.0%
Payments for investments in property, plant and equipment	–165	–168	–1.5%	–374	–396	–5.5%
Payments from the disposal of property, plant and equipment	3	2	43.2%	6	13	–50.5%
Free cash flow[1]	**497**	**168**	**> 100.0%**	**792**	**317**	**> 100.0%**

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

Business free cash flow of the Merck Group improved in the second quarter of 2019 to € 701 million (Q2 2018: € 514 million). This development was primarily due to the increase in EBITDA pre.

MERCK GROUP

Business free cash flow[1].

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
EBITDA pre[1]	1,139	920	23.8%	2,068	1,887[2]	9.6%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–193	–177	8.9%	–319	–306	4.1%
Changes in inventories	–96	–116	17.5%	–269	–185	45.0%
Changes in trade accounts receivable and receivables from royalties and licenses	–116	–112	3.3%	–175	–163	7.3%
Lease payments[3]	–33	–	–	–59	–	–
Business free cash flow[1]	**701**	**514**	**36.4%**	**1,246**	**1,232[2]**	**1.1%**

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

[3] Excluding payments for low-value leases and interest components included in lease payments.

In comparison with the year-earlier period, business free cash flow rose by 1.1% to € 1,246 million in the first six months of 2019 (January-June 2018: € 1,232 million). Higher EBITDA pre had a positive effect here although it was lowered in particular by the increase in inventories.

Healthcare

HEALTHCARE

Key figures

€ million	Q2 2019	Q2 2018	Change	Jan.–June 2019	Jan.–June 2018	Change
Net sales	1,677	1,584	5.9%	3,158	3,019	4.6%
Operating result (EBIT)[1]	345	155	> 100.0%	473	350	35.0%
Margin (% of net sales)[1]	20.6%	9.8%		15.0%	11.6%	
EBITDA[1]	523	338	54.5%	852	717	18.8%
Margin (% of net sales)[1]	31.2%	21.4%		27.0%	23.8%	
EBITDA pre[1]	528	379	39.5%	860	760[2]	13.2%
Margin (% of net sales)[1]	31.5%	23.9%		27.2%	25.2%	
Business free cash flow[1]	346	232	49.3%	568	530[2]	7.1%

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In the second quarter of 2019, the Healthcare business sector generated organic sales growth of 5.2%. Including positive foreign exchange effects of 0.7%, net sales amounted to € 1,677 million (Q2 2018: € 1,584 million). The exchange rate effect reflects the positive impact of the increase in the value of the U.S. dollar against the euro as well as the negative impact of the development of individual Latin American currencies and the Turkish lira.

Sales of the key product lines and products developed in the second quarter of 2019 as follows:

HEALTHCARE

Net sales by major product lines/products

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Total change	Q2 2018	Share
Oncology	**250**	**15%**	**6.8%**	**–1.1%**	**5.8%**	**236**	**15%**
thereof: Erbitux®	212	13%	5.7%	–1.5%	4.2%	203	13%
thereof: Bavencio®	23	1%	34.8%	3.6%	38.4%	17	1%
Neurology & Immunology	**392**	**23%**	**–5.1%**	**2.4%**	**–2.7%**	**403**	**25%**
thereof: Rebif®	331	20%	–16.1%	2.5%	–13.7%	383	24%
thereof: Mavenclad®	61	4%	> 100.0%	0.7%	> 100.0%	20	1%
Fertility	**313**	**19%**	**3.5%**	**0.6%**	**4.0%**	**301**	**19%**
thereof: Gonal-f®	191	11%	2.8%	0.9%	3.7%	184	12%
General Medicine & Endocrinology	**640**	**38%**	**10.1%**	**0.1%**	**10.3%**	**580**	**37%**
thereof: Glucophage®	237	14%	31.9%	0.2%	32.1%	180	11%
thereof: Concor®	124	7%	3.2%	0.2%	3.4%	120	8%
thereof: Euthyrox®	97	6%	5.4%	–0.4%	5.1%	93	6%
thereof: Saizen®	58	3%	–2.6%	–2.6%	–5.2%	61	4%
Other	**82**	**5%**				**64**	**4%**
Healthcare	**1,677**	**100%**	**5.2%**	**0.7%**	**5.9%**	**1,584**	**100%**

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

Sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw a double-digit organic sales decline of –16.1%. Including a positive exchange rate effect of 2.5%, sales amounted to € 331 million (Q2 2018: € 383 million). In North America, the largest sales market for Rebif®, the continued difficult competitive situation in the interferon market as well as competition from oral dosage forms were responsible for the organic sales decline of –20.8%. A price increase in January 2019 as well as the positive exchange rate effect stemming from the U.S. dollar could not compensate for this development. Consequently, sales in North America declined to € 210 million (Q2 2018: € 252 million). In Europe too, ongoing competitive pressure was responsible for the organic sales decline of –21.8%. In the second quarter of 2019, sales amounted to € 78 million (Q2 2018: € 101 million). The other regions generated organic growth of 41.2% overall. This was due to performance in both the Middle East and Africa region as well as in Latin America.

Sales of the oncology drug Erbitux® showed organic growth of 5.7% in the second quarter of 2019. Including negative foreign exchange effects, sales amounted to € 212 million (Q2 2018: € 203 million). Performance in Europe continued to be influenced by the difficult competitive environment. Organically, sales declined by –5.3%, and consequently sales in Europe decreased to € 101 million (Q2 2018: € 108 million). By contrast, with double-digit organic growth rates of 21.2%, performance in Asia-Pacific was very favorable. The addition of Erbitux® to the National Reimbursement Drug List in China was a major driver. Latin America also delivered organic growth of 28.0%, thus offsetting negative foreign exchange effects of –20.1%. The corresponding sales amounted to € 18 million (Q2 2018: € 17 million). The Middle East and Africa region generated net sales of € 12 million (Q2 2018: € 13 million).

HEALTHCARE

Product sales and organic growth[1] of Rebif® and Erbitux® by region – Q2 2019

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	331	78	210	3	17	23
	Organic growth[1] in %	–16.1%	–21.8%	–20.8%	–18.1%	33.9%	63.4%
	% of sales	100%	24%	63%	1%	5%	7%
Erbitux®	€ million	212	101	–	81	18	12
	Organic growth[1] in %	5.7%	–5.3%	–	21.2%	28.0%	–11.6%
	% of sales	100%	48%	–	38%	9%	5%

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

In a year-on-year comparison, sales of Mavenclad®, a medicine for oral short-course treatment of highly active relapsing multiple sclerosis, more than tripled to € 61 million in the second quarter of 2019 (Q2 2018: € 20 million). In March 2019, Mavenclad® was approved in the United States. North America accounted for 24% of total Mavenclad® sales. Sales of the immuno-oncology drug Bavencio® increased to € 23 million (Q2 2018: € 17 million). In May 2019, Bavencio® was approved in the United States in combination with axitinib for the treatment of patients with advanced renal cell carcinoma.

Gonal-f®, the leading recombinant hormone for the treatment of infertility, showed organic growth of 2.8% and increased sales to € 191 million (Q2 2018: € 184 million). In particular, performance in North America contributed to this with double-digit organic growth rates.

The General Medicine & Endocrinology franchise (including CardioMetabolic Care), which commercializes products to treat cardiovascular diseases, thyroid disorders, diabetes and growth disorders, among other things, generated organic growth of 10.1%, yielding net sales of € 640 million (Q2 2018: € 580 million). Delivering organic sales growth of 31.9%, Glucophage®, the top-selling product in this franchise, was the main driver of this development. Particularly owing to the strong performance in China, net sales of Glucophage® increased to € 237 million (Q2 2018: € 180 million).

Net sales of the business sector by region developed in the second quarter of 2019 as follows:

HEALTHCARE

Net sales by region

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018	Share
Europe	558	33%	2.2%	–0.9%	–	1.2%	552	35%
North America	363	22%	–8.3%	4.6%	–	–3.7%	377	24%
Asia-Pacific (APAC)	468	28%	24.5%	0.4%	–	24.9%	375	24%
Latin America	176	10%	1.6%	–3.7%	–	–2.1%	180	11%
Middle East and Africa (MEA)	112	7%	7.1%	3.1%	–	10.2%	102	6%
Healthcare	**1,677**	**100%**	**5.2%**	**0.7%**	**–**	**5.9%**	**1,584**	**100%**

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

In the first six months of 2019, the business sector generated sales of € 3,158 million (January-June 2018: € 3,019 million). This performance was attributable to organic sales growth of 4.1% and positive currency effects of 0.5%. The key driver of this development was the organic growth of 26.9% of Glucophage®, which led to net sales of € 418 million (January-June 2018: € 329 million) and mainly benefited from performance in China. In addition, the share of sales accounted for by Mavenclad® and Bavencio® grew steadily and contributed positively to the overall development. Sales of Mavenclad® rose to € 105 million (January-June 2018: € 33 million) and sales of Bavencio® increased to € 45 million (January-June 2018: € 29 million). Healthcare sales were also positively impacted by sales of other products from our Fertility portfolio (+10.7%) as well as Concor® (+10.0%), which generated double-digit organic growth rates. By contrast, Rebif® recorded an organic decline of –16.2% to € 630 million in the first half of 2019 (January-June 2018: € 732 million).

Sales of the key product lines and products developed in the first half of 2019 as follows:

HEALTHCARE

Net sales by major product lines/products

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Total change	Jan.–June 2018	Share
Oncology	**479**	**15%**	**4.8%**	**–1.2%**	**3.7%**	**462**	**15%**
thereof: Erbitux®	411	13%	3.7%	–1.7%	2.0%	403	13%
thereof: Bavencio®	45	1%	49.4%	5.0%	54.5%	29	1%
Neurology & Immunology	**735**	**23%**	**–6.1%**	**2.1%**	**–4.0%**	**765**	**25%**
thereof: Rebif®	630	20%	–16.2%	2.3%	–13.9%	732	24%
thereof: Mavenclad®	105	3%	> 100.0%	–1.9%	> 100.0%	33	1%
Fertility	**601**	**19%**	**5.6%**	**0.6%**	**6.1%**	**566**	**19%**
thereof: Gonal-f®	359	11%	1.7%	0.8%	2.5%	350	12%
General Medicine & Endocrinology	**1,209**	**39%**	**9.8%**	**–**	**9.9%**	**1,101**	**36%**
thereof: Glucophage®	418	13%	26.9%	0.1%	27.1%	329	11%
thereof: Concor®	241	8%	10.0%	0.1%	10.1%	219	7%
thereof: Euthyrox®	189	6%	9.0%	–0.6%	8.4%	174	6%
thereof: Saizen®	112	4%	–0.2%	–3.5%	–3.7%	117	4%
Other	**134**	**4%**				**125**	**5%**
Healthcare	**3,158**	**100%**	**4.1%**	**0.5%**	**4.6%**	**3,019**	**100%**

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

In the first half of 2019, sales by region developed as follows:

HEALTHCARE

Net sales by region

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018	Share
Europe	1,096	35%	1.5%	–1.3%	–	0.2%	1,094	36%
North America	668	21%	–10.3%	5.3%	–	–5.1%	703	23%
Asia-Pacific (APAC)	857	27%	20.8%	1.1%	–	21.9%	703	23%
Latin America	333	11%	8.7%	–6.6%	–	2.1%	326	11%
Middle East and Africa (MEA)	204	6%	2.7%	3.4%	–	6.2%	193	7%
Healthcare	**3,158**	**100%**	**4.1%**	**0.5%**	**–**	**4.6%**	**3,019**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2019 in comparison with the year-earlier quarter. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

HEALTHCARE

Reconciliation EBITDA pre[1]

	Q2 2019			Q2 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,677**	**–**	**1,677**	**1,584**	**–**	**1,584**	**5.9%**
Cost of sales	–421	–	–421	–343	–	–343	22.8%
Gross profit	**1,256**	**–**	**1,256**	**1,241**	**–**	**1,241**	**1.2%**
Marketing and selling expenses	–599	–	–599	–592	–	–592	1.3%
Administration expenses	–84	3	–81	–82	4	–79	3.5%
Research and development costs	–395	–	–395	–407	–	–407	–2.9%
Impairment losses and reversals of impairment losses on financial assets (net)	2	–	2	–5	–	–5	>100.0%
Other operating expenses and income	165	2	168	–1	37	36	>100.0%
Operating result (EBIT)[1]	**345**			**155**			
Depreciation/amortization/impairment losses/reversals of impairment losses	177	–	177	183	–	183	–3.0%
EBITDA[1]	**523**			**338**			
Restructuring expenses	5	–5	–	1	–1	–	
Integration expenses/IT expenses	4	–4	–	4	–4	–	
Gains (–)/losses (+) on the divestment of businesses	–3	3	–	37	–37	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–1	1	–	
EBITDA pre[1]	**528**	**–**	**528**	**379**	**–**	**379**	**39.5%**
of which: organic growth[1]							37.3%
of which: exchange rate effects							2.2%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Half-Year Consolidated Financial Statements as of June 30, 2019".

In the second quarter of 2019, gross profit of the Healthcare business sector increased to € 1,256 million (Q2 2018: € 1,241 million). This resulted in a gross margin of 74.9% (Q2 2018: 78.3%). Marketing and selling expenses were slightly above the year-earlier quarter and amounted to € 599 million (Q2 2018: € 592 million). Research and development costs reflected continued investments in our development pipeline and amounted to € 395 million (Q2 2018: € 407 million). The increase in the income balance of other operating expenses and income (net) to € 168 million (Q2 2018: € 36 million) was mainly due to the following: In the second quarter of 2019, a milestone payment of € 75 million was received from BioMarin Pharmaceutical Inc., USA, in connection with the sale of the rights to Palynziq™ in 2016. It also included a milestone payment of € 36 million for the approval of Bavencio® in the United States as a first-line therapy in combination with axitinib in patients with advanced renal cell carcinoma (RCC). As of the second quarter of 2019, the upfront payment amounting to € 300 million from the alliance with GlaxoSmithKline plc., United Kingdom, to develop and commercialize bintrafusp alfa is being recognized as income in accordance with the fulfillment of contractual performance obligations. The second quarter of 2019 included a positive effect of € 31 million in this connection (see Notes to the Consolidated Half-Year Financial Statements).

EBITDA pre increased organically by 37.3% and was supported by positive foreign exchange effects of 2.2%. Overall, the key figure increased by 39.5% to € 528 million (Q2 2018: € 379 million), which led to a strong improvement in the EBITDA pre margin to 31.5% (Q2 2018: 23.9%).

The following table presents the composition of EBITDA pre for the first half of 2019 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

HEALTHCARE

Reconciliation EBITDA pre[1]

	Jan.–June 2019			Jan.–June 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,158**	**–**	**3,158**	**3,019**	**–**	**3,019**	**4.6%**
Cost of sales	–746	–	–746	–677	–	–677	10.3%
Gross profit	**2,411**	**–**	**2,411**	**2,342**	**–**	**2,342**	**3.0%**
Marketing and selling expenses	–1,150	–	–1,150	–1,142	–	–1,142	0.7%
Administration expenses	–172	5	–167	–159	7	–152	9.6%
Research and development costs	–775	–	–775	–785	–	–785	–1.3%
Impairment losses and reversals of impairment losses on financial assets (net)	–1	–	–1	–5	–	–5	–77.3%
Other operating expenses and income	159	4	163	100	37	136	19.1%
Operating result (EBIT)[1]	**473**			**350**			
Depreciation/amortization/impairment losses/reversals of impairment losses	379	–	379	367	–	367	3.3%
EBITDA[1]	**852**			**717**			
Restructuring expenses	5	–5	–	–	–	–	
Integration expenses/IT expenses	5	–5	–	7	–7	–	
Gains (–)/losses (+) on the divestment of businesses	–2	2	–	37	–37	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**860**	**–**	**860**	**760**	**–**	**760**	**13.2%**
of which: organic growth[1]							11.6%
of which: exchange rate effects							1.6%
of which: acquisitions/divestments							**–**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

In the first half of 2019, EBITDA pre of the Healthcare business sector increased by 13.2% to € 860 million (January-June 2018: € 760 million). Apart from organic sales growth of 11.6%, the foreign exchange effect of 1.6% supported this development. In addition to the milestone payments for the approval of Bavencio® and in connection with the sale of the rights to Palynziq™, the first half of 2019 also included income from the deferred receipt of the upfront payment for bintrafusp alfa. In the year-earlier period, a milestone payment of € 50 million from BioMarin Pharmaceutical Inc., USA, in connection with the sale of the rights to Palynziq™ in 2016 also had a positive effect.

The EBITDA pre margin of the business sector rose in the first six months of 2019 by two percentage points to 27.2% (January-June 2018: 25.2%).

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In the second quarter of 2019, business free cash flow amounted to € 346 million (Q2 2018: € 232 million). The increase was mainly due to higher EBITDA pre as well as the decrease in inventories. The negative impact from the increase in receivables was mainly due to the Bavencio® milestone of € 36 million, which was still part of receivables as of June 30, 2019.

HEALTHCARE

Business free cash flow[1]

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
EBITDA pre[1]	528	379	39.5%	860	760[2]	13.2%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–75	–71	5.3%	–122	–112	9.4%
Changes in inventories	2	–27	> 100.0%	–64	–42	52.0%
Changes in trade accounts receivable and receivables from royalties and licenses	–97	–48	99.4%	–83	–76	9.7%
Lease payments[3]	–12	–	–	–23	–	–
Business free cash flow[1]	**346**	**232**	**49.3%**	**568**	**530[2]**	**7.1%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.
[3] Excluding payments for low-value leases and interest components included in lease payments.

In the first six months of 2019, the business sector generated business free cash flow of € 568 million (January-June 2018: € 530 million). The increase in EBITDA pre was partly canceled out by the development of inventories and receivables as well as higher capital spending.

Life Science

LIFE SCIENCE

Key figures

€ million	Q2 2019	Q2 2018	Change	Jan.–June 2019	Jan.–June 2018	Change
Net sales	1,705	1,543	10.5%	3,366	3,030	11.1%
Operating result (EBIT)[1]	322	254	26.6%	635	527	20.5%
Margin (% of net sales)[1]	18.9%	16.5%		18.9%	17.4%	
EBITDA[1]	518	442	17.1%	1,025	884	16.0%
Margin (% of net sales)[1]	30.4%	28.7%		30.5%	29.2%	
EBITDA pre[1]	533	452	18.0%	1,049	906	15.7%
Margin (% of net sales)[1]	31.3%	29.3%		31.2%	29.9%	
Business free cash flow[1]	323	269	20.3%	591	644	–8.1%

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

DEVELOPMENT OF SALES AND RESULTS OF OPERATIONS

In the second quarter of 2019, Life Science reported a 10.5% increase in sales over the year-earlier quarter. This was attributable to organic sales growth of 9.0%, a favorable foreign exchange impact of 2.1% and a negative portfolio effect of –0.6%. All three business units contributed to the organic growth, with the largest contribution coming from Process Solutions. Taking these effects into account, Life Science net sales increased to € 1,705 million (Q2 2018: € 1,543 million).

LIFE SCIENCE

Net sales by business unit

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018[2]	Share
Process Solutions	743	44%	16.2%	2.7%	–	18.9%	625	41%
Research Solutions	546	32%	3.7%	1.9%	–	5.7%	517	33%
Applied Solutions	416	24%	4.4%	1.6%	–2.1%	3.8%	401	26%
Life Science	**1,705**	**100%**	**9.0%**	**2.1%**	**–0.6%**	**10.5%**	**1,543**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted owing to an internal realignment.

The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, generated organic sales growth of 16.2%, which was the highest rate within the Life Science business sector. Assisted by a favorable foreign exchange effect of 2.7%, sales totaled € 743 million in the second quarter of 2019 (Q2 2018: € 625 million). Accordingly, Process Solutions accounted for 44% of the business sector's net sales. All Process Solutions business fields generated double-digit sales growth. In regional terms, North America was the strongest growth driver for Process Solutions.

The Research Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology, and academic research laboratories, delivered organic sales growth of 3.7%. Including a favorable foreign exchange effect of 1.9%, sales totaled € 546 million in the second quarter of 2019 (Q2 2018: € 517 million). Organic growth was driven by all business fields. Research Solutions thus accounted for 32% of Life Science net sales. The Asia-Pacific region was the strongest growth driver for Research Solutions.

The Applied Solutions business unit, which accounted for a 24% share of Life Science sales in the second quarter of 2019, generated organic sales growth of 4.4% with its broad range of products for researchers as well as scientific and industrial

laboratories. The divestment of the Flow Cytometry business led to a negative portfolio effect of –2.1%. Supported by a favorable foreign exchange effect of 1.6%, sales totaled € 416 million in the second quarter of 2019 (Q2 2018: € 401 million).

The sales performance of Applied Solutions was driven by all business fields and specifically in Latin America.

Net sales of the business sector by region developed in the second quarter of 2019 as follows:

LIFE SCIENCE

Net sales by region

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018	Share
Europe	563	33%	5.7%	0.3%	–0.5%	5.5%	534	35%
North America	619	36%	10.9%	5.7%	–0.6%	16.0%	534	35%
Asia-Pacific (APAC)	428	25%	9.8%	1.4%	–0.6%	10.6%	387	25%
Latin America	73	4%	17.3%	–7.0%	–0.1%	10.2%	66	4%
Middle East and Africa (MEA)	23	2%	3.9%	–1.4%	–0.2%	2.3%	22	1%
Life Science	**1,705**	**100%**	**9.0%**	**2.1%**	**–0.6%**	**10.5%**	**1,543**	**100%**

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

In the first half of 2019, Life Science net sales posted organic sales growth of 9.2% amid a favorable foreign exchange impact of 2.5%, resulting in total sales growth of 11.1% compared with the year-earlier period. All three business units contributed to organic growth, with the largest contribution coming from Process Solutions and followed by the Applied Solutions portfolio. Taking these effects into account, Life Science sales increased in the first half of 2019 to € 3,366 million (January-June 2018: € 3,030 million).

LIFE SCIENCE

Net sales by business unit

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018[2]	Share
Process Solutions	1,444	43%	15.7%	3.1%	–	18.8%	1,215	40%
Research Solutions	1,089	32%	3.9%	2.3%	–	6.2%	1,026	34%
Applied Solutions	834	25%	6.0%	1.7%	–2.1%	5.7%	789	26%
Life Science	**3,366**	**100%**	**9.2%**	**2.5%**	**–0.5%**	**11.1%**	**3,030**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted owing to an internal realignment.

In the first half of 2019, sales by region developed as follows:

LIFE SCIENCE

Net sales by region

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018	Share
Europe	1,144	34%	8.2%	0.3%	–0.5%	7.9%	1,060	35%
North America	1,194	36%	8.8%	6.6%	–0.6%	14.8%	1,040	34%
Asia-Pacific (APAC)	846	25%	10.2%	2.1%	–0.6%	11.7%	758	25%
Latin America	137	4%	15.8%	–9.4%	–0.1%	6.3%	129	4%
Middle East and Africa (MEA)	45	1%	6.7%	–2.1%	–0.2%	4.4%	43	2%
Life Science	**3,366**	**100%**	**9.2%**	**2.5%**	**–0.5%**	**11.1%**	**3,030**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2019 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

LIFE SCIENCE

Reconciliation EBITDA pre[1]

	Q2 2019			Q2 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,705**	**–**	**1,705**	**1,543**	**–**	**1,543**	**10.5%**
Cost of sales	–724	–	–723	–677	3	–674	7.3%
Gross profit	**982**	**–**	**982**	**865**	**3**	**869**	**13.0%**
Marketing and selling expenses	–490	–	–490	–452	2	–451	8.6%
Administration expenses	–68	–1	–69	–65	5	–60	14.9%
Research and development costs	–69	–	–69	–61	–	–61	14.1%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating expenses and income	–32	15	–17	–32	15	–17	–1.2%
Operating result (EBIT)[1]	**322**			**254**			
Depreciation/amortization/impairment losses/reversals of impairment losses	197	–	197	188	–16	172	14.2%
EBITDA[1]	**518**			**442**			
Restructuring expenses	4	–4	–	1	–1	–	
Integration expenses/IT expenses	10	–10	–	8	–8	–	
Gains (–)/losses (+) on the divestment of businesses	1	–1	–	–	–	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**533**	**–**	**533**	**452**	**–**	**452**	**18.0%**
of which: organic growth[1]							16.7%
of which: exchange rate effects							0.7%
of which: acquisitions/divestments							0.7%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

After the elimination of adjustments, gross profit rose by 13.0% to € 982 million in the second quarter of 2019 (Q2 2018: € 869 million). The strong increase was driven by organic sales growth across all business units. This led to an increase in gross margin to 57.6% (Q2 2018: 56.3%). Marketing and selling expenses increased by 8.6% to € 490 million (Q2 2018: € 451 million) while R&D costs rose by 14.1% to € 69 million (Q2 2018: € 61 million). After eliminating adjustments and depreciation, EBITDA pre grew by 18.0% to € 533 million (Q2 2018: € 452 million). This double-digit growth of the most important key figure to steer operating business was mainly organic, but was also supported by slight foreign exchange and portfolio effects. The resulting margin (EBITDA pre as a percentage of sales) increased in the second quarter of 2019 to 31.3% (Q2 2018: 29.3%). This reflects the strong performance of the operating businesses and the continued focus on driving sales and managing costs.

The following table presents the composition of EBITDA pre for the first half of 2019 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

LIFE SCIENCE

Reconciliation EBITDA pre[1]

	Jan.–June 2019			Jan.–June 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,366**	**–**	**3,366**	**3,030**	**–**	**3,030**	**11.1%**
Cost of sales	–1,443	1	–1,442	–1,328	6	–1,321	9.1%
Gross profit	**1,924**	**1**	**1,925**	**1,703**	**6**	**1,709**	**12.6%**
Marketing and selling expenses	–959	1	–959	–861	2	–859	11.6%
Administration expenses	–156	6	–150	–143	14	–130	16.1%
Research and development costs	–131	–	–131	–120	–	–120	9.0%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–2	–	–2	–
Other operating expenses and income	–42	16	–25	–49	16	–33	–22.1%
Operating result (EBIT)[1]	**635**			**527**			
Depreciation/amortization/impairment losses/reversals of impairment losses	390	–	390	357	–16	341	14.5%
EBITDA[1]	**1,025**			**884**			
Restructuring expenses	5	–5	–	1	–1	–	
Integration expenses/IT expenses	16	–16	–	20	–20	–	
Gains (–)/losses (+) on the divestment of businesses	2	–2	–	–	–	–	
Acquisition-related adjustments	–	–	–	1	–1	–	
Other adjustments	–	–	–	1	–1	–	
EBITDA pre[1]	**1,049**	**–**	**1,049**	**906**	**–**	**906**	**15.7%**
of which: organic growth[1]							15.1%
of which: exchange rate effects							0.8%
of which: acquisitions/divestments							–0.1%

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

[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

In the first half of 2019, gross profit after the elimination of adjustments increased by 12.6% to € 1,925 million (January-June 2018: € 1,709 million). Consequently, the gross margin rose to 57.2% (January-June 2018: 56.4%). After eliminating adjustments and depreciation, EBITDA pre rose by 15.7% to € 1,049 million (January-June 2018: € 906 million). The improvement in this key figure was due almost exclusively to organic growth (15.1%). This reflects the strong performance of the operating businesses and the continued focus on driving sales and managing costs.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In the second quarter of 2019, Life Science generated business free cash flow of € 323 million (Q2 2018: € 269 million). This development was mainly driven by higher EBITDA pre.

LIFE SCIENCE

Business free cash flow[1]

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
EBITDA pre[1]	533	452	18.0%	1,049	906	15.7%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–79	–55	41.8%	–137	–97	41.4%
Changes in inventories	–62	–75	–17.6%	–149	–99	50.7%
Changes in trade accounts receivable and receivables from royalties and licenses	–57	–53	7.2%	–148	–67	> 100.0%
Lease payments[2]	–13	–	–	–24	–	–
Business free cash flow[1]	**323**	**269**	**20.3%**	**591**	644	**–8.1%**

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

[2] Excluding payments for low-value leases and interest components included in lease payments.

In the first half of 2019, business free cash flow of Life Science decreased by –8.1% to € 591 million (January-June 2018: € 644 million). This was primarily attributable to the sales-related increase in inventories and receivables as well as stronger capital spending, which was partially offset by higher EBITDA pre.

Performance Materials

PERFORMANCE MATERIALS

Key figures

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
Net sales	589	587	0.4%	1,193	1,151	3.7%
Operating result (EBIT)[1]	100	131	–24.1%	195	267	–27.0%
Margin (% of net sales)[1]	16.9%	22.4%		16.3%	23.2%	
EBITDA[1]	161	192	–15.9%	318	384	–17.1%
Margin (% of net sales)[1]	27.4%	32.7%		26.7%	33.4%	
EBITDA pre[1]	190	196	–2.8%	383	392	–2.2%
Margin (% of net sales)[1]	32.3%	33.4%		32.1%	34.0%	
Business free cash flow[1]	153	143	7.5%	326	280	16.3%

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

DEVELOPMENT OF NET SALES AND RESULTS OF OPERATIONS

In the second quarter of 2019, net sales of the Performance Materials business sector increased by 0.4% to € 589 million (Q2 2018: € 587 million). An organic decline of –2.0% was more than offset by foreign exchange effects of 2.4%. This resulted mainly from a stronger U.S. dollar in comparison with the previous year as well as stronger Asian currencies, for instance the Taiwan dollar and the Japanese yen.

The Display Solutions business unit, consisting mainly of the business with liquid crystals, photoresists for display applications and OLED materials, again generated organic growth in the second quarter of 2019. Amid persistent price pressure, net sales of liquid crystal technologies benefited further from projects by panel makers in China to build up production capacities. However, in the second quarter the effects stemming from these projects declined in comparison with previous quarters, as expected. The OLED materials business continued to develop favorably.

The Semiconductor Solutions business unit comprises the business with materials used in integrated circuit production. Overall, in the second quarter of 2019 the processing of silicon wafers by customers remained below expectations against the backdrop of continued global economic uncertainty. Owing to the weak market conditions, sales declined organically overall.

In the second quarter of 2019, net sales of the Surface Solutions business unit were in line with expectations, not least due to positive foreign exchange effects. However, the Surface Solutions business declined organically overall. This development was mainly driven by sustained weak demand in the automotive segment.

Net sales of the business sector by region developed in the second quarter as follows:

PERFORMANCE MATERIALS

Net sales by region

€ million	Q2 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2018	Share
Europe	52	9%	–2.0%	0.2%	–	–1.8%	53	9%
North America	55	9%	–4.6%	5.1%	–	0.5%	55	9%
Asia-Pacific (APAC)	472	80%	–1.4%	2.4%	–	1.0%	467	80%
Latin America	7	1%	–20.0%	0.3%	–	–19.7%	9	2%
Middle East and Africa (MEA)	2	1%	19.2%	0.5%	–	19.7%	2	–
Performance Materials	**589**	**100%**	**–2.0%**	**2.4%**	**–**	**0.4%**	**587**	**100%**

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

In the first six months of 2019, net sales of the Performance Materials business sector increased by 3.7% to € 1,193 million (January-June 2018: € 1,151 million). This development was attributable to positive foreign exchange effects of 3.1%, stemming mainly from the U.S. dollar, the Taiwan dollar and the Japanese yen, as well as to organic sales growth totaling 0.6%.

The slight organic increase in sales in the first half of 2019 was particularly due to business with established liquid crystal technologies. They again benefited in the first half from projects by panel manufacturers in China to ramp up production capacities. In comparison with the second half of 2018, this effect decreased as expected.

In the first half of 2019, the Semiconductor Solutions business unit recorded an organic decline in sales, which was primarily attributable to weak economic activity.

The Surface Solutions business unit also saw an organic decrease in net sales, which was mainly due to sustained weak demand in the automotive segment.

In the first half of 2019, sales by region developed as follows:

PERFORMANCE MATERIALS

Net sales by region

€ million	Jan.–June 2019	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2018	Share
Europe	111	9%	–3.1%	0.1%	–	–3.0%	114	10%
North America	110	9%	–4.8%	6.0%	–	1.2%	108	9%
Asia-Pacific (APAC)	951	80%	1.7%	3.2%	–	5.0%	906	79%
Latin America	16	1%	–7.0%	–0.5%	–	–7.5%	17	2%
Middle East and Africa (MEA)	6	1%	18.4%	0.8%	–	19.1%	5	–
Performance Materials	**1,193**	**100%**	**0.6%**	**3.1%**	**–**	**3.7%**	**1,151**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2019 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

PERFORMANCE MATERIALS

Reconciliation EBITDA pre[1]

	Q2 2019			Q2 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**589**	**–**	**589**	**587**	**–**	**587**	**0.4%**
Cost of sales	–307	3	–304	–300	–	–300	1.4%
Gross profit	**282**	**3**	**285**	**287**	**–**	**287**	**–0.7%**
Marketing and selling expenses	–66	5	–62	–61	–	–61	1.2%
Administration expenses	–25	1	–24	–27	4	–23	4.3%
Research and development costs	–74	17	–57	–59	–	–59	–3.0%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating expenses and income	–17	4	–13	–9	1	–7	76.0%
Operating result (EBIT)[1]	**100**			**131**			
Depreciation/amortization/impairment losses/reversals of impairment losses	62	–	62	60	–1	59	3.9%
EBITDA[1]	**161**			**192**			
Restructuring expenses	26	–26	–	–	–	–	
Integration expenses/IT expenses	3	–3	–	4	–4	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**190**	**–**	**190**	**196**	**–**	**196**	**–2.8%**
of which: organic growth[1]							–8.4%
of which: exchange rate effects							5.6%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

Adjusted gross profit of the Performance Materials business sector was € 2 million lower in the second quarter of 2019 than in the year-earlier quarter, resulting in a gross margin of 48.4% (Q2 2018: 48.9%). The operating result (EBIT) decreased by € 31 million to € 100 million in the second quarter of 2019 (Q2 2018: € 131 million). Apart from the customary price decline in liquid crystal technologies, this was mainly driven by restructuring expenses within the scope of the "Bright Future" transformation program, which were eliminated in the calculation of EBITDA pre. A further factor was the lower absorption of fixed costs amid the organic decrease in sales in the Semiconductor Solutions and Surface Solutions business units. EBITDA pre of the business sector declined by –2.8% to € 190 million (Q2 2018: € 196 million). At 32.3%, the EBITDA pre margin was below the year-earlier figure (Q2 2018: 33.4%).

In the first half of 2019, EBITDA pre consisted of the following in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

PERFORMANCE MATERIALS

Reconciliation EBITDA pre[1]

	Jan.–June 2019			Jan.–June 2018[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,193**	**–**	**1,193**	**1,151**	**–**	**1,151**	**3.7%**
Cost of sales	–645	18	–627	–575	–	–575	9.0%
Gross profit	**548**	**18**	**567**	**575**	**–**	**575**	**–1.6%**
Marketing and selling expenses	–132	7	–125	–121	–	–121	3.6%
Administration expenses	–49	2	–46	–49	7	–42	10.7%
Research and development costs	–146	33	–114	–118	–	–118	–3.9%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating expenses and income	–27	5	–22	–20	1	–19	15.2%
Operating result (EBIT)[1]	**195**			**267**			
Depreciation/amortization/impairment losses/reversals of impairment losses	124	–	124	117	–1	116	6.4%
EBITDA[1]	**318**			**384**			
Restructuring expenses	60	–60	–	–	–	–	
Integration expenses/IT expenses	4	–4	–	7	–7	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	1	–1	–	
EBITDA pre[1]	**383**	**–**	**383**	**392**	**–**	**392**	**–2.2%**
of which: organic growth[1]							–8.4%
of which: exchange rate effects							6.2%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Previous year's figures have been adjusted, see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019".

At € 567 million, adjusted gross profit for the first half of 2019 was –1.6% below the previous year's level (January-June 2018: € 575 million). At € 195 million, the operating result (EBIT) was € 72 million lower than in the year-earlier period (January-June 2018: € 267 million). EBITDA pre of the business sector decreased by –2.2% to € 383 million (January-June 2018: € 392 million). Consequently, at 32.1%, the EBITDA pre margin was below the year-earlier figure of 34.0%.

DEVELOPMENT OF BUSINESS FREE CASH FLOW

In the second quarter of 2019, business free cash flow of the Performance Materials business sector grew by 7.5% to € 153 million (Q2 2018: € 143 million). A key factor here was the decline in trade accounts receivable.

PERFORMANCE MATERIALS

Business free cash flow[1]

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
EBITDA pre[1]	190	196	–2.8%	383	392	–2.2%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–29	–25	19.1%	–43	–46	–6.6%
Changes in inventories	–36	–15	> 100.0%	–56	–44	25.4%
Changes in trade accounts receivable and receivables from royalties and licenses	31	–14	> 100.0%	46	–21	> 100.0%
Lease payments[2]	–3	–	–	–5	–	–
Business free cash flow[1]	**153**	**143**	**7.5%**	**326**	**280**	**16.3%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Excluding payments for low-value leases and interest components included in lease payments.

In the first six months of 2019, business free cash flow rose by 16.3% to € 326 million (January-June 2018: € 280 million). This was mainly due to the positive development of trade accounts receivable between the first half of 2018 and the first half of 2019.

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 Merck Group as well as research and development costs spanning business sectors.

CORPORATE AND OTHER

Key figures

€ million	**Q2 2019**	Q2 2018	Change	**Jan.–June 2019**	Jan.–June 2018	Change
Operating result (EBIT)[1]	–148	–148	–0.2%	–305	–249	22.4%
EBITDA[1]	–128	–132	–3.1%	–268	–221	21.5%
EBITDA pre[1]	–112	–106	5.8%	–224	–171	31.2%
Business free cash flow[1]	–121	–129	–5.9%	–239	–221	7.8%

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

After eliminating adjustments, administrative costs amounted to € 84 million in the second quarter of 2019 (Q2 2018: € 74 million). Research and development costs spanning business sectors, for instance expenses for the Innovation Center were allocated to Corporate and Other in the amount of € 15 million in the second quarter of 2019 (Q2 2018: € 12 million). After eliminating adjustments, other operating expenses (net) declined slightly to € 29 million in the second quarter of 2019 (Q2 2018: € 30 million). After eliminating depreciation, amortization and adjustments, EBITDA pre totaled € –112 million in the second quarter of 2019 (Q2 2018: € -106 million). The slight improvement in business free cash flow to € –121 million (Q2 2018: € –129 million) was primarily due to lower investments.

In the first half of 2019, EBITDA pre of Corporate and Other totaled € –224 million (January-June 2018: € –171 million). Business free cash flow amounted to € –239 million in the first six months of 2019 (January-June 2018: € –221 million).

Report on Risks and Opportunities

As a global company operating a large number of highly innovative business fields, Merck is exposed to potential risks and opportunities.

The risk categories presented as well as the opportunities described in the Report on Risks and Opportunities found on pages 137 to 149 of the Annual Report for 2018 remain valid for the Merck Group in the current reporting period.

At present, we are not aware of any risks that could jeopardize the continued existence of Merck. We have a Group-wide risk management system in place to identify, control and mitigate potential risks. We continuously monitor business risks such as issues regarding liquidity, defaults on payables and receivables, currency and interest rates, market pricing, pension obligations, assessment of independent rating agencies, human resources, and information technology.

Regarding legal risks, we monitor a host of potential issues such as litigation regarding product liability, antitrust law, pharmaceutical law, patent law, and environmental protection.

Report on Expected Developments

With the quarterly statement as of March 31, 2019, we specified our forecast for the development of net sales and EBITDA pre for the Merck Group and the individual business sectors in 2019. The sale of the Consumer Health business to Procter & Gamble (P&G) closed on December 1, 2018. The 2018 figures already reflect this divestment. Therefore, the divestment has not been recorded as a portfolio effect in the comparison of the forecast with the figures for 2018. Furthermore, Merck defines organic earnings growth as currency-adjusted and portfolio-adjusted growth. The effects resulting from the first-time application of the new accounting standard for leases (IFRS 16) are mainly reflected in organic earnings growth.

Composition of the Group

On April 12, 2019, Merck signed a definitive agreement to acquire Versum Materials, Inc. for US$ 53 per share in cash. The transaction has been unanimously approved by the Executive Board of Merck and by the Versum Board of Directors. Versum shareholders also approved the transaction at a special meeting on June 17, 2019. The transaction is expected to close in the second half of 2019, subject to regulatory clearances and the satisfaction of other customary closing conditions. The applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 for U.S. antitrust purposes has already expired and the transaction has already been approved by the antitrust authorities in Austria, Germany, Ireland, Japan, Serbia, South Korea, and Taiwan. In addition, a definitive agreement to acquire Intermolecular, Inc. was signed on May 6, 2019. Intermolecular shareholders approved the transaction at a special meeting on July 17, 2019. This transaction is also expected to close in the second half of 2019, subject to regulatory clearance and the satisfaction of other customary closing conditions. This forecast contains no assumptions on sales and earnings contributions from Versum and Intermolecular.

Net sales

Following a solid first half that was in line with our expectations, we continue to forecast for the full year 2019 a moderate organic net sales increase of +3% to +5% over the previous year. We still assume that Life Science and Healthcare will be the growth drivers, more than offsetting the decline in Performance Materials.

Overall, our forecast for Group net sales of € 15.3 billion to € 15.9 billion for 2019 remains unchanged (2018: € 14.836 billion).

EBITDA pre

According to our expectations, in 2019 Group EBITDA pre will still be in a corridor between € 4.15 billion and € 4.35 billion (2018: € 3.80 billion). We confirm our original expectation of a strong organic increase in the range of +10% to +13% in EBITDA pre over the previous year and continue to assume a slightly positive foreign exchange effect of 0% to +2% compared with the previous year. We continue to expect the first-time application of the new accounting standard on leases (IFRS 16) to generate a positive contribution of around € 130 million to earnings.

Foreign exchange developments

In the first half of 2019, the euro-U.S. dollar exchange rate was within the range of 1.13 to 1.17 that we had previously expected for the full year, albeit at the lower end of the corridor. By contrast, the development of various emerging market currencies was somewhat below the expectations communicated in the last quarterly statement. Therefore, we continue to assume that exchange rate changes will have a slightly positive effect of 0% to +2% on our net sales growth over the previous year. In contrast to our most recent estimate for the full year 2019, we expect a euro-U.S. dollar exchange rate in the range of 1.12 to 1.16. Although exchange rate developments stabilized slightly in the second quarter, in general the development depends heavily on current political and macroeconomic factors. In principle, we thus continue to expect high exchange rate volatility.

Healthcare

For the Healthcare business sector, our forecast for a solid organic increase in net sales of +4% to +6% in 2019 in comparison with the previous year remains unchanged. The strong demand for our products in the General Medicine & Endocrinology franchise in growth markets will contribute to this trend, as will our business with products for the treatment of infertility. These positive effects should be able to offset the expected decline in sales of Rebif® as well as the lasting price pressure in key markets in Europe, Asia-Pacific, as well as the Middle East and Africa. We confirm our estimation that Mavenclad® will significantly contribute to growth, with sales reaching up to a mid-triple-digit million euro amount. We continue to expect that Bavencio® (avelumab) sales will be in the high double-digit million euro range in 2019, now with contributions from the successful FDA approval of the combination of Bavencio® (avelumab) plus axitinib in patients with advanced renal cell carcinoma. Regulatory approval was granted on May 15, 2019.

Owing to the exchange rate developments in recent weeks, we continue to forecast an exchange rate effect of –1% to +2% on the net sales of the Healthcare business sector. Overall, these developments should lead to sales ranging between € 6.45 billion and € 6.75 billion (2018: € 6.25 billion).

For 2019, we forecast EBITDA pre of the Healthcare business sector in the range of between € 1.83 billion and € 1.94 billion (previously: € 1.82 billion to € 1.95 billion; 2018: € 1.56 billion). We continue to assume strong organic growth of EBITDA pre in the range of +19% to +23% compared with 2018. In the first half of 2019, the decline in sales of Rebif® and the resulting negative impact on earnings were more pronounced than we had previously expected. However, for the full year 2019, we still assume that the expected significant contributions to earnings from our new products, particularly Mavenclad®, will more than offset this negative earnings effect. Our estimation in this respect has not changed in comparison with the last quarterly statement. The absence of one-time effects from fiscal 2018 totaling some € 180 million should be more than offset by expected earnings contributions from the active management of our pipeline assets as well as milestone payments. With respect to the global strategic alliance with GlaxoSmithKline plc announced on February 5, 2019 to co-develop and co-market bintrafusp alfa (M7824), for 2019 we expect a positive effect on earnings of around € 100 million from the upfront cash payment. Lower expected license payments for Erbitux® will also have a positive effect on earnings. We expect that research and developments costs to further advance our pipeline, especially in immuno-oncology, will remain at a stable level in comparison with 2018 (previously: slight increase). The slightly amended estimate is due to prioritization decisions within the scope of the quarterly budgeting process and to a continued increasing focus on costs. We still expect that our marketing and selling expenses will increase, driven primarily by launch activities for Mavenclad®, particularly in the United States. However, we assume that research and development costs as well as marketing and selling expenses will decline in relation to sales. As regards the expected foreign exchange effects for EBITDA pre of Healthcare, with the conclusion of the first half we are narrowing the range and now forecast an exchange rate effect ranging between –1% and +2% (previously: –2% to +3%).

Life Science

Owing to the good performance of the Life Science business sector in the first half, we now expect to see strong organic sales growth of +7% to +8% in 2019 (previously: +6% to +7%). This reflects a slightly more optimistic forecast for Process Solutions in comparison with the last quarterly statement. Owing to the continued highly dynamic market environment in the life science sector, we forecast that all business units will contribute positively to organic growth. In 2019, the Process Solutions business unit will again remain the strongest driver of organic growth, followed by Applied Solutions. The Research Solutions business unit should also make a moderate contribution to the positive sales development, albeit to a lesser extent than the other two business units. In December 2018, we sold the Flow Cytometry business. This will lead to an insignificant negative portfolio effect. Owing to the expected development of the relevant currencies, we continue to expect a slightly positive foreign exchange effect of +0% to +3%. Overall, we expect net sales of between € 6.62 billion and € 6.82 billion (2018: € 6.185 billion).

For 2019, we forecast EBITDA pre of the Life Science business sector in the range of between € 2.02 billion and € 2.12 billion (previously: € 2.00 billion to € 2.10 billion; 2018: € 1.84 billion). As we now expect sales to develop more dynamically, we are raising our forecast for the organic growth of EBITDA pre to between +11% and +13% (previously: +10% to +12%). Apart from good sales growth, we forecast a slight operating margin increase of 20-30 base points versus 2018 as well as an additional positive earnings contribution from the first-time application of IFRS 16. The realization of synergies from the Sigma-Aldrich acquisition has been completed. Consequently, no further incremental synergies from this acquisition are expected in 2019. We continue to assume that in 2019, organic EBITDA pre growth of the Life Science business sector will be supported by a slightly positive exchange rate effect. We narrow this range to 0% to +2% (previously: 0% to +3%).

Performance Materials

For our Performance Materials business sector in 2019, we now forecast an organic sales decline of –4% to –7% (previously: –3% to –6%). In the first quarter, the Display Solutions business unit again noticeably benefited in the Liquid Crystals business from individual customer capacity expansion projects in China. These continued to support the business in the second quarter, however they weakened somewhat in comparison with the previous year. Our OLED materials business also generated strong organic growth in the first half of 2019. Despite these developments, overall we continue to expect that Display Solutions will see sales and price declines in 2019 as a whole, with no change to the underlying expectations in our last quarterly statement. The Surface Solutions and the Semiconductor Solutions business units will not be able to compensate for this decline in 2019. Here, we are expecting market activity in both sectors to be softer in the course of the year than previously assumed. Against this background and deviating from our most recent assessment, for these businesses we now assume a moderate organic decline in sales. Assuming a normal global economic development, we expect the Performance Materials

business sector to return to growth in 2020, driven in particular by Semiconductor Solutions. We continue to forecast a slightly positive foreign exchange effect of 0% to +2% for Performance Materials in 2019. Overall, in Performance Materials this will lead to expected net sales in 2019 of between € 2.23 billion and € 2.38 billion (previously: € 2.25 billion to € 2.40 billion; 2018: € 2.41 billion).

Deviating from our previous estimate, we forecast EBITDA pre of the Performance Materials business sector for 2019 in the range of between € 0.685 billion and € 0.745 billion (previously: € 0.7 to € 0.760 billion) (2018: € 0.786 billion). We still assume that the other business units and the initial savings from the Bright Future program will not be able to offset the sales and price declines expected for the full year in the highly profitable Liquid Crystals business. The altered estimate stems mainly from the aforementioned developments in the Surface Solutions and Semiconductor Solutions business units. Consequently, we now forecast that organic EBITDA pre of Performance Materials will be in a range between –9% to –13% (previously: –7% to –11%). We continue to assume a slightly positive exchange rate effect and narrow the range to +1% to +4% (previously: 0% to +4%).

Corporate and Other

We continue to project EBITDA pre of Corporate and Other for 2019 of between € –420 million and € –480 million (2018: € –381 million). Owing to our updated exchange rate assumption, we continue to expect that the currency hedging effects in Corporate and Other will significantly burden EBITDA pre, in contrast to the positive contributions expected for the business sectors. We continue to invest in innovation and digitalization initiatives. A greater focus on reducing the costs of the administrative functions is likely to mitigate the increase.

MERCK GROUP

Forecast for FY 2019

€ million	Net sales	EBITDA pre	Business free cash flow
Merck Group	**~15,300 to 15,900** • Organic growth of +3% to +5% vs. 2018 • Exchange rate effect of 0% to +2%	**~4,150 to 4,350** • Organic growth of +10% to +13% vs. 2018 • Exchange rate effect of 0% to +2%	**~2,550 to 2,800**
Healthcare	**~6,450 to 6,750** • Solid organic growth +4% to +6% • Exchange rate effect of –1% to +2%	**~1,830 to 1,940** • Organic growth of +19% to +23% • Exchange rate effect of –1% to +2%	**~1,200 to 1,300**
Life Science	**~6,620 to 6,820** • Strong organic growth of +7% to +8% • Exchange rate effect of 0% to +3%	**~2,020 to 2,120** with an operating margin expansion of 20 to 30 base points • Organic growth of around +11% to +13% • Exchange rate effect of 0% to +2%	**~1,350 to 1,450**
Performance Materials	**~2,230 to 2,380** • Organic decline of –4% to –7% • Exchange rate effect of 0% to +2%	**~685 to 745** • Organic decline of –9% to –13% • Exchange rate effect of +1% to +4%	**~500 to 600**
Corporate and Other	–	**~ –420 to –480**	**~ –500 to –580**

EPS pre € 5.30 to € 5.65

Full-year FX assumption for 2019:
€ 1 = US$ 1.12 to US$ 1.16

Consolidated Half-Year Financial Statements as of June 30, 2019

Consolidated Half-Year Financial Statements as of June 30, 2019

Consolidated Income Statement[1]

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
Net sales	**3,971**	**3,714**	**7,717**	**7,199**
Cost of sales	–1,454	–1,321	–2,838	–2,581
Gross profit	**2,517**	**2,392**	**4,879**	**4,618**
Marketing and selling expenses	–1,157	–1,109	–2,248	–2,129
Administration expenses	–269	–275	–552	–532
Research and development costs	–553	–538	–1,080	–1,046
Impairment losses and reversals of impairment losses on financial assets (net)	2	–6	–2	–8
Other operating income	252	131	352	285
Other operating expenses	–173	–203	–352	–293
Operating result (EBIT)[2]	**618**	**392**	**997**	**895**
Finance income	37	21	53	35
Finance costs	–98	–85	–227	–160
Profit before income tax	**557**	**328**	**824**	**769**
Income tax	–136	–84	–203	–192
Profit after tax from continuing operations	**421**	**244**	**620**	**577**
Profit after tax from discontinued operation	**50**	**7**	**40**	**16**
Profit after tax	**471**	**251**	**660**	**593**
thereof: attributable to Merck KGaA shareholders (net income)	471	247	659	588
thereof: attributable to non-controlling interests	–	4	1	5
Earnings per share (in €)				
basic	1.08	0.57	1.52	1.35
– thereof: from continuing operations	0.97	0.56	1.42	1.32
– thereof: from discontinued operation	0.11	0.01	0.09	0.03
diluted	1.08	0.57	1.52	1.35
– thereof: from continuing operations	0.97	0.56	1.42	1.32
– thereof: from discontinued operation	0.11	0.01	0.09	0.03

[1] Previous year's figures have been adjusted, see "Effects of new accounting standards and other disclosure changes".
[2] Not defined by International Financial Reporting Standard (IFRS).

Statement of Comprehensive Income

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
Profit after tax	**471**	**251**	**660**	**593**
Items of other comprehensive income that will not be reclassified to profit or loss in subsequent periods				
Net defined benefit liability				
Changes in remeasurement	–278	–7	–365	109
Tax effect	40	1	60	–22
Changes recognized in equity	–238	–5	–306	87
Equity instruments				
Fair value adjustments	44	4	26	27
Tax effect	–	–	–	–
Changes recognized in equity	44	4	27	27
	–194	–1	–279	114
Items of other comprehensive income that may be reclassified to profit or loss in subsequent periods				
Debt instruments				
Fair value adjustments	–	–	–	–
Reclassification to profit or loss	–	–	–	–
Tax effect	–	–	–	–
Changes recognized in equity	–	–	–	–
Cash flow hedge reserve				
Fair value adjustments	3	–59	–35	–27
Reclassification to profit or loss	25	21	50	15
Reclassification to assets	–	–	–	–
Tax effect	–8	11	–4	4
Changes recognized in equity	21	–27	11	–8
Cost of cash flow hedge reserve				
Fair value adjustments	–16	–46	–14	–51
Reclassification to profit or loss	4	–	4	–
Tax effect	3	18	3	18
Changes recognized in equity	–9	–29	–7	–33
Exchange differences on translating foreign operations				
Changes taken directly to equity	–218	782	128	348
Reclassification to profit or loss	–	–17	–	–2
Changes recognized in equity	–218	765	128	346
	–206	709	133	305
Other comprehensive income	**–400**	**708**	**–146**	**419**
Comprehensive income	**71**	**958**	**515**	**1,011**
thereof: attributable to Merck KGaA shareholders	71	954	513	1,008
thereof: attributable to non-controlling interests	–	4	2	3
Comprehensive income	**71**	**958**	**515**	**1,011**
thereof: from continuing operations	21	961	475	1,005
thereof: from discontinued operation	50	–2	40	7

Consolidated Balance Sheet[1]

€ million	June 30, 2019	Dec. 31, 2018
Non-current assets		
Goodwill	13,841	13,764
Intangible assets other than goodwill	6,770	7,237
Property, plant and equipment[2]	5,251	4,811
Other non-current financial assets	657	656
Other non-current receivables	13	17
Other non-current non-financial assets	88	76
Deferred tax assets	1,255	1,091
	27,874	**27,652**
Current assets		
Inventories	3,033	2,764
Trade and other current receivables	3,468	3,226
Other current financial assets	154	29
Other current non-financial assets	1,284	587
Income tax receivables	304	460
Cash and cash equivalents	3,451	2,170
	11,694	**9,236**
Total assets	**39,568**	**36,888**
Total equity		
Equity capital	565	565
Capital reserves	3,814	3,814
Retained earnings	11,410	11,192
Gains/losses recognized in equity	1,761	1,629
Equity attributable to Merck KGaA shareholders	**17,550**	**17,200**
Non-controlling interests	24	33
	17,574	**17,233**
Non-current liabilities		
Provisions for pensions and other post-employment benefits	2,751	2,336
Other non-current provisions	829	780
Non-current financial debt[2]	6,497	6,681
Other non-current financial liabilities	34	33
Other non-current non-financial liabilities	226	19
Deferred tax liabilities	1,163	1,288
	11,499	**11,138**
Current liabilities		
Current provisions	545	600
Current financial debt[2]	4,933	2,215
Other current financial liabilities	543	1,077
Trade and other current payables	1,737	1,766
Refund liabilities	565	472
Income tax liabilities	1,107	1,176
Other current non-financial liabilities	1,065	1,211
	10,494	**8,517**
Total equity and liabilities	**39,568**	**36,888**

[1] Previous year's figures have been adjusted, see "Effects of new accounting standards and other disclosure changes".

[2] The first-time application of IFRS 16 led to an increase in property, plant and equipment as well as financial debt as of January 1, 2019 (see "Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019").

Consolidated Cash Flow Statement

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
Profit after tax	**471**	**251**	**660**	**593**
Depreciation/amortization/impairment losses/ reversals of impairment losses	453	448	927	876
Changes in inventories	–113	–75	–259	–167
Changes in trade accounts receivable	–104	–115	–119	–186
Changes in trade accounts payable/refund liabilities	159	41	141	44
Changes in provisions	–47	34	54	50
Changes in other assets and liabilities	–26	–243	–115	–478
Neutralization of gains/losses on disposals of assets	–50	2	–49	–7
Other non-cash income and expenses	–	23	–5	22
Net cash flows from operating activities	**743**	**367**	**1,235**	**748**
thereof: from discontinued operation	–7	–20	–12	–35
Payments for investments in intangible assets	–83	–34	–93	–55
Payments from the disposal of intangible assets	–	1	17	7
Payments for investments in property, plant and equipment	–165	–168	–374	–396
Payments from the disposal of property, plant and equipment	3	2	6	13
Payments for investments in financial assets	–127	–7	–164	–21
Payments for acquisitions less acquired cash and cash equivalents	–10	–	–10	–
Payments from the disposal of other financial assets	3	6	10	39
Payments for the purchase of non-financial assets	–400	–	–500	–
Payments from other divestments	–92	–	–92	–
Net cash flows from investing activities	**–870**	**–200**	**–1,199**	**–412**
thereof: from discontinued operation	–112	–2	–112	–5
Dividend payment to Merck KGaA shareholders	–162	–162	–162	–162
Dividend payments to non-controlling interests	–11	–3	–11	–5
Dividend payments to E. Merck KG	–454	–531	–516	–593
Payments from new borrowings from E. Merck KG	397	375	406	375
Repayments of financial debt to E. Merck KG	–	–	–	–109
Payments from the issuance of bonds	1,497	–	1,497	–
Repayments of bonds	–	–	–	–323
Changes in other current and non-current financial debt	–23	25	26	520
Net cash flows from financing activities	**1,244**	**–295**	**1,241**	**–298**
thereof: from discontinued operation	–	14	–	39
Changes in cash and cash equivalents	**1,116**	**–128**	**1,276**	**37**
Changes in cash and cash equivalents due to currency translation	–6	3	4	–4
Cash and cash equivalents at the beginning of the reporting period	2,340	747	2,170	589
Changes in cash and cash equivalents due to reclassification to assets held for sale	–	–13	–	–13
Cash and cash equivalents as of June 30	**3,451**	**609**	**3,451**	**609**

Consolidated Statement of Changes in Net Equity

	Equity capital			Retained earnings		
€ million	General partner's equity Merck KGaA	Subscribed capital Merck KGaA	**Capital reserves (share premium) Merck KGaA**	Retained earnings/net retained profit	Remeasurement of defined benefit plans	Fair value reserve for equity instruments
Balance as of January 1, 2018	**397**	**168**	**3,814**	**9,930**	**–1,358**	**–6**
Profit after tax	–	–	–	588	–	–
Other comprehensive income	–	–	–	–	87	27
Comprehensive income	**–**	**–**	**–**	**588**	**87**	**27**
Dividend payments	–	–	–	–162	–	–
Transactions with no change of control	–	–	–	–	–	–
Changes in scope of consolidation/Other	–	–	–	–2	–	–
Balance as of June 30, 2018	**397**	**168**	**3,814**	**10,354**	**–1,271**	**21**
Balance as of January 1, 2019	**397**	**168**	**3,814**	**12,525**	**–1,340**	**7**
Profit after tax	–	–	–	659	–	–
Other comprehensive income	–	–	–	–	–306	27
Comprehensive income	**–**	**–**	**–**	**659**	**–306**	**27**
Dividend payments	–	–	–	–162	–	–
Transactions with no change of control	–	–	–	–	–	–
Changes in scope of consolidation/Other	–	–	–	1	–	–1
Balance as of June 30, 2019	**397**	**168**	**3,814**	**13,024**	**–1,646**	**32**

Gains/losses recognized in equity						
Fair value reserve for debt instruments	Cash flow hedge reserve	Cost of hedging reserve	Currency translation difference	**Equity attributable to Merck KGaA**	**Non-controlling interests**	**Total equity**
–1	**–121**	**–1**	**1,171**	**13,992**	**63**	**14,055**
–	–	–	–	588	5	593
–	–8	–33	348	421	–2	419
–	**–8**	**–33**	**348**	**1,008**	**3**	**1,011**
–	–	–	–	–162	–5	–167
–	–	–	–	–	–	–
–	–	–	–	–2	–	–2
–1	**–129**	**–35**	**1,519**	**14,837**	**61**	**14,898**
–1	**–128**	**–33**	**1,790**	**17,200**	**33**	**17,233**
–	–	–	–	659	1	660
–	11	–7	127	–147	1	–146
–	**11**	**–7**	**127**	**513**	**2**	**515**
–	–	–	–	–162	–11	–173
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	**–116**	**–40**	**1,918**	**17,550**	**24**	**17,574**

Notes to the Consolidated Half-Year Financial Statements as of June 30, 2019

These consolidated half-year financial statements have been prepared with Merck KGaA, Frankfurter Str. 250, 64293 Darmstadt, Germany, which manages the operations of the Merck Group, as parent company.

Accounting and measurement principles

The half-year financial statements of the Merck Group dated June 30, 2019 comply with IAS 34. They have been prepared in accordance with the International Financial Reporting Standards in force on the balance sheet date as issued by the International Accounting Standards Board (IFRS and IAS) and the IFRS Interpretations Committee (IFRIC and SIC) and endorsed by the European Union as well as in accordance with section 117 in conjunction with section 115 of the German Securities Trading Act (WpHG). In accordance with IAS 34, a condensed scope of reporting as compared with the consolidated financial statements as of December 31, 2018 was selected. The figures presented in this half-year financial report have been rounded, which may lead to individual values not adding up to the totals presented.

The preparation of the consolidated half-year financial statements requires that assumptions and estimates be made to a certain extent. The assumptions and estimates are based on the latest state of knowledge and the data available on the balance sheet date. A detailed presentation of the most significant management judgments and sources of estimation uncertainty can be found in the Notes to the Consolidated Financial Statements of the Merck Group for 2018. The explanations provided there, particularly with respect to accounting and measurement principles, apply accordingly with the exception of the changes presented in these financial statements as a result of new and binding accounting standards that took effect in fiscal 2019 as well as the following disclosure changes.

ACCOUNTING STANDARDS APPLICABLE FOR THE FIRST TIME IN FISCAL 2019

The following regulations take effect as of fiscal 2019:

- IFRS 16 “Leases”
- IFRIC 23 “Uncertainty over Income Tax Treatments”
- Amendment to IAS 19 “Employee Benefits”
- Amendment to IAS 28 “Investments in Associates and Joint Ventures”
- Amendment to IFRS 9 “Financial Instruments”
- Annual Improvements to IFRSs 2015 – 2017 Cycle

With the exception of IFRS 16, no further regulations had a material effect on the assets, liabilities, financial position and financial performance of Merck.

CHANGE IN ACCOUNTING AND MEASUREMENT POLICIES RESULTING FROM IFRS 16

Effective January 1, 2019, Merck applied the accounting standard IFRS 16 “Leases” for the first time. IFRS 16 “Leases” replaces IAS 17 “Leases” and the corresponding interpretations. Merck applied the modified retrospective method to implement IFRS 16 and recognized the cumulative transition effects as at January 1, 2019. Previous-year comparative figures have not been restated.

IFRS 16 introduces a uniform lessee accounting model that requires lessees to recognize all leases in the consolidated balance sheet. This model mandates that right-of-use assets be recognized for identified assets and lease liabilities recognized for entered payment obligations. The new lease accounting regulations affect Merck as a lessee, in particular regarding leased real estate and vehicles. The lessor accounting regulations remain largely unchanged; this business has no material relevance for Merck. Furthermore, the consolidated financial statements are not affected by the new sale-and-lease-back regulations introduced per IFRS 16.

In accordance with IFRS 16, lease liabilities to be recognized for leases with Merck as a lessee are to be measured at the present value of the future lease payments. The weighted average interest rate used to discount the leases in place on January 1, 2019 was 2.8%. At this present value, adjusted for directly attributable costs, the right to use the leased asset was also capitalized as an asset. Advance payments and liabilities relating to earlier periods were also taken into account. When determining the remaining lease term at first-time application, the probability of exercising purchase, extension or termination options was estimated on the basis of current knowledge. These estimates were discretionary.

In accordance with IFRS 16, right-of-use assets are recognized within property, plant and equipment under the same line item that would have been used if the underlying asset had been purchased. In contrast to the previous approach of fully recognizing expenses from operating leases in the respective functional costs, interest expenses from the unwinding of the discount on lease liabilities will in future be recognized in the financial result.

The effect on the consolidated balance sheet was as follows:

€ million	Jan. 1, 2019
Property, plant and equipment	
Land, land rights and buildings, including buildings on third-party land	384
Plant and machinery	17
Other facilities, operating and office equipment	67
Right-of-use assets	**467**
Other current non-financial assets	**–2**
Non-current financial debt	
Lease liabilities	349
Current financial debt	
Lease liabilities	116
	465

Based on the obligations from operating leases (IAS 17) as of December 31, 2018, the following reconciliation was made to the opening balance sheet value of the lease liabilities as of January 1, 2019:

€ million	
Operating lease obligation as of December 31, 2018 (IAS 17)[1]	**561**
Practical expedient for leases involving low-value assets	–54
Minimum lease payments (nominal value) of finance lease liabilities as of December 31, 2018	4
Variable lease payments depending upon an index or a rate	19
Lease payments owing to the exercise of extension options assessed as being reasonably certain as of January 1, 2019	1
Lease payments owing to the exercise of termination options assessed as not being reasonably certain as of January 1, 2019	27
Service contracts to which IFRS 16 does not apply	–33
Undiscounted lease liabilities as of January 1, 2019 (IFRS 16)	**525**
Discounting	–56
Lease liabilities as of January 1, 2019	**469**
Present value of finance lease liabilities as of December 31, 2018	–4
Additional lease liabilities due to the first-time application of IFRS 16 as of January 1, 2019	**465**

[1] Previous year's figures have been adjusted.

Merck made use of the following practical expedients of IFRS 16:

- Right-of-use assets, including the corresponding liabilities, from leases of low-value assets are not recognized in the consolidated balance sheet;
- Leases of intangible assets within the scope of IAS 38 are not recognized in accordance with IFRS 16;
- Non-lease components are not separated from lease components with respect to buildings, including buildings on third-party land;
- Leases that were previously subject to IAS 17 and the corresponding interpretations were treated as leases under IFRS 16;
- At first-time application, no impairment tests for right-of-use assets were carried out – instead, Merck charged provisions for onerous contracts against the respective right-of-use assets;
- At first-time application, directly attributable costs incurred at contract inception were not taken into consideration;
- In the case of existing extension or termination options, the term of the lease was determined retrospectively;
- The carrying amounts of right-of-use assets and lease liabilities of leases classified as finance leases in accordance with IAS 17 were retained on the date of first-time application.

Merck is not applying the practical expedient regarding leases with a term of less than 12 months. Further information on the effects of the first-time application of IFRS 16 can be found in the Consolidated Financial Statements as of December 31, 2018.

OTHER DISCLOSURE CHANGES

To increase comparability and transparency, the disclosure of functional costs in the consolidated income statement and the structure of the consolidated balance sheet have been adapted. The changes in the consolidated income statement relate to the functional disclosure of expenses and income from the adjustments that were previously included under other operating income and other operating expenses. Now the adjustments are disclosed directly in the respective functional costs in order to directly show the relationship of the relevant expenses and income to functional costs. In the consolidated balance sheet, other assets and other liabilities have been separated into financial and non-financial assets and liabilities, depending on their specific nature. Furthermore, trade accounts receivable and other receivables have been combined. Within equity, the reserves have been separated into capital reserves and retained earnings.

The modified year-earlier comparison figures in the consolidated income statement and in the consolidated balance sheet can be found in the tables under "Effects of new accounting standards and other disclosure changes."

Scope of consolidation

As of June 30, 2019, 302 (December 31, 2018: 301) companies were fully consolidated. No companies were consolidated using the equity method as of the balance sheet date. Since the beginning of 2019, one previously immaterial company was included in the consolidated financial statements for the first time.

Significant events during the reporting period

AGREEMENT WITH GLAXOSMITHKLINE PLC., UNITED KINGDOM, TO CO-DEVELOP AND CO-COMMERCIALIZE ACTIVE INGREDIENTS IN IMMUNO-ONCOLOGY

On February 5, 2019, Merck signed an agreement with a subsidiary of GlaxoSmithKline plc, United Kingdom, (GSK) to co-develop and co-commercialize the immuno-oncology drug candidate bintrafusp alfa (also known as M7824). The bifunctional fusion protein is currently in clinical development and is being investigated in multiple forms of cancer. This includes a Phase II trial to investigate bintrafusp alfa as a first-line treatment in patients with PD-L1 expressing advanced non-small cell lung cancer (NSCLC).

After fulfillment of the agreed closing conditions, Merck received an upfront payment of € 300 million. Merck is recognizing this payment as income in accordance with the fulfillment of contractual performance commitments. Merck expects that in 2019, around € 100 million of the upfront payment will be recorded under other operating income.

Depending on clinical data, Merck is eligible for potential development milestone payments of up to € 500 million. Moreover, Merck will also be eligible for further payments of up to € 2.9 billion upon successfully achieving future approval and commercial milestones.

The two companies will jointly conduct development and commercialization. In the event of regulatory approval, net sales will be realized by Merck in the United States and by GSK in all other countries whereas net profits from sales and defined expense components will be shared equally by the alliance partners.

RESTRUCTURING OF THE IMMUNO-ONCOLOGY COLLABORATION WITH F-STAR DELTA LTD., UNITED KINGDOM

In June 2017, Merck announced a strategic collaboration with F-star Delta Ltd, Cambridge, United Kingdom, (F-star) for the development and commercialization of bispecific immuno-oncology antibodies. Due to a reprioritization of resources and programs, in 2019 Merck decided to no longer pursue the development of the bispecific antibody FS118 as part of the existing license and collaboration agreement with F-star and consequently restructured the collaboration. Based on the agreement, all rights to FS118 revert to F-star. The option to acquire F-star Delta Ltd. was rescinded. In the course of the restructuring, Merck in-licensed a novel bispecific antibody and additionally has an option to in-license a further bispecific antibody from the F-star antibody platform. Both bispecific antibodies have already been studied within the scope of the preceding collaboration.

As a result of these changes, in the first quarter of 2019 an impairment loss of € 27 million on an intangible asset was recorded as part of other operating expenses. Furthermore, the fair value of the existing option to acquire F-star Delta Ltd. was reduced to zero and the option was derecognized; the corresponding expense of € 45 million is included in finance costs.

PLANNED ACQUISITION OF VERSUM MATERIALS, INC., USA

On April 12, 2019, Merck announced that it had signed a definitive agreement to acquire all the issued and outstanding shares of Versum Materials, Inc., USA, (Versum) for US$ 53 per share in cash. Versum is one of the world's leading suppliers of innovation-driven, high-purity process chemicals, gases and equipment for semiconductor manufacturing. The company reported annual sales of approximately € 1.2 billion in fiscal 2018, has approximately 2,300 employees, and operates 14 manufacturing and seven research and development facilities throughout Asia and North America. The aim of the transaction is to create a leading electronic materials player focused on the semiconductor and display industries and to significantly strengthen the Performance Materials business sector. At a special meeting of stockholders held on June 17, 2019, Versum shareholders approved the transaction with Merck. The transaction is expected to close in the second half of 2019, subject to regulatory clearances and the satisfaction of other customary closing conditions.

To finance the purchase price, on June 18, 2019 Merck issued a hybrid bond in two tranches amounting to € 1.5 billion as well as a bond amounting to € 2 billion on July 1, 2019. The hybrid bond comprises two tranches, both of which have a maturity of 60 years with an early redemption option for Merck after 5.5 and 10 years, respectively. Rating agencies (Moody's, Scope and Standard & Poor's) gave equity credit treatment to the issuance. The bond is recognized in full as a financial liability in the balance sheet. Derivatives were used to hedge the foreign currency risk stemming from the U.S. dollar purchase price payment obligation.

PLANNED ACQUISITION OF INTERMOLECULAR, INC., USA

On May 6, 2019, Merck announced the signing of a definitive agreement to acquire Intermolecular, Inc., USA, (Intermolecular) for US$ 1.20 per share in cash (equity value of around US$ 62 million). The acquisition serves to strengthen the semiconductor technology offering in the Performance Materials business sector. Intermolecular reported annual sales of US$ 34 million in fiscal 2018 and has around 90 employees. The transaction is expected to close in the second half of 2019, subject to regulatory clearance and the satisfaction of other customary closing conditions.

RECEIPT OF MILESTONE PAYMENTS

In the second quarter of 2019, Merck received a milestone payment of € 75 million (2018: € 50 million) from BioMarin Pharmaceutical Inc., USA. The payment represents subsequent compensation for the return of the development and commercialization rights to Palynziq™ (formerly: Peg-Pal or Pegvaliase), which became due in the reporting period owing to the regulatory approval of the product in Europe.

Likewise in the second quarter of 2019, Merck received a milestone payment from Pfizer Inc., USA, amounting to € 36 million (US$ 40 million) for the regulatory approval of Bavencio® (avelumab) in combination with axitinib as a first-line therapy in patients with advanced renal cell carcinoma (RCC) by the U.S. Food and Drug Administration (FDA).

Both milestone payments were recorded under other operating income and allocated to the Healthcare business sector.

PURCHASE PRICE ADJUSTMENT FROM THE DIVESTMENT OF THE CONSUMER HEALTH BUSINESS

On December 1, 2018 Merck completed the divestment of its global Consumer Health business to The Procter & Gamble Company, USA, (P&G). The selling price was € 3.4 billion in cash before defined purchase price adjustments on the closing date for transferred operating assets, cash on hand and borrowed capital, among other things. The final determination of the purchase price adjustments took place in the first half of 2019. In this regard Merck recognized a further € 50 million as income; the corresponding payments will largely be received in the second half of 2019. The corresponding income and further expenses in connection with the divestment have been reported under profit after tax of discontinued operation. The payments from discontinued operation amounting to € 112 million reported under net cash flows from investing activities in the consolidated cash flow statement were mainly attributable to tax payments in connection with the divestment of the Consumer Health business.

Segment Reporting

INFORMATION BY BUSINESS SECTOR

	Healthcare				Life Science			
€ million	**Q2 2019**	Q2 2018	**Jan.–June 2019**	Jan.–June 2018	**Q2 2019**	Q2 2018	**Jan.–June 2019**	Jan.–June 2018
Net sales[1]	**1,677**	**1,584**	**3,158**	**3,019**	**1,705**	**1,543**	**3,366**	**3,030**
Intersegment sales	–	–	–	–	18	12	28	26
Operating result (EBIT)[2]	**345**	**155**	**473**	**350**	**322**	**254**	**635**	**527**
Depreciation and amortization	177	183	351	367	197	172	390	341
Impairment losses	–	–	27	–	–	16	–	16
Reversals of impairment losses	–	–	–	–	–	–	–	–
EBITDA[2]	**523**	**338**	**852**	**717**	**518**	**442**	**1,025**	**884**
Adjustments[2]	5	40	8	43	15	9	24	22
EBITDA pre (Segment result)[2]	**528**	**379**	**860**	**760**[3]	**533**	**452**	**1,049**	**906**
EBITDA pre margin (in % of net sales)[2]	31.5 %	23.9 %	27.2 %	25.2 %	31.3 %	29.3 %	31.2 %	29.9 %
Assets by business sector[4]			7,555	7,568			21,371	20,860
Liabilities by business sector[4]			–3,009	–2,893			–1,360	–1,333
Investments in property, plant and equipment[5]	66	67	164	155	63	55	139	120
Investments in intangible assets[5]	35	27	41	41	43	1	45	4
Net cash flows from operating activities	595	144	878	377	389	316	700	601
Business free cash flow[2]	346	232	568	530[3]	323	269	591	644

[1] Excluding intersegment sales.

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

[3] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

[4] Figures for the reporting period ending on June 30, 2019; previous-year figures as of December 31, 2018.

[5] As reported in the consolidated cash flow statement.

Segmentation was performed in accordance with the internal organization and reporting structure of the Merck Group valid as of 2019.

The fields of activity of the individual segments are described under “Fundamental Information about the Group” in the combined management report for 2018.

“Corporate and Other” in Segment Reporting includes income and expenses, assets and liabilities as well as cash flows that cannot be directly allocated to the reportable segments presented. This relates mainly to central Group functions. Moreover, the column served the reconciliation to the Group numbers. The expenses and income from the financial result and from income taxes as well as cash flows were also disclosed under “Corporate and Other”.

Apart from sales, the success of a segment is mainly determined by EBITDA pre (segment result) and business free cash

Performance Materials				Corporate and Other				Group			
Q2 2019	Q2 2018	**Jan.–June 2019**	Jan.–June 2018	**Q2 2019**	Q2 2018	**Jan.–June 2019**	Jan.–June 2018	**Q2 2019**	Q2 2018	**Jan.–June 2019**	Jan.–June 2018
589	**587**	**1,193**	**1,151**	**–**	**–**	**–**	**–**	**3,971**	**3,714**	**7,717**	**7,199**
–	–	–	–	–18	–12	–28	–26	–	–	–	–
100	**131**	**195**	**267**	**–148**	**–148**	**–305**	**–249**	**618**	**392**	**997**	**895**
62	59	124	116	20	16	37	29	455	430	902	852
–	1	–	1	–	–	–	–	–	17	27	17
–	–	–	–	–	–	–	–	–	–	–	–
161	**192**	**318**	**384**	**–128**	**–132**	**–268**	**–221**	**1,074**	**840**	**1,927**	**1,764**
29	4	65	7	16	26	44	50	65	80	141	123
190	**196**	**383**	**392**	**–112**	**–106**	**–224**	**–171**	**1,139**	**920**	**2,068**	**1,887**[3]
32.3 %	33.4 %	32.1 %	34.0 %	–	–	–	–	28.7 %	24.8 %	26.8 %	26.2 %
		3,995	4,046			6,647	4,414			39,568	36,888
		–536	–489			–17,090	–14,940			–21,994	–19,655
28	23	41	51	8	22	29	69	165	168	374	396
2	3	3	4	3	4	3	5	83	34	93	55
141	107	390	355	–382	–200	–732	–585	743	367	1,235	748
153	143	326	280	–121	–129	–239	–221	701	514	1,246	1,232[3]

flow. EBITDA pre and business free cash flow are performance indicators not defined by International Financial Reporting Standards. They represent important performance measures used to steer the Merck Group. To permit a better understanding of operational performance, EBITDA pre excludes depreciation and amortization, impairment losses and reversals of impairment losses in addition to specific adjustments presented in the following. Among other things, business free cash flow is also used for internal target agreements.

Transfer prices for intragroup sales were determined on an arm's-length basis.

The following table presents the reconciliation of EBITDA pre of all operating businesses to the profit before income tax of the Merck Group:

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
EBITDA pre of the operating businesses[1]	**1,251**	**1,026**	**2,292**	**2,058[2]**
Corporate and Other	–112	–106	–224	–171
EBITDA pre of the Merck Group[1]	**1,139**	**920**	**2,068**	**1,887[2]**
Depreciation/amortization/impairment losses/reversals of impairment losses	–455	–448	–929	–870
Adjustments[1]	–65	–80	–141	–123[2]
Operating result (EBIT)[1]	**618**	**392**	**997**	**895**
Financial result	–61	–65	–174	–126
Profit before income tax	**557**	**328**	**824**	**769**

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

Business free cash flow was determined as follows:

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
EBITDA pre[1]	**1,139**	**920**	**2,068**	**1,887[2]**
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–193	–177	–319	–306
Changes in inventories	–96	–116	–269	–185
Changes in trade accounts receivable as well as receivables from royalties and licenses	–116	–112	–175	–163
Lease payments[3]	–33		–59	
Business free cash flow[1]	**701**	**514**	**1,246**	**1,232[2]**

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

[2] In connection with the classification of the divested Consumer Health business as a discontinued operation, the figures have been adjusted by + € 2 million.

[3] Excluding payments for low-value leases and interest components included in lease payments.

Adjustments comprised the following:

€ million	Q2 2019	Q2 2018	Jan.–June 2019	Jan.–June 2018
Restructuring expenses	–39	–11	–100	–16
Integration expenses/IT expenses	–22	–21	–35	–42
Gains (+)/losses (–) on the divestment of businesses	2	–37	–	–39
Acquisition-related adjustments	–	–	–	–1
Other adjustments	–6	–11	–5	–25
Adjustments before impairment losses/reversals of impairment losses[1]	**–65**	**–80**	**–141**	**–123**
Impairment losses	–	–17	–	–17
Reversals of impairment losses	–	–	–	–
Adjustments (total)[1]	**–65**	**–97**	**–141**	**–140**

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

Restructuring expenses amounting to € 100 million (January-June 2018: € 16 million) resulted primarily in connection with the Bright Future transformation program of the Performance Materials business sector (€ 60 million) as well as with the transfer of Shared Service functions in Finance from Darmstadt to Wroclaw, Poland, and Manila, Philippines (€ 28 million). The integration and IT costs of the current fiscal year amounting to € 35 million (January-June 2018: € 42 million) resulted mainly from investments in ERP systems.

The following tables present a more detailed breakdown of net sales from contracts with customers:

€ million	Jan.–June 2019							
Net sales by nature of the products	Healthcare		Life Science		Performance Materials		**Group**	
Goods	3,067	97%	2,928	87%	1,192	100%	7,187	93%
Equipment/hardware	4	–	206	6%	–	–	210	3%
Services	55	2%	227	7%	1	–	282	4%
License income	–	–	4	–	–	–	4	–
Commission income	10	–	1	–	1	–	11	–
Income from co-commercialization agreements	22	1%	–	–	–	–	22	–
Total	**3,158**	**100%**	**3,366**	**100%**	**1,193**	**100%**	**7,717**	**100%**
Net sales by region (customer location)								
Europe	1,096	35%	1,144	34%	111	9%	2,351	31%
North America	668	21%	1,194	36%	110	9%	1,972	26%
Asia-Pacific (APAC)	857	27%	846	25%	951	80%	2,654	34%
Latin America	333	11%	137	4%	16	1%	486	6%
Middle East and Africa (MEA)	204	6%	45	1%	6	1%	255	3%
Total	**3,158**	**100%**	**3,366**	**100%**	**1,193**	**100%**	**7,717**	**100%**

€ million	Jan.–June 2018							
Net sales by nature of the products	Healthcare		Life Science		Performance Materials		**Group**	
Goods	2,948	98%	2,687	89%	1,149	100%	6,785	94%
Equipment/hardware	2	–	149	5%	–	–	151	2%
Services	33	1%	191	6%	1	–	225	3%
License income	–	–	3	–	–	–	3	–
Commission income	7	–	–	–	–	–	7	–
Income from co-commercialization agreements	30	1%	–	–	–	–	30	1%
Total	**3,019**	**100%**	**3,030**	**100%**	**1,151**	**100%**	**7,199**	**100%**
Net sales by region (customer location)								
Europe	1,094	36%	1,060	35%	114	10%	2,268	31%
North America	703	23%	1,040	34%	108	9%	1,852	26%
Asia-Pacific (APAC)	703	23%	758	25%	906	79%	2,367	33%
Latin America	326	11%	129	4%	17	2%	472	7%
Middle East and Africa (MEA)	193	7%	43	2%	5	–	240	3%
Total	**3,019**	**100%**	**3,030**	**100%**	**1,151**	**100%**	**7,199**	**100%**

HEALTHCARE

€ million	Jan.–June 2019	Share	Jan.–June 2018	Share
Oncology	**479**	**15%**	**462**	**15%**
thereof: Erbitux®	411	13%	403	13%
thereof: Bavencio®	45	1%	29	1%
Neurology & Immunology	**735**	**23%**	**765**	**25%**
thereof: Rebif®	630	20%	732	24%
thereof: Mavenclad®	105	3%	33	1%
Fertility	**601**	**19%**	**566**	**19%**
thereof: Gonal-f®	359	11%	350	12%
General Medicine & Endocrinology	**1,209**	**39%**	**1,101**	**36%**
thereof: Glucophage®	418	13%	329	11%
thereof: Concor®	241	8%	219	7%
thereof: Euthyrox®	189	6%	174	6%
thereof: Saizen®	112	4%	117	4%
Other	**134**	**4%**	**125**	**5%**
Total	**3,158**	**100%**	**3,019**	**100%**

LIFE SCIENCE[1]

€ million	Jan.–June 2019	Share	Jan.–June 2018	Share
Process Solutions	1,444	43%	1,215	40%
Research Solutions	1,089	32%	1,026	34%
Applied Solutions	834	25%	789	26%
Total	**3,366**	**100%**	**3,030**	**100%**

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

Earnings per share

Basic earnings per share are calculated by dividing the profit after tax attributable to the shareholders of Merck KGaA (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. The share capital of € 168 million was divided into 129,242,252 shares. Accordingly, the general partner's capital of € 397 million was divided into 305,535,626 theoretical shares. Overall, the total capital thus amounted to € 565 million or 434,777,878 theoretical shares outstanding. The weighted average number of shares (basic) was likewise 434,777,878 in the first half of 2019.

In the first half of 2019, there were no shares with a potentially dilutive effect. Thus, diluted earnings per share corresponded to basic earnings per share. In the first half of 2018, the calculation of diluted earnings per share had to take into account a potential dilution effect that arose from the free grant of Merck shares to eligible employees on the occasion of the 350th anniversary of the company. The shares required for this were purchased on the market. Pursuant to IAS 33, this led to an increase of 35,849 in the weighted average (diluted) number of shares to 434,813,727 shares. However, this did not lead to an arithmetical dilution effect on the indicator so that diluted earnings per share corresponded to basic earnings per share.

Earnings per share attributable to the discontinued operation resulted from the divestment of the Consumer Health business, which closed as of December 1, 2018.

Information on the measurement of fair value

The following table presents the carrying amounts and the fair values of the individual financial assets and liabilities as of June 30, 2019 for each individual financial instrument class pursuant to IFRS 9:

	Carrying amount			Fair value[1]			
June 30, 2019 € million	Short-term	Long-term	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using inputs observable in the market (Level 2)	Fair value determined using inputs unobservable in the market (Level 3)	Total
Financial assets							
Subsequent measurement at amortized cost							
Cash and cash equivalents	3,451	–	3,451				
Trade and other receivables (excluding leasing receivables)	3,445	13	3,458				
Other debt instruments	2	8	10				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	321	321	9	138	173	321
Trade and other receivables	22	–	22	–	–	22	22
Other debt instruments	142	9	151	16	135	–	151
Subsequent measurement at fair value through profit or loss							
Equity instruments	–	–	–	–	–	–	–
Contingent consideration	–	256	256	–	–	256	256
Other debt instruments	–	47	47	2	21	23	47
Derivatives without a hedging relationship	7	15	22	–	22	–	22
Derivatives with a hedging relationship	3	–	3	–	3	–	3
Leasing receivables (to be measured in accordance with IFRS 16)[2]	1	–	1				
Total	**7,072**	**670**	**7,742**	**27**	**320**	**475**	**822**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade and other payables	1,737	–	1,737				
Financial debt	4,693	6,106	10,799	8,950	2,131	–	11,081
Other financial liabilities	473	21	494				
Subsequent measurement at fair value through profit or loss							
Contingent consideration	–	4	4	–	–	4	4
Derivatives without a hedging relationship	23	60	83	–	83	–	83
Derivatives with a hedging relationship	188	10	198	–	198	–	198
Refund liabilities	565	–	565				
Leasing liabilities (to be measured in accordance with IFRS 16)[2]	98	332	430				
Total	**7,778**	**6,531**	**14,309**	**8,950**	**2,412**	**4**	**11,366**

[1] The simplification option under IFRS 7.29(a) was used for disclosures of certain fair values.

[2] Measurements within the scope of IFRS 16 are exempted from the requirements of IFRS 13 (IFRS 13.6(b)).

The following table presents the carrying amounts and the fair values of the individual financial assets and liabilities as of December 31, 2018 for each individual financial instrument class pursuant to IFRS 9:

	Carrying amount			Fair value[1]			
December 31, 2018 € million	Short-term	Long-term	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using inputs observable in the market (Level 2)	Fair value determined using inputs unobservable in the market (Level 3)	Total
Financial assets[3]							
Subsequent measurement at amortized cost							
Cash and cash equivalents	2,170	–	2,170				
Trade and other receivables (excluding leasing receivables)	3,204	17	3,221				
Other debt instruments	1	9	10				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	274	274	17	118	140	274
Trade and other receivables	21	–	21	–	–	21	21
Other debt instruments	8	4	12	12	–	–	12
Subsequent measurement at fair value through profit or loss							
Equity instruments	–	–	–	–	–	–	–
Contingent consideration	–	259	259	–	–	259	259
Other debt instruments	–	50	50	2	22	27	50
Derivatives without a hedging relationship	16	59	76	–	30	45	76
Derivatives with a hedging relationship	4	1	4	–	4	–	4
Leasing receivables (to be measured in accordance with IAS 17)[2]	1	–	1				
Total	**5,425**	**673**	**6,098**	**30**	**174**	**492**	**696**
Financial liabilities[3]							
Subsequent measurement at amortized cost							
Trade and other payables	1,766	–	1,766				
Financial debt	2,196	6,601	8,797	7,258	1,645	–	8,903
Other financial liabilities	1,019	13	1,032				
Subsequent measurement at fair value through profit or loss							
Contingent consideration	1	4	5	–	–	5	5
Derivatives without a hedging relationship	16	73	90	–	90	–	90
Derivatives with a hedging relationship	58	20	78	–	78	–	78
Refund liabilities	472	–	472				
Leasing liabilities (to be measured in accordance with IAS 17)[2]	2	2	4				
Total	**5,530**	**6,714**	**12,244**	**7,258**	**1,813**	**5**	**9,076**

[1] The simplification option under IFRS 7.29(a) was used for disclosures of certain fair values.

[2] Measurements within the scope of IAS 17 are exempted from the requirements of IFRS 13 (IFRS 13.6(b)).

[3] Previous year's figures have been adjusted, see “Effects of new accounting standards and other disclosure changes”.

The determination of the fair values of financial assets and liabilities is presented in the following table:

		June 30, 2019		Dec. 31, 2018			
		Fair value		Fair value			
€ million							
Fair value determined by official prices and quoted market values (Level 1)	**Financial instruments concerned**	Financial assets	Financial liabilities	Financial assets	Financial liabilities	**Description of the measurement technique**	**Main input factors used to determine fair values**
Equity instruments	Shares (equity investments in listed companies)	9		17		Derivation from an active market	Quoted prices in an active market
Debt instruments (subsequent measurement through other comprehensive income)	Bonds	16		12			
Debt instruments (subsequent measurement through profit or loss)	Publicly traded funds	2		2			
Financial liabilities (subsequent measurement at amortized cost)	Bonds		8,950		7,258		
Total		**27**	**8,950**	**30**	**7,258**		
Fair value determined using inputs observable in the market (Level 2)							
Equity instruments	Shares (equity investments in listed companies)	138		118		Derivation from active market considering liquidity discount	Quoted prices in an active market and volatilities observable on the market
Debt instruments (subsequent measurement through other comprehensive income)	Other short-term cash investments	135		–		Use of recognized actuarial methods	Interest rate curves available on the market
Debt instruments (subsequent measurement through profit or loss)	Convertible notes with conversion right to shares in companies	21		22		Nominal value considering liquidity discount	Volatilities observable on the market
Derivatives (with or without a hedging relationship)	Forward exchange contracts, currency options and other forward contracts	10	221	21	95	Use of recognized actuarial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
	Interest rate swaps	15	60	14	73		Interest rate curves available on the market
Financial liabilities (subsequent measurement at amortized cost)	Liabilities to banks and other loan liabilities		2,131		1,645	Discounting of future cash flows	Interest rates observable on the market
Total		**320**	**2,412**	**174**	**1,813**		
Fair value determined using inputs unobservable in the market (Level 3)							
Equity instruments	Equity investments in unlisted companies	13		10		Discounting expected future cash flows	Expected cash flows from the latest corporate planning, average cost of capital, expected long-term growth rate
		160		129		Derivation from market prices within the scope of equity refinancing sufficiently close to the balance sheet date	Derived from observable prices from equity refinancing transactions
		1		1		Cost-based measurement models	At cost
Trade and other receivables	Trade accounts receivable that are intended for sale due to a factoring agreement	22		21		Nominal value less factoring fees	Nominal value of trade receivables potentially for sale, average fees for sales of trade receivables
Derivatives (without a hedging relationship)	Option on equity instruments in an unlisted company	–	–	45	–	Option pricing models	Sales planning, milestone payments, probability of regulatory and commercial events, discount rates
Contingent consideration	Contingent consideration from the sale and purchase of businesses or shares in corporations	256	4	259	5	Discounting of probability-weighted future milestone payments and license fees	Sales planning, milestone payments, probability of regulatory and commercial events, discount rates
Other debt instruments	Interests in unlisted funds	19		19		Taking into account the fair values of the companies in which the funds are invested	Net asset values of the fund interests
	Convertible note with conversion right to shares in unlisted companies	4		7		Use of recognized actuarial methods	Interest rates observable on the market
Total		**475**	**4**	**492**	**5**		

Counterparty credit risk was taken into consideration for all valuations of financial instruments. In the case of non-derivative financial instruments, such as other liabilities or interest-bearing securities, this was reflected using risk premiums on the discount rate, while discounts on market value (so-called credit valuation adjustments and debit valuation adjustments) were used for derivatives.

The planning periods used to determine the fair value of equity investments in unlisted companies ranged from 1.5 to 9.5 years (December 31, 2018: 2 to 8 years). Cash flows for periods in excess of this are included in the terminal value calculation using long-term growth rates of between 0.5% and 2.0% (December 31, 2018: 0.5% and 2.0%). The applied average cost of capital (after tax) was 7.0% on June 30, 2019 (December 31, 2018 7.0%).

The fair values of contingent consideration were calculated by weighting the expected future milestone payments and royalties using their probability of occurrence and discounting them. This calculation is subject to judgment to a high degree. The main parameters when determining contingent consideration represent

- the estimated probability of occurrence of the individual milestone events,
- the sales planning assumed to derive royalties and
- the discount rate used.

When determining the probability of occurrence of the individual milestone events in connection with the development of drug candidates, the focus was on empirically available probabilities of success of development programs in comparable phases of clinical development in the relevant therapeutic areas. To determine the sales planning, internal sales plans and sales plans of external industry services were used. The discount rate (after tax) of between 5.5% and 7.6% (December 31, 2018: 6.3% to 7.3%) was calculated using the weighted average cost of capital.

The most significant contingent consideration was the future purchase price claim from the disposal of the Biosimilars business. It was calculated by an external valuation expert in 2017. As of June 30, 2019, the carrying amount was € 197 million (December 31, 2018: € 196 million). If, in determining the fair value of this contingent consideration as of the balance sheet date, the probability of approval or the discount rate of the three most important development programs had been estimated to be lower or higher to the extent described below, as of June 30, 2019, this would have led to the following valuation changes with corresponding effects on profit before income tax:

June 30, 2019		**Change in probability of regulatory approval**		
€ million		–10 %	unchanged	10 %
	5.0 %	–28	6	40
Change in the discount rate	unchanged (5.5 %)	–33	0	33
	6.0 %	–38	–7	25

Dec. 31, 2018		**Change in the probability of regulatory approval**		
€ million		–10 %	unchanged	10 %
	5.8%	–34	5	45
Change in the discount rate	unchanged (6.3%)	–38	0	38
	6.8%	–42	–5	32

A change in the main input parameters used to measure other contingent consideration would not have had a material impact on profit before income tax.

The changes in financial assets and liabilities allocated to Level 3 and measured at fair value for each individual class of financial instrument were as follows:

		Financial assets						Financial liabilities
		Subsequent measurement at fair value through profit or loss				Subsequent measurement at fair value through other comprehensive income		Subsequent measurement at fair value through profit or loss
€ million	Total	Equity instruments	Other debt instruments	Contingent consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration
Net carrying amounts, Jan. 1, 2019	**487**	**–**	**27**	**259**	**45**	**140**	**21**	**–5**
Additions due to acquisitions/divestments/ conclusion of factoring agreements	49	–	3	–	–	20	27	–
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+) / losses (–) recognized in profit or loss	–25	–	2	17	–45		–	1
thereof: other operating result	2	–	2	–1	–		–	1
thereof: attributable to assets/liabilities held as of the balance sheet date	–12	–	2	–15	–		–	1
thereof: financial result	–28	–	–1	18	–45		–	–
thereof: attributable to assets/liabilities held as of the balance sheet date	17	–	–1	18	–		–	–
Gains (+)/losses (–) recognized in other comprehensive income	6					6	–	
Currency translation difference	–	–	–	–	–	–	–	–
Disposals due to divestments/payments received/payments made	–46	–	–	–20	–	–	–26	1
Transfers out of Level 3 into Level 1/Level 2	–	–	–	–	–	–	–	–
Other	–	–	–8	–	–	8	–	–
Net carrying amounts, June 30, 2019	**471**	**–**	**23**	**256**	**–**	**173**	**22**	**–4**

Additions during the reporting period comprised particularly trade accounts receivable designated for sale owing to a factoring agreement as well as acquisitions of equity investments by Merck Ventures B.V., Netherlands. Disposals during the reporting period related particularly to payments received in connection with trade accounts receivable within the scope of factoring agreements as well as payments received in connection with the contingent consideration from the divestment of the Biosimilars business. Gains and losses from Level 3 assets recognized in equity are reported in the consolidated statement of comprehensive income under the item “fair value adjustments”.

		Financial assets						Financial liabilities
		Subsequent measurement at fair value through profit or loss				Subsequent measurement at fair value through other comprehensive income		Subsequent measurement at fair value through profit or loss
€ million	Total	Equity instruments	Other debt instruments	Contingent consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration
Net carrying amounts, Jan. 1, 2018	**447**	**–**	**21**	**277**	**46**	**106**	**–**	**–3**
Additions due to acquisitions/divestments/ conclusion of factoring agreements	105	–	15	8	–	33	49	–
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+) / losses (–) recognized in profit or loss	–7	–	2	–7	–1		–	–1
thereof: other operating result	–31	–	–1	–29	–		–	–1
thereof: attributable to assets/liabilities held as of the balance sheet date	–37	–	–1	–36	–		–	–1
thereof: financial result	24	–	3	22	–1		–	–
thereof: attributable to assets/liabilities held as of the balance sheet date	24	–	3	22	–1		–	–
Gains (+)/losses (–) recognized in other comprehensive income	30					30	–	
Currency translation difference	1	–	1	–	–	–	–	–
Disposals due to divestments/payments received	–80	–	–4	–20	–	–29	–28	–
Transfers out of Level 3 into Level 1/Level 2	–9	–	–	–	–	–9	–	–
Other	–	–	–8	–	–	8	–	–
Net carrying amounts, Dec. 31, 2018	**487**	**–**	**27**	**259**	**45**	**140**	**21**	**–5**

Related-party disclosures

As of June 30, 2019, there were liabilities of Merck Financial Services GmbH to E. Merck KG in the amount of € 1,226.6 million. In addition, as of June 30, 2019, there were receivables of Merck & Cie. Switzerland to E. Merck KG in the amount of € 12.5 million as well as of Merck KGaA to E. Merck Beteiligungen KG in the amount of € 28.6 million. The balances result mainly from the profit transfers by Merck & Cie, Switzerland, to E. Merck KG as well as the reciprocal profit transfers between Merck KGaA and E. Merck KG. They included financial liabilities of € 1,226.6 million, which were subject to standard market interest rates. Neither collateral nor guarantees existed for any of the balances either in favor or to the disadvantage of the Merck Group.

From January to June 2019, Merck KGaA performed services for E. Merck KG with a value of € 0.6 million. During the same period, E. Merck KG performed services for Merck KGaA with a value of € 0.5 million.

As of June 30, 2019, receivables and payables vis-à-vis non-consolidated subsidiaries amounted to € 11.6 million and € 10.6 million, respectively. From January to June 2019, the Merck Group generated sales of € 0.1 million with these companies. During the same period, expenses amounting to € 0.2 million were incurred as a result of transactions with these companies.

Subsequent Events

With the exception of the bond issue amounting to € 2 billion on July 1, 2019 (see “Planned acquisition of Versum Materials, Inc., USA”), no events of special importance occurred that could have a material impact on the net assets, financial position or results of operations of the Merck Group.

Effects of new accounting standards and other disclosure changes

€ million	Dec. 31, 2018 (as reported)	Reclassification Receivables/liabilities	Reclassification Derivatives
Non-current assets			
Goodwill	13,764	–	–
Intangible assets other than goodwill	7,237	–	–
Property, plant and equipment	4,811	–	–
Other non-current financial assets	610	–	46
Other non-current receivables		17	–
Other non-current non-financial assets		–	–
Other non-current assets	138	–17	–46
Deferred tax assets	1,091	–	–
	27,652	**–**	**–**
Current assets			
Inventories	2,764	–	–
Trade accounts receivable	2,931	–2,931	–
Trade and other current receivables		3,226	–
Other current financial assets	24	–	4
Other current non-financial assets		–	–
Other current assets	886	–295	–4
Income tax receivables	460	–	–
Cash and cash equivalents	2,170	–	–
Assets held for sale	–	–	–
	9,236	**–**	**–**
Total assets	**36,888**	**–**	**–**
Equity			
Equity capital	565	–	–
Reserves	15,006	–	–
Capital reserves		–	–
Retained earnings		–	–
Gains/losses recognized in equity	1,629	–	–
Equity attributable to Merck KGaA shareholders	**17,200**	**–**	**–**
Non-controlling interests	33	–	–
	17,233	**–**	**–**
Non-current liabilities			
Provisions for pensions and other post-employment benefits	2,336	–	–
Other non-current provisions	780	–	–
Non-current financial debt	6,681	–	–
Other non-current financial liabilities		13	20
Other non-current non-financial liabilities		–	–
Other non-current liabilities	52	–13	–20
Deferred tax liabilities	1,288	–	–
	11,138	**–**	**–**
Current liabilities			
Current provisions	600	–	–
Current financial debt	2,215	–	–
Other current financial liabilities		1,019	58
Trade and other current payables	1,766	–	–
Refund liabilities	472	–	–
Income tax liabilities	1,176	–	–
Other current non-financial liabilities		–	–
Other current liabilities	2,288	–1,019	–58
Liabilities included in disposal groups classified as held for sale	–	–	–
	8,517	**–**	**–**
Total equity and liabilities	**36,888**	**–**	**–**

Reclassification	Reclassification	**Dec. 31, 2018**	Application of IFRS 16	**Jan. 1, 2019**
Non-financial assets/ liabilities	Equity/reserves	(after reclassifications)		(after adjustment)
–	–	13,764	–	13,764
–	–	7,237	–	7,237
–	–	4,811	467	5,278
–	–	656	–	656
–	–	17	–	17
76	–	76	–	76
–76	–			
–	–	1,091	–	1,091
–	**–**	**27,652**	**467**	**28,119**
–	–	2,764	–	2,764
–	–			
–	–	3,226	–	3,226
–	–	29	–	29
587	–	587	–2	585
–587	–			
–	–	460	–	460
–	–	2,170	–	2,170
–	–	–	–	–
–	**–**	**9,236**	**–2**	**9,234**
–	**–**	**36,888**	**465**	**37,353**
–	–	565	–	565
–	–15,006			
–	3,814	3,814	–	3,814
–	11,192	11,192	–	11,192
–	–	1,629	–	1,629
–	**–**	**17,200**	**–**	**17,200**
–	–	33	–	33
–	**–**	**17,233**	**–**	**17,233**
–	–	2,336	–	2,336
–	–	780	–	780
–	–	6,681	349	7,030
–	–	33	–	33
19	–	19	–	19
–19	–			
–	–	1,288	–	1,288
–	**–**	**11,138**	**349**	**11,487**
–	–	600	–	600
–	–	2,215	116	2,331
–	–	1,077	–	1,077
–	–	1,766	–	1,766
–	–	472	–	472
–	–	1,176	–	1,176
1,211	–	1,211	–	1,211
–1,211	–			
–	–	–	–	–
–	**–**	**8,517**	**116**	**8,633**
–	**–**	**36,888**	**465**	**37,353**

CONSOLIDATED INCOME STATEMENT

	Jan.–June 2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**7,199**	**–**	**7,199**
Cost of sales	–2,581	–	–2,581
Gross profit	**4,618**	**–**	**4,618**
Marketing and selling expenses	–2,127	–2	–2,129
Administration expenses	–457	–75	–532
Research and development costs	–1,046	–	–1,046
Impairment losses and reversals of impairment losses on financial assets (net)	–8	–	–8
Other operating income	285	–	285
Other operating expenses	–371	77	–293
Operating result (EBIT)[1]	**895**	**–**	**895**

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

HEALTHCARE RESULTS OF OPERATIONS

	Jan.–June 2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**3,019**	**–**	**3,019**
Cost of sales	–677	–	–677
Gross profit	**2,342**	**–**	**2,342**
Marketing and selling expenses	–1,142	–	–1,142
Administration expenses	–152	–7	–159
Research and development costs	–785	–	–785
Remaining operating expenses and income	88	6	94
Operating result (EBIT)[1]	**350**	**–**	**350**

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

LIFE SCIENCE RESULTS OF OPERATIONS

	Jan.–June 2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**3,030**	**–**	**3,030**
Cost of sales	–1,328	–	–1,328
Gross profit	**1,703**	**–**	**1,703**
Marketing and selling expenses	–859	–2	–861
Administration expenses	–130	–14	–143
Research and development costs	–120	–	–120
Remaining operating expenses and income	–67	16	–51
Operating result (EBIT)[1]	**527**	**–**	**527**

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

PERFORMANCE MATERIALS RESULTS OF OPERATIONS

	Jan.–June 2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**1,151**	**–**	**1,151**
Cost of sales	–575	–	–575
Gross profit	**575**	**–**	**575**
Marketing and selling expenses	–121	–	–121
Administration expenses	–42	–7	–49
Research and development costs	–118	–	–118
Remaining operating expenses and income	–28	7	–21
Operating result (EBIT)[1]	**267**	**–**	**267**

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

CONSOLIDATED INCOME STATEMENT

	2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**14,836**	**–**	**14,836**
Cost of sales	–5,382	–	–5,382
Gross profit	**9,454**	**–**	**9,454**
Marketing and selling expenses	–4,384	–13	–4,396
Administration expenses	–993	–190	–1,183
Research and development costs	–2,225	–2	–2,227
Impairment losses and reversals of impairment losses on financial assets (net)	27	–	27
Other operating income	627	–	627
Other operating expenses	–780	205	–575
Operating result (EBIT)[1]	**1,727**	**–**	**1,727**

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

HEALTHCARE RESULTS OF OPERATIONS

	2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**6,246**	**–**	**6,246**
Cost of sales	–1,425	–	–1,425
Gross profit	**4,820**	**–**	**4,820**
Marketing and selling expenses	–2,339	–10	–2,349
Administration expenses	–301	–28	–329
Research and development costs	–1,686	–1	–1,687
Remaining operating expenses and income	237	39	276
Operating result (EBIT)[1]	**731**	**–**	**731**

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

LIFE SCIENCE RESULTS OF OPERATIONS

	2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**6,185**	**–**	**6,185**
Cost of sales	-2,723	–	-2,723
Gross profit	**3,463**	**–**	**3,463**
Marketing and selling expenses	-1,775	-2	-1,777
Administration expenses	-282	-52	-335
Research and development costs	-249	-1	-251
Remaining operating expenses and income	-121	56	-65
Operating result (EBIT)[1]	**1,036**	**–**	**1,036**

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

PERFORMANCE MATERIALS RESULTS OF OPERATIONS

	2018		
€ million	as reported	Disclosure adjustment	restated
Net sales	**2,406**	**–**	**2,406**
Cost of sales	–1,231	–	–1,231
Gross profit	**1,175**	**–**	**1,175**
Marketing and selling expenses	–255	–	–255
Administration expenses	–90	–17	–107
Research and development costs	–242	–	–242
Remaining operating expenses and income	–81	16	–64
Operating result (EBIT)[1]	**508**	**–**	**508**

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

Darmstadt, July 31, 2019

Stefan Oschmann

Udit Batra

Kai Beckmann

Belén Garijo

Marcus Kuhnert

Responsibility Statement

To the best of our knowledge, and in accordance with the applicable reporting principles for half-year financial reporting, the consolidated half-year financial statements of the Merck Group give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group, and the interim management report of the Group includes a fair review of the development and performance of the business and the position of the Group, together with a description of the material opportunities and risks associated with the expected development of the Group for the remaining months of the financial year.

Darmstadt, July 31, 2019

Stefan Oschmann

Udit Batra

Kai Beckmann

Belén Garijo

Marcus Kuhnert

Review Report

To Merck Kommanditgesellschaft auf Aktien, Darmstadt

We have reviewed the condensed half-year consolidated financial statements – comprising the Consolidated Income Statement, the Consolidated Statement of Comprehensive Income, the Consolidated Balance Sheet, the Consolidated Cash Flow Statement, the Consolidated Statement of Changes in Net Equity and Notes to the Half-Year Financial Statements – together with the interim group management report of Merck Kommanditgesellschaft auf Aktien, Darmstadt, for the period from January 1, 2019 to June 30, 2019 that are part of the half-year financial report according to § 115 WpHG ["Wertpapierhandelsgesetz": "German Securities Trading Act"]. The preparation of the condensed half-year consolidated financial statements in accordance with those IFRS applicable to interim financial reporting as adopted by the EU, and of the interim group management report in accordance with the requirements of the WpHG applicable to interim group management reports, is the responsibility of the Company's management. Our responsibility is to issue a report on the condensed half-year consolidated financial statements and on the interim group management report based on our review.

We performed our review of the condensed half-year consolidated financial statements and the interim group management report in accordance with the German generally accepted standards for the review of financial statements promulgated by the Institut der Wirtschaftsprüfer (IDW). Those standards require that we plan and perform the review so that we can preclude through critical evaluation, with a certain level of assurance, that the condensed interim consolidated financial statements have not been prepared, in material respects, in accordance with with those IFRS applicable to interim financial reporting as adopted by the EU, and that the interim group management report has not been prepared, in material respects, in accordance with the requirements of the WpHG applicable to interim group management reports. A review is limited primarily to inquiries of company employees and analytical assessments and therefore does not provide the assurance attainable in a financial statement audit. Since, in accordance with our engagement, we have not performed a financial statement audit, we cannot issue an auditor's report.

Based on our review, no matters have come to our attention that cause us to presume that the condensed interim consolidated financial statements have not been prepared, in material respects, in accordance with those IFRS applicable to interim financial reporting as adopted by the EU, or that the interim group management report has not been prepared, in material respects, in accordance with the requirements of the WpHG applicable to interim group management reports.

Frankfurt am Main, July 31, 2019

KPMG AG
Wirtschaftsprüfungsgesellschaft

Original German version signed by

Rackwitz
Wirtschaftsprüfer

Rienecker
Wirtschaftsprüferin

FINANCIAL CALENDAR
for 2019 / 2020

November
11/14/2019
Quarterly Statement Q3

May
5/14/2020
Quarterly Statement Q1

March
3/5/2020
Annual Press Conference

August
8/6/2020
Half-yearly Financial Report

April
4/24/2020
Annual General Meeting

Published on August 8, 2019
by Merck KGaA, Group Communications
Frankfurter Str. 250, 64293 Darmstadt, Germany
Telephone: + 49 6151 72-0
Fax: + 49 6151 72-5577
E-Mail: comms@merckgroup.com
Website: www.merckgroup.com

TYPESETTING + LAYOUT
typowerkstatt Dieter Thomas Schwarz, Darmstadt