Half-Yearly Financial Report 2021

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This half-yearly financial report contains certain financial indicators such as operating result (EBIT), EBITDA, EBITDA pre, 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 2020 has been optimized for mobile devices and is available on the Web at **merckgroup.com/en/annualreport/2020/**.

MERCK – IN BRIEF

Merck Group

Key figures

€ million	Q2 2021	Q2 2020	Change	Jan.–June 2021	Jan.-June 2020	Change
Net sales	4,870	4,119	18.2%	9,501	8,489	11.9%
Operating result (EBIT)[1]	1,049	491	> 100.0%	2,092	1,207	73.3%
Margin (% of net sales)[1]	21.5%	11.9%		22.0%	14.2%	
EBITDA[1]	1,472	1,048	40.5%	2,939	2,195	33.9%
Margin (% of net sales)[1]	30.2%	25.4%		30.9%	25.9%	
EBITDA pre[1]	1,576	1,074	46.7%	3,087	2,256	36.9%
Margin (% of net sales)[1]	32.4%	26.1%		32.5%	26.6%	
Profit after tax	747	289	> 100.0%	1,495	747	> 100.0%
Earnings per share (€)	1.71	0.67	> 100.0%	3.43	1.72	99.4%
Earnings per share pre (€)[1]	2.24	1.30	72.3%	4.42	2.80	57.9%
Operating cash flow	888	502	76.9%	2,104	1,019	> 100.0%

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

Merck Group

Net sales by quarter

€ million

Merck Group

EBITDA pre[1] by quarter

€ million

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

Developments within the Group and R&D

Merck

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 Electronics, 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. We are curious minds dedicated to human progress. 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 biopharmaceutical business, as MilliporeSigma in the life science business, and as EMD Electronics in the high-tech materials business. We had 58,408 employees[1] worldwide on June 30, 2021. This compares with 57,523 employees as of June 30, 2020.

This section of the present half-yearly report summarizes the highlights of the first half of 2021 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 2020.

Based on the recommendation and preference of the Audit Committee, at its meeting on July 30, 2021, the Supervisory Board of Merck KGaA resolved to propose Deloitte GmbH Wirtschaftsprüfungsgesellschaft to the Annual General Meeting for election as auditor for the annual financial statements and the consolidated financial statements for fiscal 2023. This decision was preceded by a public and non-discriminatory tender process in accordance with the legal requirements for the selection of a new auditor as of fiscal 2023 for Merck KGaA and the Merck Group under the supervision of the Supervisory Board and the Audit Committee. In the invitation to tender, the Supervisory Board and the Audit Committee were supported by an operational project team and regularly received reports on the main process steps in their meetings, acknowledging these in detail.

In order to implement the provisions of Regulation (EU) No. 537/2014 on the mandatory rotation of the auditor, such an invitation to tender would have had to be issued for the first time for fiscal 2024.

Merck Group

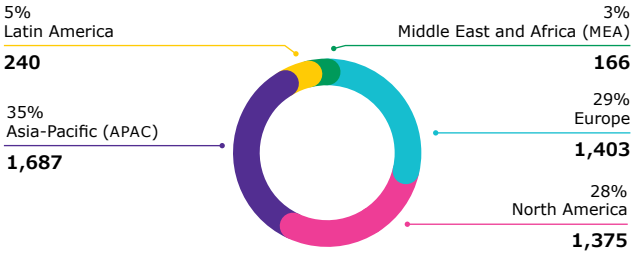
Net sales by business sector – Q2 2021

€ million/in % of net sales

Merck Group

Net sales by region – Q2 2021

€ million/in % of net sales



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

Healthcare

- We are here for people at every step, helping to create, improve and prolong life. Patients are at the center of our work and with every advance, we are striving to make a meaningful difference for patients around the world. This single ambition drives everything we do.

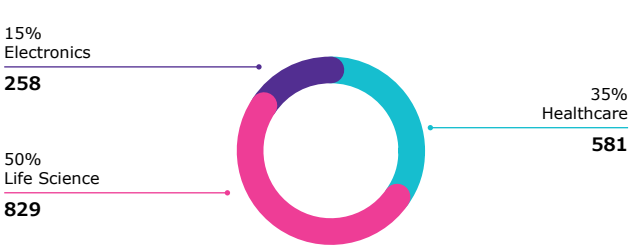
Neurology & Immunology

- On February 25, we announced the presentation of a new analysis from the MAGNIFY-MS study on Mavenclad® (cladribine tablets) in patients with relapsing multiple sclerosis (RMS), indicating Mavenclad®-treated RMS patients mount protective antibody response to common vaccines. The MAGNIFY-MS retrospective analysis demonstrated patients develop protective antibody levels for at least six months following seasonal influenza and varicella zoster vaccines, irrespective of vaccine timing relative to Mavenclad® dosing.
- On April 16, we announced a data presentation from a Phase II placebo-controlled randomized trial that showed the investigational Bruton's tyrosine kinase (BTK) inhibitor evobrutinib significantly reduced blood neurofilament light chain (NfL) levels, a key biomarker of neuronal damage and inflammation, in patients with multiple sclerosis (MS). Elevated blood NfL levels have been shown to be associated with damage to neurons and inflammation and may predict future brain atrophy and disease progression.
- On April 23, we announced a new analysis from the MAGNIFY-MS sub-study showing a specific immune repopulation pattern in patients with RMS treated with Mavenclad®, which may contribute to their ability to fight infections and develop protective antibodies from vaccines. In addition, an independent study conducted in Israel was published in Therapeutic Advances in Neurological Disorders, demonstrating that patients who have taken Mavenclad® were able to generate Covid-19 antibodies following the mRNA vaccine from Pfizer/BioNTech. Humoral response to the Covid-19 vaccine was independent of lymphocyte count.
- On May 3, we announced the completion of an out-licensing agreement with MoonLake Immunotherapeutics AG for sonelokimab (M1095). Sonelokimab is an investigational anti-IL-17 A/F Nanobody®, which neutralizes both IL-17A and IL-17F, for the potential treatment of patients with moderate to severe chronic plaque-type psoriasis. Currently there are no approved IL-17 A/F nanobodies. This agreement is a part of the strategic evolution of our immunology pipeline, allowing us to focus our efforts on priority assets and areas of expertise to deliver the greatest impact for patients. It follows other recently announced agreements, including the out-licensing of M6495 – an anti-ADAMTS5 Nanobody® for the potential treatment of osteoarthritis – to Novartis in October 2020, and the out-licensing of the Phase II-ready IgA nephropathy-candidate atacicept to Vera Therapeutics in November 2020.

Merck Group

EBITDA pre[1] by business sector[2] – Q2 2021

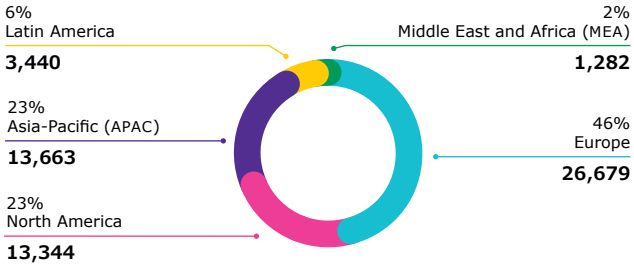
€ million / in %



Merck Group[1]

Employees by region as of June 30, 2021

Number / in %



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

[2] Not presented: Decline in Group EBITDA pre by € –92 million due to Corporate and Other.

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

Oncology

- On January 20, we announced an update on the INTR@PID clinical development program for bintrafusp alfa. Based on a recommendation from an independent data monitoring committee, we made the decision to discontinue the Phase III INTR@PID Lung 037 of bintrafusp alfa in the first-line treatment of patients with stage IV non-small cell lung cancer (NSCLC) whose tumors have high expression of PD-L1. Bintrafusp alfa was discovered in-house and is currently in clinical development through a strategic alliance with GSK formed in 2019.
- On January 25, we and our alliance partner Pfizer Inc. announced that the European Commission approved our internally discovered immunotherapy Bavencio® (avelumab), as monotherapy for the first-line maintenance treatment of adult patients with locally advanced or metastatic urothelial carcinoma (UC) who are progression-free following platinum-based chemotherapy. This approval follows regulatory approvals in the United States and Japan as well as more than 40 other countries in all major markets in this indication.
- On February 3, the U.S. Food and Drug Administration (FDA) approved Tepmetko® (tepotinib) following Priority Review under the Real-Time Oncology Review pilot program for the treatment of adult patients with metastatic NSCLC harboring mesenchymal-epithelial transition (MET) exon 14 skipping alterations. The approval is based on results from the pivotal Phase II VISION study evaluating Tepmetko® as monotherapy in patients with advanced NSCLC with METex14 skipping alterations. This indication is approved under accelerated approval based on overall response rate and duration of response. Continued approval for this indication may be contingent upon verification and description of clinical benefit in confirmatory trials. Tepmetko® was discovered in-house and was the first oral MET inhibitor to receive regulatory approval anywhere in the world for the treatment of advanced NSCLC harboring MET gene alterations, with its approval in Japan in March 2020. A marketing authorization application for tepotinib for a similar indication was validated by the European Medicines Agency in November 2020.
- On March 1, we announced an exclusive worldwide in-licensing agreement with Switzerland-based Debiopharm for the development and commercialization of xevinapant (Debio 1143) a potent oral IAP (inhibitor of apoptosis proteins) antagonist. Merck will co-fund with Debiopharm the ongoing Phase III registrational TrilynX study, a global double-blind, placebo-controlled, 700-patient randomized clinical trial to evaluate the efficacy and safety of xevinapant versus placebo when added to definitive chemoradiotherapy in cisplatin-eligible patients with high-risk locally advanced squamous cell carcinoma of the head and neck (LA SCCHN). Merck will also initiate a second global Phase III study to evaluate xevinapant in patients with LA SCCHN who are unable to tolerate high-dose cisplatin in combination with radiotherapy. The agreement also includes development rights for preclinical follow-on compounds to xevinapant. Debiopharm will receive € 188 million in upfront payments and up to € 710 million in regulatory and commercial milestones, as well as royalty payments. The transaction has been in effect since April 2021.
- On March 16, we announced topline data from the Phase II INTR@PID BTC 047 study evaluating bintrafusp alfa as a monotherapy in the second-line treatment of patients with locally advanced or metastatic biliary tract cancer (BTC) who have failed or are intolerant of first-line platinum-based chemotherapy. In this study of 159 patients, bintrafusp alfa demonstrated single-agent efficacy and durability with a manageable safety profile after more than nine months of follow-up, with an independent review

committee-adjudicated objective response rate (ORR) of 10.1% (95% CI: 5.9% to 15.8%) per RECIST 1.1. Though single-agent activity was observed, the study did not meet the pre-defined threshold that would have enabled regulatory filing for BTC in the second line setting. Additionally, a Phase II/III study of bintrafusp alfa in combination with chemotherapy as a first-line treatment for BTC (INTR@PID BTC 055), which is assessing a different hypothesis than the second-line monotherapy study, is ongoing.

- On April 12, we announced key clinical advancements for berzosertib (M6620), an investigational, potent and selective ataxia telangiectasia and Rad3-related (ATR) inhibitor and the leading asset in the company's DNA damage response (DDR) inhibitor program. Results from a Phase II proof-of-concept study conducted by the U.S. National Cancer Institute and published in Cancer Cell showed that berzosertib in combination with the chemotherapy topotecan resulted in an ORR of 36% among patients with relapsed small cell lung cancer (SCLC), including durable responses among a majority of responding patients with platinum-resistant disease.
- As part of its new DDRiver™ Clinical Trials program, Merck also initiated a global open-label, single-arm Phase II study to further assess berzosertib in combination with topotecan for the treatment of relapsed, platinum-resistant SCLC (DDRiver SCLC 250), which plans to include approximately 80 participants at about 41 study sites across Asia, Europe and North America. Our DDR clinical program includes a strong portfolio of oral DDR inhibitors (DDRi). We are evaluating investigational, potent, orally administered assets targeting DDR enzymes including ATR inhibitor M1774, DNA-PK inhibitor peposertib and ATM inhibitor M4076, including a focus on various combinations with other oral therapies (such as an oral PARP inhibitor) as well as combinations with radiotherapy, chemotherapy and immunotherapy.
- On May 19, we announced more than 40 abstracts representing the company's innovative oncology portfolio including seven oral presentations and seven poster discussions would be shared during the 2021 Annual Meeting of the American Society of Clinical Oncology (ASCO). At the meeting, several important new analyses were shared from our pivotal studies in UC and NSCLC, which have led to recent regulatory approvals for Bavencio® and Tepmetko® in these tumor types, along with additional data informing the understanding of new and emerging mechanisms under investigation. In particular, this year's meeting featured clinical trial data for all three approved Bavencio® indications (UC, renal cell carcinoma, and Merkel cell carcinoma, continued presentation of primary (MET amplification, cohort B), post-hoc (intracranial, METex14 skipping cohort A) efficacy and biomarker results from the tepotinib VISION trial in NSCLC, and key Phase I and II data for bintrafusp alfa in patients with cervical cancer and cancer types associated with the human papilloma virus (HPV).

Fertility

- A meta-analysis published in April 2021 evaluating live birth as primary endpoint of treatment with biosimilar preparations of follitropin alfa versus the reference product (Gonal-f®) concluded that treatment with biosimilar preparations is likely to result in lower probability of live birth, clinical and ongoing pregnancy compared with the reference product.
- A real-world study (2021) demonstrated significantly higher rates of cumulative live birth, cumulative ongoing pregnancy and cumulative clinical pregnancy with r-hFSH-alfa (Gonal-f®) versus hMG HP.
- The Pergoveris® pen is the first product with a combination of recombinant follicle-stimulating hormone (FSH) and recombinant luteinizing hormone (LH) in a ready-to-use liquid version, eliminating the need for mixing. It thus provides an improved and convenient treatment option for women with severe deficiency of both FSH and LH. Launches around the globe will continue in order to provide patients with access to this therapeutic. The Pergoveris® pen was successfully launched in the United Kingdom in the first half of 2021 and is now available in 40 countries.
- To date, an estimated 4 million babies have been born with the help of our Fertility portfolio.

Cardiology, Metabolism and Endocrinology (CM&E, formerly General Medicine & Endocrinology)

- CM&E is the largest business franchise of the Healthcare business sector at Merck in terms of sales, with strong growth in all major therapeutic areas of focus, contributing significantly to the overall profitability of the company.
- Concor® (bisoprolol) is the leading beta-blocker for chronic cardiovascular diseases such as hypertension, coronary artery disease, and chronic heart failure. The fixed-dose bisoprolol-amlodipine combination Concor® AM for the treatment of hypertension is now available in 57 countries. In May 2021, the National Medical Products Administration granted approval for Concor® AM in China.
- Glucophage® XR 850, specifically dedicated to prediabetes, was successfully launched in Brazil; additional country approvals have been recently obtained for El Salvador, Dominican Republic and Honduras.
- Saizen® (somatropin) is our main endocrinology product and is indicated for the treatment of growth hormone deficiency in children and adults. Saizen® is delivered with the Easypod® electromechanical injection device, the only growth hormone injection device of its kind. The number of new patients using the Easypod® continues to grow, bringing the number of patients enrolled on Easypod® Connect to over 25,000 to date.

Global Healthcare Operations

- Since the start of the Covid-19 pandemic more than a year ago, we have been continuously making every effort to proactively handle the situation and minimize the impact of the pandemic on the supply of our medicines locally and globally through three main levers: the thorough implementation of our business continuity plans across our network, the active management of our stocks and the assessment of alternative transportation routes to reach our customers and patients.

Other

- On May 17, we announced the extension of our ongoing collaboration with the BioMed X Institute based in Heidelberg, Germany. Under the new agreement, we will start up to six additional research projects at BioMed X, building on ongoing research projects in the fields of oncology (DDR and RNA splicing) and autoimmunity (intestinal epithelial barrier in autoimmune diseases) and aging.
- On May 18, Merck announced the following changes in its operating model for the Healthcare business sector: Chris Round, President of EMD Serono, leads the North America Healthcare business. Andrew Paterson is the Chief Marketing Officer. The recruitment is ongoing for the position of Head of China & International.

Life Science

- We provide infinite solutions to solve the toughest problems in life science in collaboration with the global scientific community. Our high-quality products, technology and expertise empower scientists and engineers at every stage, helping deliver breakthrough therapies faster to accelerate access to better health. In terms of sales, our Life Science business sector has achieved a top-three ranking in the global life science industry. Our work is redefining the industry as we know it, because we believe science should know no bounds.
- In the first half of 2021, we continued to focus on meeting customer needs by launching more than 10,600 products across the Research Solutions, Process Solutions and Applied Solutions business units, including those launched through our “faucet program” for antibodies, reference materials, chemicals, and nanomaterials.

- In February, we announced seven expanded partnerships with leading nonprofit organizations across the world to build on our commitment to accelerate scientific research and science education. These long-term, multi-dimensional partnerships are designed to increase educational and research equity, including access to science education for more than 500,000 students in underserved communities, globally.
- Also in February, we launched an enhanced Design for Sustainability framework, offering a unique approach to holistically integrate sustainability into products, systems and services. With this launch, we lead the life science industry in ensuring that sustainability is at the forefront of each stage of the product life cycle.
- In March, we signed a 12-year, off-site, virtual power purchase agreement with Enel Green Power for the construction of a future wind and storage project in Texas, United States. The agreement will deliver Renewable Energy Certificates to match 65% of our company's U.S. electricity consumption or 100% of the Life Science business sector's U.S. electricity consumption.
- We also joined Massachusetts Institute of Technology's (MIT) Center for Collective Intelligence and Community Biotechnology Initiative at the MIT Media Lab in releasing a comprehensive report on pandemic response solutions, developed by 180 leading experts convened using MIT CCI's collective intelligence platform and methodology.

Process Solutions

- In January, we announced the acquisition of AmpTec GmbH, a leading Hamburg, Germany-based, mRNA contract development and manufacturing organization, to strengthen our capabilities to develop and manufacture mRNA for customer use in vaccines, treatments and diagnostics applicable in Covid-19 and many other diseases.
- In February, we announced the further expansion of our strategic partnership with BioNTech to accelerate supply of urgently-needed lipids used for the production of the Pfizer-BioNTech vaccine (BNT162b2).
- Also in February, we announced an agreement with Alteogen, Inc., of Korea, to provide late-stage CDMO services through our BioReliance® End-to-End Solutions to develop and produce recombinant biologics used in the development and clinical evaluation of next-generation therapeutics from monoclonal antibody drugs.
- In March, we boosted our European expansion plans to add a single-use assembly production unit at our site in Molsheim, France. With the € 25 million investment, we are responding to the unprecedented global demand of this key technology, which is used for the production of Covid-19 vaccines as well as other life-saving therapies.
- Also in March, we received a patent for an improved CRISPR genome-editing method in Japan. Our proxy-CRISPR technology provides a solution to improve genome editing and advance new possibilities for research. This marks our second CRISPR patent in Japan and our 38th CRISPR patent. Our 39th and 40th CRISPR patents were also allowed in May by the European Patent Office and the Intellectual Property Office of Singapore, respectively, which are directed to our CRISPR-chrom and CRISPR vector technologies.
- In May, we launched a new, high-purity synthetic cholesterol product to meet the high demand for lipids, a key component of mRNA-based vaccines and therapeutics. Under the SAFC® brand of products, this launch occurred nine months ahead of schedule and will increase capacity 50-fold. We are one of a few companies that produces lipids in quantities needed to meet demand for mRNA therapeutics, including the Pfizer-BioNTech Covid-19 vaccine.

- Furthermore, in June, we announced an investment to strengthen our development and production of monoclonal antibodies and other life-saving medicines and vaccines. This includes € 50 million to strengthen bioproduction activities at our site in Martillac, France, involving the creation of 150 jobs until 2024. Combined with our investment in Molsheim, France, these expansion plans are part of an ambitious multi-year program aimed at expanding the industrial capacities of our business sector to meet growing global demand for life-saving drugs and make a significant contribution to global public health.

Research Solutions

- In March, we were named 2021 Charitable Supplier of the Year and Protein Supplier of the Year 2021 by the CiteAb Awards. These awards, from a leading life science data provider, celebrate the top suppliers and individuals in the research reagent sector worldwide, helping researchers and their suppliers make more informed decisions.
- In May, we introduced GenElute™-E Single Spin purification kits, a new solution designed to improve productivity in the lab through a more flexible and streamlined nucleic acid purification process. This process is an essential step in the pursuit of scientific answers to many health-related questions, including use in virus detection and surveillance, research and therapeutic development, and waste-water testing, and performed before downstream applications such as next-generation sequencing.
- In June, we launched our new e-commerce platform with a simplified learning and buying journey on www.sigmaaldrich.com. The site was built to support an optimized experience for flexible digital access, via a computer or mobile device.

Applied Solutions

- In January, we launched the new Milli-Q® EQ 7000 Type 1 water purification system to expand our benchtop ultrapure water system portfolio. The new Milli-Q® EQ 7000 system produces consistent ultrapure water quality that is easily customized to experimental requirements, strengthening our Milli-Q® ultrapure water offering.

Electronics

- We are the company behind the companies, advancing digital living. Our primary focus is on the electronics market. Our materials and solutions change how we generate, access, store, process, and display information. In addition, our highly specialized Surface Solutions business makes life more colorful.
- Together with our customers, we are creating the infrastructure that modern society requires for a data-driven world. Based on strong growth trends such as 5G and Big Data, and new applications such as autonomous driving and the Internet of Things (IoT), we are setting the course for future growth.
- The Electronics business sector comprises three business units: Semiconductor Solutions, Display Solutions and Surface Solutions. Comparing Electronics with a smartphone, Display Solutions represents the user interface, Semiconductor Solutions the intelligence, and Surface Solutions the aesthetics.
- We are well on track with the execution of our Bright Future transformation program announced in 2018. Following the acquisitions of Versum Materials and Intermolecular, we achieved a further major milestone in transforming Electronics into a strong solutions provider and a leading player in the electronic materials market. Effective March 4, 2021, we changed the name of the business sector from Performance Materials to Electronics. The new name is the visible result of the strategic realignment conducted over the past several years underscoring our strategic focus on the electronics industry.

Semiconductor Solutions

- Semiconductor Solutions is at the heart of Electronics and is enabling the digital transformation in communications, mobility and healthcare. As almost every electronic device uses one of our products, we are advancing virtually every aspect of digital living. We are developing solutions for smaller, faster and more powerful devices. Semiconductor Solutions is the largest business unit in terms of sales within Electronics and offers materials, delivery systems and services for the semiconductor industry.
- The Delivery Systems & Services (DS&S) business develops and deploys reliable delivery equipment to ensure the safe and responsible handling of gases and liquid materials with the highest quality and safety standards for electronic manufacturers.
- The overall semiconductor market is seeing strong growth with the rising adoption of digital technologies driven by recovering automotive markets and increasing smartphone demand amid wider availability of 5G networks.
- The Semiconductor Materials business supplies products for every major production step in wafer processing, including doping, lithography, patterning, deposition, planarization, etching, and cleaning. Specialty cleans, photoresists, and conductive pastes for semiconductor packaging round off the portfolio. Our business fields are Thin-Film Solutions, Specialty Gases, Planarization, and Patterning Solutions.
- Our Thin Film Solutions business is actively developing new organosilanes for conformal, high-performance Atomic Layer Deposition (ALD) to obtain films with optimized electrical and physical properties. Additionally, materials with low-dielectric constants are highly desirable for electronic applications. We continue to develop our Plasma-enhanced Chemical Vapor Deposition (PECVD) products for low-dielectric constant applications. We are already qualified at several customers and continue to develop new materials for leading edge nodes in 5nm, 3nm and beyond. Newly engineered container delivery systems enable these materials for our customers. To support the industry’s need for faster and better processors, servers, and data storage density, we are working on new spin-on dielectric formulations with improved dielectric characteristics.
- Our new etch gas technology program in our Specialty Gases business is developing new chemistries to enable more than 100-layer, single-stack etching for advanced memory devices such as V-NAND (vertical Flash memory). We continue to see new Process of Record (POR) wins across our existing portfolio into leading-edge nodes and new product introductions.
- Our Planarization business is driving new product development across both slurry and cleans products to support the high demand for new materials in memory and logic. Our new R&D center in Korea, which we opened in June 2020, is actively engaged with key customers and has completed several sample demonstrations. We are also working closely with customers in Taiwan and the United States to drive new product introductions, leveraging a data analytics approach to respond to inquiries quickly.
- Our Patterning business has increased engagements with leading memory and logic customers to support lithography and cleaning needs for advanced leading-edge nodes. We continue to make progress in developing smart patterning solutions such as Directed Self Assembly (DSA) and Extreme Ultraviolet

(EUV) materials. Our advanced Surface Preparation & Cleans products are enabling new device integration paths in logic and 3D NAND. Continued innovations in thick-film photoresists and related cleaning products support advances in heterogeneous integration — the future of the semiconductor industry.

- Intermolecular is our Silicon Valley science hub and center for complex material solutions in Electronics, located in San Jose, California. We explore, test and develop combinations of advanced materials for next-generation electronics. Compared to conventional methods, our approach provides significant time savings in the material development process, faster learning cycles, and detailed findings on new material combinations to provide a unique service for customers.
- In February, we participated in Semicon Korea's virtual conference sessions about women in technology as well as atomic layer deposition and cleaning developments for advanced semiconductor technology nodes. In March, we exhibited our comprehensive portfolio across the semiconductor value chain at SEMICON China 2021, a leading exhibition for China's semiconductor industry.
- In February, we announced the purchase of our Tempe, Arizona, facility for € 18 million. This increases our flexibility for future investments in R&D and the production of semiconductor materials.
- In mid-April, we announced an investment of € 20 million to expand our R&D and manufacturing capabilities at our site in Shizuoka, Japan. This investment will accelerate innovation in leading-edge semiconductor and display materials for next-generation electronics.

Display Solutions

- Our Display Solutions business unit includes the businesses Liquid Crystals (LC), Organic Light-Emitting Diodes (OLED), Photoresists, and Liquid Crystal Windows We support our display customers in developing novel display technologies and product concepts for applications, while also addressing new requirements that have emerged from the Covid-19 pandemic. With the proliferation of multiple applications and display trends, the display industry's technological requirements are significantly expanding. We are in a leading position to develop required new display materials and technology concepts to contribute to the diverse display landscape. We are active in the development of a broad range of display materials, including Liquid Crystals, organic light-emitting diodes, Quantum Dots Pixel Color Converters (QDPCC), and Display Patterning Materials (DPM).
- Our R&D and Supply teams continuously secure qualifications of our LC, OLED and DPM materials in new devices.
- In Liquid Crystals we continue to see very dynamic market developments. Covid-19 has accelerated the market shift towards China and increased competition. We maintained our position as the technology leader with our XtraBright™ products winning new projects for large-area displays as well as high-resolution mobile devices.
- Our OLED and photoresist materials are used in multiple free-form display products. Our low-temperature processable positive tone photoresists are widely used to pattern on-cell touch sensors. These sensors enable a thinner display structure, which is crucial for foldable devices.
- Our Liquid Crystal Windows business is receiving an increasing number of commercial orders for eyrise® i350 invisible privacy glazing. The transparent dynamic liquid crystal glass partitions can be switched on demand to create private spaces in public and commercial venues. In April, we entered a commercial collaboration with Glas Troesch AG (Switzerland) to leverage their commercial network and expand our customer base in key markets such as the Germany, Austria and Switzerland region.
- In March, we also announced the commercial launch of licriOn™, a liquid crystal-based solution for electronically beam-steered smart antennas. These antennas can easily connect with stationary and moving satellites. The energy and cost efficiency of the liquid crystal-based solution helps achieve extensive connectivity access, even in remote areas where fast Internet connections are unavailable or unaffordable today.

Surface Solutions

- The core markets for Surface Solutions are automotive coatings, cosmetics, and, to a smaller extent, industrials. We are serving these markets with functional and decorative solutions. Our focus is on expanding our portfolio through innovation in all areas and proactive solution development in close cooperation with our customers. We provide our customers with solutions that help them to create innovative surfaces of all kinds.
- The global automotive market continued to recover in the second quarter of 2021, positively impacting the Surface Solutions business. In particular, the Xirallic® product series and the silica-based effect pigment Colorstream® Lava Red developed favorably, despite headwinds from the chip shortage, which slowed down automotive production globally.
- In addition, an upwards trend in most Industrials markets, e.g. Plastics, Printing and Electronics, contributed to the performance of the Surface Solutions business in the first half of 2021, strongly driven by functional laser and security pigments as well as specialty chemicals.
- By hosting the first virtual Automotive Coatings Show in June 2021, Surface Solutions fostered the exchange with customers and industry experts on market trends and further promoted the portfolio of coatings pigments for the automotive industry.
- While first signs of the market recovery for decorative cosmetics are emerging in some regions depending on vaccination rates, the global cosmetic market is still impacted by the Covid-19 pandemic. Nevertheless, our Cosmetics business grew in the second quarter of 2021, supported by an increasing trend towards self-tanning products. In addition, the insect repellent IR 3535 demonstrated continuing growth, especially in Asia. With Halal certification of the entire portfolio of cosmetics effect and care solutions in June 2021, Surface Solutions ensured to capture the growing global demand for Halal cosmetics products.

Course of Business and Economic Position

Merck

Overview – Q2 2021

- Group sales increase by 18.2% to € 4,870 million
- Organic sales growth of 23.0% amid negative foreign exchange effects of –4.8%
- Group EBITDA pre up 46.7% to € 1,576 million
- EBITDA pre margin improves to 32.4% (Q2 2020: 26.1%)
- Net financial debt amounts to € 10.1 billion on June 30, 2021 (December 31, 2020: € 10.8 billion).

Merck Group

Key figures

€ million	**Q2 2021**	Q2 2020	Change	**Jan.–June 2021**	Jan.-June 2020	Change
Net sales	4,870	4,119	18.2%	9,501	8,489	11.9%
Operating result (EBIT)[1]	1,049	491	> 100.0%	2,092	1,207	73.3%
Margin (% of net sales)[1]	21.5%	11.9%		22.0%	14.2%	
EBITDA[1]	1,472	1,048	40.5%	2,939	2,195	33.9%
Margin (% of net sales)[1]	30.2%	25.4%		30.9%	25.9%	
EBITDA pre[1]	1,576	1,074	46.7%	3,087	2,256	36.9%
Margin (% of net sales)[1]	32.4%	26.1%		32.5%	26.6%	
Profit after tax	747	289	> 100.0%	1,495	747	> 100.0%
Earnings per share (€)	1.71	0.67	> 100.0%	3.43	1.72	99.4%
Earnings per share pre (€)[1]	2.24	1.30	72.3%	4.42	2.80	57.9%
Operating cash flow	888	502	76.9%	2,104	1,019	> 100.0%

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

Development of net sales and results of operations

In the second quarter of 2021, the Merck Group generated net sales of € 4,870 million (Q2 2020: € 4,119 million). This represents a year-on-year increase of around € 751 million or 18.2%. Group organic sales growth, to which all business sectors contributed with double-digit growth rates, totaled € 948 million or 23.0%. In the second quarter of 2021, negative foreign exchange effects had an adverse impact of € –196 million or –4.8% on Group net sales. This was primarily attributable to the development of the U.S. dollar and the Japanese yen.

In the second quarter of 2021, Life Science sales increased to € 2,225 million, which was € 419 million or 23.2% more than in the year-earlier quarter (Q2 2020: € 1,806 million). Double-digit organic growth of 28.2% was offset by negative exchange rate effects of –5.0%. Accounting for a 46% (Q2 2020: 44%) share of Group sales, Life Science was the Group's largest business sector in terms of sales. In the second quarter of 2021, net sales of the Healthcare business sector also showed double-digit growth, increasing by 19.2% to € 1,788 million (Q2 2020: € 1,499 million). Healthcare generated an organic sales increase of 23.6%. This contrasted with negative foreign exchange effects of –4.3%. Consequently, Healthcare's share of Group net sales rose to 37% (Q2 2020: 36%). The 5.4% increase in sales of the Electronics business sector to € 857 million (Q2 2020: € 814 million) was due to double-digit organic growth of 10.3%. Foreign exchange had a negative effect of –5.0% on Electronics net sales. The percentage contribution of Electronics to Group net sales was 17% (Q2 2020: 20%).

Merck Group

Net sales by business sector

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020	Share
Healthcare	1,788	37%	23.6%	–4.3%	–	19.2%	1,499	36%
Life Science	2,225	46%	28.2%	–5.0%	–	23.2%	1,806	44%
Electronics	857	17%	10.3%	–5.0%	–	5.4%	814	20%
Merck Group	**4,870**	**100%**	**23.0%**	**–4.8%**	**–**	**18.2%**	**4,119**	**100%**

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

In the second quarter of 2021, the regional sales development of the Merck Group was as follows:

Merck Group

Net sales by region

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020	Share
Europe	1,403	29%	26.4%	–0.9%	–	25.5%	1,118	27%
North America	1,375	28%	36.6%	–10.8%	–	25.8%	1,093	27%
Asia-Pacific (APAC)	1,687	35%	12.8%	–3.3%	–	9.5%	1,541	37%
Latin America	240	5%	23.8%	–5.9%	–	17.9%	203	5%
Middle East and Africa (MEA)	166	3%	4.5%	–3.3%	–	1.2%	164	4%
Merck Group	**4,870**	**100%**	**23.0%**	**–4.8%**	**–**	**18.2%**	**4,119**	**100%**

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

In the first six months of 2021, net sales of the Merck Group increased by € 1,012 million or 11.9% to € 9,501 million (January-June 2020: € 8,489 million). All business sectors contributed to this positive sales development. The favorable sales growth was due in particular to the organic increases in Life Science (27.5%) and Healthcare (12.9%). The negative foreign exchange effects of –5.3% were primarily due to the development of U.S. dollar, the Brazilian real and the Japanese yen.

Merck Group

Net sales by business sector

€ million	Jan.-June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2020	Share
Healthcare	3,427	36%	12.9%	–5.2%	–0.6%	7.1%	3,200	38%
Life Science	4,356	46%	27.5%	–5.6%	–	21.8%	3,575	42%
Electronics	1,719	18%	5.0%	–4.7%	–	0.3%	1,714	20%
Merck Group	**9,501**	**100%**	**17.4%**	**–5.3%**	**–0.2%**	**11.9%**	**8,489**	**100%**

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

In the first half of 2021, net sales by region developed as follows:

Merck Group

Net sales by region

€ million	Jan.-June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2020	Share
Europe	2,730	29%	14.7%	–1.5%	–0.7%	12.4%	2,428	29%
North America	2,643	28%	28.1%	–10.3%	–	17.8%	2,243	27%
Asia-Pacific (APAC)	3,363	35%	12.9%	–3.5%	–0.1%	9.3%	3,077	36%
Latin America	473	5%	17.3%	–13.3%	–	4.0%	455	5%
Middle East and Africa (MEA)	292	3%	6.8%	–4.6%	–	2.2%	285	3%
Merck Group	**9,501**	**100%**	**17.4%**	**–5.3%**	**–0.2%**	**11.9%**	**8,489**	**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 Statement1

€ million	Q2 2021	Q2 2020	Change	Jan.–June 2021	Jan.-June 2020	Change
Net sales	**4,870**	**4,119**	**18.2%**	**9,501**	**8,489**	**11.9%**
Cost of sales	–1,813	–1,610	12.6%	–3,534	–3,264	8.3%
Gross profit	**3,057**	**2,509**	**21.9%**	**5,967**	**5,225**	**14.2%**
Marketing and selling expenses	–1,035	–1,035	0.1%	–2,043	–2,094	–2.4%
Administration expenses	–307	–298	3.0%	–580	–587	–1.1%
Research and development costs	–585	–520	12.4%	–1,158	–1,099	5.4%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–5	–98.6%	–6	1	> 100.0%
Other operating expenses and income	–81	–160	–49.6%	–87	–240	–63.5%
Operating result (EBIT)[1]	**1,049**	**491**	**> 100.0%**	**2,092**	**1,207**	**73.3%**
Financial result	–95	–102	–7.3%	–154	–201	–23.3%
Profit before income tax	**955**	**389**	**> 100.0%**	**1,939**	**1,006**	**92.6%**
Income tax	–208	–100	> 100.0%	–444	–259	71.2%
Profit after tax	**747**	**289**	**> 100.0%**	**1,495**	**747**	**> 100.0%**
Non-controlling interests	–2	1	> 100.0%	–3	–1	> 100.0%
Net income	**745**	**290**	**> 100.0%**	**1,492**	**746**	**100.0%**

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

In the second quarter of 2021, the positive development of Group sales led to an increase of 21.9% in gross profit to € 3,057 million (Q2 2020: € 2,509 million). The resulting gross margin, i.e. gross profit as a percentage of sales, increased by almost two percentage points to 62.8% (Q1 2020: 60.9%).

Compared with the year-earlier quarter, Group research and development costs increased by 12.4% to € 585 million (Q2 2020: € 520 million), which was mainly attributable to the Healthcare business sector. In the second quarter of 2021, the Group research spending ratio (research and development costs as a percentage of net sales) was 12.0% (Q2 2020: 12.6%). Accounting for a 73% (Q2 2020: 72%) share[1] of research and development expenses of all business sectors, Healthcare is the most research-intensive business sector of Merck.

The decline in other operating expenses and income (net) to € –81 million (Q2 2021: € –160 million) was mainly attributable to impairments of intangible assets and property, plant, equipment in the Electronics business sector in the year-earlier quarter.

An increase in provisions for obligations under long-term variable compensation programs (Merck Long-Term Incentive Plan) had an adverse effect on the operating result in the second quarter of 2021. The rise in the intrinsic value of the Merck Share Units was reflected in the respective functional costs depending on the area of activity of the plan beneficiaries.

The financial result was € –95 million in the second quarter of 2021 (Q2 2020: € –102 million). This was primarily due to lower interest expenses.

Income tax expenses of € 208 million (Q2 2020: € 100 million) led to an effective tax rate of 21.8% (Q2 2020: 25.7%). The lower effective tax rate in the second quarter of 2021 was mainly related to the strong earnings contribution in the United States and the relatively low tax rate there.

Net income, i.e. profit after tax attributable to Merck KGaA shareholders, increased by € 455 million to € 745 million (Q2 2020: € 290 million), yielding earnings per share of € 1.71 in the second quarter of 2021 (Q2 2020: € 0.67).

[1] Not included: Research and development costs of € 16 million allocated to Corporate and Other.

The following table presents the composition of EBITDA pre in the second quarter of 2021 compared 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 2021			Q2 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**4,870**	**–**	**4,870**	**4,119**	**–**	**4,119**	**18.2%**
Cost of sales	–1,813	7	–1,805	–1,610	3	–1,608	12.3%
Gross profit	**3,057**	**7**	**3,065**	**2,509**	**3**	**2,511**	**22.0%**
Marketing and selling expenses	–1,035	3	–1,033	–1,035	10	–1,025	0.8%
Administration expenses	–307	20	–287	–298	33	–266	8.2%
Research and development costs	–585	1	–584	–520	–	–520	12.2%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–5	–	–5	–100.0%
Other operating income and expenses	–81	81	–	–160	93	–67	–100.0%
Operating result (EBIT)[1]	**1,049**			**491**			
Depreciation/amortization/impairment losses/reversals of impairment losses	422	–8	414	556	–112	445	–6.8%
EBITDA[1]	**1,472**			**1,048**			
Restructuring expenses	12	–12	–	21	–21	–	
Integration expenses/IT expenses	18	–18	–	37	–37	–	
Gains (–)/losses (+) on the divestment of businesses	88	–88	–	2	–2	–	
Acquisition-related adjustments	–17	17	–	–30	30	–	
Other adjustments	4	–4	–	–4	4	–	
EBITDA pre[1]	**1,576**	**–**	**1,576**	**1,074**	**–**	**1,074**	**46.7%**
of which: organic growth[1]							52.0%
of which: exchange rate effects							–5.2%
of which: acquisitions/divestments							–0.1%

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

EBITDA pre, the most important financial indicator used to steer operating business, soared by € 502 million or 46.7% to € 1,576 million in the second quarter of 2021 (Q2 2020: € 1,074 million). Organic earnings growth was 52.0%. However, EBITDA pre was offset by negative foreign exchange effects of –5.2%. Relative to net sales, the EBITDA pre margin was 32.4% in the second quarter of 2021 (Q2 2020: 26.1%). Earnings per share pre (earnings per share after net of tax effect of adjustments and amortization of purchased intangible assets) improved by 72.3% to € 2.24 (Q2 2020: € 1.30).

The following table shows the composition of EBITDA pre in the first half of 2021 compared with the first half of 2020. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Merck Group

Reconciliation EBITDA pre[1]

€ million	Jan.–June 2021 IFRS	Jan.–June 2021 Elimination of adjustments	Jan.–June 2021 Pre[1]	Jan.–June 2020 IFRS	Jan.–June 2020 Elimination of adjustments	Jan.–June 2020 Pre[1]	Change Pre[1]
Net sales	**9,501**	**–**	**9,501**	**8,489**	**–**	**8,489**	**11.9%**
Cost of sales	–3,534	12	–3,522	–3,264	23	–3,241	8.7%
Gross profit	**5,967**	**12**	**5,979**	**5,225**	**23**	**5,248**	**13.9%**
Marketing and selling expenses	–2,043	9	–2,034	–2,094	12	–2,081	–2.3%
Administration expenses	–580	41	–540	–587	49	–538	0.4%
Research and development costs	–1,158	3	–1,156	–1,099	–2	–1,101	5.0%
Impairment losses and reversals of impairment losses on financial assets (net)	–6	–	–6	1	–	1	> 100.0%
Other operating income and expenses	–87	95	7	–240	91	–148	> 100.0%
Operating result (EBIT)[1]	**2,092**			**1,207**			
Depreciation/amortization/impairment losses/reversals of impairment losses	846	–11	835	988	–114	874	–4.5%
EBITDA[1]	**2,939**			**2,195**			
Restructuring expenses	39	–39	–	37	–37	–	
Integration expenses/IT expenses	37	–37	–	59	–59	–	
Gains (–)/losses (+) on the divestment of businesses	82	–82	–	–28	28	–	
Acquisition-related adjustments	–18	18	–	–11	11	–	
Other adjustments	8	–8	–	4	–4	–	
EBITDA pre[1]	**3,087**	**–**	**3,087**	**2,256**	**–**	**2,256**	**36.9%**
of which: organic growth[1]							43.8%
of which: exchange rate effects							–6.8%
of which: acquisitions/divestments							–0.1%

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

In the first six months of 2021, EBITDA pre of the Merck Group increased by 36.9% to € 3,087 million (January-June 2020: € 2,256 million). Organic growth amounted to 43.8% and the impact of negative foreign exchange effects on EBITDA pre was –6.8%. In the first half of 2021, earnings per share pre increased by 57.9% to € 4.42 (January-June 2020: € 2.80).

Net assets and financial position

Merck Group

Balance sheet structure

	June 30, 2021		December 31, 2020		Change	
	€ million	**in %**	€ million	in %	€ million	in %
Non-current assets	**32,963**	**76.4%**	**32,516**	**77.8%**	**447**	**1.4%**
thereof:						
Goodwill	16,347		15,959		388	
Other intangible assets	7,613		7,653		–41	
Property, plant and equipment	6,601		6,421		180	
Other non-current assets	2,403		2,483		–80	
Current assets	**10,182**	**23.6%**	**9,280**	**22.2%**	**902**	**9.7%**
thereof:						
Inventories	3,564		3,294		270	
Trade and other current receivables	3,657		3,221		436	
Other current financial assets	45		125		–80	
Other current assets	1,092		1,286		–194	
Cash and cash equivalents	1,825		1,355		470	
Total assets	**43,145**	**100.0%**	**41,796**	**100.0%**	**1,349**	**3.2%**
Equity	**19,361**	**44.9%**	**17,017**	**40.7%**	**2,345**	**13.8%**
Non-current liabilities	**13,964**	**32.3%**	**15,548**	**37.2%**	**–1,584**	**–10.2%**
thereof:						
Non-current provisions for employee benefits	3,350		3,880		–530	
Other non-current provisions	351		281		70	
Non-current financial debt	8,721		9,785		–1,064	
Other non-current liabilities	1,543		1,603		–60	
Current liabilities	**9,820**	**22.8%**	**9,231**	**22.1%**	**588**	**6.4%**
thereof:						
Current provisions	526		613		–87	
Current financial debt	3,278		2,357		921	
Trade and other current payables/refund liabilities	2,853		2,434		420	
Other current liabilities	3,162		3,828		–665	
Total equity and liabilities	**43,145**	**100.0%**	**41,796**	**100.0%**	**1,349**	**3.2%**

In the first six months of 2021, total assets of the Merck Group rose by 3.2% to € 43,145 million (December 31, 2020: € 41,796 million). The increase was attributable to both the effect of successful operating business performance on the financial statements and to exchange rate changes.

Equity showed a double-digit increase in the first six months of 2021, rising by 13.8% to € 19,361 million as of June 30, 2021 (December 31, 2020: € 17,017 million). Consequently, the equity ratio improved to 44.9% (December 31, 2020: 40.7%). 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 and the development of net financial debt were as follows:

Merck Group

Net financial debt[1]

	June 30, 2021	December 31, 2020	Change	
	€ million	€ million	€ million	in %
Bonds and commercial paper	9,671	9,642	29	0.3%
Bank loans	553	1,085	–532	–49.0%
Liabilities to related parties	1,262	817	445	54.4%
Loans from third parties and other financial liabilities	54	58	–3	–5.4%
Liabilities from derivatives (financial transactions)	31	102	–71	–70.1%
Lease liabilities	428	438	–11	–2.4%
Financial debt	**11,998**	**12,142**	**–144**	**–1.2%**
less:				
Cash and cash equivalents	1,825	1,355	470	34.6%
Current financial assets[2]	33	28	4	14.8%
Net financial debt[1]	**10,141**	**10,758**	**–618**	**–5.7%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Excluding current derivatives (operational).

Merck Group

Reconciliation of net financial debt[1]

€ million	**2021**	2020
January 1	**10,758**	**12,363**
Operating cash flow	–2,104	–1,019
Payments for investments in intangible assets[2]	69	66
Payments from the disposal of intangible assets[2]	–30	–13
Payments for investments in property, plant and equipment[2]	569	541
Payments from the disposal of property, plant and equipment[2]	–4	–10
Acquisitions[2]	–	7
Payments from other divestments[2]	–1	–56
Dividend payments/profit withdrawals[2]	756	686
Currency translation difference	74	20
Other	55	–25
June 30	**10,141**	**12,560**

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

Operating cash flow, which as of fiscal 2021 replaced business free cash flow as one of the three key performance indicators – in addition to net sales and EBITDA pre – developed as follows:

Merck Group

Operating cash flow

€ million	**Q2 2021**	Q2 2020	Change	**Jan.–June 2021**	Jan.-June 2020	Change
EBITDA pre[1]	**1,576**	**1,074**	46.7%	**3,087**	**2,256**	36.9%
Adjustments[1]	–105	–27	> 100.0%	–148	–60	> 100.0 %
Financial result[2]	–95	–102	–7.3%	–154	–201	–23.3%
Income tax[2]	–208	–100	> 100.0%	–444	–259	71.2%
Changes in other financial assets recognized in income	–3	3	> 100.0%	–3	3	> 100.0%
Changes in working capital[1]	–168	–112	49.4%	–256	–468	–45.2%
of which: changes in inventories[3]	–117	–118	–1.1%	–225	–247	–8.9%
of which: changes in trade accounts receivable[3]	–65	75	> 100.0%	–379	–180	> 100.0%
of which: changes in trade accounts payable/refund liabilities[3]	14	–69	> 100.0%	348	–42	> 100.0%
Changes in provisions[3]	88	–54	> 100.0%	55	–38	> 100.0%
Changes in other assets and liabilities[3]	–217	–166	30.2%	–56	–189	–70.3%
Neutralization of gains/losses on disposals of fixed assets and other disposals[3]	–18	–4	> 100.0%	–23	–38	–39.4%
Other non-cash income and expenses[3]	36	–9	> 100.0%	48	15	> 100.0%
Operating cash flow	**888**	**502**	**76.9%**	**2,104**	**1,019**	**> 100.0%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] According to the Consolidated Income Statement.
[3] According to the Consolidated Cash Flow Statement.

Healthcare

Healthcare

Key figures

€ million	Q2 2021	Q2 2020	Change	Jan.–June 2021	Jan.-June 2020	Change
Net sales	1,788	1,499	19.2%	3,427	3,200	7.1%
Operating result (EBIT)[1]	501	269	86.0%	945	692	36.7%
Margin (% of net sales)[1]	28.0%	18.0%		27.6%	21.6%	
EBITDA[1]	572	359	59.5%	1,096	860	27.4%
Margin (% of net sales)[1]	32.0%	23.9%		32.0%	26.9%	
EBITDA pre[1]	581	374	55.3%	1,114	846	31.6%
Margin (% of net sales)[1]	32.5%	24.9%		32.5%	26.4%	

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

Development of net sales and results of operations

In the second quarter of 2021, the Healthcare business sector generated organic sales growth of 23.6%. Including negative foreign exchange effects of –4.3 %, net sales amounted to € 1,788 million (Q2 2020: € 1,499 million). The exchange rate effect reflects the negative development of various currencies against the euro, in particular the U.S. dollar, the Turkish lira, the Japanese yen, and the Russian ruble.

Sales of the key product lines and products developed in the second quarter of 2021 as follows:

Healthcare

Development of net sales by key product lines and products

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Total change	Q2 2020	Share
Oncology	**370**	**21%**	**49.0%**	**–5.4%**	**43.7%**	**258**	**17%**
thereof: Erbitux®	273	15%	35.6%	–3.8%	31.7%	207	14%
thereof: Bavencio®	87	5%	> 100.0%	–17.7%	> 100.0%	30	2%
Neurology & Immunology	**405**	**23%**	**15.3%**	**–6.5%**	**8.8%**	**372**	**25%**
thereof: Rebif®	247	14%	–9.3%	–5.3%	–14.6%	290	19%
thereof: Mavenclad®	157	9%	> 100.0%	–10.6%	91.3%	82	5%
Fertility	**343**	**19%**	**87.6%**	**–6.7%**	**80.8%**	**190**	**13%**
thereof: Gonal-f®	200	11%	85.4%	–7.2%	78.2%	112	7%
Cardiovascular, Metabolism and Endocrinology	**628**	**35%**	**0.6%**	**–2.3%**	**–1.7%**	**638**	**42%**
thereof: Glucophage®	213	12%	–4.1%	–1.7%	–5.8%	226	15%
thereof: Concor®	127	7%	0.6%	–3.0%	–2.4%	130	9%
thereof: Euthyrox®	112	6%	–0.3%	–1.6%	–1.9%	114	8%
thereof: Saizen®	66	4%	27.3%	–3.6%	23.7%	54	4%
Other	**42**	**2%**				**40**	**3%**
Healthcare	**1,788**	**100%**	**23.6%**	**–4.3%**	**19.2%**	**1,499**	**100%**

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

The oncology drug Erbitux® (cetuximab) generated strong organic sales growth of 35.6%. Including negative foreign exchange effects of –3.8%, net sales increased by a total of 31.7% to € 273 million in the second quarter of 2021 (Q2 2020: € 207 million). The sales growth of Erbitux® was positively impacted not only by the lower comparative base due to the pandemic, but also a temporary collaboration with Eli Lilly and Company, USA. As part of this collaboration, services were rendered in the contract manufacturing of cetuximab that were reported as sales in the United States. Consequently, sales in North America were € 49 million (Q2 2020: € 0 million). Sales in Europe grew organically by 14.8% to € 105 million (Q2 2020: € 93 million). In Asia-Pacific, sales rose organically by 10.5% to € 89 million (Q2 2020: € 83 million).

Within Immuno-Oncology, sales of the oncology drug Bavencio® (avelumab) nearly tripled to € 87 million (Q2 2020: € 30 million) amid negative foreign exchange effects of –17.7%. The very favorable growth was due largely to the approvals in June 2020 in the United States and in the first quarter of 2021 in Europe and Japan as a first-line maintenance treatment of patients with locally advanced or metastatic urothelial carcinoma (UC), which had a positive impact on growth in these regions.

Mavenclad®, for the oral short-course treatment of highly active relapsing multiple sclerosis (MS), generated organic sales growth of more than 100.0% in the second quarter of 2021. Including negative foreign exchange effects of –10.6%, sales totaled € 157 million (Q2 2020: € 82 million). The positive development was driven mainly by the recovery of the segment for high-efficacy MS therapies from the negative effects of the pandemic.

Healthcare

Product sales and organic growth[1] of Rebif®, Glucophage® and Erbitux® by region – Q2 2021

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	247	70	151	2	10	14
	Organic growth[1]	–9.3%	–2.1%	–12.4%	–20.3%	6.9%	–13.7%
	Share	100%	28%	61%	1%	4%	6%
Glucophage®	€ million	213	32	–	118	33	30
	Organic growth[1]	–4.1%	20.6%	–	–15.6%	11.5%	12.2%
	Share	100%	15%	–	55%	16%	14%
Erbitux®	€ million	273	105	49	89	15	15
	Organic growth[1]	35.6%	14.8%	–	10.5%	26.9%	–10.1%
	Share	100%	38%	18%	33%	6%	5%

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

The medicine Rebif®, which is indicated for the treatment of relapsing multiple sclerosis, saw an organic sales decline of –9.3%. Negative foreign exchange effects of –5.3% were responsible for a –14.6% decrease in global net sales to € 247 million (Q2 2020: € 290 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 and high-efficacy MS therapies were responsible for the organic sales decline of –12.4%. The corresponding sales in the region amounted to € 151 million (Q2 2020: € 188 million). In Europe, sales declined organically in comparison with the previous year by only –2.1% to € 70 million (Q2 2020: € 72 million). This was due in particular to the lower comparative base in the year-earlier quarter caused by the pandemic.

The Cardiovascular, Metabolism and Endocrinology franchise, which commercializes products to treat cardiovascular diseases, thyroid disorders, diabetes, and growth disorders, among other things, generated positive organic growth of 0.6%. Including currency headwinds of –2.3%, net sales of the franchise amounted to € 628 million (Q2 2020: € 638 million). At € 213 million, sales of the diabetes medicine Glucophage® were below the year-earlier quarter (Q2 2020: € 226 million). In addition to negative foreign exchange effects of –1.7%, the price regulation that took effect in China in 2020 (volume-based procurement) had a negative impact on Glucophage® sales. The beta-blocker Concor® is also affected by this regulation. Nevertheless, sales grew organically by 0.6% in the second quarter of 2021.

The Fertility franchise generated favorable organic sales growth of 87.6%. Including negative foreign exchange effects of –6.7%, global net sales soared by 80.8% to € 343 million (Q2 2020: € 190 million). In addition to very strong demand, the positive development primarily resulted from the comparison with the year-earlier quarter, which was significantly impacted by the pandemic. Gonal-f®, the leading recombinant hormone for the treatment of infertility, delivered organic growth of 85.4%, thus increasing net sales to € 200 million (Q2 2020: € 112 million).

Net sales of the business sector by region developed in the second quarter of 2021 as follows:

Healthcare

Net sales by region

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020	Share
Europe	562	31%	26.4%	–2.2%	–	24.2%	452	30%
North America	455	25%	48.4%	–10.6%	–	37.9%	330	22%
Asia-Pacific (APAC)	474	27%	8.8%	–1.5%	–0.1%	7.2%	442	29%
Latin America	163	9%	19.5%	–5.4%	–	14.1%	143	10%
Middle East and Africa (MEA)	133	8%	5.9%	–4.3%	–	1.6%	131	9%
Healthcare	**1,788**	**100%**	**23.6%**	**–4.3%**	**–**	**19.2%**	**1,499**	**100%**

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

In the first six months of 2021, the Healthcare business sector recorded net sales of € 3,427 million (January-June 2020: € 3,200 million). This development reflected favorable organic growth of 12.9% and negative foreign exchange effects of –5.2%. Specifically, this positive development was attributable to the organic growth of Gonal-f® (45.2%), Mavenclad® (56.4%), Bavencio® (> 100.0%), and Erbitux® (22.6%). Mavenclad® gained further market share in a market environment still impacted by the Covid-19 pandemic. Consequently, sales increased to € 304 million (January-June 2020: € 206 million). Sales of Bavencio® more than doubled to € 148 million (January-June 2020: € 63 million). Sales of Erbitux® amounted to € 492 million (January-June 2020: € 419 million). This was mainly attributable to the positive development in China and contract manufacturing for Eli Lilly and Company, USA. The Fertility franchise continued its positive recovery trend from the second half of 2020 and generated net sales of € 664 million (January-June 2020: € 468 million).

Owing to the difficult competitive situation, sales of Rebif® declined organically by –13.2%. Including negative foreign exchange effects of –5.6%, net sales thus totaled € 475 million (January-June 2020: € 584 million). Sales of Glucophage® also decreased organically by –2.8%, primarily as a result of the price regulation (volume-based procurement) that took effect in China in 2020. Net sales amounted to € 430 million (January-June 2020: € 460 million).

Sales of the key product lines and products developed in the first half of 2021 as follows:

Healthcare

Development of net sales by key product lines and products

€ million	Jan.–June 2021	Share	Organic growth[1]	Exchange rate effects	Total change	Jan.–June 2020	Share
Oncology	**665**	**20%**	**34.5%**	**–6.0%**	**28.4%**	**518**	**16%**
thereof: Erbitux®	492	14%	22.6%	–5.0%	17.6%	419	13%
thereof: Bavencio®	148	4%	> 100.0%	–15.5%	> 100.0%	63	2%
Neurology & Immunology	**779**	**23%**	**4.9%**	**–6.3%**	**–1.4%**	**790**	**25%**
thereof: Rebif®	475	14%	–13.2%	–5.6%	–18.8%	584	18%
thereof: Mavenclad®	304	9%	56.4%	–8.3%	48.1%	206	6%
Fertility	**664**	**19%**	**48.6%**	**–6.7%**	**41.9%**	**468**	**15%**
thereof: Gonal-f®	386	11%	45.2%	–6.9%	38.4%	279	9%
Cardiovascular, Metabolism and Endocrinology	**1,242**	**36%**	**–1.8%**	**–3.9%**	**–5.8%**	**1,318**	**41%**
thereof: Glucophage®	430	13%	–2.8%	–3.6%	–6.4%	460	14%
thereof: Concor®	253	7%	–5.2%	–4.5%	–9.7%	281	9%
thereof: Euthyrox®	219	6%	–0.7%	–3.4%	–4.0%	228	7%
thereof: Saizen®	124	4%	8.9%	–4.4%	4.5%	118	4%
Other	**77**	**2%**				**105**	**3%**
Healthcare	**3,427**	**100%**	**12.9%**	**–5.2%**	**7.1%**	**3,200**	**100%**

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

In the first half of 2021, net sales by region developed as follows:

Healthcare

Net sales by region

€ million	Jan.–June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2020	Share
Europe	1,101	32%	7.1%	–2.8%	–1.7%	2.5%	1,074	33%
North America	830	24%	28.2%	–9.7%	–	18.5%	700	22%
Asia-Pacific (APAC)	945	28%	9.0%	–1.9%	–0.2%	6.9%	884	28%
Latin America	321	9%	12.4%	–12.2%	–	0.2%	321	10%
Middle East and Africa (MEA)	229	7%	9.3%	–5.5%	–	3.8%	221	7%
Healthcare	**3,427**	**100%**	**12.9%**	**–5.2%**	**–0.6%**	**7.1%**	**3,200**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2021 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]

	Q2 2021			Q2 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,788**	**–**	**1,788**	**1,499**	**–**	**1,499**	**19.2%**
Cost of sales	–420	–	–421	–364	–	–364	15.4%
Gross profit	**1,368**	**–**	**1,367**	**1,135**	**–**	**1,135**	**20.5%**
Marketing and selling expenses	–391	2	–389	–409	8	–401	–3.1%
Administration expenses	–78	2	–76	–81	2	–79	–3.4%
Research and development costs	–415	1	–414	–366	–	–366	13.3%
Impairment losses and reversals of impairment losses on financial assets (net)	3	–	3	–3	–	–3	> 100.0%
Other operating income and expenses	14	8	22	–7	6	–1	> 100.0%
Operating result (EBIT)[1]	**501**			**269**			
Depreciation/amortization/impairment losses/reversals of impairment losses	72	–3	69	90	–	90	–23.3%
EBITDA[1]	**572**			**359**			
Restructuring expenses	2	–2	–	12	–12	–	
Integration expenses/IT expenses	1	–1	–	1	–1	–	
Gains (–)/losses (+) on the divestment of businesses	5	–5	–	1	–1	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**581**	**–**	**581**	**374**	**–**	**374**	**55.3%**
of which: organic growth[1]							70.2%
of which: exchange rate effects							–14.9%
of which: acquisitions/divestments							–

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

In the second quarter of 2021, adjusted gross profit amounted to € 1,367 million (Q2 2020: € 1,135 million). The resulting gross margin rose slightly to 76.5% (Q2 2020: 75.7%). After eliminating adjustments, marketing and selling expenses declined in comparison with the year-earlier quarter by –3.1% to € 389 million (Q2 2020: € 401 million). Apart from positive effects from the transformation and growth program that began in fiscal 2020, lower royalty fees were mainly responsible for the reduction in costs. The increase in research and development costs was attributable to the lower costs in the year-earlier quarter, which reflected the comparatively low investment requirements at that time. In the second quarter of 2021, the income balance of other operating expenses and income (net) of the business sector amounted to € 22 million (Q2 2020: € –1 million). This mainly reflects an upfront payment amounting to a low double-digit million euro figure from the out-licensing agreement with MoonLake Immunotherapeutics AG for sonelokimab (M1095), which was concluded in May 2021. EBITDA pre rose by 55.3% to € 581 million in the second quarter of 2021 (Q2 2020: € 374 million). Organic earnings growth amounted to 70.2% amid negative exchange rate effects of –14.9%. The EBITDA pre margin increased significantly to 32.5 % (Q2 2020: 24.9%).

The following table presents the composition of EBITDA pre for the first half of 2021 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 2021			Jan.–June 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,427**	**–**	**3,427**	**3,200**	**–**	**3,200**	**7.1%**
Cost of sales	–808	–	–809	–758	–	–758	6.8%
Gross profit	**2,618**	**–**	**2,618**	**2,442**	**–**	**2,442**	**7.2%**
Marketing and selling expenses	–761	7	–754	–832	8	–824	–8.5%
Administration expenses	–150	5	–146	–160	3	–157	–7.5%
Research and development costs	–831	2	–829	–783	–	–783	5.9%
Impairment losses and reversals of impairment losses on financial assets (net)	1	–	1	2	–	2	–46.5%
Other operating income and expenses	69	8	77	24	–23	–	–
Operating result (EBIT)[1]	**945**			**692**			
Depreciation/amortization/impairment losses/reversals of impairment losses	150	–3	147	168	–2	167	–11.7%
EBITDA[1]	**1,096**			**860**			
Restructuring expenses	10	–10	–	14	–14	–	
Integration expenses/IT expenses	4	–4	–	2	–2	–	
Gains (–)/losses (+) on the divestment of businesses	5	–5	–	–30	30	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,114**	**–**	**1,114**	**846**	**–**	**846**	**31.6%**
of which: organic growth[1]							47.2%
of which: exchange rate effects							–15.4%
of which: acquisitions/divestments							–0.2%

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

In the first six months of 2021, Healthcare generated an increase in EBITDA pre of 31.6% to € 1,114 million (January-June 2020: € 846 million). Strong organic earnings growth of 47.2% was weakened by negative foreign exchange effects of –15.4%. The increase in EBITDA pre was primarily attributable to strong gross profit, lower marketing and selling costs as well as the development of other operating expenses and income. Other operating income included the recognized milestone payments of around € 50 million for the regulatory approval of Bavencio® in Europe and Japan as a first-line maintenance therapy for patients with locally advanced or metastatic urothelial carcinoma (UC) in the first quarter of 2021 as well as the upfront payment received from MoonLake Immunotherapeutics AG in the second quarter of 2021. The EBITDA pre margin increased accordingly by around six percentage points to 32.5% (January-June 2020: 26.4%).

Life Science

Life Science

Key figures

€ million	Q2 2021	Q2 2020	Change	Jan.–June 2021	Jan.-June 2020	Change
Net sales	2,225	1,806	23.2%	4,356	3,575	21.8%
Operating result (EBIT)[1]	644	386	66.9%	1,237	731	69.2%
Margin (% of net sales)[1]	28.9%	21.3%		28.4%	20.4%	
EBITDA[1]	835	584	42.9%	1,614	1,126	43.4%
Margin (% of net sales)[1]	37.5%	32.4%		37.1%	31.5%	
EBITDA pre[1]	829	569	45.7%	1,622	1,122	44.6%
Margin (% of net sales)[1]	37.3%	31.5%		37.2%	31.4%	

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

Development of net sales and results of operations

In the second quarter of 2021, net sales of the Life Science business sector grew organically by 28.2%. Overall, net sales rose by 23.2% compared with the second quarter of 2020, impacted by an unfavorable foreign exchange effect of –5.0%. All three business units contributed to organic growth, with the largest contribution coming from Process Solutions followed by Research Solutions. Overall, Life Science net sales increased to € 2,225 million (Q2 2020: € 1,806 million).

Life Science

Net sales by business unit

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020[2]	Share
Process Solutions	1,145	52%	33.8%	–5.6%	–	28.3%	892	49%
Research Solutions	631	28%	30.9%	–4.9%	–	26.0%	501	28%
Applied Solutions	449	20%	12.8%	–4.0%	–	8.8%	413	23%
Life Science	**2,225**	**100%**	**28.2%**	**–5.0%**	**–**	**23.2%**	**1,806**	**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 33.8%, which was the highest rate within the Life Science business sector. Additional business related to the pandemic relief effort as well as continued high demand in the base business supported the positive development. Including an unfavorable foreign exchange effect of –5.6%, net sales amounted to € 1,145 million in the second quarter of 2021 (Q2 2020: € 892 million). The percentage contribution of the Process Solutions business unit to Life Science net sales rose by three percentage points to 52%. In regional terms, all major regions experienced double-digit organic sales growth within Process Solutions.

The Research Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology, and academic research laboratories, generated organic sales growth of 30.9%. This was mainly driven by a strong base business as well as demand related to the pandemic relief effort in the second quarter of 2021. In addition, the effect of the low year-on-year comparative base caused by the pandemic can be seen. Amid an unfavorable foreign exchange effect of –4.9%, net sales totaled € 631 million in the second quarter of 2021 (Q2 2020: € 501 million). Research Solutions thus accounted for 28% of Life Science net sales. Research Solutions saw double-digit organic sales growth in all regions.

The Applied Solutions business unit with its broad range of products for researchers as well as scientific and industrial laboratories, accounted for a 20% share of Life Science sales. Applied Solutions generated organic sales growth of 12.8% in the second quarter of 2021. Including an unfavorable foreign exchange effect of –4.0%, sales totaled € 449 million in the second quarter of 2021 (Q2 2020: € 413 million). In regional terms, Applied Solutions saw organic sales growth in all regions.

Net sales of the business sector by region developed in the second quarter of 2020 as follows:

Life Science

Net sales by region

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020	Share
Europe	775	35%	27.0%	–	–	27.0%	610	34%
North America	788	35%	32.4%	–10.9%	–	21.5%	648	36%
Asia-Pacific (APAC)	570	26%	24.5%	–3.7%	–	20.9%	471	26%
Latin America	69	3%	32.2%	–7.5%	–	24.7%	55	3%
Middle East and Africa (MEA)	24	1%	6.6%	4.2%	–	10.8%	21	1%
Life Science	**2,225**	**100%**	**28.2%**	**–5.0%**	**–**	**23.2%**	**1,806**	**100%**

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

In the first half of 2021, Life Science sales grew organically by 27.5% amid an unfavorable foreign exchange impact of –5.6%, resulting in net sales growth of 21.8% over the year-earlier period. Process Solutions delivered the strongest growth followed by Research Solutions and Applied Solutions. Taking these developments into account, Life Science net sales increased overall to € 4,356 million (January-June 2020: € 3,575 million). Net sales rebounded strongly across all businesses compared with year-earlier period, which was impacted by the pandemic-related lockdown in the first half of 2020.

Life Science

Net sales by business unit

€ million	Jan.–June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2020[2]	Share
Process Solutions	2,199	51%	35.9%	–6.2%	–	29.8%	1,694	48%
Research Solutions	1,275	29%	27.3%	–5.6%	–	21.8%	1,047	29%
Applied Solutions	881	20%	10.4%	–4.6%	–	5.7%	834	23%
Life Science	**4,356**	**100%**	**27.5%**	**–5.6%**	**–**	**21.8%**	**3,575**	**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 2021, net sales by region developed as follows:

Life Science

Net sales by region

€ million	Jan.–June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2020	Share
Europe	1,492	34%	22.3%	–0.4%	–	21.9%	1,224	34%
North America	1,550	36%	30.7%	–10.8%	–	19.9%	1,293	36%
Asia-Pacific (APAC)	1,131	26%	30.8%	–4.2%	–	26.6%	893	25%
Latin America	136	3%	29.0%	–16.3%	–	12.7%	121	4%
Middle East and Africa (MEA)	46	1%	3.7%	0.8%	–	4.5%	44	1%
Life Science	**4,356**	**100%**	**27.5%**	**–5.6%**	**–**	**21.8%**	**3,575**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2021 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 2021			Q2 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**2,225**	**–**	**2,225**	**1,806**	**–**	**1,806**	**23.2%**
Cost of sales	–887	–	–887	–774	–	–774	14.6%
Gross profit	**1,338**	**–**	**1,338**	**1,033**	**–**	**1,033**	**29.6%**
Marketing and selling expenses	–505	1	–505	–488	–	–488	3.4%
Administration expenses	–92	8	–84	–100	12	–88	–4.5%
Research and development costs	–87	–	–87	–75	–	–75	15.4%
Impairment losses and reversals of impairment losses on financial assets (net)	–1	–	–1	–1	–	–1	53.1%
Other operating income and expenses	–8	–15	–23	18	–27	–10	> 100.0%
Operating result (EBIT)[1]	**644**			**386**			
Depreciation/amortization/impairment losses/reversals of impairment losses	191	–	191	199	–	199	–3.8%
EBITDA[1]	**835**			**584**			
Restructuring expenses	2	–2	–	1	–1	–	
Integration expenses/IT expenses	8	–8	–	14	–14	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–17	17	–	–30	30	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**829**	**–**	**829**	**569**	**–**	**569**	**45.7%**
of which: organic growth[1]							49.5%
of which: exchange rate effects							–3.7%
of which: acquisitions/divestments							–0.1%

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

Adjusted gross profit grew by 29.6% to € 1,338 million (Q2 2020: €1,033 million). The increase was mainly driven by the strong sales growth of the business sector. Marketing and selling expenses rose slightly by 3.4% due to incremental investment in the e-commerce organization and higher logistics costs as the main drivers to € 505 million (Q2 2020: € 488 million). Adjusted administration expenses decreased by 4.5% to € 84 million (Q2 2020: € 88 million) and research and development costs increased by 15.4% to € 87 million (Q2 2020: € 75 million). In the second quarter of 2021, “elimination of adjustments” for other operating income and expenses includes income amounting to a low double-digit million euro sum in connection with the decision in the antitrust review proceedings for the acquisition of Sigma-Aldrich Corporation, USA (see also the Notes to the Consolidated Half-Year Financial Statements). After eliminating adjustments, amortization and depreciation, EBITDA pre rose by 45.7% to € 829 million (Q2 2020: € 569 million), reflecting the strong performance of the Life Science business sector. Organically, EBITDA pre grew by 49.5% in the second quarter of 2021. The EBITDA pre margin, i.e. EBITDA pre as a percentage of net sales, improved in the second quarter of 2021 to 37.3% (Q2 2020: 31.5%).

The following table presents the composition of EBITDA pre for the first half of 2021 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 2021			Jan.–June 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**4,356**	**–**	**4,356**	**3,575**	**–**	**3,575**	**21.8%**
Cost of sales	–1,736	1	–1,735	–1,518	–	–1,518	14.3%
Gross profit	**2,620**	**1**	**2,621**	**2,057**	**–**	**2,057**	**27.4%**
Marketing and selling expenses	–1,006	1	–1,005	–986	–	–986	2.0%
Administration expenses	–174	15	–158	–189	21	–168	–5.7%
Research and development costs	–162	–	–162	–151	–	–151	7.5%
Impairment losses and reversals of impairment losses on financial assets (net)	–7	–	–7	–	–	–	> 100.0%
Other operating income and expenses	–34	–9	–43	–	–26	–26	69.4%
Operating result (EBIT)[1]	**1,237**			**731**			
Depreciation/amortization/impairment losses/reversals of impairment losses	377	–	377	395	–	395	–4.5%
EBITDA[1]	**1,614**			**1,126**			
Restructuring expenses	10	–10	–	3	–3	–	
Integration expenses/IT expenses	16	–16	–	23	–23	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–18	18	–	–30	30	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,622**	**–**	**1,622**	**1,122**	**–**	**1,122**	**44.6%**
of which: organic growth[1]							49.7%
of which: exchange rate effects							–5.0%
of which: acquisitions/divestments							–0.1%

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

In the first half of 2021, adjusted gross profit grew by 27.4% to € 2,621 million (January-June 2020: € 2,057 million). The increase was mainly driven by the strong sales growth of the business sector. Despite higher logistics costs, marketing and selling expenses increased by only 2.0% to € 1,005 million (January-June 2020: € 986 million) while adjusted administration expenses declined by –5.7% to € 158 million (January-June 2020: € 168 million). Research and development costs increased by 7.5% to € 162 million (January-June 2020: € 151 million). EBITDA pre rose by 44.6% to € 1,622 million (January-June 2020: € 1,122 million), reflecting the strong performance of the Life Science business sector, both in the base business and from sales related to the Covid-19 pandemic. Organically, EBITDA pre grew by 49.7% in first half of 2021. In the first half of 2021, the EBITDA pre margin of Life Science improved to 37.2% (January-June 2020: 31.4%).

Electronics

Electronics

Key figures

€ million	Q2 2021	Q2 2020	Change	Jan.–June 2021	Jan.-June 2020	Change
Net sales	857	814	5.4%	1,719	1,714	0.3%
Operating result (EBIT)[1]	118	–30	> 100.0%	244	86	> 100.0%
Margin (% of net sales)[1]	13.8%	–3.7%		14.2%	5.0%	
EBITDA[1]	252	219	15.1%	512	470	9.0%
Margin (% of net sales)[1]	29.4%	26.9%		29.8%	27.4%	
EBITDA pre[1]	258	238	8.3%	532	524	1.5%
Margin (% of net sales)[1]	30.1%	29.3%		30.9%	30.6%	

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

Development of net sales and results of operations

While the Covid-19 pandemic weighed heavily on the second quarter of 2020, Electronics generated strong organic growth in the second quarter of 2021. Organically, second-quarter sales of the Electronics business sector increased by 10.3% over the year-earlier period. Including negative foreign exchange effects of –5.0%, net sales amounted to € 857 million (Q2 2020: € 814 million). The increase in net sales was driven by strong demand in Semiconductor Solutions, a recovery in most Surface Solutions business lines, and a slight organic decline of only –0.7% in Display Solutions.

Electronics

Net sales by business unit

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020[2]	Share
Semiconductor Solutions	501	58%	11.6%	–5.9%	–	5.7%	474	58%
Display Solutions	253	30%	–0.7%	–3.4%	–	–4.1%	264	33%
Surface Solutions	104	12%	41.3%	–4.9%	–	36.4%	76	9%
Electronics	**857**	**100%**	**10.3%**	**–5.0%**	**–**	**5.4%**	**814**	**100%**

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

[2] Within the scope of the integration of Versum Materials Inc., USA, two products previously allocated to the Semiconductor Solutions business unit have now been assigned to Display Solutions. The previous year's figures have been adjusted accordingly.

The Semiconductor Solutions business unit comprises two businesses, namely Semiconductor Materials and Delivery Systems & Services, and accounted for 58% of net sales of the Electronics business sector in the second quarter of 2021. Semiconductor Materials focuses on the development and commercialization of material-based solutions for the semiconductor industry, while Delivery Systems & Services focuses on developing, selling and operating delivery systems for semiconductor manufacturers. Organically, net sales grew by 11.6% in the second quarter of 2021 with continued strong demand in most business lines. Adverse foreign exchange rate effects of –5.9% partly offset the strong organic growth. Net sales of Semiconductor Solutions thus increased by a total of 5.7% to € 501 million (Q2 2020: € 474 million).

Net sales of the Display Solutions business unit, consisting mainly of the business with liquid crystals, photoresists for display applications as well as OLED materials, decreased organically by –0.7%. This milder decline was due not only to a weaker year-earlier quarter, but primarily to the strong growth of the OLED materials business. Negative foreign exchange effects of –3.4% were responsible for a –4.1% decrease in sales to € 253 million (Q2 2020: € 264 million).

Net sales of the Surface Solutions business unit grew 36.4% to € 104 million (Q2 2020: € 76 million). Organically, Surface Solutions increased sales by 41.3% compared with the year-earlier quarter. This was due to an ongoing recovery across most business lines from the Covid-19 crisis, which had a severe impact in the second quarter of 2020. Foreign exchange impacts were unfavorable at –4.9%.

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

Electronics

Net sales by region

€ million	Q2 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2020	Share
Europe	66	8%	20.0%	–0.8%	–	19.2%	55	7%
North America	132	15%	25.9%	–10.9%	–	15.1%	115	14%
Asia-Pacific (APAC)	643	75%	6.8%	–4.3%	–	2.5%	628	77%
Latin America	7	1%	55.0%	–2.1%	–	52.8%	5	1%
Middle East and Africa (MEA)	9	1%	–15.7%	–5.4%	–	–21.2%	11	1%
Electronics	**857**	**100%**	**10.3%**	**–5.0%**	**–**	**5.4%**	**814**	**100%**

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

In the first half of 2021, net sales of the Electronics business sector grew organically by 5.0%. This sold growth was mainly attributable to continued strong organic demand in the Semiconductor Solutions and Surface Solutions business units. The organic increase in sales was partly offset by negative foreign exchange effects of –4.7%. Consequently, net sales of the Electronics business sector rose by a total of 0.3% to € 1,719 million (January-June 2020: € 1,714 million). The Semiconductor Solutions business unit grew organically by 7.6% and benefited from strong demand across most business lines, but was challenged by ongoing global supply chain delays. The negative impact of foreign exchange on net sales was –5.6%. The Display Solutions business unit continued to face increasing competition, leading to adverse pricing impacts that drove an organic decline of –4.1%. Foreign exchange impacts of –3.3% adversely affected sales as well. Surface Solutions generated an organic sales increase of 19.5% as its strong recovery from the negative business effects of the Covid-19 pandemic continued throughout the first half of 2021. Coatings and Industrial Pigments continued to fuel the recovery. Foreign exchange impacts of –4.8% weakened net sales growth.

Electronics

Net sales by business unit

€ million	Jan.-June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June[2] 2020	Share
Semiconductor Solutions	976	57%	7.6%	–5.6%	–	2.0%	957	56%
Display Solutions	528	31%	–4.1%	–3.3%	–	–7.4%	570	33%
Surface Solutions	214	12%	19.5%	–4.8%	–	14.8%	187	11%
Electronics	**1,719**	**100%**	**5.0%**	**–4.7%**	**–**	**0.3%**	**1,714**	**100%**

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

[2] Within the scope of the integration of Versum Materials Inc., USA, two products previously allocated to the Semiconductor Solutions business unit have now been assigned to Display Solutions. The previous year's figures have been adjusted accordingly.

In the first half of 2021, net sales by region developed as follows:

Electronics

Net sales by region

€ million	Jan.–June 2021	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2020	Share
Europe	137	8%	6.2%	–0.9%	–	5.4%	130	7%
North America	262	15%	14.4%	–9.6%	–	4.8%	250	15%
Asia-Pacific (APAC)	1,287	75%	3.1%	–4.1%	–	–1.0%	1,300	76%
Latin America	16	1%	28.5%	–11.9%	–	16.6%	13	1%
Middle East and Africa (MEA)	17	1%	–13.5%	–6.0%	–	–19.6%	21	1%
Electronics	**1,719**	**100%**	**5.0%**	**–4.7%**	**–**	**0.3%**	**1,714**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2021 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.

Electronics

Reconciliation EBITDA pre[1]

	Q2 2021			Q2 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**857**	**–**	**857**	**814**	**–**	**814**	**5.4%**
Cost of sales	–506	7	–498	–472	2	–470	6.1%
Gross profit	**352**	**7**	**359**	**342**	**2**	**344**	**4.3%**
Marketing and selling expenses	–137	1	–136	–134	3	–131	3.9%
Administration expenses	–30	1	–28	–44	9	–36	–20.5%
Research and development costs	–67	–	–66	–68	–	–69	–3.5%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–1	–	–1	–100.0%
Other operating income and expenses	1	1	1	–124	117	–7	> 100.0%
Operating result (EBIT)[1]	**118**			**–30**			
Depreciation/amortization/impairment losses/reversals of impairment losses	134	–5	129	249	–112	138	–6.0%
EBITDA[1]	**252**			**219**			
Restructuring expenses	1	–1	–	2	–2	–	
Integration expenses/IT expenses	4	–4	–	16	–16	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**258**	**–**	**258**	**238**	**–**	**238**	**8.3%**
of which: organic growth[1]							14.3%
of which: exchange rate effects							–6.0%
of which: acquisitions/divestments							–

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

Adjusted gross profit for the Electronics business sector was € 359 million in the second quarter of 2021 (Q2 2020: € 344 million). The increase of 4.3% over the year-earlier quarter was mainly due to higher net sales as discussed above. At 41.9%, the adjusted gross margin in the second quarter of 2021 was nearly on a par with the year-earlier figure (Q2 2020: 42.3%). Excluding adjustments, the operating result (EBIT) increased by € 149 million to € 118 million in the second quarter of 2021 (Q2 2020: € –30 million). In particular, this was

attributable to higher amortization and impairments in the year-earlier quarter. Marketing and selling expenses increased by 3.9% to support sales growth as well as a result of higher logistics costs related to the Covid-19 pandemic. Administration expenses declined due to synergy execution and reorganization activities associated with the Versum Materials acquisition. Organic growth of 14.3% for EBITDA pre was mainly attributable to the 10.3% organic increase in sales discussed above as well as the positive development of gross profit and functional costs. Foreign exchange effects impacted EBITDA pre by –6.0%. Consequently, EBITDA pre of Electronics grew by a total of 8.3% to € 258 million (Q2 2020: € 238 million). At 30.1%, the EBITDA pre margin was above the year-earlier figure (Q2 2020: 29.3%).

The following table presents the composition of EBITDA pre for the first half of 2021 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.

Electronics

Reconciliation EBITDA pre[1]

	Jan.–June 2021			Jan.–June 2020			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,719**	**–**	**1,719**	**1,714**	**–**	**1,714**	**0.3%**
Cost of sales	–989	11	–978	–987	22	–965	1.4%
Gross profit	**729**	**11**	**741**	**727**	**22**	**749**	**–1.1%**
Marketing and selling expenses	–272	1	–271	–270	4	–266	2.1%
Administration expenses	–64	3	–61	–83	9	–74	–17.1%
Research and development costs	–134	1	–133	–140	–2	–141	–6.1%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating income and expenses	–15	11	–4	–149	132	–17	–74.4%
Operating result (EBIT)[1]	**244**		**–**	**86**			
Depreciation/amortization/impairment losses/reversals of impairment losses	268	–7	261	384	–112	272	–4.3%
EBITDA[1]	**512**			**470**			
Restructuring expenses	10	–10	–	10	–10	–	
Integration expenses/IT expenses	10	–10	–	24	–24	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–	–	–	19	–19	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**532**	**–**	**532**	**524**	**–**	**524**	**1.5%**
of which: organic growth[1]							7.8%
of which: exchange rate effects							–6.3%
of which: acquisitions/divestments							–

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

In the first half of 2021, adjusted gross profit of the Electronics business sector was € 741 million, which was nearly at the previous year's level (January-June 2020: € 749 million). At € 244 million, the operating result (EBIT) was € 158 million more than in the year-earlier period (January-June 2020: € 86 million). The increase was largely attributable to higher amortization and impairments in the year-earlier period. EBITDA pre of Electronics rose organically by 7.8%. Negative foreign exchange effects amounted to –6.3%. EBITDA pre of the business sector thus grew by a total of 1.5% to € 532 million (January-June 2020: € 524 million). At 30.9%, the EBITDA pre margin was slightly above the year-earlier figure of 30.6%.

Corporate and Other

Corporate and Other comprises administration expenses for Group functions that cannot be directly allocated to the business sectors, such as Finance, Procurement, Legal, Communications, and Human Resources. Corporate and Other additionally encompasses 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 2021**	Q2 2020	Change	**Jan.–June 2021**	Jan.-June 2020	Change
Operating result (EBIT)[1]	–213	–133	59.9%	–334	–301	10.8%
EBITDA[1]	–188	–115	63.6%	–283	–261	8.7%
EBITDA pre[1]	–92	–107	–14.4%	–181	–236	–23.3%

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

In the second quarter of 2021, the operating result (EBIT) included expenses amounting to a double-digit million euro sum from a provision set up in connection with a legal dispute with Heraeus Medical GmbH, Wehrheim, Germany. These expenses were eliminated in the calculation of EBITDA pre. After eliminating adjustments, administration expenses amounted to € 98 million in the second quarter of 2021 (Q2 2020: € 63 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 € 16 million in the second quarter of 2021 (Q2 2020: € 11 million). After eliminating adjustments, the income balance of other operating expenses and other operating income (net) was € 1 million in the second quarter of 2021 (Q2 2020: expense balance of € –49 million); the change compared with the year-earlier quarter was mainly attributable to the positive development of the currency result, especially thanks to foreign currency hedging. After eliminating depreciation, amortization and adjustments, EBITDA pre totaled € –92 million in the second quarter of 2021 (Q2 2020: € –107 million). Compared with the first half of 2020, EBITDA pre improved by 23.3% to € –181 million in the first half of 2021 (January-June 2020: € –236 million).

Report on Risks and Opportunities

As a company operating globally with various products and in highly innovative business fields, Merck is pursuing great opportunities yet is also exposed to potential risks. The outlined risks as well as the opportunities described in the section on “Risks and Opportunities” in the Annual Report for 2020 remain valid in the current reporting period. At present, we are not aware of any risks that could jeopardize the continued existence of Merck.

A Group-wide risk management system is in place to identify, assess, mitigate and to monitor potential risks. We continuously track 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, data privacy, and environmental protection. More information on sector-specific updates and developments can be found in the respective sections of this report.

Report on Expected Developments

Merck Group

With the publication of the quarterly statement as of March 31, 2021, we provided a forecast of the development of net sales and EBITDA pre for the Merck Group and the individual business sectors Healthcare, Life Science and Electronics as well as an estimate of Group operating cash flow in 2021.

The divestment of the allergy business Allergopharma to Dermapharm Beteiligungs GmbH ("Dermapharm") closed on March 31, 2020. The business in Europe was transferred to Dermapharm on March 31, 2020. The transfer of the Allergopharma business in China closed on August 31, 2020. Accordingly, in fiscal 2021, we report a portfolio effect from this transaction, yet this will not be material.

Moreover, on December 22, 2020, Merck fully acquired AmpTec GmbH, Hamburg, Germany, a leading contract development and manufacturing organization for mRNA, which is used in vaccines, medicines and diagnostics in connection with Covid-19 and numerous other diseases. Owing to the size of the acquired business, we do not expect a significant portfolio effect.

In the United States, Merck was involved in patent litigation with Biogen Inc., USA. Biogen sued Merck for having allegedly infringed a patent in connection with Rebif®. On September 28, 2020, the U.S. Court of Appeals for the Federal Circuit set aside the first-instance decision and declared Biogen's patent invalid. Therefore, a provision amounting to € 365 million for this patent litigation was reversed. The income from the reversal of the provision led to a corresponding increase in EBITDA pre in fiscal 2020. The following forecast, especially the information on the organic growth rates for EBITDA pre of the Merck Group and the Healthcare business sector, is based on a year-earlier figure that has been adjusted for the income from the reversal of the provision.

As regards the Covid-19 pandemic and the negative effects thereof, we assume that the business recovery that started in the second half of 2020 will continue in fiscal 2021. At present, we do not assume that further disease waves will have a negative effect comparable to that seen in the first half of 2020, especially on the Healthcare and Electronics business sectors. For Life Science, we continue to expect significantly positive contributions owing to the Covid-19 pandemic, particularly in the Process Solutions business unit. The increasing availability of Covid-19 vaccines and the associated immunization of the population will contribute to a further stabilization of the societal and economic situation. Nevertheless, the present forecast is subject to a higher degree of estimation uncertainty than was the case in the years prior to the Covid-19 pandemic.

With regard to exchange rate developments, we expect a continuing volatile environment due to political and macroeconomic developments. In the first half of 2021, the euro-U.S. dollar exchange rate was within the range of 1.19 to 1.23 that we had previously expected for the full year. Likewise, we do not expect to see any significant changes for the remaining exchange rate developments in comparison with the previous forecast. We continue to expect negative foreign exchange effects in comparison with the previous year. In this context, we assume that in particular, the euro-U.S. dollar exchange rate will impact foreign exchange effects, as was largely the case in the first half of 2021. In addition, foreign exchange developments in individual growth markets will contribute to the overall negative exchange rate impact. The expected negative foreign exchange effects on EBITDA pre will be partly mitigated by currency hedging, although we do not hedge all growth market currencies. This forecast for 2021 is unchanged and based on a euro-U.S. dollar exchange rate in a corridor of 1.19 to 1.23.

Net sales

Following a strong first half of 2021 that was mainly driven by the Life Science business sector, we are raising the forecast for Group net sales slightly and expect organic growth of 12% to 14% in fiscal 2021 (previously 10% to 12%). All business sectors, first and foremost Life Science, will contribute to organic growth. We continue to expect negative foreign exchange effects between –2% and –4%. Overall, we now forecast net sales in the range of € 18.8 billion to € 19.7 billion (previously: € 18.5 billion to € 19.5 billion / 2020: € 17.53 billion).

EBITDA pre

EBITDA pre is our key financial indicator for steering operating business. For fiscal 2021, we are raising our forecast and now expect an organic increase in EBITDA pre of between 21% and 25% (previously 16% to 20%). This is based on an EBITDA pre of € 4.84 billion in 2020, adjusted for the reversal of the provision for the litigation with Biogen. All business sectors will contribute to this organic growth, especially Life Science. The foreign exchange development is still forecast to adversely affect Group EBITDA pre by between –2% and –4% in fiscal 2021; it is likely to be seen in all business sectors, yet most strongly in Healthcare. EBITDA pre is thus expected to be between € 5.6 billion and € 6.0 billion (previously € 5.4 billion to € 5.8 billion).

Operating cash flow

As of fiscal 2021, operating cash flow will represent one of our key performance indicators at Group level and thus replace business free cash flow (BFCF) as a key steering parameter. As regards the composition of operating cash flow, we make reference to the consolidated cash flow statement. In general, the forecast for operating cash flow is subject to a larger fluctuation corridor than the forecast for net sales, EBITDA pre and the previous steering parameter BFCF. We provide an estimate of the development of operating cash flow at Group level.

The expected strong operating business performance in fiscal 2021 will be the main driver of operating cash flow, which is why we are also raising the forecast compared with the first quarter to € 3.8 billion to € 4.4 billion (previously: € 3.6 billion to € 4.2 billion). The strong operating performance will be able to more than offset the effects mentioned in the following, which were already included in the previous forecast. The operating cash flow in fiscal 2020 (€ 3.48 billion), which serves as the reference figure, included the increasing receipt of payments from customers in the fourth quarter of 2020. We do not expect to see a comparable effect in fiscal 2021. We continue to expect payouts for ongoing transformation programs on a larger scale in 2021. In particular, this relates to the transformation and growth program that was launched in the Healthcare business sector in 2020. Negative foreign exchange effects will also adversely impact operating cash flow.

Healthcare

Following significant negative effects of the Covid-19 pandemic on the Healthcare business sector in fiscal 2020, we continue to expect organic growth of net sales of 7% to 10% in 2021. We expect further significant increases in sales of Mavenclad® and Bavencio® to contribute substantially to this. For the base business, we forecast a roughly stable development overall. This reflects the continued competitive pressure and the associated decline in sales of Rebif®. Although the negative impacts of the volume-based procurement regulations that took effect in China in fiscal 2020 will now be incurred in full in fiscal 2021, we forecast a roughly stable organic development of our products in the Cardiovascular, Metabolism and Endocrinology franchise. We assume that this franchise will resume its growth course as of 2022. The performance of the Fertility franchise is having a very positive effect. We continue to expect a negative foreign exchange effect of between –2% and –4%. Overall, our forecast for net sales of € 6.85 billion to € 7.20 billion remains unchanged (2020: € 6.64 billion).

For 2021, we now expect EBITDA pre for the Healthcare business sector of € 2.05 billion to € 2.15 billion (previously € 2.00 billion to € 2.10 billion (2020: € 1.90 billion, excluding the reversal of the provision from the patent litigation with Biogen). For this key performance indicator, we forecast organic growth of 15% to 18% (previously 12% to 15%). The negative earnings effects resulting from the expected decline in Rebif® sales should be more than offset by substantial earnings contributions from Mavenclad®. Rigorous cost management will remain responsible for the stronger development of EBITDA pre in comparison with the previous forecast. Therefore, costs will increase only moderately in comparison with the rise in sales. In addition, we will further pursue the continuous prioritization of our development pipeline. We therefore expect the share of both marketing and selling expenses as well as research and development costs to decline as a percentage of sales. Research and development costs will remain heavily dependent on the development of clinical data as well as further expected study results. We forecast the upfront cash payment in the context of the global strategic alliance with GlaxoSmithKline plc for the joint development and marketing of bintrafusp alfa to have a positive earnings effect amounting to a high double-digit million euro sum, which will be disclosed under other operating income. The precise amount depends on the cost evolution. Development milestones will no longer occur in fiscal 2021 subsequent to the discontinuation of the INTR@PID Lung 037 trial, which was announced at the beginning of the year. The forecast reflects income expected from active portfolio management in a low to mid double-digit million euro range as well as income from two already received milestone payments within the scope of our strategic alliance with Pfizer to develop and commercialize Bavencio® as well as R&D costs from the in-licensing agreement for xevinapant. More information on the in-licensing of xevinapant can be found in the Notes to the Half-Year Consolidated Financial Statements as of June 30, 2021. We confirm our assumption that foreign exchange will negatively impact EBITDA pre by between –5% and –7%.

Life Science

Following a strong first half of 2021, we are raising our forecast for net sales of the Life Science business sector. For fiscal 2021, we now expect organic growth of 18% to 21% (previously 15% to 18%). This development is due to the higher sales expectation for Process Solutions. The business unit clearly remains the strongest growth driver, accelerated by continued significantly positive effects from the Covid-19 pandemic. The base business is also developing more strongly than initially expected. The Applied Solutions and Research Solutions business units are also contributing positively to the overall development of Life Science. The dynamic growth in our Life Science business is currently subject to higher volatility due to the varying development across product groups and customer segments. Increased research and development activity as well as higher production volumes among pharmaceutical companies, especially in the biopharmaceutical segment, are the key drivers of growth in the base business. In connection with the Covid-19 pandemic, our growth is being complemented by increased production of vaccines, medicines and diagnostics, for which we manufacture the required input materials. The expansion of our production capacities will enable us to meet a higher level of demand. We forecast a foreign exchange effect of –2% to –4% (previously: –2% to –5%). Consequently, we are raising the forecast and expect net sales of between € 8.50 billion and € 8.95 billion (previously: € 8.20 billion to € 8.70 billion; 2020: € 7.51 billion).

We have also raised the forecast for EBITDA pre of the Life Science business sector and now expect to generate EBITDA pre of € 3.05 billion to € 3.20 billion in fiscal 2021 (previously € 2.85 billion to € 3.00 billion (2020: € 2.41 billion), which will reflect organic growth of 30% to 34% (previously 22% to 26%). The persistently dynamic demand trend and clearly positive Covid-19 effects will contribute to organic earnings growth. This will reflect both a continued favorable product mix, predominantly driven by pandemic-related demand, as well as positive scale effects. Higher freight costs will have a negative effect. We confirm our assumption that based on our estimates, the impact of foreign exchange on earnings will be between –1% and –3% in fiscal 2021.

Electronics

Following the successful realignment of our portfolio, we are raising the forecast for the Electronics business sector in fiscal 2021 slightly. We now expect organic growth of net sales in a range between 6% and 8% (previously 5% to 7%), which should be reflected in net sales of € 3.45 billion to € 3.60 billion (previously € 3.40 billion to € 3.55 billion) (2020: € 3.38 billion). Most notably, we have lifted our growth expectations for the Semiconductor Solutions business unit. We expect a strong growth dynamic, which will exceed market growth in the medium term. The business unit will thus become the main driver of performance in Electronics. As expected, the project business in this sector will be subject to stronger fluctuations in the course of the year. Following a recovery from the negative effects caused by the Covid-19 pandemic in 2020, we expect that the organic performance of our Surface Solutions business will be positive in fiscal 2021. Our Liquid Crystals business will continue to decline and face persistent price erosion due to price pressure common in this industry. We forecast a foreign exchange effect of –1% to –3% (previously –1% to –4%).

For EBITDA pre of our Electronics business sector, we confirm our forecast for an organic increase in a range between 9% and 12% in 2021. In this context, we assume that the anticipated growth of Semiconductor Solutions as well as active cost management will more than offset the price decline in Liquid Crystals. This forecast includes the planned realization of synergies totaling around € 83 million from the integration of Versum Materials. We assume that the expected foreign exchange development will have a negative effect of between –2% and –4% (previously –3% and –5%) on EBITDA pre. Overall, we forecast EBITDA pre in the range of between € 1.07 billion and € 1.13 billion (previously € 1.05 billion to € 1.13 billion) (2020: € 1.02 billion).

Corporate and Other

We are slightly adapting our forecast for Corporate and Other and now expect EBITDA pre for fiscal 2021 of between € –450 million and € –500 million (previously € –440 million to € –490 million) (2020: € –495 million). We are thus planning on average a lower cost level in comparison with 2020. This is mainly due to the positive effects expected from foreign currency hedging, which will partly offset negative foreign exchange effects in the business sectors.

In summary, the forecast for fiscal 2021 is as follows:

Forecast for the Merck Group

Forecast for 2021

€ million	Net sales	EBITDA pre	Operating cash flow
Merck Group	**~18,800 bis 19,700** • Organic increase of +12% to +14% • Exchange rate effect –2% to –4%	**~5,600 bis 6,000**[1] • Organic increase of +21% to +25% • Exchange rate effect –2% to –4%	**~3,800 bis 4,400**
Healthcare	**~6,850 bis 7,200** • Organic increase of +7% to +10% • Exchange rate effect –2% to –4%	**~2,050 bis 2,150**[1] • Organic increase of +15% to +18% • Exchange rate effect –5% to –7%	n/a
Life Science	**~8,500 bis 8,950** • Organic increase of +18% to +21% • Exchange rate effect –2% to –4%	**~3,050 bis 3,200** • Organic increase of +30% to +34% • Exchange rate effect –1% to –3%	n/a
Electronics	**~3,450 bis 3,600** • Organic increase of +6% to +8% • Exchange rate effect –1% to –3%	**~1,070 bis 1,130** • Organic increase of +9% to +12% • Exchange rate effect –2% to –4%	n/a
Corporate and Other	–	**~–450 bis –500**	n/a

[1] EBITDA pre of fiscal 2020 included income from the reversal of a provision for patent litigation amounting to € 365 million. Including this amount in 2020, we expect organic growth of between 12% and 17% for the Group and an organic decline of –1% to –4% for Healthcare.

EPS pre € 7.80 to € 8.50, based on an adjusted underlying tax rate of 23%

Full-year FX assumption for 2021: € 1 = US$ 1.19 to US$ 1.23

Consolidated Half-Year Financial Statements as of June 30, 2021

Consolidated Half-Year Financial Statements as of June 30, 2021

Consolidated Income Statement

€ million	Q2 2021	Q2 2020	Jan.–June 2021	Jan.–June 2020
Net sales	**4,870**	**4,119**	**9,501**	**8,489**
Cost of sales	–1,813	–1,610	–3,534	–3,264
Gross profit	**3,057**	**2,509**	**5,967**	**5,225**
Marketing and selling expenses	–1,035	–1,035	–2,043	–2,094
Administration expenses	–307	–298	–580	–587
Research and development costs	–585	–520	–1,158	–1,099
Impairment losses and reversals of impairment losses on financial assets (net)	–	–5	–6	1
Other operating income	154	114	286	226
Other operating expenses	–234	–274	–373	–465
Operating result (EBIT)[1]	**1,049**	**491**	**2,092**	**1,207**
Finance income	14	4	22	18
Finance costs	–109	–107	–175	–219
Profit before income tax	**955**	**389**	**1,939**	**1,006**
Income tax	–208	–100	–444	–259
Profit after tax	**747**	**289**	**1,495**	**747**
thereof: attributable to Merck KGaA shareholders (net income)	745	290	1,492	746
thereof: attributable to non-controlling interests	2	–1	3	1
Earnings per share (in €)				
Basic	1.71	0.67	3.43	1.72
Diluted	1.71	0.67	3.43	1.72

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

Statement of Comprehensive Income

€ million	Q2 2021	Q2 2020	Jan.–June 2021	Jan.–June 2020
Profit after tax	**747**	**289**	**1,495**	**747**
Items of other comprehensive income that will not be reclassified to profit or loss in subsequent periods				
Net defined benefit liability				
Changes in remeasurement	66	–466	622	–364
Tax effect	–3	83	–108	53
Changes recognized in equity	63	–383	514	–310
Equity instruments				
Fair value adjustments	–14	37	–77	–20
Tax effect	9	–	9	–
Changes recognized in equity	–5	37	–68	–20
	59	–346	446	–331
Items of other comprehensive income that may be reclassified to profit or loss in subsequent periods				
Cash flow hedge reserve				
Fair value adjustments	25	19	–65	–29
Reclassification to profit or loss	–8	25	–2	46
Reclassification to assets	–	–	–	–
Tax effect	–5	–14	22	–6
Changes recognized in equity	12	29	–45	12
Cost of cash flow hedge reserve				
Fair value adjustments	–11	–3	–13	4
Reclassification to profit or loss	15	3	17	5
Tax effect	–1	1	–1	–1
Changes recognized in equity	3	1	3	8
Currency translation difference				
Changes taken directly to equity	–260	–384	635	–152
Reclassification to profit or loss	–	4	–	3
Changes recognized in equity	–260	–379	635	–149
	–246	–349	593	–130
Other comprehensive income	**–187**	**–695**	**1,038**	**–461**
Comprehensive income	**560**	**–406**	**2,533**	**286**
thereof: attributable to Merck KGaA shareholders	558	–406	2,529	286
thereof: attributable to non-controlling interests	1	–	4	1

Consolidated Balance Sheet[1]

€ million	June 30, 2021	Dec. 31, 2020
Non-current assets		
Goodwill	16,347	15,959
Other intangible assets	7,613	7,653
Property, plant and equipment	6,601	6,421
Investments accounted for using the equity method	2	2
Other non-current financial assets	742	822
Other non-current receivables	29	25
Other non-current non-financial assets	87	81
Non-current income tax receivables	10	10
Deferred tax assets	1,532	1,543
	32,963	**32,516**
Current assets		
Inventories	3,564	3,294
Trade and other current receivables	3,657	3,221
Contract assets	114	169
Other current financial assets	45	125
Other current non-financial assets	625	597
Current income tax receivables	353	520
Cash and cash equivalents	1,825	1,355
	10,182	**9,280**
Total assets	**43,145**	**41,796**
Total equity		
Equity capital	565	565
Capital reserves	3,814	3,814
Retained earnings	14,134	12,378
Gains/losses recognized in equity	780	189
Equity attributable to Merck KGaA shareholders	**19,293**	**16,946**
Non-controlling interests	68	71
	19,361	**17,017**
Non-current liabilities		
Non-current provisions for employee benefits	3,350	3,880
Other non-current provisions	351	281
Non-current financial debt	8,721	9,785
Other non-current financial liabilities	68	62
Other non-current non-financial liabilities	30	55
Non-current income tax liabilities	43	45
Deferred tax liabilities	1,401	1,441
	13,964	**15,548**
Current liabilities		
Current provisions for employee benefits	144	152
Other current provisions	382	461
Current financial debt	3,278	2,357
Other current financial liabilities	392	1,008
Trade and other current payables	2,107	1,768
Refund liabilities	746	666
Current income tax liabilities	1,465	1,460
Other current non-financial liabilities	1,305	1,360
	9,820	**9,231**
Total equity and liabilities	**43,145**	**41,796**

[1]Previous year's figures have been adjusted, see "Accounting and measurement principles".

Consolidated Cash Flow Statement

€ million	Q2 2021	Q2 2020	Jan.–June 2021	Jan.–June 2020
Profit after tax	**747**	**289**	**1,495**	**747**
Depreciation/amortization/impairment losses/reversals of impairment losses	419	559	843	991
Changes in inventories	–117	–118	–225	–247
Changes in trade accounts receivable	–65	75	–379	–180
Changes in trade accounts payable/refund liabilities	14	–69	348	–42
Changes in provisions	88	–54	55	–38
Changes in other assets and liabilities	–217	–166	–56	–189
Neutralization of gains/losses on disposals of assets	–18	–4	–23	–38
Other non-cash income and expenses	36	–9	48	15
Operating cash flow	**888**	**502**	**2,104**	**1,019**
Payments for investments in intangible assets	–21	–48	–69	–66
Payments from the disposal of intangible assets	21	7	30	13
Payments for investments in property, plant and equipment	–254	–200	–569	–541
Payments from the disposal of property, plant and equipment	–2	6	4	10
Payments for investments in financial assets	–14	–12	–24	–38
Payments for acquisitions less acquired cash and cash equivalents	–	–6	–	–7
Payments from the disposal of other financial assets	29	38	39	70
Payments from other divestments	–	–	1	56
Cash flow from investing activities	**–241**	**–216**	**–587**	**–504**
Dividend payment to Merck KGaA shareholders	–181	–168	–181	–168
Dividend payments to non-controlling interests	–	–	–7	–5
Dividend payments to E. Merck KG	–519	–455	–567	–512
Payments from new borrowings from E. Merck KG	471	390	471	390
Repayments of financial debt to E. Merck KG	–	–	–25	–34
Payments from the issuance of bonds	–	–	–	1,490
Repayments of bonds	–317	–	–317	–2,041
Changes in other current and non-current financial debt	–513	–69	–427	1,120
Cash flow from financing activities	**–1,059**	**–302**	**–1,054**	**239**
Changes in cash and cash equivalents	**–412**	**–16**	**463**	**754**
Changes in cash and cash equivalents due to currency translation	–	–3	6	–23
Cash and cash equivalents at the beginning of the reporting period	2,238	1,530	1,355	781
Cash and cash equivalents as of June 30 (consolidated balance sheet)	**1,825**	**1,512**	**1,825**	**1,512**

Consolidated Statement of Changes in Net Equity

€ million	Jan. 1, 2021	Comprehensive income: Profit after tax	Comprehensive income: Gains/losses recognized in equity	Dividend payments	Profit transfer to/from E. Merck KG including changes in reserves	Transactions with no change of control	Change in scope of consolidation/ Other	June 30, 2021
Equity capital	**565**	**–**	**–**	**–**	**–**	**–**	**–**	**565**
General partner's equity	397	–	–	–	–	–	–	397
Subscribed capital	168	–	–	–	–	–	–	168
Capital reserves	**3,814**	**–**	**–**	**–**	**–**	**–**	**–**	**3,814**
Retained earnings	**12,378**	**1,492**	**446**	**–181**	**–**	**–**	**–**	**14,134**
Retained earnings/ net retained profit	14,453	1,492	–	–181	–	–	5	15,768
Remeasurement of defined benefit plans	–2,179	–	514	–	–	–	–	–1,665
Fair value reserve for equity instruments	105	–	–68	–	–	–	–5	31
Gains/losses recognized in equity	**189**	**–**	**591**	**–**	**–**	**–**	**–**	**780**
Fair value reserve for debt instruments	–	–	–	–	–	–	–	–
Cash flow hedge reserve	–49	–	–45	–	–	–	–	–94
Cost of cash flow hedge reserve	–34	–	3	–	–	–	–	–32
Currency translation difference	273	–	633	–	–	–	–	906
Equity attributable to Merck KGaA shareholders	**16,946**	**1,492**	**1,037**	**–181**	**–**	**–**	**–**	**19,293**
Non-controlling interests	71	3	2	–7	–	–	–	68
Total equity	**17,017**	**1,495**	**1,038**	**–188**	**–**	**–**	**–**	**19,361**

€ million	Jan. 1, 2020[1]	Comprehensive income: Profit after tax	Comprehensive income: Gains/losses recognized in equity	Dividend payments	Profit transfer to/from E. Merck KG including changes in reserves	Transactions with no change of control	Change in scope of consolidation/ Other	June 30, 2020[1]
Equity capital	**565**	**–**	**–**	**–**	**–**	**–**	**–**	**565**
General partner's equity	397	–	–	–	–	–	–	397
Subscribed capital	168	–	–	–	–	–	–	168
Capital reserves	**3,814**	**–**	**–**	**–**	**–**	**–**	**–**	**3,814**
Retained earnings	**11,483**	**746**	**–331**	**–168**	**–**	**–1**	**–**	**11,729**
Retained earnings/ net retained profit	13,134	746	–	–168	–	–1	44	13,755
Remeasurement of defined benefit plans	–1,729	–	–310	–	–	–	21	–2,019
Fair value reserve for equity instruments	79	–	–20	–	–	–	–65	–7
Gains/losses recognized in equity	**1,980**	**–**	**–130**	**–**	**–**	**–**	**–**	**1,850**
Fair value reserve for debt instruments	–1	–	–	–	–	–	–	–1
Cash flow hedge reserve	–118	–	12	–	–	–	–	–107
Cost of cash flow hedge reserve	–33	–	8	–	–	–	–	–26
Currency translation difference	2,131	–	–149	–	–	–	–	1,982
Equity attributable to Merck KGaA shareholders	**17,841**	**746**	**–461**	**–168**	**–**	**–1**	**–**	**17,957**
Non-controlling interests	73	1	–	–5	–	–	–	69
Total equity	**17,914**	**747**	**–461**	**–173**	**–**	**–1**	**–**	**18,026**

[1] Previous year's figures have been adjusted owing to the completion of the purchase price allocation for Versum Materials, Inc., USA.

Notes to the Consolidated Half-Year Financial Statements as of June 30, 2021

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, 2021 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, 2020 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 these 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 2020. Due to the uncertain development of the global Covid-19 pandemic, the degree of uncertainty in making assumptions and exercising management judgments in these consolidated half-year financial statements continues to be greater than is normally the case.

The notes to the consolidated financial statements for 2020 also include a presentation of the accounting and measurement principles used. These apply accordingly in these consolidated half-year financial statements for 2021 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 2021 as well as the disclosure changes described in the following.

In April 2021, the IFRS Interpretations Committee (IFRS IC) made a negative agenda decision entitled “Attributing Benefit to Periods of Service (IAS 19 Employee Benefits)” in relation to the issue of how to recognize post-employment benefits to employees where the period of service rendered by the employee that determines the amount of subsequent benefits to the employee is subject to certain limits. Based on the agenda decision, expense recognition shall not occur until the beginning of the maximum period of service rendered. The review of the effects of this agenda decision by the IFRS IC on Merck was still underway on the balance sheet date. According to the present state of knowledge, no material effects are expected for the Group.

Standards, interpretations and amendments requiring mandatory application for the first time in fiscal 2021

The following regulations take effect as of fiscal 2021:

- Amendment to IAS 39 “Financial Instruments: Recognition and measurement”
- Amendments to IFRS 4 “Insurance Contracts”
- Amendment to IFRS 7 “Financial Instruments: Disclosures”
- Amendment to IFRS 9 “Financial Instruments”
- Amendment to IFRS 16 “Leases”

These rules had no material effects on the half-year consolidated financial statements.

Change in balance sheet presentation of non-current income tax receivables and income tax liabilities

To increase comparability, with effect from January 1, 2021, Merck adapted the presentation of non-current income tax receivables and income tax liabilities.

Non-current assets were expanded to include the balance sheet item “non-current income tax receivables”. In connection with this reclassification, other non-current non-financial assets were reduced correspondingly by € 10 million.

Non-current liabilities were expanded to include the balance sheet item “non-current income tax liabilities”. In connection with this reclassification, other non-current non-financial liabilities were reduced correspondingly by € 45 million.

Scope of consolidation

As of June 30, 2021, 325 (December 31, 2020: 326) companies were fully consolidated. Two companies were accounted for using the equity method as of the balance sheet date. These are Syntropy Technologies LLC, United States, and MM Domain Holdco Limited, United Kingdom. Since the beginning of 2021, two companies have been added to the scope of consolidation for the first time. Two companies were deconsolidated owing to a merger and a further company was deconsolidated due to immateriality.

Significant events during the reporting period

End of patent law disputes in the Electronics business sector

In the Electronics business sector, Merck was involved in a legal dispute with JNC Corporation, Japan (JNC). JNC claimed that, by manufacturing and marketing certain liquid crystal mixtures, Merck had infringed JNC patents in China, Taiwan and Korea. Merck maintained that these patents were invalid owing to relevant prior art. The most recent patent infringement action on the part of JNC that was still pending and the patent nullity action on the part of Merck in Korea were resolved in an agreement by both parties in March of fiscal 2021. Based on the agreement, Merck will not be required to make any payments to JNC. The provision, amounting to a low double-digit million euro figure, was thus reversed in the first quarter of fiscal 2021.

Decision in the antitrust review proceedings for the acquisition of Sigma-Aldrich Corporation, United States

In May 2021, the European Commission (EU Commission) imposed a fine against Sigma-Aldrich Corporation, USA, (Sigma-Aldrich) in the amount of € 7.5 million because it is of the opinion that within the scope of the registration of the acquisition of Sigma-Aldrich, important information about an innovation project was withheld. The EU Commission had cleared the registration of the merger in 2015 subject to the condition that Merck and Sigma-Aldrich divest parts of the European solvents and inorganic chemicals businesses of Sigma-Aldrich in order to resolve antitrust concerns. In July 2017, in connection with the antitrust review proceedings for the acquisition, the EU Commission informed the parties of its preliminary conclusion that Merck and Sigma-Aldrich transmitted incorrect and/or misleading information. This accusation against Merck was dropped in mid-2020. With the imposition of the fine, its payment in June 2021 and the decision to refrain from taking further legal recourse, the proceedings were closed. Since no further resource outflows are expected, the remaining portion of the provision was reversed in the second quarter of 2021. This led to income amounting to a low double-digit million euro sum, which was disclosed in other operating income.

Legal dispute with Heraeus Medical GmbH, Wehrheim

On July 19, 2021 Merck was sued by Heraeus Medical GmbH, Wehrheim, Germany, (Heraeus) claiming payment of damages. Originally, Heraeus started a proceeding against Biomet Deutschland GmbH, Freiburg im Breisgau, Germany, (Biomet), Zimmer Nederland B.V., Netherlands, (Zimmer) and Biomet, Inc., USA, in 2018 for payment of damages for the unauthorized use of trade secrets and has now expanded the lawsuit to include Merck. Merck is now facing the allegation to have infringed fiduciary duties, which facilitated the unlawful replication of bone cement products by Biomet / Zimmer.

The claim refers to a prior declaratory judgment against Merck obtained by Heraeus in 2013. In that final judgment it was decided that Merck had breached its duties stemming from a distribution agreement with Heraeus that was terminated in 2001. The infringement occurred in 2004 when Merck dissolved its joint venture with Biomet that had existed from 1997 to 2004. Merck will defend itself against the claims for damages by Heraeus. A provision amounting to a mid double-digit million euro sum has been set up for this matter.

In-licensing agreement with Debiopharm for an active ingredient candidate to treat head and neck tumors

On March 1, 2021, Merck announced the conclusion of an in-licensing agreement with Debiopharm International SA, Switzerland, (Debiopharm) on exclusive development and global commercialization rights for the active ingredient candidate xevinapant (Debio 1143). The agreement also includes development rights for preclinical follow-on compounds to xevinapant. Xevinapant is currently being investigated in a Phase III study for previously untreated high-risk locally advanced squamous cell carcinoma of the head and neck in combination with platinum-based chemotherapy and standard fractionation intensity-modulated radiotherapy.

Pursuant to the agreement, Debiopharm is entitled to an upfront payment of € 188 million, which will be made in the third quarter of 2021. Moreover, Debiopharm is entitled to future milestone payments of up to € 710 million in total, depending on the achievement of certain approval and sales milestones as well as royalties on future net sales.

The transaction took effect in April 2021. To date, it has led to the recognition of € 141 million in intangible assets not yet available for use as well as a liability for the upfront payment in the corresponding amount. In addition, in the course of 2021 Merck will recognize other financial and non-financial assets for prepaid development expenses as well as refund claims from development activities (each amounting to a low double-digit million euro figure).

Out-licensing agreement with MoonLake Immunotherapeutics AG, Switzerland on active ingredient candidates to treat multiple inflammatory diseases

On May 3, 2021, Merck announced that it had entered into an out-licensing agreement with the newly founded company MoonLake Immunotherapeutics AG (MoonLake) for sonelokimab (M1095). Sonelokimab is an investigational anti-IL-17A/F Nanobody®, which neutralizes both IL-17A and IL-17F, in patients with moderate to severe chronic plaque-type psoriasis. MoonLake will assume full responsibility for the research, development and commercialization of sonelokimab.

As part of the agreement, Merck received an upfront payment amounting to a low double-digit million euro figure, an equity interest in MoonLake of just under 10% and the right to future milestone payments totaling up to a mid triple-digit million euro amount depending on the achievement of certain development and sales milestones, as well as royalties on future net sales. On initial recognition, the equity instruments were measured at fair value. The income from the out-licensing of intellectual property, which amounted to a low double-digit million euro figure, was reported in other operating income.

Segment Reporting

Information by business sector

€ million	Healthcare				Life Science				Electronics			
	Q2 2021	Q2 2020	**Jan.–June 2021**	Jan.–June 2020	**Q2 2021**	Q2 2020	**Jan.–June 2021**	Jan.–June 2020	**Q2 2021**	Q2 2020	**Jan.–June 2021**	Jan.–June 2020
Net sales[1]	**1,788**	**1,499**	**3,427**	**3,200**	**2,225**	**1,806**	**4,356**	**3,575**	**857**	**814**	**1,719**	**1,714**
Intersegment sales	–	–	–	–	13	13	31	27	–	–	–	–
Operating result (EBIT)[2]	**501**	**269**	**945**	**692**	**644**	**386**	**1,237**	**731**	**118**	**–30**	**244**	**86**
Depreciation and amortization	75	78	156	156	191	199	377	395	129	138	261	272
Impairment losses[3]	5	12	5	13	–	–	–	–	5	111	7	112
Reversals of impairment losses	–9	–	–11	–	–	–	–	–	–	–	–	–
EBITDA[2]	**572**	**359**	**1,096**	**860**	**835**	**584**	**1,614**	**1,126**	**252**	**219**	**512**	**470**
Adjustments[2]	9	15	18	–14	–6	–15	8	–4	6	19	20	54
EBITDA pre (Segment result)[2]	**581**	**374**	**1,114**	**846**	**829**	**569**	**1,622**	**1,122**	**258**	**238**	**532**	**524**
EBITDA pre margin (in % of net sales)[2]	32.5%	24.9%	32.5%	26.4%	37.3%	31.5%	37.2%	31.4%	30.1%	29.3%	30.9%	30.6%
Assets by business sector[4]			7,658	7,358			20,873	20,145			9,857	9,735
Liabilities by business sector[4]			–2,681	–2,494			–1,707	–1,589			–589	–666
Investments in property, plant and equipment[5]	88	67	196	222	102	70	238	177	54	57	110	118
Investments in intangible assets[5]	8	7	43	15	7	14	16	22	4	25	6	26
Non-cash changes in provisions[6]	33	–1	58	25	19	–8	39	–6	5	–	–10	8

€ million	Corporate and Other				Group			
	Q2 2021	Q2 2020	**Jan.–June 2021**	Jan.–June 2020	**Q2 2021**	Q2 2020	**Jan.–June 2021**	Jan.–June 2020
Net sales[1]	**–**	**–**	**–**	**–**	**4,870**	**4,119**	**9,501**	**8,489**
Intersegment sales	–13	–13	–31	–27	–	–	–	–
Operating result (EBIT)[2]	**–213**	**–133**	**–334**	**–301**	**1,049**	**491**	**2,092**	**1,207**
Depreciation and amortization	25	18	50	41	421	434	844	863
Impairment losses[3]	–	–	1	–	10	123	13	125
Reversals of impairment losses	–	–	–	–	–9	–	–11	–
EBITDA[2]	**–188**	**–115**	**–283**	**–261**	**1,472**	**1,048**	**2,939**	**2,195**
Adjustments[2]	96	8	102	24	105	27	148	60
EBITDA pre (Segment result)[2]	**–92**	**–107**	**–181**	**–236**	**1,576**	**1,074**	**3,087**	**2,256**
EBITDA pre margin (in % of net sales)[2]	–	–	–	–	32.4%	26.1%	32.5%	26.6%
Assets by business sector[4]			4,758	4,558			43,145	41,796
Liabilities by business sector[4]			–18,806	–20,030			–23,784	–24,780
Investments in property, plant and equipment[5]	11	7	26	24	254	200	569	541
Investments in intangible assets[5]	2	2	4	4	21	48	69	66
Non-cash changes in provisions[6]	105	33	136	49	161	24	223	75

[1] Excluding intersegment sales.
[2] Not defined by International Financial Reporting Standards (IFRS).
[3] Excluding impairments on financial assets.
[4] Figures for the reporting period ending on June 30, 2021; previous-year figures as of December 31, 2020.
[5] As reported in the consolidated cash flow statement.
[6] Excluding provisions for pensions and other post-employment benefits.

Segmentation was performed in accordance with the internal organization and reporting structure of the Merck Group valid as of 2021.

The fields of activity of the individual segments are described under "Fundamental Information about the Group" in the combined management report for 2020.

"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 and includes the results of currency hedging transactions. 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). EBITDA pre is a key figure that is not defined by International Financial Reporting Standards. However, it represents an important variable 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.

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

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

€ million	**Q2 2021**	Q2 2020	**Jan.–June 2021**	Jan.–June 2020
EBITDA pre of the operating businesses[1]	**1,668**	**1,181**	**3,268**	**2,492**
Corporate and Other	–92	–107	–181	–236
EBITDA pre of the Merck Group[1]	**1,576**	**1,074**	**3,087**	**2,256**
Depreciation/amortization/impairment losses/ reversals of impairment losses[2]	–422	–557	–846	–988
Adjustments[1]	–105	–27	–148	–60
Operating result (EBIT)[1]	**1,049**	**491**	**2,092**	**1,207**
Financial result	–95	–102	–154	–201
Profit before income tax	**955**	**389**	**1,939**	**1,006**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Excluding impairments on financial assets.

Adjustments comprised the following:

€ million	**Q2 2021**	Q2 2020	**Jan.–June 2021**	Jan.–June 2020
Restructuring expenses	–12	–21	–39	–37
Integration expenses/IT expenses	–18	–37	–37	–59
Gains (+)/losses (–) on the divestment of businesses	–88	–2	–82	28
Acquisition-related adjustments	17	30	18	11
Other adjustments	–4	4	–8	–4
Adjustments before impairment losses/ reversals of impairment losses[1]	**–105**	**–27**	**–148**	**–60**
Impairment losses	–8	–112	–11	–114
Reversals of impairment losses	–	–	–	–
Adjustments (total)[2]	**–112**	**–138**	**–159**	**–174**

[1] Excluding impairments on financial assets.
[2] Not defined by International Financial Reporting Standards (IFRS).

In the first half of 2021, adjustments amounted to € 159 million and were thus lower than in the previous year (January-June 2020: € 174 million). Integration and IT expenses declined to € 37 million (January–June 2020: € 59 million), mainly as a result of lower expenses for the rollout of new ERP systems (January–June 2021: € 22 million/January–June 2020: € 32 million) and the integration of Versum Materials, Inc., USA (January–June 2021: € 9 million / January–June 2020: € 18 million). Furthermore, gains/losses on the divestment of businesses decreased to € –82 million (January–June 2020: € 28 million). These resulted mainly from the provision for litigation in connection with the claim for damages by Heraeus Medical GmbH, Wehrheim, Germany. A smaller portion was due to the remeasurement of contingent consideration from the divestment of the Biosimilars business to Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, Germany, in fiscal 2017. In the previous year, this item included the gain on the divestment of the allergy business Allergopharma (€ 36 million). Higher impairments in the previous year (January–June 2021: € 11 million; January-June 2020: € 114 million) related for the most part to intangible assets in the Electronics business sector.

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

€ million	Jan.–June 2021							
Net sales by nature of the products	Healthcare		Life Science		Electronics		**Group**	
Goods	3,384	99%	3,843	88%	1,547	90%	8,774	92%
Equipment/hardware	1	–	222	5%	129	8%	353	4%
Services	16	–	285	7%	42	2%	343	4%
License income	–	–	5	–	1	–	6	–
Commission income	8	–	–	–	–	–	8	–
Income from co-commercialization agreements	17	1%	–	–	–	–	17	–
Total	**3,427**	**100%**	**4,356**	**100%**	**1,719**	**100%**	**9,501**	**100%**
Net sales by region (customer location)								
Europe	1,101	32%	1,492	34%	137	8%	2,730	29%
North America	830	24%	1,550	36%	262	15%	2,643	28%
Asia-Pacific (APAC)	945	28%	1,131	26%	1,287	75%	3,363	35%
Latin America	321	9%	136	3%	16	1%	473	5%
Middle East and Africa (MEA)	229	7%	46	1%	17	1%	292	3%
Total	**3,427**	**100%**	**4,356**	**100%**	**1,719**	**100%**	**9,501**	**100%**

€ million	Jan.–June 2020							
Net sales by nature of the products	Healthcare		Life Science		Electronics		**Group**	
Goods	3,130	98%	3,167	89%	1,540	90%	7,837	92%
Equipment/hardware	2	–	168	5%	127	7%	297	4%
Services	24	1%	236	7%	46	3%	307	4%
License income	–	–	4	–	1	–	5	–
Commission income	7	–	–	–	–	–	7	–
Income from co-commercialization agreements	35	1%	–	–	–	–	35	–
Total	**3,200**	**100%**	**3,575**	**100%**	**1,714**	**100%**	**8,489**	**100%**
Net sales by region (customer location)								
Europe	1,074	33%	1,224	34%	130	7%	2,428	29%
North America	700	22%	1,293	36%	250	15%	2,243	27%
Asia-Pacific (APAC)	884	28%	893	25%	1,300	76%	3,077	36%
Latin America	321	10%	121	4%	13	1%	455	5%
Middle East and Africa (MEA)	221	7%	44	1%	21	1%	285	3%
Total	**3,200**	**100%**	**3,575**	**100%**	**1,714**	**100%**	**8,489**	**100%**

Healthcare

€ million	Jan.–June 2021	Share	Jan.–June 2020	Share
Oncology	**665**	**20%**	**518**	**16%**
thereof: Erbitux®	492	14%	419	13%
thereof: Bavencio®	148	4%	63	2%
Neurology & Immunology	**779**	**23%**	**790**	**25%**
thereof: Rebif®	475	14%	584	18%
thereof: Mavenclad®	304	9%	206	6%
Fertility	**664**	**19%**	**468**	**15%**
thereof: Gonal-f®	386	11%	279	9%
Cardiovascular, Metabolism and Endocrinology	**1,242**	**36%**	**1,318**	**41%**
thereof: Glucophage®	430	13%	460	14%
thereof: Concor®	253	7%	281	9%
thereof: Euthyrox®	219	6%	228	7%
thereof: Saizen®	124	4%	118	4%
Other	**77**	**2%**	**105**	**3%**
Total	**3,427**	**100%**	**3,200**	**100%**

Life Science[1]

€ million	Jan.–June 2021	Share	Jan.–June 2020	Share
Process Solutions	2,199	51%	1,694	48%
Research Solutions	1,275	29%	1,047	29%
Applied Solutions	881	20%	834	23%
Total	**4,356**	**100%**	**3,575**	**100%**

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

Electronics[1]

€ million	Jan.–June 2021	Share	Jan.–June 2020	Share
Semiconductor Solutions	976	57%	957	56%
Display Solutions	528	31%	570	33%
Surface Solutions	214	12%	187	11%
Total	**1,719**	**100%**	**1,714**	**100%**

[1] Within the scope of the integration of Versum Materials Inc., USA, two products previously allocated to the Semiconductor Solutions business unit have now been assigned to Display Solutions. The previous year's figures have been adjusted accordingly.

Earnings per share

Basic earnings per share is calculated by dividing the profit after taxes attributable to the shareholders of Merck KGaA (net income) by the weighted average number of theoretical shares outstanding. The calculation of the theoretical number of shares is based on the fact that the general partner's equity is not represented by shares. The subscribed capital of € 168 million was divided into 129,242,252 shares. Accordingly, the general partner’s equity of € 397 million was divided into 305,535,626 theoretical shares. Overall, equity 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 2021.

There were no changes to equity capital in the first half of 2021. The weighted average (basic) number of shares was 434,777,878 and thus corresponded to the number of theoretical shares outstanding. In the first half of 2021, there were no shares with a potential diluting effect; as a result, diluted earnings per share were equivalent to basic earnings per share.

Information on fair value measurement

The following table presents the carrying amounts and the fair values of the individual financial assets and liabilities as of June 30, 2021 for each individual financial instrument class pursuant to IFRS 9:

June 30, 2021	Carrying amount			Fair value[1]			
€ million	Short-term	Long-term	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using input factors observable in the market (Level 2)	Fair value determined using input factors unobservable in the market (Level 3)	Total
Financial assets							
Subsequent measurement at amortized cost							
Cash and cash equivalents	1,825	–	1,825				
Trade and other receivables (excluding leasing receivables)	3,642	28	3,670				
Other debt instruments	–	5	6				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	420	420	28	124	268	420
Trade and other receivables	13	–	13	–	–	13	13
Other debt instruments	3	1	4	4	–	–	4
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	260	260	–	–	260	260
Other debt instruments	7	37	44	8	–	36	44
Derivatives without a hedging relationship	22	19	41	–	22	19	41
Derivatives with a hedging relationship	12	–	12	–	12	–	12
Leasing receivables (to be measured in accordance with IFRS 16)[2]	2	1	2				
Total	**5,526**	**771**	**6,297**	**41**	**158**	**595**	**794**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade and other payables	2,107	–	2,107				
Financial debt	3,137	8,403	11,540	9,623	2,359	–	11,982
Other financial liabilities	359	28	387				
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	33	33	–	–	33	33
Derivatives without a hedging relationship	30	7	37	–	30	7	37
Derivatives with a hedging relationship	33	–	33	–	33	–	33
Refund liabilities	746	–	746				
Leasing liabilities (to be measured in accordance with IFRS 16)[2]	110	318	428				
Total	**6,523**	**8,789**	**15,312**	**9,623**	**2,422**	**40**	**12,085**

[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 fair values of the individual financial assets and liabilities as of December 31, 2020 for each individual financial instrument class pursuant to IFRS 9:

December 31, 2020	Carrying amount			Fair value[1]			
€ million	Short-term	Long-term	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using input factors observable in the market (Level 2)	Fair value determined using input factors unobservable in the market (Level 3)	Total
Financial assets							
Subsequent measurement at amortized cost							
Cash and cash equivalents	1,355	–	1,355				
Trade and other receivables (excluding leasing receivables)	3,199	24	3,223				
Other debt instruments	1	7	7				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	499	499	18	226	255	499
Trade and other receivables	19	–	19	–	–	19	19
Other debt instruments	5	4	9	9	–	–	9
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	260	260	–	–	260	260
Other debt instruments	7	34	41	8	–	33	41
Derivatives without a hedging relationship	16	18	34	–	26	8	34
Derivatives with a hedging relationship	96	–	96	–	96	–	96
Leasing receivables (to be measured in accordance with IFRS 16)[2]	3	1	4				
Total	**4,701**	**848**	**5,548**	**36**	**348**	**575**	**958**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade and other payables	1,768	–	1,768				
Financial debt	2,183	9,419	11,602	9,970	2,180	–	12,150
Other financial liabilities	963	34	997				
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	26	26	–	–	26	26
Derivatives without a hedging relationship	62	42	104	–	102	2	104
Derivatives with a hedging relationship	45	–	45	–	45	–	45
Refund liabilities	666	–	666				
Leasing liabilities (to be measured in accordance with IFRS 16)[2]	112	327	438				
Total	**5,799**	**9,847**	**15,646**	**9,970**	**2,327**	**28**	**12,325**

[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 measurement techniques and main input factors used to determine the fair value of financial instruments are as follows:

Fair value determined by official prices and quoted market values (Level 1)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through other comprehensive income			
Equity instruments	Shares	Derived from active market	Quoted prices in an active market
Other debt instruments	Bonds		
Subsequent measurement at fair value through profit or loss			
Equity instruments	Shares	Derived from active market	Quoted prices in an active market
Other debt instruments	Publicly traded funds		
	Other short-term cash investments		
Financial liabilities			
Subsequent measurement at amortized cost			
Financial liabilities	Bonds	Derived from active market	Quoted prices in an active market

Fair value determined using input factors observable in the market (Level 2)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through other comprehensive income			
Equity instruments	Shares	Derived from active market including a liquidity discount	Quoted prices in an active market and volatilities observable on the market
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Forward exchange contracts and currency options	Use of recognized actuarial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
	Interest rate swaps		Interest rate curves available on the market
Derivatives (with a hedging relationship)			
	Forward exchange contracts and currency options	Use of recognized actuarial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Financial liabilities			
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Forward exchange contracts and currency options	Use of recognized actuarial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
	Interest rate swaps		Interest rate curves available on the market
Derivatives (with a hedging relationship)			
	Forward exchange contracts and currency options	Use of recognized actuarial methods	Spot and forward rates observable on the market as well as exchange rate volatilities
Subsequent measurement at amortized cost			
Financial liabilities	Liabilities to banks and other loan liabilities	Discounting of future cash flows	Interest rates observable on the market

Fair value determined using input factors unobservable in the market (Level 3)

	Financial instruments concerned	Description of the measurement technique	Main input factors used to determine fair values
Financial assets			
Subsequent measurement at fair value through other comprehensive income			
Equity instruments	Equity investments in unlisted companies	Discounting of expected future cash flows	Expected cash flows from recent business planning, average cost of capital, expected longterm growth rate
		Derived from observable prices within the scope of equity refinancing sufficiently close to the balance sheet date, considered risk allowances	Observable prices derived from equity refinancing
		Cost-based determination	Acquisition cost
Trade and other receivables	Trade accounts receivable that are intended for sale due to a factoring agreement	Nominal value less factoring fees	Nominal value of potentially sold trade accounts receivable, average fees for sales of trade accounts receivable
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Virtual power purchase agreement	Discounting of expected future cash flows	Electricity future price curves, expected electricity production volumes, discount factors
Contingent considerations	Contingent considerations from the sale of businesses or shares in corporations	Discounting of probability-weighted future milestone payments and license fees	Sales planning, milestone payments, probabilities of regulatory and commercial events, discount rates
Other debt instruments	Interests in unlisted funds	Consideration of the fair value of companies in which the funds are invested	Net asset values of the fund interests
	Bonds with embedded settlement option for equity in an unlisted company	Use of recognized actuarial methods	Interest rates observable on the market
Financial liabilities			
Subsequent measurement at fair value through profit or loss			
Derivatives (without a hedging relationship)	Hedging instrument for the virtual power purchase agreement	Use of recognized actuarial methods	Electricity future price curves, expected electricity production volumes, discount factors
Contingent considerations	Contingent considerations from the purchase of businesses	Discounting of probability-weighted future milestone payments and license fees	Sales planning, milestone payments, probabilities of regulatory and commercial events, discount rates

Counterparty credit risk was taken into consideration for 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.

Equity investments in unlisted companies (Level 3)
The planning periods used to determine the fair value of equity investments in unlisted companies ranged from 2.5 to 8.5 years (December 31, 2020: 3 to 9 years). Cash flows for periods in excess of this are included in the terminal value calculation using long-term growth rates of between 1.0% and 2.0% (December 31, 2020: 1.0% and 2.0%). The applied average cost of capital (after tax) was 7.0% on June 30, 2021 (December 31, 2020: 7.0%).

Determining the parameters that are to be included in discounted cash-flow-methods and deriving the fair value from observable prices within the scope of equity refinancing are both subject to discretionary decisions and estimation uncertainty.

Assets from contingent considerations (Level 3)
The fair values of assets from contingent considerations are calculated by weighting the expected future milestone payments and royalties using their probability of occurrence and discounting them. This assessment is subject to significant discretionary judgment. The main parameters when determining contingent considerations are

- the estimated probability of reaching the individual milestone events,
- the underlying sales planning used to derive royalties,
- and the discount factor used.

When determining the probability of occurrence of the individual milestones events in connection with the development of drug candidates, the focus is 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 are used. The discount rates (after tax) as of June 30, 2021 were between 5.7% and 6.7% (December 31, 2020: 5.4% to 6.5%) and were 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 to Fresenius SE & Co. KGaA, Bad Homburg vor der Höhe, on August 31, 2017. It was calculated by an external valuation expert on initial recognition in 2017 and continued on this basis. As of June 30, 2021, the carrying amount was € 205 million (December 31, 2020: € 208 million).

If, in the context of determining the fair value of this contingent consideration at the date of transaction, the probability of approval as well as the discount factor of the three major development programs had been estimated to be lower or higher, this would have led to the following changes in the measurement and the corresponding effects on the profit before income tax:

June 30, 2021		Change in the probability of regulatory approval		
€ million		–10%	unchanged	10%
	5.2%	–21	5	31
Change in the discount rate	5.7% (unchanged)	–26	–	26
	6.2%	–30	–5	20

Dec. 31, 2020		Change in the probability of regulatory approval		
€ million		–10%	unchanged	10%
	5.0%	–22	6	33
Change in the discount rate	5.5% (unchanged)	–27	–	27
	6.0%	–32	–5	21

The changes in financial assets and liabilities allocated to Level 3 and measured at fair value for each individual category of financial instrument were as follows in the period from January 1, 2021 to June 30, 2021:

2021		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	Other debt instruments	Contingent considerations	Derivatives without a hedging relationship	Equity instruments	Trade accounts receivable and other receivables	Contingent considerations	Derivatives without a hedging relationship
Net carrying amounts, Jan. 1, 2021	**547**	**33**	**260**	**8**	**255**	**19**	**–26**	**–2**
Additions due to acquisitions/ divestments/conclusion of factoring agreements	39	4	–	–	21	14	–	–
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes	–							
Gains (+)/losses (–) recognized in profit or loss	2	3	1	11		–	–6	–5
thereof: other operating result	–8	–2	–5	11		–	–5	–5
thereof: attributable to assets/liabilities held as of the balance sheet date	–8	–2	–5	11		–	–5	–5
thereof: financial income and expenses	11	5	6	–		–	–1	–
thereof: attributable to assets/liabilities held as of the balance sheet date	11	5	6	–		–	–1	–
Gains (+)/losses (–) recognized in other comprehensive income	8				8	–		
Currency translation difference	–	1	–	–	–	–	–1	–
Disposals due to divestments/ payments received/payments made	–20	–	–	–	–	–19	–	–
Transfers out of Level 3 into Level 1/Level 2	–21	–	–	–	–21	–	–	–
Other	–	–5	–	–	5	–	–	–
Net carrying amounts, June 30, 2021	**555**	**36**	**260**	**19**	**268**	**13**	**–33**	**–7**

Additions during the reporting period comprised particularly acquisitions of equity interests by Merck Ventures B.V., Netherlands as well as trade accounts receivable that are designated to be sold owing to a factoring agreement. Disposals during the reporting period related particularly to advance payments received in connection with trade accounts receivable under factoring agreements. The gains and losses from Level 3 assets recognized in other comprehensive income were reported in the consolidated statement of comprehensive income under the item “fair value adjustments”.

The changes in financial assets and liabilities for each of the individual classes of financial instruments allocated to Level 3 and measured at fair value were as follows in the period from January 1, 2020 to December 31, 2020:

2020		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	Other debt instruments	Contingent considerations	Derivatives without a hedging relationship	Equity instruments	Trade accounts receivable and other receivables	Contingent considerations	Derivatives without a hedging relationship
Net carrying amounts, Jan. 1, 2020	**483**	**26**	**258**	**–**	**190**	**24**	**–16**	**–**
Additions due to acquisitions/ divestments/conclusion of factoring agreements	94	19	–	8	51	25	–9	–
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+)/losses (–) recognized in profit or loss	–1	–	2	–		–	–1	–2
thereof: other operating result	–20	–1	–18	–		–	1	–2
thereof: attributable to assets/liabilities held as of the balance sheet date	–20	–1	–18	–		–	1	–2
thereof: financial income and expenses	19	2	20	–		–	–2	–
thereof: attributable to assets/liabilities held as of the balance sheet date	19	2	20	–		–	–2	–
Gains (+)/losses (–) recognized in other comprehensive income	22				22	–		
Currency translation difference	–1	–2	–	–	–	–	–	–
Disposals due to divestments/ payments received/payments made	–33	–3	–	–	–	–31	–	–
Transfers out of Level 3 into Level 1/Level 2	–16	–	–	–	–16	–	–	–
Other	–	–9	–	–	9	–	–	–
Net carrying amounts, Dec. 31, 2020	**547**	**33**	**260**	**8**	**255**	**19**	**–26**	**–2**

Related-party disclosures

Transactions were conducted with related parties as follows:

	Income		Expenses		Receivables		Liabilities	
€ million	**Jan.–June 2021**	Jan.–June 2020	**Jan.–June 2021**	Jan.–June 2020	**June 30, 2021**	Dec. 31, 2020	**June 30, 2021**	Dec. 31, 2020
E. Merck KG	0.7	0.6	0.5	0.5	6.7	0.1	1,261.6	1,373.7
E. Merck Beteiligungen KG	0.3	0.0	0.0	0.0	11.9	0.0	0.0	0.0
Emanuel-Merck-Vermögens-KG	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Joint venture	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Non-consolidated subsidiaries	6.7	0.0	0.2	0.3	4.1	3.4	4.1	5.2
Engel-Apotheke[1]	0.0	0.0	0.7	0.2	0.0	0.0	0.0	0.0

[1]The owner of the Engel-Apotheke, Darmstadt, is a member of the Supervisory Board of Merck KGaA.

As in the previous year, the liabilities of Group companies in respect of E. Merck KG primarily resulted from mutual profit transfers between Merck KGaA and E. Merck KG as well as the profit transfer by Merck & Cie, Switzerland, to E. Merck KG. As of June 30, 2021, they consisted entirely of financial liabilities (December 31, 2020: € 815.9 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.

Information on Executive Board and Supervisory Board compensation can be found in the Notes to the Consolidated Financial Statements of the Annual Report for 2020.

Subsequent events

On July 19, 2021, Merck received notice that it is being sued for damages by Heraeus Medical GmbH; Wehrheim, Germany. More information on this adjusting event can be found under “Significant events during the reporting period”.

Subsequent to the balance sheet date, no further events of special importance occurred that could have a material impact on the net assets, financial position or results of operations.

Darmstadt, July 30, 2021

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

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 30, 2021

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

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, 2021 to June 30, 2021 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 interim consolidated financial statements and on the interim group management report based on our review.

We performed our review of the condensed interim 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 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 30, 2021

KPMG AG
Wirtschaftsprüfungsgesellschaft

signature **Janz**
Wirtschaftsprüfer

signature **Jung**
Wirtschaftsprüfer

FINANCIAL CALENDAR 2021 · 2022

November
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2021
Quarterly Statement Q3

March
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2022
Annual Press Conference

April
22
2022
Annual General Meeting

May
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2022
Quarterly Statement Q1

Published on August 5, 2021
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