Half-Yearly Financial Report

2022

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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 2021 has been optimized for mobile devices and is available on the Web at **https://www.merckgroup.com/en/annualreport/2021/**.

MERCK – IN BRIEF

Merck Group

Key figures

€ million	**Q2 2022**	Q2 2021	Change	**Jan.–June 2022**	Jan.-June 2021	Change
Net sales	5,568	4,870	14.3%	10,766	9,501	13.3%
Operating result (EBIT)[1]	1,177	1,049	12.2%	2,350	2,092	12.3%
Margin (% of net sales)[1]	21.1%	21.5%		21.8%	22.0%	
EBITDA[2]	1,709	1,472	16.2%	3,312	2,939	12.7%
Margin (% of net sales)[1]	30.7%	30.2%		30.8%	30.9%	
EBITDA pre[1]	1,782	1,576	13.1%	3,411	3,087	10.5%
Margin (% of net sales)[1]	32.0%	32.4%		31.7%	32.5%	
Profit after tax	870	747	16.5%	1,754	1,495	17.3%
Earnings per share (€)	1.99	1.71	16.4%	4.02	3.43	17.2%
Earnings per share pre (€)[1]	2.64	2.24	17.9%	5.05	4.42	14.3%
Operating cash flow	852	888	–4.1%	1,692	2,104	–19.6%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

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. Our Life Science experts impact life and health with science. In Healthcare, we discover unique ways to treat the most challenging diseases such as multiple sclerosis and cancer. And with our Electronics business, we are the company behind the companies, advancing digital living.

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 MilliporeSigma in the Life Science business, as EMD Serono in the Healthcare business, and as EMD Electronics in the electronics business. We had 62,770 employees worldwide on June 30, 2022, compared with 58,408 employees on June 30, 2021.

This section of the present half-yearly report summarizes the highlights of the first half of 2022 at Merck including those in research and development. A detailed description of Merck and its business sectors can be found in our **Annual Report for 2021**.

Change of the statutory auditor for fiscal 2023

Based on the recommendation 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. On April 22, 2022, shareholders voted on the change of the statutory auditor for fiscal 2023. The proposal was accepted by the Annual General Meeting by 99.33% of votes representing 69.66% of the approximately 129.2 million shares issued.

Merck Group

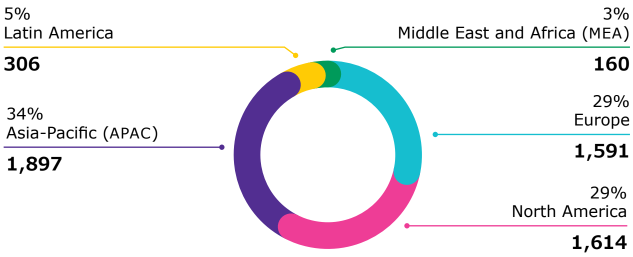
Net sales by business sector – Q2 2022

€ million/in % of net sales

Merck Group

Net sales by region – Q2 2022

€ million/in % of net sales



Life Science

We are a leading, global supplier of tools, research-grade chemicals and equipment for academic labs, biotech and biopharmaceutical manufacturers and the industrial sector. Together with our customers, our purpose is to impact life and health with science. With a strong focus on innovation, we are committed to delivering the products, services and digital platforms to create a sustainable future for generations to come.

Life Science Reorganization

In February 2022, we announced the reorganization of our Life Science business sector, with several organizational changes and a new operating model to support the long-term growth strategy of Life Science and to better serve the evolving needs of our global customers. As of April 1, existing Contract Development and Manufacturing Organization (CDMO) and Contract Testing services were consolidated into one global fully integrated Life Science Services organization for traditional and novel modalities, along with the respective sales and marketing, research and development, manufacturing, and supply chain operations. The CDMO service business covers traditional modalities, including monoclonal antibodies and high-potency active pharmaceutical ingredients as well as novel modalities, such as antibody drug conjugates and viral and gene therapies. The Process Solutions business unit will continue to focus on delivering our leading product offering for pharmaceutical development and manufacturing, including filtration devices, chromatography resins, single-use assemblies and systems, processing chemicals, and excipients.

As of April 1, the Research Solutions and Applied Solutions business units were combined into one organization renamed Science & Lab Solutions. This business unit serves the pharma and biotech, industrial and testing, academic and government, as well as diagnostics sectors, providing customers a more seamless experience and access to a broad portfolio including reagents, consumables, devices, instruments, software, and services for scientific discovery, in addition to lab water instruments, consumables and services, microbiology and biomonitoring products, test assays, analytical reagents, and flow cytometry kits and instruments. Functions such as Integrated Supply Chain and Operations, the Transformation Office, Strategy, Business Development & Sustainability and Quality & Regulatory as well as other enabling functions will remain unchanged.

Across our Life Science business sector, we collaborate with the global scientific community to deliver breakthrough innovations along with a broad and deep portfolio of more than 300,000 products. In the first half year, we continued to focus on innovating for our customers by launching more than 11,000 products across the Process Solutions, Life Science Services and the Science & Lab Solutions business units, including those launched through our "faucet program" for antibodies, reference materials, chemicals, and nanomaterials.

Merck Group

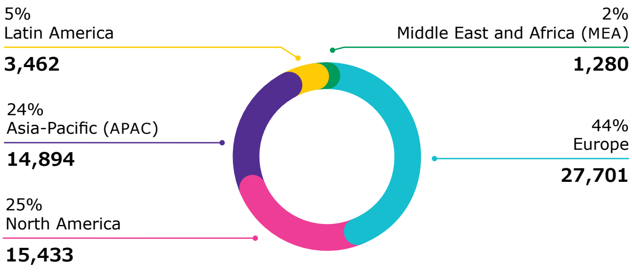
EBITDA pre[1] by business sector[2] – Q2 2022

€ million / in%

Merck Group

Employees by region as of June 30, 2022

Number / in%



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

[2] Not presented: Decline in Group EBITDA pre by € −120 million due to Corporate and Other.

Process Solutions

- In February, we announced the closing of the transaction to acquire Exelead Inc., a biopharmaceutical CDMO based in Indianapolis, Indiana, USA. Exelead specializes in PEGylated products and complex injectable formulations, including lipid nanoparticle- (LNP) based drug delivery technology, which plays a key role in mRNA vaccines and therapeutics for use in Covid-19 and many other indications. The company has experience in all development phases, from pre-clinical development to commercial contract manufacturing for LNP formulations, including fill and finish. In addition, we plan to invest more than € 500 million in Exelead's capabilities over the next ten years. Exelead will complement the more than 20 years of experience we have in producing lipids as well as our mRNA manufacturing capabilities acquired through AmpTec in 2020. This integrated offering will accelerate our ability to bring life-enhancing vaccines and treatments to patients faster by simplifying supply chain complexity and enhancing speed to market through an end-to-end portfolio.
- In April, we announced a € 100 million investment for our first Asia-Pacific Mobius® Single-Use Manufacturing Center in Wuxi, China. This investment supports the booming biotech innovation sector in China and is being realized in close collaboration with the Administrative Management Committee of Wuxi National High-Tech Industrial Development Zone to jointly cultivate and enhance the life science ecosystem in the Wuxi area and throughout China.

Life Science Services

- In June, we announced the opening of our newly expanded high-potent active pharmaceutical ingredients (HPAPIs) lab in Verona, near Madison, Wisconsin, USA. This new € 59 million, 70,000 square-foot facility doubles HPAPI production capacity. HPAPIs are important components of targeted cancer therapies, which along with antibody drug conjugates, are changing the landscape of cancer treatments. We have been developing multi-step, complex and highly potent compounds for more than 30 years and continue to be an industry leader in the development and manufacture of these components.

Science & Lab Solutions

- In the first half of 2022, we continued to expand our ZooMAb® recombinant monoclonal antibodies product portfolio and added new products to the ColorWheel® flow cytometry antibodies and dyes portfolio.
- In May, we announced the investment of more than € 440 million in two major Life Science projects over five years in Cork, Ireland. These expansions will significantly increase membrane manufacturing capacities and enable construction of a new filtration manufacturing facility. These critical projects support our strategy to invest in products and technologies across our portfolio that contribute to manufacturing novel therapies, vaccines and diagnostics. More than 370 additional jobs are expected to be created in Ireland by the end of 2027.

Healthcare

Patients are at the center of our work and with every advance, we contribute to creating, improving and prolonging lives. This single ambition drives everything we do. With the continued evolution of our pipeline and a clear commitment to delivering on our performance objectives, we strengthen our position as a global specialty innovator.

Oncology

- We have transformed the first-line standard of care in advanced bladder cancer with Bavencio® (avelumab) with more than 50 approvals around the world. On February 18, we announced the results of an exploratory analysis of Bavencio® from the Phase III JAVELIN Bladder 100 trial with 19 additional months of follow-up data from the initial primary analysis. This analysis reinforced the original results of the trial. At 38 months median follow-up, patients with locally advanced or metastatic urothelial carcinoma (UC) whose tumors had not progressed on platinum-based chemotherapy and who received first-line maintenance treatment with Bavencio® plus best supportive care (BSC) showed a consistent overall survival (OS) benefit, with a median OS of 23.8 months compared with patients who received BSC alone. The results were presented at the 2022 American Society of Clinical Oncology's (ASCO) annual Genitourinary Cancers Symposium from February 17-19, 2022.
- With Tepmetko® (tepotinib) for advanced lung cancer, we have brought the first MET inhibitor to market. On February 18, we announced that the European Commission approved once-daily oral Tepmetko® as monotherapy for the treatment of adult patients with advanced non-small cell lung cancer (NSCLC) harboring alterations leading to mesenchymal-epithelial transition factor gene exon 14 (METex14) skipping who require systemic therapy following prior treatment with immunotherapy and/or platinum-based chemotherapy. 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. Tepmetko® is now approved in multiple countries.
- On May 26, we announced that the latest research representing our innovative oncology portfolio was accepted for presentation at this year's ASCO annual meeting, which took place from June 3-7, 2022. More than 30 abstracts highlighting key data encompassing our broad oncology clinical portfolio were presented. The abstracts include new analyses of long-term data from the Phase III JAVELIN Bladder 100 study of Bavencio® as first-line maintenance treatment in advanced UC; data for Teptmetko® from the VISION trial, in METex14 skipping NSCLC and NSCLC with high-level MET amplification; and key investigator-sponsored studies exploring combinations with Erbitux® (cetuximab) in metastatic colorectal cancer; as well as data from our oncology pipeline.
- On June 3, we provided an update on the progress of our innovative oncology development pipeline. We have advanced the development of our orally administered ataxia telangiectasia and Rad3-related (ATR) inhibitor M1774, with the confirmation of a monotherapy dose for further evaluation in Phase Ib of the DDRiver Solid Tumors 301 study. The ongoing study is assessing M1774 as a single agent in patients whose tumors have specific DNA damage response (DDR) mutations (defined loss-of-function mutation in ARIDIA, ATRX and/or DAXX, and ATM), and in combination with the poly(ADP-ribose) polymerase (PARP) inhibitor niraparib. The development of M1774 will build on learnings from the exploration of the intravenous ATR inhibitor berzosertib, which has been studied in approximately 1,000 patients to date in multiple combinations, including chemotherapy, radiotherapy, immunotherapy, and PARP inhibitors across company- and investigator-sponsored studies. Following an interim analysis of the ongoing global Phase II DDRiver SCLC 250 trial of

berzosertib in combination with topotecan in patients with relapsed, platinum-resistant small cell lung cancer (SCLC), the decision was made to discontinue the study due to low probability of meeting the pre-defined objective of this trial. The safety profile for berzosertib plus topotecan was consistent with that observed in other clinical trials to date. SCLC remains a difficult-to-treat disease, with minimal advances in the past 20 years.

- The second Phase III clinical trial of xevinapant is expected to open for enrollment in summer 2022; XRay Vision (NCT05386550) is a randomized, double-blind, placebo-controlled study to evaluate the efficacy and safety of xevinapant versus placebo in combination with adjuvant, post-operative radiotherapy in patients with resected LA SCCHN who are at high risk for relapse and are ineligible for cisplatin.

Neurology and Immunology

- On January 10, we entered into an out-licensing agreement via our subsidiary Ares Trading S.A. for sprifermin with TrialSpark/High Line Bio, based in New York, USA. Sprifermin, a recombinant form of human fibroblast growth factor 18, is currently being investigated as a potential form of treatment for people living with osteoarthritis. As part of the agreement, we will receive an upfront payment as well as equity in TrialSpark/High Line Bio. Additionally, we are eligible for milestone payments related to the company’s timely delivery related to certain development and commercial milestones, as well as royalties on any potential future net sales. TrialSpark/High Line Bio will assume full responsibility for the research, development and potential commercialization of sprifermin.
- At the Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS), which took place from February 24-26, 2022 in West Palm Beach, Florida, USA, we presented new real-world data from the MSBase Registry demonstrating Mavenclad® (cladribine tablets) had lower annualized relapse rates and longer time to first relapse compared with other oral disease-modifying therapies such as fingolimod, dimethyl fumarate and teriflunomide for people living with relapsing multiple sclerosis (RMS). Additional clinical trial data showed that those treated with Mavenclad® had a lower rate of conversion to clinically definite multiple sclerosis (MS), defined by further relapse or disability progression, and lower risk of relapse than those not exposed to Mavenclad®.
- At the American Academy of Neurology (AAN) annual meeting, which was held from April 2-7, 2022, we presented 13 abstracts from our MS portfolio. Data that was presented included presentations on our investigational Bruton’s tyrosine kinase (BTK) inhibitor evobrutinib, including new 2.5-year efficacy and safety data in patients with RMS from a Phase II open-label extension study and a Phase II post-hoc analysis demonstrating that treatment with evobrutinib led to a reduction in slowly expanding lesions, which may be associated with chronic inflammation in the central nervous system. Additionally, retrospective real-world efficacy and safety data on Mavenclad® were presented, including relapse data compared to other oral disease modifying therapies as well as Covid-19 outcomes.
- In the second quarter, we decided to reopen recruitment in the Phase III evobrutinib study. In order to ensure the integrity of our study in the face of the Russia-Ukraine war, we decided to add extra patients outside these countries. We also amended the trial protocol to event-driven, which we believe would be the best approach in these circumstances.

Fertility

- According to updated data, more than five million babies have been born with the help of Gonal-f® to date.
- The Pergoveris® pen is the first product comprising both recombinant follicle-stimulating hormone (FSH) and recombinant luteinizing hormone (LH) in a ready-to-use liquid version. It thus provides a convenient treatment option for women with severe FSH and LH deficiency. Launches around the globe will continue in order to provide patients with access to this treatment. The Pergoveris® pen is currently available in 51 countries.
- In June we started a clinical study for a new innovative smart fertility patient hormone monitoring solution. This is a non-invasive device that allows hormone monitoring from the comfort of a patient's home while enabling clinicians to monitor hormone levels remotely as well as to support their clinical decisions. Through this device, we hope to improve both the patient experience and the efficiency of clinic workflows by increasing convenience and flexibility.

Cardiovascular, Metabolism and Endocrinology

- In the second quarter, our modified formulation of Euthyrox® (levothyroxine) for the treatment of hypothyroidism received regulatory approval in five additional countries, bringing the total number of countries in which it is approved to 88.
- Glucophage®, containing the active ingredient metformin, is approved in 69 countries for prediabetes when lifestyle intervention is not enough to control the condition, with new approvals in two countries in the second quarter of 2022. This is in addition to the more than 100 countries in which Glucophage® is approved for type 2 diabetes.
- Saizen® (somatropin) is our main endocrinology product and is indicated for the treatment of growth hormone deficiency in children and adults. As of June 30, 2022, 15,330 patients who use the Easypod® electromechanical injection device for treatment with Saizen®, were enrolled in Easypod® Connect software.
- We continued the rollout of Aluetta®, our pen for the injection of Saizen®, taking the total number of countries where it is currently available to 29.

Global Healthcare Operations

- We are striving to ensure the supply of our medicines to patients in any circumstances while always observing the highest standards of health and safety for our people and partners.
- Since the start of the Covid-19 pandemic more than two years 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. To this end, we are using 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.
- In the context of the war in Ukraine, we have taken a number of measures to continue to supply to the best of our ability patients who rely on our medicines in the countries impacted, while ensuring the strictest compliance with international sanctions. These measures include constantly monitoring and updating our demand plans, building safety stocks locally, accelerating the shipment of goods from our European sites to the countries impacted, and defining back-up air shipment routes in addition to truck transportation to ensure the highest flexibility at all times.

Electronics

Our primary focus is on the electronics market with our materials and solutions changing the way we generate, access, store, process, and display information. In addition, our highly specialized, application-driven Surface Solutions business makes life more colorful. Our business sector consists of three business units: Semiconductor Solutions, Display Solutions and Surface Solutions.

In 2021, we introduced our growth program Level Up and announced our plans to invest significantly more than € 3 billion in innovation and capacities up to the end of 2025. With the transition from the transformation to the growth phase, we aim to achieve a compounded annual organic growth rate (CAGR) of 3% to 6% for the period from 2021 to 2025.

Semiconductor Solutions

- Semiconductor Solutions is at the heart of Electronics as almost every electronic device uses one of our products. We are advancing virtually every aspect of digital living. Semiconductor Solutions consists of Delivery Systems & Services (DS&S) and Semiconductor Materials.
- 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. In the second quarter of 2022, our DS&S business continued to make progress in ramping up its manufacturing capacity in Kaohsiung, Taiwan, and Chandler, Arizona, USA. These new factories will supplement our ability to support customers' increasing demand and boost our overall global footprint of manufacturing facilities around the globe. Kaohsiung will begin operations by the end of 2022 and Chandler in the second quarter of 2023.
- The Semiconductor Materials business supplies products for every major production step in wafer processing, including doping, 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, Patterning, and Planarization Solutions.
- Our Thin Film Solutions business is actively developing new organosilanes (OS) and organometallics (OM) for conformal, high-performance atomic layer deposition (ALD) films. Throughout the second quarter of 2022, we continued to develop our low-k dielectric products and metal chemical vapor deposition (CVD) for middle-of-line and back-end-of-line applications utilizing CVD. Many new OS and OM products qualified at several customers and we are working to develop new materials for leading edge nodes in 5 nm, 3 nm and beyond. Newly engineered container delivery systems enable these materials for our customers. In the second quarter of 2022, our spin-on-dielectrics platform focused on developing new formulations for gap fill applications in high aspect ratio insulating features with improved dielectric characteristics, which are needed to enable next-generation V-NAND (vertical flash memory) and DRAM (dynamic random-access memory).
- In the first half of 2022 our etch gas technology program in our Specialty Gases business continued to develop new chemistries to enable more than 100-layer, single-stack etching for advanced memory devices such as V-NAND. We are also seeing good progress in our etch gas development work for new low-GWP (global warming potential) gases for etch applications. Our Patterning Solutions business continues to see strong engagement in the development of extreme ultraviolet (EUV) lithography materials. At the same time, we are also driving our R&D engagements to continue development in Directed Self Assembly (DSA), advanced hard mask materials, as well as underlayers for photoresists and related ancillaries to address shrink-related module challenges. Our Planarization business is driving new product development across advanced oxide and metal segments by leveraging the proximity of our R&D lab to our leading customers in Asia and the United States. We are also leveraging data analytics in product development and quality control to speed up time to market for our customers while providing more predictive in-use performance for our customers.

Display Solutions

- Our Display Solutions business unit includes Liquid Crystal Materials (LC), Organic Light-Emitting Diode Materials (OLED), Display Patterning Materials (DPM), Smart Antennas, and Liquid Crystal Glazing. With our rich expertise, broad portfolio, and strong global footprint, we continue to work very closely with the display industry to push the boundaries of possibility. As we head towards a much more digitalized post-pandemic world, displays will continue to play a key role in all aspects of our lives. Not only larger TVs and more smartphones but also emerging completely new devices such as augmented reality (AR) headsets, or quantum-dot (QD)-OLED TVs will revolutionize displays to create immersive experiences.
- The market for TV sets has always been driven by the quest to render images that are as lifelike as possible. The novel QD-OLED technology sets new standards in relation to color, brightness and contrast. This technology is made possible by innovative materials and processes also developed by Merck, among others. Our quantum-dot ink formulations are among the most efficient on the market. In the second quarter we continued to work on further improvements in terms of scalability and mass production.
- To meet the increasing demand for high-purity OLED materials in Asia, we completed our OLED manufacturing capacity expansion project in Korea in June 2022. We have invested around € 20 million to install sublimation equipment and OLED vacuum deposition units at our OLED Application Center (OAC) in Poseung, Korea. This investment is also expected to ease the supply chain disruptions caused by Covid-19 and build supply agility and resilience for our customers. By bringing production closer to customers, we are also demonstrating our commitment to a more sustainable future. We aim to reduce our product carbon footprint by choosing the shortest supply routes, expanding capacity for circular material flows and adopting the latest production technologies.
- Leading real estate investors are choosing eyrise® as a key building block to upgrade the sustainability ratings of their buildings. Swiss Prime Site Immobilien, one of the largest real estate investors in Switzerland, is currently installing eyrise® at all facades of its signature project in the center of Zurich for its tenant Google. The transparent dynamic liquid crystal glass partitions can be switched on demand to create private spaces in public and commercial venues. Our factory eyrise B.V. in the Netherlands is the only manufacturer of Dynamic Glazing Solutions in Europe, an important differentiator for our customers who prefer local supply chains. In June 2022, we performed a full Life Cycle Analysis, validated it externally and created one of the first cradle-to-grave environmental product declarations in this space, critically important for our future growth.
- In the first half of 2022 our smart antenna technology licriOn™ continued to leverage the microwave properties of liquid crystals to deliver flat and robust phased array antennas for broadband communication. As our expertise clearly lies on the materials side, we collaborate with antenna partners to design and commercialize antennas.

Surface Solutions

- The core markets for Surface Solutions are automotive coatings, cosmetics and, to a smaller extent, industrial applications. We are serving these markets with functional and decorative solutions. We provide our customers with solutions that help them to create innovative surfaces of all kinds. Our materials enable more beautiful, more resistant, and more effective product designs.
- Surface Solutions is successfully implementing its strategic transformation. After substantial investments in expanding our production capacities in 2021, we are now further investing in digitalizing and modernizing our effect pigment production plants around the globe. In the past two years Surface Solutions suffered from effects of the Covid-19 crisis. Despite the current challenging economic environment, the business is back on a successful organic growth track.
- In April, we successfully presented our broad portfolio of optical and functional effect pigments addressing actual market trends at the In-cosmetics fair in Paris, France, and showcased our laser marking solutions at the Laser World of Photonics in Munich, Germany. Following the successful launch of a pilot project for our e-commerce strategy in China in 2020, we expanded our e-commerce platform to Germany, Italy and the United Kingdom in the first half of 2022. The platform will further grow geographically and is an important milestone to broaden our sales channels.

Course of Business and Economic Position

Merck

Overview – Q2 2022

- All business sectors contribute to Group net sales increase of 14.3% to € 5,568 million
- Organic sales growth (6.6%) was supported by positive foreign exchange effects (7.2%) and by a minor acquisition-related sales increase (0.5%)
- Group EBITDA pre up 13.1% to € 1,782 million
- EBITDA pre margin slips to 32.0% (Q2 2021: 32.4%)
- Net financial debt amounts to € 10.2 billion on June 30, 2022 (December 31, 2021: € 8.8 billion).

Merck Group
Key figures

€ million	**Q2 2022**	Q2 2021	Change	**Jan.–June 2022**	Jan.-June 2021	Change
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Margin (% of net sales)[1]	32.0%	32.4%		31.7%	32.5%	
Profit after tax	870	747	16.5%	1,754	1,495	17.3%
Earnings per share (€)	1.99	1.71	16.4%	4.02	3.43	17.2%
Earnings per share pre (€)[1]	2.64	2.24	17.9%	5.05	4.42	14.3%
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Development of net sales and results of operations

In the second quarter of 2022, the Merck Group generated net sales of € 5,568 million (Q2 2021: € 4,870 million). This represents a year-on-year increase of € 698 million or 14.3%. Organic sales growth amounted to € 321 million or 6.6%. Positive foreign exchange effects, due in particular to the development of the U.S. dollar, the Chinese renminbi and the Taiwan dollar, boosted Group net sales by € 352 million or 7.2%. The portfolio-related sales increase of € 25 million (0.5%) resulted mainly from the acquisition of Exelead Inc., USA, which closed on February 22, 2022.

In the second quarter of 2022, Life Science sales increased to € 2,648 million, which was 19.0% more than in the year-earlier quarter (Q2 2021: € 2,225 million). In this context, organic growth amounted to 10.4% and was complemented by a positive foreign exchange effect of 7.4% as well as a sales increase of 1.1% stemming from the acquisition of Exelead Inc., USA. Accounting for a 47% (Q2 2021: 46%) share of Group sales, Life Science was the Group's largest business sector in terms of sales. The Healthcare business sector followed, accounting for 35% (Q2 2021: 37%) of Group net sales and delivering a 7.6% increase in sales to € 1,924 million (Q2 2021: € 1,788 million). Organic sales growth was 1.4% amid currency tailwinds of 6.2%. The 16.3% increase in net sales in the Electronics business sector to € 996 million (Q2 2021: € 857 million) reflects organic growth of 7.4% and a positive foreign exchange effect of 8.9%. The percentage contribution of Electronics to Group net sales amounted to 18% (Q2 2021: 17%).

Merck Group

Net sales by business sector

€ million	Q2 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/divestments	Total change	Q2 2021	Share
Life Science[2]	2,648	47%	10.4%	7.4%	1.1%	19.0%	2,225	46%
Healthcare	1,924	35%	1.4%	6.2%	–	7.6%	1,788	37%
Electronics[2]	996	18%	7.4%	8.9%	–	16.3%	857	17%
Merck Group	**5,568**	**100%**	**6.6%**	**7.2%**	**0.5%**	**14.3%**	**4,870**	**100%**

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

[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

In the second quarter of 2022, the regional sales development of the Merck Group was as follows:

Merck Group

Net sales by region

€ million	Q2 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/divestments	Total change	Q2 2021	Share
Europe	1,591	29%	12.2%	0.8%	0.4%	13.4%	1,403	29%
North America	1,614	29%	2.8%	13.2%	1.4%	17.4%	1,375	28%
Asia-Pacific (APAC)	1,897	34%	5.4%	7.0%	–	12.5%	1,687	35%
Latin America	306	5%	14.1%	13.3%	0.3%	27.7%	240	5%
Middle East and Africa (MEA)	160	3%	–8.9%	5.6%	–	–3.3%	166	3%
Merck Group	**5,568**	**100%**	**6.6%**	**7.2%**	**0.5%**	**14.3%**	**4,870**	**100%**

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

In the first six months of 2022, net sales of the Merck Group increased by € 1,265 million or 13.3% to € 10,766 million (January-June 2021: € 9,501 million). All three business sectors contributed to this positive development of Group sales. With double-digit organic sales growth of 10.1%, the Life Science business sector made the largest contribution to overall organic growth of 7.2% in the first half of 2022. The Electronics business sector followed with 6.3%. In addition, foreign exchange had a favorable effect of 5.8%. This was mainly attributable to the development of the U.S. dollar, the Chinese renminbi and the Taiwanese dollar.

Merck Group

Net sales by business sector

€ million	Jan.-June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2021	Share
Life Science[2]	5,093	47%	10.1%	6.1%	0.7%	16.9%	4,357	46%
Healthcare	3,719	35%	3.9%	4.7%	–	8.5%	3,427	36%
Electronics[2]	1,954	18%	6.3%	7.5%	–	13.8%	1,718	18%
Merck Group	**10,766**	**100%**	**7.2%**	**5.8%**	**0.3%**	**13.3%**	**9,501**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

In the first half of 2022, net sales by region developed as follows:

Merck Group

Net sales by region

€ million	Jan.-June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2021	Share
Europe	3,053	28%	11.5%	–	0.3%	11.8%	2,730	29%
North America	3,041	28%	3.7%	10.6%	0.8%	15.1%	2,643	28%
Asia-Pacific (APAC)	3,782	35%	6.1%	6.4%	–	12.4%	3,363	35%
Latin America	582	6%	13.2%	9.5%	0.2%	22.9%	473	5%
Middle East and Africa (MEA)	309	3%	0.6%	5.3%	–	5.9%	292	3%
Merck Group	**10,766**	**100%**	**7.2%**	**5.8%**	**0.3%**	**13.3%**	**9,501**	**100%**

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

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

Merck Group

Consolidated Income Statement[1]

€ million	Q2 2022	Q2 2021	Change	Jan.–June 2022	Jan.-June 2021	Change
Net sales	**5,568**	**4,870**	**14.3%**	**10,766**	**9,501**	**13.3%**
Cost of sales	–2,109	–1,813	16.3%	–4,096	–3,534	15.9%
Gross profit	**3,460**	**3,057**	**13.2%**	**6,671**	**5,967**	**11.8%**
Marketing and selling expenses	–1,194	–1,035	15.3%	–2,281	–2,043	11.7%
Administration expenses[1]	–331	–301	9.8%	–618	–572	8.0%
Research and development costs[1]	–600	–591	1.4%	–1,185	–1,167	1.5%
Impairment losses and reversals of impairment losses on financial assets (net)	–9	–	>100.0%	–14	–6	>100.0%
Other operating expenses and income[1]	–150	–80	87.6%	–223	–87	>100.0%
Operating result (EBIT)[2]	**1,177**	**1,049**	**12.2%**	**2,350**	**2,092**	**12.3%**
Financial result	–55	–95	–41.9%	–89	–154	–41.9%
Profit before income tax	**1,122**	**955**	**17.5%**	**2,261**	**1,939**	**16.6%**
Income tax	–252	–208	21.1%	–507	–444	14.2%
Profit after tax	**870**	**747**	**16.5%**	**1,754**	**1,495**	**17.3%**
Non-controlling interests	–3	–2	95.2%	–6	–3	>100.0%
Net income	**867**	**745**	**16.4%**	**1,748**	**1,492**	**17.1%**

[1] Adjustment of prior-year figures due to restructuring within Corporate and Other.
[2] Not defined by International Financial Reporting Standards (IFRS).

In the second quarter of 2022, the positive development of Group net sales led to an 13.2% increase in gross profit to € 3,460 million (Q2 2021: € 3,057 million). The resulting gross margin, i.e. gross profit as a percentage of sales, was 62.1% (Q2 2021: 62.8%).

In comparison with the year-earlier quarter, Group research and development costs rose by 1.4% to € 600 million (Q2 2021: € 591 million). In the second quarter of 2022, the Group research spending ratio (research and development costs as a percentage of net sales) was 10.8% (Q2 2021: 12.1%). Accounting for a 70% (Q2 2021: 73%) share[1] of research and development expenses of all business sectors, Healthcare is the most research-intensive business sector of Merck.

In the second quarter of 2022, other operating expenses and income (net) saw an increase in net operating expenses to € 150 million compared with the year-earlier quarter (Q2 2021: € 80 million). This was due to higher other operating expenses, which were significantly impacted by the impairment loss recognized on the intangible asset attributable to the rights to the drug candidate berzosertib in the Healthcare business sector (further information can be found under “Significant events during the reporting period”). In addition, other operating income declined, particularly as a result of lower upfront payments in Healthcare (see explanations under “Healthcare”).

The 12.2% increase in the operating result (EBIT) in the second quarter of 2022 to € 1,177 million (Q2 2021: € 1,049 million) was driven mainly by the positive development of gross profit.

The financial result of the Merck Group improved by 41.9% to € –55 million in the second quarter of 2022 (Q2 2021: € –95 million). This was primarily attributable to the positive effect from the time value measurement of long-term variable compensation programs (Merck Long-Term Incentive Plan) as well as positive developments with respect to the interest and currency result.

Income tax expenses of € 252 million (Q2 2021: € 208 million) led to an effective tax rate of 22.4% (Q2 2021: 21.8%).

Net income, i.e. profit after tax attributable to Merck KGaA shareholders, increased by 16.4% to € 867 million (Q2 2021: € 745 million), yielding earnings per share of € 1.99 in the second quarter of 2022 (Q2 2021: € 1.71).

[1] Not included: Research and development costs of € 28 million allocated to Corporate and Other.

The following table presents the composition of EBITDA pre in the second quarter of 2022 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 2022			Q2 2021			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**5,568**	**–**	**5,568**	**4,870**	**–**	**4,870**	**14.3%**
Cost of sales	–2,109	8	–2,101	–1,813	7	–1,805	16.4%
Gross profit	**3,460**	**8**	**3,468**	**3,057**	**7**	**3,065**	**13.1%**
Marketing and selling expenses	–1,194	14	–1,180	–1,035	3	–1,033	14.2%
Administration expenses[2]	–331	30	–301	–301	20	–281	7.0%
Research and development costs[2]	–600	6	–593	–591	1	–590	0.5%
Impairment losses and reversals of impairment losses on financial assets (net)	–9	–	–9	–	–	–	>100.0%
Other operating expenses and income[2]	–150	105	–46	–80	81	1	>100.0%
Operating result (EBIT)[1]	**1,177**			**1,049**			
Depreciation/amortization/impairment losses/reversals of impairment losses	532	–90	442	422	–8	414	6.7%
EBITDA[3]	**1,709**			**1,472**			
Restructuring expenses	38	–38	–	12	–12	–	
Integration expenses/IT expenses	24	–24	–	18	–18	–	
Gains (–)/losses (+) on the divestment of businesses	–22	22	–	88	–88	–	
Acquisition-related adjustments	9	–9	–	–17	17	–	
Other adjustments	24	–24	–	4	–4	–	
EBITDA pre[1]	**1,782**	**–**	**1,782**	**1,576**	**–**	**1,576**	**13.1%**
of which: organic growth[1]							3.2%
of which: exchange rate effects							9.5%
of which: acquisitions/divestments							0.3%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Adjustment of prior-year figures due to restructuring within Corporate and Other.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

EBITDA pre, the most important financial indicator used to steer operating business, soared by € 206 million or 13.1% to € 1,782 million in the second quarter of 2022 (Q2 2021: € 1,576 million). Organic earnings growth was 3.2%, complemented by a positive foreign exchange effect of 9.5%. Relative to net sales, the EBITDA pre margin was 32.0% in the second quarter of 2022 (Q2 2021: 32.4%). Earnings per share pre (earnings per share after net of tax effect of adjustments and amortization of purchased intangible assets) improved by 17.9% to € 2.64 (Q2 2021: € 2.24).

The following table presents the composition of EBITDA pre for the first half of 2022 in comparison with the year-earlier period. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs:

Merck Group

Reconciliation EBITDA pre[1]

	Jan.–June 2022			Jan.–June 2021			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**10,766**	**–**	**10,766**	**9,501**	**–**	**9,501**	**13.3%**
Cost of sales	–4,096	9	–4,086	–3,534	12	–3,522	16.0%
Gross profit	**6,671**	**9**	**6,680**	**5,967**	**12**	**5,979**	**11.7%**
Marketing and selling expenses	–2,281	15	–2,266	–2,043	9	–2,034	11.4%
Administration expenses[2]	–618	49	–568	–572	41	–531	7.0%
Research and development costs[2]	–1,185	7	–1,178	–1,167	3	–1,165	1.1%
Impairment losses and reversals of impairment losses on financial assets (net)	–14	–	–14	–6	–	–6	>100.0%
Other operating expenses and income[2]	–223	110	–113	–87	95	8	>100.0%
Operating result (EBIT)[1]	**2,350**			**2,092**			
Depreciation/amortization/impairment losses/reversals of impairment losses	962	–93	869	846	–11	835	4.1%
EBITDA[3]	**3,312**			**2,939**			
Restructuring expenses	46	–46	–	39	–39	–	
Integration expenses/IT expenses	44	–44	–	37	–37	–	
Gains (–)/losses (+) on the divestment of businesses	–32	32	–	82	–82	–	
Acquisition-related adjustments	10	–10	–	–18	18	–	
Other adjustments	30	–30	–	8	–8	–	
EBITDA pre[1]	**3,411**	**–**	**3,411**	**3,087**	**–**	**3,087**	**10.5%**
of which: organic growth[1]							2.4%
of which: exchange rate effects							8.0%
of which: acquisitions/divestments							0.1%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Adjustment of prior-year figures due to restructuring within Corporate and Other.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

In the first six months of 2022, EBITDA pre of the Merck Group rose by 10.5% to € 3,411 million (January-June 2021: € 3,087 million). Organic growth amounted to 2.4% amid currency tailwinds of 8.0%. In the first half of 2022, earnings per share pre increased by 14.3% to € 5.05 (January-June 2021: € 4.42).

Net assets and financial position

Merck Group

Balance sheet structure

	June 30, 2022		December 31, 2021		Change	
	€ million	in %	€ million	in %	€ million	in %
Non-current assets	**36,301**	**74.5%**	**34,380**	**75.8%**	**1,921**	**5.6%**
thereof:						
Goodwill	18,573		17,004		1,569	
Other intangible assets	7,862		7,612		249	
Property, plant and equipment	7,573		7,217		356	
Other non-current assets	2,293		2,546		–254	
Current assets	**12,416**	**25.5%**	**10,982**	**24.2%**	**1,434**	**13.1%**
thereof:						
Inventories	4,474		3,900		573	
Trade and other current receivables	4,414		3,646		768	
Other current financial assets	133		174		–41	
Other current assets	1,816		1,362		453	
Cash and cash equivalents	1,580		1,899		–320	
Total assets	**48,717**	**100.0%**	**45,362**	**100.0%**	**3,355**	**7.4%**
Equity	**26,029**	**53.4%**	**21,416**	**47.2%**	**4,613**	**21.5%**
Non-current liabilities	**12,971**	**26.6%**	**13,515**	**29.8%**	**–544**	**–4.0%**
thereof:						
Non-current provisions for employee benefits	1,666		3,402		–1,736	
Other non-current provisions	265		269		–4	
Non-current financial debt	9,385		8,270		1,116	
Other non-current liabilities	1,654		1,574		80	
Current liabilities	**9,718**	**19.9%**	**10,432**	**23.0%**	**–714**	**–6.8%**
thereof:						
Current provisions	523		601		–78	
Current financial debt	2,418		2,531		–114	
Trade and other current payables/refund liabilities	3,428		3,219		209	
Other current liabilities	3,348		4,081		–732	
Total equity and liabilities	**48,717**	**100.0%**	**45,362**	**100.0%**	**3,355**	**7.4%**

In the first six months of 2022, total assets of the Merck Group rose by 7.4% to € 48,717 million (December 31, 2021: € 45,362 million). The increase was attributable to both the impact of successful operating business performance as well as to exchange rate changes.

Equity showed a double-digit increase in the first half of 2022, rising by 21.5% to € 26,029 million as of June 30, 2022 (December 31, 2021: € 21,416 million). Consequently, the equity ratio grew to 53.4% (December 31, 2021: 47.2%). The change in equity was mainly driven by a positive currency translation difference as well as adjustments of pension provisions due to the increase in the discount factors. 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, 2022	Dec. 31, 2021	Change	
	€ million	€ million	€ million	in %
Bonds and commercial paper	9,607	9,320	287	3.1%
Bank loans	193	36	158	>100.0%
Liabilities to related parties	1,466	896	570	63.6%
Loans from third parties and other financial liabilities	57	56	2	3.3%
Liabilities from derivatives (financial transactions)	19	35	–15	–44.3%
Lease liabilities	460	459	1	0.2%
Financial debt	**11,803**	**10,801**	**1,002**	**9.3%**
less:				
Cash and cash equivalents	1,580	1,899	–320	–16.8%
Current financial assets[2]	58	149	–91	–60.8%
Net financial debt[1]	**10,165**	**8,753**	**1,412**	**16.1%**

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

Merck Group

Reconciliation of net financial debt[1]

€ million	2022	2021
January 1	**8,753**	**10,758**
Operating Cash Flow	–1,692	–2,104
Payments for investments in intangible assets[2]	120	69
Payments from the disposal of intangible assets[2]	–25	–30
Payments for investments in property, plant and equipment[2]	677	569
Payments from the disposal of property, plant and equipment[2]	–10	–4
Acquisitions[2]	695	–
Payments from other divestments[2]	–4	–1
Dividend payments/profit withdrawals[2]	966	756
Currency translation difference	124	74
Other	561	55
June 30	**10,165**	**10,141**

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

“Other” includes payments for the acquisition of non-financial assets amounting to € 500 million (January-June 2021: € 0 million).

As one of the three key performance indicators alongside net sales and EBITDA pre, operating cash flow developed as follows:

Merck Group

Operating cash flow

€ million	**Q2 2022**	Q2 2021	Change	**Jan.–June 2022**	Jan.-June 2021	Change
EBITDA pre[1]	**1,782**	**1,576**	13.1%	**3,411**	**3,087**	10.5%
Adjustments[1]	–73	–105	–30.5%	–98	–148	–33.6%
Financial result[2]	–55	–95	–41.9%	–89	–154	–41.9%
Income tax[2]	–252	–208	21.1%	–507	–444	14.2%
Changes in working capital[1]	–325	–168	93.4%	–647	–256	>100.0%
of which: changes in inventories[3]	–201	–117	72.0%	–387	–225	72.3%
of which: changes in trade accounts receivable[3]	–194	–65	>100.0%	–537	–379	41.5%
of which: changes in trade accounts payable/refund liabilities[3]	70	14	>100.0%	277	348	–20.4%
Changes in provisions[3]	–174	88	>100.0%	–152	55	>100.0%
Changes in other assets and liabilities[3]	–51	–217	–76.2%	–200	–56	>100.0%
Neutralization of gains/losses on disposals of fixed assets and other disposals[3]	–12	–18	–30.9%	–39	–23	66.9%
Other non-cash income and expenses[3]	12	33	–63.0%	15	45	–66.5%
Operating cash flow	**852**	**888**	**–4.1%**	**1,692**	**2,104**	**–19.6%**

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

Life Science

Life Science

Key figures

€ million	**Q2 2022**	Q2 2021[2]	Change	**Jan.–June 2022**	Jan.-June 2021[2]	Change
Net sales	2,648	2,225	19.0%	5,093	4,357	16.9%
Operating result (EBIT)[1]	765	644	18.9%	1,489	1,237	20.3%
Margin (% of net sales)[1]	28.9%	28.9%		29.2%	28.4%	
EBITDA[3]	975	835	16.8%	1,897	1,615	17.5%
Margin (% of net sales)[1]	36.8%	37.5%		37.2%	37.1%	
EBITDA pre[1]	1,006	829	21.3%	1,933	1,623	19.1%
Margin (% of net sales)[1]	38.0%	37.3%		37.9%	37.2%	

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Development of net sales and results of operations[1]

In the second quarter of 2022, Life Science generated organic sales growth of 10.4%. Including a favorable foreign exchange effect of 7.4% and a portfolio effect of 1.1%, net sales of the business sector grew by 19.0% over the year-earlier period. All three business units contributed to organic growth, with the largest contribution coming from Process Solutions followed by Science & Lab Solutions and Life Science Services. Overall, Life Science net sales increased to € 2,648 million (Q2 2021: € 2,225 million).

Life Science

Net sales by business unit

€ million	**Q2 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Q2 2021[2]	Share
Science & Lab Solutions	1,233	47%	6.4%	7.0%	–	13.5%	1,086	49%
Process Solutions	1,149	43%	12.4%	7.2%	–	19.5%	962	43%
Life Science Services	266	10%	24.6%	10.8%	14.2%	49.5%	178	8%
Life Science	**2,648**	**100%**	**10.4%**	**7.4%**	**1.1%**	**19.0%**	**2,225**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted owing to the reorganization of the Life Science business sector as well as to product reallocations between the Life Science and Electronics business sectors.

The Science & Lab Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology and academic research laboratories and researchers as well as scientific and industrial laboratories, delivered organic sales growth of 6.4% in the second quarter of 2022. This was mainly driven by growth in the core business amid a decline in pandemic-related demand. Including a favorable foreign exchange effect of 7.0%, net sales amounted to € 1,233 million (Q2 2021: € 1,086 million). Science & Lab Solutions thus accounted for 47% of Life Science net sales. Organic sales growth was driven especially by North America.

[1] The development of net sales and the results of operations reflect the new organizational structure introduced on April 1, 2022. More information on the reorganization can be found under “Developments within the Group and R&D”.

The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, generated organic sales growth of 12.4%. This was primarily attributable to strong demand in the core business amid a decline in pandemic-related demand. Including a favorable foreign exchange effect of 7.2%, net sales increased to € 1,149 million in the second quarter of 2022 (Q2 2021: € 962 million). The percentage contribution of the Process Solutions business unit to Life Science net sales remained constant at 43%. In regional terms, all regions generated organic sales growth within Process Solutions except for Asia-Pacific, which saw a slight decline due to the pandemic-related lockdown in China.

The Life Science Services business unit, which offers fully integrated Contract Development and Manufacturing Organization (CDMO) and Contract Testing services, accounted for a 10% share of Life Science net sales. Life Science Services delivered organic sales growth of 24.6% in the second quarter of 2022, driven by all businesses. Including a favorable foreign exchange effect of 10.8% as well as a positive portfolio effect of 14.2% from the acquisition of Exelead Inc., USA, net sales totaled € 266 million (Q2 2021: € 178 million). Geographically, Life Science Services generated organic sales growth in all regions with the strongest contribution coming from North America.

Net sales of the business sector by region developed in the second quarter of 2022 as follows:

Life Science

Net sales by region

€ million	**Q2 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Q2 2021[2]	Share
Europe	903	34%	14.5%	1.4%	0.7%	16.6%	775	35%
North America	1,016	38%	12.2%	14.4%	2.4%	29.0%	788	35%
Asia-Pacific (APAC)	608	23%	1.5%	5.3%	–	6.8%	570	26%
Latin America	91	4%	16.0%	14.4%	1.0%	31.4%	69	3%
Middle East and Africa (MEA)	29	1%	20.0%	3.1%	–	23.0%	24	1%
Life Science	**2,648**	**100%**	**10.4%**	**7.4%**	**1.1%**	**19.0%**	**2,225**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between Life Science and Electronics business sectors.

In the first half of 2022, Life Science sales recorded organic sales growth of 10.1% with a favorable foreign exchange effect of 6.1% and a portfolio effect of 0.7%, resulting in net sales growth of 16.9% over the year-earlier period. All three business units contributed to organic growth, with the largest contribution coming from Process Solutions followed by Science & Lab Solutions and Life Science Services. Taking these developments into account, Life Science net sales increased overall to € 5,093 million (January-June 2021: € 4,357 million).

Life Science

Net sales by business unit

€ million	**Jan.–June 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Jan.–June 2021[2]	Share
Science & Lab Solutions	2,432	48%	6.5%	5.7%	–	12.2%	2,167	50%
Process Solutions	2,200	43%	11.6%	6.1%	–	17.7%	1,869	43%
Life Science Services	462	9%	25.6%	8.9%	9.4%	43.9%	321	7%
Life Science	**5,093**	**100%**	**10.1%**	**6.1%**	**0.7%**	**16.9%**	**4,357**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted owing to the reorganization of the Life Science business sector as well as to product reallocations between the Life Science and Electronics business sectors.

In the first half of 2022, net sales by region developed as follows:

Life Science

Net sales by region

€ million	Jan.–June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2021[2]	Share
Europe	1,702	33%	12.2%	1.3%	0.6%	14.1%	1,492	34%
North America	1,917	38%	10.9%	11.3%	1.3%	23.6%	1,551	36%
Asia-Pacific (APAC)	1,251	25%	5.6%	5.0%	–	10.6%	1,131	26%
Latin America	171	3%	14.5%	10.4%	0.6%	25.4%	136	3%
Middle East and Africa (MEA)	53	1%	12.6%	3.0%	–	15.6%	46	1%
Life Science	**5,093**	**100%**	**10.1%**	**6.1%**	**0.7%**	**16.9%**	**4,357**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between Life Science and Electronics business sectors.

The following table presents the composition of EBITDA pre for the second quarter of 2022 in comparison with the year-earlier quarter. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Life Science

Reconciliation EBITDA pre[1]

	Q2 2022			Q2 2021[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**2,648**	**–**	**2,648**	**2,225**	**–**	**2,225**	**19.0%**
Cost of sales	–1,052	3	–1,049	–887	–	–887	18.3%
Gross profit	**1,595**	**3**	**1,598**	**1,338**	**–**	**1,339**	**19.4%**
Marketing and selling expenses	–609	11	–598	–505	1	–505	18.4%
Administration expenses	–103	9	–94	–92	8	–84	11.3%
Research and development costs	–99	–	–98	–87	–	–87	13.2%
Impairment losses and reversals of impairment losses on financial assets (net)	–8	–	–8	–1	–	–1	>100.0%
Other operating expenses and income	–12	7	–5	–8	–15	–23	–77.2%
Operating result (EBIT)[1]	**765**			**644**			
Depreciation/amortization/impairment losses/reversals of impairment losses	210	–	210	191	–	191	9.8%
EBITDA[3]	**975**			**835**			
Restructuring expenses	13	–13	–	2	–2	–	
Integration expenses/IT expenses	10	–10	–	8	–8	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	7	–7	–	–17	17	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,006**	**–**	**1,006**	**829**	**–**	**829**	**21.3%**
of which: organic growth[1]							14.5%
of which: exchange rate effects							6.2%
of which: acquisitions/divestments							0.6%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Adjusted gross profit rose by 19.4% to € 1,598 million in the second quarter of 2022 (Q2 2021: € 1,339 million). The increase was mainly attributable to strong sales growth in the Process Solutions business unit followed by Science & Lab Solutions and Life Science Services. Marketing and selling expenses grew by 18.4% to € 598 million (Q2 2021: € 505 million) primarily due to increased logistic costs and personnel expenses. Administration expenses rose by 11.3% to € 94 million (Q2 2021: € 84 million) owing to additional expenses to support our organic transformation. Research and development costs increased by 13.2% to € 98 million (Q2 2021: € 87 million), driven mainly by investments in our core growth areas. In addition to organic developments, unfavorable foreign exchange effects impacted the development of costs in comparison with the year-earlier quarter. After eliminating adjustments, amortization and depreciation, EBITDA pre rose by 21.3% to € 1,006 million (Q2 2021: € 829 million). Organic growth of 14.5% in the second quarter of 2022 was supported by positive exchange rate effects of 6.2%. The EBITDA pre margin, i.e. EBITDA pre as percentage of net sales, improved in the second quarter of 2022 to 38.0% (Q2 2021: 37.3 %).

The following table presents the composition of EBITDA pre for the first half of 2022 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 2022			Jan.–June 2021[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**5,093**	**–**	**5,093**	**4,357**	**–**	**4,357**	**16.9%**
Cost of sales	–2,017	3	–2,014	–1,736	1	–1,735	16.1%
Gross profit	**3,076**	**3**	**3,079**	**2,620**	**1**	**2,621**	**17.5%**
Marketing and selling expenses	–1,161	11	–1,149	–1,006	1	–1,005	14.3%
Administration expenses	–194	16	–178	–174	15	–158	12.4%
Research and development costs	–187	–	–186	–162	–	–162	15.1%
Impairment losses and reversals of impairment losses on financial assets (net)	–9	–	–9	–7	–	–7	42.9%
Other operating expenses and income	–36	6	–30	–34	–9	–43	–31.3%
Operating result (EBIT)[1]	**1,489**			**1,237**			
Depreciation/amortization/impairment losses/reversals of impairment losses	408	–1	407	377	–	377	7.9%
EBITDA[3]	**1,897**			**1,615**			
Restructuring expenses	10	–10	–	10	–10	–	
Integration expenses/IT expenses	18	–18	–	16	–16	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	8	–8	–	–18	18	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,933**	**–**	**1,933**	**1,623**	**–**	**1,623**	**19.1%**
of which: organic growth[1]							13.1%
of which: exchange rate effects							5.8%
of which: acquisitions/divestments							0.1%

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

In the first half of 2022, after the elimination of adjustments, gross profit grew by 17.5% to € 3,079 million (January-June 2021: € 2,621 million). The increase was mainly attributable to strong sales growth in the Process Solutions business unit followed by Science & Lab Solutions and Life Science Services. Marketing and selling expenses rose by 14.3% to € 1,149 million (January-June 2021: € 1,005 million), primarily owing to increased logistic costs and personnel expenses. Administration expenses increased by 12.4% to € 178 million (January-June 2021: € 158 million) due to additional expenses to support our organic transformation. Research and development costs rose by 15.1% to € 186 million (January-June 2021: € 162 million), driven mainly by our core growth areas. In comparison with the year-earlier period, in addition to organic developments, unfavorable foreign exchange effects impacted the development of costs in the first six months of 2022. EBITDA pre grew by 19.1% to € 1,933 million (January-June 2021: € 1,623 million). Organically, EBITDA pre increased by 13.1% in the first half of 2022. Organic growth was supported by positive exchange rate effects of 5.8%. In the first half of 2022, the EBITDA pre margin improved to 37.9 % (January-June 2021: 37.2%).

Healthcare

Healthcare

Key figures

€ million	**Q2 2022**	Q2 2021	Change	**Jan.–June 2022**	Jan.-June 2021	Change
Net sales	1,924	1,788	7.6%	3,719	3,427	8.5%
Operating result (EBIT)[1]	439	501	–12.4%	893	945	–5.6%
Margin (% of net sales)[1]	22.8%	28.0%		24.0%	27.6%	
EBITDA[2]	603	572	5.3%	1,128	1,096	3.0%
Margin (% of net sales)[1]	31.3%	32.0%		30.3%	32.0%	
EBITDA pre[1]	604	581	3.9%	1,133	1,114	1.7%
Margin (% of net sales)[1]	31.4%	32.5%		30.5%	32.5%	

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Development of net sales and results of operations

In the second quarter of 2022, the Healthcare business sector generated organic sales growth of 1.4% over the year-earlier quarter. Including positive foreign exchange effects of 6.2%, net sales amounted to € 1,924 million (Q2 2021: € 1,788 million). The positive foreign exchange effects were driven in particular by the increase in the value of the U.S. dollar, the Chinese renminbi, the Russian ruble, and individual Latin American currencies.

Sales of the key product lines and products developed in the second quarter of 2022 as follows:

Healthcare

Development of net sales by key product lines and products

€ million	**Q2 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Total change**	Q2 2021	Share
Oncology	**415**	**22%**	**8.1%**	**4.3%**	**12.4%**	**370**	**21%**
thereof: Erbitux®	258	13%	–9.0%	3.2%	–5.8%	273	15%
thereof: Bavencio®	146	8%	60.7%	7.6%	68.3%	87	5%
Neurology & Immunology	**429**	**22%**	**–1.2%**	**7.3%**	**6.1%**	**405**	**23%**
thereof: Rebif®	217	11%	–18.9%	6.7%	–12.2%	247	14%
thereof: Mavenclad®	212	11%	26.6%	8.2%	34.8%	157	9%
Fertility	**351**	**18%**	**–2.7%**	**5.0%**	**2.3%**	**343**	**19%**
thereof: Gonal-f®	198	10%	–5.0%	4.2%	–0.8%	200	11%
Cardiovascular, Metabolism and Endocrinology	**691**	**36%**	**2.7%**	**7.3%**	**10.0%**	**628**	**35%**
thereof: Glucophage®	228	12%	–2.1%	8.9%	6.8%	213	12%
thereof: Concor®	147	8%	8.1%	7.8%	16.0%	127	7%
thereof: Euthyrox®	139	7%	17.5%	6.7%	24.1%	112	6%
thereof: Saizen®	68	4%	0.3%	2.1%	2.4%	66	4%
Other	**38**	**2%**				**42**	**2%**
Healthcare	**1,924**	**100%**	**1.4%**	**6.2%**	**7.6%**	**1,788**	**100%**

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

The oncology drug Erbitux® saw an organic sales decline of −9.0% in comparison with the year-earlier quarter. Including positive foreign exchange effects of 3.2%, net sales decreased by a total of −5.8% to € 258 million in the second quarter of 2022 (Q2 2021: € 273 million). The year-earlier quarter reflected a temporary collaboration with Eli Lilly and Company, USA, which led to sales of € 49 million in North America. All other regions saw a favorable development in the second quarter of 2022. Sales in Europe grew organically by 5.6% to € 112 million (Q2 2021: € 105 million). In Asia-Pacific, sales rose organically by 14.8% to € 108 million (Q2 2021: € 89 million).

Thanks to strong organic growth of 60.7% and positive foreign exchange effects of 7.6%, sales of the oncology drug Bavencio® rose to € 146 million (Q2 2021: € 87 million). The organic growth of Bavencio® was driven by all regions, especially thanks to the further gain of market shares in connection with first-line maintenance therapy in patients with locally advanced or metastatic urothelial carcinoma (UC), particularly in Europe and Japan.

Mavenclad®, for the oral short-course treatment of highly active relapsing multiple sclerosis (MS), generated organic sales growth of 26.6% in the second quarter of 2022. Supported by positive foreign exchange effects of 8.2%, net sales increased to a total of € 212 million (Q2 2021: € 157 million). Growth in the second quarter of 2022 was driven by higher demand in all regions, especially in Europe and the United States.

Healthcare

Product sales and organic growth[1] of Erbitux®, Glucophage® und Rebif® by region – Q2 2022

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Erbitux®	€ million	258	112	–	108	21	16
	Organic growth[1]	−9.0%	5.6%	>100.0%	14.8%	27.2%	9.5%
	Share	100%	44%	–	42%	8%	6%
Glucophage®	€ million	228	31	–	136	43	18
	Organic growth[1]	−2.1%	−5.5%	–	5.0%	13.0%	−42.9%
	Share	100%	13%	–	60%	19%	8%
Rebif®	€ million	217	61	137	2	9	8
	Organic growth[1]	−18.9%	−10.8%	−20.2%	−12.3%	−19.1%	−47.5%
	Share	100%	28%	63%	1%	4%	4%

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

The medicine Rebif®, which is used to treat relapsing forms of multiple sclerosis, saw an organic sales decline of −18.9%. Including currency tailwinds of 6.7%, net sales decreased to € 217 million (Q2 2021: € 247 million). In North America, the largest sales market for Rebif®, sales declined organically by −20.2% to a total of € 137 million (Q2 2021: € 151 million). This was mainly attributable to the continued decline of the interferon market as well as competition from oral dosage forms and high-efficacy MS therapies. In Europe, sales declined organically by −10.8% in comparison with the year-earlier quarter to € 61 million (Q2 2021: € 70 million), also corresponding to the overriding trend in the interferon market.

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 sales growth of 2.7%. Including positive foreign exchange effects of 7.3%, net sales of the franchise amounted to € 691 million (Q2 2021: € 628 million). The strongest driver of the organic sales increase was the medicine Euthyrox® for the treatment of hypothyroidism. Following a weaker year-earlier quarter due to the volume-based procurement regulation that was rolled out in China and has since been in effect, sales of this product grew organically by 17.5% in the second quarter of 2022 to € 139 million (Q2 2021: € 112 million). Sales of the betablocker Concor® grew organically by 8.1% and amounted to € 147 million (Q2 2021: € 127 million), while net sales of the diabetes medicine Glucophage® saw a slight organic decline of −2.1% to € 228 million (Q2 2021: € 213 million).

In comparison with a strong year-earlier quarter due to pandemic-related rebound effects as well as owing to renewed regional pandemic-related lockdowns in China in the second quarter of 2022, sales of the Fertility franchise showed a slight organic decline of −2.7%. Positive foreign exchange effects of 5.0% were responsible for the increase in net sales to a total of € 351 million (Q2 2021: € 343 million). Gonal-f®, the leading recombinant hormone used in the treatment of infertility, showed an organic sales decline of −5.0%. Including positive foreign exchange effects of 4.2%, net sales amounted to € 198 million (Q2 2021: € 200 million).

Net sales of the business sector by region developed in the second quarter of 2022 as follows:

Healthcare

Net sales by region

€ million	**Q2 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Q2 2021	Share
Europe	610	32%	8.9%	−0.3%	–	8.6%	562	31%
North America	429	22%	−16.4%	10.7%	–	−5.8%	455	25%
Asia-Pacific (APAC)	560	29%	10.6%	7.5%	–	18.2%	474	27%
Latin America	206	11%	13.4%	12.7%	–	26.1%	163	9%
Middle East and Africa (MEA)	119	6%	−16.4%	5.7%	–	−10.7%	133	8%
Healthcare	**1,924**	**100%**	**1.4%**	**6.2%**	**–**	**7.6%**	**1,788**	**100%**

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

In the first six months of 2022, the Healthcare business sector generated net sales of € 3,719 million (January-June 2021: € 3,427 million). This performance was driven both by organic sales growth of 3.9% and currency tailwinds of 4.7%. Specifically, the positive performance was due especially to the organic sales increase for Bavencio® (78%), Mavenclad® (25.8%) and Euthyrox® (16.8%). Bavencio® benefited from growing market shares in first-line maintenance therapy for patients with locally advanced or metastatic urothelial carcinoma (UC), increasing sales in the first half of 2022 to € 274 million (January-June 2021: € 148 million). In an environment characterized by increasing demand, Mavenclad® gained further market shares, generating sales of € 401 million (January-June 2021: € 304 million). Amid favorable organic growth, sales of Euthyrox® amounted to € 267 million (January-June 2021: € 219 million), which was due particularly to higher demand in China.

Owing to the difficult competitive situation as well as a weakening interferon market, Rebif® sustained an organic sales decline of −16.9% whereas positive foreign exchange effects led to net sales totaling € 419 million (January-June 2021: € 475 million). Glucophage® also saw an organic sales decline of −3.6%, driven by the volume-based procurement regulation rolled out in China as well as by temporary supply delays in the Middle East and Africa region. Thanks to currency tailwinds of 7.1%, sales of Glucophage® increased to € 445 million (January-June 2021: € 430 million).

Sales of the key product lines and products developed in the first half of 2022 as follows:

Healthcare

Development of net sales by key product lines and products

€ million	Jan.–June 2022	Share	Organic growth[1]	Exchange rate effects	Total change	Jan.–June 2021	Share
Oncology	**794**	**21%**	**16.3%**	**3.2%**	**19.5%**	**665**	**20%**
thereof: Erbitux®	500	13%	–0.8%	2.2%	1.5%	492	14%
thereof: Bavencio®	274	7%	78.0%	6.5%	84.5%	148	4%
Neurology & Immunology	**820**	**22%**	**–0.2%**	**5.5%**	**5.2%**	**779**	**23%**
thereof: Rebif®	419	11%	–16.9%	5.1%	–11.8%	475	14%
thereof: Mavenclad®	401	11%	25.8%	6.0%	31.8%	304	9%
Fertility	**693**	**19%**	**0.7%**	**3.7%**	**4.4%**	**664**	**19%**
thereof: Gonal-f®	398	11%	–0.2%	3.3%	3.1%	386	11%
Cardiovascular, Metabolism and Endocrinology	**1,343**	**36%**	**2.6%**	**5.4%**	**8.1%**	**1,242**	**36%**
thereof: Glucophage®	445	12%	–3.6%	7.1%	3.5%	430	13%
thereof: Concor®	286	8%	8.1%	4.6%	12.7%	253	7%
thereof: Euthyrox®	267	7%	16.8%	5.1%	21.9%	219	6%
thereof: Saizen®	129	3%	3.2%	1.1%	4.3%	124	4%
Other	**69**	**2%**				**77**	**2%**
Healthcare	**3,719**	**100%**	**3.9%**	**4.7%**	**8.5%**	**3,427**	**100%**

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

In the first six months of 2022, net sales by region were as follows:

Healthcare

Net sales by region

€ million	Jan.–June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2021	Share
Europe	1,193	32%	10.2%	–2.0%	–	8.3%	1,101	32%
North America	816	22%	–10.7%	9.1%	–	–1.6%	830	24%
Asia-Pacific (APAC)	1,084	29%	7.8%	6.9%	–	14.7%	945	28%
Latin America	393	11%	13.2%	9.1%	–	22.4%	321	9%
Middle East and Africa (MEA)	233	6%	–3.6%	5.3%	–	1.8%	229	7%
Healthcare	**3,719**	**100%**	**3.9%**	**4.7%**	**–**	**8.5%**	**3,427**	**100%**

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

The following table presents the composition of EBITDA pre for the second quarter of 2022 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 2022			Q2 2021			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,924**	**–**	**1,924**	**1,788**	**–**	**1,788**	**7.6%**
Cost of sales	–484	1	–482	–420	–	–421	14.7%
Gross profit	**1,441**	**1**	**1,442**	**1,368**	**–**	**1,367**	**5.5%**
Marketing and selling expenses	–417	1	–415	–391	2	–389	6.8%
Administration expenses	–81	3	–78	–78	2	–76	2.5%
Research and development costs	–401	6	–395	–415	1	–414	–4.6%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	3	–	3	>100.0%
Other operating expenses and income	–103	80	–23	14	8	22	>100.0%
Operating result (EBIT)[1]	**439**			**501**			
Depreciation/amortization/impairment losses/reversals of impairment losses	164	–90	74	72	–3	69	7.6%
EBITDA[2]	**603**			**572**			
Restructuring expenses	8	–8	–	2	–2	–	
Integration expenses/IT expenses	3	–3	–	1	–1	–	
Gains (–)/losses (+) on the divestment of businesses	–10	10	–	5	–5	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**604**	**–**	**604**	**581**	**–**	**581**	**3.9%**
of which: organic growth[1]							–9.5%
of which: exchange rate effects							13.4%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

In the second quarter of 2022, adjusted gross profit increased by 5.5% to € 1,442 million (Q2 2021: € 1,367 million). Compared with the year-earlier quarter, the resulting gross margin declined to 74.9% (Q2 2021: 76.5%).

Adjusted marketing and selling expenses were 6.8% higher than in the year-earlier quarter and amounted to € 415 million (Q2 2021: € 389 million). The slight decline in research and development costs by –4.6% to € 395 million (Q2 2021: € 414 million) reflected the somewhat lower investment requirements currently expected for our development pipeline. The change in other operating expenses and income to € –23 million (Q2 2021: € 22 million) was mainly due to the fact that the year-earlier quarter included income recognition from an upfront payment in connection with an outlicensing agreement with MoonLake Immunotherapeutics AG, Switzerland, which was concluded in May 2021. In addition, the year-earlier quarter included a pro rata earnings effect from the receipt of the previously deferred upfront cash payment for the global strategic alliance with GlaxoSmithKline plc (GSK), United Kingdom, to co-develop and co-commercialize bintrafusp alfa.

EBITDA pre increased to € 604 million (Q2 2021: € 581 million). An organic earnings decline of –9.5% was countered by positive foreign exchange effects of 13.4%. The EBITDA pre margin decreased to 31.4% (Q2 2021: 32.5%).

The following table presents the composition of EBITDA pre for the first half of 2022 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 2022			Jan.–June 2021			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,719**	**–**	**3,719**	**3,427**	**–**	**3,427**	**8.5%**
Cost of sales	–944	2	–943	–808	–	–809	16.5%
Gross profit	**2,775**	**2**	**2,776**	**2,618**	**–**	**2,618**	**6.1%**
Marketing and selling expenses	–792	2	–791	–761	7	–754	4.8%
Administration expenses	–152	5	–147	–150	5	–146	1.3%
Research and development costs	–798	6	–792	–831	2	–829	–4.5%
Impairment losses and reversals of impairment losses on financial assets (net)	–4	–	–4	1	–	1	>100.0%
Other operating expenses and income	–135	81	–55	69	8	77	>100.0%
Operating result (EBIT)[1]	**893**			**945**			
Depreciation/amortization/impairment losses/reversals of impairment losses	236	–91	145	150	–3	147	–1.5%
EBITDA[2]	**1,128**			**1,096**			
Restructuring expenses	10	–10	–	10	–10	–	
Integration expenses/IT expenses	4	–4	–	4	–4	–	
Gains (–)/losses (+) on the divestment of businesses	–10	10	–	5	–5	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,133**	**–**	**1,133**	**1,114**	**–**	**1,114**	**1.7%**
of which: organic growth[1]							–8.5%
of which: exchange rate effects							10.2%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

In the first six months of 2022, adjusted gross profit grew by 6.1% to € 2,776 million (January-June 2021: € 2,618 million). Compared with the year-earlier period, the resulting gross margin declined to 74.7% (January-June 2021: 76.4%).

Adjusted marketing and selling expenses were 4.8% higher than in the first half of 2021 and amounted to € 791 million (January-June 2021: € 754 million). Research and development costs declined by –4.5% to € 792 million (January-June 2021: € 829 million). The change in other operating expenses and income to € –55 million (January-June 2021: € 77 million) was due to the fact that the year-earlier period included milestone payments of around € 50 million received for the approvals of Bavencio® in Europe and Japan as a first-line maintenance treatment of patients with locally advanced or metastatic urothelial carcinoma as well as the upfront cash payment from the out-licensing agreement with MoonLake Immunotherapeutics AG, Switzerland, which was concluded in May 2021. Moreover, no further previously deferred upfront cash payments from the GSK strategic alliance for bintrafusp alfa were received in the first half of 2022.

EBITDA pre rose slightly to € 1,133 million (January-June 2021: € 1,114 million). An organic earnings decline of –8.5% was offset by positive foreign exchange effects of 10.2%. The EBITDA pre margin decreased to 30.5% (January-June 2021: 32.5%).

Electronics

Electronics
Key figures

€ million	**Q2 2022**	Q2 2021[2]	Change	**Jan.–June 2022**	Jan.-June 2021[2]	Change
Net sales	996	857	16.3%	1,954	1,718	13.8%
Operating result (EBIT)[1]	148	118	25.6%	294	243	20.6%
Margin (% of net sales)[1]	14.9%	13.8%		15.0%	14.2%	
EBITDA[3]	282	252	11.9%	561	512	9.6%
Margin (% of net sales)[1]	28.3%	29.4%		28.7%	29.8%	
EBITDA pre[1]	293	258	13.7%	582	531	9.6%
Margin (% of net sales)[1]	29.4%	30.1%		29.8%	30.9%	

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Development of net sales and results of operations

In the second quarter of 2022, net sales of the Electronics business sector grew by 16.3% to € 996 million (Q2 2021: € 857 million). Organically, sales rose by 7.4%, driven by the continued strong growth in Semiconductor Solutions. Foreign exchange effects increased sales by 8.9%.

Electronics
Net sales by business unit

€ million	**Q2 2022**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Q2 2021[2]	Share
Semiconductor Solutions	653	66%	20.3%	10.2%	–	30.5%	500	58%
Display Solutions	233	23%	–15.9%	7.9%	–	–8.1%	253	30%
Surface Solutions	111	11%	2.0%	5.0%	–	7.0%	104	12%
Electronics	**996**	**100%**	**7.4%**	**8.9%**	**–**	**16.3%**	**857**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors and adjustments within the Electronics business sector.

Net sales of the Semiconductor Solutions business unit, which comprises two businesses, namely Semiconductor Materials and Delivery Systems & Services, increased by a total of 30.5% in the second quarter of 2022 to € 653 million (Q2 2021: € 500 million), driving its overall share of net sales of the Electronics business sector to 66% (Q2 2021: 58%). 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. Semiconductor Materials achieved significant double-digit organic growth, increasing sales organically by 20.3% in the second quarter of 2022. Strong demand in both Semiconductor Materials and Delivery Systems & Services continued to fuel growth across both businesses. Additionally, organic growth was supported by price increases in both businesses to mitigate inflationary pressures. Positive foreign exchange effects of 10.2% also contributed to sales.

In the second quarter of 2022, 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 by –8.1% to € 233 million (Q2 2021: € 253 million). This development was driven by weaker market demand and the resulting lower capacity utilization at key customers, which led to an organic decline of –15.9%. Foreign exchange effects were favorable at 7.9%.

Net sales of the Surface Solutions business unit grew 7.0% to € 111 million in the second quarter of 2022 (Q2 2021: € 104 million). Organically, the business unit increased net sales by 2.0% compared with the year-earlier quarter. Higher demand and improved pricing in the Cosmetics business line outweighed declines in the Coatings and Industrials business lines as customer production challenges continued to negatively impact demand. Foreign exchange effects were favorable at 5.0%.

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

Electronics

Net sales by region

€ million	Q2 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2021[2]	Share
Europe	77	8%	14.7%	2.9%	–	17.6%	66	8%
North America	168	17%	13.4%	14.7%	–	28.1%	131	15%
Asia-Pacific (APAC)	729	73%	5.1%	8.2%	–	13.3%	643	75%
Latin America	9	1%	12.0%	15.5%	–	27.5%	7	1%
Middle East and Africa (MEA)	12	1%	26.5%	11.3%	–	37.7%	9	1%
Electronics	**996**	**100%**	**7.4%**	**8.9%**	**–**	**16.3%**	**857**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

In the first half of 2022, net sales of the Electronics business sector grew organically by 6.3%. Growth was mainly driven by strong demand and improved pricing in Semiconductor Solutions. In addition, sales growth was favorably impacted by foreign exchange effects of 7.5%. Consequently, net sales of the Electronics business sector rose by a total of 13.8% to € 1,954 million (January-June 2021: € 1,718 million). The Semiconductor Solutions business unit grew organically by 18.1%, benefiting from strong demand across most business lines. At the same time, price increases largely compensated for inflation-related cost increases. Foreign exchange was favorable at 8.3%. The Display Solutions business unit saw an organic decline of –13.6%. Weaker demand and associated reduced capacity utilization at key customers drove the decrease along with the continued high competitive pressure in the Liquid Crystals business. Favorable foreign exchange effects of 7.3% partly offset the decline. Surface Solutions increased sales organically by 1.4% thanks to stronger demand in the Cosmetics business line and favorable pricing. This growth was partly offset by a decline in the Coatings and Industrials business lines due to the aforementioned challenges. Foreign exchange impacts were positive at 4.0%.

Electronics

Net sales by business unit

€ million	Jan.-June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2021[2]	Share
Semiconductor Solutions	1,234	63%	18.1%	8.3%	–	26.4%	976	57%
Display Solutions	494	25%	–13.6%	7.3%	–	–6.3%	527	31%
Surface Solutions	226	12%	1.4%	4.0%	–	5.4%	214	12%
Electronics	**1,954**	**100%**	**6.3%**	**7.5%**	**–**	**13.8%**	**1,718**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors and adjustments within the Electronics business sector.

In the first half of 2022, net sales by region developed as follows:

Electronics

Net sales by region

€ million	Jan.–June 2022	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.–June 2021[2]	Share
Europe	159	8%	13.8%	2.2%	–	16.0%	137	8%
North America	307	16%	6.4%	11.1%	–	17.5%	262	15%
Asia-Pacific (APAC)	1,447	74%	5.3%	7.2%	–	12.5%	1,287	75%
Latin America	18	1%	2.7%	10.7%	–	13.5%	16	1%
Middle East and Africa (MEA)	23	1%	25.5%	10.7%	–	36.2%	17	1%
Electronics	**1,954**	**100%**	**6.3%**	**7.5%**	**–**	**13.8%**	**1,718**	**100%**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

The following table presents the composition of EBITDA pre for the second quarter of 2022 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 2022			Q2 2021[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**996**	**–**	**996**	**857**	**–**	**857**	**16.3%**
Cost of sales	–571	4	–567	–506	7	–498	13.9%
Gross profit	**426**	**4**	**429**	**351**	**7**	**359**	**19.6%**
Marketing and selling expenses	–163	1	–162	–137	1	–136	18.6%
Administration expenses	–33	2	–31	–30	1	–28	9.0%
Research and development costs	–73	1	–72	–67	0	–66	9.0%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating expenses and income	–8	4	–5	1	1	1	>100.0%
Operating result (EBIT)[1]	**148**			**118**			
Depreciation/amortization/impairment losses/reversals of impairment losses	134	–	134	134	–5	129	3.3%
EBITDA[3]	**282**			**252**			
Restructuring expenses	8	–8	–	2	–2	–	
Integration expenses/IT expenses	1	–1	–	4	–4	–	
Gains (–)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	1	–1	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**293**	**–**	**293**	**258**	**–**	**258**	**13.7%**
of which: organic growth[1]							–1.9%
of which: exchange rate effects							15.5%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

Adjusted gross profit for the Electronics business sector rose 19.6% to € 429 million in the second quarter of 2022 (Q2 2021: € 359 million). The aforementioned higher sales and favorable foreign exchange effects drove the increase. These gains were partly offset by higher raw material costs as a result of inflationary pressures.

In the second quarter of 2022, adjusted gross margin was 43.1%, which was above the year-earlier figure (Q2 2021: 41.9%). Favorable foreign exchange effects were the primary driver of the improved margin. Excluding the elimination of adjustments, the operating result (EBIT) rose by € 30 million to € 148 million in the second quarter of 2022 (Q2 2021: € 118 million). The increase in EBIT was driven by the increase in gross profit. Higher logistics costs in marketing and selling expenses and increased research and development costs for important Semiconductor Materials technologies partly offset the positive effects. EBITDA pre increased by 13.7% to € 293 million in the second quarter of 2022 (Q2 2021: € 258 million). An organic decline of −1.9% was more than offset by favorable foreign exchange effects of 15.5%. At 29.4%, the EBITDA pre margin in the second quarter of 2022 was slightly below the year-earlier quarter (Q2 2021: 30.1%).

The following table presents the composition of EBITDA pre for the first half of 2022 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 2022			Jan.–June 2021[2]			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,954**	**–**	**1,954**	**1,718**	**–**	**1,718**	**13.8%**
Cost of sales	−1,131	5	−1,126	−989	11	−978	15.2%
Gross profit	**823**	**5**	**828**	**729**	**11**	**740**	**11.9%**
Marketing and selling expenses	−319	1	−317	−272	1	−271	17.1%
Administration expenses	−61	2	−59	−64	3	−61	−3.8%
Research and development costs	−148	1	−147	−134	1	−133	11.0%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating expenses and income	−1	13	11	−15	11	−4	>100.0%
Operating result (EBIT)[1]	**294**			**243**			
Depreciation/amortization/impairment losses/reversals of impairment losses	267	–	267	268	−7	261	2.4%
EBITDA[3]	**561**			**512**			
Restructuring expenses	13	−13	–	10	−10	–	
Integration expenses/IT expenses	6	−6	–	10	−10	–	
Gains (−)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	2	−2	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**582**	**–**	**582**	**531**	**–**	**531**	**9.6%**
of which: organic growth[1]							−4.0%
of which: exchange rate effects							13.6%
of which: acquisitions/divestments							–

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[3] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

In the first half of 2022, adjusted gross profit of the Electronics business sector rose 11.9% to € 828 million (January-June 2021: € 740 million). Increased sales and favorable foreign exchange effects were the main contributors to growth. At € 294 million, the operating result (EBIT) was € 51 million higher than in the year-earlier period (January-June 2021: € 243 million). The increase was largely attributable to the improved gross profit, which was partly offset by higher logistics costs in marketing and selling expenses and increased research and development costs. EBITDA pre of the business sector rose 9.6% to € 582 million (January-June 2021: € 531 million). Positive foreign exchange effects of 13.6% were partly offset by an organic decline of −4.0%. At 29.8%, the EBITDA pre margin was slightly lower than the year-earlier figure of 30.9%.

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 2022**	Q2 2021	Change	**Jan.–June 2022**	Jan.-June 2021	Change
Operating result (EBIT)[1]	–175	–213	–17.8%	–324	–334	–2.8%
EBITDA[2]	–151	–188	–19.9%	–274	–283	–3.4%
EBITDA pre[1]	–120	–92	31.1%	–237	–181	30.9%

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

[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to the operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

The operating result (EBIT) improved by 17.8% to € –175 million in the second quarter of 2022 (Q2 2021: € –213 million). This positive development was also reflected correspondingly in EBITDA, resulting in a change of 19.9% to € –151 million in the second quarter of 2022 (Q2 2021: € –188 million). Adjusted administration expenses amounted to € 98 million in the second quarter of 2022 (Q2 2021: € 92 million). EBITDA pre decreased to € –120 million in the second quarter of 2022 (Q2 2021: € –92 million). In the first six months of 2022, EBITDA pre amounted to € –237 million (January-June 2021: € –181 million).

Report on Risks and Opportunities

As a global corporate group, Merck offers a broad range of products in all its business sectors and operates in highly innovative business fields. Consequently, this gives rise to great opportunities on the one hand yet subjects business activities to potential risks that could have a substantial and lasting impact on the achievement of financial and non-financial objectives on the other hand.

Merck has a Group-wide risk management system in place to identify, assess, mitigate, and continuously monitor potential risks. We continuously track business risks and opportunities such as financial risks, human resources risks, information technology risks as well as risks relating to the environment, climate, safety, and security.
In terms of legal risks, we monitor a range of potential issues such as litigation risks relating to product liability, patent law, data privacy as well as risks due to antitrust and other government proceedings.

The risks and opportunities described in the Annual Report for 2021 largely remain valid in the current reporting period, which covers the first half of 2022. The majority of risks have been revised on the basis of current plan figures or were reassessed.

Explicit mention is to be made of the risks in connection with the war in Ukraine, the impact of which on global supply chains and especially on the European energy market has significantly affected assessments of energy and raw material prices. More information on further developments in the individual business sectors can be found in the corresponding sections of this report. In this context, we also refer to the section on significant events during the reporting period.

Apart from the risk situation described in the preceding paragraph, there have been no significant changes to the risk landscape. We are not aware of any risks that could jeopardize the continued existence of Merck.

Report on Expected Developments

Merck Group

With the publication of the quarterly statement as of March 31, we provided a forecast of the development of net sales and EBITDA pre for the Merck Group and the individual business sectors Life Science, Healthcare and Electronics as well as an estimate of Group operating cash flow in 2022. With the completion of the second quarter of 2022, we update this forecast.

Fundamental assumptions

Owing to the geopolitical situation, the increase in energy and raw material prices in particular has accelerated. The current forecast reflects the continuation of a high price level, which will be mitigated by countermeasures if possible.

Following a renewed outbreak of Covid-19 in China at the start of the year and the “zero-Covid” strategy pursued there, temporary and locally restricted lockdowns were imposed. Renewed lockdowns are not taken into account in the underlying forecast.

Owing to the aforementioned economic and geopolitical circumstances, this forecast is subject to increased uncertainty and volatility. We are monitoring the developments very closely and will adapt our forecast accordingly if necessary.

We do not expect the acquisition of Exelead Inc., USA, a biopharmaceutical contract development and manufacturing organization (CDMO), to have a material portfolio effect at Group level in fiscal 2022.

As regards the development of exchange rates, we expect a continuing volatile environment due to political and macroeconomic developments. For 2022, we continue to forecast a positive foreign exchange effect. In the first half of the year, the euro-U.S. dollar exchange rate was within the corridor of 1.06 to 1.10 we had forecast. Taking into account the current exchange rate development, we expect a further decline in the value of the euro in the second half of the year compared with the first half of the year. We now assume a more favorable development of foreign exchange effects than in the previous forecast and expect a euro-U.S. dollar exchange rate within the corridor of 1.04 to 1.08 for fiscal 2022.

Net sales

We confirm our expectations for the Merck Group and continue to predict organic sales growth of 6% to 9% in fiscal 2022, which will be driven by all our business sectors, in particular Life Science. Owing to the current development of exchange rates, we now assume a stronger positive foreign exchange effect of between 5% and 8% (previously 3% to 6%). Overall, we forecast net sales in the range of € 21.9 billion to € 23.0 billion (previously: € 21.6 billion to € 22.8 billion / 2021: € 19.7 billion).

EBITDA pre

For EBITDA pre, we also confirm our forecast for organic growth of between 5% and 9%. Life Science will be the main growth driver. Compared with the previous forecast, we estimate that positive foreign exchange effects will have a more favorable impact on Group EBITDA pre. These are expected to be between 6% and 10% (previously 4% to 8%) and will be seen mainly in the Healthcare and Electronics business sectors. We are therefore raising the forecast and now expect EBITDA pre of between € 6.75 billion and € 7.25 billion (previously € 6.6 billion to € 7.1 billion / 2021: € 6.1 billion).

Operating cash flow

In general, the forecast for operating cash flow is subject to a higher fluctuation corridor than the forecast for net sales and EBITDA pre. We provide an estimate of the development of operating cash flow only for the Group as a whole. In this context, the development of operating cash flow is forecast to be largely in line with the strong operating performance. This will be dampened by the development of working capital, which reflects the strong business performance as well as the difficult global supply chain situation. Moreover, expected payments within the scope of the ongoing transformation and growth programs are included in fiscal 2022. These programs relate mainly to the Healthcare and Electronics business sectors. Overall, we confirm our expectations for operating cash flow of between € 4.5 billion and € 5.1 billion (2021: € 4.6 billion). As regards the composition of operating cash flow, we refer to the consolidated cash flow statement in this report.

Life Science

For the Life Science business sector, we continue to assume organic sales growth of between 7% and 10% for fiscal 2022. Process Solutions will be the strongest growth driver, with growth in this business unit being driven exclusively by the organic growth of the core business. From the fight against the Covid-19 pandemic, we continue to expect sales of up to € 450 million in Process Solutions and up to € 250 million in Life Science Services. In connection with the Covid-19 pandemic, the production of vaccines, medicines and diagnostics, for which we manufacture the required input materials, is contributing to our sales. The Science & Lab Solutions business unit will also contribute 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 developments across product groups and customer segments. Increased research and development activity on the customer side as well as higher production volumes among pharmaceutical companies, especially in the biopharmaceutical segment, are the key drivers of growth in the core business. The expansion of our production capacities will enable us to meet a higher level of demand. We expect foreign exchange effects of 5% to 8% (previously 3% to 6%). The net sales forecast for the full year is € 10.15 billion to € 10.75 billion (previously € 10.00 billion to € 10.65 billion / 2021: € 9.0 billion).

For the organic growth of EBITDA pre, we are specifying our expectations at 7% to 10% (previously 6% to 10%), which is expected to lead to EBITDA pre of between € 3.7 billion and € 3.9 billion (previously € 3.60 billion to € 3.85 billion / 2021: € 3.3 billion). Earnings growth will continue to be driven mainly by the dynamic development of demand. Targeted countermeasures are likely to be able to offset the increase in negative impacts from higher logistics costs and raw material and energy prices. Based on our estimates, the foreign exchange effect on earnings in fiscal 2022 should be between 4% and 7% (previously 3% to 6%).

Healthcare

For fiscal 2022, we confirm organic net sales growth of between 4% and 7%. We expect further significant increases in sales of Mavenclad® and Bavencio® to contribute substantially to this. For our established business, we forecast a roughly stable organic development. Generally, this will be driven by organic growth in the Fertility franchise and by our products in the Cardiovascular, Metabolism & Endocrinology (CM&E) franchise. Following the adverse impacts on the sales of CM&E in fiscal 2021 caused by the volume-based procurement regulations in place in China since 2020, this franchise will deliver growth in the mid single-digit percentage range in fiscal 2022 as expected. The decline in sales of Rebif® due to continued competitive pressure can thus be offset. We expect a foreign exchange effect of 4% to 7% (previously 3% to 6%). Overall, we forecast net sales in a corridor from € 7.70 billion to € 8.05 billion (previously € 7.60 billion to € 8.0 billion / 2021: € 7.1 billion).

For fiscal 2022, we continue to expect organic growth of EBITDA pre of between 3% and 5%. Significant earnings contributions, especially from Mavenclad®, should more than offset the negative earnings effects due to the expected decline in sales of Rebif®. The expected positive development of EBITDA pre in comparison with the previous year will result from continued strict cost management. Consequently, operating expenses will develop more moderately compared with the increase 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. In this context, the development of research and development costs will reflect the operating activities in connection with our Phase III clinical trials for evobrutinib and xevinapant. The absence of non-recurring effects from fiscal 2021 will negatively impact the development of EBITDA pre. This relates primarily to the milestone payments realized in the previous year within the scope of our strategic alliance with Pfizer to develop and commercialize Bavencio® as well as the earnings effect from the full receipt of the previously deferred upfront cash payment as a result of the mutual decision to end the global strategic alliance with GlaxoSmithKline plc, United Kingdom, on the co-development and co-commercialization of bintrafusp alfa. The one-time items included in other operating income in the previous year in this context totaled € 173 million. In fiscal 2022, we expect income from active portfolio management in a low to mid double-digit million euro range. For the Healthcare business sector, we predict foreign exchange effects of 12% to 15% (previously 8% to 12%). Overall, we now forecast EBITDA pre in a range of between € 2.45 billion and € 2.55 billion (previously € 2.35 billion to € 2.5 billion / 2021: € 2.2 billion).

Electronics

For the Electronics business sector, we confirm our forecast for fiscal 2022 and continue to expect organic sales growth of 5% to 8%. The key growth driver of the development compared with the previous year will remain the Semiconductor Solutions business unit, for which we expect a strong growth dynamic that will exceed market growth in the medium term. As expected, the project business within our Delivery Systems & Services business will be subject to strong fluctuations owing to its dependency on major individual orders. We also expect our Surface Solutions business unit to see a positive organic development in fiscal 2022. Sales in our Display Solutions business unit will continue to decline organically. This will be attributable to the organic decrease in the Liquid Crystals business, which is facing persistent price erosion due to the price pressure common in this industry. We expect foreign exchange effects of 6% to 9% (previously 4% to 7%). Consequently, we forecast net sales of € 4.05 billion to € 4.25 billion (previously € 3.95 billion to € 4.15 billion / 2021: € 3.6 billion).

As regards the organic development of EBITDA pre, we adjust our forecast to 0% to 3% (previously 0% to 4%). We assume that in comparison with the previous year, the anticipated growth of Semiconductor Solutions as well as active price management will more than offset the price erosion in Liquid Crystals. Nevertheless, in comparison with the previous forecast, we expect greater adverse effects from increased logistics costs as well as higher raw material and energy prices. These will be offset only partly by countermeasures and will negatively impact earnings in the Electronics business sector in particular. We forecast foreign exchange effects of between 12% and 15% (previously 9% to 12%) and expect EBITDA pre of € 1.25 billion to € 1.3 billion (previously € 1.2 billion to € 1.3 billion / 2021: € 1.1 billion).

Corporate and Other

We are revising our forecast for Corporate and Other and now expect EBITDA pre for fiscal 2022 in a corridor of € –560 million to € –610 million (previously € –510 million to € –570 million / 2021: € –465 million). In particular, this increase is attributable to the adapted assumptions for exchange rate developments and the associated expected negative effects of currency hedging transactions, which will partly offset positive foreign exchange effects in the business sectors.

In summary, the forecast for fiscal 2022 is as follows:

Forecast for the Merck Group

Forecast for 2022

€ million	Net sales	EBITDA pre	Operating cash flow
Merck Group	**~21,900 to 23,000** • Organic increase of +6% to +9% • Foreign exchange effect +5% to +8%	**~6,750 to 7,250** • Organic increase of +5% to +9% • Foreign exchange effect +6% to +10%	**~4,500 to 5,100**
Life Science	**~10,150 to 10,750** • Organic increase of +7% to +10% • Foreign exchange effect +5% to +8%	**~3,700 to 3,900** • Organic increase of +7% to +10% • Foreign exchange effect +4% to +7%	n/a
Healthcare	**~7,700 to 8,050** • Organic increase of +4% to +7% • Foreign exchange effect +4% to +7%	**~2,450 to 2,550** • Organic increase of +3% to +5% • Foreign exchange effect +12% to +15%	n/a
Electronics	**~4,050 to 4,250** • Organic increase of +5% to +8% • Foreign exchange effect +6% to +9%	**~1,250 to 1,300** • Organic increase of 0% to +3% • Foreign exchange effect +12% to +15%	n/a
Corporate and Other	–	**~–560 to –610**	n/a

EPS pre € 9.85 to € 10.75, based on an underlying tax rate of 23%.

Full-year FX assumption for 2022: € 1 = US$ 1.04 to US$ 1.08.

Consolidated Half-Year Financial Statements as of June 30, 2022

Consolidated Half-Year Financial Statements as of June 30, 2022

Consolidated Income Statement

€ million	Q2 2022	Q2 2021	Jan.–June 2022	Jan.–June 2021
Net sales	**5,568**	**4,870**	**10,766**	**9,501**
Cost of sales	–2,109	–1,813	–4,096	–3,534
Gross profit	**3,460**	**3,057**	**6,671**	**5,967**
Marketing and selling expenses	–1,194	–1,035	–2,281	–2,043
Administration expenses[1]	–331	–301	–618	–572
Research and development costs[1]	–600	–591	–1,185	–1,167
Impairment losses and reversals of impairment losses on financial assets (net)	–9	–	–14	–6
Other operating income	110	154	223	286
Other operating expenses[1]	–261	–234	–445	–373
Operating result (EBIT)[2]	**1,177**	**1,049**	**2,350**	**2,092**
Finance income	25	14	57	22
Finance costs	–81	–109	–146	–175
Profit before income tax	**1,122**	**955**	**2,261**	**1,939**
Income tax	–252	–208	–507	–444
Profit after tax	**870**	**747**	**1,754**	**1,495**
thereof: attributable to Merck KGaA shareholders (net income)	867	745	1,748	1,492
thereof: attributable to non-controlling interests	3	2	6	3
Earnings per share (in €)				
Basic	1.99	1.71	4.02	3.43
Diluted	1.99	1.71	4.02	3.43

[1] Adjustment of prior-year figures due to restructuring within Corporate and Other.
[2] Not defined by International Financial Reporting Standard (IFRS).

Statement of Comprehensive Income

€ million	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021
Profit after tax	**870**	**747**	**1,754**	**1,495**
Items of other comprehensive income that will not be reclassified to profit or loss in subsequent periods				
Net defined benefit liability				
Changes in remeasurement	1,203	66	1,792	622
Tax effect	–258	–3	–370	–108
Changes recognized in equity	945	63	1,421	514
Equity instruments				
Fair value adjustments	–11	–14	–56	–77
Tax effect	3	9	6	9
Changes recognized in equity	–8	–5	–50	–68
	937	59	1,372	446
Items of other comprehensive income that may be reclassified to profit or loss in subsequent periods				
Cash flow hedge reserve				
Fair value adjustments	–95	25	–115	–65
Reclassification to profit or loss	44	–8	59	–2
Reclassification to assets	–	–	–	–
Tax effect	–2	–5	1	22
Changes recognized in equity	–53	12	–55	–45
Cost of cash flow hedge reserve				
Fair value adjustments	–6	–11	–3	–13
Reclassification to profit or loss	3	15	4	17
Tax effect	–	–1	4	–1
Changes recognized in equity	–2	3	5	3
Currency translation difference				
Changes taken directly to equity	1,528	–260	1,789	635
Reclassification to profit or loss	–	–	–2	–
Changes recognized in equity	1,528	–260	1,787	635
	1,473	–246	1,738	593
Other comprehensive income	**2,409**	**–187**	**3,109**	**1,038**
Comprehensive income	**3,280**	**560**	**4,863**	**2,533**
thereof: attributable to Merck KGaA shareholders	3,275	558	4,856	2,529
thereof: attributable to non-controlling interests	5	1	7	4

Consolidated Balance Sheet

€ million	June 30, 2022	Dec. 31, 2021
Non-current assets		
Goodwill	18,573	17,004
Other intangible assets	7,862	7,612
Property, plant and equipment	7,573	7,217
Investments accounted for using the equity method	3	3
Non-current receivables	26	25
Other non-current financial assets	902	911
Other non-current non-financial assets	99	95
Non-current income tax receivables	10	10
Deferred tax assets	1,253	1,502
	36,301	**34,380**
Current assets		
Inventories	4,474	3,900
Trade and other current receivables	4,414	3,646
Contract assets	156	207
Other current financial assets	133	174
Other current non-financial assets	1,363	663
Current income tax receivables	297	492
Cash and cash equivalents	1,580	1,899
	12,416	**10,982**
Total assets	**48,717**	**45,362**
Total equity		
Equity capital	565	565
Capital reserves	3,814	3,814
Retained earnings	18,015	15,134
Gains/losses recognized in equity	3,561	1,824
Equity attributable to Merck KGaA shareholders	**25,955**	**21,338**
Non-controlling interests	74	78
	26,029	**21,416**
Non-current liabilities		
Non-current provisions for employee benefits	1,666	3,402
Other non-current provisions	265	269
Non-current financial debt	9,385	8,270
Other non-current financial liabilities	155	106
Other non-current non-financial liabilities	16	15
Non-current income tax liabilities	41	42
Deferred tax liabilities	1,442	1,411
	12,971	**13,515**
Current liabilities		
Current provisions for employee benefits	182	224
Other current provisions	341	377
Current financial debt	2,418	2,531
Other current financial liabilities	594	1,192
Trade and other current payables	2,456	2,380
Refund liabilities	972	839
Current income tax liabilities	1,430	1,421
Other current non-financial liabilities	1,325	1,468
	9,718	**10,432**
Total equity and liabilities	**48,717**	**45,362**

Consolidated Cash Flow Statement

€ million	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021
Profit after tax	**870**	**747**	**1,754**	**1,495**
Depreciation/amortization/impairment losses/reversals of impairment losses[1]	532	422	962	846
Changes in inventories	–201	–117	–387	–225
Changes in trade accounts receivable	–194	–65	–537	–379
Changes in trade accounts payable/refund liabilities	70	14	277	348
Changes in provisions	–174	88	–152	55
Changes in other assets and liabilities	–51	–217	–200	–56
Neutralization of gains/losses on disposals of assets	–12	–18	–39	–23
Other non-cash income and expenses[1]	12	33	15	45
Operating cash flow	**852**	**888**	**1,692**	**2,104**
Payments for investments in intangible assets	–52	–21	–120	–69
Payments from the disposal of intangible assets	5	21	25	30
Payments for investments in property, plant and equipment	–246	–254	–677	–569
Payments from the disposal of property, plant and equipment	–7	–2	10	4
Payments for investments in financial assets	–23	–14	–48	–24
Payments for acquisitions less acquired cash and cash equivalents	–	–	–695	–
Payments from the disposal of other financial assets	37	29	124	39
Payments for the acquisition of non-financial assets	–500	–	–600	–
Proceeds from the disposal of non-financial assets	–	–	100	–
Payments from other divestments	–	–	4	1
Cash flow from investing activities	**–786**	**–241**	**–1,875**	**–587**
Dividend payment to Merck KGaA shareholders	–239	–181	–239	–181
Dividend payments to non-controlling interests	–2	–	–11	–7
Dividend payments to E. Merck KG	–626	–519	–716	–567
Payments from new borrowings from E. Merck KG	977	471	977	471
Repayments of financial debt to E. Merck KG	–	–	–406	–25
Payments from the issuance of bonds	995	–	995	–
Repayments of bonds	–550	–317	–1,433	–317
Changes in other current and non-current financial debt	–389	–513	686	–427
Cash flow from financing activities	**167**	**–1,059**	**–148**	**–1,054**
Changes in cash and cash equivalents	**234**	**–412**	**–330**	**463**
Changes in cash and cash equivalents due to currency translation	7	–	11	6
Cash and cash equivalents at the beginning of the reporting period	1,339	2,238	1,899	1,355
Cash and cash equivalents as of June 30 (consolidated balance sheet)	**1,580**	**1,825**	**1,580**	**1,825**

[1] Previously, impairment losses/reversals of impairment losses on financial assets were disclosed under “Depreciation/amortization/impairment losses/reversals of impairment losses”. As of fiscal 2022, they are disclosed under “Other non-cash income and expenses”.

Consolidated Statement of Changes in Net Equity

€ million	Equity capital	Capital reserves	Retained earnings	Gains/losses recognized in equity	Equity attributable to Merck KGaA shareholders	Non-controlling interests	Equity
Jan. 1, 2022	**565**	**3,814**	**15,134**	**1,824**	**21,338**	**78**	**21,416**
Profit after tax	–	–	1,748	–	1,748	6	1,754
Gains/losses recognized in equity	–	–	1,372	1,737	3,109	1	3,109
Comprehensive income	**–**	**–**	**3,119**	**1,737**	**4,856**	**7**	**4,863**
Dividend payments	–	–	–239	–	–239	–11	–250
Profit transfer to/from E. Merck KG including changes in reserves	–	–	–	–	–	–	–
Transactions with no change of control	–	–	–	–	–	–	–
Change in scope of consolidation/ other changes	–	–	–	–	–	–	–
June 30, 2022	**565**	**3,814**	**18,015**	**3,561**	**25,955**	**74**	**26,029**

€ million	Equity capital	Capital reserves	Retained earnings	Gains/losses recognized in equity	Equity attributable to Merck KGaA shareholders	Non-controlling interests	Equity
Jan. 1, 2021	**565**	**3,814**	**12,378**	**189**	**16,946**	**71**	**17,017**
Profit after tax	–	–	1,492	–	1,492	3	1,495
Gains/losses recognized in equity	–	–	446	591	1,037	2	1,038
Comprehensive income	**–**	**–**	**1,938**	**591**	**2,529**	**4**	**2,533**
Dividend payments	–	–	–181	–	–181	–7	–188
Profit transfer to/from E. Merck KG including changes in reserves	–	–	–	–	–	–	–
Transactions with no change of control	–	–	–	–	–	–	–
Change in scope of consolidation/ other changes	–	–	–	–	–	–	–
June 30, 2021	**565**	**3,814**	**14,134**	**780**	**19,293**	**68**	**19,361**

Notes to the Consolidated Half-Year Financial Statements as of June 30, 2022

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, 2022 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 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, 2021 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 2021. Due to the uncertain development of the global Covid-19 pandemic and the war in Ukraine, the degree of uncertainty in making assumptions and exercising management judgments is greater in these consolidated half-year financial statements than is normally the case.

The notes to the consolidated financial statements for 2021 also include a presentation of the accounting and measurement principles used. These apply accordingly in these consolidated half-year financial statements for 2022 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 2022.

In the reporting period, provisions for pensions and other post-employment benefits declined significantly to € 1,388 million (December 31, 2021: € 3,001 million). This was primarily caused by a strong increase in the discount factors for defined benefit pension plans, particularly in the eurozone, to 3.35% (December 31, 2021: 1.28%), the impacts of which were only partly compensated for by a decline in the fair value of the plan assets.

Amendments to standards effective for the first time in fiscal 2022

The following regulations take effect as of fiscal 2022:

- Amendment to IAS 16: Property, Plant and Equipment — Proceeds before Intended Use
- Amendment to IAS 37: Onerous Contracts – Cost of Fulfilling a Contract
- Amendment to IFRS 3: Reference to the Conceptual Framework
- Amendment to IFRS 16: Covid-19-Related Rent Concessions beyond 30 June 2021
- Annual Improvements to IFRS Standards 2018–2020

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

Scope of consolidation

As of June 30, 2022, 319 (December 31, 2021: 325) companies were fully consolidated. Two companies were accounted for using the equity method as of the balance sheet date. These are Syntropy Technologies LLC, USA, and MM Domain Holdco Limited, UK. At the beginning of 2022, two companies were added to the scope of consolidation. Seven companies were deconsolidated due to merger or liquidation and a further company was deconsolidated due to immateriality.

Significant events during the reporting period

Acquisition of Exelead Inc., USA

On December 30, 2021, Merck signed a definitive agreement to acquire Exelead Inc., USA, (Exelead), a biopharmaceutical contract development and manufacturing organization (CDMO). The transaction closed on February 22, 2022 after regulatory clearances and the satisfaction of other customary closing conditions. The purchase price amounted to US$ 793 million (€ 702 million) in cash. In the consolidated cash flow statement, € 693 million has been disclosed as net cash outflows from acquisitions less acquired cash and cash equivalents.

Exelead specializes in complex injectable formulations, including the lipid nanoparticles that are key components of mRNA (messenger ribonucleic acid) therapeutics for treating Covid-19 and many other diseases. The aim of the acquisition is to use Exelead’s capacities and expertise to expand the service range for mRNA contract development and manufacturing and to provide a fully integrated offering across the entire mRNA manufacturing process. The business is being integrated into the new Life Science Services business unit, which is part of the Life Science business sector.

The preliminary determination of the fair values calls for comprehensive analyses and calculations by an external valuation expert and had not been completed by June 30, 2022. The preliminary fair values were as follows:

€ million	Fair value at the acquisition date (preliminary) **Exelead**
Non-current assets	
Intangible assets (excluding goodwill)	162
Property, plant and equipment	42
Other non-current assets	3
	208
Current assets	
Inventories	47
Trade and other current receivables	12
Cash and cash equivalents	8
Other current assets	27
	94
Assets	**302**
Non-current liabilities	
Non-current provisions and liabilities	3
Deferred tax liabilities	41
	44
Current liabilities	
Trade and other payables	13
Other current liabilities and provisions	4
	16
Total liabilities	**60**
Net assets acquired	**242**
Purchase price for the acquisition of shares in accordance with IFRS 3	**702**
Positive difference (goodwill)	**460**

Material contingent liabilities were not identified as part of the preliminary purchase price allocation.

The preliminary positive difference of € 460 million was recognized as goodwill. This includes expected earnings synergies resulting from the integration of Exelead into the Merck Group, expected revenues from technical innovations and developments that go beyond the current product, development, and customer portfolios, as well as unrecognized intangible assets such as the expertise of the workforce. The goodwill was allocated in full to the Life Science business sector. As expected, the goodwill is non-tax deductible. As a result of foreign exchange developments, goodwill carried in U.S. dollars increased from € 460 million on first-time recognition to € 497 million as of June 30, 2022.

For the period between the acquisition and June 30, 2022, the legacy Exelead business contributed € 30 million to Group net sales as well as € –6 million to net income after taxes. This result also includes higher cost of sales due to the step-up of the acquired inventories to preliminary fair values as well as the amortization of assets identified and remeasured during the preliminary purchase price allocation.

Assuming the first-time consolidation of Exelead as of January 1, 2022, sales of the Merck Group for the period would have been € 10,775 million (compared with reported net sales of € 10,766 million) and net income after taxes would have been € 1,751 million (compared with reported net income after taxes of € 1,754 million). When calculating these figures, it was assumed that the adjustments to carrying amounts resulting from the preliminary purchase price allocation had been identical and would have been taken into account in accordance with their useful life in terms of their effects on the consolidated income statement.

Acquisition of Chord Therapeutics SA, Switzerland

On January 31, 2022, Merck completed the acquisition of Chord Therapeutics SA, Switzerland, a biotech company specializing in rare neuroinflammatory diseases. The purchase price was agreed as an upfront cash payment amounting to a mid double-digit million euro figure plus payments for the achievement of future development and sales milestones.

For this transaction, Merck applied the optional concentration test set out in IFRS 3. Since the vast majority of the purchase price was attributable to the intellectual property acquired in conjunction with the company, the concentration test was satisfied. Consequently, the transaction was not treated in the balance sheet as the acquisition of a business pursuant to IFRS 3 but rather as the acquisition of individual assets.

Acquisition of the MAST® platform from the Lonza Group AG, Switzerland

On March 31, 2022, Merck entered into an agreement with a subsidiary of the Lonza Group AG, Switzerland, to acquire the technology and associated assets of a Modular Automated Sampling Technology (MAST®) platform. A mid double-digit million euro amount was agreed as the purchase price. The acquired business is being integrated into Process Solutions. The acquisition closed on July 1, 2022.

Impacts of the war in Ukraine

As of the preparation date of the half-yearly consolidated financial statements, the war in Ukraine has not had any material effects on the net assets, financial position or results of operations of Merck owing to the limited business volume in Russia, Ukraine, Belarus, and the Republic of Moldova. In the reporting period, the total share of Group net sales generated in the named countries amounted to less than 1.5%. These sales were attributable almost exclusively to the Healthcare and Life Science business sectors. With the exception of Russia, Merck does not have any of its own subsidiaries in this region.

Trade receivables from customers in Russia, Ukraine, Belarus and the Republic of Moldova are partly covered by credit insurance. In the consolidated half-year financial statements for 2022, specific, individual loss allowances for trade receivables amounting to a mid single-digit million euro amount from customers in this region were recognized. The payment behavior of customers in the affected region is being monitored very closely. To date, the Group has been able to ensure without restriction not only local payments from customers and to employees in Russia as well as international payments with Russia.

Moreover, the war has had an indirect impact on the net assets, financial position and results of operations as a result of higher logistic and energy expenses as well as an increase in the procurement costs of raw materials.

Termination of a study for the drug candidate berzosertib

Following an interim analysis of a global Phase II study of the ATR inhibitor berzosertib in combination with topotecan in patients with a certain form of lung cancer (relapsed, platinum-resistant small cell lung cancer), it was decided to discontinue the trial owing to the low probability of achieving the predefined study target. Based on these results, an impairment loss in a high double-digit million euro amount was recognized on the intangible asset attributable to the rights to the drug candidate.

Issuances and repayments of financial debt

On June 8, 2022, Merck issued a euro bond amounting to € 1 billion. The issuance comprised two fixed-interest tranches: a bond with a term of four years amounting to € 500 million paying a coupon of 1.875%, as well as a bond amounting to € 500 million with a term of eight years paying a coupon of 2.375%.

Moreover, in the first half of 2022, a tranche of a U.S. dollar bond with a nominal volume of USD$ 1 billion was repaid as was a euro bond with a nominal volume of € 550 million.

Segment Reporting

Information by business sector

	Life Science				Healthcare				Electronics			
€ million	**Q2 2022**	Q2 2021[1]	**Jan.–June 2022**	Jan.–June 2021[1]	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021	**Q2 2022**	Q2 2021[1]	**Jan.–June 2022**	Jan.–June 2021[1]
Net sales[2]	**2,648**	**2,225**	**5,093**	**4,357**	**1,924**	**1,788**	**3,719**	**3,427**	**996**	**857**	**1,954**	**1,718**
Intersegment sales	14	13	30	31	–	–	–	–	–	–	–	–
Operating result (EBIT)[3]	**765**	**644**	**1,489**	**1,237**	**439**	**501**	**893**	**945**	**148**	**118**	**294**	**243**
Depreciation and amortization	210	191	407	377	74	75	145	156	134	129	267	261
Impairment losses[4]	–	–	1	–	90	5	91	5	–	5	–	7
Reversals of impairment losses	–	–	–	–	–	–9	–	–11	–	–	–	–
EBITDA[5]	**975**	**835**	**1,897**	**1,615**	**603**	**572**	**1,128**	**1,096**	**282**	**252**	**561**	**512**
Adjustments[3]	30	–6	36	8	1	9	4	18	11	6	22	20
EBITDA pre (Segment result)[3]	**1,006**	**829**	**1,933**	**1,623**	**604**	**581**	**1,133**	**1,114**	**293**	**258**	**582**	**531**
EBITDA pre margin (in % of net sales)[3]	38.0%	37.3%	37.9%	37.2%	31.4%	32.5%	30.5%	32.5%	29.4%	30.1%	29.8%	30.9%
Assets by business sector[6]	24,591	21,917	24,591	21,917	8,103	7,809	8,103	7,809	10,859	10,306	10,859	10,306
Liabilities by business sector[6]	–2,036	–2,094	–2,036	–2,094	–3,020	–2,807	–3,020	–2,807	–608	–720	–608	–720
Payments for investments in property, plant and equipment[7]	93	102	298	238	82	88	184	196	45	54	132	110
Payments for investments in intangible assets[7]	8	7	11	16	38	8	99	43	2	4	3	6
Non-cash changes in provisions (according to consolidated cash flow statement)[8]	5	19	11	39	–6	33	54	58	–3	5	3	–10

	Corporate and Other				Group			
€ million	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021
Net sales[2]	**–**	**–**	**–**	**–**	**5,568**	**4,870**	**10,766**	**9,501**
Intersegment sales	–14	–13	–30	–31	–	–	–	–
Operating result (EBIT)[3]	**–175**	**–213**	**–324**	**–334**	**1,177**	**1,049**	**2,350**	**2,092**
Depreciation and amortization	25	25	51	50	442	421	869	844
Impairment losses[4]	–	–	–	1	90	10	93	13
Reversals of impairment losses	–	–	–	–	–	–9	–	–11
EBITDA[5]	**–151**	**–188**	**–274**	**–283**	**1,709**	**1,472**	**3,312**	**2,939**
Adjustments[3]	30	96	36	102	73	105	98	148
EBITDA pre (Segment result)[3]	**–120**	**–92**	**–237**	**–181**	**1,782**	**1,576**	**3,411**	**3,087**
EBITDA pre margin (in % of net sales)[3]	–	–	–	–	32.0%	32.4%	31.7%	32.5%
Assets by business sector[6]	5,164	5,329	5,164	5,329	48,717	45,362	48,717	45,362
Liabilities by business sector[6]	–17,024	–18,326	–17,024	–18,326	–22,688	–23,947	–22,688	–23,947
Payments for investments in property, plant and equipment[7]	26	11	62	26	246	254	677	569
Payments for investments in intangible assets[7]	4	2	6	4	52	21	120	69
Non-cash changes in provisions (according to consolidated cash flow statement)[8]	–	105	–16	136	–4	161	52	223

[1] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.
[2] Excluding intersegment sales.
[3] Not defined by International Financial Reporting Standards (IFRS).
[4] Not including impairment losses on financial assets.
[5] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.
[6] Figures for the reporting period ending on June 30, 2022, previous-year figures as of December 31, 2021.
[7] As reported in the consolidated cash flow statement.
[8] 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 fiscal 2022.

The fields of activity of the individual segments are described under “Fundamental Information about the Group” in the combined management report for 2021.

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

Apart from net 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 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021
EBITDA pre of the operating businesses[1]	**1,903**	**1,668**	**3,648**	**3,268**
Corporate and Other	–120	–92	–237	–181
EBITDA pre of the Merck Group[1]	**1,782**	**1,576**	**3,411**	**3,087**
Depreciation/amortization/impairment losses/ reversals of impairment losses	–532	–422	–962	–846
Adjustments[1]	73	105	98	148
Operating result (EBIT)[1]	**1,177**	**1,049**	**2,350**	**2,092**
Financial result	–55	–95	–89	–154
Profit before income tax	**1,122**	**955**	**2,261**	**1,939**

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

Adjustments comprised the following:

€ million	**Q2 2022**	Q2 2021	**Jan.–June 2022**	Jan.–June 2021
Restructuring expenses	–38	–12	–46	–39
Integration expenses/IT expenses	–24	–18	–44	–37
Gains (+)/losses (–) on the divestment of businesses	22	–88	32	–82
Acquisition-related adjustments	–9	17	–10	18
Other adjustments	–24	–4	–30	–8
Adjustments before impairment losses/ reversals of impairment losses[1]	**–73**	**–105**	**–98**	**–148**
Impairment losses[2]	–90	–8	–93	–11
Reversals of impairment losses	–	–	–	–
Adjustments (total)[1]	**–163**	**–112**	**–191**	**–159**

[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not including impairment losses on financial assets.

In the first half of 2022, adjustments amounted to € 191 million and were thus higher than in the previous year (January-June 2021: € 159 million). Gains and losses from divested businesses increased to € 32 million. These mainly included interest rate effects from the measurement of environmental provisions. A small portion arose from the subsequent measurement of contingent consideration from divested businesses. In the previous year, this item mainly reflected the provision for litigation owing to the claims for damages by Heraeus Medical GmbH, Wehrheim, Germany. Impairment losses were mainly attributable to intangible assets in the Healthcare business sector (see explanations under “Significant events during the reporting period”).

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

€ million	Jan.–June 2022							
Net sales by nature of the products	Life Science		Healthcare		Electronics		**Group**	
Goods	4,508	89%	3,703	100%	1,726	88%	9,937	92%
Equipment/hardware	217	4%	1	–	175	9%	392	4%
Services	360	7%	7	–	53	3%	420	4%
License income	9	–	–	–	1	–	9	–
Commission income	–	–	8	–	–	–	8	–
Income from co-commercialization agreements	–	–	1	–	–	–	1	–
Total	**5,093**	**100%**	**3,719**	**100%**	**1,954**	**100%**	**10,766**	**100%**
Net sales by region (customer location)								
Europe	1,702	33%	1,193	32%	159	8%	3,053	28%
North America	1,917	38%	816	22%	307	16%	3,041	28%
Asia-Pacific (APAC)	1,251	25%	1,084	29%	1,447	74%	3,782	35%
Latin America	171	3%	393	11%	18	1%	582	6%
Middle East and Africa (MEA)	53	1%	233	6%	23	1%	309	3%
Total	**5,093**	**100%**	**3,719**	**100%**	**1,954**	**100%**	**10,766**	**100%**

€ million	Jan.–June 2021							
Net sales by nature of the products	Life Science[1]		Healthcare		Electronics[1]		**Group**	
Goods	3,844	88%	3,384	99%	1,546	90%	8,774	92%
Equipment/hardware	222	5%	1	–	129	8%	353	4%
Services	285	7%	16	–	42	2%	343	4%
License income	5	–	–	–	1	–	6	–
Commission income	–	–	8	–	–	–	8	–
Income from co-commercialization agreements	–	–	17	1%	–	–	17	–
Total	**4,357**	**100%**	**3,427**	**100%**	**1,718**	**100%**	**9,501**	**100%**
Net sales by region (customer location)								
Europe	1,492	34%	1,101	32%	137	8%	2,730	29%
North America	1,551	36%	830	24%	262	15%	2,643	28%
Asia-Pacific (APAC)	1,131	26%	945	28%	1,287	75%	3,363	35%
Latin America	136	3%	321	9%	16	1%	473	5%
Middle East and Africa (MEA)	46	1%	229	7%	17	1%	292	3%
Total	**4,357**	**100%**	**3,427**	**100%**	**1,718**	**100%**	**9,501**	**100%**

[1] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors.

Life Science[1]

€ million	Jan.–June 2022	Share	Jan.–June 2021	Share
Science & Lab Solutions	2,432	48%	2,167	50%
Process Solutions	2,200	43%	1,869	43%
Life Science Services	462	9%	321	7%
Total	**5,093**	**100%**	**4,357**	**100%**

[1] Prior-year figures have been adjusted owing to the reorganization of the Life Science business sector as well as to product reallocations between the Life Science and Electronics business sectors.

Healthcare

€ million	Jan.–June 2022	Share	Jan.–June 2021	Share
Oncology	**794**	**21%**	**665**	**20%**
thereof: Erbitux®	500	13%	492	14%
thereof: Bavencio®	274	7%	148	4%
Neurology & Immunology	**820**	**22%**	**779**	**23%**
thereof: Rebif®	419	11%	475	14%
thereof: Mavenclad®	401	11%	304	9%
Fertility	**693**	**19%**	**664**	**19%**
thereof: Gonal-f®	398	11%	386	11%
Cardiovascular, Metabolism and Endocrinology	**1,343**	**36%**	**1,242**	**36%**
thereof: Glucophage®	445	12%	430	13%
thereof: Concor®	286	8%	253	7%
thereof: Euthyrox®	267	7%	219	6%
thereof: Saizen®	129	3%	124	4%
Other	**69**	**2%**	**77**	**2%**
Total	**3,719**	**100%**	**3,427**	**100%**

Electronics[1]

€ million	Jan.–June 2022	Share	Jan.–June 2021	Share
Semiconductor Solutions	1,234	63%	976	57%
Display Solutions	494	25%	527	31%
Surface Solutions	226	12%	214	12%
Total	**1,954**	**100%**	**1,718**	**100%**

[1] Prior-year figures have been adjusted due to product reallocations between the Life Science and Electronics business sectors and adjustments within the Electronics business sector.

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 2022.

There were no changes to equity capital in the first half of 2022. 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 2022, 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, 2022 for each individual financial instrument class pursuant to IFRS 9:

June 30, 2022	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	1,580	–	1,580				
Trade and other receivables (excluding leasing receivables)	4,396	25	4,421				
Other debt instruments	15	4	19				
Subsequent measurement at fair value through other comprehensive income							
Trade and other receivables	15	–	15	–	–	15	15
Other debt instruments	–	1	1	1	–	–	1
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	256	256	–	–	256	256
Other debt instruments	17	153	170	79	–	92	170
Derivatives without a hedging relationship	37	40	77	–	27	50	77
Derivatives with a hedging relationship	65	–	65	–	65	–	65
Leasing receivables (to be measured in accordance with IFRS 16)[2]	3	–	3				
Total	**6,127**	**928**	**7,054**	**150**	**92**	**789**	**1,031**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade and other payables	2,456	–	2,456				
Financial debt	2,277	9,047	11,324	8,395	2,331	–	10,726
Other financial liabilities	383	117	501				
Subsequent measurement at fair value through profit or loss							
Contingent considerations	19	15	34	–	–	34	34
Derivatives without a hedging relationship	19	23	42	–	19	23	42
Derivatives with a hedging relationship	191	–	191	–	191	–	191
Refund liabilities	972	–	972				
Leasing liabilities (to be measured in accordance with IFRS 16)[2]	121	339	460				
Total	**6,440**	**9,540**	**15,980**	**8,395**	**2,541**	**57**	**10,993**

[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, 2021 for each individual financial instrument class pursuant to IFRS 9:

December 31, 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	1,899	–	1,899				
Trade and other receivables (excluding leasing receivables)	3,622	24	3,646				
Other debt instruments	57	4	61				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	462	462	117	–	345	462
Trade and other receivables	20	–	20	–	–	20	20
Other debt instruments	43	1	44	44	–	–	44
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	271	271	–	–	271	271
Other debt instruments	12	149	161	83	–	78	161
Derivatives without a hedging relationship	37	24	61	–	37	24	61
Derivatives with a hedging relationship	25	–	25	–	25	–	25
Leasing receivables (to be measured in accordance with IFRS 16)[2]	4	1	6				
Total	**5,719**	**937**	**6,656**	**244**	**62**	**738**	**1,044**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade and other payables	2,380	–	2,380				
Financial debt	2,379	7,928	10,307	9,655	1,213	–	10,868
Other financial liabilities	1,110	56	1,166				
Subsequent measurement at fair value through profit or loss							
Contingent considerations	–	39	39	–	–	39	39
Derivatives without a hedging relationship	35	10	45	–	35	10	45
Derivatives with a hedging relationship	82	–	82	–	82	–	82
Refund liabilities	839	–	839				
Leasing liabilities (to be measured in accordance with IFRS 16)[2]	117	342	459				
Total	**6,942**	**8,375**	**15,318**	**9,655**	**1,330**	**49**	**11,034**

[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 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 long-term 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	Loans with variable repayments	Discounting of expected future cash flows	Expected cash flows from recent planning, discount factors
	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 fair value measurements 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 3.5 to 7.5 years (December 31, 2021: 3 to 8 years). Cash flows for periods in excess of this are included in the terminal value calculation using long-term growth rates of between 1.0% and 9.0% (December 31, 2021: 1.0% and 9.0%). The applied average cost of capital (after tax) was 7.0% on June 30, 2022 (December 31, 2021: 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 milestone 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, 2022 were between 5.9% and 6.9% (December 31, 2021: 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, 2022, the carrying amount was € 211 million (December 31, 2021: € 206 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, 2022		**Change in the probability of regulatory approval**		
€ million		–10%	unchanged	10%
	5.4%	–20	4	28
Change in the discount rate	5.9% (unchanged)	–24	–	23
	6.4%	–27	–4	19

Dec. 31, 2021		**Change in the probability of regulatory approval**		
€ million		–10%	unchanged	10%
	4.9%	–21	4	30
Change in the discount rate	5.4% (unchanged)	–25	–	25
	5.9%	–29	–4	20

The changes in financial assets and liabilities allocated to Level 3 and measured at fair value for each individual class of financial instrument were as follows in the period from January 1, 2021 to June 30, 2022:

2022	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	Other debt instruments	Contingent considerations	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent considerations	Derivatives without a hedging relationship	Total
Net carrying amounts, Jan. 1, 2022	**78**	**271**	**24**	**345**	**20**	**–39**	**–10**	**689**
Additions	10	–	–	35	37	–	–	81
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+)/losses (–) recognized in the consolidated income statement	10	15	23		–	6	–13	43
thereof: other operating result	12	11	23		–	7	–13	39
thereof: attributable to assets/liabilities held as of the balance sheet date	12	2	23		–	7	–13	31
thereof: financial income and expenses	–2	5	–		–	–1	–	3
thereof: attributable to assets/liabilities held as of the balance sheet date	–2	4	–		–	–1	–	2
Gains (+)/losses (–) recognized in other comprehensive income				–3	–			–3
Currency translation difference	3	–	3	–	–	–3	–	3
Disposals	–6	–30	–	–	–42	2	–	–76
Transfers out of Level 3 into Level 1/Level 2	–	–	–	–7	–	–	–	–7
Other	–3	–	–	7	–	–	–	3
Net carrying amounts, June 30, 2022	**92**	**256**	**50**	**377**	**15**	**–34**	**–23**	**733**

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 payments received in connection with trade accounts receivable under factoring agreements and owing to milestone payments in connection with the contingent consideration from the divestment of the business activities for the product Kuvan®.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 allocated to Level 3 and measured at fair value for each individual class of financial instrument were as follows in the period from January 1, 2021 to December 31, 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	Other debt instruments	Contingent considerations	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent considerations	Derivatives without a hedging relationship	**Total**
Net carrying amounts, Jan. 1, 2021	**33**	**260**	**8**	**255**	**19**	**–26**	**–2**	**547**
Additions	46	5	4	48	38	–	–	141
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+)/losses (–) recognized in the consolidated income statement	7	6	12		–	–12	–7	5
thereof: other operating result	–8	–12	10		–	–10	–7	–27
thereof: attributable to assets/liabilities held as of the balance sheet date	–8	–12	10		–	–10	–7	–27
thereof: financial income and expenses	15	18	1		–	–2	–	32
thereof: attributable to assets/liabilities held as of the balance sheet date	15	18	1		–	–2	–	32
Gains (+)/losses (–) recognized in other comprehensive income				91	–			91
Currency translation difference	2	–	1	–	–	–2	–	1
Disposals	–1	–	–	–13	–37	–	–	–50
Transfers out of Level 3 into Level 1/Level 2	–	–	–	–45	–	–	–	–45
Other	–8	–	–	8	–	–	–	–
Net carrying amounts, Dec. 31, 2021	**78**	**271**	**24**	**345**	**20**	**–39**	**–10**	**689**

Related-party disclosures

Transactions were conducted with related parties as follows:

	Income		Expenses		Receivables		Liabilities	
€ million	**Jan.–June 2022**	Jan.–June 2021	**Jan.–June 2022**	Jan.–June 2021	**June 30, 2022**	Dec. 31, 2021	**June 30, 2022**	Dec. 31, 2021
E. Merck KG	0.9	0.7	0.5	0.5	7.4	0.3	1,464.8	1,602.3
E. Merck Beteiligungen KG	0.3	0.3	0.0	0.0	24.8	0.5	0.0	0.0
Emanuel-Merck-Vermögens-KG	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Engel-Apotheke, Darmstadt[1]	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0.0
Joint ventures	2.0	0.1	0.0	0.0	0.9	1.1	0.6	0.6
Majority interest in non-controlled companies	0.2	0.0	0.0	0.0	0.0	0.0	0.4	1.2
Non-consolidated subsidiaries	0.0	6.7	0.3	0.2	2.2	3.2	0.4	5.0

[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, 2022 these consisted entirely of financial liabilities (December 31, 2021: € 894.1 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 2021.

Subsequent events

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

Darmstadt, July 29, 2022

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 29, 2022

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

Marcus Kuhnert

Review Report

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, 2022 to June 30, 2022 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 29, 2022

KPMG AG
Wirtschaftsprüfungsgesellschaft

signature **Janz**
Wirtschaftsprüfer

signature **Jung**
Wirtschaftsprüfer

FINANCIAL CALENDAR 2022–2023

November
10
2022
Quarterly Statement Q3

March
2
2023
Annual Press Conference

April
28
2023
Annual General Meeting

May
11
2023
Quarterly Statement Q1

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