Half-Yearly Financial Report 2023

Merck – in brief*

Merck Group

Key figures

€ million	Q2 2023	Q2 2022	Change	Jan.-June 2023	Jan.-June 2022	Change
Net sales	5,302	5,568	-4.8%	10,595	10,766	-1.6%
Operating result (EBIT)[1]	969	1,177	-17.6%	2,004	2,350	-14.7%
Margin (% of net sales)[1]	18.3%	21.1%		18.9%	21.8%	
EBITDA[2]	1,452	1,709	-15.1%	2,942	3,312	-11.2%
Margin (% of net sales)[1]	27.4%	30.7%		27.8%	30.8%	
EBITDA pre[1]	1,553	1,782	-12.8%	3,140	3,411	-7.9%
Margin (% of net sales)[1]	29.3%	32.0%		29.6%	31.7%	
Profit after tax	706	870	-18.9%	1,506	1,754	-14.1%
Earnings per share (€)	1.62	1.99	-18.6%	3.45	4.02	-14.2%
Earnings per share pre (€)[1]	2.20	2.64	-16.7%	4.57	5.05	-9.5%
Operating cash flow	622	852	-27.0%	1,475	1,692	-12.8%
Net financial debt[3]	9,355	8,328	12.3%			
Number of employees[4]	63,701	62,759	1.5%			

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

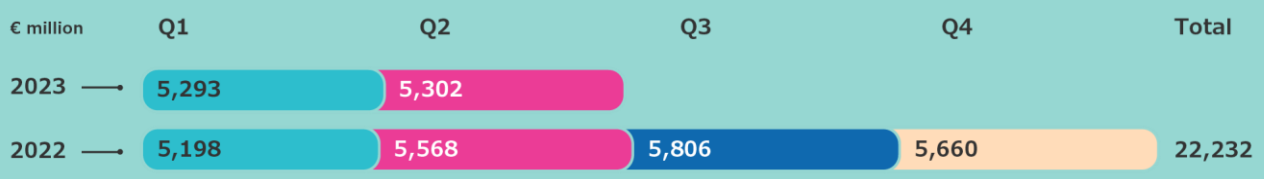
[2] Not defined by International Financial Reporting Standards (IFRS); EBITDA corresponds to operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

[3] Figures for the reporting period ending on June 30, 2023, prior-year figures as of December 31, 2022.

[4] Figures for the reporting period ending on June 30, 2023, prior-year figures as of June 30, 2022. Prior-year figures have been adjusted. This figure refers to all employees at sites of fully consolidated entities.

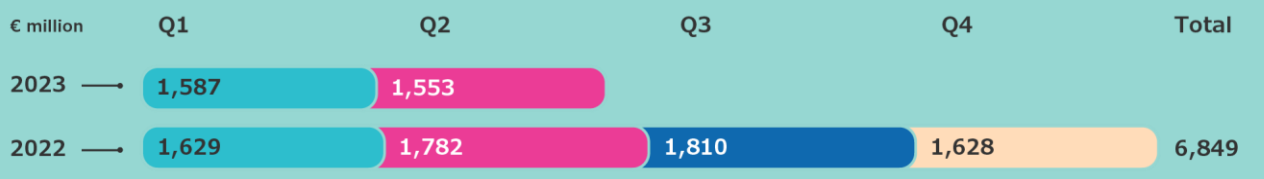
Merck Group

Net sales by quarter



Merck Group

EBITDA pre by quarter



* 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.

It is our aim to ensure that our communication is inclusive and so we strive to use language that is both non-discriminatory and easy to read. This report attempts to use gender-neutral language, which may not yet be consistent in all instances. Even if masculine forms are used, all genders are explicitly meant.

The Annual Report for 2022 has been optimized for mobile devices and is available at https://www.merckgroup.com/en/annualreport/2022/.

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Interim Management Report as of June 30, 2023

Developments within the Group and R&D

We are Merck, a science and technology company. We are pioneers of human progress, driven by our curiosity. Established in 1668, we are continuously reinventing ourselves by thinking long-term. Our special organizational setup comprising the business sectors Life Science, Healthcare and Electronics allows us to work towards an ambitious future by bringing different disciplines under one roof. We aim to become the global 21st century science and technology pioneer.

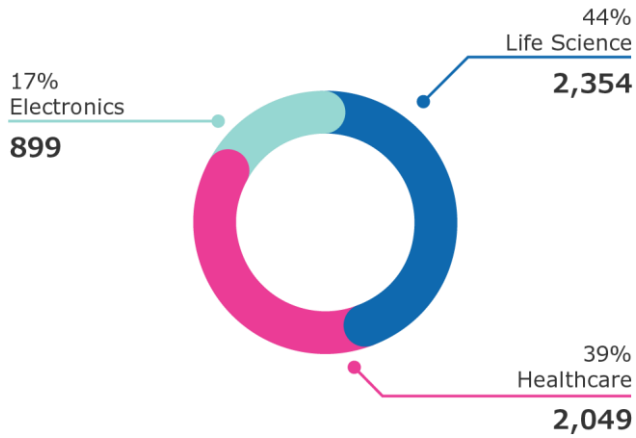
We hold the global rights to the Merck name and brand. The only exceptions are Canada and the United States. In these countries, we operate as MilliporeSigma in the Life Science business, EMD Serono in the Healthcare business, and as EMD Electronics in the Electronics business. Apart from our three business sectors, our financial reporting presents five regions: Europe, North America, Asia-Pacific, Latin America, the Middle East and Africa.

The following sections of this half-yearly financial report summarize the main developments in the first half of 2023 at Merck including those in research in development. A detailed description of our company as well as our business sectors and sustainability goals can be found in the **Annual Report for 2022** and in the **Sustainability Report for 2022**. We had 63,712 employees worldwide on June 30, 2023 compared with 62,770 on June 30, 2022[1].

Merck Group

Net sales by business sector – Q2 2023

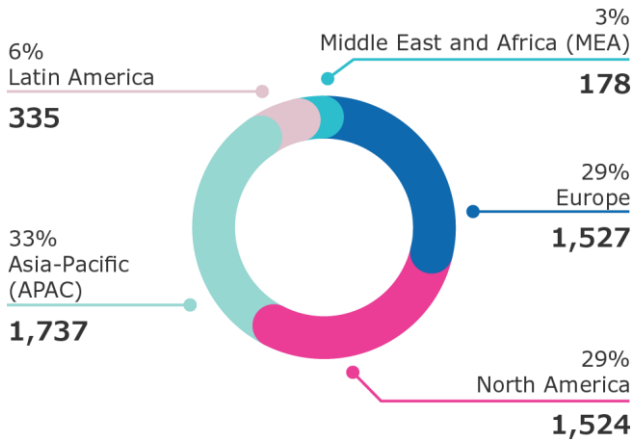
€ million/in % of net sales



Merck Group

Net sales by region – Q2 2023

€ million/in % of net sales

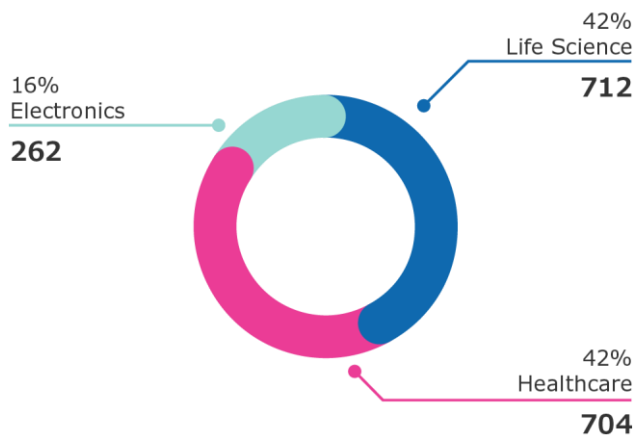


[1] Merck also employs people at sites of subsidiaries that are not fully consolidated. These figures relate to all employees working directly for Merck and may therefore differ from the figures in the financial section of this report.

Merck Group

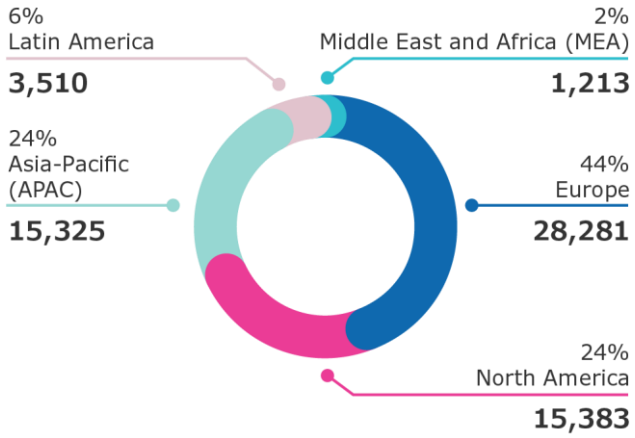
EBITDA pre[1] by business sector[2] – Q2 2023

€ million/in % of net sales



Merck Group

Employees by region as of June 30, 2023



[1] Not defined by International Financial Reporting Standards (IFRS).
[2] Not presented: Decline in Group EBITDA pre by € -124 million due to Corporate and Other.

Life Science*

We are a leading global provider of products and services for a wide range of customers, including academic labs, biotech and pharmaceutical companies, diagnostic labs, 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 solutions to create a sustainable future for generations to come.

Across our Life Science business sector, we collaborate with the global scientific community to deliver break-through innovations supported by a broad and deep portfolio of more than 300,000 products as well as global Contract Testing Development Manufacturing Organization (CTDMO) services ranging from process development to commercialization. As a diversified life science leader, we are well-positioned to respond to growth trends and meet the needs of our 1.6 million global customers. During the first half of 2023, we continued to execute our strategy to strengthen our three business units, namely Process Solutions, Life Science Services, and Science and Lab Solutions. Our R&D teams in the three business units launched more than 8,300 products, including those launched through our “faucet program” for antibodies, reference materials, chemicals, and nanomaterials.

Process Solutions

The Process Solutions business unit continued to focus on delivering its leading product offering for pharmaceutical development and manufacturing, including filtration devices, chromatography resins, single-use assemblies and systems, processing chemicals, and excipients.

- In April, we launched Ultimus® single-use process container film, designed to provide extreme durability and leak resistance for single-use assemblies used for bioprocessing liquid applications. Ultimus® film provides an animal-origin-free contact resin that demonstrates a low extractable profile and supports healthy cell growth performance. This technology is now available in Mobius® 3D process containers.

* These sections, which are extraneous to the management report, did not undergo a review by our statutory auditor, however they were read critically.

- In June, we announced that Proteologix US Inc. had been selected as the North American winner of our 12th Advance Biotech Grant program. The biotechnology startup, which is headquartered in Redwood City, California, USA, was selected for its robust pipeline targeting autoimmune/inflammatory diseases and oncology indications that affect a large patient population. Since 2014, the Life Science business sector's Advance Biotech Grant program has awarded technologies and consultation to nearly 40 biotechnology companies around the world, supporting their efforts to improve patient outcomes for various diseases such as cancer, brain tumors, osteoarthritis, and cardiovascular disorders.

Life Science Services

The Life Science Services business unit offers traditional and novel modalities, including monoclonal antibodies, high-potency active pharmaceutical ingredients (HPAPIs), as well as antibody-drug conjugates and viral and gene therapies including mRNA. In addition to manufacturing, Life Science Services includes sales and marketing, research and development, and supply chain operations. Our fully integrated CTDMO (Contract Testing, Development and Manufacturing Organization) Services support clients from pre-clinical phases to commercial production.

Science and Lab Solutions

The Science and Lab Solutions business unit serves the pharmaceutical and biotech, industrial and testing, academic and government, and 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.

Investments to expand capabilities and production

In May, we announced an investment of € 35 million in biosafety testing at our Glasgow and Stirling sites in Scotland. Biosafety testing is a critical step in the drug development and manufacturing process to ensure that drugs are safe, efficacious, and compliant with regulatory requirements. Through the expansion, we will create nearly 500 new jobs, bringing our Life Science workforce to over 1,200 employees across the two sites.

The investment includes a new 1,200-square-meter facility in Glasgow, which will house molecular biology and sequencing services. Testing capacity in current buildings will be expanded to include biosafety testing, analytical development and viral clearance suites. The latest investment follows our recent Rockville, Maryland, USA, and Shanghai, China, testing expansions. With its BioReliance® testing services portfolio, Life Science now performs more than 20,000 studies annually in the United Kingdom for more than 500 customers globally. BioReliance® Contract Testing Services and the recently formed Millipore® CTDMO Services are part of the Life Science Services business unit.

Also in May, we signed a non-binding memorandum of understanding with the Korean Ministry of Trade, Industry and Energy, and Daejeon City, Korea, for a new Asia-Pacific BioProcessing Center aimed at supporting the region's healthcare ecosystem. The planned bioprocessing facility would support commercial manufacturing for biotech and pharmaceutical customers across the Asia-Pacific region.

In June, we announced an investment of approximately € 70 million to expand production for highly purified reagents at our manufacturing site in Nantong, China. The facility, which is expected to be operational by 2026, will cover 40,000 square meters and offer high-performance products for quality control and testing to customers in the pharmaceutical, food and beverage industries.

Sustainability

In April, Life Science placed 64th on the U.S. Environmental Protection Agency's (EPA) annual Green Power Partnership National Top 100 within the EPA's Green Power Partnership (GPP) program. In the United States, Life Science uses more than 256 million kilowatt-hours (kWh) of green power annually, representing 100% of its U.S. operations' total power needs. In 2021, Life Science signed a virtual power purchase agreement (VPPA), receiving renewable energy certificates (REC) that match 100% of Life Science's electricity consumption in the United States. The green power is generated by the Azure Sky Wind & Storage Project, which went into operation in May 2022 and resulted from one of the world's largest renewable energy procurement contracts by a power buyer consortium.

Digitalization

In March, Life Science launched its open-source code library around Palantir Foundry on GitHub®. Our source code, "Foundry DevTools", was published under an open-source license in collaboration with Palantir. We have been partnering with Palantir since 2017 to build our data and analytics capabilities and contribute to the digital product portfolios of our Life Science, Healthcare and Electronics business sectors. The source code is freely accessible to all Foundry developers worldwide.

Healthcare*

In Healthcare we operate as a global specialty innovator in the Neurology & Immunology and Oncology franchises as well as the therapeutic areas of fertility and cardiovascular, metabolic and endocrinological disorders. The Healthcare business sector discovers, develops, manufactures and markets innovative pharmaceutical and biological prescription drugs to treat cancer, multiple sclerosis (MS), infertility and growth disorders, as well as certain cardiovascular and metabolic diseases. Our R&D pipeline is clearly focused on strengthening our leadership positions in oncology, neurology and immunology.

Oncology

We strengthened our Oncology franchise by regaining exclusive worldwide rights to develop, manufacture and commercialize Bavencio® (avelumab), effective June 30, 2023. The previous profit share arrangement has been replaced by a 15% royalty to Pfizer on defined net sales of Bavencio®. Our company and Pfizer continue to operationalize their respective ongoing clinical trials for Bavencio® and we control all future research and development activities.

- At this year's 2023 American Society of Clinical Oncology's annual Genitourinary Cancers Symposium (ASCO GU), June 16-18, we announced the findings of a new analysis of long-term follow-up data from the Phase III JAVELIN Bladder 100 trial. The analysis demonstrated median overall survival (OS) from start of chemotherapy of 29.7 months among patients receiving Bavencio®, establishing a new reference point for treatment outcomes in clinical studies. This analysis reinforces the proven survival benefits of Bavencio® in the first-line maintenance setting for patients with locally advanced or metastatic urothelial carcinoma (UC). With median follow-up of at least 38 months from randomization, patients who were progression-free following platinum-based chemotherapy who received Bavencio® first-line maintenance plus best supportive care (BSC) had longer median OS than those who received BSC alone. This benefit was seen regardless of whether their initial chemotherapy regimens included cisplatin or carboplatin. As a key growth driver of our biopharma business, Bavencio® is now approved as a first-line maintenance treatment for advanced UC in 63 countries and has become a standard of care in the treatment of this disease.

* These sections, which are extraneous to the management report, did not undergo a review by our statutory auditor, however they were read critically.

- At the 2023 American Society of Clinical Oncology (ASCO) annual meeting, June 2-6, we presented 43 abstracts featuring new data for the medicines Bavencio®, Erbitux® (cetuximab), and Tepmetko® (tepotinib) as well as pipeline assets including the first-in-class investigational IAP (inhibitor of apoptosis protein) inhibitor xevinapant. These abstracts demonstrate our efforts to pioneer novel medicines intended to improve the lives of people living with cancer.
- Bavencio® clinical data, including poster discussions featuring long-term safety analyses and an analysis of quality-adjusted survival from the Phase III JAVELIN Bladder 100 study, confirm the acceptable long-term benefit-risk profile as well as the net benefit estimate of Bavencio® first-line maintenance, further supporting its use as a standard of care for advanced UC.
- Xevinapant preclinical data suggest the benefit of extended xevinapant treatment beyond the completion of xevinapant plus radiotherapy and support the dosing rationale for administration of six cycles of xevinapant in the ongoing Phase III studies in locally advanced squamous cell carcinoma of the head and neck (SCCHN).
- For Tepmetko®, long-term outcomes from the VISION study, the largest study of a MET inhibitor in patients with METex14-skipping advanced non-small cell lung cancer (NSCLC) (N=313), demonstrate the robust and durable clinical activity of Tepmetko®, particularly in the first-line setting, detected by liquid and/or tissue biopsy. A manageable safety profile further supports its use in clinical practice. These long-term data were published in JAMA Oncology on June 4. Additional presentations for Tepmetko® include analyses from the INSIGHT 2 study in EGFRm METamp NSCLC for patients treated with Tepmetko® plus osimertinib.
- Erbitux® data presented at the congress add to the growing body of evidence supporting the role of cetuximab-based therapies across the continuum of care in the treatment of RAS wild-type metastatic colorectal cancer and as a backbone of treatment in SCCHN.
- Erbitux® continued to be our best-selling drug in terms of revenue in the portfolio of our biopharma business and is our flagship product in Oncology, reaching € 1 billion in sales in 2022. Currently, Erbitux® is being investigated in more than 150 clinical studies, most of them as part of new combination therapies, for example, in combination with KRAS G12C or BRAF inhibitors.

Neurology and Immunology

We have a long-standing legacy in neurology and immunology, including more than two decades of experience in multiple sclerosis (MS). We are committed to people living with neuroinflammatory and immune-mediated diseases by focusing on finding solutions addressing unmet medical needs.

Mavenclad® (cladribine), our short-course oral therapy for the treatment of adults with various forms of highly active relapsing multiple sclerosis (RMS), is approved in 91 countries worldwide. Rebif® (interferone beta-1a) has been a standard of care in RMS treatment for nearly 25 years with data supported by more than 1.9 million patient-years of therapy since approval. Beyond our commitment to multiple sclerosis, we have a pipeline focusing on discovering new therapies that have potential in other neurological and immune-mediated conditions, including systemic lupus erythematosus and cutaneous lupus erythematosus.

- At the Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2023, February 23-25, we presented new four-year efficacy and safety data for the investigational Bruton's tyrosine kinase (BTK) inhibitor, evobrutinib, in RMS. Data from the ongoing Phase II extension showed treatment benefits of evobrutinib were maintained over four years and remained consistent with the efficacy and safety profile seen in earlier data. Evobrutinib is an oral, CNS-penetrating, highly selective inhibitor of BTK and is in clinical development as a potential treatment for relapsing RMS.
- In April, the U.S. Food and Drug Administration (FDA) placed a partial clinical hold on the initiation of new patients on evobrutinib and patients with less than 70 days exposure to study medication in the United States. The ongoing, fully enrolled Phase III EVOLUTION clinical trial program for evobrutinib in RMS continues as planned with all participants remaining on treatment as all are beyond 70 days exposure to study medication. The Phase III clinical trial program for evobrutinib is on schedule for read-out in the fourth quarter of 2023.

Fertility

As the global market leader in fertility drugs and treatments, our Fertility franchise is an important contributor to our Healthcare business sector. According to updated data, more than five million babies have been born with the help of Gonal-f® (follitropin alfa) to date.

The Pergoveris® pen, currently available in more than 50 countries, is the first product comprising both recombinant human follicle-stimulating hormone (FSH) and recombinant human 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.

Cardiovascular, Metabolism & Endocrinology

Every day, more than 93 million patients around the world use our trusted Cardiovascular, Metabolism & Endocrinology (CM&E) medicines. Euthyrox® (levothyroxine), Glucophage® (metformin), Saizen® (somatropin), and Concor® (bisoprolol fumarate) are CM&E brands and contribute to making CM&E the largest franchise of the Healthcare business sector in terms of sales, with growth in almost all therapeutic areas of focus.

- Euthyrox® is the worldwide market leader for the treatment of hypothyroidism.
- Glucophage® was the second largest product of Healthcare in terms of sales in 2022. It is available for the first-line treatment of type 2 diabetes in 100 countries and registered for prediabetes in 89 countries.
- Saizen® is our main endocrinology product and is indicated for the treatment of growth hormone deficiency in children and adults.
- Concor®/Concor Cor® is a beta-blocker for treating hypertension and cardiovascular diseases such as coronary heart disease and chronic heart failure.

Investments

In June, we inaugurated our Biotech Development Center located at our campus in Corsier-sur-Vevey, Switzerland. With the new Biotech Development Center, which represents an investment of over € 250 million, we are aiming to support our ambition to bring more medicines to more patients faster. To this end, we want to ensure that our next-generation biotech therapies and potential other new therapeutic modalities are available for clinical trials on time, on quality and on quantity, with accelerated timeframes.

Sustainability

Committed to contributing to global health, we are dedicated to human progress and to serving patients, scientists and customers around the world.

Our aim is to address challenges that affect millions of people, improving the health of underserved populations in low- and middle-income countries through our scientific and technological innovations and products, and the close collaborations with our partners. In April, we announced our ambition to serve more than 170 million patients per year in low- and middle-income countries by 2030.

In May, we entered into a partnership with Novo Nordisk, Eli Lilly and Sanofi to pioneer the world's first cross-industry solution for recycling materials from injection pens. The collaboration was launched to minimize the ecological footprint of our activities, and Denmark was chosen because of the existing recycling infrastructure in the country. Today, the four companies account for around six million injection pens used in Denmark annually. The ambitious target for the first 12 months is for 25% of all injection pens distributed by the four companies in Denmark to be recycled, amounting to more than 25 metric tons of plastic.

Electronics*

Our main focus is on materials and solutions for the electronics market. Over the past several years, we have realigned our portfolio towards accelerated digitalization and data growth, which are driving the need for more and more sophisticated semiconductor chips and displays.

Today, we are optimally positioned to leverage our key strengths. With a well-balanced and broad technology portfolio of materials and equipment, industry-leading R&D and a global production network close to our customers, we have become one of the most relevant suppliers of materials and solutions for the semiconductor and display industries – and are on track to further expand our position. In addition, our decorative and functional solutions for innovative surfaces of all kinds make life more colorful. The Electronics business sector comprises three business units: Semiconductor Solutions, Display Solutions and Surface Solutions.

In recent years, we have successfully developed into a leading player in the global electronic materials market. We seek to capture growth opportunities offered by exponential data growth and impactful technology trends such as Artificial Intelligence, the Internet of Things and 5G, which in turn are driving global demand for innovative semiconductor and display materials.

Semiconductor Solutions

Semiconductor Solutions is enabling the digital transformation in areas including communications, mobility and healthcare. As almost every electronic device uses one of our products, we are advancing virtually every aspect of digital living, for example by developing solutions for smaller, faster and more powerful devices.

Despite the current cyclical downturn, the semiconductor market is expected to grow further. Among other things, this is due to the rising adoption of digital technologies driven by automotive markets, increasing smartphone demand amid wider availability of 5G networks, and the overall proliferation of data across all aspects of our lives. As part of our Level Up growth program, we are investing in R&D and manufacturing capacities worldwide.

The Semiconductor Solutions business unit consists of the Semiconductor Materials and Delivery Systems & Services businesses.

Semiconductor Materials

Semiconductor Materials supplies a wide array of products for wafer processing, including doping, patterning, deposition, planarization, etching, and cleaning for the semiconductor industry. Our business fields are Thin Film Solutions, Specialty Gases, Patterning Solutions, and Planarization Solutions.

- Our Patterning Solutions business continues to make progress in the development of Extreme Ultra Violet (EUV) lithography materials. Despite the semiconductor industry downturn, our EUV Rinse and advanced metal contamination control technologies have grown year-on-year. We are investing in Directed Self-Assembly (DSA) capacity as we support customers' integration of DSA into advanced nodes, and we are beginning to sample photoresists and rinse materials from our per- and polyfluoroalkyl substance (PFAS)-free portfolio development.
- Our Planarization Solutions business recently won a major memory customer process of record (POR) on the critical tungsten Chemical Mechanical Polishing (CMP) layers by replacing an industry-leading supplier's product. We continue to drive innovations to meet the semiconductor industry's technical and commercial roadmaps.

* These sections, which are extraneous to the management report, did not undergo a review by our statutory auditor, however they were read critically.

Delivery Systems & Services

The Delivery Systems & Services 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.

Display Solutions

Our Display Solutions business unit includes the Liquid Crystal Materials (LC), Organic Light-Emitting Diode Materials (OLED), Photoresists, Smart Antenna, and Liquid Crystal Glazing businesses. With the proliferation of multiple applications and display trends, the display industry's technological requirements are significantly expanding. We support our display customers in developing novel display technologies and product concepts for applications. We are active in a broad range of display materials, including LCs, OLED and Display Patterning Materials.

As liquid crystals is a strong focus area, our R&D team is continuously working to develop new liquid crystal mixtures for our customers who need differentiated performance such as high transmittance, high contrast ratio, and high reliability to realize displays for new applications. We are working with our customers in the field of Augmented and Virtual Reality to expand the application scenarios of liquid crystals and continue to enhance the user experience in small and micro-sized displays. We remain fully committed to advancing LCD technology and are working very closely with leading panel makers to develop next-generation products for the electronics market.

In the display industry, OLED is regarded as state-of-the-art technology for its excellent visual experience. It is also known as the technology for the future of displays as it enables the production of foldable, rollable and even transparent displays.

- We introduced new barrier materials that offer superior flexibility, higher reliability, and longer lifetime in flexible OLED devices compared to existing solutions. In April, these innovative Atomic Layer Deposition (ALD) materials won the Display Component of The Year 2023 award from the Society for Information Display (SID), the world's largest display industry association.

- In addition, to accelerate the growth of our OLED business, we signed an Intellectual Property deal with Universal Display Corporation (UDC) and entered into a multi-year collaboration agreement with the company, as announced in May. As part of this, we sold our OLED emitter patent portfolio, including over 150 patent families to UDC. UDC will give us early access to their R&D emitter materials, thus benefiting our development of transport materials and most importantly boosting our capabilities to develop new host materials.

Surface Solutions

The core markets for Surface Solutions are automotive coatings, cosmetics and, to a smaller extent, industrial applications. We serve these markets with functional and decorative solutions. With a broad portfolio of active ingredients, we enable cosmetics manufacturers to enhance their skin care products with moisturizing, protecting and anti-aging effects.

Moreover, our functional solutions serve many innovative applications, from dirt-repellent and easy-care surfaces to laser markings of plastic parts and cables. With face-to-face interaction and expert exchange continuing to regain importance in the post-Covid-19 era, we attended major trade shows for the cosmetics and coatings industries in the first half of 2023 such as the in-cosmetics trade fair in Barcelona in March.

Investments

As part of our Level Up growth program introduced in 2021, we plan to invest significantly more than € 3 billion in innovation and capacities up until the end of 2025.

- To further expand our Semiconductor Materials business, we broke ground for a new integrated facility in Kaohsiung, Taiwan, in February, and announced our plans to expand manufacturing capacities at our site in Hometown, Pennsylvania, in April.
- We are also continuing to expand our DS&S capacities for the production of delivery equipment for the safe handling of gases and chemicals in the semiconductor industry. In the United States, a new production facility in Chandler, Arizona started operations in June. Together with the new facility in Kaohsiung, Taiwan, that was completed back in October 2022, this new factory will supplement our ability to support customers' investments and boost our global footprint of manufacturing facilities around the globe.
- We completed the acquisition of the chemical business of Mecaro Co. Ltd. to strengthen our expertise in thin-film materials for semiconductor manufacturing.

Sustainability

With the objective of enabling more sustainable semiconductor manufacturing solutions we have joined forces with Intel Corporation to jointly fund a new academic research program over a three-year period. The program, which was announced in March, will specifically leverage artificial intelligence (AI) and machine learning technologies to achieve innovative breakthroughs in semiconductor manufacturing processes and technologies. Potential solutions could include environmentally friendlier materials, more efficient use of resources, AI-based solutions for modeling chemical processes, and opportunities for waste and emissions reductions.

Course of Business and Economic Position

Merck

Development of net sales

The development of Group net sales across the individual business sectors in the second quarter of 2023 was as follows:

Merck Group

Net sales by business sector

€ million	Q2 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2022	Share
Life Science	2,354	44%	-8.7%	-2.4%	–	-11.1%	2,648	47%
Healthcare	2,049	39%	11.9%	-5.4%	–	6.5%	1,924	35%
Electronics	899	17%	-6.3%	-3.8%	0.3%	-9.7%	996	18%
Merck Group	**5,302**	**100%**	**-1.1%**	**-3.7%**	**0.1%**	**-4.8%**	**5,568**	**100%**

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

The development of Group net sales across the individual business sectors in the first half of 2023 was as follows:

Merck Group

Net sales by business sector

€ million	Jan.-June 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2022	Share
Life Science	4,840	46%	-4.2%	-0.9%	0.1%	-5.0%	5,093	47%
Healthcare	3,955	37%	8.8%	-2.4%	–	6.3%	3,719	35%
Electronics	1,800	17%	-6.7%	-1.6%	0.3%	-7.9%	1,954	18%
Merck Group	**10,595**	**100%**	**-0.2%**	**-1.5%**	**0.1%**	**-1.6%**	**10,766**	**100%**

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

In the second quarter of 2023, the regional breakdown of Group net sales was as follows:

Merck Group

Net sales by region

€ million	Q2 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2022	Share
Europe	1,527	29%	-1.5%	-2.5%	–	-4.0%	1,591	29%
North America	1,524	29%	-3.2%	-2.3%	–	-5.5%	1,614	29%
Asia-Pacific (APAC)	1,737	33%	-2.6%	-6.0%	0.2%	-8.4%	1,897	34%
Latin America	335	6%	13.3%	-3.9%	–	9.4%	306	5%
Middle East and Africa (MEA)	178	3%	14.7%	-3.7%	–	11.1%	160	3%
Merck Group	**5,302**	**100%**	**-1.1%**	**-3.7%**	**0.1%**	**-4.8%**	**5,568**	**100%**

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

In the first half of 2023, net sales by region developed as follows:

Merck Group

Net sales by region

€ million	**Jan.-June 2023**	**Share**	**Organic growth[1]**	**Exchange rate effects**	**Acquisitions/ divestments**	**Total change**	Jan.-June 2022	Share
Europe	3,107	29%	2.8%	-1.1%	–	1.8%	3,053	28%
North America	3,031	29%	-1.2%	0.7%	0.2%	-0.3%	3,041	28%
Asia-Pacific (APAC)	3,466	33%	-4.6%	-3.9%	0.2%	-8.4%	3,782	35%
Latin America	658	6%	12.8%	0.4%	0.1%	13.2%	582	6%
Middle East and Africa (MEA)	333	3%	9.5%	-1.8%	–	7.8%	309	3%
Merck Group	**10,595**	**100%**	**-0.2%**	**-1.5%**	**0.1%**	**-1.6%**	**10,766**	**100%**

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

Results of operations

The following table presents the composition of EBITDA pre for the second quarter of 2023 in comparison with the year-earlier quarter. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Merck Group

Reconciliation EBITDA pre[1]

	Q2 2023			Q2 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**5,302**	**–**	**5,302**	**5,568**	**–**	**5,568**	**-4.8%**
Cost of sales	-2,139	5	-2,134	-2,109	8	-2,101	1.6%
Gross profit	**3,163**	**5**	**3,168**	**3,460**	**8**	**3,468**	**-8.6%**
Marketing and selling expenses	-1,139	5	-1,134	-1,194	14	-1,180	-3.9%
Administration expenses	-345	42	-303	-331	30	-301	0.8%
Research and development costs	-600	8	-593	-600	6	-593	-0.1%
Impairment losses and reversals of impairment losses on financial assets (net)	-10	–	-10	-9	–	-9	12.3%
Other operating income and expenses	-99	79	-20	-150	105	-46	-55.2%
Operating result (EBIT)[1]	**969**			**1,177**			
Margin (in % of net sales)[1]	18.3%			21.1%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	482	-37	445	532	-90	442	0.7%
EBITDA[2]	**1,452**			**1,709**			
Margin (in % of net sales)[1]	27.4%			30.7%			
Restructuring expenses	39	-39	–	38	-38	–	
Integration expenses/ IT expenses	27	-27	–	24	-24	–	
Gains (–)/losses (+) on the divestment of businesses	17	-17	–	-22	22	–	
Acquisition-related adjustments	5	-5	–	9	-9	–	
Other adjustments	13	-13	–	24	-24	–	
EBITDA pre[1]	**1,553**	**–**	**1,553**	**1,782**	**–**	**1,782**	**-12.8%**
Margin (in % of net sales)[1]	29.3%			32.0%			
thereof: organic growth[1]							-7.0%
thereof: exchange rate effects							-5.7%
thereof: acquisitions/ divestments							-0.2%

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

[2] 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.

The following table presents the composition of EBITDA pre for the first half of 2023 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 2023			Jan.-June 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**10,595**	**–**	**10,595**	**10,766**	**–**	**10,766**	**-1.6%**
Cost of sales	-4,111	7	-4,104	-4,096	9	-4,086	0.4%
Gross profit	**6,484**	**7**	**6,491**	**6,671**	**9**	**6,680**	**-2.8%**
Marketing and selling expenses	-2,249	4	-2,244	-2,281	15	-2,266	-1.0%
Administration expenses	-703	114	-589	-618	49	-568	3.7%
Research and development costs	-1,198	–	-1,198	-1,185	7	-1,178	1.7%
Impairment losses and reversals of impairment losses on financial assets (net)	-12	–	-12	-14	–	-14	-12.7%
Other operating income and expenses	-318	120	-199	-223	110	-113	76.7%
Operating result (EBIT)[1]	**2,004**			**2,350**			
Margin (in % of net sales)[1]	18.9%			21.8%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	938	-47	891	962	-93	869	2.5%
EBITDA[2]	**2,942**			**3,312**			
Margin (in % of net sales)[1]	27.8%			30.8%			
Restructuring expenses	84	-84	–	46	-46	–	
Integration expenses/ IT expenses	51	-51	–	44	-44	–	
Gains (–)/losses (+) on the divestment of businesses	17	-17	–	-32	32	–	
Acquisition-related adjustments	14	-14	–	10	-10	–	
Other adjustments	32	-32	–	30	-30	–	
EBITDA pre[1]	**3,140**	**–**	**3,140**	**3,411**	**–**	**3,411**	**-7.9%**
Margin (in % of net sales)[1]	29.6%			31.7%			
thereof: organic growth[1]							-4.5%
thereof: exchange rate effects							-3.2%
thereof: acquisitions/ divestments							-0.3%

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

[2] 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.

- In the second quarter of 2023, the operating result (EBIT) decreased in comparison with the year-earlier period. This was primarily due to the decline in gross profit and could only be partly offset by the reduction in operating expenses. Since the decrease in operating profit in the first quarter continued in the second quarter, Group EBIT saw an overall decline in the first half of 2023. Consequently, the EBIT margin decreased by around three percentage points.

- EBITDA pre, the key financial indicator used to steer operating business, was lower in the first half of 2023 than in the year-earlier period. This resulted mainly from the organic decrease in EBITDA pre as well as negative foreign exchange effects in the first and second quarters. The Group EBITDA pre margin also decreased and amounted to 29.6% in the first half of 2023 (January-June 2022: 31.7%).

- Earnings per share pre (earnings per share after net of tax effect of adjustments and amortization of purchased intangible assets) declined in the second quarter of 2023. In combination with the slight slowdown in the first quarter, earnings per share pre were € 4.57 in the first half of 2023 and thus below the corresponding year-earlier period (January-June 2022: € 5.05).

Net assets and financial position

Merck Group

Balance sheet structure

	June 30, 2023		Dec. 31, 2022		Change	
	€ million	in %	€ million	in %	€ million	in %
Non-current assets[1]	35,763	73.3%	36,334	74.9%	-571	-1.6%
Current assets	13,019	26.7%	12,201	25.1%	818	6.7%
Total assets[1]	**48,782**	**100.0%**	**48,535**	**100.0%**	**247**	**0.5%**
Equity	**26,772**	**54.9%**	**26,005**	**53.6%**	**766**	**2.9%**
Non-current liabilities[1]	13,164	27.0%	13,015	26.8%	148	1.1%
Current liabilities[1]	8,846	18.1%	9,514	19.6%	-668	-7.0%
Liabilities[1]	**22,010**	**45.1%**	**22,530**	**46.4%**	**-520**	**-2.3%**
Total equity and liabilities[1]	**48,782**	**100.0%**	**48,535**	**100.0%**	**247**	**0.5%**

[1] Previous-year figures have been adjusted owing to the finalization of the purchase price allocation in connection with the acquisitions of the chemical business of Mecaro Co. Ltd., Korea, trading as M Chemicals Inc., Korea, as well as Erbi Biosystems Inc., USA.

- In the first six months of 2023, total assets of the Merck Group increased by € 247 million to € 48,782 million (December 31, 2022: € 48,535 million). This was mainly attributable to an increase in other current non-financial assets.
- Equity showed a moderate increase in the first half of 2023 and amounted to € 26,772 million as of June 30, 2023 (December 31, 2022: € 26,005 million). Consequently, the equity ratio improved to 54.9% (December 31, 2022: 53.6%).
- Liabilities decreased in the first six months of the year by € 520 million to € 22,010 million (December 31, 2022: € 22,530). This was mainly driven by the decline in other current financial liabilities.

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

Merck Group

Net financial debt[1]

			Change	
€ million	June 30, 2023	Dec. 31, 2022	€ million	in %
Bonds and commercial paper	8,700	8,726	-26	-0.3%
Bank loans	289	203	86	42.3%
Liabilities to related parties	1,617	919	698	75.9%
Loans from third parties and other financial liabilities	58	59	-1	-1.7%
Liabilities from derivatives (financial transactions)	42	30	12	40.9%
Lease liabilities	479	491	-12	-2.4%
Financial debt	**11,186**	**10,428**	**757**	**7.3%**
less:				
Cash and cash equivalents	1,761	1,854	-93	-5.0%
Current financial assets[2]	70	247	-177	-71.8%
Net financial debt[1]	**9,355**	**8,328**	**1,027**	**12.3%**

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

[2] Excluding current derivatives (operational) and contingent considerations, which are recognized in the context of business combinations according to IFRS 3.

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 2023	Q2 2022	Change	Jan.-June 2023	Jan.-June 2022	Change
EBITDA pre[1]	**1,553**	**1,782**	**-12.8%**	**3,140**	**3,411**	**-7.9%**
Adjustments[1]	-102	-73	39.7%	-198	-98	>100.0%
Financial result[2]	-76	-55	37.4%	-98	-89	10.0%
Income tax[2]	-188	-252	-25.4%	-400	-507	-21.1%
Changes in working capital[1]	-53	-325	-83.7%	-277	-647	-57.2%
thereof: changes in inventories[3]	-106	-201	-47.0%	-429	-387	10.8%
thereof: changes in trade accounts receivable[3]	15	-194	>100.0%	-102	-537	-81.0%
thereof: changes in trade accounts payable/refund liabilities[3]	39	70	-44.3%	254	277	-8.3%
Changes in provisions[3,4]	53	-93	>100.0%	45	14	>100.0%
Changes in other assets and liabilities[3,4]	-421	-133	>100.0%	-608	-367	65.9%
Neutralization of gains/losses on disposals of fixed assets and other disposals[3]	-146	-12	>100.0%	-146	-39	>100.0%
Other non-cash income and expenses[3]	–	12	>100.0%	17	15	10.9%
Operating cash flow	**622**	**852**	**-27.0%**	**1,475**	**1,692**	**-12.8%**

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

[2] In accordance with the Consolidated Income Statement.

[3] In accordance with the Consolidated Cash Flow Statement.

[4] As of January 1, 2023, the tranche of the Merck Long-Term Incentive Plan to be paid out in the months following the balance sheet date is disclosed under other current non-financial liabilities and no longer under current provisions for employee benefits. For better comparability, the previous year's figures have been adjusted.

Life Science

Development of net sales and results of operations

In the second quarter of 2023, the net sales of the Life Science business sector developed as follows:

Life Science

Net sales by business unit

€ million	Q2 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2022[2]	Share
Science & Lab Solutions	1,182	50%	-1.1%	-2.9%	–	-4.1%	1,232	46%
Process Solutions	994	42%	-11.8%	-2.1%	–	-13.9%	1,154	44%
Life Science Services	178	8%	-30.5%	-1.4%	–	-31.9%	262	10%
Life Science	**2,354**	**100%**	**-8.7%**	**-2.4%**	**–**	**-11.1%**	**2,648**	**100%**

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

[2] Prior-year figures have been adjusted owing to an internal realignment.

The development of Life Science net sales across the individual business units in the first half of 2023 was as follows:

Life Science

Net sales by business unit

€ million	Jan.-June 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2022[2]	Share
Science & Lab Solutions	2,458	51%	2.4%	-1.2%	–	1.1%	2,430	48%
Process Solutions	2,016	42%	-8.1%	-0.6%	–	-8.7%	2,208	43%
Life Science Services	366	7%	-20.6%	-0.1%	1.2%	-19.5%	455	9%
Life Science	**4,840**	**100%**	**-4.2%**	**-0.9%**	**0.1%**	**-5.0%**	**5,093**	100%

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

[2] Prior-year figures have been adjusted owing to an internal realignment.

- The Science & Lab Solutions business unit, which provides products and services to support life science research for pharmaceutical, biotechnology, academic research laboratories and researchers as well as scientific and industrial laboratories, delivered slight organic sales growth in the first half of 2023. This was driven by the solid performance of the core business[1] in the first quarter of 2023, while sales saw a slight organic decline in the second quarter of 2023 amid further decreasing pandemic-related sales. Geographically, overall organic sales growth in the first half of 2023 was mainly driven by Europe and Asia-Pacific.
- The Process Solutions business unit, which markets products and services for the entire pharmaceutical production value chain, saw an organic decrease in sales in the first half of 2023. This was attributable to the continued decline in pandemic-related sales and a slowdown of the core business, driven mainly by the effects of destocking by key customers.
- The Life Science Services business unit, which offers fully integrated Contract Development and Manufacturing Organization (CDMO) and Contract Testing services, recorded a strong organic sales decline in the second quarter of 2023. Apart from declining pandemic-related sales, the core business also decreased significantly. Whereas the Life Science Service business unit generated sales growth in the core business in both the first quarter and the first six months, decreasing pandemic-related sales led to an overall organic sales decline in the first half of 2023.

[1] The core business consists of “Net sales excluding the Covid-19 business“. This is a financial indicator that is not defined by International Financial Reporting Standards (IFRS). It should not be taken into account in order to assess the performance of Merck in isolation or as an alternative to the financial indicators presented in the consolidated financial statements and determined in accordance with IFRS.

The following table presents the composition of EBITDA pre for the second quarter of 2023 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 2023			Q2 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**2,354**	**–**	**2,354**	**2,648**	**–**	**2,648**	**-11.1%**
Cost of sales	-1,078	–	-1,078	-1,052	3	-1,049	2.8%
Gross profit	**1,275**	**–**	**1,275**	**1,595**	**3**	**1,598**	**-20.2%**
Marketing and selling expenses	-566	–	-566	-609	11	-598	-5.3%
Administration expenses	-103	12	-91	-103	9	-94	-3.1%
Research and development costs	-99	1	-98	-99	–	-98	–
Impairment losses and reversals of impairment losses on financial assets (net)	-1	–	-1	-8	–	-8	-83.9%
Other operating income and expenses	-51	32	-18	-12	7	-5	>100.0%
Operating result (EBIT)[1]	**455**			**765**			
Margin (in % of net sales)[1]	19.3%			28.9%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	243	-32	211	210	–	210	0.7%
EBITDA[2]	**698**			**975**			
Margin (in % of net sales)[1]	29.7%			36.8%			
Restructuring expenses	2	-2	–	13	-13	–	
Integration expenses/ IT expenses	12	-12	–	10	-10	–	
Gains (-)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	–	–	–	7	-7	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**712**	**–**	**712**	**1,006**	**–**	**1,006**	**-29.2%**
Margin (in % of net sales)[1]	30.2%			38.0%			
thereof: organic growth[1]							-26.1%
thereof: exchange rate effects							-3.3%
thereof: acquisitions/ divestments							0.2%

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

[2] 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.

The following table presents the composition of EBITDA pre for the first half of 2023 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 2023			Jan.-June 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**4,840**	**–**	**4,840**	**5,093**	**–**	**5,093**	**-5.0%**
Cost of sales	-2,077	–	-2,077	-2,017	3	-2,014	3.1%
Gross profit	**2,763**	**–**	**2,763**	**3,076**	**3**	**3,079**	**-10.3%**
Marketing and selling expenses	-1,134	-1	-1,135	-1,161	11	-1,149	-1.3%
Administration expenses	-208	23	-185	-194	16	-178	3.8%
Research and development costs	-203	1	-202	-187	–	-186	8.4%
Impairment losses and reversals of impairment losses on financial assets (net)	-2	–	-2	-9	–	-9	-75.3%
Other operating income and expenses	-88	39	-50	-36	6	-30	65.8%
Operating result (EBIT)[1]	**1,128**			**1,489**			
Margin (in % of net sales)[1]	23.3%			29.2%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	455	-32	423	408	-1	407	3.9%
EBITDA[2]	**1,583**			**1,897**			
Margin (in % of net sales)[1]	32.7%			37.2%			
Restructuring expenses	2	-2	–	10	-10	–	
Integration expenses/ IT expenses	23	-23	–	18	-18	–	
Gains (-)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	5	-5	–	8	-8	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,612**	**–**	**1,612**	**1,933**	**–**	**1,933**	**-16.6%**
Margin (in % of net sales)[1]	33.3%			37.9%			
of which: organic growth[1]							-14.2%
of which: exchange rate effects							-2.2%
of which: acquisitions/ divestments							-0.1%

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

[2] 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.

- Adjusted gross profit for the Life Science business sector was lower in both the second quarter and the first half in comparison with the year-earlier periods. This was attributable to the organic sales decline following the continued decrease in pandemic-related sales combined with a slowdown of the core business in the second quarter of 2023. At 57.1%, the adjusted gross margin for the first half of 2023 was below the year-earlier period (January-June 2022: 60.5%).
- The decrease in marketing and selling expenses was largely driven by lower logistic costs in the second quarter. However, with respect to the first half of 2023, lower logistics costs in the second quarter were partly offset by higher personnel costs in the first quarter. While research and development costs in the second quarter of 2023 remained flat compared with the year-earlier period, these were higher in the first half of 2023 than in the comparable year-earlier period due to more intense research activity in our core growth areas as well as additional costs linked to the acquisition of Erbi Biosystems Inc., USA.
- EBITDA pre saw an organic decline in both the second quarter and the first half of 2023, resulting in an EBITDA pre margin of 33.3% for the first half of 2023 (January-June 2022: 37.9%).

Healthcare

Development of net sales and results of operations

Sales of the key product lines and products developed in the second quarter of 2023 as follows:

Healthcare

Net sales by major product lines/products

€ million	Q2 2023	Share	Organic growth[1]	Exchange rate effects	Total change	Q2 2022	Share
Oncology	**458**	**22%**	**17.8%**	**-7.7%**	**10.1%**	**415**	**22%**
thereof: Erbitux®	260	13%	10.2%	-9.2%	1.1%	258	13%
thereof: Bavencio®	178	9%	26.8%	-5.0%	21.8%	146	8%
Neurology & Immunology	**467**	**23%**	**12.2%**	**-3.4%**	**8.8%**	**429**	**22%**
thereof: Rebif®	205	10%	-3.2%	-2.4%	-5.6%	217	11%
thereof: Mavenclad®	262	13%	28.1%	-4.5%	23.6%	212	11%
Fertility	**409**	**20%**	**24.7%**	**-8.1%**	**16.5%**	**351**	**18%**
thereof: Gonal-f®	219	11%	18.7%	-8.6%	10.1%	198	10%
Cardiovascular, Metabolism and Endocrinology	**665**	**32%**	**0.9%**	**-4.6%**	**-3.7%**	**690**	**36%**
thereof: Glucophage®	197	10%	-8.9%	-4.6%	-13.6%	228	12%
thereof: Concor®	142	7%	1.8%	-5.7%	-3.9%	147	8%
thereof: Euthyrox®	131	6%	-2.3%	-3.4%	-5.8%	139	7%
thereof: Saizen®	79	4%	22.1%	-5.9%	16.2%	68	4%
Other	**50**	**3%**				**38**	**2%**
Healthcare	**2,049**	**100%**	**11.9%**	**-5.4%**	**6.5%**	**1,924**	**100%**

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

The development of Healthcare net sales across the major product lines and products in the first half of 2023 was as follows:

Healthcare

Net sales by major product lines/products

€ million	Jan.-June 2023	Share	Organic growth[1]	Exchange rate effects	Total change	Jan.-June 2022	Share
Oncology	**891**	**22%**	**16.3%**	**-4.2%**	**12.1%**	**794**	**21%**
thereof: Erbitux®	510	13%	7.1%	-5.0%	2.0%	500	13%
thereof: Bavencio®	345	9%	28.6%	-2.6%	25.9%	274	7%
Neurology & Immunology	**858**	**22%**	**5.5%**	**-0.9%**	**4.6%**	**820**	**22%**
thereof: Rebif®	359	9%	-13.9%	-0.4%	-14.3%	419	11%
thereof: Mavenclad®	499	13%	25.7%	-1.3%	24.3%	401	11%
Fertility	**776**	**20%**	**15.8%**	**-3.8%**	**12.0%**	**693**	**19%**
thereof: Gonal-f®	416	11%	8.3%	-3.9%	4.3%	398	11%
Cardiovascular, Metabolism and Endocrinology	**1,342**	**34%**	**1.9%**	**-2.0%**	**–**	**1,343**	**36%**
thereof: Glucophage®	415	10%	-4.6%	-2.3%	-6.9%	445	12%
thereof: Concor®	284	7%	1.3%	-1.9%	-0.6%	286	8%
thereof: Euthyrox®	260	7%	-1.0%	-1.6%	-2.6%	267	7%
thereof: Saizen®	155	4%	23.5%	-3.2%	20.4%	129	3%
Other	**89**	**2%**				**69**	**2%**
Healthcare	**3,955**	**100%**	**8.8%**	**-2.4%**	**6.3%**	**3,719**	**100%**

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

- In the second quarter of 2023, the oncology drug Erbitux® (cetuximab) delivered organic sales growth in the low-teens percentage range, driven in particular by the Asia-Pacific and Latin America regions, whereas sales in Europe as well as in the Middle East and Africa region showed an organic decline. In the first half of 2023, Erbitux® generated strong organic sales growth. The main contributors here were increased demand in the Asia-Pacific and Latin America regions as a result of inclusion in the drug reimbursement formularies of Mexico and Uruguay, among other things.

- In immuno-oncology, the oncology medicine Bavencio® (avelumab) saw organic sales growth in the high-twenties percentage range in the second quarter of 2023 with nearly all regions contributing. In particular, the Europe and North America regions generated favorable growth with organic increases in the mid-thirties and mid-twenties percentage range, respectively. This development was mainly driven by further market share growth in first-line maintenance treatment for patients with locally advanced or metastatic urothelial carcinoma (UC). The first half of 2023 showed a similar development, also with Bavencio® generating strong organic increases in the high-twenties percentage range.

- Organically, sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis (MS), declined moderately in the second quarter of 2023. The sharper decline in the first quarter of 2023 was influenced by the ongoing difficult situation in the interferon market as well as negative effects from changes in inventories among wholesalers in the North America region. The dynamics in the interferon market generally remain unchanged. Consequently, further sales declines are expected in the future due to the ongoing difficult competitive situation as well as competition from oral dosage forms and high-efficacy MS therapies. In the first half of 2023 and in line with the aforementioned overriding trends in the interferon market, Rebif® saw an organic sales decline in the mid-teens percentage range.

- Mavenclad®, for the oral short-course treatment of highly active relapsing forms of multiple sclerosis, generated organic sales growth in the high-twenties percentage range in the second quarter of 2023. This organic growth was driven by all regions, especially thanks to increasing demand in North America and Europe. Since the developments from the first quarter of 2023 continued in the second quarter, overall favorable organic sales growth was recorded in the first half of 2023.

- In the second quarter of 2023, the Fertility franchise generated strong organic sales growth in the mid-twenties percentage range. Gonal-f®, the leading recombinant hormone for the treatment of infertility, delivered organic growth in the high-teens percentage range, which was driven by increased demand as well as supply bottlenecks faced by a competing product. Other products from the Fertility franchise also generated organic sales growth, in some cases in the mid double-digit percentage range, thus contributing to the strong growth. This development occurred against the background of increased demand as well as supply bottlenecks of a competing product. As a result of the aforementioned growth drivers, the Fertility franchise also generated favorable organic growth in the mid-teens percentage range in the first half of 2023.

- Organically, the Cardiovascular, Metabolism and Endocrinology franchise, which commercializes products to treat cardiovascular diseases, thyroid disorders, diabetes, and growth disorders, among other things, delivered roughly stable sales in the second quarter of 2023 compared with the year-earlier quarter. Sales of the diabetes medicine Glucophage® declined sharply due to a difficult market situation in the Asia-Pacific region while the sales development of the beta-blocker Concor® and the thyroid medicine Euthyrox® changed only slightly compared with the year-earlier quarter. The favorable organic growth of Saizen® in the low-twenties percentage range as a result of increasing demand and supply bottlenecks of a competing product also had a positive impact on the franchise. In the first half of 2023, the Cardiovascular, Metabolism and Endocrinology franchise generated slight organic growth overall.

The following table presents the composition of EBITDA pre for the second quarter of 2023 in comparison with the year-earlier quarter. The IFRS figures have been modified to reflect the elimination of adjustments included in the respective functional costs.

Healthcare

Reconciliation EBITDA pre[1]

	Q2 2023			Q2 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**2,049**	**–**	**2,049**	**1,924**	**–**	**1,924**	**6.5%**
Cost of sales	-486	-2	-488	-484	1	-482	1.1%
Gross profit	**1,564**	**-2**	**1,562**	**1,441**	**1**	**1,442**	**8.3%**
Marketing and selling expenses	-422	5	-418	-417	1	-415	0.6%
Administration expenses	-79	3	-76	-81	3	-78	-3.0%
Research and development costs	-401	5	-396	-401	6	-395	0.3%
Impairment losses and reversals of impairment losses on financial assets (net)	-8	–	-8	–	–	–	>100.0%
Other operating income and expenses	-36	–	-36	-103	80	-23	56.4%
Operating result (EBIT)[1]	**616**			**439**			
Margin (in % of net sales)[1]	30.0%			22.8%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	76	–	76	164	-90	74	3.0%
EBITDA[2]	**692**			**603**			
Margin (in % of net sales)[1]	33.8%			31.3%			
Restructuring expenses	12	-12	–	8	-8	–	
Integration expenses/IT expenses	3	-3	–	3	-3	–	
Gains (-)/losses (+) on the divestment of businesses	-4	4	–	-10	10	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**704**	**–**	**704**	**604**	**–**	**604**	**16.6%**
Margin (in % of net sales)[1]	34.3%			31.4%			
thereof: organic growth[1]							30.4%
thereof: exchange rate effects							-13.9%
thereof: acquisitions/ divestments							–

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

[2] 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.

The following table presents the composition of EBITDA pre for the first half of 2023. 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 2023			Jan.-June 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**3,955**	**–**	**3,955**	**3,719**	**–**	**3,719**	**6.3%**
Cost of sales	-933	-2	-934	-944	2	-943	-0.9%
Gross profit	**3,022**	**-2**	**3,021**	**2,775**	**2**	**2,776**	**8.8%**
Marketing and selling expenses	-803	5	-798	-792	2	-791	1.0%
Administration expenses	-155	7	-147	-152	5	-147	–
Research and development costs	-797	-3	-800	-798	6	-792	1.0%
Impairment losses and reversals of impairment losses on financial assets (net)	-9	–	-9	-4	–	-4	>100.0%
Other operating income and expenses	-123	–	-123	-135	81	-55	>100.0%
Operating result (EBIT)[1]	**1,135**			**893**			
Margin (in % of net sales)[1]	28.7%			24.0%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	149	1	150	236	-91	145	3.3%
EBITDA[2]	**1,285**			**1,128**			
Margin (in % of net sales)[1]	32.5%			30.3%			
Restructuring expenses	5	-5	–	10	-10	–	
Integration expenses/ IT expenses	7	-7	–	4	-4	–	
Gains (-)/losses (+) on the divestment of businesses	-4	4	–	-10	10	–	
Acquisition-related adjustments	–	–	–	–	–	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**1,293**	**–**	**1,293**	**1,133**	**–**	**1,133**	**14.2%**
Margin (in % of net sales)[1]	32.7%			30.5%			
of which: organic growth[1]							21.1%
of which: exchange rate effects							-7.0%
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 operating result (EBIT) adjusted by depreciation, amortization, impairment losses, and reversals of impairment losses.

- In the second quarter of 2023, adjusted gross profit increased sharply, resulting in a gross margin of 76.2% (Q2 2022: 74.9%). The first half of 2023 showed a similar picture, also with strong increases in adjusted gross profit and a gross margin of 76.4% (January-June 2022: 74.7%).
- Both in the second quarter and the first half of 2023, marketing and sales expenses as well as research and development costs were roughly in line with the year-earlier period. After the elimination of adjustments, net other operating expenses and income in the second quarter of 2023 were mainly attributable to lower income from licensing agreements as well as increased sales of the oncology medicine Bavencio® and the resulting higher profit transfers from the strategic alliance with Pfizer Inc., USA. Income received from the disposal of intangible assets in the second quarter of 2023 did not fully compensate for these higher expenses. In the first half of 2023, the higher expense balance (net) was attributable to income received from the out-licensing of drug candidates in the year-earlier period as well as higher profit transfers on net sales of the oncology medicine Bavencio® in the reporting period.
- In the second quarter of 2023, EBITDA pre increased by a low double-digit percentage amount, which resulted in an EBITDA pre margin of 34.3% (Q2 2022: 31.4%). Since the developments from the first quarter continued in the second quarter, EBITDA pre in the first half of 2023 saw in increase in the mid-teens percentage range, improving the EBITDA pre margin to 32.7% (January-June 2022: 30.5%).

Electronics

Development of net sales and results of operations

In the second quarter of 2023, net sales of the Electronics business sector developed as follows:

Electronics

Net sales by business unit

€ million	Q2 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Q2 2022	Share
Semiconductor Solutions	602	67%	-4.7%	-3.6%	0.5%	-7.8%	653	66%
Display Solutions	196	22%	-10.9%	-4.9%	–	-15.8%	233	23%
Surface Solutions	101	11%	-5.8%	-2.8%	–	-8.7%	111	11%
Electronics	**899**	**100%**	**-6.3%**	**-3.8%**	**0.3%**	**-9.7%**	**996**	**100%**

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

The development of Electronics net sales across the individual business units in the first half of 2023 was as follows:

Electronics

Net sales by business unit

€ million	Jan.-June 2023	Share	Organic growth[1]	Exchange rate effects	Acquisitions/ divestments	Total change	Jan.-June 2022	Share
Semiconductor Solutions	1,207	67%	-1.5%	-1.2%	0.5%	-2.2%	1,234	63%
Display Solutions	383	21%	-20.0%	-2.5%	–	-22.5%	494	25%
Surface Solutions	210	12%	-5.3%	-1.5%	–	-6.8%	226	12%
Electronics	**1,800**	**100%**	**-6.7%**	**-1.6%**	**0.3%**	**-7.9%**	**1,954**	**100%**

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

- The Semiconductor Solutions business unit, which comprises two businesses, namely Semiconductor Materials and Delivery Systems & Services (DS&S), saw an organic sales decline in the second quarter of 2023. Demand for Semiconductor Materials was already depressed in the first quarter and declined further in the second quarter. This was the main driver of the organic sales decline in Semiconductor Solutions in the first half of 2023. Supported by a solid order book in equipment and with strong project activity, growth in DS&S largely compensated for the weaker demand in Semiconductor Materials. The portfolio effect was due to the acquisition of the chemical business of Mecaro Co. Ltd., Korea, trading as M Chemicals Inc., Korea, on December 30, 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 in the second quarter of 2023 as a result of weaker pricing stemming from continued competitive pressure and an unfavorable product mix. This effect was partially mitigated by Liquid Crystals volumes, which began to recover in the second quarter. In the first half of 2023, the overall decline was also driven by weaker volumes in the first quarter of 2023 in comparison with the year-earlier period. This was attributable to lower customer utilization in Liquid Crystals, which began late in the second quarter of 2022.

- The Surface Solutions business unit saw a strong decline in sales due to weaker demand for industrial pigments and automotive coatings in the second quarter of 2023. This decline was partly offset by continued strong demand in Cosmetics, especially in Europe. The impacts in the first half of 2023 were similar since these effects were already in place in the first quarter of 2023.

The following table presents the composition of EBITDA pre for the second quarter of 2023 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.

Electronics

Reconciliation EBITDA pre[1]

	Q2 2023			Q2 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**899**	**–**	**899**	**996**	**–**	**996**	**-9.7%**
Cost of sales	-572	6	-566	-571	4	-567	-0.2%
Gross profit	**327**	**6**	**333**	**426**	**4**	**429**	**-22.4%**
Marketing and selling expenses	-148	–	-147	-163	1	-162	-9.0%
Administration expenses	-35	4	-31	-33	2	-31	1.3%
Research and development costs	-75	–	-74	-73	1	-72	2.7%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating income and expenses	40	11	52	-8	4	-5	>100.0%
Operating result (EBIT)[1]	**110**			**148**			
Margin (in % of net sales)[1]	12.2%			14.9%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	135	-5	130	134	–	134	-2.8%
EBITDA[2]	**245**			**282**			
Margin (in % of net sales)[1]	27.2%			28.3%			
Restructuring expenses	7	-7	–	8	-8	–	
Integration expenses/ IT expenses	5	-5	–	1	-1	–	
Gains (-)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	5	-5	–	1	-1	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**262**	**–**	**262**	**293**	**–**	**293**	**-10.7%**
Margin (in % of net sales)[1]	29.1%			29.4%			
thereof: organic growth[1]							-5.2%
thereof: exchange rate effects							-4.9%
thereof: acquisitions/ divestments							-0.5%

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

[2] 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.

The following table presents the composition of EBITDA pre for the first half of 2023 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 2023			Jan.-June 2022			Change
€ million	IFRS	Elimination of adjustments	Pre[1]	IFRS	Elimination of adjustments	Pre[1]	Pre[1]
Net sales	**1,800**	**–**	**1,800**	**1,954**	**–**	**1,954**	**-7.9%**
Cost of sales	-1,098	8	-1,090	-1,131	5	-1,126	-3.2%
Gross profit	**702**	**8**	**710**	**823**	**5**	**828**	**-14.2%**
Marketing and selling expenses	-306	–	-305	-319	1	-317	-3.8%
Administration expenses	-68	6	-62	-61	2	-59	5.9%
Research and development costs	-149	–	-148	-148	1	-147	0.7%
Impairment losses and reversals of impairment losses on financial assets (net)	–	–	–	–	–	–	–
Other operating income and expenses	16	27	43	-1	13	11	>100.0%
Operating result (EBIT)[1]	**196**			**294**			
Margin (in % of net sales)[1]	10.9%			15.0%			
Depreciation/amortization/ impairment losses/reversals of impairment losses	277	-15	262	267	–	267	-1.8%
EBITDA[2]	**473**			**561**			
Margin (in % of net sales)[1]	26.3%			28.7%			
Restructuring expenses	9	-9	–	13	-13	–	
Integration expenses/ IT expenses	8	-8	–	6	-6	–	
Gains (-)/losses (+) on the divestment of businesses	–	–	–	–	–	–	
Acquisition-related adjustments	9	-9	–	2	-2	–	
Other adjustments	–	–	–	–	–	–	
EBITDA pre[1]	**499**	**–**	**499**	**582**	**–**	**582**	**-14.3%**
Margin (in % of net sales)[1]	27.7%			29.8%			
of which: organic growth[1]							-12.5%
of which: exchange rate effects							-1.4%
of which: acquisitions/ divestments							-0.5%

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

[2] 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.

- Adjusted gross profit for the Electronics business sector decreased in the second quarter of 2023, driven first and foremost by the aforementioned decline in sales. At 37.0%, the adjusted gross margin declined compared with the year-earlier quarter (Q2 2022: 43.1%) owing to lower volumes to cover fixed costs, an unfavorable product and business mix, inventory revaluations and rising costs due to inflation as well as the price effects in Display Solutions. The effects seen in the second quarter were the primary drivers in the first half of 2023 as well.

- Marketing and selling expenses decreased in both the second quarter and the first half, primarily owing to lower logistics costs from the lower volumes and declining freight rates. Research and development costs and administration costs were nearly stable year-on-year for both the second quarter and the first half, excluding the effects of inflation and foreign exchange. The development of other operating income and

expenses was favorable in comparison with both previous-year periods due to the disposal of Display patents in the second quarter of 2023.

- Consequently, EBITDA pre declined in both the second quarter and the first half of 2023 in comparison with the corresponding year-earlier periods. The EBITDA pre margin was flat year-on-year at 29.1% in the second quarter (Q2 2022: 29.4%) as the weaker gross profit margins discussed above were mostly offset by favorable operating expenses and the one-time disposal of patents. As part of the deal to dispose of the patent portfolio, a new multi-year collaboration agreement was signed with Universal Display Corporation which strengthens the OLED materials portfolio. In the first half of 2023, the EBITDA pre margin decreased from 29.8% to 27.7% with similar drivers as in the second quarter.

Corporate and Other

Corporate and Other comprises administration expenses for Group functions that cannot be directly allocated to the business sectors.

Corporate and Other

Key figures

€ million	**Q2 2023**	Q2 2022	Change	**Jan.-June 2023**	Jan.-June 2022	Change
Operating result (EBIT)[1]	-212	-175	20.7%	-455	-324	40.1%
EBITDA[2]	-184	-151	21.9%	-398	-274	45.5%
EBITDA pre[1]	-124	-120	3.0%	-264	-237	11.5%

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

[2] 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.

The reduction in both the operating result and in EBITDA in comparison with the previous year was due also to expenses in connection with a program to continuously improve processes and align the Group functions more closely with the businesses. In this context, reference is made to the section entitled "**Reimagine the Enabling Functions program**" under "**Significant events during the reporting period**" in the consolidated interim financial statements as of June 30, 2023.

Report on Risks and Opportunities

As a global corporate group, Merck offers a broad range of products across its three business sectors in highly innovative business fields. While this presents significant opportunities, it also exposes the company and its business activities to potential risks that could impact its financial and non-financial objectives.

To address these risks, Merck has a Group-wide risk management system in place that aims to identify, evaluate, mitigate, and continuously monitor potential risks. This system enables us to track a variety of risks and opportunities, including financial, human resources, information technology, environmental, climate, safety, security, and legal risks. Legal risks, in particular, encompass a broad range of potential issues such as product liability litigation, patent law disputes, data privacy concerns as well as risks arising from antitrust and government proceedings.

The risks and opportunities outlined in the 2022 Annual Report remain valid in the current reporting period, which covers the first half of 2023. Further information on developments in specific 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**".

Most of the risks have been revised using the current plan figures or reassessed accordingly. Special note is to be made of the geopolitical risks across the globe. As the war in Ukraine grinds on, we are also seeing increasing tensions and trade barriers between China, the United States and the rest of the world. These tensions have implications for global supply chains, raw materials and overall operations.

Apart from the aforementioned developing risk situation, there have been no significant changes to the overall risk landscape. An existence-threatening risk scenario derived from the leading risk key performance indicator "Risk Capacity" remains at a low level.

However, our assumptions on geopolitical developments exclude highly accelerated and extreme scenarios involving severe escalation of current and future geopolitical tensions. The materialization of such scenarios would naturally jeopardize the existence of entire industries, the overall balance of geopolitical and economic structures and would accordingly pose a substantial challenge for Merck, as for any other company.

Report on Expected Developments

With the publication of the quarterly statement as of March 31, 2023, we specified our forecast for the development of net sales and EBITDA pre of the Merck Group and the individual business sectors Life Science, Healthcare and Electronics and provided an estimate of Group operating cash flow in 2023. With the completion of the second quarter of 2023, we update this forecast as follows:

Forecast for the Merck Group

Forecast for FY 2023

€ million	**Net sales**	**EBITDA pre[1]**	**Operating cash flow**
Merck Group	**~20,500 to 21,900** Organic -2% to +2% Foreign exchange effect -6% to -3%	**~5,800 to 6,400** Organic -9% to -3% Foreign exchange effect -6% to -3%	**~3,500 to 4,100**
Life Science	**~9,100 to 9,950** Organic -8% to -2% Foreign exchange effect -5% to -2%	**~2,750 to 3,200** Organic -21% to -12% Foreign exchange effect -6% to -2%	
Healthcare	**~7,750 to 8,300** Organic +6% to +9% Foreign exchange effect -7% to -4%	**~2,450 to 2,600** Organic +14% to +19% Foreign exchange effect -17% to -13%	
Electronics	**~3,500 to 3,800** Organic -6% to -1% Foreign exchange effect -7% to -4%	**~870 to 980** Organic -18% to -10% Foreign exchange effect -10% to -7%	
Corporate and Other	n/a	**~-370 bis -330**	

[1] 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.

EPS pre € 8.25 to € 9.35, based on an underlying tax rate of 22%.

Full-year FX assumption for 2023: € 1 = US$ 1.08 to US$ 1.12

Fundamental assumptions

Against the backdrop of macroeconomic, geopolitical and industry-specific circumstances, the forecast is also subject to greater uncertainty and volatility in fiscal 2023 than is normally the case. It continues to assume an elevated level of inflation. Countermeasures will be taken to soften the expected negative effects as far as possible.

As regards the development of exchange rates, our assumption of a persistently volatile environment remains unchanged. We continue to expect negative foreign exchange impacts in 2023 resulting mainly from the development of the U.S. dollar and the Chinese renminbi. In the first half of the year, the euro-U.S. dollar exchange rate was within the range we had forecast of 1.07 to 1.11. Taking into account the current exchange rate development, we expect a further increase 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 unfavorable development of foreign exchange effects than in the previous forecast and expect a euro-U.S. dollar exchange rate within the corridor of 1.08 to 1.12 for fiscal 2023.

Net sales

We are lowering our forecast for Group net sales and now expect an organic development in fiscal 2023 of between -2% and 2% (previously growth of 1% to 4%). Our net sales excluding the Covid-19 business[1] are likely to grow organically by between 1% and 5% (previously 4% to 7%). As expected, the Healthcare business sector will be the main driver of net sales with not only Bavencio® and Mavenclad®, but also our established portfolio, especially products from our Fertility franchise, contributing to growth. As inventory levels and investment restraint among our customers remain high, we are lowering our forecast for the Life Science business sector and now expect the development of net sales excluding the Covid-19 business to lie between -3% and 4%. We confirm our assumption for Life Science sales stemming from demand for products in connection with Covid-19 and continue to assume a significant decline from around € 800 million in 2022 to around € 250 million in fiscal 2023. The development of the Electronics business sector reflects the declining Display Solutions business as well as the ongoing softness of the semiconductor materials market. In comparison with the previous forecast, we assume a further delay in the recovery of the semiconductor market. Market consensus assumes a stabilization in the second half of the year at a continued low level. The positive development of the project business within Semiconductor Solutions will be sustained as expected and partly offset the decline in Semiconductor Materials. Including negative foreign exchange effects of -3% to -6% (previously -2% to -5%), we forecast net sales for the Merck Group of between € 20.5 billion and € 21.9 billion (previously € 21.2 billion to € 22.7 billion / 2022: € 22.2 billion).

EBITDA pre

We are lowering our forecast for EBITDA pre and assume an organic development of -3% to -9% (previously 0% to -5%). Overall, we expect a negative impact on EBITDA pre due to a higher level of costs stemming from inflation as well as underutilization of our production capacities, impacting the Life Science and Electronics business sectors in particular. We will mitigate the negative effects through active cost management. In comparison with the previous forecast, we raise our expectation for a positive organic development in Healthcare. This will be particularly attributable to expected stronger business performance. The termination of the alliance with Pfizer Inc., USA, as a result of which we will regain the exclusive global rights to develop, manufacture and commercialize Bavencio®, will also have a positive effect on the development of earnings. We continue to assume that active portfolio management will lead to income in the mid to high double-digit million euro range in fiscal 2023. The forecast foreign exchange development is expected to impact EBITDA pre of the Group by -6% to -3% (previously -2% to -5%) and manifest primarily in the Healthcare business sector. Positive effects of currency hedging transactions will mitigate the impact in comparison with the previous year. For Group EBITDA pre, we therefore expect an amount ranging from € 5.8 billion to € 6.4 billion (previously € 6.1 billion to € 6.7 billion / 2022: € 6.8 billion).

Operating cash flow

The forecast for operating cash flow is generally subject to a higher fluctuation corridor than the forecast for EBITDA pre. We provide an estimate of the development of operating cash flow only for the Group as a whole.

The development of operating cash flow is forecast to be largely in line with operating performance. For operating cash flow, we also expect negative foreign exchange impacts in fiscal 2023. Positive effects will result from a weaker rise in working capital in comparison with the previous year. Fiscal 2022 was particularly impacted by inventory build-ups to secure production and supply capacities as well as higher material prices. Overall, for fiscal 2023, we forecast operating cash flow of € 3.5 billion to € 4.1 billion (previously € 3.7 billion to € 4.3 billion / 2022: € 4.3 billion). As regards the composition of operating cash flow, we refer to the "**Consolidated Cash Flow Statement**" in this report.

[1] "Net sales excluding the Covid-19 business" refers to a financial indicator that is not defined by International Financial Reporting Standards (IFRS). It should not be taken into account in order to assess the performance of Merck in isolation or as an alternative to the financial indicators presented in the consolidated financial statements and determined in accordance with IFRS.

consolidated interim financial statements as of June 30, 2023

Consolidated Income Statement

€ million	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022
Net sales	**5,302**	**5,568**	**10,595**	**10,766**
Cost of sales	-2,139	-2,109	-4,111	-4,096
Gross profit	**3,163**	**3,460**	**6,484**	**6,671**
Marketing and selling expenses	-1,139	-1,194	-2,249	-2,281
Administration expenses	-345	-331	-703	-618
Research and development costs	-600	-600	-1,198	-1,185
Impairment losses and reversals of impairment losses on financial assets (net)	-10	-9	-12	-14
Other operating income	181	110	213	223
Other operating expenses	-280	-261	-532	-445
Operating result (EBIT)[1]	**969**	**1,177**	**2,004**	**2,350**
Finance income	73	25	106	57
Finance costs	-149	-81	-205	-146
Profit before income tax	**894**	**1,122**	**1,906**	**2,261**
Income tax	-188	-252	-400	-507
Profit after tax	**706**	**870**	**1,506**	**1,754**
thereof: attributable to Merck KGaA shareholders (net income)	704	867	1,500	1,748
thereof: attributable to non-controlling interests	3	3	6	6
Earnings per share (€)				
Basic	1.62	1.99	3.45	4.02
Diluted	1.62	1.99	3.45	4.02

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

Consolidated Statement of Comprehensive Income

€ million	Q2 2023	Q2 2022	Jan.-June 2023	Jan.-June 2022
Profit after tax	**706**	**870**	**1,506**	**1,754**
Items of other comprehensive income that will not be reclassified to profit or loss in subsequent periods				
Net defined benefit liability				
Changes in remeasurement	-20	1,203	-33	1,792
Tax effect	5	-258	6	-370
Changes recognized in equity	-15	945	-27	1,421
Equity instruments				
Fair value adjustments	100	-11	108	-56
Tax effect	6	3	1	6
Changes recognized in equity	106	-8	109	-50
	91	**937**	**82**	**1,372**
Items of other comprehensive income that may be reclassified to profit or loss in subsequent periods				
Cash flow hedge reserve				
Fair value adjustments	33	-95	73	-115
Reclassification to profit or loss	-20	44	-12	59
Reclassification to assets	–	–	–	–
Tax effect	-8	-2	-8	1
Changes recognized in equity	6	-53	53	-55
Cost of cash flow hedge reserve				
Fair value adjustments	-7	-6	-17	-3
Reclassification to profit or loss	8	3	13	4
Tax effect	–	–	–	4
Changes recognized in equity	1	-2	-4	5
Currency translation difference				
Changes taken directly to equity	33	1,528	-576	1,789
Reclassification to profit or loss	–	–	–	-2
Changes recognized in equity	33	1,528	-576	1,787
	40	**1,473**	**-527**	**1,738**
Other comprehensive income	**131**	**2,409**	**-444**	**3,109**
Comprehensive income	**837**	**3,280**	**1,061**	**4,863**
thereof: attributable to Merck KGaA shareholders	836	3,275	1,057	4,856
thereof: attributable to non-controlling interests	1	5	4	7

Consolidated Balance Sheet

€ million	June 30, 2023	Dec. 31, 2022
Non-current assets[1]		
Goodwill[1]	18,102	18,389
Other intangible assets[1]	6,765	7,335
Property, plant and equipment[1]	8,393	8,204
Investments accounted for using the equity method	3	3
Non-current receivables	23	27
Other non-current financial assets	1,041	957
Other non-current non-financial assets	88	99
Non-current income tax receivables	9	10
Deferred tax assets	1,338	1,310
	35,763	**36,334**
Current assets		
Inventories	4,996	4,632
Trade and other current receivables	4,210	4,114
Contract assets	127	128
Other current financial assets	166	321
Other current non-financial assets	1,250	705
Current income tax receivables	509	446
Cash and cash equivalents	1,761	1,854
	13,019	**12,201**
Total assets[1]	**48,782**	**48,535**
Total equity		
Equity capital	565	565
Capital reserves	3,814	3,814
Retained earnings	19,760	18,463
Gains/losses recognized in equity	2,561	3,086
Equity attributable to Merck KGaA shareholders	**26,701**	**25,927**
Non-controlling interests	71	78
	26,772	**26,005**
Non-current liabilities[1]		
Non-current provisions for employee benefits	1,994	2,030
Other non-current provisions	294	299
Non-current financial debt	9,495	9,200
Other non-current financial liabilities[2]	141	141
Other non-current non-financial liabilities[2]	19	19
Non-current income tax liabilities	38	38
Deferred tax liabilities[1]	1,182	1,287
	13,164	**13,015**
Current liabilities[1]		
Current provisions for employee benefits[2]	106	81
Current provisions	448	372
Current financial debt	1,690	1,228
Other current financial liabilities[2]	259	1,153
Trade and other current payables[1]	2,403	2,499
Refund liabilities	963	912
Current income tax liabilities	1,488	1,483
Other current non-financial liabilities[2]	1,489	1,786
	8,846	**9,514**
Total equity and liabilities[1]	**48,782**	**48,535**

[1] Previous-year figures have been adjusted owing to the finalization of the purchase price allocation in connection with the acquisitions of the chemical business of Mecaro Co. Ltd., Korea, trading as M Chemicals Inc., Korea, as well as Erbi Biosystems Inc., USA.

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

Consolidated Cash Flow Statement

€ million	Q2 2023	Q2 2022	Jan.-June 2023	Jan.-June 2022
Profit after tax	**706**	**870**	**1,506**	**1,754**
Depreciation/amortization/impairment losses/reversals of impairment losses	482	532	938	962
Changes in inventories	-106	-201	-429	-387
Changes in trade accounts receivable	15	-194	-102	-537
Changes in trade accounts payable/refund liabilities	39	70	254	277
Changes in provisions[1]	53	-93	45	14
Changes in other assets and liabilities[1]	-421	-133	-608	-367
Neutralization of gains/losses on disposals of assets	-146	-12	-146	-39
Other non-cash income and expenses	–	12	17	15
Operating cash flow	**622**	**852**	**1,475**	**1,692**
Payments for investments in intangible assets	-31	-52	-110	-120
Payments from the disposal of intangible assets	126	5	130	25
Payments for investments in property, plant and equipment	-296	-246	-868	-677
Payments from the disposal of property, plant and equipment	3	-7	13	10
Payments for investments in financial assets	-12	-23	-34	-48
Payments for acquisitions less acquired cash and net cash equivalents	–	–	–	-695
Proceeds from the disposal of other financial assets	43	37	267	124
Payments from disposal of non-financial assets	-1,207	-500	-2,104	-600
Proceeds from the disposal of non-financial assets	1,514	–	1,614	100
Payments from other divestments	–	–	–	4
Investing cash flow	**140**	**-786**	**-1,091**	**-1,875**
Dividend payments to Merck KGaA shareholders	-284	-239	-284	-239
Dividend payments to non-controlling interests	-10	-2	-10	-11
Dividend payments to E. Merck KG	-778	-626	-868	-716
Payments from new borrowings from E. Merck KG and E. Merck Beteiligungen KG	698	977	697	977
Repayments of financial debt to E. Merck KG	–	–	–	-406
Payments from the issuance of bonds	–	995	–	995
Repayments of bonds	–	-550	–	-1,433
Changes in other current and non-current financial debt	-206	-389	10	686
Financing cash flow	**-580**	**167**	**-456**	**-148**
Cash changes in cash and cash equivalents	**182**	**234**	**-72**	**-330**
Changes in cash and cash equivalents due to currency translation	-5	7	-21	11
Cash and cash equivalents at the beginning of the reporting period	1,584	1,339	1,854	1,899
Changes in cash and cash equivalents due to reclassification to assets held for sale	–	–	–	–
Cash and cash equivalents as of June 30 (consolidated balance sheet)	**1,761**	**1,580**	**1,761**	**1,580**

[1] As of January 1, 2023, the tranche of the Merck Long-Term Incentive Plan to be paid out in the months following the balance sheet date is disclosed under other current non-financial liabilities and no longer under current provisions for employee benefits. For better comparability, the previous year's figures have been adjusted.

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	**Total equity**
Jan. 1, 2023	**565**	**3,814**	**18,463**	**3,086**	**25,927**	**78**	**26,005**
Profit after tax	–	–	1,500	–	1,500	6	1,506
Gains/losses recognized in equity	–	–	82	-524	-442	-2	-444
Comprehensive income	**–**	**–**	**1,582**	**-524**	**1,057**	**4**	**1,061**
Dividend payments	–	–	-284	–	-284	-10	-295
Profit transfer to/from E. Merck KG including changes in reserves	–	–	–	–	–	–	–
Transactions with no change of control	–	–	–	–	–	–	–
Change in scope of consolidation/Other	–	–	–	–	–	–	–
June 30, 2023	**565**	**3,814**	**19,760**	**2,561**	**26,701**	**71**	**26,772**

€ million	Equity capital	Capital reserves	Retained earnings	Gains/losses recognized in equity	**Equity attributable to Merck KGaA shareholders**	Non-controlling interests	**Total 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	–	–	–	–	–	–	–
June 30, 2022	**565**	**3,814**	**18,015**	**3,561**	**25,955**	**74**	**26,029**

Notes to the Consolidated Interim Financial Statements as of June 30, 2023

These consolidated interim financial statements have been prepared by the parent company, Merck KGaA, Frankfurter Strasse 250, 64293 Darmstadt, Germany, which manages the operations of the Merck Group.

Accounting and measurement principles

The interim financial statements of the Merck Group dated June 30, 20203 comply with IAS 34. They have been prepared in accordance with the International Reporting Standards (IFRS) in force on the balance sheet date and adopted 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, 2022 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 interim 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 and the preparation 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 2022.

The dynamic development of the macroeconomic environment means that the degree of uncertainty in the preparation of these interim consolidated financial statements is considerably higher than was typically the case in the past. In particular, uncertainties include the development of inflation, the higher level of interest rates as well as geopolitical challenges, trade restrictions and sanctions. This applies above all to the recoverability of non-financial assets. As has been the case to date, the war in Ukraine has not had any direct material effects on the Merck Group’s net assets, financial position or results of operations owing to its limited business volume in Russia, Ukraine, Belarus, and the Republic of Moldova. As in previous years, there are no grounds to suggest that the going concern assumption should not have been applied in preparing the consolidated financial statements.

The notes to the consolidated financial statements for 2022 also include a presentation of the accounting and measurement principles used. These apply accordingly in these consolidated interim financial statements for 2023 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 2023 as well as the disclosure changes described in the following.

Accounting standards applicable for the first time in fiscal 2023

The following regulations take effect as of fiscal 2023:

Standard/Interpretation	Title	Date of publication	Date of endorsement by EU law	Impact on the consolidated financial statements
Amendments to IAS 1	Disclosure of Accounting Policies	February 12, 2021	March 2, 2022	No material impact
Amendments to IAS 8	Definition of Accounting Estimates	February 12, 2021	March 2, 2022	No material impact
Amendments to IAS 12	Deferred Tax related to Assets and Liabilities arising from a Single Transaction	May 7, 2021	August 11, 2022	No material impact
IFRS 17; Amendments to IFRS 17	IFRS 17 Insurance Contracts; Amendments to IFRS 17; Initial Application of IFRS 17 and IFRS 9 — Comparative Information	May 18, 2017 June 25, 2020 December 9, 2021	November 19, 2021 November 19, 2021 September 8, 2022	No material impact

Impact of the introduction of a global minimum tax rate by the OECD (Pillar Two)

On December 14, 2022, the Council of the European Union passed a directive on the implementation of the internationally agreed minimum tax rate in the member states (“Pillar Two Model Rules”). Merck is continuously analyzing the latest legislative developments and their impact on the countries affected. As the details of the implementation have yet to be finalized, it is not possible to reliably quantify the financial impact at present.

Change in the balance sheet disclosure of liabilities and provisions

To improve comparability, as of January 1, 2023, wage- and salary-related liabilities are disclosed under other non-financial liabilities instead of under other financial liabilities as in the past. In this context, € 127 million was reclassified to other non-financial liabilities.

Moreover, since January 1, 2023, the tranche of the Merck Long-Term Incentive Plan to be paid out in the months following the balance sheet date has been disclosed under other current non-financial liabilities and is no longer disclosed under current provisions for employee benefits. In connection with this reclassification, current provisions for employee benefits decreased by € 158 million.

Scope of consolidation

As of June 30, 2023, 318 (December 31, 2022: 320) 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. Since the beginning of 2023, one company has been added to the scope of consolidation due to materiality. Two companies were deconsolidated due to liquidation. In addition, one company was merged.

Significant events during the reporting period

Termination of the strategic alliance with Pfizer Inc., USA, to co-develop and co-commercialize Bavencio® with effect from June 30, 2023

Merck announced on March 27, 2023 the termination of the alliance agreement with Pfizer Inc., USA, (Pfizer) to co-develop and co-commercialize the anti-PD-L1 antibody Bavencio® (avelumab) with effect from June 30, 2023. Bavencio® is approved for the treatment of multiple cancer indications. In the first half of 2023, net sales generated by Merck with Bavencio® amounted to € 345 million (fiscal 2022: € 611 million).

In accordance with the termination agreement, with effect from June 30, 2023, Merck receives the exclusive worldwide rights to develop, manufacture and commercialize Bavencio®, thus regaining full control over it. The current even split of net profits from sales and defined expense components by the alliance partners will be replaced by a 15% royalty to Pfizer on defined net sales of Bavencio®. While Merck and Pfizer will continue to operationalize their respective ongoing clinical trials for Bavencio®, Merck will control all future research and development activities. Likewise, product manufacturing and supply chain operation will remain solely with Merck.

Disposal of intangible assets in the Healthcare and Electronics business sectors

In the reporting period, intangible assets in the Healthcare and Electronics business sectors were disposed of through divestments.

In the Healthcare business sector, the rights to a non-strategic brand were divested. The net disposal proceeds amounted to a high double-digit million euro figure.

The divestment in the Electronics business sector affected a patent family in the area of emitter materials in the Display Solutions business unit. The net disposal proceeds amounted to a mid double-digit euro million figure.

Reimagine the Enabling Functions program

In fiscal 2022, a program to continuously improve processes and align the Group functions more closely with the businesses was launched. It will take at least until the end of fiscal 2024 to implement this program. In the current fiscal year, provisions amounting to a mid double-digit million euro figure were set up and recognized in profit or loss.

Impairment losses of intangible assets in the reporting period

In the first half of 2023, impairment losses of intangible assets amounted to € 51 million (January-June 2022: € 92 million), of which € 32 million was primarily attributable to a total of five intangible assets in the Life Science business sector. These related to technologies, customer lists and brand rights. In the Electronics business sector, impairment losses of € 15 million were recognized on intangible assets not yet available for use. This related to four discontinued projects from the development pipeline in the Semiconductor Solutions business unit.

Furthermore, an analysis of existing indications of goodwill impairment was conducted in the reporting period with the involvement of the responsible departments and taking external and internal information sources into consideration. The outcome of this analysis did not indicate any need to perform impairment testing.

Segment Reporting

Information by Business Sector

	Life Science				Healthcare				Electronics			
€ million	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022
Net sales[1]	**2,354**	**2,648**	**4,840**	**5,093**	**2,049**	**1,924**	**3,955**	**3,719**	**899**	**996**	**1,800**	**1,954**
Intersegment sales	21	14	40	30	–	–	–	–	–	–	–	–
Operating result (EBIT)[2]	**455**	**765**	**1,128**	**1,489**	**616**	**439**	**1,135**	**893**	**110**	**148**	**196**	**294**
Depreciation and amortization	211	210	423	407	72	74	145	145	130	134	262	267
Impairment losses[3]	32	–	32	1	4	90	5	91	5	–	15	–
Reversals of impairment losses	–	–	–	–	–	–	-1	–	–	–	–	–
EBITDA[4]	**698**	**975**	**1,583**	**1,897**	**692**	**603**	**1,285**	**1,128**	**245**	**282**	**473**	**561**
Adjustments[2]	13	30	30	36	12	1	9	4	17	11	26	22
EBITDA pre (Segment result)[2]	**712**	**1,006**	**1,612**	**1,933**	**704**	**604**	**1,293**	**1,133**	**262**	**293**	**499**	**582**
EBITDA pre margin (in % of net sales)[2]	30.2%	38.0%	33.3%	37.9%	34.3%	31.4%	32.7%	30.5%	29.1%	29.4%	27.7%	29.8%
Assets by business sector[5]	23,898	24,203	23,898	24,203	8,332	8,135	8,332	8,135	10,504	10,857	10,504	10,857
Liabilities by business sector[5]	-1,862	-2,101	-1,862	-2,101	-3,018	-3,111	-3,018	-3,111	-600	-746	-600	-746
Investments in property, plant and equipment[6]	122	93	421	298	45	82	156	184	95	45	223	132
Investments in intangible assets[6]	9	8	25	11	8	38	35	99	7	2	39	3
Non-cash changes in provisions[7]	2	5	7	11	5	-6	-4	54	6	-3	10	3

	Corporate and Other				Group			
€ million	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022	**Q2 2023**	Q2 2022	**Jan.-June 2023**	Jan.-June 2022
Net sales[1]	**–**	**–**	**–**	**–**	**5,302**	**5,568**	**10,595**	**10,766**
Intersegment sales	-22	-14	-40	-30	–	–	–	–
Operating result (EBIT)[2]	**-212**	**-175**	**-455**	**-324**	**969**	**1,177**	**2,004**	**2,350**
Depreciation and amortization	28	25	57	51	441	442	887	869
Impairment losses[3]	–	–	–	–	41	90	52	93
Reversals of impairment losses	–	–	–	–	–	–	-1	–
EBITDA[4]	**-184**	**-151**	**-398**	**-274**	**1,452**	**1,709**	**2,942**	**3,312**
Adjustments[2]	60	30	133	36	102	73	198	98
EBITDA pre (Segment result)[2]	**-124**	**-120**	**-264**	**-237**	**1,553**	**1,782**	**3,140**	**3,411**
EBITDA pre margin (in % of net sales)[2]	–	–	–	–	29.3%	32.0%	29.6%	31.7%
Assets by business sector[5]	6,048	5,341	6,048	5,341	48,782	48,535	48,782	48,535
Liabilities by business sector[5]	-16,529	-16,571	-16,529	-16,571	-22,010	-22,530	-22,010	-22,530
Investments in property, plant and equipment[6]	34	26	68	62	296	246	868	677
Investments in intangible assets[6]	7	4	11	6	31	52	110	120
Non-cash changes in provisions[7]	64	–	110	-16	76	-4	123	52

[1] Excluding intersegment sales.

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

[3] Not including impairment losses on financial assets.

[4] 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.

[5] Figures for the reporting period ending on June 30, 2023; previous-year figures as of December 31, 2022. Previous-year figures have been adjusted owing to the finalization of the purchase price allocation in connection with the acquisitions of the chemical business of Mecaro Co. Ltd., Korea, trading as M Chemicals Inc., Korea, as well as Erbi Biosystems Inc., USA.

[6] In accordance with the Consolidated Cash Flow Statement.

[7] 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 2023.

The fields of activity of the individual segments are described under "**Fundamental Information about the Group**" in the combined management report for 2022.

"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 2023	Q2 2022	Jan.-June 2023	Jan.-June 2022
EBITDA pre of the operating businesses[1]	**1,677**	**1,902**	**3,405**	**3,648**
Corporate and Other	-124	-120	-264	-237
EBITDA pre of the Merck Group[1]	**1,553**	**1,782**	**3,140**	**3,411**
Depreciation/amortization/impairment losses/reversals of impairment losses	-482	-532	-938	-962
Adjustments[1]	-102	-73	-198	-98
Operating result (EBIT)[1]	**969**	**1,177**	**2,004**	**2,350**
Financial result	-76	-55	-98	-89
Profit before income tax	**894**	**1,122**	**1,906**	**2,261**

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

Adjustments comprised the following:

€ million	Q2 2023	Q2 2022	Jan.-June 2023	Jan.-June 2022
Restructuring expenses	-39	-38	-84	-46
Integration expenses/IT expenses	-27	-24	-51	-44
Gains (+)/losses (-) on the divestment of businesses	-17	22	-17	32
Acquisition-related adjustments	-5	-9	-14	-10
Other adjustments	-13	-24	-32	-30
Adjustments before impairment losses/reversals of impairment losses[1]	**-102**	**-73**	**-198**	**-98**
Impairment losses[2]	-37	-90	-48	-93
Reversals of impairment losses	–	–	1	–
Adjustments (total)[1]	**-138**	**-163**	**-245**	**-191**

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

[2] Without impairments on financial assets.

In the first half of 2023, adjustments amounted to € 245 million and were thus € 54 million higher than in the previous-year period (January-June 2022: € 191 million). Restructuring expenses increased by € 37 million and were primarily attributable to a program to continuously improve processes and align the Group functions more closely with the businesses (see explanations under "**Significant events during the reporting period**"). Gains and losses from divested businesses decreased by € 49 million. In the previous year, this item mainly reflected interest rate effects from the measurement of environmental provisions. A small portion arose from the subsequent measurement of contingent consideration. Impairment losses were mainly attributable to intangible assets in the Life Science and Electronics business sectors (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 2023							
Net sales by nature of products	**Life Science**		**Healthcare**		**Electronics**		**Group**	
Goods	4,229	87%	3,939	100%	1,480	82%	9,648	91%
Equipment/hardware	218	5%	–	–	263	15%	481	5%
Services	381	8%	7	–	56	3%	445	4%
License income	12	–	–	–	1	–	13	–
Commission income	1	–	8	–	–	–	9	–
Income from co-commercialization agreements	–	–	–	–	–	–	–	–
Total	**4,840**	**100%**	**3,955**	**100%**	**1,800**	**100%**	**10,595**	**100%**
Net sales by region (customer location)								
Europe	1,666	34%	1,277	32%	165	9%	3,107	29%
North America	1,773	37%	892	23%	366	21%	3,031	29%
Asia-Pacific (APAC)	1,155	24%	1,087	28%	1,224	68%	3,466	33%
Latin America	188	4%	450	11%	20	1%	658	6%
Middle East and Africa (MEA)	59	1%	249	6%	25	1%	333	3%
Total	**4,840**	**100%**	**3,955**	**100%**	**1,800**	**100%**	**10,595**	**100%**

€ million	Jan.-June 2022							
Net sales by nature of 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%**

Life Science[1]

€ million	Jan.-June 2023	Share	Jan.-June 2022	Share
Science & Lab Solutions	2,458	51%	2,430	48%
Process Solutions	2,016	42%	2,208	43%
Life Science Services	366	7%	455	9%
Total	**4,840**	**100%**	**5,093**	**100%**

[1] Prior-year figures have been adjusted owing to an internal realignment.

Healthcare

€ million	Jan.-June 2023	Share	Jan.-June 2022	Share
Oncology	**891**	**22%**	**794**	**21%**
thereof: Erbitux®	510	13%	500	13%
thereof: Bavencio®	345	9%	274	7%
Neurology & Immunology	**858**	**22%**	**820**	**22%**
thereof: Rebif®	359	9%	419	11%
thereof: Mavenclad®	499	13%	401	11%
Fertility	**776**	**20%**	**693**	**19%**
thereof: Gonal-f®	416	11%	398	11%
Cardiovascular, Metabolism and Endocrinology	**1,342**	**34%**	**1,343**	**36%**
thereof: Glucophage®	415	10%	445	12%
thereof: Concor®	284	7%	286	8%
thereof: Euthyrox®	260	7%	267	7%
thereof: Saizen®	155	4%	129	3%
Other	**89**	**2%**	**69**	**2%**
Total	**3,955**	**100%**	**3,719**	**100%**

Electronics

€ million	Jan.-June 2023	Share	Jan.-June 2022	Share
Semiconductor Solutions	1,207	67%	1,234	63%
Display Solutions	383	21%	494	25%
Surface Solutions	210	12%	226	12%
Total	**1,800**	**100%**	**1,954**	**100%**

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 2023.

There were no changes to equity capital in the first half of 2023. 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 2023, 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, 2023 for each individual financial instrument class pursuant to IFRS 9:

June 30, 2023

	Carrying amount			Fair value[1]			
€ million	Current	Non-current	**Total**	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using inputs observable in the market (Level 2)	Fair value determined using inputs unobservable in the market (Level 3)	**Total**
Financial assets							
Subsequent measurement at amortized cost							
Cash and cash equivalents	1,761	–	1,761				
Trade accounts receivable and other receivable (excluding leasing receivables)	4,180	23	4,202				
Other debt instruments	23	5	28				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	609	609	188	–	421	609
Trade accounts receivable and other receivable	27	–	27	–	–	27	27
Debt instruments	–	1	1	1	–	–	1
Subsequent measurement at fair value through profit or loss							
Equity instruments	–	–	–	–	–	–	–
Contingent consideration	–	227	227	–	–	227	227
Other debt instruments	27	155	182	89	–	93	182
Derivatives without a hedging relationship	22	44	66	–	16	50	66
Derivatives with a hedging relationship	93	–	93	–	93	–	93
Finance lease receivables (to be measured in accordance with IFRS 16)[2]	4	–	4				
Total	**6,137**	**1,064**	**7,201**	**279**	**109**	**818**	**1,206**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade accounts payable and other payable	2,403	–	2,403				
Financial debt	1,529	9,135	10,664	7,997	1,970	–	9,967
Other financial liabilities	248	121	369				
Subsequent measurement at fair value through profit or loss							
Contingent consideration	–	4	4	–	–	4	4
Derivatives without a hedging relationship	15	17	32	–	14	18	32
Derivatives with a hedging relationship	38	–	38	–	38	–	38
Refund liabilities	963	–	963				
Finance lease liabilities (to be measured in accordance with IFRS 16)[2]	118	361	479				
Total	**5,315**	**9,637**	**14,952**	**7,997**	**2,022**	**22**	**10,041**

[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, 2022 for each individual financial instrument class pursuant to IFRS 9:

December 31, 2022

	Carrying amount			Fair value[1]			
€ million	Current	Non-current	Total	Fair value determined by official prices and quoted market values (Level 1)	Fair value determined using inputs observable in the market (Level 2)	Fair value determined using inputs unobservable in the market (Level 3)	Total
Financial assets							
Subsequent measurement at amortized cost							
Cash and cash equivalents	1,854	–	1,854				
Trade accounts receivable and other receivable (excluding leasing receivables)	4,087	25	4,112				
Other debt instruments	122	4	126				
Subsequent measurement at fair value through other comprehensive income							
Equity instruments	–	516	516	102	–	415	516
Trade accounts receivable and other receivable	22	–	22	–	–	22	22
Debt instruments	80	1	81	81	–	–	81
Subsequent measurement at fair value through profit or loss							
Equity instruments	–	–	–	–	–	–	–
Contingent consideration	14	235	250	–	–	250	250
Other debt instruments	28	154	182	89	–	93	182
Derivatives without a hedging relationship	23	46	69	–	17	53	69
Derivatives with a hedging relationship	53	–	53	–	53	–	53
Finance lease receivables (to be measured in accordance with IFRS 16)[2]	5	2	7				
Total	**6,289**	**984**	**7,273**	**271**	**70**	**833**	**1,174**
Financial liabilities							
Subsequent measurement at amortized cost							
Trade accounts payable[3]	2,499	–	2,499				
Financial debt	1,073	8,834	9,907	7,989	1,188	–	9,177
Other financial liabilities[4]	1,119	118	1,237				
Subsequent measurement at fair value through profit or loss							
Contingent consideration	–	4	4	–	–	4	4
Derivatives without a hedging relationship	34	19	53	–	30	23	53
Derivatives with a hedging relationship	30	–	30	–	30	–	30
Refund liabilities	912	–	912				
Finance lease liabilities (to be measured in accordance with IFRS 16)[2]	125	366	491				
Total	**5,792**	**9,342**	**15,134**	**7,989**	**1,248**	**27**	**9,265**

[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)).

[3] Previous-year figures have been adjusted owing to the finalization of the purchase price allocation in connection with the acquisitions of the chemical business of Mecaro Co. Ltd., Korea, trading as M Chemicals Inc., Korea, as well as Erbi Biosystems Inc., USA.

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

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		
	Other short-term cash investments		
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 debt	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 agreements	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 business planning, discount rates
	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 virtual power purchase agreements	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.

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, 2023 were between 6.2% and 8.2% (December 31, 2022: 6.3% to 7.3%) 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, 2023, the carrying amount was € 220 million (December 31, 2022: € 219 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, 2023		**Change in probability of regulatory approval**		
€ million		**-10%**	**unchanged**	**10%**
Discount rate	5.7%	-16	3	23
	6.2% (unchanged)	-19	–	19
	6.7%	-22	-3	16

Dec. 31, 2022		**Change in probability of regulatory approval**		
€ million		-10%	unchanged	10%
Discount rate	5.8%	-18	3	24
	6.3% (unchanged)	-21	–	20
	6.8%	-24	-3	17

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, 2023 to June 30, 2023:

2023

	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 consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration	Derivatives without a hedging relationship	**Total**
Net carrying amounts as of Jan. 1, 2023	**93**	**250**	**53**	**415**	**22**	**-4**	**-23**	**806**
Additions	7	–	–	18	48	–	–	**74**
Transfers into Level 3 out of Level 1/Level 2	–	–	–	–	–	–	–	**–**
Fair value changes								**–**
Gains (+)/losses (–) recognized in the consolidated income statement (other operating result)	3	–	-2		–	1	4	**6**
thereof: attributable to assets/liabilities held as of the balance sheet date	3	–	-2		–	1	4	**6**
Gains (+)/losses (–) recognized in the consolidated income statement (financial income and expenses)	5	9	–		–	–	–	**14**
thereof: attributable to assets/ liabilities held as of the balance sheet date	5	9	–		–	–	–	**14**
Gains (+)/losses (-) recognized in other comprehensive income				18	–			**17**
Currency translation difference	-1	–	-1	-1	–	–	–	**-3**
Disposals	-12	-32	–	-27	-43	–	1	**-114**
Transfers out of Level 3 into Level 1/Level 2	–	–	–	–	–	–	–	**–**
Other	-3	–	–	-1	–	–	–	**-4**
Net carrying amounts as of June 30, 2023	**93**	**227**	**50**	**421**	**27**	**-4**	**-18**	**796**

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, 2022 to December 31, 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 consideration	Derivatives without a hedging relationship	Equity instruments	Trade and other receivables	Contingent consideration	Derivatives without a hedging relationship	Total
Net carrying amounts as of Jan. 1, 2022	**78**	**271**	**24**	**345**	**20**	**-39**	**-10**	**689**
Additions	27	–	–	87	70	–	–	184
Transfers into Level 3 from Level 1/Level 2	–	–	–	–	–	–	–	–
Fair value changes								
Gains (+)/losses (–) recognized in the consolidated income statement (other operating result)	17	15	30		–	30	-13	79
thereof: attributable to assets/liabilities held as of the balance sheet date	17	7	30		–	4	-13	44
Gains (+)/losses (–) recognized in the consolidated income statement (financial income and expenses)	-4	10	1		–	-1	–	6
thereof: attributable to assets/liabilities held as of the balance sheet date	-4	9	1		–	–	–	6
Gains (+)/losses (–) recognized in other comprehensive income				-11	–			-11
Currency translation difference	2	–	2	-1	–	-3	–	–
Disposals	-21	-46	-4	-1	-68	10	–	-131
Transfers out of Level 3 into Level 1/Level 2	–	–	–	-11	–	–	–	-11
Other	-7	–	–	7	–	–	–	–
Net carrying amounts as of Dec. 31, 2022	**93**	**250**	**53**	**415**	**22**	**-4**	**-23**	**806**

Related party disclosures

Transactions were conducted with related parties as follows:

	Income		Expenses		Receivables		Liabilities	
€ million	**Jan.-June 2023**	Jan.-June 2022	**Jan.-June 2023**	Jan.-June 2022	**June 30, 2023**	Dec. 31, 2022	**June 30, 2023**	Dec. 31, 2022
E. Merck KG	1.0	0.9	5.1	0.5	10.0	0.0	405.1	1,118.8
E. Merck Beteiligungen KG	0.4	0.3	12.7	0.0	27.6	0.0	1,210.1	660.1
Engel-Apotheke, Darmstadt[1]	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Joint ventures	1.1	2.0	0.0	0.0	0.6	0.5	0.0	0.0
Majority interest in non-controlled companies	0.1	0.2	0.0	0.0	0.0	0.0	2.2	1.2
Non-consolidated subsidiaries	0.0	0.0	0.4	0.3	1.7	1.8	0.4	0.4

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

As of June 30, 2023, there were liabilities by Merck Financial Services GmbH to E. Merck Beteiligungen KG in the amount of € 1,210.1 million (December 31, 2022: € 660.1 million) as well as to E. Merck KG, amounting to € 405.1 million (December 31, 2022: € 258.1 million) as well as by Merck KGaA to E. Merck KG in the amount of € 0.0 million (December 31, 2022: € 777.6 million). In addition, as of June 30, 2023, there were receivables of Merck & Cie, Altdorf, Switzerland, to E. Merck KG in the amount of € 10.0 million (December 31, 2022: liabilities in the amount of € 83.1 million) as well as of Merck KGaA to E. Merck Beteiligungen KG in the amount of € 27.6 million (December 31, 2022: € 0.0 million). The balances included financial liabilities by Merck Financial Services GmbH to E. Merck Beteiligungen KG in the amount of € 1,210.0 million (December 31, 2022: € 660.0 million) as well as to E. Merck KG, amounting to € 405.1 million (December 31, 2022: € 258.0 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. Furthermore, as of December 31, 2022, the liabilities of Group companies in respect of E. Merck KG 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.

From January to June 2023, Merck KGaA performed services for E. Merck KG and E. Merck Beteiligungen KG with a value of € 0.9 million and € 0.4 million, respectively. During the same period, E. Merck KG performed services for Merck KGaA with a value of € 0.5 million. Moreover, from January to June 2023, there were interest expenses by Merck Financial Services GmbH to E. Merck Beteiligungen KG in the amount of € 12.7 million as well as to E. Merck KG, amounting to € 4.6 million.

Subsequent Events

Effective July 1, 2023, Helene von Roeder was appointed as a new member of the Executive Board and Chief Financial Officer.

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 28, 2023

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

Helene von Roeder

Responsibility Statement

To the best of our knowledge, and in accordance with the applicable reporting principles for half-year financial reporting, the consolidated interim 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 28, 2023

Belén Garijo

Kai Beckmann

Peter Guenter

Matthias Heinzel

Helene von Roeder

Review Report

To Merck Kommanditgesellschaft auf Aktien (KGaA), Darmstadt, Germany

We have reviewed the condensed interim consolidated financial statements of Merck Kommanditgesellschaft auf Aktien, Darmstadt, which comprise 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 Interim Financial Statements, and the Interim Group Management Report for the period from January 1, 2023 to June 30, 2023, that are part of the half-year financial information under Section 115 German Securities Trading Act (WpHG). The preparation of the condensed interim consolidated financial statements in accordance with the International Financial Reporting Standards (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 executive directors of the Company. Our responsibility is to issue a review report on the condensed interim consolidated financial statements and on the interim group management report based on our review.

We conducted our review of the condensed interim consolidated financial statements and of the interim group management report in compliance with the German Generally Accepted Standards for Reviews of Financial Statements promulgated by the Institut der Wirtschaftsprüfer (IDW). Those standards require that we plan and perform the review to obtain a certain level of assurance to preclude through critical evaluation that the condensed interim consolidated financial statements have not been prepared, in material respects, in accordance with the 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. A review is limited primarily to inquiries of company personnel and to analytical procedures applied to financial data and thus provides less assurance than an audit. Since, in accordance with our engagement, we have not performed an audit, we do not express an audit opinion.

Based on our review, nothing has come to our attention that causes us to believe that the condensed interim consolidated financial statements of Merck Kommanditgesellschaft auf Aktien, Darmstadt, Germany, have not been prepared, in material respects, in accordance with the 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.

Without qualifying our review report, we would like to emphasize that we have not reviewed the sections in the interim group management report that are marked as extraneous information.

Frankfurt am Main, July 28, 2023

Deloitte GmbH
Wirtschaftsprüfungsgesellschaft

Signed:	Signed:
(Christoph Schenk)	(Daniel Weise)
Wirtschaftsprüfer	Wirtschaftsprüfer
(German Public Auditor)	(German Public Auditor)

financial calendar

November 9, 2023 Quarterly Statement Q3

March 7, 2024 Annual Report 2023

April 26, 2024 Annual General Meeting

May 15, 2024 Quarterly Statement Q1

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