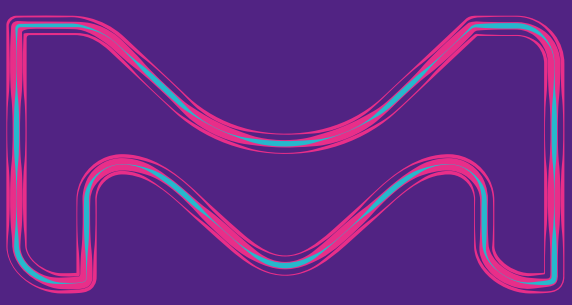
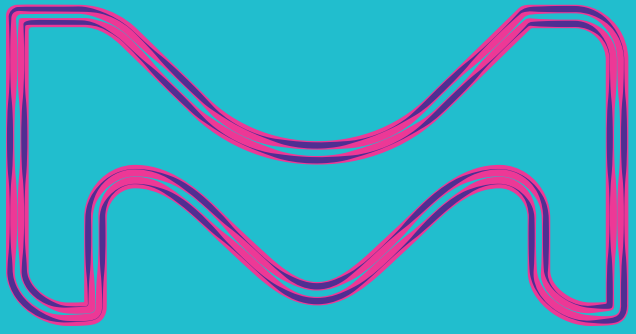
Merck KGaA,
Darmstadt, Germany

Half-Year Financial Report

2nd QUARTER 2016





DISCLAIMER

This half-year financial report contains certain financial indicators such as EBITDA pre exceptionals, business free cash flow (BFCF), net financial debt and earnings per share pre exceptionals, 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 the Group 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-year financial report have been rounded. This may lead to individual values not adding up to the totals presented.

The Annual Report for 2015 has been optimized for mobile devices and is available on the Web at **ar2015.emdgroup.com**

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IN BRIEF

GROUP

Key figures

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	3,805	3,219	18.2 %	7,470	6,261	19.3 %
Operating result (EBIT)	550	501	9.8 %	1,399	981	42.6 %
Margin (% of net sales)	14.5 %	15.6 %		18.7 %	15.7 %	
EBITDA	1,069	845	26.6 %	2,351	1,650	42.5 %
Margin (% of net sales)	28.1 %	26.2 %		31.5 %	26.4 %	
EBITDA pre exceptionals	1,158	899	28.8 %	2,242	1,752	27.9 %
Margin (% of net sales)	30.4 %	27.9 %		30.0 %	28.0 %	
Profit after tax	314	346	–9.0 %	907	631	43.8 %
Earnings per share (€)	0.72	0.79	–8.9 %	2.08	1.44	44.4 %
Earnings per share pre exceptionals (€)	1.55	1.30	19.2 %	3.09	2.43	27.2 %
Business free cash flow	799	830	–3.7 %	1,562	1,190	31.2 %

GROUP

Net sales by quarter

GROUP

EBITDA pre exceptionals by quarter

OUR SHARES

At a glance

On the whole, the stock markets largely moved sideways in the second quarter of 2016. By contrast, the development of our shares was very positive. Based on a closing price on March 31, 2016 of € 73.31, the share price rose to € 91.31 by June 30, 2016, corresponding to an increase of more than 24%. Our shares thus considerably outperformed all the relevant comparative indices. In comparison with the DAX®, their performance was approximately 27 percentage points stronger. Our shares outperformed the relevant pharmaceutical industry index by nearly 17 percentage points and the relevant chemical industry index by almost 29 percentage points.

After experiencing a period of significant weakness in the first quarter, our shares already began to see a certain recovery effect during the first few weeks of the second quarter, both in absolute terms and in comparison with the stock market as a whole. The diversion between the share price and the relevant share indices became even more pronounced as of May 2016. Among other things, the presentation of the good figures for the first quarter of 2016 and more specific guidance for 2016 in this connection may have helped to better estimate our business performance in 2016. Additionally, in early June 2016, Merck KGaA, Darmstadt, Germany, presented clinical data on its significant pipeline compound avelumab at both the important pharmaceutical ASCO meeting (American Society of Clinical Oncology) in Chicago, Illinois (USA) and during a conference call. The news was positively received by market participants. The referendum in the United Kingdom concerning the country's exit from the European Union became a dominant theme in the financial markets at the end of the second quarter, leading to significant share price corrections. Broad geographic positioning and limited dependence on this market could be an important reason why our shares largely escaped the incipient general market weakness.

In the second quarter of 2016, our executive management and IR team gave in-depth briefings to around 150 investors as part of investor conference, roadshows and conference calls.

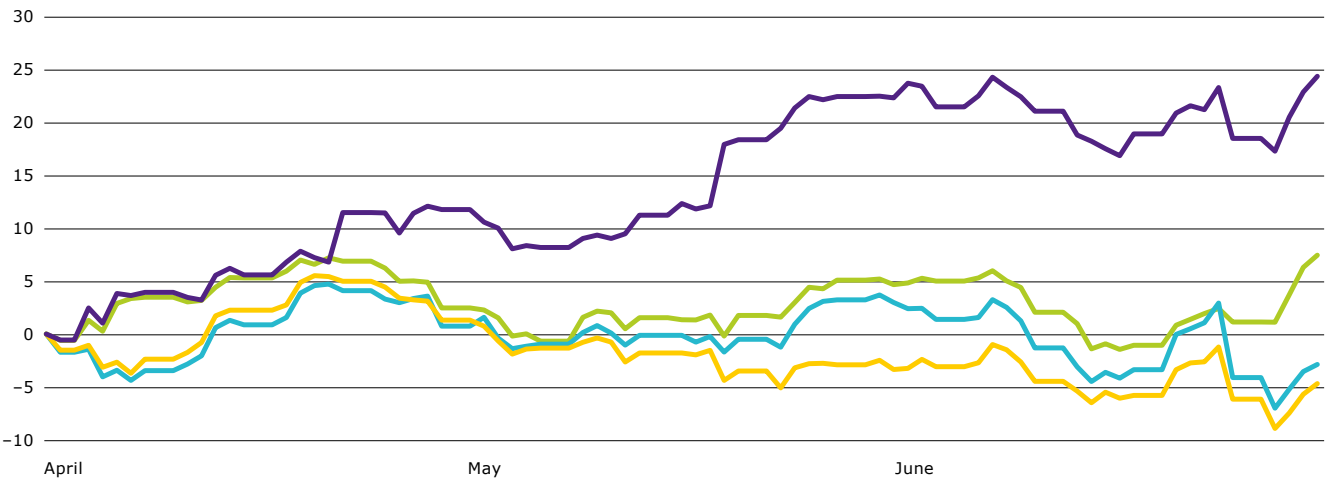
The average daily trading volume of our shares decreased by around 4% from approximately 569,000 in the previous-year period to over 544,000 in the second quarter of 2016.

In the first half of 2016, the share price rose by nearly 2%, with strong performance in the second quarter more than offsetting the weakness in the first quarter. Our shares also outperformed the relevant stock market indices. They were nearly 12 percentage points stronger than both the DAX® and the relevant chemical industry index, and around 8 percentage points stronger than then relevant pharmaceutical industry index.

OUR SHARES

Share price development from April 1, 2016 to June 30, 2016

in %



Source: Bloomberg (closing rates)

- Merck KGaA, Darmstadt, Germany
- DAX®
- MSCI European Pharma Index
- Dow Jones European Chemical Index

FUNDAMENTAL INFORMATION ABOUT THE GROUP

The Group

We are a global science and technology company headquartered in Darmstadt, Germany. In October 2015, we repositioned our corporate brand. The fundamental redesign of the visual appearance and the introduction of a new logo reflect our transformation into a global science and technology company. At the same time, we simplified the brand architecture. We operate globally under our corporate brand - the only exceptions are Canada and the United States. In these countries, we operate as EMD Serono in the Biopharma business, as MilliporeSigma – following the completed acquisition of Sigma-Aldrich – in the Life Science business and as EMD Performance Materials in the materials business.

With a history of nearly 350 years, we are the oldest chemical and pharmaceutical company in the world. Our product portfolio ranges from innovative pharmaceuticals and biopharmaceutical products, to life science tools, specialty chemicals, and high-tech materials.

In line with our strategic direction, our company comprises three business sectors: Healthcare, Life Science, and Performance Materials, which encompass the Group's six businesses.

At the Annual General Meeting of the Group on April 29, 2016, Stefan Oschmann took over as new CEO and Chairman of the Executive Board from Karl-Ludwig Kley, who had held this position since 2007. In addition, Udit Batra, Head of the Life Science business sector, and Walter Galinat, Head of the Performance Materials business sector, became new members of the Executive Board. They succeeded Bernd Reckmann, a long-serving member of the Executive Board and until then responsible for Life Science and Performance Materials.

The Group had 50,456 employees worldwide on June 30, 2016. which compares with 40,192 on June 30, 2015 prior to the acquisition of Sigma-Aldrich.

A detailed description of our company and its business sectors can be found in the Annual Report for 2015 starting on page 45. This section of the present half-year financial report summarizes the highlights of the first half of 2016 at Merck KGaA, Darmstadt, Germany.

GROUP

Sales by business sector – Q2 2016

€ million/% of net sales

GROUP

EBITDA pre exceptionals by business sector – Q2 2016

€ million/in %

Not presented: Decline in Group EBITDA pre exceptionals by € –89 million due to Corporate and Other.

GROUP

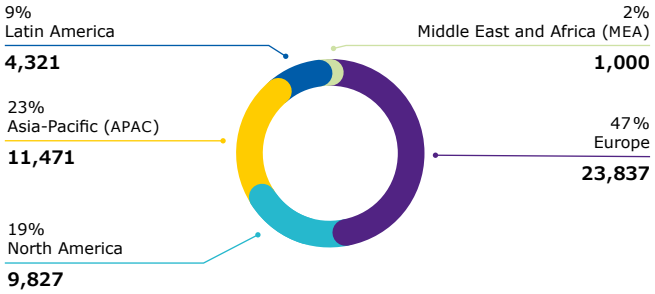
Business free cash flow by business sector – Q2 2016

€ million/in %

GROUP

Employees by region as of June 30, 2016

Number/in %



Not presented: Decline in Group EBITDA pre exceptionals by € –102 million due to Corporate and Other.

Healthcare

The Healthcare business sector comprises the Biopharma, Consumer Health, Biosimilars, and Allergopharma businesses. The share of Group sales attributable to the Healthcare business sector was 46% in the second quarter of 2016 and the share of EBITDA pre exceptionals (excluding Corporate and Other) was 45%.

BIOPHARMA

Oncology

In January, we further strengthened our leadership in precision medicine through a collaboration with Biocartis on a new liquid biopsy technology for RAS and BRAF biomarker testing for colorectal cancer patients. We became the first pharmaceutical company to collaborate with multiple diagnostic providers to support RAS biomarker testing, with the aim of offering complementary molecular testing solutions to various laboratory segments. In April, our other liquid biopsy technology for RAS biomarker testing, developed in collaboration with Sysmex Inostics, received CE mark approval and we expect it to become widely available across Europe, Asia, Latin America, and Australia within the next few months. Based on a small blood sample rather than a tissue biopsy, the test will help guide physicians to select the most effective treatment for metastatic colorectal cancer in a timely manner.

In May, we reached a major milestone regarding the expansion of Erbitux® in growth markets with the positive results of the pivotal Chinese Phase III TAILOR study, and will work with relevant authorities to make Erbitux® available to patients in China as a first-line treatment for metastatic colorectal cancer as soon as possible.

In June, we initiated a Phase III study assessing the safety and efficacy of Erbitux® in combination with novel compounds in BRAF-mutant metastatic colorectal cancer, a particularly aggressive type of cancer with a very poor prognosis.

Immuno-Oncology

Together with our alliance partner Pfizer, we further advanced the clinical development of avelumab*, with the initiation of two additional pivotal Phase III trials in the first half of 2016. The development program for avelumab now includes 30 ongoing clinical programs and nine pivotal studies, involving 2,200 patients, being treated across more than 15 tumor types.

The Alliance of Merck KGaA, Darmstadt, Germany, and Pfizer also entered into two collaboration agreements to evaluate avelumab as a potential combination therapy with other novel compounds in advanced ovarian cancer.

In June, numerous clinical study data of avelumab across seven different tumor types were presented at the American Society of Clinical Oncology (ASCO) meeting, including results from the pivotal Phase II study in pre-treated metastatic Merkel cell carcinoma patients, a rare and aggressive type of skin cancer. These pivotal study results will be the foundation for the first regulatory submission of avelumab in this first indication later this year.

Neurology/Immunology

In June, we reached a major regulatory milestone with the submission for registration of cladribine tablets to the European Medicines Agency (EMA). Although there are multiple therapies available for relapsing-remitting multiple sclerosis (RRMS), there are still significant unmet medical needs in this disease. We believe that cladribine tablets, if approved,

*Avelumab is the proposed nonproprietary name for the anti-PD-L1 monoclonal antibody (MSB0010718C).

could serve as an important therapeutic option for patients with RRMS.

We also further strengthened our portfolio of patient support programs in multiple sclerosis with the signing of an agreement with HAPPYneuron, giving us an exclusive license to the company's cognitive remediation training program, which will be integrated into our MSdialog platform for people living with multiple sclerosis (MS). The program is designed to improve cognitive skills through brain-training by repeated cognitive game-training exercises, and the games automatically adjust skill levels to match the need of the individual. MSdialog with HAPPYneuron will be made available to MS patients in a phased rollout beginning in Brazil, Argentina, Israel, Italy, France, and the Netherlands.

Fertility

In March, we announced a further enhancement of our portfolio of drugs for every step of the fertility treatment cycle with the European approval of the improved Gonal-f® prefilled pen, a new version of the pen including various advanced features designed to facilitate administration for patients.

We also continued to strengthen our offering of technologies for fertility clinics as part of our commitment to further improve outcomes for patients undergoing assisted reproductive technology (ART). In April, we announced that the three groundbreaking fertility technologies Gavi™, Geri™ and Gems™ are now available for clinical use in Europe with additional regions to follow later in 2016. Having received CE mark certification for all products, our company can offer on the market these pioneering technologies. Gavi™, Geri™ and Gems™ are being commercialized as part of the collaboration between Merck KGaA, Darmstadt, Germany, and Genea. In June, the Global Fertility Alliance welcomed two new members: Zeiss, an internationally leading technology enterprise operating in the optics and optoelectronics industries, and Hamilton Thorne, a leading provider of precision laser devices and advanced image analysis systems for ART, regenerative medicine and developmental biology research markets. The alliance is a collaboration to advance excellence in fertility technologies and processes within the ART laboratory, founded 2015 by Merck KGaA, Darmstadt, Germany, together with Illumina, a leader in developing and commercializing systems for analysis of genetic variation and function, and Genea, a developer of innovative fertility technologies.

General Medicine & Endocrinology

At the beginning of 2016, we returned to BioMarin the rights for Kuvan®, a drug used to treat a metabolic disorder known as phenylketonuria (PKU) as well as the option to develop and commercialize Peg-Pal, an investigational drug that is also designed for the treatment of PKU.

CONSUMER HEALTH

In January, Consumer Health started the market launch of the new, innovative brand Vivera®, which as a probiotic is meant to address gastro-intestinal discomfort by supporting the natural healing process. The new brand is being rolled out across many key markets in the Latin American region throughout 2016 and early 2017.

On January 1, 2016, we transferred several vitamin brands from our Biopharma business to our Consumer Health business in India. Included in this transfer are Polybion®, a vitamin B complex, Livogen®, a food supplement containing iron and folic acid, and Evion®, a vitamin E supplement. These brands now add to our already existing Consumer Health business in India. The total annual sales volume of the transferred business is around € 45 million.

The product brand transfer in India follows a pattern of successful brand transfers from our Biopharma business to our Consumer Health business, all aimed at additional value creation. The first example was the highly successful global consumerization of the Neurobion®/Dolo-Neurobion® franchise as of January 1, 2014 in Latin America and Asia with an annual sales volume of around € 250 million. A second example is the Vigantol® brand transfer in 2015 with a focus on Germany and eastern Europe.

BIOSIMILARS

We further advanced our biosimilar pipeline during the first half of 2016 and in March we announced the initiation of a global Phase III clinical study of MSB11022, a proposed biosimilar of adalimumab, a recombinant human monoclonal antibody in patients with chronic plaque psoriasis.

Life Science

In the second quarter of 2016, the share of Group sales attributable to the Life Science business sector was 38% and the share of EBITDA pre exceptionals (excluding Corporate and Other) was 33%.

Since the acquisition closing, we have expanded the e-commerce platform of legacy Sigma-Aldrich (www.sigma-aldrich.com) to include a number of core products from the legacy Millipore portfolio. Overall, we have added roughly 50% of the addressable portfolio to the website in the United States and approximately 30% in Europe. As a result, we are seeing increasing page views and sales in these markets.

The integration of the local administrative and business operations around the world is one of the critical next steps in the integration process to ensure the successful implementation of the new structure and go-to-market strategy of the Life Science business sector. Both the integration of the Legal and Administration functions is progressing with all countries on track against their milestones. The integration of the two legacy businesses within the Research, Applied and Process Solutions business areas is also well underway and will progress further as we move into the second half of the year.

The Life Science business sector also implemented a new brand strategy to leverage the strong brand equity of our combined portfolio. Brands such as Sigma-Aldrich and Millipore will take on a new role as portfolio brands representing different parts of our product portfolio. All of these portfolio brands are marketed by our company and we will build a strong relationship between our corporate brand and our portfolio brands.

Within the scope of the integration and our effort to unite Life Science employees, we launched the SPARK initiative in February 2016. This science education program offered employees the opportunity to join together to give back to the communities in which they live and work. SPARK inspired employees across the Life Science business sector to log 19,500 volunteer hours, sharing their knowledge with students in 192 cities around the world.

Performance Materials

Our entire specialty chemicals business is combined in our Performance Materials business sector. The portfolio includes high-tech chemicals for applications in fields such as consumer electronics, lighting, coatings, printing technology, paints, plastics, and cosmetics. Performance Materials comprises four business units: Display Materials, Integrated Circuit Materials, Pigments & Functional Materials, and Advanced Technologies. In the second quarter of 2016, the business sector's share of Group sales amounted to 16% and its share of EBITDA pre exceptionals (excluding Corporate and Other) was 22%.

In the first half of 2016, we defended our position as the global market and technology leader for established liquid crystal technologies – in the face of declining demand for liquid crystal displays (LCDs) and the associated lower capacity utilization of display manufacturers. New developments such as UB-FFS technology continued to establish themselves in the market. Following the breakthrough in the energy efficiency of displays for smartphones and tablets made possible by UB-FFS, we are now working on developing this technology also for large, non-mobile displays such as in televisions. In the first half of 2016, the development of new application possibilities for liquid crystals was again an important focus of our LC 2021 strategic initiative. This primarily includes the development of liquid crystal window technology. In order to protect against solar radiation, these windows allow continuously variable switching from light to dark in just seconds and have high color neutrality compared with competitive technologies. They are intended for use in buildings, but also for example in sunroofs of automobiles. For privacy control, the windows allow switching from transparent to opaque, which is suitable for use such as in conference rooms and bedrooms. To achieve faster market penetration with the new technologies, Merck KGaA, Darmstadt, Germany, is investing in a production unit for liquid crystal window modules. The manufacture of these switchable glass modules, which our customers can use in smart windows and glass facades, is to start at the end of 2017.

Integrated Circuit Materials is our second-largest business unit and supplies products for integrated circuit manufacture. Since April 2016, Deposition Materials has been established as a new business field within Integrated Circuit Materials. It comprises the former SAFC Hitech business of Sigma-Aldrich, consisting of high-purity materials for silicon semiconductors, compound semiconductors, and other high-tech industry applications. Deposition materials ideally complement our offering and strengthen our position as a global leading supplier to the electronics and semiconductor industries. At the annual SPIE Advanced Lithography conference in February 2016 in San Jose, CA (USA), we presented our newly developed material solutions for next-generation lithography, including directed self-assembly (DSA), a revolutionary technology that is crucial to all advanced semiconductor manufacturers. We hold a leadership position in DSA technology thanks to our extensive expertise in polymer synthesis using anionic polymerization techniques as well as many years of process and formulation experience.

The Pigments & Functional Materials business unit develops and markets a comprehensive product portfolio of decorative effect pigments and functional materials. In the second quarter of 2016, we launched three new decorative pigments. Timiron Halo White is used in cosmetic applications and is distinguished by its frosty-white effect and exceptional purity. Iriodin Icy White Pristine has a silky shimmering effect and features a new stabilization technology that prevents yellowing and is used for high-quality print and plastics applications. Candurin NXT Ruby Red is the first silica-based effect pigment approved for food use. In June 2016, we received the prestigious European Frost & Sullivan Award for Product Leadership 2016 for our pioneering role in pigments used in high-quality automotive coatings. This recognizes the success achieved with the innovative Meoxal and Xirallic NXT lines.

Growth in demand for our insect repellent IR3535 in the first half of 2016 was triggered by the Zika virus epidemic, which has spread widely especially in Latin America. The biologic substance provides effective protection against mosquito bites and is also safe for pregnant women, who are at particular risk from the Zika virus. In April 2016, we were awarded the BSB Innovation Prize 2016 for our dermocosmetic active substance RonaCare SereneShield. The mechanism of action of this substance used to treat acne and skin irritations convinced the jury of experts.

The Advanced Technologies business unit invests particularly in future-oriented research and development in Performance Materials. A very good example of this are our materials for organic light-emitting diodes (OLEDs), which are used in new display technologies and lighting techniques. The OLED materials business is one of our fastest-growing businesses. We presented the future potential of OLED lighting in March 2016 at the world's leading Light + Building trade fair in Frankfurt. Artwork installations at the booth showed how OLED materials can be used to build thin, filigree, lightweight light panels that provide great freedom of design. The construction of the new OLED materials production unit progressed according to plan in the first half of 2016 and is to be inaugurated in September. With a volume of more than € 30 million, the project is one of the largest single investments we have made at the Darmstadt site in recent years.

Objectives and Strategies

The transformation process that we launched back in 2007 culminated in the successful acquisition of Sigma-Aldrich in 2015. We have transformed from a classic supplier of chemicals and pharmaceuticals into a leading science and technology company.

General principles and Group strategy

General principles

Our Group strategy is based on an almost 350-year history of success. General principles provide stability and guidance in all our business endeavors. They help those responsible within the company to shape strategic plans and make decisions.

The partner structure of Merck KGaA, Darmstadt, Germany, with members of the Merck family as personally liable partners requires the Executive Board, whose members are also personally liable partners, to pay special attention to the long-term development of value. Therefore, sustainability plays a special role for us. The objective is to align the long-term development of the company with the legitimate interests of shareholders, whose engagement in the company is normally of a shorter duration. That is why our business portfolio must always be balanced so that it reflects an optimum mix of entrepreneurial opportunities and risks. We achieve this through diversification in the Healthcare, Life Science and Performance Materials business sectors, as well as through our geographic breadth with respect to growth sources.

For us, however, the principle of sustainability applies not only to economic aspects. Instead, it also encompasses responsibility for society and environmental preservation. With our current and future product portfolio, we want to help solve global challenges and shape a sustainable future. Around 50,000 employees work to further develop technologies that improve and enhance life, from biopharmaceutical therapies to treat cancer or multiple sclerosis, cutting-edge systems for scientific research and production, to liquid crystals for smartphones and LCD televisions.

Group strategy

In 2007, we started a transformation process to secure our future through profitable growth in today's Healthcare, Life Science and Performance Materials business sectors. With the completion of the acquisition of Sigma-Aldrich in November 2015, this transformation process achieved its aim. In recent years, we have thus transformed from a classic chemical and pharmaceutical group into a leading science and technology company. This change is also reflected by the repositioning of our corporate brand, which was launched with a revamped visual appearance and the introduction of a new logo in October 2015.

The process started with the change program "Sustain. Change. Grow." and the two major acquisitions of Serono SA in 2007 and the Millipore Corporation in 2010. In 2011, we embarked on the "Fit for 2018" transformation and growth program with a new executive management team. In the first phase, we created the foundation for profitable growth by introducing a new global leadership organization and a comprehensive, Group-wide efficiency program. The second phase, which started in 2014, was aimed at successively implementing the growth options identified by establishing three strong platforms for sustainable profitable growth. We are building on our core competencies:

- Science and technology
- Closeness to existing businesses
- Customer proximity (to offer tailored solutions)

Overall, acquisitions and divestments since 2004 with a total transaction volume of around € 38 billion have helped cement the strategic change to a science and technology company. These also included the acquisition of AZ Electronic Materials, a leading supplier of high-tech materials for the electronics industry. A milestone in our growth strategy was the successful completion of the acquisition of Sigma-Aldrich in 2015, which has enabled us to become a leading company in the attractive life science industry. The aim of our strengthened Life Science business sector is to solve the greatest challenges in the industry globally. To this end, we now have a considerably broader range comprising more than 300,000 products offered via one of the industry's leading e-commerce platforms.

The complete overhaul of our brand is to communicate this new direction to our customers, partners and employees. A more self-confident and at the same time clearer tone of voice and the new visual appearance reflect our character as a vibrant science and technology company. This investment in our corporate brand is also part of the strategic "Fit for 2018" transformation and growth program.

The strategic change is also indicated by the changing composition of sales, with a growing share of high-quality and innovative solutions in all three business sectors. The Healthcare business sector today generates around 60% of its sales with biopharmaceuticals. In 2006, there was only one such product, Erbitux®, which accounted for less than 10% of sales. The classic Chemicals business has increasingly become a premium materials business that offers our customers a wide range of value-adding products. Today, high-tech materials and life science tools make up around 80% of sales in the Life Science and Performance Materials business sectors. In 2006, the share was around 30%. In addition, the geographic split of sales has changed, reflecting our mid- to long-term goal to further expand our strong market position in growth markets. In 2015, the growth markets of the reported regions Asia-Pacific and Latin America contributed 43% to Group sales.

With our three business sectors Healthcare, Life Science and Performance Materials, we now hold leading positions in the corresponding markets. Our goal is to continue to generate sustainable and profitable growth. We intend to achieve this by growing organically and further developing our competencies, as well as by making targeted acquisitions that complement and expand existing strengths in meaningful ways. Building on leading products in all our businesses, we aim to generate income that is largely independent of the prevailing economic cycles. With innovative products and services, as well as our unique combination of businesses, today we have platforms on which we can build in order to provide solutions to challenges, also in the future, that arise from global megatrends such as demographic changes and digitalization. Our aim is to drive innovations just as much within our businesses as between them, and also beyond our businesses. In order to foster innovations across the three businesses and external partners, an Innovation Center at Group headquarters in Darmstadt was opened in October 2015 (see page 10 et seq. in the magazine section of the Annual Report). The company also started a digitalization initiative aimed at driving digitalization within the business sectors and set up corresponding projects. A Chief Digital Officer was appointed in December 2015.

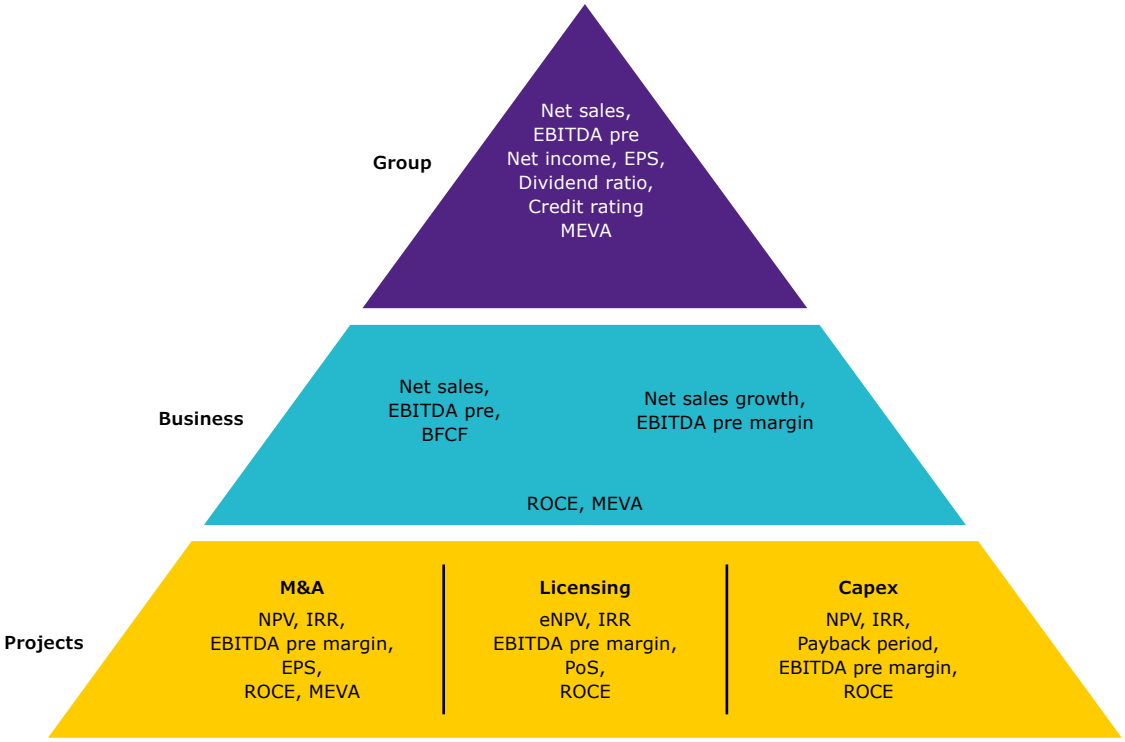
More information on the Group's general principles and strategy can be found on pages 52 to 57 of the Annual Report for 2015.

Internal Management System

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

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

A detailed description of our Internal Management System can be found in 2015 Annual Report starting on page 58.



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

Key performance indicators of the Group and its businesses

The three key performance indicators net sales, EBITDA pre exceptionals, and business free cash flow are the most important factors for assessing operational performance.

Net sales

Net sales are defined as the revenues from the sale of goods and services rendered to external customers net of value added tax and after sales deductions such as rebates or discounts. Net sales are the main indicator of our business growth and therefore an important parameter of external as well as internal performance measurement. In addition, acquisition and currency-adjusted sales are used for internal performance management.

EBITDA pre exceptionals

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

Business free cash flow (BFCF)

Business free cash flow comprises the major cash-relevant items that the individual businesses can influence and are under their full control. It comprises EBITDA pre exceptionals less the change in the opening and closing amounts reported in the balance sheet for investments in property, plant and equipment, software, advance payments for intangible assets, as well as the change in inventories and trade accounts receivable. To manage working capital on a regional and local level, the businesses use the two indicators days sales outstanding and days in inventory.

Research and Development

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

Around 5,000 employees work for our company researching innovations to serve long-term health and technology trends in both established and growth markets. We spent around € 986 million on research and development in the first half of 2016. We focus on both in-house research and external collaborations. Our R&D activities are set up in line with the structure of our company with three business sectors.

A detailed description of our R&D activities can be found in the Annual Report for 2015 starting on page 70. This section of the present half-year financial report summarizes the research and development highlights of the first half of 2016.

Healthcare

On February 16, 2016 we announced the extension of the partnership with Weizmann Institute of Science, Rehovot, Israel, by signing a new framework agreement, building on a successful innovation partnership of almost four decades. As part of the new framework agreement, our company will fund each of the two research areas immuno-oncology and immunology with up to € 1 million per year over the three-year period initially.

Our company's ties in research and development collaboration with the Weizmann Institute date back as far as 1978. For example, our top-selling drug Rebif® for the treatment of multiple sclerosis has intellectual roots in Israel's prestigious Weizmann Institute, as has our oncology drug Erbitux®.

Oncology

As regards Erbitux®, we announced on April 25, 2016 that the pivotal Chinese Phase III TAILOR study met its primary endpoint of significantly increasing progression-free survival (PFS) in patients with RAS wild-type metastatic colorectal cancer (mCRC) treated with Erbitux® (cetuximab) plus FOLFOX chemotherapy, compared with FOLFOX alone. The clinical benefit that Erbitux® offers to RAS wild-type mCRC patients is further strengthened by the secondary endpoint results, which support the superiority shown for PFS. The safety profile of Erbitux® in the TAILOR clinical trial was manageable and similar to that observed in other pivotal trials, with no unexpected safety findings. The full study results were presented at the ESMO 18th World Congress on Gastrointestinal Cancer (WCGC) held in Barcelona, Spain, from June 29 to July 2. Our company will work with relevant authorities to make Erbitux® available for patients in China as a first-line treatment as soon as possible.

On April 6, 2016, we announced that a new liquid biopsy RAS biomarker test, which we are co-developing and commercializing with Sysmex Inostics, has been granted CE Mark approval. This test will now be made widely accessible for patients with metastatic colorectal cancer in Europe, Asia, Latin America, and Australia. The testing technology, OncoBEAM® RAS CRC assay can be used to determine which patients would benefit from anti-epidermal growth factor receptor (anti-EGFR) therapies, such as Erbitux® (cetuximab). The liquid biopsy RAS biomarker test is a comprehensive 34-mutation panel that is based on the BEAMing (Beads, Emulsion, Amplification and Magnetics) technology. The test only requires a small blood sample (10 ml), rather than a tissue biopsy, to determine the mutation status of tumors. The test has the potential to provide mutation status results within days, which can help guide quicker treatment decisions. Merck KGaA, Darmstadt, Germany, and Sysmex Inostics originally entered into an agreement to co-develop and commercialize the liquid biopsy test in 2014.

In early January 2016, we announced that we signed a collaboration agreement with Biocartis for the development and commercialization of a new liquid biopsy RAS biomarker test for patients with mCRC. The test will be developed on Biocartis' innovative, fully automated molecular diagnostics system, Idylla™, which is designed to offer accurate and reliable molecular information from virtually any biological sample. The Idylla™ system is a fully automated sample-to-result PCR-based (polymerase chain reaction) molecular diagnostics system. Whereas most of today's solutions only look for the most prevalent RAS mutations, the Idylla™ RAS test will be designed to detect an extended panel of RAS mutations. The new test will also provide a BRAF V600 mutation analysis directly integrated with the Idylla™ RAS test to allow clinicians to evaluate BRAF and RAS mutation status simultaneously. Based on a 2 ml sample of blood plasma, the test aims to provide high sensitivity and ease-of-use, requiring less than

2 minutes of hands-on time and a turnaround time of approximately two hours, enabling clinical decision-making in a timely manner. Merck KGaA, Darmstadt, Germany, and Biocartis plan to implement the Idylla™ liquid biopsy RAS test in numerous medical centers across the world, excluding the United States, China and Japan. The test will be available for Research Use Only in H2 2016, and shortly thereafter is planned to be submitted for a CE Mark.

At the beginning of March this year, we announced that we entered into a research collaboration focused on cancer metabolism with the European Molecular Biology Laboratory (EMBL), located in Heidelberg, Germany. The aim of the collaboration is to investigate mechanisms by which cancer cells generate energy and growth-enabling building blocks, which could ultimately deliver novel therapeutic targets, as well as biomarkers. The collaboration will make use of EMBL's capabilities in the area of metabolomics. During the three-year collaboration, EMBL will apply its unique expertise, combining modelling and bioinformatics with experimental approaches to investigate these metabolic pathways and shed light on their control mechanisms. EMBL will also utilize the cutting-edge equipment of its Genomics and Metabolomics Core Facilities to resolve the transcriptional and metabolic profiles of the samples for the study.

At this year's annual meeting of the American Society of Clinical Oncology (ASCO), held in June in Chicago, Illinois (USA), abstracts presented featuring our company compounds spanned a broad range of cancers, with an emphasis on those which are difficult-to-treat and represent significant unmet patient needs. Erbitux® continued to captivate the interest of leading researchers and the medical community with more than 30 abstracts, the majority of which concerned investigator-led studies.

On June 4, our company announced jointly with Array BioPharma Inc. and Pierre Fabre, the initiation of a prospective, randomized, global Phase III clinical trial of BRAF-mutant mCRC, investigating a new combination of Erbitux® plus encorafenib, with or without binimetinib. The trial, known as BEACON CRC (Binimetinib, Encorafenib And Cetuximab Combined to treat BRAF-mutant Colorectal Cancer) will assess the efficacy and safety of these two novel combinations in patients with BRAF-mutant tumors, compared with investigator's choice of Erbitux® plus irinotecan or Erbitux® plus FOLFIRI. Approximately 650 patients are expected to be enrolled by 2018 and, after a lead-in period to assess the safety and tolerability of Erbitux® plus encorafenib (a BRAF inhibitor) and binimetinib (a MEK inhibitor), will be randomized to receive one of the two novel combinations, or the investigator's choice. The primary endpoint of the trial is overall survival. Key secondary endpoints include progression-free survival, objective response rate, duration of response, safety and tolerability. The trial will also assess health-related quality of life.

Immuno-Oncology

At the 2016 ASCO annual meeting demonstrated how the Alliance of Merck KGaA, Darmstadt, Germany, and Pfizer is making significant progress to accelerate the expansive, international development program (known as JAVELIN) for its investigational product avelumab (proposed International Non-proprietary Name). The program comprises 30 ongoing clinical programs assessing avelumab as monotherapy or combination therapy including nine pivotal studies, and approximately 2,200 patients across more than 15 tumor types. The data presented at ASCO 2016 contribute to the growing understanding of the potential role of avelumab in treating a broad range of cancers. In total, 14 avelumab abstracts were presented (two oral presentations and 12 posters/poster discussions) across seven different cancer types.

One of the oral presentations concerned the first pivotal, international, multicenter, open-label, Phase II study of avelumab in 88 patients with metastatic Merkel cell carcinoma (MCC), a rare and aggressive type of skin cancer, who were treated with avelumab in second or subsequent lines of therapy. The study showed a 31.8% objective response rate. There were 8 complete responses and 20 partial responses. Tumor responses were rapid, with 78.6% of patients (22 of 28) responding within seven weeks of starting treatment, and durable, with 82.1% of patients (23 of 28) still responding at the time of analysis. Tumor responses were seen in patients regardless of the status of certain biomarkers (PD-L1 and Merkel cell polyomavirus). No unexpected safety signals were reported. Treatment-related adverse events (AEs) occurred in 62 patients (70.5%); the most common were fatigue (23.9%) and infusion-related reactions (17.0%), all of which were Grade 1 or 2 in severity. Grade 3 treatment-related AEs were reported in four patients (4.5%).

Avelumab has received multiple regulatory designations in MCC from the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA), including Orphan Drug (FDA and EMA), Fast Track and Breakthrough status (FDA). We plan to submit marketing authorization applications for avelumab to regulatory authorities based on these data.

Other highlights of the avelumab clinical program reported at ASCO included the presentation of data in adrenocortical carcinoma, gastric/gastro-esophageal junction cancer, mesothelioma, non-small-cell lung cancer, ovarian cancer and urothelial (bladder) cancer. Additionally, safety data were presented from 1,300 patients enrolled in the Phase Ib JAVELIN Solid Tumor trial, the largest Phase I trial investigating an anti-PD-L1 therapy.

In April 2016, Merck KGaA, Darmstadt, Germany, and Pfizer announced the initiation of a Phase III study of avelumab in an advanced renal cell carcinoma setting. The study, JAVELIN Renal 101 is a multicenter, international, randomized, open-label Phase III trial designed to evaluate the potential superiority, assessed by the progression-free survival, of first-line avelumab combined with INLYTA® (axitinib) compared

with SUTENT (sunitinib malate) monotherapy in patients with unresectable, locally advanced or metastatic RCC with clear cell component. It is the first pivotal trial investigating avelumab in combination with INLYTA® (axitinib), a tyrosine kinase inhibitor (TKI), in patients with previously untreated advanced RCC. Moreover, it is the only Phase III trial currently evaluating an anti-PD-L1 immunotherapy in combination with a vascular endothelial growth factor (VEGF)-receptor TKI in this setting.

Furthermore, early in July 2016, Merck KGaA, Darmstadt, Germany, and Pfizer announced the initiation of the Phase III study JAVELIN Ovarian 100 to evaluate the efficacy and safety of avelumab in combination with, or as follow-on (maintenance) treatment to, platinum-based chemotherapy in patients with locally advanced or metastatic disease (Stage III or Stage IV) with previously untreated epithelial ovarian cancer. This is the first Phase III study evaluating the addition of an immune checkpoint inhibitor to standard-of-care in first-line treatment for this aggressive disease. JAVELIN Ovarian 100 is an open-label, international, multi-center, randomized, three-arm Phase III trial in treatment-naïve patients with locally advanced or metastatic ovarian cancer (Stage III or Stage IV) designed to evaluate the potential superiority of two first-line therapies with avelumab and platinum-based chemotherapy versus platinum-based chemotherapy alone, as assessed by progression-free survival. The study will enroll approximately 950 patients, who will receive concurrent avelumab and chemotherapy, avelumab following chemotherapy, or chemotherapy alone.

In March 2016, Merck KGaA, Darmstadt, Germany, Pfizer and Verastem announced that they had entered into an agreement to evaluate avelumab in combination with Verastem's VS-6063, an investigational focal adhesion kinase (FAK) inhibitor, in patients with advanced ovarian cancer. This Phase I/Ib clinical trial is expected to begin in the second half of 2016.

In early January, the alliance partners Merck KGaA, Darmstadt, Germany, and Pfizer entered into an exclusive collaboration agreement with Syndax Pharmaceuticals, Inc. to evaluate avelumab in combination with Syndax's entinostat, an investigational oral small molecule that targets immune regulatory cells (myeloid-derived suppressor cells and regulatory T-cells), in patients with heavily pre-treated, recurrent ovarian cancer. Syndax will be responsible for conducting the Phase Ib/II clinical trial.

Neurology

At the end of June we submitted our Marketing Authorization Application (MAA) for cladribine tablets to the European Medicines Agency (EMA). Although there are multiple therapies available for relapsing-remitting MS, there are still significant unmet medical needs in several areas. We believe that Cladribine Tablets, if approved, would have a unique oral dosing regimen followed by prolonged treatment-free periods and could serve as an important therapeutic option for patients with RRMS. The regulatory submission includes data from several advanced phase clinical studies (CLARITY, CLARITY EXT, ORACLE MS and ONWARD), as well as interim long-term follow-up data from the PREMIERE registry. The new MAA includes more than 10,000 patient-years of follow-up.

At the European Academy of Neurology (EAN) meeting in Copenhagen in May 2016, new data and analyses were presented from clinical studies with Cladribine Tablets. Outcomes in patients from across the spectrum of relapsing MS were presented from the CLARITY, ORACLE-MS and ONWARD studies. The results of a re-analysis of the ORACLE-MS data were chosen by the organisers to be shown at the highlights session that showcases the most interesting data presented during the congress. This analysis showed efficacy of Cladribine Tablets in patients who would now be classified as having early multiple sclerosis according to the latest disease definitions, as well as an adverse event profile in line with previous experience. Further data investigating brain atrophy associated with cladribine tablet therapy vs placebo was presented from the CLARITY study. Final results on safety and tolerability were reported from the ONWARD study.

Concerning Rebif®, results of two non-interventional studies (REBIFLECT and REBISTART) were presented showing the positive effect of the RebiSmart injection device as well as nurse support for patient adherence to treatment, a key concern in patients requiring treatment for a chronic disease. In addition, a retrospective claims analysis was presented to investigate the reasons for treatment discontinuation over time.

Immunology

A Phase IIa study of our BTK inhibitor (M2951) in rheumatoid arthritis was initiated in early July. This molecule is also currently being tested in Phase Ib in systemic lupus erythematosus (SLE).

BIOSIMILARS

In March 2016, we announced the initiation of a global Phase III clinical study of MSB11022, a proposed biosimilar of adalimumab, a recombinant human monoclonal antibody that binds specifically to tumor necrosis factor-alpha (TNF-α), in patients with chronic plaque psoriasis. The AURIEL-Psoriasis (PsO) study is a randomized, double-blind, active-controlled trial evaluating the efficacy, safety and immunogenicity of our adalimumab biosimilar candidate MSB11022 compared with Humira® (adalimumab) in patients with moderate to severe chronic plaque psoriasis. Humira® is marketed globally by AbbVie, Inc. The study is expected to recruit approximately 400 patients across Europe, Asia as well as North and Central America.

Life Science

During the first half of 2016, within our Life Science business sector we continued the research and development work underway 2015 and presented in the Annual Report for 2015 starting on page 76. As Life Science continues to integrate, innovation remains a top priority for the business sector.

At the beginning of 2016, Life Science completed the manufacture of the world's first arrayed CRISPR library, known as the CRISPR Whole Genome pooled library, covering the entire human genome. CRISPR-Cas9 is a DNA editing technology that can be used to remove or replace an existing gene, switch a gene on or off or insert a new gene with unprecedented accuracy. Shortly thereafter, "The Scientist" magazine named our CRISPR Epigenetic Activator one of its "Top 10 Innovations of 2015." The CRISPR Epigenetic Activator is a key product for the Life Science business sector after the acquisition of Sigma-Aldrich in 2015. The life science research community lacked an effective method for the activation of endogenous gene expression, and our technology provides a highly specific, robust tool for both targeted epigenetic manipulation and transcriptional regulation.

In addition, the Life Science business sector launched more than ten new products across its Research Solutions, Process Solutions and Applied Solutions business areas. These products include: KitAlysis™ high-throughput screening kits designed to increase productivity in the lab (Research Solutions); Mobius® 1000 L single-use Bioreactor and Mobius® 50 and 200-liter single-use bioreactors as part of a scalable profile of bioreactors and single-use assemblies (Process Solutions); and Spectroquant® Prove, a new class of spectrometers for simplified and secure analysis of wastewater, drinking water, beverages, and process water (Applied Solutions).

During the first half of 2016, the Life Science business sector successfully showcased its technology and innovations at several global congresses: American Association for Cancer Research, Analytica 2016, BIO 2016, and INTERPHEX 2016, where the Mobius 1000 L single-use bioreactor received the INTERPHEX Process Efficiency Champion Award.

Process Solutions launched the "Go Beyond" thought leadership campaign, including a sponsored report with the Economist Intelligence Unit entitled "The Changing Biopharma Risk Equation" and a microsite to continue the conversation.

Performance Materials

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

Display Materials

In the first half of 2016, we continued working with display manufacturers on further developing the energy-saving liquid crystal technology UB-FFS (ultra-brightness fringe field switching) – which has won multiple awards – also for non-mobile applications. These include televisions, for example, where we want to utilize the trend towards very high resolutions with low power consumption. In addition, we positioned liquid crystals more strongly as an innovative material for architects. Following the positive reception in 2015 of the liquid crystal window façade of the new modular Innovation Center in Darmstadt, we are driving the development and commercialization of liquid crystal windows forward – together with our cooperation partners, for example from the glass industry. The new OLED production building currently being constructed at the Darmstadt site has also been fitted with liquid crystal windows that already provide improved energy and light management.

The development of smart antennas using liquid crystal technology also progressed well. For practical tests, they have now been installed in automobile roofs and enabled good Internet connectivity via satellite throughout the whole journey.

Integrated Circuit Materials

In April 2016, the former SAFC Hitech business of Sigma-Aldrich became the new Deposition Materials business field within the Integrated Circuit Materials business unit. This has added new materials for deposition technology to the portfolio – including atomic layer deposition (ALD), which is used in modern semiconductor manufacturing processes. These materials, which are deposited from the gas phase, ideally complement our offering of products deposited from the liquid phase. This technology is gaining importance in modern semiconductor manufacturing processes.

Pigments & Functional Materials

In technical applications, besides classic laser pigments we are continuing to work on additives for 3D laser direct structuring and 3D printing of plastics, as well as additives for conductive coatings. Laser additives enable computer-controlled fabrication of three-dimensional components and their laser-assisted bonding. We received first prize in the Darmstadt Enterprise Innovation Award for our technical additives used in energy-efficient generators. The jury honored the innovative project on which we are collaborating with our customer Siemens. Further developments include a new light-colored pigment that can be used as a primer in applications such as the automotive sector.

Advanced Technologies

Organic light-emitting diodes (OLEDs) are an outstanding example of our R&D activities in the Advanced Technologies business unit. We again pushed their continuous further development forward in the first half of 2016. An important focus in early development are flexible electronics for sensors and displays. We presented our innovations at the LOPEC 2016 conference in Munich, Germany.

COURSE OF BUSINESS AND ECONOMIC POSITION

Group

Overview – Q2 2016

- Group sales rise to € 3.8 billion thanks to organic growth of 5.1% and acquisition-related increases
- Healthcare and Life Science deliver very strong organic sales growth
- Integration of Sigma-Aldrich on track
- Performance Materials sustains high profitability with EBITDA pre exceptionals margin of 44.1%
- Group EBITDA pre exceptionals up 28.8% to € 1,158 million
- Group profitability increases to 30.4% thanks to growth in Healthcare and Life Science as well as synergies from the Sigma-Aldrich acquisition

GROUP

Key figures

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	3,805	3,219	18.2 %	7,470	6,261	19.3 %
Operating result (EBIT)	550	501	9.8 %	1,399	981	42.6 %
Margin (% of net sales)	14.5 %	15.6 %		18.7 %	15.7 %	
EBITDA	1,069	845	26.6 %	2,351	1,650	42.5 %
Margin (% of net sales)	28.1 %	26.2 %		31.5 %	26.4 %	
EBITDA pre exceptionals	1,158	899	28.8 %	2,242	1,752	27.9 %
Margin (% of net sales)	30.4 %	27.9 %		30.0 %	28.0 %	
Profit after tax	314	346	-9.1 %	907	631	43.8 %
Earnings per share (€)	0.72	0.79	-8.9 %	2.08	1.44	44.4 %
Earnings per share pre exceptionals (€)	1.55	1.30	19.2 %	3.09	2.43	27.2 %
Business free cash flow	799	830	-3.7 %	1,562	1,190	31.2 %

Development of net sales and results of operations

In the second quarter of 2016, the Group generated sales of € 3,805 million (Q2 2015: € 3,219 million). This represented a year-on-year increase of around € 585 million or 18.2%. This double-digit sales increase was due not only to portfolio changes but also to solid organic growth. Organic sales growth amounted to € 165 million or 5.1% in the second quarter and was generated by the Healthcare and Life Science business sectors. Portfolio changes lifted net sales by € 617 million or 19.2%. This was mainly due to the acquisition of Sigma-Aldrich, which closed on November 18, 2015. Negative exchange rate effects lowered net sales by € 197 million or –6.1%. These effects were primarily due to the development of Latin American currencies.

The double-digit growth rate of Group net sales was particularly attributable to the positive contribution by our Life Science business sector, which increased its sales by 85.0% to € 1,430 million (Q2 2015: € 773 million). This was due on the one hand to the effects of the acquisition of Sigma-Aldrich (+79.7%) and on the other hand to the very strong organic increase in sales (+8.1%). Consequently, the share of Group sales attributable to Life Science in the second quarter of 2016

GROUP

Net sales components by business sector – Q2 2016

€ million/Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Healthcare	1,754	7.3 %	–9.0 %	–1.0 %	–2.7 %
Life Science	1,430	8.1 %	–2.8 %	79.7 %	85.0 %
Performance Materials	621	–4.7 %	–2.0 %	3.1 %	–3.5 %
Group	**3,805**	**5.1 %**	**–6.1 %**	**19.2 %**	**18.2 %**

increased significantly by 14 percentage points to 38% (Q2 2015: 24%). With a 46% share (Q2 2015: 56%) of Group sales, in the second quarter of 2016 Healthcare remained our strongest business sector in terms of sales. Healthcare delivered organic growth of 7.3%, which however was canceled out by the absence of Kuvan® sales (see explanations in the Notes to the Half-Year Group Accounts). Overall, Healthcare sales declined slightly to € 1,754 million (Q2 2015: € 1,803 million). Net sales by the Performance Materials business sector decreased moderately to € 621 million (Q2 2015: € 643 million). The business sector thus generated 16% (Q2 2015: 20%) of Group sales.

At € 1,198 million (Q2 2015: € 1,008 million), Europe again accounted for 31% of Group sales and thus remained our strongest region in terms of sales in the second quarter of 2016. Driven by double-digit acquisition-related sales increases (+18.0%) and supported by slight organic growth, sales in Europe rose by 18.8% or around € 190 million. This positive sales performance in Europe was due first and foremost to our Life Science business sector.

Sales in the Asia-Pacific region amounted to € 1,196 million (Q2 2015: € 1,046 million), which represents a year-on-year increase of € 150 million or 14.3%. The acquisition-related effects of the consolidation of Sigma-Aldrich and the organic sales performance of Healthcare were largely responsible for this. The percentage contribution to Group sales by the Asia-Pacific region fell by two percentage points to 31% (Q2 2015: 33%).

In North America, our net sales rose by € 325 million or 50.3% to € 971 million (Q2 2015: € 646 million). Apart from portfolio-related growth (+43.5%), particularly the Healthcare business sector contributed to the organic increase (+7.6%) in Group sales generated in North America. The contribution to Group sales by North America in the second quarter of 2016 was 26%, representing an increase of six percentage points (Q2 2015: 20%).

GROUP

Net sales by region – Q2 2016

€ million/% of net sales

The Latin America region sustained double-digit sales declines owing to foreign exchange effects. Consequently, Latin America accounted for € 290 million (Q2 2015: € 392 million) or 8% of Group net sales (Q2 2015: 12%).

Net sales in the Middle East and Africa region rose in the second quarter of 2016 by 17.5%, amounting to € 150 million (Q2 2015: € 127 million). Organic sales growth of 14.9% was mainly attributable to the Healthcare business sector. This region accounted for an unchanged 4% of Group sales in the second quarter of 2016.

GROUP

Net sales components by region – Q2 2016

€ million/Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	1,198	2.7 %	–2.0 %	18.0 %	18.8 %
North America	971	7.6 %	–0.8 %	43.5 %	50.3 %
Asia-Pacific (APAC)	1,196	4.2 %	–2.2 %	12.4 %	14.3 %
Latin America	290	6.6 %	–36.6 %	4.2 %	–25.8 %
Middle East and Africa (MEA)	150	14.9 %	–3.7 %	6.2 %	17.5 %
Group	**3,805**	**5.1 %**	**–6.1 %**	**19.2 %**	**18.2 %**

In the first half of 2016, we increased Group net sales by 19.3% or € 1,209 million to € 7,470 million (January – June 2015: € 6,261 million). This double-digit growth rate was due to acquisition effects (+19.5%) and organic sales increases (+4.9%). In the first half of 2016, exchange rate movements lowered sales by –5.1% and were primarily attributable to Latin American currencies. The Healthcare and Life Science business sectors respectively accounted for +6.4% and +8.5% of the Group's organic sales growth in the first half of 2016. By contrast, Performance Materials registered an organic sales decline of –3.5%.

From a geographic perspective, sales increases were achieved in nearly all regions. For example in North America, where the effects of the acquisition of Sigma-Aldrich were particularly strong, Group sales soared by 52.4% to € 1,903 million (January – June 2015: € 1,249 million). Double-digit growth rates were achieved in other regions as well. The only exception was Latin America, where net sales declined to € 556 million (January – June 2015: € 726 million) owing to negative exchange rate effects.

The consolidated income statement of the Group is as follows:

GROUP

Consolidated Income Statement

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	**3,805**	**3,219**	**18.2 %**	**7,470**	**6,261**	**19.3 %**
Cost of sales	–1,315	–1,015	29.6 %	–2,622	–1,988	31.9 %
(of which: amortization of intangible assets)[1]	*(–45)*	*(–42)*	*(6.5 %)*	*(–88)*	*(–83)*	*(6.5 %)*
Gross profit	**2,489**	**2,204**	**12.9 %**	**4,848**	**4,272**	**13.5 %**
Marketing and selling expenses	–1,114	–1,027	8.4 %	–2,204	–1,967	12.1 %
(of which: amortization of intangible assets)[1]	*(–256)*	*(–189)*	*(35.1 %)*	*(–513)*	*(–367)*	*(39.6 %)*
Administration expenses	–209	–174	20.4 %	–415	–346	20.1 %
Research and development costs	–497	–456	9.1 %	–986	–897	9.9 %
(of which: amortization of intangible assets)[1]	*(–1)*	*(–1)*	*(58.4 %)*	*(–2)*	*(–1)*	*(51.5 %)*
Other operating expenses and income	–119	–46	>100%	157	–81	>100 %
Operating result (EBIT)	**550**	**501**	**9.8 %**	**1,399**	**981**	**42.6 %**
Financial result	–121	–41	>100 %	–190	–141	34.1 %
Profit before income tax	**429**	**461**	**–6.8 %**	**1,209**	**840**	**44.0 %**
Income tax	–115	–115	–	–302	–209	44.7 %
Profit after tax	**314**	**346**	**–9.1 %**	**907**	**631**	**43.8 %**
Non-controlling interests	–2	–2	1.8 %	–4	–6	–26.9 %
Net income	**312**	**343**	**–9.1 %**	**903**	**625**	**44.4 %**

[1] Excluding amortization of internally generated or separately acquired software.

The increase in cost of sales to € 1,315 million (Q2 2015: € 1,015 million) was largely due to the first-time consolidation of Sigma-Aldrich in November 2015. As part of the purchase price allocation, the inventories of Sigma-Aldrich were stepped up to fair values on the date of first-time consolidation. In the second quarter of 2016, part of this step-up was included as an expense in cost of sales. The gross profit resulting from the difference between net sales and cost of sales showed a double-digit increase to € 2,489 million (Q2 2015: € 2,204 million). Consequently, gross margin declined to 65.4% (Q2 2015: 68.5%).

The increases in marketing and selling expenses as well as administration expenses were largely acquisition-related. In particular, marketing and selling expenses of the Life Science business sector were burdened by higher amortization of intangible assets stemming from the purchase price allocation. Group research and development costs increased by 9.1% to € 497 million. This was due mainly to the Healthcare business sector and the consolidation of Sigma-Aldrich. Accounting for 76% of Group R&D spending, (Q2 2015: 78%), Healthcare remained our most research-intensive business sector. The Group research spending ratio (research and development costs as a percentage of sales) was 13.1% (Q2 2015: 14.2%). The increase in other operating expenses and income (net) to € –119 million (Q2 2015: €- 46 million) was due mainly to the impairment loss on the co-commercialization right for Xalkori®

(see explanations in the Notes to the Half-Year Group Accounts). In the Healthcare business sector, a gain of around € 30 million on the sale of a minority interest had a positive effect.

The Group operating result (EBIT) rose by € 49 million or 9.8% year-on-year to € 550 million. This was primarily due to the positive business performance of Life Science.

The financial result was € –121 million in the second quarter of 2016 (Q2 2015: € –41 million). This sharp increase in the negative balance was mainly the result of the development of the time value of Share Units of Merck KGaA, Darmstadt, Germany, within the scope of our company's Long- Term Incentive Plan. While this generated income in the year-earlier quarter, it adversely affected the second quarter of 2016.

Income tax expenses of € 115 million (Q2 2015: € 115 million) led to an effective tax rate of 26.7% (Q2 2015: 24.9%).

Net income, i.e. profit after tax attributable to shareholders of Merck KGaA, Darmstadt, Germany, declined by –9.1% to € 312 million in the second quarter of 2016, yielding earnings per share of € 0.72 (Q2 2015: € 0.79).

GROUP

Reconciliation of EBIT to EBITDA pre exceptionals

€ million	Q2 2016	Q2 2015	Change	Jan.–June 2016	Jan.–June 2015	Change
Operating result (EBIT)	**550**	**501**	**9.8 %**	**1,399**	**981**	**42.6 %**
Depreciation/amortization/ impairment losses/reversals of impairment losses	519	343	51.0 %	952	669	42.3 %
(of which: exceptionals)	*(71)*	*(2)*	*(>100 %)*	*(71)*	*(2)*	*(>100 %)*
EBITDA	**1,069**	**845**	**26.6 %**	**2,351**	**1,650**	**42.5 %**
Restructuring costs	2	21	–89.7 %	4	40	–91.2 %
Integration costs/IT costs	37	11	>100 %	64	22	>100 %
Gains/losses on the divestment of businesses	–4	–6	–27.6 %	–328	–6	>100 %
Acquisition-related exceptionals	53	25	>100 %	148	40	>100 %
Other exceptionals	1	3	–56.6 %	3	7	–49.2 %
EBITDA pre exceptionals	**1,158**	**899**	**28.8 %**	**2,242**	**1,752**	**27.9 %**

Adjusted for depreciation, amortization and exceptionals, EBITDA pre exceptionals, the key financial indicator used to steer operating business, rose by 28.8% to € 1,158 million (Q2 2015: € 899 million). Consequently, the EBITDA margin pre exceptionals relative to sales was 30.4% (Q2 2015: 27.9%). Earnings per share pre exceptionals (earnings per share adjusted by net of tax effect of exceptionals and amortization of purchased intangible assets) rose by 19.2% to € 1.55 in the second quarter of 2016 (Q2 2015: € 1.30).

In the first half of 2016, the Group increased its operating result (EBIT) by 42.6% to € 1,399 million (January-June 2015: € 981 million). In particular, this was due to the good business performance of Life Science and Healthcare. The gain stemming from the return of the rights to Kuvan® in the first quarter of 2016 as well as a gain from the sale of a minority interest in the second quarter of 2016 also drove the increase in the operating result. The impairment recognized on the co-commercialization right for Xalkori® (see explanations in the Notes to the Half-Year Group Accounts) had a negative effect in the second quarter. EBITDA pre exceptionals totaled € 2,242 million (January-June 2015: € 1,752 million), exceeding the year-earlier figure by € 490 million or 27.9%. The EBITDA margin pre exceptionals increased by two percentage points to 30.0% (January-June 2015: 28.0%). Earnings per share pre exceptionals climbed by 27.2% to € 3.09 in the first six months of 2016 (January-June 2015: € 2.43).

Net assets and financial position

GROUP

Balance sheet structure

	June 30, 2016		Dec. 31, 2015		Change	
	€ million	**in %**	€ million	in %	€ million	in %
Non-current assets	**29,770**	**80.4 %**	**30,657**	**80.7 %**	**–887**	**–2.9 %**
of which:						
Intangible assets	24,418		25,339		–921	
Property, plant and equipment	3,979		4,009		–30	
Other non-current assets	1,373		1,309		64	
Current assets	**7,256**	**19.6 %**	**7,350**	**19.3 %**	**–94**	**–1.3 %**
of which:						
Inventories	2,640		2,620		20	
Trade accounts receivable	2,960		2,738		222	
Current financial assets	104		227		–123	
Other current assets	829		933		–104	
Cash and cash equivalents	723		832		–110	
Total assets	**37,026**	**100.0 %**	**38,007**	**100.0 %**	**–982**	**–2.6 %**
Equity	**12,856**	**34.7 %**	**12,855**	**33.8 %**	**–**	**–**
Non-current liabilities	**15,755**	**42.6 %**	**15,769**	**41.5 %**	**–14**	**–0.1 %**
of which:						
Provisions for pensions and other post-employment benefits	2,482		1,836		646	
Other non-current provisions	786		855		–69	
Non-current financial liabilities	9,290		9,616		–326	
Other non-current liabilities	3,197		3,462		–265	
Current liabilities	**8,415**	**22.7 %**	**9,383**	**24.7 %**	**–968**	**–10.3 %**
of which:						
Current provisions	495		535		–40	
Current financial liabilities	4,047		4,097		–50	
Trade accounts payable	1,809		1,921		–112	
Other current liabilities	2,064		2,830		–766	
Total liabilities and equity	**37,026**	**100.0 %**	**38,007**	**100.0 %**	**–982**	**–2.6 %**

The total assets of the Group amounted to € 37,026 million as of June 30, 2016. This represents a slight decline of 2.6% compared with December 31, 2015 (€ 38,007 million). Higher inventory levels and trade accounts receivable as well as the decline in trade accounts payable lowered working capital by 10.6% to € 3,813 million (December 31, 2015: € 3,448 million).

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

GROUP

Net financial debt

	June 30, 2016	Dec. 31, 2015	Change	
	€ million	€ million	€ million	in %
Bonds and commercial paper	9,383	9,851	–468	–4.8 %
Loans to banks	2,849	3,006	–157	–5.2 %
Liabilities to related parties	881	578	303	52.4 %
Loans from third parties and other financial liabilities	112	89	22	25.0 %
Liabilities from derivatives (financial transactions)	109	184	–75	–40.8 %
Finance lease liabilities	4	5	–1	–19.7 %
Total financial liabilities	**13,337**	**13,713**	**–376**	**–2.7 %**
less				
Cash and cash equivalents	723	832	–110	–13.2 %
Current financial assets	104	227	–123	–54.1 %
Net financial debt	**12,510**	**12,654**	**–143**	**–1.1 %**

GROUP

Reconciliation of net financial debt

€ million	**2016**
January 1	**12,654**
Currency translation	–55
Dividend payments to shareholders and to E. Merck KGaA, Darmstadt, Germany[1]	599
Acquisitions	–
Payments from the divestment of assets held for sale and from other divestments[1]	–361
Free cash flow	–345
Other	18
June 30	**12,510**

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

The increase in pension provisions to € 2,482 million (December 31, 2015: € 1,836 million) resulted mainly from the required reduction in the discount rate when calculating the present value of the defined benefit obligations. The resulting actuarial losses were recognized in the Consolidated Statement of Comprehensive Income and, taking into account deferred taxes, lowered the equity of the Group as of June 30, 2016. Moreover, dividend payments as well as the translation of assets held in foreign currencies into euros, the reporting currency, lowered equity. These effects were offset by profit after tax. Consequently, equity amounted to € 12,856 million as of June 30, 2016 (December 31, 2015: € 12,855 million) (see the Consolidated Statement of Comprehensive Income and the Consolidated Statement of Changes in Net Equity).

The equity ratio rose by nearly one percentage point to 34.7% (Dec. 31, 2015: 33.8%).

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

GROUP

Free cash flow

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Cash flow from operating activities as reported in the consolidated cash flow statement	311	326	–4.7 %	663	605	9.6 %
Payments for investments in intangible assets	–33	–16	>100 %	–45	–20	>100 %
Payments from the disposal of intangible assets	1	–	–	1	16	–93.4 %
Payments for investments in property, plant and equipment	–125	–93	34.5 %	–285	–167	70.5 %
Payments from the disposal of property, plant and equipment	5	–	–	11	2	>100 %
Free cash flow	**159**	**217**	**–26.7 %**	**345**	**436**	**–20.8 %**

Business free cash flow of the Group was € 799 million in the second quarter of 2016 (Q2 2015: € 830 million), representing a decline of 3.7%. While the increase in EBITDA pre exceptionals had a positive effect on business free cash flow, it was more than offset by higher investments as well as the increase in inventories and receivables.

GROUP

Business free cash flow

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
EBITDA pre exceptionals	1,158	899	28.8 %	2,242	1,752	27.9 %
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–150	–99	52.0 %	–268	–177	51.4 %
Changes in inventories as reported in the consolidated balance sheet	–37	21	>100 %	–20	–134	–84.7 %
Changes in trade accounts receivable and receivables from royalties and licenses as reported in the consolidated balance sheet	–109	8	>100 %	–232	–251	–7.5 %
Adjustments first-time consolidation of Sigma-Aldrich	–64	–	–	–159	–	–
Business free cash flow	**799**	**830**	**–3.7 %**	**1,562**	**1,190**	**31.2 %**

In the first half of 2016, the Group generated a € 372 million or 31.2% increase in business free cash flow, which amounted to € 1,562 million (January-June 2015: € 1,190 million). This improvement was especially driven by higher EBITDA pre exceptionals.

Healthcare

HEALTHCARE

Key figures

€ million	Q2 2016	Q2 2015	Change	Jan.–June 2016	Jan.–June 2015	Change
Net sales	1,754	1,803	–2.7 %	3,400	3,490	–2.6 %
Operating result (EBIT)	298	267	11.4 %	939	536	75.3 %
Margin (% of net sales)	17.0 %	14.8 %		27.6 %	15.3 %	
EBITDA	558	461	21.2 %	1,387	910	52.4 %
Margin (% of net sales)	31.8 %	25.5 %		40.8 %	26.1 %	
EBITDA pre exceptionals	557	480	16.1 %	1,065	941	13.3 %
Margin (% of net sales)	31.8 %	26.6 %		31.3 %	27.0 %	
Business free cash flow	423	427	–0.9 %	765	683	12.0 %

Development of net sales and results of operations

In the second quarter of 2016, our Healthcare business sector generated organic sales growth of 7.3%. Due to negative exchange rate effects of –9.0% and a negative portfolio effect of –1.0%, net sales decreased overall by –2.7% to € 1,754 million (Q2 2015: € 1,803 million). Within the Biopharma business, organic sales in the second quarter of 2016 were driven in particular by the double-digit growth rates of products to treat infertility (Gonal-f®) and thyroid disorders (Euthyrox®). Rebif®, our top-selling drug, maintained its organic sales growth at the previous year's level. The negative foreign exchange impact was mainly attributable to the development of Latin American currencies. In the second quarter of 2016, the return of the Kuvan® rights to BioMarin Pharmaceutical Inc., USA, lowered sales by –1.0%.

Commission income, which is also included in net sales, rose to € 42 million in the second quarter of 2016 (Q2 2015: € 22 million). This increase was driven in particular by profit-sharing from the co-commercialization of Xalkori® with Pfizer.

Europe, our Healthcare business sector's largest region accounting for 37% of sales (Q2 2015: 38%), maintained the previous year's level with organic growth of 0.3%. The organic decline in sales of Rebif®, which remains attributable to the difficult competitive environment for the multiple sclerosis treatment, was offset by organic sales growth of other products. Owing to negative exchange rate and portfolio effects, organic sales in the region declined to € 650 million (Q2 2015: € 680 million).

In North America, the second-largest region in terms of sales, organic growth of 10.1% led to net sales of € 398 million (Q2 2015: € 364 million). This double-digit organic growth was mainly due to the development of products to treat infertility, in particular Gonal-f®. The largest contribution to net sales in the region was generated by Rebif® with € 263 million. Organically, sales thus remained stable at the previous year's level (Q2 2015: € 265 million). North America's contribution rose by almost three percentage points year-on-year to 23% (Q2 2015: 20%).

The Asia-Pacific (APAC) region recorded organic sales growth of 19.4% and, including a foreign exchange impact of –3.4%, generated net sales of € 369 million (Q2 2015: € 319 million). The main drivers of this development were our products to treat infertility, the thyroid drug Euthyrox® and the oncology drug Erbitux®. Consequently, the proportion of sales accounted for by this region increased to 21% (Q2 2015: 18%).

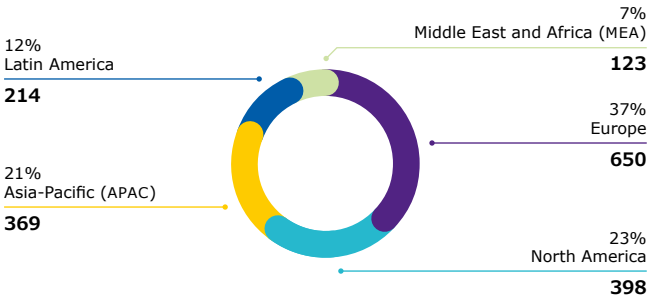
In Latin America, net sales amounted to € 214 million (Q2 2015: € 328 million). This decline was due to a negative foreign exchange effect of –39.4%. Organic growth in the region amounted to 4.7% and mainly resulted from sales of our products to treat infertility, as well as Euthyrox®, Glucophage® and the Consumer Health business.

With sales of € 123 million (Q2 2015: € 112 million), the Middle East and Africa region recorded organic sales growth of 14.3%. Exchange rate developments had a negative effect of –2.9%. In particular products such as Glucophage®, Euthyrox® and Erbitux® were responsible for this development.

HEALTHCARE

Net sales by region – Q2 2016

€ million / % of net sales of the business sector



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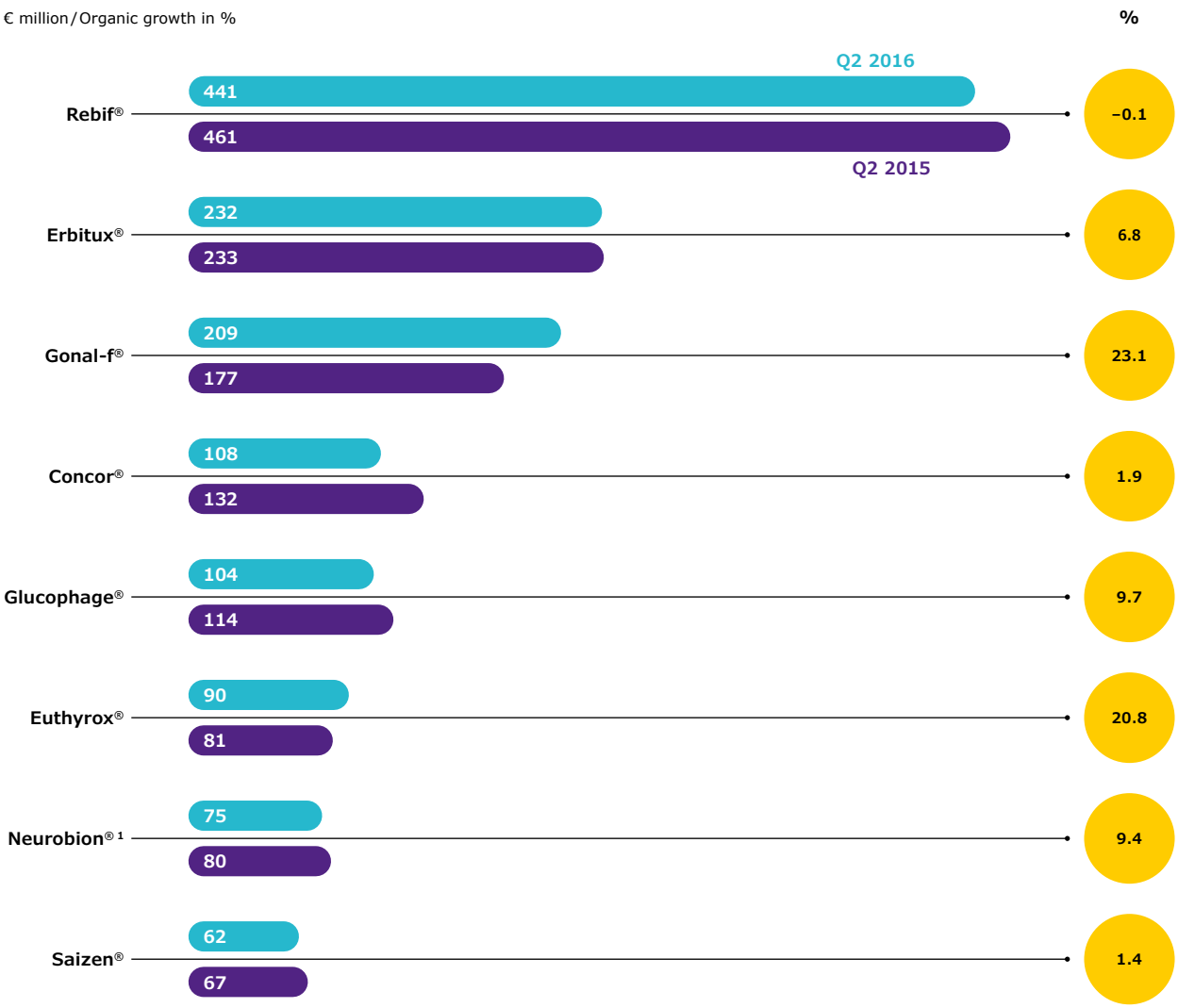
Net sales components by region – Q2 2016

€ million / Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	650	0.3 %	–2.4 %	–2.3 %	–4.4 %
North America	398	10.1 %	–0.8 %	–	9.3 %
Asia-Pacific (APAC)	369	19.4 %	–3.4 %	–0.3 %	15.7 %
Latin America	214	4.7 %	–39.4 %	–	–34.7 %
Middle East and Africa (MEA)	123	14.3 %	–2.9 %	–1.7 %	9.7 %
Healthcare	**1,754**	**7.3 %**	**–9.0 %**	**–1.0 %**	**–2.7 %**

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

HEALTHCARE

Product sales and organic growth



[1] Previous year's figure has been adjusted.

Sales of Rebif®, which is used to treat relapsing forms of multiple sclerosis, were flat, declining organically by –0.1% in the second quarter of 2016 in comparison with the year-earlier quarter. Including negative foreign exchange effects of –4.2%, sales of Rebif® totaled € 441 million (Q2 2015: € 461 million). The North America region, which is the largest market for Rebif® accounting for 60% (Q2 2015: 58%) of overall sales, delivered stable year-on-year sales of € 263 million (Q2 2015: € 265 million). The sales volume decline resulting from the competitive situation was offset by price increases, leading to stable organic sales growth. Negative exchange rate movements had a –0.7% impact on sales.

Europe, the second-largest region for the product, contributed 32% to Rebif® sales (Q2 2015: 32%). Owing to the competitive situation, sales decreased to € 141 million (Q2 2015: € 149 million). This was due to an organic decline of –2.3% and a negative exchange rate effect of –3.2%, which was mainly driven by the eastern European countries. Together, the other regions, namely Latin America, Middle East and Africa, and Asia-Pacific, accounted for an 8% share of sales

(Q2 2015: 10%). Positive performance in the Middle East and Africa, which saw organic growth of 32.5%, partly offset the decrease in Latin America due to negative foreign exchange effects of –43.2% as well as the organic sales decline of –4.4%.

Thanks to organic growth of 6.8% and including negative exchange rate effects of –7.2%, the oncology drug Erbitux® generated sales of € 232 million (Q2 2015: 233 million).

In Europe, which again accounted for 54% of Erbitux® sales and is thus the top-selling region for this product, sales declined slightly to € 125 million (Q2 2015: €126 million). Here, organic growth of 1.1% only partly offset negative currency effects of –2.4%. In Asia-Pacific, which accounted for a 31% share (Q2 2015: 27%) of net sales and is thus the second-largest region for the product, Erbitux® generated organic growth of 13.1%. This was mainly driven by the good performance in China. Amid positive exchange rate effects of 1.2%, sales totaled € 72 million (Q2 2015: € 63 million). A significant decline in sales to € 18 million (Q2 2015: € 32 million) in Latin America resulted from negative foreign exchange effects of –45.3% and only slight organic growth of 2.4%. At 45.6%, the Middle East and Africa region generated the strongest percentage organic growth of Erbitux®. Including negative exchange rate effects of –1.2%, sales in this region amounted to € 17 million (Q2 2015: € 12 million).

HEALTHCARE

Product sales and organic growth of Rebif® and Erbitux® by region – Q2 2016

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	441	141	263	4	15	18
	Organic growth in %	–0.1 %	–2.3 %	–	–3.9 %	–4.4 %	32.5 %
	% of sales	100 %	32 %	60 %	1 %	3 %	4 %
Erbitux®	€ million	232	125	–	72	18	17
	Organic growth in %	6.8 %	1.1 %	–	13.1 %	2.4 %	45.6 %
	% of sales	100 %	54 %	–	31 %	8 %	7 %

In the second quarter of 2016, our Healthcare business sector generated double-digit organic sales growth of 23.1% with the fertility treatment Gonal-f®. This was amid negative exchange rate effects of –4.9%. Overall, sales thus rose to € 209 million (Q2 2015: € 177 million). At 75.0%, the North America region generated the strongest organic growth owing to a continued advantageous competitive situation. The region thus became the top-selling market for Gonal-f®.

Sales by the Endocrinology franchise, which mainly consists of products to treat growth disorders, amounted to € 96 million and were thus lower than the year-earlier quarter (Q2 2015: € 119 million). This decline reflected organic growth of 1.4%, which could not offset negative exchange rate effects of –5.1%. Furthermore, the return of the rights to Kuvan®, a drug used to treat rare metabolic disorders, also contributed to the decline in sales. Sales of the growth hormone Saizen®, the top-selling product in the Endocrinology franchise, amounted to € 62 million (Q2 2015: € 67 million). Organic growth of 1.4% and a negative exchange rate effect of –8.6% were responsible for the decline.

The General Medicine franchise, which commercializes products to treat cardiovascular diseases and diabetes among other things, registered organic growth of 8.8%. Including negative exchange rate effects of –14.5%, sales declined to € 446 million (Q2 2015: € 473 million*). Euthyrox® in particular showed excellent organic growth of 20.8%, mainly driven by the development of the Chinese market. Taking into account currency effects of –10.1%, the product generated sales of € 90 million (Q2 2015: 81 million). Glucophage® delivered sales of € 104 million (Q2 2015: € 114 million). However, organic growth across the regions of 9.7% only partly offset the negative exchange rate effects of –18.9%. Despite organic growth of 1.9%, at € 108 million, sales of Concor® were lower than the year-earlier quarter (Q2 2015: € 132 million) owing to negative exchange rate effects of –20.3%.

In the second quarter of 2016, Consumer Health, our business with over-the-counter pharmaceuticals, delivered organic sales growth of 0.4% in comparison with a strong year-earlier quarter. Amid negative exchange rate effects of –14.9%, this resulted in sales of € 212 million (Q2 2015: € 248 million*). In particular, the strategic brands Neurobion® and Dolo-Neurobion® contributed 9.4% to organic growth. This was pri-

*The previous year's figures have been adjusted due to product transfers from Biopharma to Consumer Health in India and Latin America as of January 1, 2016.

marily achieved in the Latin American region, where organic growth of the two brands was 10.3%.

In the first half of 2016, net sales of our Healthcare business sector declined by –2.6%, amounting to € 3,400 million (January-June 2015: € 3,490 million). This reflected a 6.4% organic increase in sales, negative exchange rate effects of –7.9% and a portfolio effect of –1.0% resulting from the return of the Kuvan® rights to BioMarin Pharmaceutical Inc., USA. In particular, performance in China, Russia, the Middle East and Africa, and North America fueled organic growth. Exchange rate effects were mainly due to Latin American currencies. With Rebif®, the top-selling product, Healthcare generated net sales of € 863 million in the first half of 2016 (January-June 2015: € 891 million). Organically, sales decreased by –0.8%. The positive developments in the Middle East and Africa region as well as in Latin America and North America could not offset the negative developments in the remaining regions. This was particularly the case in Europe due to the tight competitive situation. Including negative exchange rate effects of –2.3%, sales of Rebif® decreased overall by –3.1%. At € 438 million, sales of Erbitux®, the second largest product, remained at the previous year's level (January-June 2015: € 438 million). Organic growth of 5.4% was canceled out by negative foreign exchange effects of –5.3%. Special mention should be made of the continued good performance of Gonal-f® in the first half of 2016. Sales of € 396 million in the first half of 2016 (January-June 2015: € 341 million) reflected organic growth of 20.2%, which was mainly driven by the advantageous competitive situation in North America and growth in China, as well as negative exchange rate effects of –4.1%. With organic growth of 17.8% and foreign exchange effects of –10.8%, sales of Euthyrox® also increased, totaling € 160 million (January-June 2015: € 149 million).

In the first half of 2016, Consumer Health sales were lower than in the year-earlier period, declining by –10.9% to € 427 million (January-June 2015: € 479 million). In particular the strategic brands Neurobion®, Dolo-Neurobion® and Femibion®, as well as the Latin America region delivered organic growth of 3.2%. However, this was canceled out by a negative exchange rate effect of –14.0%.

The business sector's results of operations developed as follows:

HEALTHCARE

Results of operations

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	**1,754**	**1,803**	**–2.7 %**	**3,400**	**3,490**	**–2.6 %**
Cost of sales	–350	–403	–13.2 %	–660	–774	–14.7 %
(of which: amortization of intangible assets)[1]	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*
Gross profit	**1,405**	**1,401**	**0.3 %**	**2,740**	**2,715**	**0.9 %**
Marketing and selling expenses	–643	–730	–11.9 %	–1,256	–1,390	–9.7 %
(of which: amortization of intangible assets)[1]	*(–143)*	*(–145)*	*(–1.1 %)*	*(–286)*	*(–278)*	*(2.8 %)*
Administration costs	–66	–69	–4.0 %	–137	–135	1.4 %
Research and development costs	–378	–358	5.8 %	–756	–706	7.1 %
(of which: amortization of intangible assets)[1]	*(–)*	*(–)*	*(–)*	*(–1)*	*(–1)*	*(1.2 %)*
Other operating expenses and income	–19	23	>100 %	348	51	>100 %
Operating result (EBIT)	**298**	**267**	**11.4 %**	**939**	**536**	**75.3 %**
Depreciation/amortization/impairment losses/reversals of impairment losses	261	194	34.7 %	448	375	19.7 %
(of which: exceptionals)	*(71)*	*(2)*	(>100 %)	*(71)*	*(2)*	(>100 %)
EBITDA	**558**	**461**	**21.2 %**	**1,387**	**910**	**52.4 %**
Restructuring costs	1	19	–96.7 %	1	30	–95.2 %
Integration costs/IT costs	4	–	–	6	–	–
Gains/losses on the divestment of businesses	–6	–	–	–329	–	–
Acquisition-related exceptionals	–	–	–	–	–	–
Other exceptionals	–	–	–	–	–	–
EBITDA pre exceptionals	**557**	**480**	**16.1 %**	**1,065**	**941**	**13.3 %**

[1] Excluding amortization of internally generated or separately acquired software.

In absolute terms, gross profit was stable at € 1,405 million in the second quarter of 2016 (Q2 2015: € 1,401 million), leading to a gross margin of 80.1% (Q2 2015: 77.7%). This increase is mainly attributable to a favorable product mix. The decrease in marketing and selling expenses in the second quarter of 2016 was primarily due to the termination of the agreement with Pfizer on the co-promotion of Rebif®. The increase in research and development costs mainly stemmed from higher investments in clinical development, especially in immuno-oncology within the scope of the avelumab program. Overall, R&D costs amounted to € 378 million (Q2 2015: € 358 million), resulting in a research spending ratio of 21.6% (Q2 2015: 19.8%). The change in other operating expenses and income was largely due to the impairment recognized on the co-commercialization right for Xalkori® (see explanations in the Notes to the Half-Year Group Accounts). This was offset by a gain of around € 30 million on the sale of a minority interest.

After adjusting for depreciation, amortization and exceptionals, EBITDA pre exceptionals, the key financial indicator used to steer operating business, rose to € 557 million (Q2 2015: € 480 million). The EBITDA margin pre exceptionals increased to 31.8% (Q2 2015: 26.6%).

In the first half of 2016, EBITDA pre exceptionals of our Healthcare business sector amounted to € 1,065 million (January-June 2015: € 941 million). The positive effect from the development of gross profit as well as lower marketing and selling expenses offset higher research and development spending. At 31.3%, the resulting EBITDA margin pre exceptionals was higher than in the year-earlier period (January-June 2015: 27.0%).

Development of business free cash flow

In the second quarter of 2016, our Healthcare business sector generated business free cash flow of € 423 million, which was at the previous year's level (Q2 2015: € 427 million). The negative impact of higher inventories and receivables canceled out the increase in EBITDA pre exceptionals.

HEALTHCARE

Business free cash flow

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
EBITDA pre exceptionals	557	480	16.1 %	1,065	941	13.3 %
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–59	–41	44.6 %	–101	–70	43.5 %
Changes in inventories	–26	17	>100 %	–64	–29	>100 %
Changes in trade accounts receivable as well as receivables from royalties and licenses	–49	–28	72.3 %	–135	–158	–14.5 %
Business free cash flow	**423**	**427**	**–0.9 %**	**765**	**683**	**12.0 %**

In the first half of 2016, business free cash flow increased by € 82 million to € 765 million (January-June 2015: € 683 million). The negative effects of higher investments and the increase in inventories were more than offset by the positive effects resulting from the increase in EBITDA pre exceptionals and the relatively low level of capital tied up in receivables in comparison with the year-earlier period.

Life Science

LIFE SCIENCE

Key figures

€ million	Q2 2016	Q2 2015	Change	Jan.–June 2016	Jan.–June 2015	Change
Net sales	1,430	773	85.0 %	2,826	1,511	87.1 %
Operating result (EBIT)	166	87	90.8 %	271	170	59.5 %
Margin (% of net sales)	11.6 %	11.2 %		9.6 %	11.2 %	
EBITDA	343	170	>100 %	627	334	87.8 %
Margin (% of net sales)	24.0 %	22.0 %		22.2 %	22.1 %	
EBITDA pre exceptionals	417	200	>100 %	810	384	>100 %
Margin (% of net sales)	29.1 %	25.9 %		28.6 %	25.4 %	
Business free cash flow	277	202	37.3 %	545	225	>100 %

Development of sales and results of operations

In the second quarter of 2016, Life Science posted very strong organic sales growth of 8.1%, which was particularly driven by the positive performance of the Process Solutions business area, which markets products and services for the pharmaceutical production value chain, among other things.

In addition to organic growth, the acquisition of Sigma-Aldrich lifted sales by 79.7% or € 616 million. However, foreign exchange lowered sales by –2.8%. Taking these effects into account, Life Science sales rose overall by 85.0% to € 1,430 million in the second quarter of 2016.

From a regional perspective, all regions contributed positively to organic sales growth, with North America and Europe leading the business sector's absolute growth.

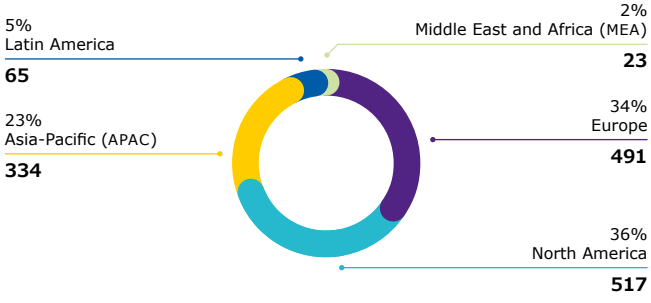
In Europe, Life Science delivered organic growth of 8.0% with all business areas contributing favorably. The increase was primarily driven by Process Solutions, which benefited from increased sales of materials for biopharmaceutical production. The Sigma-Aldrich acquisition contributed sales of € 197 million. Overall, sales in Europe increased to € 491 million (Q2 2015: € 275 million), equating to 34% of the business sector's net sales in the second quarter.

Sales in North America increased organically by 4.8% and were also driven by Process Solutions. In total, North America sales increased to € 517 million (Q2 2015: € 235 million), including € 272 million from the Sigma-Aldrich acquisition. The region thus contributed 36% to Life Science's net sales in the second quarter.

LIFE SCIENCE

Net sales by region – Q2 2016

€ million / % of net sales of the business sector



In the Asia-Pacific region, Life Science achieved double-digit organic sales growth of 10.4% with all business areas contributing favorably. Growth was mainly driven by Process Solutions systems hardware sales in China. Overall, sales in Asia-Pacific increased to € 334 million (Q2 2015: € 196 million), which apart from organic growth includes € 121 million in sales from Sigma-Aldrich. The region thus accounted for 23% of Life Science's net sales in the second quarter.

Latin America reported double-digit organic sales growth of 13.3% and adverse foreign currency effects of –21.6%. Sales were primarily driven by Applied Solutions owing to higher instrumental analytics sales to the pharmaceutical industry. In addition to very strong organic growth in the region, the legacy Sigma-Aldrich business contributed sales of € 17 million. The region thus generated 5% of Life Science's net sales of € 65 million in the second quarter (Q2 2015: € 53 million).

Sales in Middle East and Africa increased organically by 17.2%. Net sales for the region were € 23 million (Q2 2015: € 13 million) of which € 10 million was attributable to the Sigma-Aldrich acquisition.

LIFE SCIENCE

Net sales components by region – Q2 2016

€ million/Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	491	8.0 %	–1.2 %	71.4 %	78.2 %
North America	517	4.8 %	–0.9 %	115.6 %	119.5 %
Asia-Pacific (APAC)	334	10.4 %	–1.8 %	61.7 %	70.3 %
Latin America	65	13.3 %	–21.6 %	31.1 %	22.8 %
Middle East and Africa (MEA)	23	17.2 %	–10.4 %	74.1 %	80.9 %
Life Science	**1,430**	**8.1 %**	**–2.8 %**	**79.7 %**	**85.0 %**

All three business areas contributed to the strong organic growth of our Life Science business sector in the second quarter of 2016. Process Solutions was the top-selling business area for Life Science, reporting double-digit organic sales growth while Research Solutions and Applied Solutions posted moderate organic growth.

The Process Solutions business area generated organic sales growth of 13.5%, which was the highest rate within our Life Science business sector. Taking legacy Sigma-Aldrich sales into account (€ 145 million) and slight adverse foreign exchange effects of –2.2%, net sales amounted to € 539 million (Q2 2015: € 354 million).

Applied Solutions generated moderate organic sales growth of 3.9% with its broad range of workflow solutions for testing and diagnostic applications. Including legacy Sigma-Aldrich sales of € 112 million as well as slight adverse foreign exchange effects of –3.1%, net sales amounted to € 369 million (Q2 2015: € 255 million). The sales performance of Applied Solutions was primarily driven by the Analytical and Biomonitoring business fields.

The Research Solutions business area, which provides products and services to support research for pharmaceutical, biotechnology and academic research laboratories, reported an organic increase of 3.2%. Including Sigma-Aldrich sales (€ 358 million) and adverse foreign exchange effects of –3.7%, sales amounted to € 522 million (Q2 2015: € 165 million). The growth was attributable to the Chemistry business field and benefited from strong demand from technical industries.

LIFE SCIENCE

Net sales components by business area[1] – Q2 2016

€ million/Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Process Solutions	539	13.5 %	–2.2 %	41.1 %	52.4 %
Research Solutions	522	3.2 %	–3.7 %	217.4 %	217.0 %
Applied Solutions	369	3.9 %	–3.1 %	44.1 %	44.9 %

[1] The business areas were restructured in the context of the Sigma-Aldrich acquisition.

During the first half of 2016, Life Science sales increased to € 2,826 million with very strong organic growth of 8.5%. All business areas contributed favorably to the organic increase in sales, with the Process Solutions business area posting double-digit growth.

Process Solutions generated organic sales growth of 14.7% in the first half of 2016. Including the 40.1% increase in sales due to the Sigma-Aldrich acquisition and a negative exchange rate effect of –1.3%, sales amounted to € 1,064 million (January-June 2015: € 693 million). Process Solutions thus accounted for 38% of the business sector's net sales in the first half of 2016. Overall, the Process Solutions portfolio performed very well in the first half of 2016. While the increase in the first quarter was primarily attributable to the Filtration & Chromatography business field, Process Chemicals & Systems drove the increase in the second quarter.

Applied Solutions generated organic growth of 3.8% for the first half of 2016. Including the 44.5% increase in sales due to the Sigma-Aldrich acquisition and a negative exchange rate effect of –2.6%, sales amounted to € 717 million (January-June 2015: € 492 million). Applied Solutions thus accounted for 25% of the business sector's net sales in the first half of 2016. All businesses contributed positively to the organic growth with the exception of the Applied Systems business , which is facing higher competition in the market. Organic growth for the first half of 2016 was driven by Analytical and Biomonitoring, which posted growth in all regions.

Research Solutions generated organic growth of 2.6% in the first half of 2016. Taking into account the 221.8% increase in sales due to the Sigma-Aldrich acquisition and an adverse foreign exchange impact of –2.9%, sales amounted to € 1,045 million (January-June 2015: € 325 million). Research Solutions accounted for 37% of the business sector's net sales in the first half of 2016. All businesses contributed positively to organic growth, with first-quarter sales primarily driven by the Biology business field and the second quarter benefiting from increased sales by the Chemistry business field.

In the first half of 2016, our Life Science business sector generated net sales of € 2,826 million (January-June 2015: € 1,511 million). The acquisition of Sigma-Aldrich boosted Life Science sales by € 1,218 million or 80.6%. At –2.1%, the exchange rate impact was negligible.

The results of operations developed as follows:

LIFE SCIENCE

Results of operations

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	**1,430**	**773**	**85.0 %**	**2,826**	**1,511**	**87.1 %**
Cost of sales	–679	–326	>100 %	–1,392	–647	>100 %
(of which: amortization of intangible assets)[1]	*(–15)*	*(–12)*	*(19.8 %)*	*(–30)*	*(–25)*	*(21.2 %)*
Gross profit	**751**	**447**	**67.9 %**	**1,434**	**864**	**66.0 %**
Marketing and selling expenses	–413	–244	69.3 %	–833	–477	74.7 %
(of which: amortization of intangible assets)[1]	*(–108)*	*(–41)*	*(>100 %)*	*(–218)*	*(–82)*	*(>100 %)*
Administration costs	–58	–28	>100 %	–121	–59	>100 %
Research and development costs	–65	–49	32.8 %	–126	–94	34.9 %
(of which: amortization of intangible assets)[1]	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*
Other operating expenses and income	–50	–40	25.1 %	–83	–65	28.7 %
Operating result (EBIT)	**166**	**87**	**90.8 %**	**271**	**170**	**59.5 %**
Depreciation/amortization/impairment losses/reversals of impairment losses	178	83	>100 %	356	164	>100 %
(of which: exceptionals)	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*
EBITDA	**343**	**170**	**>100 %**	**627**	**334**	**87.8 %**
Restructuring costs	1	1	–50.5 %	1	4	–74.3 %
Integration costs/IT costs	21	4	>100 %	37	8	>100 %
Gains/losses on the divestment of businesses	–	–	–	–	–	–
Acquisition-related exceptionals	52	25	>100 %	145	39	>100 %
Other exceptionals	–	–	–	–	–	–
EBITDA pre exceptionals	**417**	**200**	**>100 %**	**810**	**384**	**>100 %**

[1] Excluding amortization of internally generated or separately acquired software.

As a consequence of the increase in net sales, the inclusion of Sigma-Aldrich and related first-time consolidation effects, gross profit amounted to € 751 million (Q2 2015: € 447 million), equivalent to growth of 67.9%. As Life Science continues to integrate Sigma-Aldrich, spending is being closely monitored and there is a strong focus on the execution of synergy initiatives. In the second quarter of 2016, marketing and selling expenses, administration expenses and R&D costs rose due to the consolidation of Sigma-Aldrich.

In comparison with the year-earlier quarter, the operating result (EBIT) of Life Science rose by 90.8% to € 166 million. After eliminating depreciation and amortization, and adjusted for exceptionals, EBITDA pre exceptionals, the most important performance indicator, climbed 108.6% to € 417 million (Q2 2015: € 200 million).

In the first half of 2016, EBITDA pre exceptionals of Life Science rose by € 426 million, or 110.9%, to € 810 million, reflecting the integration of Sigma-Aldrich and strong organic growth.

Development of business free cash flow

In the second quarter of 2016, Life Science's business free cash flow increased by 37.3% to € 277 million. This strong outcome was driven by the integration of Sigma-Aldrich and higher EBITDA pre exceptionals.

LIFE SCIENCE

Business free cash flow

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
EBITDA pre exceptionals	417	200	>100 %	810	384	>100 %
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–52	–27	91.3 %	–98	–49	>100 %
Changes in inventories	–	4	–	75	–51	>100 %
Changes in trade accounts receivable as well as receivables from royalties and licenses	–25	25	>100 %	–85	–60	40.5 %
Adjustments first-time consolidation of Sigma-Aldrich	–62	–	–	–	–	–
Business free cash flow	**277**	**202**	**37.3 %**	**545**	**225**	**>100 %**

In the first half of 2016, business free cash flow rose to € 545 million (January-June 2015: € 225 million). This increase was primarily due to the integration of Sigma-Aldrich.

Performance Materials

PERFORMANCE MATERIALS

Key figures

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	621	643	–3.5 %	1,243	1,260	–1.4 %
Operating result (EBIT)	193	238	–19.0 %	399	452	–11.6 %
Margin (% of net sales)	31.1 %	37.0 %		32.1 %	35.8 %	
EBITDA	267	299	–10.7 %	534	572	–6.5 %
Margin (% of net sales)	43.0 %	46.4 %		43.0 %	45.4 %	
EBITDA pre exceptionals	273	295	–7.4 %	547	572	–4.4 %
Margin (% of net sales)	44.1 %	45.9 %		44.0 %	45.4 %	
Business free cash flow	201	289	–30.7 %	457	452	1.2 %

Development of net sales and results of operations

In the second quarter of 2016, net sales of our Performance Materials business sector decreased by –3.5% to € 621 million (Q2 2015: € 643 million). This was due mainly to the organic sales decline of –4.7% resulting from the business with display materials as well as to negative exchange rate effects of –2.0%. The SAFC Hitech business of Sigma-Aldrich acquired in November 2015 (+3.1%) only partially compensated for this negative development.

The Display Materials business unit, consisting of the liquid crystals business and the complementary materials, represented more than 50% of the overall net sales of Performance Materials. This business unit saw a significant organic decrease in net sales, but continued to defend its market leadership position. In the second quarter of 2016, the drop in sales was mainly due to inventory adjustments by customers in the display industry as well as to the decline in volumes of the mature LC technology TN-TFT. Double-digit growth in the energy-saving UB-FFS technology as well as volume growth in IPS and PS-VA could not compensate for these negative effects.

The Integrated Circuit Materials (ICM) business unit delivered solid organic growth, to which all businesses contributed. Special mention should be made of the positive development of the business with deposition materials for chip production, which was added to the product portfolio due to the acquisition of the SAFC Hitech business of Sigma-Aldrich.

In the second quarter of 2016, the Pigments & Functional Materials business unit generated very strong organic growth from a low comparable basis. Xirallic® pigments, which are primarily used in automotive coatings, as well as the entire range of functional materials, achieved double-digit growth.

The Advanced Technologies business unit registered the highest organic growth rates within our Performance Materials business sector. Special mention should be made of the continuing dynamic development of the OLED materials business.

The Asia-Pacific region once again accounted for 80% and thus the vast majority of the business sector's net sales. This is due to the concentration of display and integrated circuit materials customers in Asia. In this region, sales of Performance Materials declined to € 494 million (Q2 2015: € 532 million). Organically, sales fell by –7.3% owing to Display Materials. The dynamic development of the OLED materials business and higher ICM sales growth could not compensate for this decrease.

In Europe, Performance Materials generated sales of € 57 million (Q2 2015: € 53 million). The increase in sales was primarily due to the positive performance of functional materials within the Pigments & Functional Materials business unit.

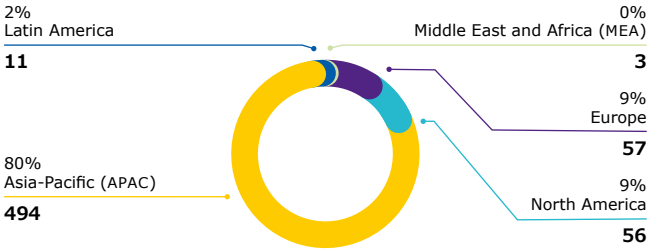
In North America, the sharp increase in sales to € 56 million was fueled by the SAFC Hitech business of Sigma-Aldrich (Q2 2015: € 46 million). Sales also increased organically (+1.6%). This was mainly driven by double-digit growth of the Xirallic® pigments business.

Since they account for a low proportion of sales, the two regions Latin America and Middle East and Africa played a subordinate role. Both regions recorded double-digit organic sales growth, albeit at a low overall level and primarily as a result of Pigments & Functional Materials.

PERFORMANCE MATERIALS

Net sales by region – Q2 2016

€ million / % of net sales of the business sector



PERFORMANCE MATERIALS

Net sales components by region – Q2 2016

€ million / Change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	57	6.8 %	–0.5 %	2.1 %	8.4 %
North America	56	1.6 %	–0.7 %	19.0 %	19.9 %
Asia-Pacific (APAC)	494	–7.3 %	–1.7 %	1.8 %	–7.1 %
Latin America	11	32.2 %	–26.6 %	–	5.6 %
Middle East and Africa (MEA)	3	35.1 %	–5.1 %	16.7 %	46.7 %
Performance Materials	**621**	**–4.7 %**	**–2.0 %**	**3.1 %**	**–3.5 %**

In the first six months of 2016, net sales of Performance Materials declined slightly by –1.4% to € 1,243 million (January-June 2015: € 1,260 million). This was caused by organic sales declines (–3.5%) as Display Materials did not reach the previous year's level. At –0.8%, the exchange rate effect was slightly negative, while the SAFC Hitech business of Sigma-Aldrich acquired in November 2015 made a positive contribution of 2.9% to sales.

In the first six months of 2016, sales volumes of liquid crystals were impacted by inventory adjustments by customers in the display industry as well as the decline in volumes of the mature LC technology TN-TFT. Consequently, sales by the Display Materials business declined organically.

In the first half of 2016, sales contributions by both the Integrated Circuit Materials and Pigments & Functional Materials business units increased significantly. The drivers of organic growth were dielectric materials for chip production within Integrated Circuit Materials and functional materials within Pigments & Functional Materials.

Thanks to growing demand for OLED materials, the Advanced Technologies business unit achieved double-digit growth, albeit from a low basis.

The results of operations developed as follows:

PERFORMANCE MATERIALS

Results of operations

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Net sales	**621**	**643**	**–3.5 %**	**1,243**	**1,260**	**–1.4 %**
Cost of sales	–287	–287	–	–569	–567	0.4 %
(of which: amortization of intangible assets)[1]	*(–29)*	*(–29)*	*(1.1 %)*	*(–58)*	*(–58)*	*(0.4 %)*
Gross profit	**334**	**356**	**–6.3 %**	**674**	**693**	**–2.8 %**
Marketing and selling expenses	–59	–53	9.9 %	–116	–99	16.9 %
(of which: amortization of intangible assets)[1]	*(–5)*	*(–3)*	*(33.3 %)*	*(–9)*	*(–7)*	*(29.9 %)*
Administration costs	–14	–14	2.4 %	–31	–32	–4.1 %
Research and development costs	–53	–49	9.3 %	–101	–95	6.2 %
(of which: amortization of intangible assets)[1]	*(–1)*	*(–)*	*(–)*	*(–1)*	*(–)*	*(–)*
Other operating expenses and income	–15	–3	>100 %	–26	–15	79.1 %
Operating result (EBIT)	**193**	**238**	**–19.0 %**	**399**	**452**	**–11.6 %**
Depreciation/amortization/impairment losses/reversals of impairment losses	74	61	21.7 %	135	120	12.6 %
(of which: exceptionals)	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*	*(–)*
EBITDA	**267**	**299**	**–10.7 %**	**534**	**572**	**–6.5 %**
Restructuring costs	–	–	–	–	–	–
Integration costs/IT costs	6	2	>100 %	10	4	>100 %
Gains/losses on the divestment of businesses	–	–6	–	–	–6	–
Acquisition-related exceptionals	1	1	31.4 %	3	1	>100 %
Other exceptionals	–	–	–	–	–	–
EBITDA pre exceptionals	**273**	**295**	**–7.4 %**	**547**	**572**	**–4.4 %**

[1] Excluding amortization of internally generated or separately acquired software.

In the second quarter of 2016, gross profit amounted to € 334 million (Q2 2015: € 356 million). As was the case with sales, this represented a decline of € 22 million compared with the year-earlier quarter. The resulting gross margin decreased to 53.8% (Q2 2015: 55.4%). The operating result (EBIT) fell by € 45 million to € 193 million in the second quarter of 2016 (Q2 2015: € 238 million). This was due to the lower gross profit and the amortization of intangible assets from the SAFC Hitech business of Sigma-Aldrich. The increases in marketing and selling expenses as well as research costs were also mainly attributable to the consolidation of this business. After adjusting for depreciation, amortization and exceptionals, EBITDA pre exceptionals of our Performance Materials business sector amounted to € 273 million (Q2 2015: € 295 million). At 44.1%, the EBITDA margin pre exceptionals was only slightly lower than the previous year's high level (Q2 2015: 45.9%).

In the first half of 2016, EBITDA pre exceptionals of our Performance Materials business sector amounted to € 547 million, representing a decline of € –25 million. Expressed as a percentage of sales, this resulted in an EBITDA margin pre exceptionals of 44.0% (January-June 2015: 45.4%).

Development of business free cash flow

In the second quarter of 2016, our Performance Materials business sector generated business free cash flow of € 201 million, falling short of the previous year's high level (Q2 2015: € 289 million). Besides lower EBITDA pre exceptionals, negative exchange rate effects from currency translation of the relevant balance sheet items, particularly in Japanese yen, contributed to the decline in business free cash flow.

PERFORMANCE MATERIALS

Business free cash flow

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
EBITDA pre exceptionals	273	295	–7.4 %	547	572	–4.4 %
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–25	–17	44.5 %	–44	–34	28.3 %
Changes in inventories	–11	1	>100 %	–31	–54	–43.1 %
Changes in trade accounts receivable as well as receivables from royalties and licenses	–36	10	>100 %	–13	–32	–61.4 %
Adjustments first-time consolidation of Sigma-Aldrich	–1	–	–	–3	–	–
Business free cash flow	**201**	**289**	**–30.7 %**	**457**	**452**	**1.2 %**

In the first six months of 2016, business free cash flow rose slightly by € 5 million to € 457 million (January-June 2015: € 452 million).

Corporate and Other

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

CORPORATE AND OTHER

Key figures

€ million	**Q2 2016**	Q2 2015	Change	**Jan.–June 2016**	Jan.–June 2015	Change
Operating result (EBIT)	–105	–90	16.7 %	–210	–176	19.5 %
EBITDA	–99	–84	17.6 %	–197	–165	19.5 %
EBITDA pre exceptionals	–89	–76	17.7 %	–180	–144	24.8 %
Business free cash flow	–102	–89	15.0 %	–206	–169	21.8 %

In the second quarter of 2016, administration expenses reported under Corporate and Other amounted to € 70 million (Q2 2015: € 62 million). Other operating expenses (net) rose to € –35 million (Q2 2015: € –27 million). Including these effects, in the second quarter of 2016 EBIT amounted to € –105 million (Q2 2015: € –90 million) and EBITDA was € –99 million (Q2 2015: € –84 million). Adjusted for exceptionals, EBITDA pre exceptionals totaled € –89 million (Q2 2015: € –76 million). This increase in negative EBITDA pre exceptionals also had an impact on the development of business free cash flow, which amounted to € –102 million in the second quarter of 2016 (Q2 2015: € –89 million).

In the first half of 2016, EBITDA pre exceptionals of Corporate and Other totaled € –180 million (January-June 2015: € –144 million). The change in this indicator was mainly attributable to the increase in administration expenses and higher other operating expenses. Business free cash flow, which declined to € –206 million (January-June 2015: € –169 million), particularly reflected the development of EBITDA pre exceptionals.

REPORT ON RISKS AND OPPORTUNITIES

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

The risk categories presented as well as the opportunities described in the Report on Risks and Opportunities found on pages 120 to 130 of the Annual Report for 2015 remain valid for the Group in the current reporting period.

At present, we are not aware of any risks that could jeopardize the continued existence of the Group.

We have a Group-wide risk management system in place to identify, control and mitigate potential risks. We continuously monitor business risks such as issues regarding liquidity, defaults on payables and receivables, currency and interest rates, market pricing, pension obligations, assessment of independent rating agencies, human resources, and information technology.

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

REPORT ON EXPECTED DEVELOPMENTS

Owing to the good business performance in the second quarter, we are lifting our forecast for the Group and now expect net sales to increase in 2016 to between € 14.9 billion and € 15.1 billion (previous forecast: € 14.8 billion to € 15.0 billion). Organically, we predict net sales to increase moderately in 2016 (previous forecast: slightly). In addition, owing to the acquisition of Sigma-Aldrich, we continue to expect a portfolio-related net sales increase in the low double-digit percentage range. This will still be countered by negative foreign exchange effects that are forecast to range between –3% and –5% and are mainly due to the currency devaluations in Latin America. As business performance has exceeded our expectations, we are raising our forecast for EBITDA pre exceptionals, which we now expect to range between € 4,250 million and € 4,400 million for 2016 (previous forecast: € 4,100 million to € 4,300 million). We predict business free cash flow of the Group to be between € 3,140 million and € 3,250 million in 2016.

Following the strong second quarter, we are raising our 2016 sales forecast for our Healthcare business sector. We now expect a solid organic increase in net sales in comparison with the previous year (previous forecast: slight increase). In particular, the performance of Rebif® and the Fertility franchise in North America was better than expected. In contrast to our previous expectations, the Fertility franchise benefited yet again from a favorable competitive environment in North America in the second quarter. Additionally, a further price increase for Rebif® in the United States should have a positive effect. We continue to assume that the strong dynamics in our growth markets will be sustained. These positive effects should more than offset the expected decline in sales of Rebif® in Europe. For EBITDA pre exceptionals of the Healthcare business sector, we are now aiming for a target corridor of € 1,950 million to € 2,050 million (previous forecast: € 1,800 million to € 1,900 million). This improved forecast reflects two important aspects. Firstly, the stronger sales performance of Rebif® and the Fertility franchise in comparison with our previous assumptions is positively impacting the margins of the Healthcare business sector. And secondly, the second-quarter included a gain of around € 30 million on the sale of a minority interest within the Healthcare business sector, as well as royalty and license income expected as of the second half of 2016 resulting from a patent granted in the United States at the end of June 2016. In a year-on-year comparison, the adverse impact on EBITDA pre exceptionals of higher research and development costs for our pharmaceutical pipeline, market launch costs for avelumab and cladribine, the sale of the rights to Kuvan®, and negative exchange rate effects will persist. However, their impact will now be noticeably reduced by the aforementioned developments.

The performance of the Life Science business sector was again positive in the second quarter. For 2016, we now therefore expect organic sales growth in the mid to high single-digit percentage range compared with the previous year. However, due to the high prior-year basis, we expect net sales growth in the second half to be lower than in the first half. Process Solutions should continue to benefit from the positive growth dynamics of the biopharmaceuticals market also in the second half and therefore contribute substantially to the expected development. Overall, we confirm our forecast for EBITDA pre exceptionals for the Life Science business sector and assume a range between € 1,620 million and € 1,670 million for 2016.

The destocking by customers in the liquid crystals display industry, which already began in the first quarter, continued in the second quarter. We now assume that this development will persist into the second half of the year. We will therefore no longer be able to fully offset the organic sales decline incurred in the first half. Along with the price decline typical in this industry, we therefore now expect a moderate organic decrease in 2016 sales for our Performance Materials business

sector in comparison with the previous year. However, we assume that we will largely be able to compensate for the resulting impact on earnings. Owing to the strong market position of our Performance Materials business sector, a positive product mix within the Performance Materials business units and active cost management, we continue to predict EBITDA pre exceptionals of € 1.10 billion to € 1.15 billion in 2016.

We confirm our most recent forecast for EBITDA pre exceptionals of Corporate and Other and continue to expect a target corridor of € –370 million to € –400 million in 2016. As in 2015, we are continuing to drive strategic Group initiatives forward in 2016. Among other things, this includes the further expansion of our new branding, as well as Group-wide projects to optimize internal processes and to efficiently align the organization for the future.

GROUP

Forecast for FY 2016

€ million	Net sales	EBITDA pre exceptionals	Business free cash flow
Group	14,900 - 15,100	~4,250 to 4,400	~3,140 to 3,250
Healthcare	Solid organic growth, slightly negative portfolio effect due to the divestment of Kuvan®	~1,950 to 2,050	1,490 to 1,590
Life Science	Organic growth in the mid to high single-digit percentage range, portfolio effect in the high double-digit percentage range due to the acquisition of Sigma-Aldrich	~1,620 to 1,670	~1,180 to 1,230
Performance Materials	Moderate decline	~1,100 to 1,150	930 to 980
Corporate and Other	–	~–370 to –400	~–460 to –490

Earnings per share pre exceptionals: € 5.85 – € 6.10

Full-year FX assumptions for 2016:
€ 1 = US$ 1.07 to 1.12
€ 1 = JPY 120
€ 1 = CHF 1.10

CONSOLIDATED HALF-YEAR FINANCIAL STATEMENTS AS OF JUNE 30, 2016

Consolidated Income Statement

€ million	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
Net sales	**3,805**	**3,219**	**7,470**	**6,261**
Cost of sales	–1,315	–1,015	–2,622	–1,988
(of which: amortization of intangible assets)[1]	*(–45)*	*(–42)*	*(–88)*	*(–83)*
Gross profit	**2,489**	**2,204**	**4,848**	**4,272**
Marketing and selling expenses	–1,114	–1,027	–2,204	–1,967
(of which: amortization of intangible assets)[1]	*(–256)*	*(–189)*	*(–513)*	*(–367)*
Administration expenses	–209	–174	–415	–346
Research and development costs	–497	–456	–986	–897
(of which: amortization of intangible assets)[1]	*(–1)*	*(–1)*	*(–2)*	*(–1)*
Other operating income	130	134	610	271
Other operating expenses	–249	–180	–452	–353
Operating result (EBIT)	**550**	**501**	**1,399**	**981**
Financial result	–121	–41	–190	–141
Profit before income tax	**429**	**461**	**1,209**	**840**
Income tax	–115	–115	–302	–209
Profit after tax	**314**	**346**	**907**	**631**
of which: attributable to shareholders of Merck KGaA, Darmstadt, Germany (net income)	312	343	903	625
of which: attributable to non-controlling interests	2	2	4	6
Earnings per share (€)				
basic	0.72	0.79	2.08	1.44
diluted	0.72	0.79	2.08	1.44

[1] Excluding amortization of internally generated or separately acquired software.

Consolidated Statement of Comprehensive Income

€ million	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
Profit after tax	**314**	**346**	**907**	**631**
Items of other comprehensive income that will not be reclassified to profit or loss in subsequent periods:				
Remeasurement of the net defined benefit liability				
Changes in remeasurement	–211	536	–620	248
Tax effect	35	–106	99	–51
Changes recognized in equity	–176	430	–521	197
	–176	430	–521	197
Items of other comprehensive income that may be reclassified to profit or loss in subsequent periods:				
Available-for-sale financial assets				
Fair value adjustments	26	12	25	19
Reclassification to profit or loss	–31	–	–31	–
Tax effect	1	–1	2	–2
Changes recognized in equity	–4	11	–4	17
Derivative financial instruments				
Fair value adjustments	–49	–253	10	638
Reclassification to profit or loss	11	18	23	29
Reclassification to assets	–	–	–	–
Tax effect	12	–7	–8	23
Changes recognized in equity	–27	–242	26	689
Exchange differences on translating foreign operations				
Changes taken directly to equity	315	–333	–195	700
Reclassification to profit or loss	3	–	–74	–
Changes recognized in equity	318	–333	–269	700
	288	–564	–248	1,406
Other comprehensive income	**112**	**–133**	**–768**	**1,603**
Comprehensive income	**427**	**213**	**139**	**2,234**
of which: attributable to shareholders of Merck KGaA, Darmstadt, Germany	424	214	136	2,224
of which: attributable to non-controlling interests	3	–1	3	10

Consolidated Balance Sheet

€ million	June 30, 2016	Dec. 31, 2015
Non-current assets		
Intangible assets	24,418	25,339
Property, plant and equipment	3,979	4,009
Non-current financial assets	184	131
Other non-current assets	126	128
Deferred tax assets	1,063	1,050
	29,770	**30,657**
Current assets		
Inventories	2,640	2,620
Trade accounts receivable	2,960	2,738
Current financial assets	104	227
Other current assets	546	496
Income tax receivables	283	391
Cash and cash equivalents	723	832
Assets held for sale	–	46
	7,256	**7,350**
Total assets	**37,026**	**38,007**
Total equity		
Equity capital	565	565
Reserves	9,925	9,679
Gains / losses recognized in equity	2,297	2,543
Equity attributable to shareholders of Merck KGaA, Darmstadt, Germany	**12,787**	**12,787**
Non-controlling interests	69	68
	12,856	**12,855**
Non-current liabilities		
Provisions for pensions and other post-employment benefits	2,482	1,836
Other non-current provisions	786	855
Non-current financial liabilities	9,290	9,616
Other non-current liabilities	521	609
Deferred tax liabilities	2,676	2,853
	15,755	**15,769**
Current liabilities		
Current provisions	495	535
Current financial liabilities	4,047	4,097
Trade accounts payable	1,809	1,921
Income tax liabilities	776	1,011
Other current liabilities	1,288	1,819
Liabilities directly related to assets held for sale	–	–
	8,415	**9,383**
Total equity and liabilities	**37,026**	**38,007**

Consolidated Cash Flow Statement

€ million	Q2 2016	Q2 2015	Jan.–June 2016	Jan.–June 2015
Profit after tax	**314**	**346**	**907**	**631**
Depreciation/amortization/impairment losses/reversals of impairment losses	519	343	952	669
Changes in inventories	–22	–52	–41	–95
Changes in trade accounts receivable	–50	–46	–208	–150
Changes in trade accounts payable	42	72	–48	48
Changes in provisions	–67	–70	–46	20
Changes in other assets and liabilities	–397	–270	–431	–501
Neutralization of gain/loss on disposals of assets	–34	–7	–422	–22
Other non-cash income and expenses	6	10	–	5
Net cash flows from operating activities	**311**	**326**	**663**	**605**
thereof: from discontinued operations	**–**	**–**	**–**	**–**
Payments for investments in intangible assets	–33	–16	–45	–20
Payments from the disposal of intangible assets	1	–	1	16
Payments for investments in property, plant and equipment	–125	–93	–285	–167
Payments from the disposal of property, plant and equipment	5	–	11	2
Payments for investments in financial assets	–62	–579	–220	–1,620
Payments for acquisitions less acquired cash and cash equivalents	–	1,026	–	1,026
Payments from the disposal of other financial assets	79	1,521	348	3,015
Payments from other divestments	21	–	21	–
Payments from the divestment of assets held for sale	–	–	340	–
Net cash flows from investing activities	**–114**	**1,860**	**170**	**2,252**
thereof: from discontinued operations	**23**	**–**	**23**	**–**
Dividend payments to shareholders of Merck KGaA, Darmstadt, Germany	–136	–129	–136	–129
Dividend payments to non-controlling interests	–	–2	–2	–3
Dividend payments to E. Merck KG, Darmstadt, Germany	–408	–380	–461	–435
Payments from new borrowings of financial liabilities from E. Merck KG, Darmstadt, Germany	801	573	801	573
Repayments of financial liabilities to E. Merck KG, Darmstadt, Germany	–480	–250	–498	–311
Payments from the issuance of bonds	–	–	–	3,713
Repayments of bonds	–212	–	–212	–1,350
Changes in other current and non-current financial liabilities	79	15	–421	56
Net cash flows from financing activities	**–357**	**–174**	**–930**	**2,114**
thereof: from discontinued operations	**–**	**–**	**–**	**–**
Changes in cash and cash equivalents	**–160**	**2,013**	**–96**	**4,971**
Changes in cash and cash equivalents due to currency translation	2	–181	–5	–75
Cash and cash equivalents at the beginning of the reporting period	880	5,943	832	2,879
Changes in cash and cash equivalents due to changes in the scope of consolidation	–	–	–8	–
Cash and cash equivalents as of June 30	**723**	**7,775**	**723**	**7,775**

Consolidated Statement of Changes in Net Equity

	Equity capital			Retained earnings	
€ million	General partner's equity Merck KGaA, Darmstadt, Germany	Subscribed capital Merck KGaA, Darmstadt, Germany	Capital reserves (share premium) Merck KGaA, Darmstadt, Germany	Retained earnings/ Net retained profit	Remeasurement of defined benefit plans
Balance as of January 1, 2015	**397**	**168**	**3,814**	**6,500**	**–1,275**
Profit after tax	–	–	–	625	–
Other comprehensive income	–	–	–	–	197
Comprehensive income	**–**	**–**	**–**	**625**	**197**
Dividend payments	–	–	–	–129	–
Transactions with no change of control	–	–	–	–	–
Changes in scope of consolidation/Other	–	–	–	–	–
Balance as of June 30, 2015	**397**	**168**	**3,814**	**6,996**	**–1,078**
Balance as of January 1, 2016	**397**	**168**	**3,814**	**7,025**	**–1,160**
Profit after tax	–	–	–	903	–
Other comprehensive income	–	–	–	–	–521
Comprehensive income	**–**	**–**	**–**	**903**	**–521**
Dividend payments	–	–	–	–136	–
Transactions with no change of control	–	–	–	–	–
Changes in scope of consolidation/Other	–	–	–	–	–
Balance as of June 30, 2016	**397**	**168**	**3,814**	**7,792**	**–1,681**

Gains/losses recognized in equity					
Available-for-sale financial assets	Derivative financial instruments	Currency translation difference	Equity attributable to shareholders of Merck KGaA, Darmstadt, Germany	Non-controlling interests	Total equity
–	**393**	**1,745**	**11,742**	**59**	**11,801**
–	–	–	625	6	631
17	689	696	1,599	4	1,603
17	**689**	**696**	**2,224**	**10**	**2,234**
–	–	–	–129	–3	–132
–	–	–	–	–	–
–	–	–	–	–	–
17	**1,082**	**2,441**	**13,837**	**67**	**13,904**
5	**–176**	**2,714**	**12,787**	**68**	**12,855**
–	–	–	903	4	907
–5	26	–268	–767	–1	–768
–5	**26**	**–268**	**136**	**3**	**139**
–	–	–	–136	–2	–138
–	–	–	–	–	–
–	–	–	–	–	–
–	**–149**	**2,446**	**12,787**	**69**	**12,856**

Notes to the Half-Year Group Accounts as of June 30, 2016

These consolidated half-year financial statements have been prepared with MERCK Kommanditgesellschaft auf Aktien (Merck KGaA), Frankfurter Strasse 250, 64293 Darmstadt, Germany, which manages the operations of the Group, as parent company.

Accounting policies

The half-year financial statements of the Group dated June 30, 2016 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 37y in conjunction with section 37w 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, 2015 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 notes to the consolidated financial statements of the Group for 2015, particularly the accounting policies, apply accordingly.

Income tax include the taxes on taxable profit levied in the individual countries plus changes in deferred taxes recognized in income. The income tax in the consolidated half-year financial statements is calculated based on the income of the consolidated companies and the currently valid tax rate as a best possible estimate.

The preparation of the consolidated half-year financial statements requires that assumptions and estimates be made to a certain extent. The assumptions and estimates are based on the current state of knowledge and the data available on the balance sheet date.

The following standards take effect as of fiscal 2016:

- Amendment to IAS 1 ”Presentation of Financial Statements”
- Amendments to IAS 16 “Property, Plant and Equipment”
- Amendment to IAS 19 ”Employee Benefits”
- Amendment to IAS 27 “Separate Financial Statements”
- Amendment to IAS 38 “Intangible Assets”
- Amendment to IAS 41 ”Agriculture”
- Amendment to IFRS 11 ”Joint Arrangements”
- Annual Improvements to IFRSs 2010 – 2012 Cycle
- Annual Improvements to IFRSs 2012 – 2014 Cycle

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

In comparison with the previous year, there were no material changes to accounting and measurement principles.

Scope of consolidation

As of June 30, 2016 312 (December 31, 2015: 316) companies were fully consolidated. As of the balance sheet date, no companies were consolidated using the equity method. Since the beginning of 2016, two companies were liquidated, one merger took place, and two companies were deconsolidated due to immateriality. One previously immaterial company was included in the consolidated financial statements for the first time.

Acquisition of the Sigma-Aldrich Corporation, USA, in 2015

On November 18, 2015, the Group obtained control of the Sigma-Aldrich Corporation, a life science enterprise headquartered in St. Louis, USA (Sigma-Aldrich).

Since the determination of the fair values of the acquired assets and liabilities calls for extensive analyses and calculations, the purchase price allocation had not been fully completed as of June 30, 2016. In comparison with the balance sheet date as of December 31, 2015, only minor changes resulted with respect to property, plant and equipment and

provisions. The fair value of inventories was € 11 million lower than on the acquisition date. The cost of sales of the acquired inventories, for which an average turnover time of six months was assumed, was already fully expensed in the income statement.

With the exception of the measurement of intangible assets, deferred taxes as well as tax receivables and liabilities, the purchase price allocation had been completed as of the balance sheet date.

Consequently, the preliminary fair values as of the acquisition date were as follows:

€ million	Fair values on the acquisition date
Non-current assets	
Intangible assets (excluding goodwill)	5,866
Property, plant and equipment	838
Other non-current assets	125
	6,829
Current assets	
Cash and cash equivalents	1,235
Inventories	841
Receivables	452
Other current assets	36
Assets held for sale	124
	2,688
Assets	**9,516**
Non-current liabilities	
Non-current financial liabilities	–
Other non-current liabilities and provisions	150
Deferred tax liabilities	2,436
	2,586
Current liabilities	
Current financial liabilities	425
Other current liabilities and provisions	540
Liabilities directly related to assets held for sale	–
	965
Liabilities	**3,551**
Acquired net assets	**5,966**
Purchase price for the acquisition of shares	**14,594**
Positive difference (goodwill)	**8,628**

The preliminary positive difference of € 8,628 million was recognized as goodwill. This comprised anticipated synergies from the integration of Sigma-Aldrich into the Group as well as intangible assets that are not recognizable, such as the expertise of the workforce. Synergies are primarily expected in the areas of administration, production and purchasing. Apart from these cost synergies, earnings synergies are expected particularly through the use of the e-commerce platform of Sigma-Aldrich for products from the legacy life science business. The resulting goodwill was preliminarily allocated to the two business sectors Life Science (€ 8,275 million) and Performance Materials (€ 353 million). Goodwill is not expected to be deductible for tax purposes.

Costs of € 78 million related to the acquisition of the company were recorded under other operating expenses. These comprised € 2 million in the first half of 2016, € 60 million in 2015, and € 17 million in 2014.

Within the scope of the acquisition, no contingent consideration was agreed upon which the Group would possibly have to pay in the future. The selling shareholders did not contractually indemnify the Group for the outcome of a contingency or uncertainty related to the acquired assets or liabilities.

The development of goodwill, which is carried in U.S. dollars, during the period from January 1, 2016 and June 30, 2016 was as follows:

€ million	Development of goodwill
Goodwill on January 1, 2016	8,393
Effects from the adjustment of the purchase price allocation	15
Exchange rate effects	–132
Goodwill on June 30, 2016	**8,276**

Agreements with BioMarin Pharmaceutical Inc., USA, to return the rights to Kuvan® and Peg-Pal

In January 2016, an agreement entered into with BioMarin Pharmaceutical Inc., USA (BioMarin) on October 1, 2015 to return the rights to Kuvan® (sapropterin dihydrochloride), became effective. Kuvan® is a drug used to treat phenylketonuria (PKU), a rare metabolic disorder. The Group received an upfront payment of € 340 million for the sale of this business and is entitled to further payments of up to € 60 million for the achievement of certain milestones. The upfront payment and the fair value of the contingent purchase price payments were taken into consideration in the calculation of the disposal gain.

Moreover, an agreement also became effective in January 2016 under which the Group returned its option to develop and commercialize Peg-Pal to BioMarin. Peg-Pal is an investigational drug that is also designed for the treatment of PKU. For returning the development and marketing rights, the Group is to receive further payments of up to € 125 million when certain milestones are achieved.

The relevant assets were classified as assets held for sale until both transactions were completed in January 2016.

Deconsolidation of the Venezuelan subsidiaries

Due to the nearly complete absence of dividend payments and payments for Group-internal supplies of goods, the Executive Board of Merck KGaA, Darmstadt, Germany, came to the conclusion that the possibility of receiving and influencing variable returns from the participation in the Venezuelan subsidiaries can no longer be deemed given. Owing to the lack of a possibility of control, the Venezuelan subsidiaries were therefore deconsolidated effective February 29, 2016.

Impairment of the co-commercialization right for Xalkori®

As part of the immuno-oncology alliance entered into with Pfizer Inc., USA (Pfizer), in 2014, among other things the Group received the right to co-promote with Pfizer for multiple years Xalkori® (crizotinib), a medicine to treat patients with ALK-positive metastatic non-small cell lung cancer in the United States and several other key markets. Based on this co-commercialization right, the Group is entitled to 20% of the profits that both parties generate from the commercialization of Xalkori® in the relevant markets. Based on the available sales plans, the fair value of the right was determined by an independent external expert on the date the right was granted and is being amortized over the term of the co-commercialization right until December 31, 2021.

In the second quarter of 2016 the Group revised its expected profit participations from the co-commercialization right due to developments in the market landscape. As a consequence an impairment test was performed in the second quarter of 2016 and led to an impairment loss of € 71 million on the intangible asset (residual book value on June 30, 2016: € 169 million), which was reported under other operating expenses in the second quarter of 2016.

Segment Reporting

INFORMATION BY BUSINESS SECTOR

€ million	Healthcare				Life Science			
	Q2 2016	Q2 2015	**Jan.–June 2016**	Jan.–June 2015	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
Net sales	**1,754**	**1,803**	**3,400**	**3,490**	**1,430**	**773**	**2,826**	**1,511**
Operating result (EBIT)	**298**	**267**	**939**	**536**	**166**	**87**	**271**	**170**
Depreciation/amortization	188	191	375	372	178	83	358	164
Impairment losses	73	2	73	3	–	–	–	–
Reversals of impairment losses	–	–	–	–	–	–	–1	–
EBITDA	**558**	**461**	**1,387**	**910**	**343**	**170**	**627**	**334**
Exceptionals	–1	19	–322	31	74	30	183	50
EBITDA pre exceptionals (Segment result)	**557**	**480**	**1,065**	**941**	**417**	**200**	**810**	**384**
EBITDA margin pre exceptionals (% of net sales)	31.8 %	26.6 %	31.3 %	27.0 %	29.1 %	25.9 %	28.6 %	25.4 %
Net operating assets[1]			5,847	5,813			20,995	21,441
Segment liabilities[1]			–2,327	–2,479			–819	–910
Investments in property, plant and equipment[2]	54	39	129	67	37	26	95	48
Investments in intangible assets[2]	10	10	15	12	16	3	18	3
Net cash flows from operating activities	423	259	681	619	192	94	469	224
Business free cash flow	423	427	765	683	277	202	545	225

[1] Figures for the reporting period ending on June 30, 2016; previous-year figures as of December 31, 2015.
[2] As reported in the consolidated cash flow statement.

Performance Materials				Corporate and Other				Group			
Q2 2016	Q2 2015	**Jan.–June 2016**	Jan.–June 2015	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
621	**643**	**1,243**	**1,260**	**–**	**–**	**–**	**–**	**3,805**	**3,219**	**7,470**	**6,261**
193	**238**	**399**	**452**	**–105**	**–90**	**–210**	**–176**	**550**	**501**	**1,399**	**981**
60	61	121	120	6	4	12	9	432	339	866	664
14	–	14	–	–	2	–	2	87	4	87	5
–	–	–	–	–	–	–	–	–	–	–1	–
267	**299**	**534**	**572**	**–99**	**–84**	**–197**	**–165**	**1,069**	**845**	**2,351**	**1,650**
7	–3	13	1	10	9	17	21	89	55	–109	102
273	**295**	**547**	**572**	**–89**	**–76**	**–180**	**–144**	**1,158**	**899**	**2,242**	**1,752**
44.1 %	45.9 %	44.0 %	45.4 %	–	–	–	–	30.4 %	27.9 %	30.0 %	28.0 %
		4,302	4,279			134	112			31,278	31,645
		–264	–290			–73	–61			–3,482	–3,739
23	16	42	33	10	11	19	20	125	93	285	167
4	1	5	1	4	2	7	4	33	16	45	20
209	249	445	496	–513	–276	–932	–734	311	326	663	605
201	289	457	452	–102	–89	–206	–169	799	830	1,562	1,190

Segmentation was performed in accordance with the organizational and reporting structure of the Group valid in 2016.

The fields of activity of the individual segments are described in detail in the sections about the business sectors in the Group interim management report.

Corporate and Other 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 serves the reconciliation to the Group numbers. The expenses and income as well as cash flows attributable to the financial result and income taxes are also presented under Corporate and Other.

Apart from sales, the success of a segment is mainly determined by EBITDA pre exceptionals (segment result) and business free cash flow. EBITDA pre exceptionals and business free cash flow are performance indicators not defined by International Financial Reporting Standards. However, they represent important variables used to steer the Group. To permit a better understanding of operational performance, EBITDA pre exceptionals excludes depreciation and amortization, impairment losses, and reversals of impairment losses in addition to exceptional items presented in the following. Among other things, business free cash flow is also used for internal target agreements.

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

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

€ million	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
Total EBITDA pre exceptionals of the operating businesses	**1,248**	**975**	**2,422**	**1,897**
Corporate and Other	–89	–76	–180	–144
EBITDA pre exceptionals of the Group	**1,158**	**899**	**2,242**	**1,752**
Depreciation/amortization/impairment losses/reversals of impairment losses	–519	–343	–952	–669
Exceptionals	–89	–55	109	–102
Operating result (EBIT)	**550**	**501**	**1,399**	**981**
Financial result	–121	–41	–190	–141
Profit before income tax	**429**	**461**	**1,209**	**840**

The composition of business free cash flow was as follows:

€ million	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
EBITDA pre exceptionals	**1,158**	**899**	**2,242**	**1,752**
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–150	–99	–268	–177
Changes in inventories as reported in the consolidated balance sheet	–37	21	–20	–134
Changes in trade accounts receivable and receivables from royalties and licenses as reported in the consolidated balance sheet	–109	8	–232	–251
Adjustment first-time consolidation of Sigma-Aldrich	–64	–	–159	–
Business free cash flow	**799**	**830**	**1,562**	**1,190**

Exceptionals were as follows:

€ million	**Q2 2016**	Q2 2015	**Jan.–June 2016**	Jan.–June 2015
Restructuring costs	–2	–21	–4	–40
Integration costs/IT costs	–37	–11	–64	–22
Gains/losses on the divestment of businesses	4	6	328	6
Acquisition-related exceptionals	–53	–25	–148	–40
Other exceptionals	–1	–3	–3	–7
Exceptionals before impairment losses/reversals of impairment losses	**–89**	**–55**	**109**	**–102**
Impairment losses	–71	–2	–71	–2
Reversals of impairment losses	–	–	–	–
Exceptionals (total)	**–160**	**–56**	**38**	**–104**

The integration and IT costs incurred in the current fiscal year amounting to € 64 million (January-June 2015: € 22 million) resulted mainly from the integration of the Sigma-Aldrich Corporation, USA, and from investments in ERP systems.

Gains on the divestment of businesses amounting to € 328 million (January-June 2015: € 6 million) were mainly attributable to the sale of the rights to Kuvan® and the related business activities.

Acquisition-related exceptionals amounting to € 148 million (January-June 2015: € 40 million) arose in connection with the acquisition of the Sigma-Aldrich Corporation, USA.

The reconciliation of operating assets presented in the Segment Reporting to the total assets of the Group was as follows:

€ million	**June 30, 2016**	Dec. 31, 2015
Assets	37,026	38,007
Monetary assets (cash and cash equivalents, current financial assets, loans, securities)	–877	–1,093
Non-operating receivables, income tax receivables, deferred taxes and net defined benefit assets	–1,389	–1,484
Assets held for sale	–	–46
Operating assets (gross)	**34,760**	**35,385**
Trade accounts payable	–1,809	–1,921
Other operating liabilities	–1,673	–1,818
Segment liabilities	**–3,482**	**–3,739**
Operating assets (net)	**31,278**	**31,645**

Earnings per share

Basic earnings per share are calculated by dividing the profit after tax attributable to the shareholders of Merck KGaA, Darmstadt, Germany, 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 capital is not represented by shares. The share capital of € 168 million was divided into 129,242,252 shares. Accordingly, the general partner's capital of € 397 million was divided into 305,535,626 theoretical shares. Overall, the total capital thus amounted to € 565 million or 434,777,878 theoretical shares outstanding. The weighted average number of shares was likewise 434,777,878 in the first half of 2016.

As of June 30, 2016 there were no potentially dilutive shares. Diluted earnings per share corresponded to basic earnings per share.

Information on the measurement of fair value

On the balance sheet date, assets classified as "available-for-sale" financial assets and derivative financial instruments were measured at fair value.

Derivative financial instruments were used exclusively to hedge and reduce the risks of interest rate and foreign exchange positions.

The following derivative financial instruments were held as of the balance sheet date:

	Nominal volume		Fair value	
€ million	**June 30, 2016**	Dec. 31, 2015	**June 30, 2016**	Dec. 31, 2015
Cash flow hedge	2,047	2,161	–42	–90
Interest	–	–	–	–
Currency	2,047	2,161	–42	–90
Fair value hedge	–	–	–	–
Interest	–	–	–	–
Currency	–	–	–	–
No hedge accounting	4,984	5,468	–69	–105
Interest	1,100	1,100	–65	–101
Currency	3,884	4,368	–4	–4
	7,031	**7,629**	**–111**	**–195**

Cash flow hedges include currency hedges in a nominal volume of € 1,320 million (December 31, 2015: € 1,387 million) with a remaining term of up to one year and hedges in a nominal volume of € 727 million (December 31, 2015: € 774 million) with a remaining term of more than one year.

The maturities of derivatives (nominal volume) were as follows as of the balance sheet date:

€ million	Remaining maturity less than 1 year	Remaining maturity more than 1 year	Total June 30, 2016	Remaining maturity less than 1 year	Remaining maturity more than 1 year	Total Dec. 31, 2015
Foreign exchange contracts	4,957	510	5,467	5,715	765	6,480
Currency options	247	217	464	40	9	49
Interest rate swaps	–	1,100	1,100	–	1,100	1,100
	5,204	**1,827**	**7,031**	**5,755**	**1,874**	**7,629**

The forward exchange contracts and currency options entered into to reduce the exchange rate risk primarily served to hedge future cash flows as well as to hedge intercompany financing in foreign currency.

The following table presents the reconciliation of the balance sheets items to the categories of financial instruments pursuant to the disclosures required by IFRS 7 and provides information on the measurement of fair value:

		Subsequent measurement according to IAS 39				
€ million	**Carrying amount June 30, 2016**	Amortized cost	At cost	Fair value	Carrying amount according to IAS 17	Non-financial items
Assets						
Cash and cash equivalents	723	723	–	–	–	–
Current financial assets	104	32	–	72	–	–
Held for trading (non-derivative)	–	–	–	–	–	–
Derivatives without a hedging relationship	26	–	–	26	–	–
Held to maturity	32	32	–	–	–	–
Loans and receivables	–	–	–	–	–	–
Available for sale	46	–	–	46	–	–
Derivatives with a hedging relationship	–	–	–	–	–	–
Trade accounts receivable	2,960	2,960	–	–	–	–
Loans and receivables	2,960	2,960	–	–	–	–
Other current and non-current assets	672	161	–	23	–	488
Derivatives without a hedging relationship	1	–	–	1	–	–
Loans and receivables	161	161	–	–	–	–
Derivatives with a hedging relationship	22	–	–	22	–	–
Non-financial items	488	–	–	–	–	488
Non-current financial assets	184	13	86	85	–	–
Derivatives without a hedging relationship	15	–	–	15	–	–
Held to maturity	1	1	–	–	–	–
Loans and receivables	12	12	–	–	–	–
Available for sale	156	–	86	70	–	–
Derivatives with a hedging relationship	–	–	–	–	–	–
Liabilities						
Current and non-current financial liabilities	13,337	13,224	–	109	4	–
Derivatives without a hedging relationship	109	–	–	109	–	–
Other liabilities	13,224	13,224	–	–	–	–
Derivatives with a hedging relationship	–	–	–	–	–	–
Finance lease liabilities	4	–	–	–	4	–
Trade accounts payable	1,809	1,809	–	–	–	–
Other liabilities	1,809	1,809	–	–	–	–
Other current and non-current liabilities	1,809	400	–	66	–	1,343
Derivatives without a hedging relationship	2	–	–	2	–	–
Other liabilities	400	400	–	–	–	–
Derivatives with a hedging relationship	64	–	–	64	–	–
Non-financial items	1,343	–	–	–	–	1,343

		Subsequent measurement according to IAS 39					
Fair value June 30, 2016	Carrying amount Dec. 31, 2015	Amortized cost	At cost	Fair value	Carrying amount according to IAS 17	Non-financial items	Fair value Dec. 31, 2015
723	832	832	–	–	–	–	832
	227	33	–	195	–	–	
–	–	–	–	–	–	–	–
26	32	–	–	32	–	–	32
32	30	30	–	–	–	–	30
–	3	3	–	–	–	–	3
46	162	–	–	162	–	–	162
–	–	–	–	–	–	–	–
	2,738	2,738	–	–	–	–	
2,960	2,738	2,738	–	–	–	–	2,738
	624	155	–	14	–	455	
1	2	–	–	2	–	–	2
161	155	155	–	–	–	–	155
22	12	–	–	12	–	–	12
	455	–	–	–	–	455	
	131	17	82	32	–	–	
15	4	–	–	4	–	–	4
1	–	–	–	–	–	–	–
12	17	17	–	–	–	–	17
70	110	–	82	28	–	–	28
–	–	–	–	–	–	–	–
	13,713	13,524	–	184	5	–	
109	139	–	–	139	–	–	139
13,678	13,524	13,524	–	–	–	–	13,706
–	45	–	–	45	–	–	45
4	5	–	–	–	5	–	5
	1,921	1,921	–	–	–	–	
1,809	1,921	1,921	–	–	–	–	1,921
	2,427	904	–	61	–	1,462	
2	4	–	–	4	–	–	4
400	904	904	–	–	–	–	904
64	57	–	–	57	–	–	57
	1,462	–	–	–	–	1,462	

The fair values of financial assets and liabilities were based on the official market prices and market values quoted on the balance sheet date (Level 1 assets and liabilities) as well as mathematical calculation models with inputs observable in the market on the balance sheet date (Level 2 assets and liabilities). Level 1 assets comprised stocks and bonds and were classified as "available-for-sale", Level 1 liabilities comprised issued bonds and were classified as "other liabilities". Level 2 assets and liabilities were primarily liabilities to banks classified as "other liabilities", interest-bearing securities classified as "available-for-sale" as well as derivatives with and without hedging relationships. The fair values of interest-bearing securities as well as of the liabilities classified as "other liabilities" were determined by discounting future cash flows using market interest rates. The calculation of the fair value of forward exchange contracts and currency options used market spot and forward rates as well as foreign exchange volatilities applying recognized mathematical principles. The fair value of interest rate swaps was determined with standard market valuation models using interest rate curves available in the market.

Level 3 assets were classified as "available-for-sale". These comprised non-controlling interests in a partnership, contingent purchase price components from the divestment of a minority shareholding in a corporation as well as contingent purchase price components from the divestment of business activities in connection with Kuvan®. The fair value of the interests in the partnership was determined through an internally performed valuation using the discounted cash flow method. Expected future cash flows based on the company's latest medium-term planning were taken into account. Planning related to a period of four years. Cash flows for periods beyond this were included by calculating the terminal value using a long-term growth rate of 0.5%. The discount rate used (after tax) was 7.0%. To calculate the fair values of the contingent purchase price components, the expected future milestone payments were weighted using the probability of occurrence and discounted using discount rates (after tax) of between 6.2% and 7.2%.

Level 3 liabilities consisted of contingent purchase price components from the acquisition of a corporation. These were reported as "other liabilities" and amounted to € 1 million as of the balance sheet date.

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

The fair values of available-for-sale investments in equity instruments with a carrying amount of € 86 million (December 31, 2015: € 82 million) could not be reliably determined since there were no quoted prices for identical instruments in an active market and it was not possible to make reliable estimates of fair values. They were measured at cost. Financial investments primarily include equity investments in various companies. There is currently no intention to sell these financial instruments. The Group had no information on a market for these financial instruments.

The financial instruments recognized at fair value in the balance sheet and the additionally disclosed fair values for financial instruments were determined as follows:

€ million

June 30, 2016	Assets	Liabilities
Fair value determined by official prices and quoted market values (Level 1)	**58**	**9,026**
thereof: available-for-sale	58	–
thereof: other liabilities	–	9,026
Fair value determined using inputs observable in the market (Level 2)	**64**	**4,827**
thereof: available-for-sale	–	–
thereof: derivatives with a hedging relationship	22	64
thereof: derivatives without a hedging relationship	42	111
thereof: other liabilities	–	4,652
Fair value determined using inputs unobservable in the market (Level 3)	**58**	**1**
thereof: available-for-sale	58	–
thereof: other liabilities	–	1

€ million

December 31, 2015	Assets	Liabilities
Fair value determined by official prices and quoted market values (Level 1)	**178**	**9,022**
thereof: available-for-sale	178	–
thereof: other liabilities	–	9,022
Fair value determined using inputs observable in the market (Level 2)	**50**	**4,929**
thereof: available-for-sale	–	–
thereof: derivatives with a hedging relationship	12	102
thereof: derivatives without a hedging relationship	38	143
thereof: other liabilities	–	4,684
Fair value determined using inputs unobservable in the market (Level 3)	**12**	**1**
thereof: available-for-sale	12	–
thereof: other liabilities	–	1

The changes in financial assets allocated to Level 3 and measured at fair value were as follows:

€ million	**2016**	2015
Net book values on Jan. 1, 2016/Jan. 1, 2015	**11**	**11**
Additions due to acquisitions/divestements	46	-1
Transfers into Level 3 out of Level 1/Level 2	–	–
Fair value changes		
Gains (+) / losses (–) recognized in consolidated income statement	1	–
Gains (+) / losses (–) recognized in consolidated statement of comprehensive income	-1	1
Disposals	–	–
Transfers out of Level 3 into Level 1/Level 2	–	–
Net book value as of June 30, 2016/December 31, 2015	**57**	**11**

Gains and losses from Level 3 assets are reported in other comprehensive income in the consolidated statement of comprehensive income under the item "fair value adjustments" related to "available-for-sale financial assets". If the discount rate used for the determination of the fair value of the non-controlling interests in a partnership had been one percentage point higher, other comprehensive income would have decreased by € 2 million. By contrast, a decline in the discount rate by one percentage point would have increased other comprehensive income by € 3 million. An increase or decrease in the discount rates used to calculate the fair values of the contingent purchase price components would not have had a substantial impact on other comprehensive income since the corresponding calculations assume a defined planning horizon and the determination of the fair values does not include a calculation of a terminal value.

Related-party disclosures

As of June 30, 2016, there were liabilities by Merck Financial Services GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, to E. Merck KG, Darmstadt, Germany, in the amount of € 880.6 million. As of June 30, 2016, Merck KGaA, Darmstadt, Germany, had receivables from E. Merck Beteiligungen KG, Darmstadt, Germany, in the amount of € 29.5 million. Merck & Cie, Switzerland, a subsidiary of Merck KGaA, Darmstadt, Germany, had receivables from E. Merck KG, Darmstadt, Germany, in the amount of € 9.5 million and Merck Financial Services GmbH, Darmstadt, Germany, a subsidiary of Merck KGaA, Darmstadt, Germany, had receivables from Merck Capital Asset Management, Malta, which is part of the Contractual Trust Arrangement of Merck KGaA, Darmstadt, Germany, and other companies of the Group amounting to € 1.5 million. The balances resulted mainly from the profit transfers by Merck & Cie, Switzerland, a subsidiary of Merck KGaA, Darmstadt, Germany, to E. Merck KG, Darmstadt, Germany, as well as the reciprocal profit transfers between Merck KGaA, Darmstadt, Germany, and E. Merck KG, Darmstadt, Germany. They included financial liabilities of € 880.6 million, which were subject to standard market interest rates.

Moreover, as of June 30, 2016 Merck Serono SA, Switzerland, a subsidiary of Merck KGaA, Darmstadt, Germany, had a receivable from Calypso Biotech SA, Switzerland, amounting to € 1.2 million stemming from a convertible bond with a volume of CHF 1,350,000 and an annual coupon of 8% and maturing on December 31, 2016.

From January to June 2016, Merck KGaA, Darmstadt, Germany, performed services for E. Merck KG, Darmstadt, Germany, and Emanuel-Merck-Vermögens-KG, Darmstadt, Germany, with a value of € 0.5 million and € 0.1 million, respectively.

Subsequent events

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

Darmstadt, July 29, 2016

Stefan Oschmann

Udit Batra

Kai Beckmann

Walter Galinat

Belén Garijo Lopez

Karl-Ludwig Kley

Marcus Kuhnert

Responsibility Statement

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

Darmstadt, July 29, 2016

Stefan Oschmann

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Kai Beckmann

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Review Report

To MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany:

We have reviewed the condensed half-year consolidated financial statements - comprising the Consolidated Income Statement, the Consolidated Statement of Comprehensive Income, the Consolidated Balance Sheet, the Consolidated Cash Flow Statement, the Consolidated Statement of Changes in Net Equity and Notes to the half-year financial statements - together with the interim group management report of MERCK Kommanditgesellschaft auf Aktien, Darmstadt, Germany, for the period from January 1, 2016 to June 30, 2016 that are part of the half-year financial report according to § 37w WpHG (Wertpapierhandelsgesetz: – German Securities Trading Act). The preparation of the condensed half-year consolidated financial statements in accordance with those IFRS applicable to interim financial reporting as adopted by the EU, and of the interim group management report in accordance with the requirements of the WpHG applicable to interim group management reports, is the responsibility of the Company's management. Our responsibility is to issue a report on the condensed half-year consolidated financial statements and on the interim group management report based on our review.

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

Based on our review, no matters have come to our attention that cause us to presume that the condensed half-year 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.

Frankfurt am Main, July 29, 2016

KPMG AG
Wirtschaftsprüfungsgesellschaft

Original German version signed by

Karl Braun
Wirtschaftsprüfer

Bodo Rackwitz
Wirtschaftsprüfer

Financial Calendar 2016/2017

November

Tuesday, November 15, 2016
Report on the third quarter

March

Thursday, March 9, 2017
Annual Report 2016

April

Friday, April 28, 2017
Annual General Meeting

May

Thursday, May 18, 2017
Report on the first quarter

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