Report on Economic Position

Macroeconomic and Sector-Specific Environment

According to the most recently available figures from the International Monetary Fund (IMF), industrial countries faced dampened growth expectations in 2016. Firstly, this was due to the uncertain consequences in connection with the future exit of the United Kingdom from the European Union (“Brexit”). Secondly, economic growth in the United States was weaker than expected in the first half of the year. According to the latest IMF forecasts, global gross domestic product (GDP) increased by 3.1% in 2016, equivalent to a decline of 0.1 percentage points in comparison with 2015. As in the previous year, strong regional differences could be seen. Industrial nations registered a decline in growth to 1.6% (2015: 2.1%). At 4.2% (2015: 4.0%), emerging economies and developing countries achieved an increase in growth rates for the first time in five years. The GDP of the United States, the world’s largest economy, remained behind expectations, growing only by 1.6% (2015: 2.6%). In 2015, growth of 2.8% was forecast for 2016. Growth was slowed by a continued decline in investment in the energy sector and the strong U.S. dollar, which had a dampening impact on export-oriented industrial sectors. As was the case in the United States, the eurozone also registered a decline in GDP growth to 1.7% (2015: 2.0%). By contrast, the emerging economies of Asia registered growth of 6.5% (2015: 6.6%). As in 2015, India (7.6%) and China (6.6%) were the strongest growth drivers. The industrial nations South Korea and Taiwan only generated slight increases in growth, whereas the GDP of Japan stalled at the 2015 level of 0.5%. Korea registered growth of 2.7% (2015: 2.6%) and Taiwan saw growth of 1.0% (2015: 0.6%).

In 2016, organic sales growth at Merck was largely attributable to the North America and Latin America regions. While North America accounted for approximately 36% of Group-wide organic growth, Latin America also generated a high share, which amounted to 27.7%. In Latin America, all the business sectors contributed positively to organic sales growth. In North America, growth was driven by our Healthcare business sector. While the Asia-Pacific (APAC) region generated around 56% of organic growth in 2015, it only accounted for a share of roughly 12% in 2016. This was due to the declines in the Performance Materials business sector. For instance, Performance Materials sales in the Asia-Pacific region decreased organically by –6.6%.

	Development 2016[1]	Development 2015
Healthcare		
Global pharmaceutical market	6.3%	9.2%
Market for multiple sclerosis therapies[2]	7.5%	14.9%
Market for type 2 diabetes therapies[2]	11.2%	11.1%
Market for fertility treatment[2]	12.6%	10.7%
Market for the treatment of colorectal cancer[3]	–0.5%	–1.7%
Market for OTC pharmaceuticals	4.3%	4.9%
Life Science		
Market for laboratory products	2.5%	2.9%
Share of biopharmaceuticals in the global pharmaceutical market[2]	23.3%	22.3%
Performance Materials		
Growth of LC display surface area	4.6%	4.8%
Global automobile sales volumes	2.5%	1.3%
Materials for production of cosmetics	1.8%	1.5%
Semiconductor industry sales	Sales at the previous year's level	–2.3%

[1] Predicted development. Final development rates for 2016 were not available for all industries when this report was prepared.
[2] Growth rates based on market data in local currency, translated at a constant euro exchange rate. The IMS Health market data on the growth of indications are based on current figures, including the third quarter of 2016. Annual growth based on the values for the past 12 months. The type 2 diabetes market excludes the United States since this market is insignificant to Merck.
[3] Growth rates based on market data stated in U.S. dollars. Market data from EvaluatePharma on the growth of indications are based on published company reports and are subject to exchange rate fluctuations.

Healthcare

According to the latest study published in September 2016 by the pharmaceutical market research firm IMS Health entitled "Global Market Prognosis 2016 – 2020", the growth of the global pharmaceutical market for 2016 is quantified at 6.3%. By comparison, in 2015, sales growth was still 9.2%. As was already the case in 2015, growth in 2016 was primarily attributable to Latin America and the United States. Whereas growth in the United States fell significantly to 6.3% (2015: 12.0%), at 13.9% the Latin American market continued to see double-digit growth (2015: 16.0%). At 5.7%, the Asia-Pacific region recorded a slight decline in growth (2015: 6.6%). Europe registered a stronger decline to 4.6% (2015: 7.0%).

Not only the growth of the pharmaceutical sector as a whole, but also in particular the development of the biopharmaceutical market are relevant for our business. According to IMS Health, the market volume of biopharmaceuticals was approximately € 208 billion in 2016. In recent years, the share of the global pharmaceutical market accounted for by these products has grown continuously and already amounted to 23.3% in 2016. Globally, the largest share, or 31.2%, was attributable to the United States.

A look at the therapeutic areas of relevance to Merck shows differing developments. The markets for the therapeutic areas multiple sclerosis grew by 7.5% (2015: 14.9%), type 2 diabetes[1] by 11.2% (2015: 11.1%) as well as fertility by 12.6% (2015: 10.7%). By contrast, the market for oncology drugs for the treatment of colorectal cancer declined by – 0.5% (2015: –1.7%).

According to the market research firm Nicholas Hall, the growth of the global over-the-counter pharmaceutical market was 4.3% in 2016, which represents a slight decline of 0.6 percentage points in comparison with 2015. In 2016, growth was driven by the Asia-Pacific region, which generated growth of 5.5% (2015: 5.1%). As in 2015, India achieved the strongest growth of 7.7% (2015: 8.9%). At 2.2%, growth was weakest in western Europe (2015: 3.3%) and Japan (2015: 0.2%).

[1] Excluding the United States.

Life Science

Our Life Science business sector is a leading supplier of products and services for both research and applied laboratory applications, as well as for formulating, purifying, manufacturing, and quality-assuring drug therapies of biological and chemical origin.

For the laboratory product market relevant to Research Solutions and Applied Solutions, the market research firm Frost & Sullivan expects growth of 2.5% for 2016 (2015: 2.9%). A period of heightened uncertainty in the second half of 2016 dampened growth versus 2015. Growth was primarily driven by biopharmaceutical industry customers, specifically emerging biotech start-ups. In comparison with 2015, European market growth slowed to 1.5% (2015: 1.9%), driven by a weaker euro and economic uncertainty, for instance as regards the unexpected Brexit vote. Growth of the U.S. market was 2.7% (2015: 3.0%), with the slowdown influenced by the U.S. presidential election and delay in passing a 2017 federal budget. Emerging economies delivered higher growth; however, a slowdown in China was visible, with modest improvements expected in this market over the next few years.

The demand for Process Solutions products depends heavily on the volume of biological product sales as well as the productivity of research and development activities of biopharmaceutical companies. As previously stated, the market volume for biopharmaceuticals was € 208 billion in 2016, representing a 23.3% share of the global pharmaceutical market. According to EvaluatePharma, there are more than 8,500 active biologics projects in pre-clinical and clinical development, of which monoclonal antibodies represent 28% (2015: 25%). Biosimilars are a small, but fast-growing part of the pharmaceutical market. In 2016, biosimilars sales are expected to reach US$ 1.4 billion annually before growing to US$ 8 billion in 2022.

Performance Materials

With its liquid crystals business, Merck is the leading producer of liquid crystal mixtures for the display industry. The dynamic growth rates of display surfaces have declined to an average of 5% in recent years according to surveys by the market researchers at IHS DisplaySearch. This growth was mainly attributable to increasing average display size amid largely stagnating sales volumes. The display industry remains a growth sector in which the leading display technology is based on liquid crystals. OLED technology, for which Merck also ranks among the leading material suppliers, is gaining importance in the high-end display sector.

The markets for automotive coatings and cosmetics are crucial to Merck's Pigments business. As reported by the Center of Automotive Management (CAM) in Bergisch-Gladbach, Germany, global automobile sales volumes rose by 1.3% in 2015. As in the previous years, the growth drivers were China, western Europe and the United States while significant declines in automotive sales volumes were registered particularly in Brazil and Russia. For 2016, a slight recovery in the global growth of the automotive market is expected. According to Euromonitor International, global consumption of materials used to produce cosmetics grew by 2%, with Asia reporting the highest growth rate of 4%.

The semiconductor industry is the most important sales market for the business with integrated circuit materials (IC Materials). The long-term growth of the semiconductor industry has a cyclical demand pattern. According to Gartner, a market research institute specializing in the technology and electronics markets, in 2016 the industry's sales were at the previous year's level since the growth of smartphone applications was offset by declining demand in the PC business. The decline in 2015 of – 2.3% was likewise due to the weakness of the PC business.

Review of Forecast against Actual Business Developments

Net sales

For 2016, slight organic sales growth was forecast for the Merck Group. Owing to the acquisition of Sigma-Aldrich, which closed on November 18, 2015, we additionally expected a portfolio effect in the low double-digit percentage range. The positive organic development of net sales in the Healthcare and Life Science business sectors more than offset the slight decline in Performance Materials. Consequently, we generated a moderate organic sales increase of 3.2%. At 16.4%, the additional portfolio effect due to Sigma-Aldrich was in the low double-digit percentage range as expected. At the beginning of 2016, we had forecast a slightly negative exchange rate effect owing to the decline in the value of Latin American currencies. In the course of the year, we raised the forecast of this effect to –3% to –5%. Owing to a weakening of these dynamics and a simultaneous strengthening of the U.S. dollar in the fourth quarter, we incurred an exchange rate effect of –2.6% on our sales for 2016.

In 2016, our Healthcare business sector showed solid organic sales growth of 4.6%, thus exceeding our forecast for slight organic growth. As expected, sales growth was driven by the continued good dynamics in our growth markets as well as positive effects from the co-promotion of Xalkori® with Pfizer. Yet the Fertility franchise in North America and China as well as Rebif® performed significantly better than expected. Contrary to our original assumptions, Rebif® generated organic sales growth in North America. As forecast, a slightly negative portfolio effect of –1.1% was incurred in 2016 owing to the return of the Kuvan® rights to BioMarin Pharmaceutical, Inc.

Our Life Science business sector achieved organic sales growth of 6.3% in 2016. This was significantly stronger than the moderate organic growth we had forecast at the beginning of the year. The more dynamic business performance increasingly manifested itself in the first half of 2016. Our updated forecasts as of the second quarter of the year took this into account accordingly. All the Life Science business areas contributed to the positive development, with Process Solutions accounting for the largest proportion and benefiting from continued healthy demand from customers in the biopharmaceutical industry. In addition, the acquisition of Sigma- Aldrich was responsible for a portfolio effect of 63.1%, thus meeting the forecast we made at the beginning of the year.

As already indicated in the forecasts after the second and third quarters of 2016, the Performance Materials business sector did not meet the original expectation of slight organic growth. The destocking in the display industry, which lasted longer than expected, as well as typical price declines in liquid crystals, could not be offset by growth in the other business units. Overall, this led to an organic sales decline of –4.7% compared with 2015.

EBITDA pre exceptionals

At Group level, we increased EBITDA pre exceptionals by 23.7% to € 4,490 million in 2016, which was in line with our original forecast of an increase in the low double-digit percentage range.

Contrary to our original expectation of a decline in earnings in the low double-digit percentage range, in 2016 EBITDA pre exceptionals of our Healthcare business sector rose by 6.3% compared with 2015. The positive margin development had already started to become apparent after the second quarter following unexpectedly good sales reported for Rebif® and the Fertility franchise along with the divestment of a minority interest. Additionally, as of the second half of the year we started receiving royalty and license income for a patent granted in the United States in June 2016. Apart from the release of provisions for research projects discontinued in prior years, it became clear in the third quarter that research and development expenses would be below our conservative cost budgeting at the beginning of 2016.

For EBITDA pre exceptionals of the Life Science business sector, we had forecast a moderate increase owing to the expected organic sales growth and an additional portfolio effect in the high double-digit percentage range due to the acquisition of Sigma-Aldrich. With EBITDA pre exceptionals of € 1,652 million, equivalent to an increase of 93.0%, we met this forecast. This was due not only to the portfolio effect that corresponded to the expected amount, but also to good margin development and the faster than planned realization of the synergies from the aforementioned acquisition.

For the Performance Materials business sector, we assumed that EBITDA pre exceptionals would increase slightly. We aimed for at least the level of 2015. Owing to the significant destocking by the display industry throughout the year and the resulting negative impact on sales, we fell slightly short of this forecast. We applied maximum cost discipline to counteract this development and were able to benefit from the high degree of diversification that now characterizes Performance Materials. Since this could not fully offset the earnings impact of the decline in sales of the Display Materials business, EBITDA pre exceptionals decreased by – 2.3% to € 1,106 million. Yet the EBITDA margin pre exceptionals remained at the high level of 2015.

EBITDA pre exceptionals of Corporate and Other developed in line with our expectations. Owing to the further intensification of strategic Group initiatives, such as the new branding and projects to digitalize the Group, we expected expenses to rise significantly. With EBITDA pre exceptionals of € – 396 million in 2016, we met this forecast, which we had specified in the course of 2016 to lie between € – 370 million and € – 400 million.

Business free cash flow

In 2016, we expected business free cash flow of the Merck Group to develop positively in the high single-digit percentage range. We exceeded this forecast with business free cash flow increasing by 20.0%. The key drivers of this were the unexpectedly high growth of EBITDA pre exceptionals of our Healthcare business sector as well as, to a smaller extent, the positive development of inventories in Performance Materials. As expected, due to the Sigma-Aldrich acquisition the Life Science business sector made a high double-digit percentage contribution to the development of business free cash flow.

	Actual results 2015 in € million	**Forecast for 2016 in the Annual Report for 2015**
Merck Group		
Net sales	12,845	Slight organic growth Portfolio effect in the low double-digit percentage range
EBITDA pre exceptionals	3,630	Low double-digit percentage increase taking into account the Sigma-Aldrich portfolio effect
Business free cash flow	2,766	High single-digit percentage increase
Healthcare		
Net sales	6,934	Slight organic growth Slightly negative portfolio effect due to the divestment of Kuvan®
EBITDA pre exceptionals	2,002	Low double-digit percentage decline taking into consideration commercialization costs, especially for avelumab (excluding market launch costs: decline in the high single-digit to mid-teens percentage range) Negative portfolio effect in the medium double-digit million range due to the divestment of Kuvan®
Business free cash flow	1,581	Low double-digit percentage decline
Life Science		
Net sales	3,355	Moderate organic growth High double-digit percentage portfolio effect due to the acquisition of Sigma-Aldrich
EBITDA pre exceptionals	856	Moderate increase due to organic sales growth Additional high double-digit percentage portfolio effect due to the acquisition of Sigma-Aldrich
Business free cash flow	676	High double-digit percentage increase
Performance Materials		
Net sales	2,556	Slight organic growth
EBITDA pre exceptionals	1,132	Slight increase, yet at least at the 2015 level
Business free cash flow	931	Moderate increase
Corporate and Other		
EBITDA pre exceptionals	–360	Significant increase
Business free cash flow	–421	–

Forecast for 2016 in:			
Q1/2016 Interim Report	Q2/2016 Interim Report	Q3/2016 Interim Report	**Results 2016 in € million**
€ 14.8 – € 15.0 billion	€ 14.9 – € 15.1 billion	€ 14.9 – € 15.1 billion	15,024 (+17.0%: +3.2% Organic +16.4% Portfolio −2.6% Currency)
€ 4.1 – € 4.3 billion	€ 4.25 – € 4.4 billion	€ 4.45 – € 4.6 billion	4,490 (+23.7%)
€ 3.1 – € 3.3 billion	€ 3.14 – € 3.25 billion	€ 3.25 – € 3.36 billion	3,318 (+20.0%)
Slight organic growth, slightly negative portfolio effect due to the divestment of Kuvan®	Solid organic growth, slightly negative portfolio effect due to the divestment of Kuvan®	Solid organic growth, slightly negative portfolio effect due to the divestment of Kuvan®	6,855 (−1.1%: +4.6% Organic −1.1% Portfolio −4.6% Currency)
€ 1.8 – 1.9 billion	€ 1.95 – 2.05 billion	€ 2.1 – 2.2 billion	2,128 (+6.3%)
€ 1.4 – 1.5 billion	€ 1.49 – 1.59 billion	€ 1.59 – 1.67 billion	1,648 (+4.2%)
Organic growth in the mid-single-digit percentage range, high double-digit portfolio effect due to the acquisition of Sigma-Aldrich	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	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	5,658 (+68.6%: +6.3% Organic +63.1% Portfolio −0.8% Currency)
€ 1.62 – 1.67 billion	€ 1.62 – 1.67 billion	€ 1.64 – 1.67 billion	1,652 (+93.0%)
€ 1.22 – 1.27 billion	€ 1.18 – 1.23 billion	€ 1.18 – 1.23 billion	1,144 (+69.3%)
Organic stable	Moderate decline	Moderate decline	2,511 (−1.8%: −4.7% Organic +2.7% Portfolio +0.2% Currency)
€ 1.1 – 1.15 billion	€ 1.1 – 1.15 billion	€ 1.1 – 1.15 billion	1,106 (−2.3%)
€ 0.95 – 1.0 billion	€ 0.93 – 0.98 billion	€ 0.93 – 0.98 billion	1,011 (+8.6%)
€ −370 – −400 million	€ −370 – −400 million	€ −370 – −400 million	−396 (+10.0%)
€ −460 – −490 million	€ −460 – −490 million	€ −460 – −490 million	−485 (+15.1%)

Course of Business and Economic Position

Merck Group

Overview of 2016

- Group net sales increase by 17.0% to € 15 billion
- Healthcare and Life Science deliver organic sales growth
- EBITDA pre exceptionals up 23.7% to around € 4.5 billion
- Group profitability (EBITDA margin pre exceptionals) rises to 29.9% (2015: 28.3%)
- Improvement in earnings per share before exceptionals by 27.5% to € 6.21
- Business free cash flow increases 20.0% to € 3.3 billion

MERCK GROUP
Key figures

			Change	
€ million	**2016**	2015	€ million	in %
Net sales	15,024	12,845	2,179	17.0%
Operating result (EBIT)	2,481	1,843	637	34.6%
Margin (% of net sales)	16.5%	14.3%		
EBITDA	4,415	3,354	1,061	31.6%
Margin (% of net sales)	29.4%	26.1%		
EBITDA pre exceptionals	4,490	3,630	861	23.7%
Margin (% of net sales)	29.9%	28.3%		
Profit after tax	1,633	1,124	509	45.3%
Earnings per share (€)	3.75	2.56	1.19	46.5%
Earnings per share pre exceptionals (€)	6.21	4.87	1.34	27.5%
Business free cash flow	3,318	2,766	552	20.0%

Development of net sales and results of operations

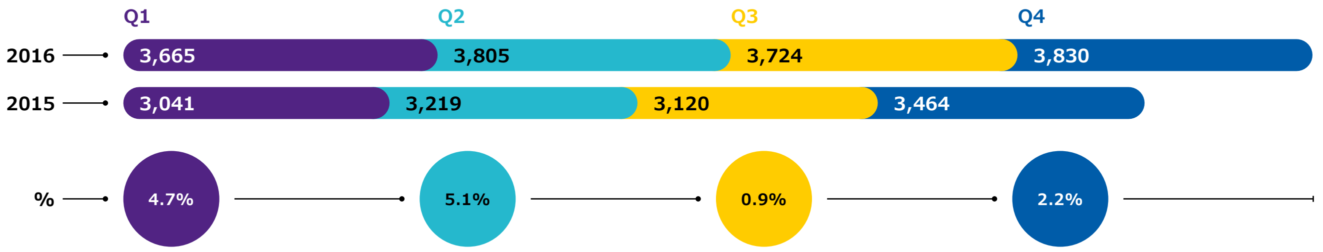
In 2016, the Merck Group generated net sales of € 15,024 million (2015: € 12,845 million), achieving sales growth of € 2,179 million or 17.0%. This double-digit increase was driven both by very significant portfolio changes and moderate organic growth. Group sales grew organically to € 408 million or 3.2% and were generated by the Healthcare and Life Science business sectors. Portfolio changes increased net sales by € 2,109 million or 16.4%. This was mainly attributable to the acquisition of Sigma-Aldrich, which closed on November 18, 2015 (see Note [4] “Acquisitions, assets held for sale and disposal groups” in the Notes to the Consolidated Financial Statements). Negative exchange rate effects lowered net sales by € –339 million or –2.6%. These effects were primarily due to the development of Latin American currencies. The decline in the value of the British pound also had a slightly adverse effect on sales.

The development of net sales in the individual quarters as well as the respective organic growth rates in 2016 are presented in the following overview:

MERCK GROUP

Net sales and organic growth by quarter[1]

€ million / organic growth in %



[1] Quarterly breakdown unaudited.

The double-digit growth rate of Group sales was attributable to the positive contribution of our Life Science business sector, which increased its sales overall by 68.6% to € 5,658 million (2015: € 3,355 million). This was driven both by the acquisition of Sigma-Aldrich (+63.1%) and the sharp organic increase in sales (+6.3%). Consequently, the share of Group sales attributable to Life Science in 2016 rose significantly by 12 percentage points to 38% (2015: 26%). With a 45% share (2015: 54%) of Group sales, Healthcare remained our strongest business sector in terms of sales. The Healthcare business sector delivered organic growth of 4.6%, which however was more than canceled out by negative exchange rate effects and the absence of Kuvan® sales (see Note [4] "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements). Overall, Healthcare sales declined slightly to € 6,855 million (2015: € 6,934 million). Net sales by the Performance Materials business sector decreased slightly to € 2,511 million (2015: € 2,556 million). The business sector thus generated 17% (2015: 20%) of Group sales.

MERCK GROUP

Net sales by business sector – 2016

€ million / % of net sales

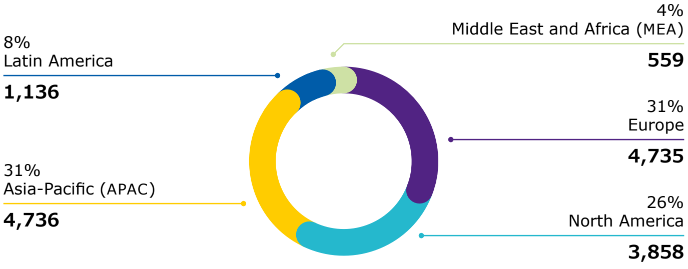
MERCK GROUP

Net sales components by business sector – 2016

€ million / change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Healthcare	6,855	4.6%	–4.6%	–1.1%	–1.1%
Life Science	5,658	6.3%	–0.8%	63.1%	68.6%
Performance Materials	2,511	–4.7%	0.2%	2.7%	–1.8%
Merck Group	**15,024**	**3.2%**	**–2.6%**	**16.4%**	**17.0%**

MERCK GROUP
Net sales by region – 2016

€ million/% of net sales



Driven by strong acquisition-related increases from the consolidation of Sigma-Aldrich and supported by slight organic growth, the strong year-earlier level of net sales in the Asia-Pacific region rose by 11.7% or € 495 million to € 4,736 million (2015: € 4,241 million). This positive sales development was fueled by the Healthcare and Life Science business sectors, which achieved high acquisition-related sales increases and very strong organic growth. Consequently, these two business sectors could almost compensate for the weaker Display Materials business of Performance Materials in this region. The contribution to Group sales by the Asia-Pacific region fell by two percentage points to 31% (2015: 33%).

Sales generated in Europe grew by 15.4% or € 632 million to € 4,735 million (2015: € 4,103 million). This was due to sales increases primarily in the Life Science business sector, which generated double-digit organic growth and high acquisition-related sales. In 2016, Europe contributed 31% to Group sales (2015: 32%).

With net sales of € 3,858 million (2015: € 2,723 million), North America generated the strongest sales increases in both absolute (+€ 1,135 million) and percentage (+41.7%) terms in 2016. In addition to the effect of the Sigma-Aldrich acquisition (+35.5%), this positive sales development was driven by the organic growth of the Healthcare business sector. The contribution to Group sales by North America in 2016 was 26%, representing an increase of five percentage points (2015: 21%).

In Latin America, Group sales decreased owing to exchange rate effects to € 1,136 million (2015: € 1,265 million). All business sectors contributed to organic sales growth of 8.9% in this region. The share of sales attributable to Latin America declined by two percentage points to 8% (2015: 10%).

Net sales in the Middle East and Africa region rose by 8.9% in 2016, amounting to € 559 million (2015: € 513 million). Organic sales growth of 5.7%, to which all business sectors contributed, was supported by acquisition-related effects (+5.4%). This region accounted for an unchanged 4% of Group sales.

MERCK GROUP
Net sales components by region – 2016

€ million/change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/ divestments	Total change
Europe	4,735	1.7%	–1.4%	15.1%	15.4%
North America	3,858	5.3%	0.9%	35.5%	41.7%
Asia-Pacific (APAC)	4,736	1.2%	0.1%	10.4%	11.7%
Latin America	1,136	8.9%	–23.4%	4.2%	–10.2%
Middle East and Africa (MEA)	559	5.7%	–2.1%	5.4%	8.9%
Merck Group	**15,024**	**3.2%**	**–2.6%**	**16.4%**	**17.0%**

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

MERCK GROUP

Consolidated Income Statement

€ million	2016	in %	2015	in %	Change € million	Change in %
Net sales	**15,024**	**100.0%**	**12,845**	**100.0%**	**2,179**	**17.0%**
Cost of sales	–5,201	–34.6%	–4,076	–31.7%	–1,125	27.6%
(of which: amortization of intangible assets)[1]	*(–181)*		*(–167)*		*(–15)*	*(8.8%)*
Gross profit	**9,823**	**65.4%**	**8,768**	**68.3%**	**1,054**	**12.0%**
Marketing and selling expenses	–4,526	–30.1%	–4,050	–31.5%	–477	11.8%
(of which: amortization of intangible assets)[1]	*(–1,032)*		*(–779)*		*(–253)*	*(32.5%)*
Administration expenses	–854	–5.7%	–720	–5.6%	–134	18.7%
Research and development costs	–1,976	–13.2%	–1,709	–13.3%	–266	15.6%
(of which: amortization of intangible assets)[1]	*(–4)*		*(–3)*		*(–2)*	*(58.6%)*
Other operating expenses and income	14	0.1%	–447	–3.5%	461	>100.0%
Operating result (EBIT)	**2,481**	**16.5%**	**1,843**	**14.3%**	**637**	**34.6%**
Financial result	–326	–2.2%	–357	–2.8%	30	–8.5%
Profit before income tax	**2,154**	**14.3%**	**1,487**	**11.6%**	**668**	**44.9%**
Income tax	–521	–3.5%	–368	–2.9%	–153	41.7%
Profit after tax from continuing operations	**1,633**	**10.9%**	**1,118**	**8.7%**	**514**	**46.0%**
Profit after tax from discontinued operations	**–**	**–**	**6**	**–**	**–6**	**>100.0%**
Profit after tax	**1,633**	**10.9%**	**1,124**	**8.8%**	**509**	**45.3%**
Non-controlling interests	–4	–0.0%	–9	–0.1%	5	–55.0%
Net income	**1,629**	**10.8%**	**1,115**	**8.7%**	**514**	**46.1%**

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

Gross profit of the Merck Group rose by 12.0% to € 9,823 million in 2016 (2015: € 8,768 million). This double-digit rate of increase was mainly driven by the Life Science business sector, which benefited from positive business performance and the acquisition of Sigma-Aldrich. The gross margin of the Group, i.e. gross profit as a percentage of sales, declined to 65.4% (2015: 68.3%).

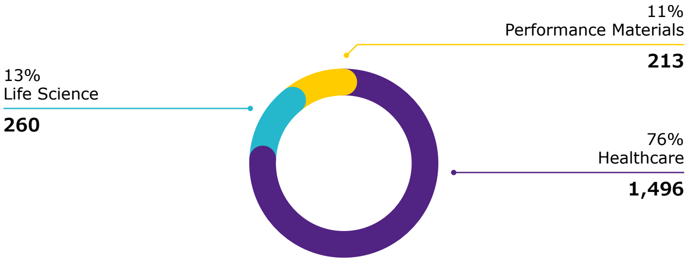
The increase in marketing and selling expenses as well as administration expenses was primarily due to the consolidation of Sigma-Aldrich. Owing to the termination of the co-promotion agreement with Pfizer for Rebif® in the United States at the end of 2015, marketing and selling expenses for the Healthcare business sector declined. Nevertheless, Group marketing and selling expenses increased overall due to the acquisition effects in Life Science.

In 2016, Group research and development costs increased by 15.6% to € 1,976 million. This was due mainly to the research activities in the Healthcare business sector and to the acquisition of Sigma-Aldrich. Accounting for 76% of Group R&D spending (2015: 77%), Healthcare is our most research-intensive business sector. At 13.2%, the Group research spending ratio (research and development costs as a percentage of sales) remained at the previous year's level (2015: 13.3%).

MERCK GROUP

Research and development costs by business sector – 2016

€ million / in %



In 2016, other operating expenses and income (net) showed an income balance of € 14 million; in 2015, an expense balance of € –447 million was reported. This positive development was driven in particular by the gain on the sale of the rights to Kuvan® (€ 330 million) and the divestment of a minority shareholding (€ 30 million) in the Healthcare business sector. Detailed information about the development and composition of other operating expenses and income can be found in Note [11] "Other operating income" and Note [12] "Other operating expenses" in the Notes to the Consolidated Financial Statements.

The operating result (EBIT) of the Merck Group soared by € 637 million or 34.6% year-on-year to € 2,481 million.

In 2016, the negative financial result improved by € 30 million to € –326 million, mainly owing to lower exchange rate losses and a decrease in currency hedging expenses from Group-internal transactions. At € –270 million, the interest result contained in the financial result was on par with the previous year (2015: € –271 million) (see Note [13] "Financial result" in the Notes to the Consolidated Financial Statements).

Income tax expenses of € 521 million (2015: € 368 million) led to an effective tax rate of 24.2% (2015: 24.8%). More information about income taxes can be found in Note [14] "Income taxes" in the Notes to the Consolidated Financial Statements.

Profit after tax of discontinued operations reported in 2015 comprises the business activities of Sigma-Aldrich acquired with a view to resale (see also Note [4] "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements). Net income, i.e. profit after tax attributable to Merck KGaA shareholders, for 2016 was € 1,629 million (2015: € 1,115 million), resulting in earnings per share of € 3.75 (2015: € 2.56).

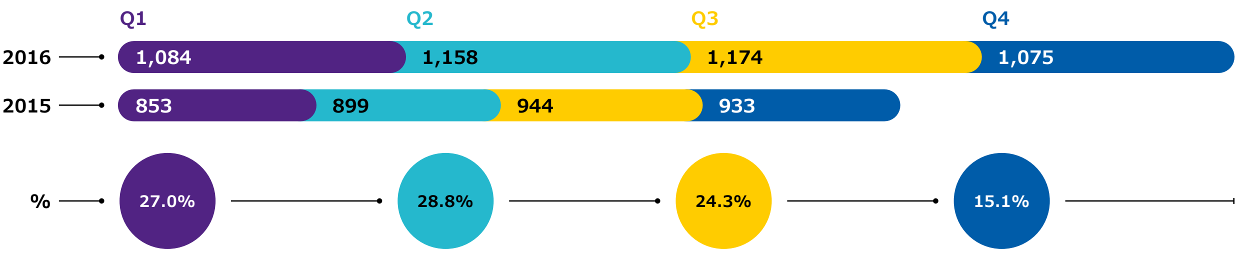
EBITDA pre exceptionals, the key financial indicator used to steer operating business, grew by € 861 million or 23.7% to € 4,490 million (2015: € 3,630 million). The resulting EBITDA margin pre exceptionals thus increased by nearly two percentage points to 29.9% (2015: 28.3%). The reconciliation of the operating result (EBIT) to EBITDA pre exceptionals is presented in the chapter entitled "Internal Management System".

The development of EBITDA pre exceptionals in the individual quarters in comparison with 2015 as well as the respective growth rates are presented in the following overview:

MERCK GROUP

EBITDA pre exceptionals and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

The increase in Group EBITDA pre exceptionals was driven especially by the Life Science business sector, which in 2016 generated an increase of € 796 million or 93.0% to € 1,652 million (2015: € 856 million). Consequently, the share of Group EBITDA pre exceptionals accounted for by Life Science (excluding the € – 396 million decline due to Corporate and Other) rose significantly to 34% (2015: 22%). Yet EBITDA pre exceptionals of the Healthcare business sector also rose by 6.3% to € 2,128 million (2015: € 2,002 million). In 2016, Healthcare generated a 43% share of this Group key indicator, thus remaining Merck's most profitable business sector in absolute terms. EBITDA pre exceptionals of the Performance Materials business sector decreased slightly to € 1,106 million and did not fully reach the high year-earlier level (2015: € 1,132 million). The percentage contribution of Performance Materials to Group EBITDA pre exceptionals declined in 2016 to 23% (2015: 28%).

MERCK GROUP

EBITDA pre exceptionals by business sector – 2016

€ million / in %

Not presented: Decline in Group EBITDA pre exceptionals by € – 396 million due to Corporate and Other.

Net assets and financial position

MERCK GROUP
Balance sheet structure

	Dec. 31, 2016		Dec. 31, 2015[1]		Change	
	€ million	in %	€ million	in %	€ million	in %
Non-current assets	**30,582**	**79.9%**	**30,737**	**80.7%**	**–155**	**–0.5%**
of which:						
Intangible assets	24,989		25,422		–433	
Property, plant and equipment	4,230		4,008		222	
Other non-current assets	1,363		1,308		55	
Current assets	**7,670**	**20.1%**	**7,344**	**19.3%**	**325**	**4.4%**
of which:						
Inventories	2,607		2,610		–3	
Trade accounts receivable	2,889		2,738		151	
Current financial assets	145		227		–82	
Other current assets	1,089		937		152	
Cash and cash equivalents	939		832		107	
Total assets	**38,251**	**100.0%**	**38,081**	**100.0%**	**170**	**0.4%**
Equity	**14,050**	**36.7%**	**12,855**	**33.8%**	**1,195**	**9.3%**
Non-current liabilities	**15,115**	**39.5%**	**15,842**	**41.6%**	**–727**	**–4.6%**
of which:						
Provisions for pensions and other post-employment benefits	2,313		1,836		477	
Other non-current provisions	834		855		–22	
Non-current financial liabilities	8,809		9,616		–807	
Other non-current liabilities	3,159		3,535		–376	
Current liabilities	**9,086**	**23.8%**	**9,384**	**24.6%**	**–298**	**–3.2%**
of which:						
Current provisions	412		536		–124	
Current financial liabilities	3,788		4,097		–309	
Trade accounts payable	2,048		1,921		127	
Other current liabilities	2,838		2,830		8	
Total liabilities and equity	**38,251**	**100.0%**	**38,081**	**100.0%**	**170**	**0.4%**

[1] Previous year's figures have been adjusted, see "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements.

The total assets of the Merck Group amounted to € 38,251 million as of December 31, 2016. This represents an increase of € 170 million or 0.4% over December 31, 2015 (€ 38,081 million).

Despite the expansion of the operating businesses, at € 3,486 million working capital remained at the level of 2015.

MERCK GROUP
Working capital

€ million	Dec. 31, 2016	Dec. 31, 2015[1]	Change € million	Change in %
Trade accounts receivable	2,889	2,738	151	5.5%
Receivables from royalties and licenses	38	11	26	>100.0%
Inventories	2,607	2,610	–3	–0.1%
Trade accounts payable	–2,048	–1,921	–127	6.6%
Working capital	**3,486**	**3,438**	**47**	**1.4%**

[1] Previous year's figures have been adjusted, see "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements.

Net financial debt, which rose sharply in 2015 owing to the acquisition of Sigma-Aldrich, was lowered in 2016 by € 1,141 million to € 11,513 million (December 31, 2015: € 12,654 million). The composition and the development of net financial debt were as follows:

MERCK GROUP
Net financial debt

€ million	Dec. 31, 2016	Dec. 31, 2015	Change € million	Change in %
Bonds and commercial paper	9,650	9,851	–201	–2.0%
Bank loans	1,978	3,006	–1,028	–34.2%
Liabilities to related parties	758	578	180	31.1%
Loans from third parties and other financial liabilities	80	89	–10	–10.9%
Liabilities from derivatives (financial transactions)	128	184	–55	–30.2%
Finance lease liabilities	4	5	–1	–25.0%
Financial liabilities	**12,597**	**13,713**	**–1,116**	**–8.0%**
less				
Cash and cash equivalents	939	832	107	12.8%
Current financial assets	145	227	–82	–36.0%
Net financial debt	**11,513**	**12,654**	**–1,141**	**–9.0%**

MERCK GROUP

Reconciliation of net financial debt

€ million	2016	2015
January 1	**12,654**	**559**
Currency translation difference	118	–737
Dividend payments to shareholders and to E. Merck[1]	600	568
Acquisitions[1]	156	13,482
Assumption of financial liabilities from Sigma-Aldrich	–	425
Payment from the disposal of assets held for sale and from other divestments[1]	–366	–86
Free cash flow	–1,693	–1,539
Other	44	–19
December 31	**11,513**	**12,654**

[1] According to the consolidated cash flow statement.

The strong increase in pension provisions to € 2,313 million (December 31, 2015: € 1,836 million) was mainly attributable to 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 Merck Group as of December 31, 2016. In addition, dividend payments and the profit transfer to E. Merck KG caused equity to decline. These equity-lowering effects were more than offset by the profit after tax amounting to € 1,633 million and the development of currency translation differences from the translation of assets held in foreign currencies into euro, the reporting currency. Consequently, equity increased in 2016 by € 1,195 million to € 14,050 million (December 31, 2015: € 12,855 million) (see "Consolidated Statement of Comprehensive Income" and "Consolidated Statement of Changes in Net Equity" in the Consolidated Financial Statements). Thanks to the sharp increase in equity, the equity ratio rose by nearly three percentage points, amounting to 36.7% as of December 31, 2016 (December 31, 2015: 33.8%).

Driven by the positive development of net cash flows from operating activities, free cash flow rose by 10.0% over 2015 to € 1,693 million, despite strong investment activity. The composition as well as the development of the relevant items are presented in the following table:

MERCK GROUP

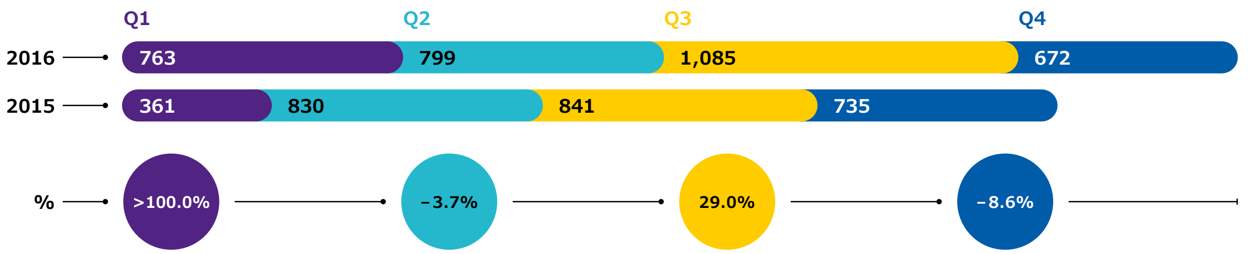
Free cash flow

			Change	
€ million	2016	2015	€ million	in %
Cash flow from operating activities according to the cash flow statement	2,518	2,195	323	14.7%
Payments for investments in intangible assets	–132	–179	47	–26.3%
Payments from the disposal of intangible assets	2	27	–26	–93.4%
Payments for investments in property, plant and equipment	–716	–514	–202	39.3%
Payments from the disposal of property, plant and equipment	21	9	12	>100.0%
Free cash flow	**1,693**	**1,539**	**155**	**10.0%**

Business free cash flow of the Merck Group rose in 2016 by 20.0% to € 3,318 million (2015: € 2,766 million). This was mainly driven by the positive development of EBITDA pre exceptionals. The composition of this financial indicator is presented in the Group management report under "Internal Management System".

The distribution of business free cash flow across the individual quarters and the percentage changes in comparison with 2015 were as follows:

MERCK GROUP
Business free cash flow and change by quarter[1]
€ million / change in %



[1] Quarterly breakdown unaudited.

MERCK GROUP
Business free cash flow by business sector – 2016
€ million / in %

Not presented: Decline in Group business free cash flow by € –485 million due to Corporate and Other.

All the business sectors contributed to the increase in Group business free cash flow in 2016. Healthcare generated business free cash flow of € 1,648 million (2015: € 1,581 million). Consequently, with a 43% share (2015: 50%) of Group business free cash flow (excluding the decline of € –485 million due to Corporate and Other) Healthcare was once again the business sector with the highest cash flows. In 2016, the Life Science business sector achieved a 69.3% increase in business free cash flow to € 1,144 million (2015: € 676 million), thus also increasing its share of Group business free cash flow to 30% (2015: 21%). Performance Materials contributed € 1,011 million (2015: € 931 million) to this Group financial indicator, equivalent to 27% (2015: 29%).

The investments in property, plant, equipment and software included in the calculation of business free cash flow as well as advance payments for intangible assets increased in 2016 by 41.1% to a total of € 859 million (2015: € 609 million). The investments in property, plant and equipment included therein amounted to € 722 million in 2016 (2015: € 564 million), € 332 million of which was attributable to strategic investment projects each with a project volume of more than € 2 million; the remainder was attributable to smaller capital spending projects.

In 2016, strategic investments of € 110 million were made to expand the Darmstadt site. Of this amount, € 39 million was used to upgrade global headquarters; the projects include an Innovation Center, a Visitor Center and an employee cafeteria, among other things. Moreover, OLED production capacity in the Performance Materials business sector was expanded with an investment of € 14 million in order to meet growing market demand. In the Healthcare business sector, investments included € 21 million in a new laboratory building for pharmaceutical research and € 10 million in a new packaging center.

Globally, the Healthcare business sector made significant strategic investments in a production facility in Nantong, China (€ 39 million), a new packaging plant at the Aubonne site in Switzerland (€ 16 million), an expansion of the existing filling plant at the Bari site in Italy (€ 11 million), and a new production unit for the Allergopharma business in Reinbek, Germany (€ 10 million).

In 2016, the outlooks for our long-term credit ratings were upgraded by the two rating agencies Moody's and Standard & Poor's. Merck currently has a rating of "A" with a stable outlook (2015: "A" with a negative outlook) from Standard & Poor's and a "Baa1" rating with a stable outlook (2015: "Baa1" with a negative outlook) from Moody's. In 2016, the rating agency Scope began covering our credit rating and issued Merck an "A-" rating with a stable outlook. An overview of the development of our rating in recent years is presented in the Report on Risks and Opportunities.

The development of key balance sheet figures is as follows:

MERCK GROUP

Key balance sheet figures

in %		**Dec. 31, 2016**	Dec. 31, 2015[1]	Dec. 31, 2014	Dec. 31, 2013	Dec. 31, 2012
Equity ratio	Equity / Total assets	36.7%	33.8%	45.4%	53.2%	48.1%
Asset ratio	Non-current assets / Total assets	79.9%	80.7%	59.7%	64.5%	69.4%
Asset coverage	Equity / Non-current assets	45.9%	41.8%	76.0%	82.4%	69.4%
Finance structure	Current liabilities / Liabilities (total)	37.5%	37.2%	46.5%	40.0%	40.6%

[1] Previous year's figures have been adjusted, see "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements.

Overall assessment of business performance and economic situation

For Merck, 2016 was another very successful year. The very good performance of operating business confirms our strategy. Despite growing global uncertainties, we reached or exceeded the objectives we had set for 2016. Group net sales showed profitable growth, reaching a new record level of € 15,024 million (2015: € 12,845 million). This was the outcome of both the company's own strengths and acquisitions. EBITDA pre exceptionals rose by 23.7% to € 4,490 million (2015: € 3,630 million), growing even more strongly than net sales, which increased in 2016 by 17.0%. Thanks to internal financing strength, we succeeded in lowering net financial debt from the Sigma-Aldrich acquisition by € 1,141 million.

Our three business sectors made significant progress in 2016. Healthcare advanced its pharmaceutical pipeline and achieved important milestones towards the market launch of new medicines. In 2016, Life Science generated a strong organic sales increase of 6.3%, thus growing faster than the market. The business sector was very successful in realizing the synergies from the Sigma-Aldrich integration in 2016. We made better progress than originally expected both in leveraging cost synergies and in realizing sales synergies. The Performance Materials business sector again demonstrated its sound earnings resilience in 2016. Future-oriented investments further boosted the innovative strength of this business sector. Among other things, an OLED materials production unit was commissioned in Darmstadt in 2016. In addition, Performance Materials sustainably secured its market leadership in Display Materials.

Our solid accounting and finance policy is reflected by the very good key balance sheet figures. The equity ratio, which improved to 36.7% as of December 31, 2016, is at a very good level. The rapid reduction of net financial debt, which rose massively in 2015 owing to the acquisition of Sigma-Aldrich, remains a key priority. This is also reflected by the improved assessments of the two rating agencies Standard & Poor's ("A" with a stable outlook; 2015: "A" with a negative outlook) and Moody's ("Baa1" with a stable outlook; 2015: "Baa1" with a negative outlook). In 2016, the rating agency Scope began covering the Group's credit rating and issued Merck an "A-" rating with a stable outlook.

Against the backdrop of the solid net assets and financial position as well as the earnings strength of the businesses, we assess the economic position of the Merck Group very positively. The excellent condition Merck is in offers a superb foundation for the achievement of further sustainable and profitable growth.

Healthcare

HEALTHCARE
Key figures

€ million	2016	2015	Change € million	Change in %
Net sales	6,855	6,934	–79	–1.1%
Operating result (EBIT)	1,593	1,097	497	45.3%
Margin (% of net sales)[1]	23.2%	15.8%		
EBITDA	2,425	1,970	454	23.0%
Margin (% of net sales)[1]	35.4%	28.4%		
EBITDA pre exceptionals	2,128	2,002	126	6.3%
Margin (% of net sales)[1]	31.0%	28.9%		
Business free cash flow	1,648	1,581	67	4.2%

Development of net sales and results of operations

In 2016, the Healthcare business sector generated organic sales growth of 4.6%. Negative exchange rate effects of –4.6% and a negative portfolio effect of –1.1% led to an overall decline in net sales of –1.1% to € 6,855 million (2015: € 6,934 million). Nearly all the franchises contributed to the business sector's organic growth. In particular, products to treat infertility (Gonal-f®), thyroid disorders (Euthyrox®), growth disorders (Saizen®), and the strategic core brand Neurobion® from the Consumer Health business performed well in 2016. Erbitux®, the business sector's second-largest product in terms of sales, also generated slight organic sales growth. Only Rebif®, the top-selling drug within Healthcare, sustained a slight organic decline. The negative exchange rate effects were mainly due to the development of Latin American currencies. However, the decline in the value of the British pound against the euro also contributed slightly to the exchange rate effects. The negative portfolio effect was attributable to the return of the rights to Kuvan® to BioMarin Pharmaceutical, Inc., USA, at the beginning of 2016.

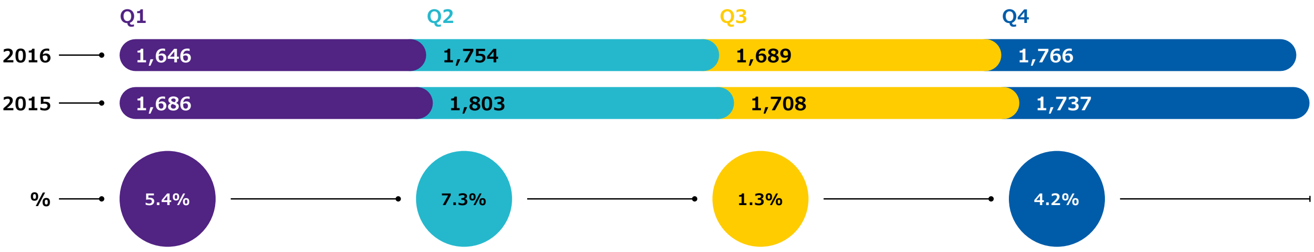
Commission income, which is also included in net sales, rose to € 178 million in 2016 (2015: € 103 million). The increase was driven in particular by profit-sharing from the co-commercialization of Xalkori® with Pfizer, Inc., USA. The agreement reached with Bristol-Myers Squibb Company, USA, in 2013 on the co-promotion of Glucophage® in China continued to have a positive effect on commission income.

The development of sales in the individual quarters as well as the respective organic growth rates in 2016 are presented in the following overview:

HEALTHCARE

Net sales and organic growth by quarter[1]

€ million / organic growth in %

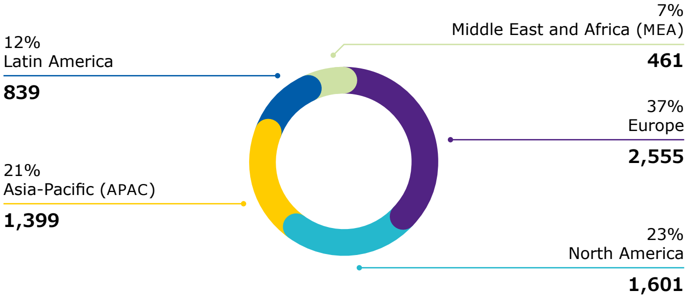


[1] Quarterly breakdown unaudited.

HEALTHCARE

Net sales by region – 2016

€ million / % of net sales of the business sector



Europe, which remained the Healthcare business sector's largest region accounting for 37% of net sales (2015: 39%), registered an organic sales decline of –2.5%. Consequently, net sales totaled € 2,555 million (2015: € 2,729 million). The organic decline was driven in particular by the continued difficult competitive situation for both Rebif® and Erbitux®. Furthermore, negative exchange rate effects of –1.6% and a portfolio effect of –2.3% resulted in an overall decline in net sales of –6.4%.

In North America, the second-largest region in terms of sales, organic growth of 11.1% led to net sales of € 1,601 million (2015: € 1,430 million). This development was mainly driven by the double-digit organic growth of Gonal-f®, a hormone used in the treatment of infertility, due to the favorable competitive situation that we benefited from throughout 2016. Organic and currency-related sales growth of Rebif® as well as organic sales growth of Saizen® continued to have a positive effect on the performance of sales in this region. North America's contribution to net sales of the Healthcare business sector thus increased to 23% (2015: 21%).

In the Asia-Pacific region, organic sales growth of 9.4% was recorded in 2016. This development was mainly attributable to higher sales of Gonal-f® and Euthyrox®, higher commission income from the co-promotion of Glucophage® with Bristol-Myers Squibb in China, as well as the growth of the Consumer Health business. In 2016, this region's share of the business sector's net sales further increased to 21% (2015: 19%).

Sales in Latin America amounted to € 839 million in 2016 and were thus below the previous year's level (2015: € 1,022 million). Positive organic growth of 7.7% could not offset the negative foreign exchange impact of –25.5%. Organic growth was generated by all franchises, in particular with Rebif®, Erbitux® and Euthyrox®, as well as in the Consumer Health business with the strategic brand Neurobion®. Overall, Asia-Pacific's contribution to the net sales of the Healthcare business sector declined to 12% (2015: 15%).

In 2016, the Middle East and Africa region achieved organic sales growth of 5.5%, with net sales totaling € 461 million (2015: € 450 million). Double-digit organic growth in particular with Rebif®, Erbitux®, Concor®, and Euthyrox® compensated for the organic decline in sales of Glucophage® and negative exchange rate effects of –1.8%.

HEALTHCARE

Net sales components by region – 2016

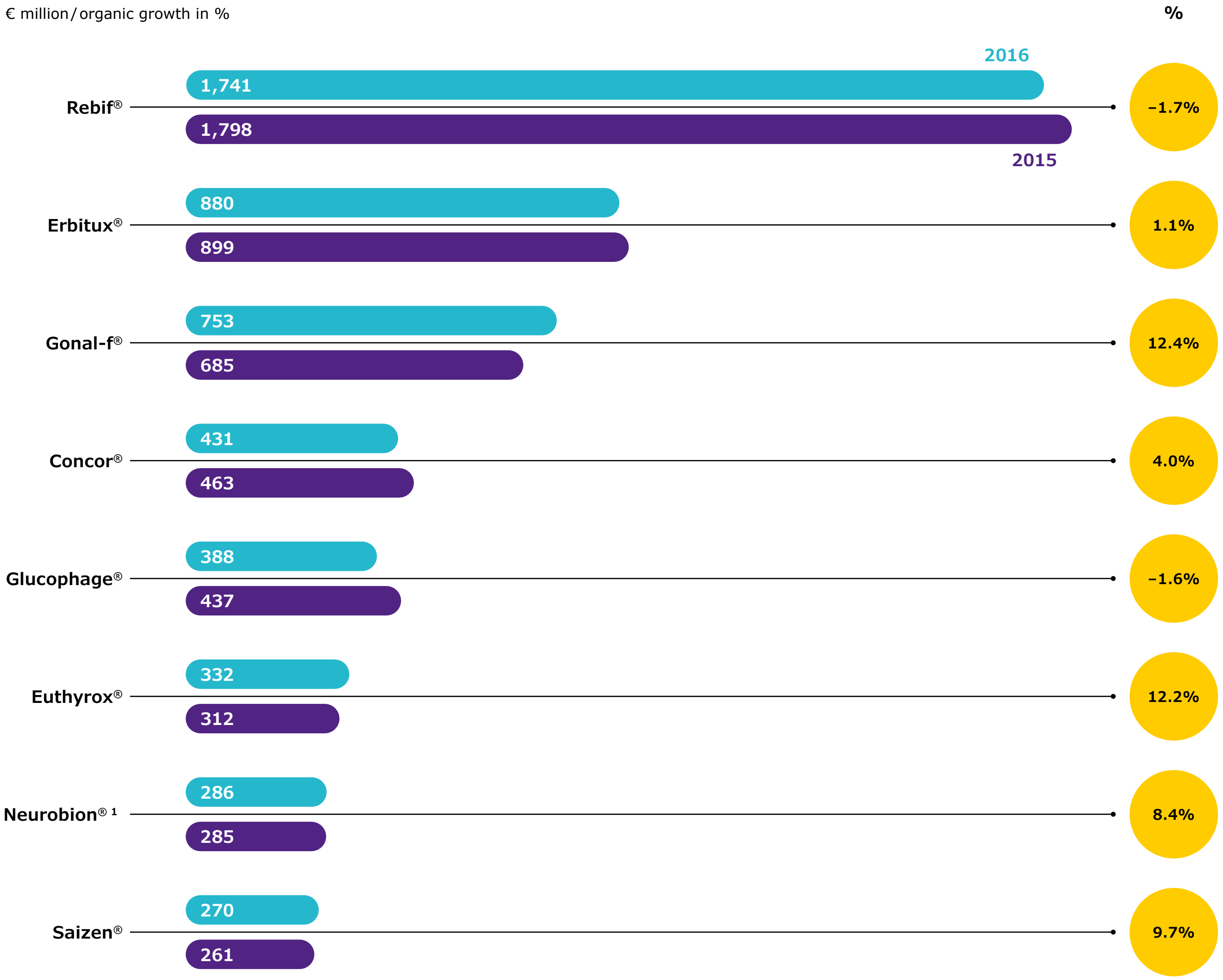
€ million / change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions / divestments	Total change
Europe	2,555	–2.5%	–1.6%	–2.3%	–6.4%
North America	1,601	11.1%	0.8%	–	11.9%
Asia-Pacific (APAC)	1,399	9.4%	–1.2%	–0.8%	7.4%
Latin America	839	7.7%	–25.5%	–0.1%	–17.9%
Middle East and Africa (MEA)	461	5.5%	–1.8%	–1.2%	2.4%
Healthcare	**6,855**	**4.6%**	**–4.6%**	**–1.1%**	**–1.1%**

Net sales and organic growth rates of the key products developed in 2016 as follows:

HEALTHCARE

Product sales and organic growth

€ million / organic growth in %



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

Sales of the drug Rebif®, which is used to treat relapsing forms of multiple sclerosis, only sustained a slight organic sales decline of −1.7% in 2016 despite continued competitive pressure from oral formulations. Including negative exchange rate effects of −1.5%, sales totaled € 1,741 million (2015: € 1,798 million).

The North America region, which generated 61% of Rebif® sales (2015: 58%) and is the largest market for this product, delivered organic growth of 2.1%. This was primarily due to favorable price developments in the United States in 2016, which slightly offset the decline in volumes.

In Europe, which accounts for 30% of sales (2015: 34%) and is the Healthcare business sector's second largest region, sales saw a significant organic decline of −12.2% to € 524 million (2015: € 605 million). This development was due in particular to the difficult competitive situation and the associated decline in volumes.

Together, the remaining regions Latin America, Middle East and Africa, and Asia-Pacific generated € 145 million (2015: € 151 million) in Rebif® sales, equivalent to a 9% share (2015: 8%).

In 2016, sales of the oncology drug Erbitux® totaled € 880 million (2015: € 899 million). Organic growth of 1.1% was fully canceled out by negative foreign exchange effects of −3.2%.

In Europe, which accounted for 54% of Erbitux® sales (2015: 55%) and is thus the top-selling region for this product, sales decreased organically by −3.4%. The organic decline was mainly attributable to the challenging competitive situation as well as mandatory price reductions in several countries. Including negative foreign exchange effects of −1.9%, sales in Europe declined to € 470 million (2015: € 496 million).

In the Asia-Pacific region, which accounted for a 32% (2015: 29%) share of net sales, Erbitux® sales increased to € 280 million (2015: 265 million). Here, both organic growth of 2.8% and currency tailwinds of 2.8% had a positive effect on the development of sales.

In Latin America, sales declined to € 73 million (2015: € 87 million) despite double-digit organic growth of 14.5%. This was due to negative foreign exchange effects of −30.4%, which were predominantly attributable to the development of the Argentinian peso against the euro.

The Middle East and Africa region generated double-digit organic growth of 13.2%, with sales amounting to € 56 million (2015: € 50 million).

HEALTHCARE

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

		Total	Europe	North America	Asia-Pacific (APAC)	Latin America	Middle East and Africa (MEA)
Rebif®	€ million	1,741	524	1,071	14	64	67
	Organic growth in %	−1.7%	−12.2%	2.1%	−11.7%	20.2%	15.3%
	% of sales	100%	30%	61%	1%	4%	4%
Erbitux®	€ million	880	470	–	280	73	56
	Organic growth in %	1.1%	−3.4%	–	2.8%	14.5%	13.2%
	% of sales	100%	54%	–	32%	8%	6%

In 2016, the Healthcare business sector generated organic sales growth of 12.4% with Gonal-f®, the leading recombinant hormone used in the treatment of infertility. Taking negative foreign exchange effects of −2.5% into account, sales of this product rose to € 753 million (2015: € 685 million). This development was mainly driven by organic growth of 47.7% in North America, as a consequence of the continued favorable competitive situation from which we benefited throughout 2016. Likewise, sales rose organically in the Asia-Pacific region by 9.6%, which more than offset the −3.5% organic decline in sales in Europe. The other products in the Fertility portfolio also developed positively.

Sales by the Endocrinology franchise, which mainly consists of products to treat growth disorders, amounted to € 404 million and were thus lower than the previous year's level (2015: € 461 million). This decrease in sales was primarily due to the return of the rights to Kuvan® to BioMarin Pharmaceutical, which was reflected in the portfolio effect of −15.8% and canceled out organic growth of 6.7%. The growth hormone Saizen®, which is the top-selling product in the franchise, delivered organic growth of 9.7%, resulting in net sales of € 270 million (2015: € 261 million).

Sales by the General Medicine franchise (including CardioMetabolic Care), which commercializes products to treat cardiovascular diseases and diabetes, among other things, declined to € 1,720 million (2015: € 1,791 million[1]). Organic growth of 4.2% was canceled out by negative foreign exchange effects of –7.9%. In particular Euthyrox®, a drug to treat thyroid disorders, showed solid performance with organic growth of 12.2%. Including currency headwinds of –5.9%, this led to sales of € 332 million (2015: € 312 million), which were mainly driven by performance in the Chinese market. Product sales of Glucophage® fell owing to an organic decline of –1.6% and negative exchange rate effects of –9.4%. However, commission income for Glucophage® rose, amounting to € 106 million (2015: € 86 million), which corresponded to an organic increase of 24.3% and was also driven by performance in China. Concor® delivered organic growth of 4.0% in 2016. Currency headwinds of –10.9% were responsible for the year-on-year decline in sales to € 431 million (2015: € 463 million).

The Consumer Health business with over-the-counter pharmaceuticals posted organic sales growth of 3.4% in 2016. Owing to negative exchange rate effects, net sales declined to € 860 million (2015: € 905 million[1]). In particular, the strategic brand Neurobion® contributed to organic growth.

The results of operations developed as follows:

HEALTHCARE

Results of operations

					Change	
€ million	**2016**	**in %**	2015	in %	€ million	in %
Net sales	**6,855**	**100.0%**	**6,934**	**100.0%**	**–79**	**–1.1%**
Cost of sales	–1,377	–20.1%	–1,442	–20.8%	66	–4.6%
(of which: amortization of intangible assets)²	*(–1)*		*(–1)*		*(–)*	*(–1.6%)*
Gross profit	**5,478**	**79.9%**	**5,491**	**79.2%**	**–13**	**–0.2%**
Marketing and selling expenses	–2,587	–37.7%	–2,801	–40.4%	214	–7.6%
(of which: amortization of intangible assets)²	*(–565)*		*(–566)*		*(–)*	*(–0.1%)*
Administration expenses	–270	–3.9%	–259	–3.7%	–10	4.0%
Research and development costs	–1,496	–21.8%	–1,310	–18.9%	–186	14.2%
(of which: amortization of intangible assets)²	*(–1)*		*(–1)*		*(–)*	*(1.4%)*
Other operating expenses and income	468	6.8%	–24	–0.3%	492	>100.0%
Operating result (EBIT)	**1,593**	**23.2%**	**1,097**	**15.8%**	**497**	**45.3%**
Depreciation/amortization/impairment losses/reversals of impairment losses	831	12.1%	874	12.6%	–42	–4.9%
(of which: exceptionals)	*(71)*		*(90)*		*(–19)*	*(–21.0%)*
EBITDA	**2,425**	**35.4%**	**1,970**	**28.4%**	**454**	**23.0%**
Restructuring costs	12		30		–18	–59.7%
Integration costs/IT costs	18		1		17	>100.0%
Gains/losses on the divestment of businesses	–330		–		–330	–
Acquisition-related exceptionals	–		–		–	–
Other exceptionals	3		–		3	–
EBITDA pre exceptionals	**2,128**	**31.0%**	**2,002**	**28.9%**	**126**	**6.3%**

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

In 2016, the gross profit of the Healthcare business sector amounted to € 5,478 million (2015: € 5,491 million), thus remaining stable at the previous year's level despite the slight decline in sales. The resulting gross margin increased slightly to 79.9% (2015: 79.2%).

Marketing and selling expenses decreased to € 2,587 million (2015: € 2,801 million), which was primarily due to the termination of the co-promotion agreement with Pfizer for Rebif® in the United States at the end of 2015.

[1] 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.

The ratio of research and development spending to net sales rose to 21.8% (2015: 18.9%), reflecting higher R&D costs of € 1,496 million in 2016 (2015: € 1,310 million). The increase was due to projects in clinical development, in particular in immuno-oncology among other things as part of the avelumab program. In addition, work on early-stage projects was intensified. The release of provisions for the follow-on costs of discontinued R&D projects had a positive effect. In 2016, provisions amounting to € 57 million were released. These were originally set up in connection with the termination of clinical development projects in previous years, for example evofosfamide.

The changes in other operating income and expenses mainly reflect items eliminated in the calculation of EBITDA pre exceptionals. Other operating expenses and income included, among other things, the impairment loss on the co-commercialization right for Xalkori® (€ 71 million) as well as the gain from returning the rights to Kuvan® to BioMarin Pharmaceutical (€ 330 million) and the divestment of a minority shareholding (€ 30 million). In addition, royalty and license income for Avonex® and Plegridy® (both Biogen Inc.) reported under other operating income rose by € 47 million in comparison with 2015 owing to a patent granted at the end of June 2016 in the United States.

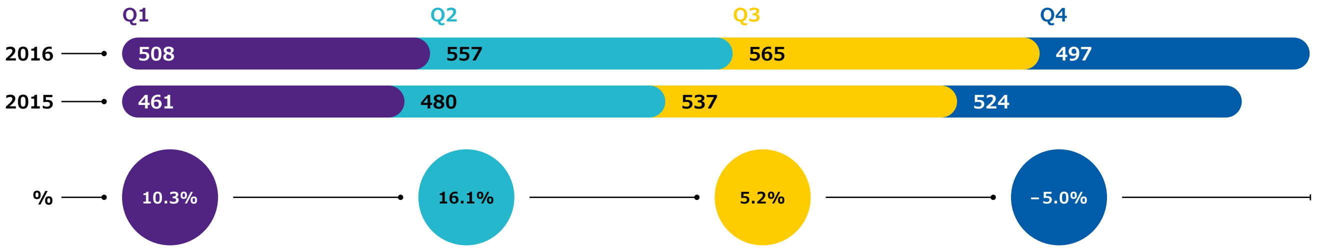
Overall, Healthcare generated an increase in EBITDA pre exceptionals to € 2,128 million (2015: € 2,002 million). The resulting EBITDA margin pre exceptionals was 31.0% (2015: 28.9%).

The development of EBITDA pre exceptionals in the individual quarters in comparison with 2015 is presented in the following overview:

HEALTHCARE

EBITDA pre exceptionals and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

Development of business free cash flow

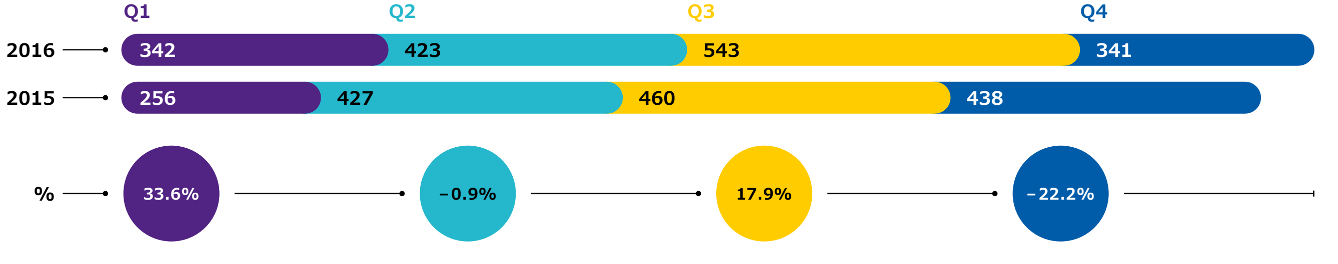
In 2016, business free cash flow of the Healthcare business sector amounted to € 1,648 million (2015: € 1,581 million). The increase in this key figure was primarily due to the rise in EBITDA pre exceptionals. Higher capital spending, driven in particular by investments at the Darmstadt site, reduced business free cash flow.

HEALTHCARE
Business free cash flow

€ million	2016	2015	Change € million	Change in %
EBITDA pre exceptionals	2,128	2,002	126	6.3%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–348	–289	–59	20.4%
Changes in inventories	–38	–27	–11	40.5%
Changes in trade accounts receivable as well as receivables from royalties and licenses	–94	–105	11	–10.2%
Business free cash flow	**1,648**	**1,581**	**67**	**4.2%**

The development of business free cash flow in the individual quarters in comparison with 2015 is presented in the following overview:

HEALTHCARE
Business free cash flow and change by quarter[1]
€ million / change in %



[1] Quarterly breakdown unaudited.

Life Science

LIFE SCIENCE

Key figures

€ million	2016	2015	Change € million	Change in %
Net sales	5,658	3,355	2,303	68.6%
Operating result (EBIT)	556	301	256	85.0%
Margin (% of net sales)	9.8%	9.0%		
EBITDA	1,378	674	704	>100.0%
Margin (% of net sales)	24.4%	20.1%		
EBITDA pre exceptionals	1,652	856	796	93.0%
Margin (% of net sales)	29.2%	25.5%		
Business free cash flow	1,144	676	468	69.3%

Development of sales and results of operations

In 2016, Life Science posted organic sales growth of 6.3%. In addition to organic growth, sales increased by 63.1% or € 2,119 million due to the acquisition of Sigma-Aldrich whereas foreign exchange had a slightly negative impact of – 0.8% or € – 28 million. Taking these effects into account, Life Science net sales increased overall by 68.6% to € 5,658 million in 2016 (2015: € 3,355 million).

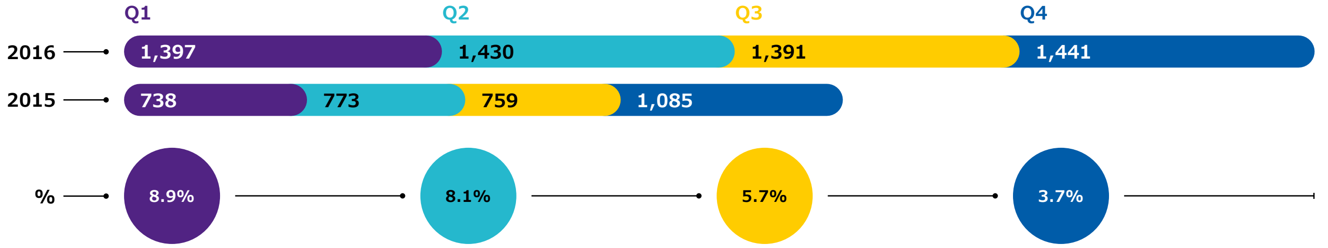
All three business areas contributed favorably to the organic growth of the Life Science business sector in 2016. In particular, the Process Solutions business area generated double-digit organic sales growth of 10.5%, thanks to high demand across the portfolio. Applied Solutions continued to perform well, posting organic growth of 4.3%. Research Solutions generated an organic increase of 1.2%.

The development of sales in the individual quarters are presented in the following overview:

LIFE SCIENCE

Net sales and organic growth by quarter[1]

€ million / organic growth in %

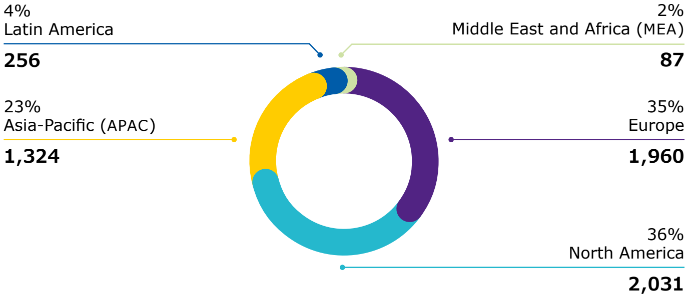


[1] Quarterly breakdown unaudited.

LIFE SCIENCE

Net sales by region – 2016

€ million / % of net sales of the business sector



From a geographic perspective, all regions – with the exception of North America – contributed positively to the organic sales growth of Life Science.

In Europe, sales increased organically by 11.0%, with the Process Solutions and Research Solutions business areas generating double-digit organic growth of 16.9% and 10.4%, respectively, while Applied Solutions posted moderate organic growth of 3.2%. Overall, sales in Europe increased to € 1,960 million (2015: € 1,168 million), which in addition to organic growth included a sales increase of € 677 million due to the Sigma-Aldrich acquisition, corresponding to an overall contribution of 35% (2015: 35%) of Life Science net sales in 2016.

North America was the Life Science business sector's largest geographic market, accounting for 36% (2015: 33%) of net sales. The organic sales decline of −1.3% in North America was primarily attributable to Research Solutions and soft market demand in the region. By contrast, Applied Solutions and Process Solutions contributed positively to organic growth. Overall, sales in North America rose to € 2,031 million (2015: € 1,098 million), which in addition to organic growth includes an acquisition-related increase of € 936 million due to Sigma-Aldrich as well as a slightly positive exchange rate effect.

Within Asia-Pacific, sales grew organically by 8.1%, with all businesses contributing favorably. Growth was primarily driven by Process Solutions. Overall, sales in Asia-Pacific rose to € 1,324 million (2015: € 831 million), which in addition to organic growth includes an acquisition-related sales increase of € 420 million due to the acquisition of Sigma-Aldrich, representing an overall contribution of 23% (2015: 25%) to Life Science net sales in 2016.

In Latin America, Life Science reported double-digit organic growth of 12.7%, primarily driven by the Applied Solutions business area. In addition to organic growth, the acquisition-related sales contribution by Sigma-Aldrich increased sales by € 55 million to € 256 million (2015: € 203 million). Currency headwinds of −13.9% lowered sales growth. Latin America accounted for 4% (2015: 6%) of Life Science net sales in 2016.

The Middle East and Africa (MEA) region posted strong organic sales growth of 6.9%. Net sales for the region grew to € 87 million (2015: € 55 million) and included a sales increase of € 31 million due to the acquisition of Sigma-Aldrich.

LIFE SCIENCE

Net sales components by region – 2016

€ million / change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions / divestments	Total change
Europe	1,960	11.0%	−1.2%	58.0%	67.8%
North America	2,031	−1.3%	1.0%	85.2%	84.9%
Asia-Pacific (APAC)	1,324	8.1%	0.7%	50.5%	59.3%
Latin America	256	12.7%	−13.9%	26.9%	25.7%
Middle East and Africa (MEA)	87	6.9%	−4.5%	57.4%	59.8%
Life Science	**5,658**	**6.3%**	**−0.8%**	**63.1%**	**68.6%**

The Process Solutions business area, which markets products and services for the pharmaceutical production value chain, generated organic sales growth of 10.5%. Including the acquisition-related sales increase (€ 505 million), net sales amounted to € 2,146 million (2015: € 1,492 million). The share of sales generated by Process Solutions represented 38% (2015: 45%) of Life Science net sales. All Process Solutions businesses contributed to this strong performance.

The Research Solutions business area, which provides products and services to support life science research for pharmaceutical, biotechnology and academic research laboratories, posted slight organic growth of 1.2% in 2016. Research Solutions suffered weak demand in the Biology business and faced a difficult market environment in North America. However, including Sigma-Aldrich acquisition-related sales (€ 1,239 million), sales increased to € 2,055 million (2015: € 814 million) representing 36% (2015: 24%) of Life Science sales.

The Applied Solutions business area generated organic sales growth of 4.3% with its broad range of products for researchers and scientific laboratories. Taking the Sigma-Aldrich acquisition-related sales into account (€ 374 million), net sales amounted to € 1,457 million (2015: € 1,050 million). The sales performance of Applied Solutions was primarily driven by the Analytical and Biomonitoring portfolios.

LIFE SCIENCE

Net sales components by business area[1] – 2016

€ million/change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions/divestments	Total change
Process Solutions	2,146	10.5%	–0.5%	33.9%	43.8%
Research Solutions	2,055	1.2%	–1.0%	152.3%	152.6%
Applied Solutions	1,457	4.3%	–1.1%	35.6%	38.8%

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

The results of operations developed as follows:

LIFE SCIENCE

Results of operations

€ million	**2016**	**in %**	2015	in %	Change € million	Change in %
Net sales	**5,658**	**100.0%**	**3,355**	**100.0%**	**2,303**	**68.6%**
Cost of sales	–2,679	–47.4%	–1,483	–44.2%	–1,197	80.7%
(of which: amortization of intangible assets)[1]	*(–63)*		*(–51)*		*(–12)*	*(23.6%)*
Gross profit	**2,978**	**52.6%**	**1,872**	**55.8%**	**1,106**	**59.1%**
Marketing and selling expenses	–1,706	–30.1%	–1,038	–31.0%	–667	64.2%
(of which: amortization of intangible assets)[1]	*(–453)*		*(–197)*		*(–256)*	*(>100.0%)*
Administration expenses	–248	–4.4%	–151	–4.5%	–96	63.8%
Research and development costs	–260	–4.6%	–197	–5.9%	–62	31.5%
(of which: amortization of intangible assets)[1]	*(–1)*		*(–1)*		*(–)*	*(1.0%)*
Other operating expenses and income	–209	–3.7%	–185	–5.5%	–24	13.3%
Operating result (EBIT)	**556**	**9.8%**	**301**	**9.0%**	**256**	**85.0%**
Depreciation/amortization/impairment losses/reversals of impairment losses	822	14.5%	373	11.1%	448	>100.0%
(of which: exceptionals)	*(27)*		*(1)*		*(26)*	*(>100.0%)*
EBITDA	**1,378**	**24.4%**	**674**	**20.1%**	**704**	**>100.0%**
Restructuring costs	1		7		–6	–83.5%
Integration costs/IT costs	122		43		79	>100.0%
Gains/losses on the divestment of businesses	–		–		–	–
Acquisition-related exceptionals	150		132		18	14.0%
Other exceptionals	–		–		–	–
EBITDA pre exceptionals	**1,652**	**29.2%**	**856**	**25.5%**	**796**	**93.0%**

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

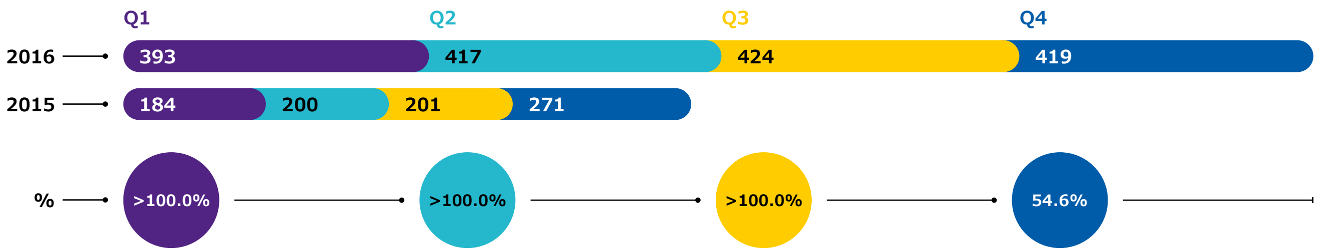
Throughout 2016, the primary focus for the Life Science business sector was the integration of Sigma-Aldrich. Gross profit rose by 59.1% to € 2,978 million (2015: € 1,872 million). This tremendous increase was mainly attributable to strong organic sales growth and the acquisition of Sigma-Aldrich. The increases in marketing and selling expenses, administration expenses and R&D costs in 2016 were mainly due to the consolidation of Sigma-Aldrich. 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 comparison with 2015, the operating result (EBIT) of Life Science rose by € 256 million to € 556 million. After eliminating depreciation and amortization, and adjusting for exceptionals, the key financial indicator EBITDA pre exceptionals rose by 93.0% to € 1,652 million (2015: € 856 million). This reflects the strong performance of both legacy life science businesses of Merck and Sigma-Aldrich.

The development of EBITDA pre exceptionals in the individual quarters in comparison with 2015 is presented in the following overview:

LIFE SCIENCE

EBITDA pre exceptionals and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

Development of business free cash flow

In 2016, the business free cash flow of the Life Science business sector amounted to € 1,144 million, which was 69.3% more than in 2015. This very strong increase was primarily due to the positive development of EBITDA pre exceptionals and was partially offset by higher capital spending.

LIFE SCIENCE

Business free cash flow

			Change	
€ million	**2016**	2015[1]	€ million	in %
EBITDA pre exceptionals	1,652	856	796	93.0%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–313	–150	–163	>100.0%
Changes in inventories	5	–840	845	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	–64	–375	311	–82.8%
Adjustments first-time consolidation of Sigma-Aldrich	–146	1,185	–1,331	>100.0%
Adjustments first-time consolidation of BioControl Systems	10	–	10	>100.0%
Business free cash flow	**1,144**	**676**	**468**	**69.3%**

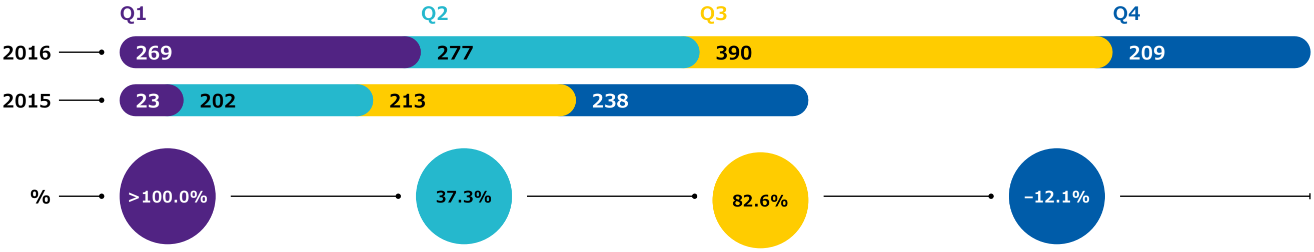
[1] Previous year's figures have been adjusted, see "Acquisitions, assets held for sale and disposal groups" in the Notes to the Consolidated Financial Statements.

The development of business free cash flow in the individual quarters in comparison with 2015 is presented in the following overview:

LIFE SCIENCE

Business free cash flow and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

Performance Materials

PERFORMANCE MATERIALS

Key figures

€ million	2016	2015	Change € million	Change in %
Net sales	2,511	2,556	–45	–1.8%
Operating result (EBIT)	823	878	–55	–6.3%
Margin (% of net sales)	32.8%	34.4%		
EBITDA	1,077	1,120	–43	–3.9%
Margin (% of net sales)	42.9%	43.8%		
EBITDA pre exceptionals	1,106	1,132	–26	–2.3%
Margin (% of net sales)	44.1%	44.3%		
Business free cash flow	1,011	931	80	8.6%

Development of net sales and results of operations

In 2016, net sales of the Performance Materials business sector decreased by –1.8% to € 2,511 million (2015: € 2,556 million). This was mainly due to organic declines in sales (–4.7%) as Display Materials did not reach the level of 2015. The acquisition-related growth from the SAFC Hitech business of Sigma-Aldrich acquired in November 2015 (2.7%) only partially offset the organic decline in sales. Exchange rate effects of 0.2% had only a slight influence on sales in 2016.

The Display Materials business unit, consisting of the Liquid Crystals business and complementary materials, represented more than 50% of the overall net sales of Performance Materials. This business unit saw a significant organic decrease in sales, but continued to defend its market leadership position. The sales decline in 2016 is based on a strong preceding year with consistently high demand for display materials. Despite signs of a recovery, demand remained at a lower level in 2016, among other things as a result of destocking by display industry customers. An exception was the energy-saving UB-FFS technology, which generated double-digit growth along with record sales in the fourth quarter.

The Integrated Circuit Materials (ICM) business unit generated strong organic sales growth, to which all businesses contributed. Particularly high growth rates were generated in the businesses with dielectric materials and deposition materials for chip production. In addition, sales of materials for chemical-mechanical planarization (CMP) of silicon wafers developed well.

The Pigments & Functional Materials business unit generated solid organic growth in 2016. Xirallic® pigments, which are used particularly in automotive coatings, as well as cosmetic actives and technical functional materials contributed significantly to the sales increase.

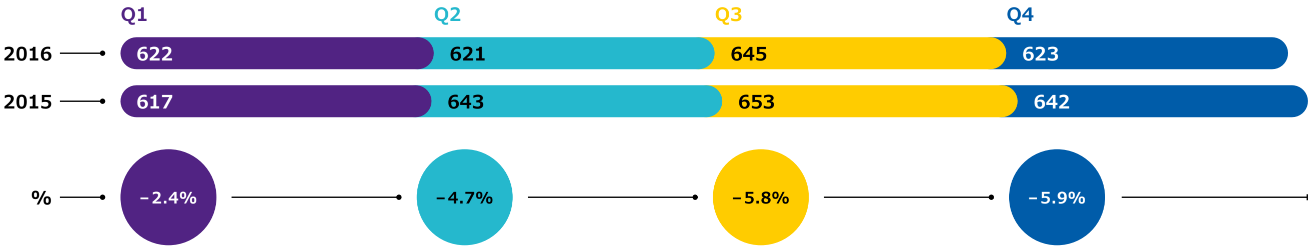
Growth in the Advanced Technologies business unit was fueled by double-digit sales increases in OLED materials.

The development of sales in the individual quarters as well as the respective organic growth rates in 2016 are presented in the following overview:

PERFORMANCE MATERIALS

Net sales and organic growth by quarter[1]

€ million / organic growth in %

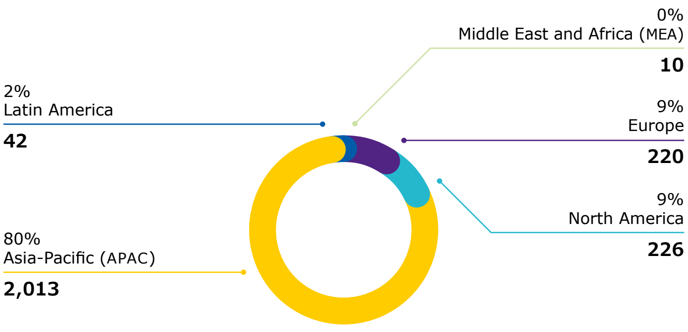


[1] Quarterly breakdown unaudited.

PERFORMANCE MATERIALS

Net sales by region – 2016

€ million / % of net sales of the business sector



With an 80% share (2015: 82%), the Asia-Pacific region once again accounted for the vast majority of the business sector's net sales. This is due to the concentration of customers for display and integrated circuit materials in Asia. In this region, sales declined to € 2,013 million (2015: € 2,107 million). Organically, sales decreased by – 6.6% owing to the performance of the Display Materials business unit. The increases in sales of IC and OLED materials and of Pigments & Functional Materials could not compensate for this.

In North America, the double-digit increase in sales to € 226 million was fueled by the SAFC Hitech business of Sigma-Aldrich (2015: € 194 million). Organically, sales reached the previous year's level. The slight growth in Pigments & Functional Materials was canceled out by declines in the other business units.

In Europe, Performance Materials generated sales of € 220 million (2015: € 206 million). The organic sales increase of 5.2% was generated by functional materials and Xirallic® pigments in the Pigments & Functional Materials business unit as well as by process materials in the IC Materials business unit.

Since they account for a low proportion of sales, the two regions Latin America and Middle East and Africa (MEA) played a subordinate role. Whereas Latin America continued to show double-digit organic growth at a low overall level, the sales improvement in the Middle East and Africa region was primarily acquisition-related.

PERFORMANCE MATERIALS
Net sales components by region – 2016

€ million / change in %	Net sales	Organic growth	Exchange rate effects	Acquisitions / divestments	Total change
Europe	220	5.2%	–0.4%	2.0%	6.9%
North America	226	–0.3%	0.9%	15.7%	16.3%
Asia-Pacific (APAC)	2,013	–6.6%	0.6%	1.6%	–4.5%
Latin America	42	21.0%	–16.8%	–	4.3%
Middle East and Africa (MEA)	10	8.0%	–2.6%	23.5%	28.8%
Performance Materials	**2,511**	**–4.7%**	**0.2%**	**2.7%**	**–1.8%**

The results of operations developed as follows:

PERFORMANCE MATERIALS
Results of operations

					Change	
€ million	**2016**	**in %**	2015	in %	€ million	in %
Net sales	**2,511**	**100.0%**	**2,556**	**100.0%**	**–45**	**–1.8%**
Cost of sales	–1,145	–45.6%	–1,151	–45.1%	7	–0.6%
(of which: amortization of intangible assets)[1]	*(–118)*		*(–115)*		*(–3)*	*(2.4%)*
Gross profit	**1,366**	**54.4%**	**1,404**	**54.9%**	**–38**	**–2.7%**
Marketing and selling expenses	–233	–9.3%	–208	–8.1%	–25	12.0%
(of which: amortization of intangible assets)[1]	*(–13)*		*(–16)*		*(3)*	*(–16.2%)*
Administration expenses	–61	–2.4%	–63	–2.5%	3	–4.1%
Research and development costs	–213	–8.5%	–197	–7.7%	–16	8.0%
(of which: amortization of intangible assets)[1]	*(–2)*		*(–1)*		*(–2)*	*(>100.0%)*
Other operating expenses and income	–37	–1.5%	–58	–2.3%	21	–36.3%
Operating result (EBIT)	**823**	**32.8%**	**878**	**34.4%**	**–55**	**–6.3%**
Depreciation / amortization / impairment losses / reversals of impairment losses	254	10.1%	242	9.5%	12	4.8%
(of which: exceptionals)	*(16)*		*(–)*		*(16)*	*(>100.0%)*
EBITDA	**1,077**	**42.9%**	**1,120**	**43.8%**	**–43**	**–3.9%**
Restructuring costs	1		2		–1	–70.7%
Integration costs / IT costs	26		15		11	73.0%
Gains / losses on the divestment of businesses	–		–6		6	>100.0%
Acquisition-related exceptionals	3		1		2	>100.0%
Other exceptionals	–		–		–	–
EBITDA pre exceptionals	**1,106**	**44.1%**	**1,132**	**44.3%**	**–26**	**–2.3%**

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

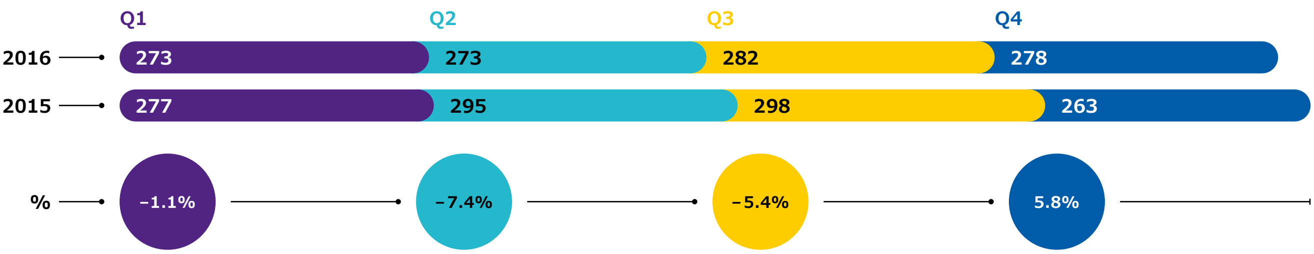
In 2016, gross profit was € 38 million below the previous year's level, leading to a gross margin of 54.4% (2015: 54.9%). The operating result (EBIT) decreased by € 55 million to € 823 million in 2016 (2015: € 878 million). Apart from the sales-related decline in gross profit, the main reasons for the decrease were higher marketing and selling expenses as well as additional research costs attributable to the SAFC Hitech business from the Sigma-Aldrich acquisition. EBITDA pre exceptionals amounted to € 1,106 million, which was € 26 million lower than in the previous year (2015: € 1,132 million). Yet the EBITDA margin pre exceptionals of 44.1% almost reached the good year-earlier level (2015: 44.3%).

The development of EBITDA pre exceptionals in the individual quarters in comparison with 2015 is presented in the following overview:

PERFORMANCE MATERIALS

EBITDA pre exceptionals and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

Development of business free cash flow

In 2016, the business free cash flow of the Performance Materials business sector increased to € 1,011 million (2015: € 931 million). This improvement was mainly attributable to significant inventory reductions, which more than offset the decline in EBITDA pre exceptionals.

PERFORMANCE MATERIALS

Business free cash flow

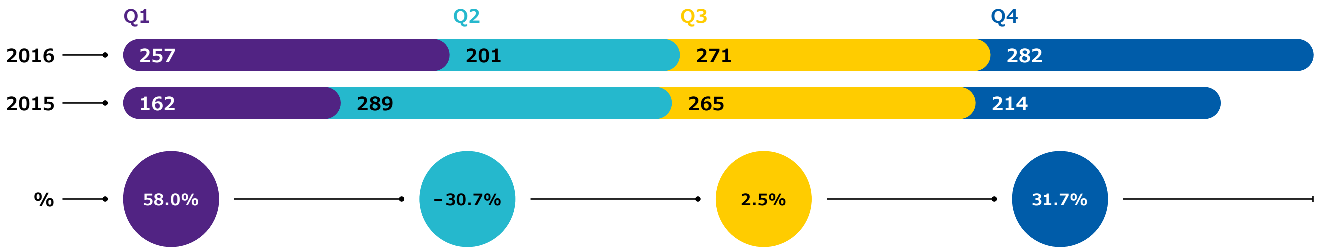
€ million	**2016**	2015	Change € million	Change in %
EBITDA pre exceptionals	1,106	1,132	−26	−2.3%
Investments in property, plant and equipment, software as well as advance payments for intangible assets	−109	−109	–	–
Changes in inventories	35	−83	119	>100.0%
Changes in trade accounts receivable as well as receivables from royalties and licenses	−19	−34	15	−44.7%
Adjustments first-time consolidation of Sigma-Aldrich	−3	25	−28	>100.0%
Business free cash flow	**1,011**	**931**	**80**	**8.6%**

The development of business free cash flow in the individual quarters in comparison with 2015 is presented in the following overview:

PERFORMANCE MATERIALS

Business free cash flow and change by quarter[1]

€ million / change in %



[1] Quarterly breakdown unaudited.

Corporate and Other

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

CORPORATE AND OTHER

Key figures

€ million	**2016**	2015	Change € million	Change in %
Operating result (EBIT)	–492	–432	–60	13.8%
EBITDA	–465	–411	–54	13.1%
EBITDA pre exceptionals	–396	–360	–36	10.0%
Business free cash flow	–485	–421	–64	15.1%

In 2016, administration expenses reported under Corporate and Other amounted to € 276 million (2015: € 246 million). Other operating expenses (net) rose to € –207 million (2015: € –180 million), particularly as a result of higher expenses from exceptionals, for example costs of special IT projects or environmental protection measures for businesses divested in prior years. Consequently, in 2016 the operating result (EBIT) amounted to € –492 million (2015: € –432 million) and EBITDA was € –465 million (2015: € –411 million). Adjusted for exceptionals, EBITDA pre exceptionals totaled € –396 million (2015: € –360 million). The increase in negative EBITDA pre exceptionals and higher capital spending had a significant impact on the development of business free cash flow, which amounted to € –485 million in 2016 (2015: € –421 million).