NOTES TO THE GROUP ACCOUNTS

General

(1) Company information

The accompanying consolidated financial statements as of December 31, 2015 have been prepared with MERCK Kommanditgesellschaft auf Aktien (Merck KGaA), Frankfurter Strasse 250, 64293 Darmstadt, which manages the operations of the Merck Group, as parent company. In accordance with the provisions of the German financial reporting disclosure law (Publizitätsgesetz), consolidated financial statements are also prepared for E. Merck Kommanditgesellschaft (E. Merck KG), the ultimate parent company and general partner of Merck KGaA with an equity interest of 70.274% as of December 31, 2015. These consolidated financial statements include Merck KGaA and its subsidiaries. The authoritative German versions of these financial statements are filed with the German Federal Gazette (Bundesanzeiger) and can be accessed at www.bundesanzeiger.de.

(2) Reporting principles

These consolidated financial statements have been prepared in accordance with the International Financial Reporting Standards in force on the balance sheet date and adopted by the European Union as issued by the International Accounting Standards Board and the IFRS Interpretations Committee (IFRS and IAS, as well as IFRIC and SIC) as well as the additionally applicable provisions of section 315a of the German Commercial Code (HGB). The fiscal year corresponds to the calendar year. These financial statements have been prepared in euros, the reporting currency. The figures reported in the consolidated financial statements have been rounded, which may lead to individual values not adding up to the totals presented.

The following rules took effect as of fiscal 2015:
- Annual Improvements to IFRSs 2011– 2013 Cycle
- IFRIC 21 “Levies”

These new rules did not have any material effects on the consolidated financial statements.

The following rules 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

Merck currently does not expect the new rules to have any material effects on the consolidated financial statements.

As of the balance sheet date, the following standards were published by the International Accounting Standards Board, but not yet adopted by the European Union:
- IFRS 9 “Financial Instruments”
- IFRS 14 “Regulatory Deferral Accounts”
- IFRS 15 “Revenue from Contracts with Customers”
- Amendments to IAS 28 “Investments in Associates and Joint Ventures”
- Amendments to IFRS 10 “Consolidated Financial Statements”
- Amendment to IFRS 12 “Disclosure of Interests in Other Entities”
- Amendment to IFRS 15 “Revenue from Contracts with Customers”

The impact of IFRS 9 and IFRS 15, which will become effective as of 2018 (subject to a corresponding endorsement by the European Union), on the consolidated financial statements is currently being examined. Based on the results of a preliminary study, Merck currently does not expect that the first-time application of IFRS 15 will have any significant effects on the amount and timing of revenue recognition. According to the present state of knowledge, certain changes will result with respect to outlicensing as well as to a smaller extent with respect to the multiple-element arrangements within the Life Science business sector. From today’s perspective, the other new rules are not expected to have any material effects on the consolidated financial statements.

(3) Changes in the scope of consolidation

The scope of consolidation changed as follows in the reporting period:

Fully consolidated companies as of December 31, 2014		**218**
Additions	Establishment	2
	Acquisitions	102
	Materiality	4
Retirements	Liquidations/Mergers	–7
	Divestments	0
	Immateriality	–3
Fully consolidated companies as of December 31, 2015		**316**
Non-consolidated subsidiaries as of December 31, 2014		28
Non-consolidated subsidiaries as of December 31, 2015		63

Due to the acquisition of the Sigma-Aldrich Corporation, USA, and its subsidiaries, the number of fully consolidated companies of the Merck Group increased by 100; the number of companies not consolidated due to immateriality increased by 40.

Overall, the impact of subsidiaries not consolidated due to immateriality on sales, profit after tax, assets and equity was less than 1% relative to the entire Merck Group. The interests in subsidiaries not consolidated due to immateriality were classified as available-for-sale financial assets and presented under non-current financial assets. The list of shareholdings presents all of the companies included in the consolidated financial statements as well as all of the shareholdings of Merck KGaA (see Note [67] “List of shareholdings”).

(4) Acquisitions, assets held for sale and disposal groups

Acquisition of Sigma-Aldrich Corporation, USA

On November 18, 2015, Merck obtained control of the Sigma-Aldrich Corporation, a life science enterprise headquartered in St. Louis, USA (Sigma-Aldrich). Prior to that, on September 22, 2014, Merck and Sigma-Aldrich entered into an agreement under which Merck would acquire Sigma-Aldrich for US$ 140 per share in cash. Afterwards, Merck received the approval of Sigma-Aldrich shareholders as well as clearance from various antitrust authorities regarding the acquisition. Due to the commitments imposed by the European antitrust authorities, Merck and Sigma-Aldrich had agreed to sell parts of Sigma-Aldrich’s solvents and inorganics business in Europe. This business was reported under “assets held for sale” in the overview of fair values as of the acquisition date. Further information can be found in the section entitled “Business activities of Sigma-Aldrich acquired with a view to resale”.

The purchase price as well as the payments for the acquisitions of 100% of the shares in Sigma-Aldrich were as follows:

€ million	
Purchase price for 100% of shares (US$ 17,015 million) at the closing rate on November 18, 2015	15,973.8
Reclassification of hedging gains from other comprehensive income to assets	–1,380.3
Purchase price according to IFRS 3	**14,593.5**
Acquired cash and cash equivalents	1,235.1
Payments for 100% of the interests less acquired cash and cash equivalents	**13,358.4**

The vast majority of the currency risk stemming from the purchase price payment for Sigma-Aldrich in U.S. dollars was hedged within the scope of a rolling hedging strategy using derivatives (forward exchange transactions and currency options) in line with the requirements for cash flow hedge accounting. The resulting income amounting to € 1,380.3 million was taken into consideration during the determination of the purchase price in accordance with IFRS 3.

Acquisition financing

The purchase price was financed through cash on Merck's balance sheet, bank loans and bonds. Following the issuance of a hybrid bond (€ 1.5 billion) in December 2014, Merck issued a further bond with a volume of US$ 4 billion in the United States on March 17, 2015. On August 27, 2015, Merck issued a euro bond amounting to € 2.1 billion. The bond issues comprised various tranches along with various maturities and interest rates. An overview of the outstanding bonds can be found in Note [28] "Financial liabilities / Capital management".

Business activities as well as sales and earnings contribution of Sigma-Aldrich

Sigma-Aldrich manufactures and distributes more than 250,000 chemicals, biochemicals and other essential products to customers in research and applied labs as well as in industrial and commercial markets. Sigma-Aldrich operates in 37 countries, has approximately 9,300 employees and, under U.S. Generally Accepted Accounting Principles (U.S. GAAP), generated sales of US$ 2,785 million (€ 2,102 million) and net income of US$ 500 million (€ 377 million) in 2014. In 2013, the corresponding values under U.S. GAAP were US$ 2,704 million (€ 2,033 million) for sales and US$ 491 million (€ 369 million) for net income.

Following the transaction closing, Merck started to integrate the life science business of Sigma-Aldrich into the Life Science business sector and the SAFC Hitech business into the Performance Materials business sector. The aim of the acquisition is to offer customers a wider range of products, greater geographic reach and a broad combination of industry-leading capabilities.

The impact of the consolidation of Sigma-Aldrich on sales between November 18, 2015 and December 31, 2015 as well as net income after taxes amounted to € 289.5 million and € –5.8 million, respectively. This result also includes higher cost of sales due to the step-up of the acquired inventories to preliminary fair values as well as the amortization of assets identified and remeasured during the purchase price allocation.

Assuming the first-time consolidation of Sigma-Aldrich had already taken place as of January 1, 2015, sales of the Merck Group for the period from January 1 to December 31, 2015 would have amounted to € 14,926.8 million (compared with reported sales of € 12,844.7 million) and net income after taxes would have been € 1,150.3 million (compared with reported net income of € 1,124.1 million). The determination of these figures assumed that the adjustments of the book values as a result of the purchase price allocation would have been identical.

Purchase price allocation

Since the obtainment of control over Sigma-Aldrich did not take place until November 18, 2015, and material information for the purchase price allocation was only obtained after that date for legal reasons, the purchase price allocation for all assets and liabilities as of December 31, 2015 has not yet been completed. 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)	5,872.6
Property, plant and equipment	840.3
Other non-current assets	124.7
	6,837.6
Current assets	
Cash and cash equivalents	1,235.1
Inventories	851.9
Receivables	451.5
Other current assets	36.0
Assets held for sale	123.8
	2,698.3
Assets	**9,535.9**
Non-current liabilities	
Non-current financial liabilities	0.2
Other non-current liabilities and provisions	150.1
Deferred tax liabilities	2,441.8
	2,592.1
Current liabilities	
Current financial liabilities	425.1
Other current liabilities and provisions	538.6
Liabilities directly related to assets held for sale	–
	963.7
Liabilities	**3,555.8**
Acquired net assets	**5,980.1**
Purchase price for the acquisition of shares	**14,593.5**
Positive difference (goodwill)	**8,613.4**

The most significant impact of the purchase price allocation resulted from the remeasurement of intangible assets, property, plant and equipment as well as finished and unfinished goods within inventories at fair value, and from the recognition of deferred taxes. The intangible assets identified during the preliminary purchase price allocation and recognized on the date of first-time consolidation as well as the measurement methods applied are presented in the following overview:

	Fair values on the acquisition date (preliminary) € million	Useful lives in years (preliminary)	Valuation method for determining the fair values
Customer relationships	4,675.5	22 – 24	multi-period excess earnings method
Trademarks and brands	963.6	12	relief from royalty method
Technologies (patented and non-patented)	129.5	10 – 15	relief from royalty method, reproduction cost method
Other	104.0		–
Total	**5,872.6**		
Goodwill	8,613.4	indefinite	
Total	**14,486.0**		

A major factor for the measurement of customer relationships was the assumption regarding long-term customer retention. If the annual loss of customers was one percentage point higher, the fair value of customer relationships would be € 529.2 million lower and the amortization period would have to be reduced by two years. The most significant assumption for the measurement of trademarks and brands concerned the underlying royalty rates. These were derived from available market information. In case of a reduction of the royalty rates by 0.5 percentage points, the fair value would have been € 113.6 million lower.

The preliminary positive difference of € 8,613.4 million was recognized as goodwill. This comprised anticipated synergies from the integration of Sigma-Aldrich into the Merck 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 goodwill was allocated on a preliminary basis to the two business sectors Life Science (€ 8,260.2 million) and Performance Materials (€ 353.2 million). Goodwill is not expected to be deductible for tax purposes.

Within the scope of the acquisition, no contingent consideration was agreed upon which Merck would possibly have to pay in the future. The selling shareholders did not contractually indemnify Merck for the outcome of a contingency or uncertainty related to the acquired assets or liabilities. Costs of € 76.6 million related to the acquisition of the company were recorded under other operating expenses in 2015 (€ 60.0 million) and in 2014 (€ 16.6 million).

The development of goodwill, which is carried in U.S. dollars, during the period from first-time recognition and December 31, 2015 was as follows:

€ million	Development of goodwill
Goodwill on November 18, 2015	8,613.4
Exchange rate effects	–219.9
Goodwill on December 31, 2015	**8,393.5**

No material contingent liabilities were identified in the course of the preliminary purchase price allocation. The gross amounts of the acquired receivables on the acquisition date were € 456.5 million. The best possible estimate of the irrecoverable receivables amounted to € 5.0 million.

Further acquisitions in 2015

At the end of July 2015, Merck acquired the remaining 52.3% interest in the start-up Qlight Nanotech Ltd., Israel (Qlight). Since then, Merck has held 100% of the company. Qlight conducts research in the field of quantum materials and was integrated into the Performance Materials business sector. The purchase price comprised fixed consideration amounting to US$ 3 million (€ 2.7 million), conditional purchase price components of up to US$ 4 million (€ 3.6 million) as well as further license remuneration provided that certain preconditions are met. Expenses of € 0.5 million were recorded from the remeasurement of the interests in Qlight prior to the obtainment of control. The intangible assets identified were attributable to technology-related assets amounting to € 6.1 million. Deferred tax liabilities amounting to € 1.6 million and goodwill of € 1.1 million were recognized. The purchase price allocation had not yet been completed on December 31, 2015.

In December 2015, Merck acquired the outstanding shares (89.7%) in Ormet Circuits, Inc., USA (Ormet) to enhance its position as a semiconductor materials supplier. Ormet will be integrated into the Performance Materials business sector. The purchase price for 100% of the shares amounts to US$ 32.0 million (€ 29.2 million). Income of € 0.6 million was recorded from the remeasurement of the interests in Ormet prior to the obtainment of control. The purchase price allocation had not been completed by December 31, 2015; therefore, the preliminary difference was fully reported as goodwill.

Acquisition of AZ Electronic Materials S.A. in 2014

Within the scope of a public takeover offer, on May 2, 2014 Merck had received valid acceptances of the offer in respect of 81.3% of the share capital and thus obtained control of the publicly listed company AZ Electronic Materials S.A., Luxembourg (AZ). By June 27, 2014, Merck had increased its shareholding in AZ to 99.8% and was then able to initiate a squeeze-out, which was completed on July 2, 2014 with the acquisition of the remaining shareholding of 0.2%.

AZ is a manufacturer of ultrapure specialty chemicals and materials for use in integrated circuits (semiconductors) and equipment, in flat-panel displays, and for photolithographic printing.

Within the scope of the acquisition, no conditional consideration was agreed upon which Merck would possibly have to pay in the future. The purchase price allocation was completed on December 31, 2014.

The development of goodwill recognized within the framework of the acquisition and carried in U.S. dollars was as follows:

€ million	Development of goodwill
Goodwill on December 31, 2014	930.0
Exchange rate effects	104.1
Goodwill on December 31, 2015	**1,034.1**

Divestment of the rights to Kuvan® and Peg-Pal

On October 1, 2015, Merck entered into an agreement with BioMarin Pharmaceutical Inc., USA (BioMarin), to return the rights to Kuvan® (sapropterin dihydrochloride), a drug used to treat phenylketonuria (PKU), a rare metabolic disorder, and the related business activities. These business activities, which were allocated to the Healthcare business sector, were reported as a disposal group and include an intangible asset of € 23.9 million, allocable goodwill of € 21.6 million, as well as an immaterial amount of inventories.

In addition, an agreement was also reached on October 1, 2015 under which Merck will return 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.

Both agreements became effective at the beginning of January 2016. Based on the agreements, in January 2016 Merck received an upfront payment of € 340 million for the sale of the rights to Kuvan®. Moreover, Merck is entitled to up to € 185 million for the achievement of certain milestones.

Business activities of Sigma-Aldrich acquired with a view to resale

On June 15, 2015, before control of the Sigma-Aldrich Corporation, USA, was obtained, Merck received conditional antitrust approval from the European Commission for the acquisition of Sigma-Aldrich. As a consequence of the EU commitments, Merck and Sigma-Aldrich had agreed to sell parts of Sigma-Aldrich's solvents and inorganics business in Europe.

This includes Sigma-Aldrich Laborchemikalien GmbH, Seelze, where most of the solvents and inorganics sold by Sigma-Aldrich in Europe were manufactured. The agreement further concerns those solvents and inorganics sold by Sigma-Aldrich in Europe under the Sigma-Aldrich brand and globally under the Fluka® brand, as well as the global rights to the Hydranal® and Chromasolv® trademarks. A corresponding agreement on the sale of these businesses was entered into with Honeywell Specialty Chemicals Seelze GmbH, Seelze, on October 19/20, 2015. Since the obtainment of control, the provisions of IFRS 5 in relation to discontinued operations have applied to the corresponding assets and liabilities, which are thus disclosed as "assets held for sale" in the overview of fair values as of the Sigma-Aldrich acquisition date. The transaction with Honeywell closed on December 15, 2015. Consequently, as of year-end, the corresponding assets and liabilities were no longer reported in the consolidated balance sheet of the Merck Group. Profit after tax of € 5.6 million was recorded in the income statement, based on net sales of € 13.1 million and expenses of € –7.5 million.

(5) Joint arrangements of material significance

Strategic alliance with Pfizer Inc., USA, to co-develop and co-commercialize active ingredients in immunooncology

On November 17, 2014 Merck formed a global strategic alliance with Pfizer Inc., USA, (Pfizer) to co-develop and co-commercialize the anti-PD-L1 antibody avelumab (also known as MSB0010718C). This antibody is currently being studied in multiple clinical trials as a potential treatment for further tumor types. The active ingredient is to be developed as a single agent as well as in various combinations with Pfizer's and Merck's broad portfolio of approved and investigational pipeline candidates. As part of the strategic alliance, the two companies will combine resources and expertise to also co-develop and co-market Pfizer's anti-PD-1 antibody. The overriding objective of the strategic alliance is share the risks of development and to accelerate the two companies' presence in immuno-oncology.

According to the collaboration agreement, during the development period each partner will bear one-half of the development expenses. In a potentially later commercialization phase, Merck will realize the vast majority of sales from the commercialization of avelumab while Merck and Pfizer will split defined income and expense components.

The execution of the collaboration agreement is not being structured through a separate vehicle. This means that the assets and liabilities attributable to the contractual arrangement are owned by the two contract partners. Decisions about the relevant activities require unanimous consent in accordance with the collaboration agreement. Therefore, the accounting rules governing joint operations pursuant to IFRS 11 are applied and Merck records the assets, liabilities, revenues and expenses attributable to the collaboration in accordance with the respectively valid IFRS.

Under the terms of the agreement, in 2014 Pfizer made an upfront cash payment of US$ 850 million (€ 678.3 million) to Merck after the closing. Pfizer also committed to make further payments of up to US$ 2 billion to Merck subject to the achievement of defined regulatory and commercial milestones. Based on the collaboration agreement, Merck additionally received the right to co-market for multiple years Xalkori® (crizotinib), a drug for the treatment of non-small-cell lung cancer, in the United States and certain other major markets. During co-commercialization of the product, Merck will receive from Pfizer compensation for marketing activities and a share of the profits. The fair value of the right was determined by an independent external expert using the multi-period excess earnings method. The entitlement to the right was capitalized when it was granted and will be amortized over the term of the agreement. The residual book value of these assets as of December 31, 2015 was € 261.7 million (2014: € 294.4 million).

On the date of the closing of the collaboration agreement, both the upfront payment received and the value of the right to co-market Xalkori® were recognized in the balance sheet as deferred revenues under other liabilities. Both amounts are being recognized over the expected period during which Merck is to meet certain obligations and will be disclosed under other operating income. More information on the exercise of management judgments and estimation uncertainties in this regard can be found in Note [7] "Management judgments and sources of estimation uncertainty."

Agreement with Threshold Pharmaceuticals, Inc., USA, to co-develop and co-market evofosfamide

In February 2012, Merck entered into a global agreement with Threshold Pharmaceuticals, Inc., USA (Threshold), to co-develop and co-commercialize evofosfamide (also known as TH-302), a chemical molecule for use in cancer treatment. Under the terms of the agreement, Merck received co-development rights as well as exclusive global commercialization rights. Threshold had the option to co-commercialize the therapeutic in the United States.

On December 7, 2015, Merck announced that it will not submit evofosfamide for approval in locally advanced inoperable or metastatic soft-tissue sarcoma as well as advanced pancreatic cancer after two Phase III studies had failed to meet their primary endpoints in these indications. Consequently, the upfront and milestone payments that had been capitalized as intangible assets with indefinite useful lives as well as capitalized borrowing costs amounting to € 84.4 million were impaired in full in December 2015.

Agreement with Eli Lilly and Company, USA and Bristol-Myers Squibb Company, USA for the co-commercialization of Erbitux® in Japan

Until its termination, which took effect on May 1, 2015, an agreement was in place between Merck, ImClone Systems Inc., USA (which has now merged into Eli Lilly and Company, USA) and Bristol-Myers Squibb Company, USA, for the co-development and co-commercialization of Erbitux® (cetuximab), a drug indicated for the treatment of metastatic colorectal cancer, as well as for other cancers, in Japan. Since the collaboration ended, Merck has been marketing the aforementioned activities itself in Japan, bearing exclusive overall responsibility.

Up until the end of the agreement, Merck recorded sales of € 36.7 million from the commercialization of Erbitux® in Japan (2014 in full: € 113.2 million).

Agreement with Bristol-Myers Squibb Company, USA, for the co-commercialization of Glucophage® in China

In March 2013, Merck established an agreement with Bristol-Myers Squibb Company, USA, for the co-commercialization of the antidiabetic agent Glucophage® (active ingredient: metformin hydrochloride) for the treatment of type 2 diabetes in China. In 2015, Merck recorded sales of € 84.3 million from co-commercialization (2014: € 59.3 million).

(6) Changes to accounting and measurement principles and disclosure changes

In comparison with the previous year, there were no material changes to accounting and measurement principles. Only the disclosure changes described in the following were made in order to ensure improved comparability of the income statement and the balance sheet of the Merck Group with other companies.

Consolidated Income Statement

New composition of net sales

Since January 1, 2015, royalty, license and commission income has no longer been disclosed in a separate line in the consolidated income statement. While commission income is now recorded as part of net sales, royalty and license income is included under other operating income.

Functional allocation of royalty, license and commission expenses

Effective January 1, 2015, royalty, license and commission expenses, which were previously disclosed in a separate line, were allocated to the corresponding functional costs.

The previous year's figures in the consolidated income statement have been adjusted accordingly and are presented in the following table:

MERCK GROUP

Adjustment

€ million	2014 old structure	2014 adjustment	2014 adjusted
Net sales	**11,291.5**	**71.3**	**11,362.8**
Royalty, license and commission income	209.3	–209.3	–
Total revenues	**11,500.8**	**–**	**–**
Cost of sales	–3,526.4	–	–3,526.4
(of which: amortization of intangible assets)[1]	*(–94.0)*	*(–)*	*(–94.0)*
Gross profit	**7,974.4**	**–138.0**	**7,836.4**
Marketing and selling expenses	–3,104.9	–484.2	–3,589.1
(of which: amortization of intangible assets)[1]	*(–719.0)*	*(–)*	*(–719.0)*
Royalty, license and commission expenses	–537.5	537.5	–
Administration expenses	–608.6	–	–608.6
Research and development costs	–1,703.7	–	–1,703.7
(of which: amortization of intangible assets)[1]	*(–3.8)*	*(–)*	*(–3.8)*
Other operating income	426.4	138.0	564.4
Other operating expenses	–684.1	–53.3	–737.4
Operating result (EBIT)	**1,762.0**	**–**	**1,762.0**
Margin (% of net sales)	15.6	–0.1	15.5
EBITDA	**3,122.9**	**–**	**3,122.9**
Margin (% of net sales)	27.7	–0.2	27.5
EBITDA pre exceptionals	**3,387.7**	**–**	**3,387.7**
Margin (% of net sales)	30.0	–0.2	29.8

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

Consolidated Balance Sheet

Balance sheet structure
Since January 1, 2015, the consolidated balance sheet of the Merck Group has been structured in descending order of maturity. The previous year's figures have been adjusted accordingly.

Disclosure of receivables from royalties and licenses
As a result of the disclosure of royalty and license income under other operating income, in the consolidated balance sheet dated December 31, 2014, receivables from royalties and licenses, which amounted to € 16.1 million and were previously included under trade accounts receivable, were reclassified to other current assets.

Segment Reporting

On January 1, 2015, the Merck Group changed its segment reporting structure to report on the three segments Healthcare, Life Science and Performance Materials. The Healthcare business sector comprises the businesses that were reported separately as the Merck Serono and Consumer Health segments in the previous year. The Life Science business sector comprises the Merck Millipore business as well as the acquired life science business of the Sigma-Aldrich Corporation, USA. The Performance Materials business sector corresponds to the segment of the same name in the previous year as well as the acquired SAFC Hitech business of Sigma-Aldrich. More information on the new segmentation as well as reconciliation of the previous year's figures by business sector can be found in Note [33] "Information on segment reporting".

As regards segment reporting by country and region, the composition of regions was adjusted and the corresponding comparative year-earlier figures are presented. The regional reporting structure now comprises five regions: Europe, North America, Asia-Pacific, Latin America as well as Middle East and Africa.

(7) Management judgments and sources of estimation uncertainty

The preparation of the consolidated financial statements requires management to make discretionary decisions and assumptions as well as estimates to a certain extent. The discretionary decisions, assumptions relating to the future and sources of estimation uncertainty described below are associated with the greatest potential effects on these consolidated financial statements.

Recognition and measurement of assets, liabilities and contingent liabilities acquired in the context of business combinations
The recognition and measurement of assets, liabilities and contingent liabilities at fair value during purchase price allocations involve the use of estimates. The expertise of external valuation experts is obtained here. The fair values of the assets and liabilities recognized as part of the purchase price allocation of the Sigma-Aldrich Corporation and further information on this acquisition, which closed in the reporting period, can be found in Note [4] "Acquisitions, assets held for sale and disposal groups".

Sales deductions
Merck grants its customers various kinds of rebates and discounts. In addition, expected returns, state compulsory charges and rebates from health plans and programs are also deducted from sales.

The most significant portion of these deductions from sales is attributable to the Healthcare business sector. The most substantial sales deductions in this business sector relate to government rebate programs in North America such as the "U.S. Federal Medicare Program" and the "U.S. Medicaid Drug Rebate Program". Other significant sales deductions in the business sector result from compulsory government rebate programs in individual European countries.

Insofar as sales deductions were not already made on payments received, Merck determines the level of sales deductions on the basis of current experience and recognizes them as a liability. The sales deductions reduce gross sales revenues. Adjustments of liabilities can lead to increases or reductions of income in later periods.

Impairment tests of goodwill and other intangible assets with indefinite useful lives
The goodwill (carrying amount as of December 31, 2015: € 14,370.1 million/2014: € 5,693.9 million) and other intangible assets with indefinite useful lives (carrying amount as of December 31, 2015: € 183.6 million/2014: € 168.7 million) reported in the consolidated financial statements are tested for impairment at least once a year or when a triggering event arises. The carrying amounts of goodwill are allocated to the following cash-generating units or groups of cash-generating units on which level the impairment tests were performed:

€ million	Goodwill as of Dec. 31, 2015	Goodwill as of Dec. 31, 2014
Biopharma	1,579.8	1,601.5
Consumer Health	243.1	243.1
Life Science	11,130.4	2,911.1
Performance Materials	1,416.8	938.2
Total	**14,370.1**	**5,693.9**

The internal reorganization and changes to the reporting structure of the Merck Group on January 1, 2015 did not result in any changes to the level at which the impairment tests are conducted. Subsequent to the reorganization, the cash-generating units or groups of cash-generating units continue to represent the lowest level at which goodwill is monitored for internal purposes by management.

As in 2014, no impairment losses for goodwill were recorded in the year under review. Owing to the termination of development projects in the Healthcare business sector, in 2015 impairment losses of other intangible assets with indefinite useful lives were recorded in the amount of € 108.5 million (2014: € 84.8 million).

Owing to a change in the planning process, the detailed planning period was shortened by one year to four years, and the date of the goodwill impairment test was changed, complying with the one-year time period stipulated by IAS 36.

When conducting the impairment tests the following parameters were used:

Measurement basis	Value in use
Impairment test level	Biopharma (including Allergopharma and Biosimilars) Consumer Health Life Science Performance Materials
Planning basis	Most recent financial medium-term planning approved by the Executive Board and used for internal purposes
Detailed planning period	4 years (2014: 5 years)
Key assumptions	Net cash flows Long-term growth rate after the detailed planning period Discount rate after tax (Weighted average cost of capital after tax – WACC)
Determination of the value of the key assumptions	Net cash flows • Sales growth Based on internal planning, taking into consideration internal and external market information and market estimations, i.e. regarding market shares, excluding approvals of new compounds from the development pipeline and other expansion investments • Profit margins Based on past experiences, adjusted for expected changes
	Long-term growth rate after the detailed planning period Based on long-term inflation expectations and expected long-term sector growth
	Discount rate after tax (Weighted average cost of capital after tax – WACC) • Cost of equity Risk-free interest rate: Derived from the returns of long-term German government bonds Beta factor: Derived from respective peer group Market risk premium: Range as recommended by the Technical Committee for Business Valuation and Commerce of the Institute of Public Auditors in Germany (Institut der Wirtschaftsprüfer e.V. – IDW) • Cost of debt and capital structure Derived from respective peer group

The long-term growth rates and weighted average cost of capital (WACC) used to conduct the goodwill impairment tests were as follows:

	Long-term growth rate		Cost of capital after tax		Cost of capital before tax	
in %	**2015**	2014	**2015**	2014	**2015**	2014
Biopharma	0.00	0.00	6.2	7.2	8.0	9.3
Consumer Health	2.00	2.00	6.2	6.9	7.6	8.4
Life Science[1]	1.75	2.00	6.1	6.8	7.5	7.8
Performance Materials[1]	0.50	1.00	6.6	6.3	8.6	7.8

[1] The disclosures for 2015 relate to the impairment test performed before the acquisition of the Sigma-Aldrich Corporation, USA.

The cost of capital before tax is iteratively calculated based on the discounted cash flows determined using cost of capital after tax.

All of the aforementioned assumptions are considered a source of estimation uncertainty due to their inherent uncertainty.

In all the impairment tests performed, the recoverable amount was more than 10% higher than the carrying amount of the respective cash-generating unit or group of cash-generating units. Irrespective of this, sensitivity analyses of the key assumptions were performed as part of the impairment tests. Overall, no change of a significant assumption deemed possible by the management would have resulted in an impairment. The following table presents the amount by which the key assumptions would have to change before an impairment would need to be recognized within the scope of an impairment test:

	Decrease in long-term growth rate		Increase in cost of capital after tax		Decrease in net cash flow	
	2015	2014	**2015**	2014	**2015**	2014
	percentage points		percentage points		%	
Biopharma	> 2	> 2	> 2	> 2	> 5	> 5
Consumer Health	> 2	> 2	> 2	> 2	> 5	> 5
Life Science[1]	> 2	> 2	> 2	> 2	> 5	> 5
Performance Materials[1]	> 2	> 2	> 2	> 2	> 5	> 5

[1] The disclosures for 2015 relate to the impairment test performed before the acquisition of the Sigma-Aldrich Corporation, USA.

Based on the preliminary purchase price allocation for the acquisition of the Sigma-Aldrich Corporation, USA, which was completed in November 2015, goodwill amounting to € 8,613.4 million was attributable to this acquisition. Based on a preliminary determination, € 8,260.2 million of this goodwill would have been allocated to Life Science and € 353.2 million to Performance Materials. Since the purchase price allocation had not yet been completed on the balance sheet date, a final allocation was not yet possible. An indicative test of the related goodwill as of November 30, 2015, on the basis of the preliminary planning used in the context of the purchase price allocation did not lead to an impairment requirement, neither with respect to the value in use nor the fair value less costs of disposal (based on non-observable input factors). The difference between the recoverable amount and the carrying amount for Life Science decreased due to the allocation of significant intangible assets and goodwill, however the difference was still more than 10%. Within the scope of these indicative impairment tests, costs of capital after tax of 6.1% (Life Science) and 6.5% (Performance Materials) were used. The assumption regarding long-term growth rates is identical to the assumption shown above. Based on the indicative test, a reduction of the long-term growth rate by around one percentage point in the Life Science business sector would have resulted in a situation where the recoverable amount would have been identical with the carrying amount. The recoverable amount would have also been identical with the carrying amount in the Life Science business sector if the cost of capital after tax (WACC) had been increased by around one percentage point. In the Performance Materials business sector, no change of a significant assumption deemed possible by the management would have resulted in an impairment.

Determination of the amortization of intangible assets with finite useful lives

In addition to goodwill and other intangible assets with indefinite useful lives, Merck has a significant amount of intangible assets with finite useful lives (carrying amount as of December 31, 2015: € 10,674.9 million / December 31, 2014: € 5,496.1 million). Substantial assumptions and estimates are required to determine the appropriate level of amortization of these intangible assets. This relates in particular to the determination of the underlying remaining useful life. The parameter is reviewed regularly by Merck and adjusted if necessary. Merck considers factors including the typical product life cycles for each asset and publicly available information about the estimated useful lives of similar assets.

If the amortization of intangible assets from customer relationships, market authorizations, patents, licenses and similar rights, capitalized brand names and trademarks had been 10% higher, for example due to shortened remaining useful lives, earnings before taxes would have been € 94.8 million lower in fiscal 2015 (2014: reduction of € 84.2 million). In fiscal 2015, a reduction of the useful lives of the intangible asset reported in connection with the drug Rebif® by one year would have lowered earnings before taxes by € 92.0 million (2014: € 73.6 million).

Research and development collaborations as well as in- and out-licensing of intangible assets

Merck is regularly a partner of research and development collaborations with research institutions, biotechnology companies and other contract parties. These collaborations are aimed at developing marketable products. Merck also enters into in-licensing agreements regarding intellectual property of contract partners. Such agreements typically involve making upfront payments and payments for the achievement of certain milestones related to development and marketing progress. In this context, Merck has to judge to what extent upfront or milestone payments represent remuneration for services received (research and development expense) or whether such payments result in an in-licensing of an intangible asset that has to be capitalized. This assessment is normally subject to judgment.

Merck regularly receives upfront and milestone payments as part of research and development collaborations or out-licensing agreements. In this context, income may only be recognized if Merck has transferred all material risks and rewards of an intangible asset to the acquirer, has no interest in the remaining business activities and has no material continuing commitment. If these criteria are not deemed to be met, the received payments are deferred and recognized over the period in which Merck is expected to fulfill its performance obligations. Both the assessment of the revenue recognition criteria and the determination of the appropriate period during which revenue is recognized are subject to judgment.

If the consideration that was received as part of the strategic alliance with Pfizer Inc., USA, in November 2014 and deferred as a liability had been recognized in the income statement over a shorter period reduced by one year, in 2015 this would have increased other operating income and thus profit before income tax would have increased by € 47.8 million (2014: € 3.9 million). Recognition over a period extended by one year would have lowered other operating income and profit before tax by € 31.9 million (2014: € 2.6 million).

Identification of impairment of non-financial assets

Discretionary decisions are required in the identification of existing indications of impairment of intangible assets and property, plant and equipment. As of December 31, 2015, the carrying amounts of these assets totaled € 29,348.1 million (December 31, 2014: € 14,385.9 million). External and internal information is used to identify indications of impairment. For example, the approval of a competing product in the Healthcare business sector or the closure of a site can be an indicator of impairment. Nevertheless, Merck's analysis of indications of impairment can prove too optimistic or too pessimistic in hindsight due to the high degree of uncertainty.

In October 2015, Merck relaunched its branding and fundamentally revamped its visual appearance. Outside the United States and Canada, the Group will operate uniformly as "Merck" in the future and has eliminated the previously independent divisional brands "Merck Serono" and "Merck Millipore". Owing to this, the "Millipore" brand, which is recognized as an intangible asset in the balance sheet, was subjected to an impairment test. As a result of this impairment test, a need to record an impairment loss was not identified since the value added from the continued use of the brand for Merck filtration products and as part of the name the Life Science business operates under in the U.S. and Canadian markets exceeded the residual book value of the brand. The intangible assets for the "Serono" brand recognized within the scope of the purchase price allocation for Serono SA had already been fully amortized when the new branding was launched.

Impairment of financial assets

On every balance sheet date, Merck reviews whether there is any objective evidence that a financial asset is impaired and, if this is the case, carries out the impairment to the extent estimated as necessary. Particularly important in this context are impairment losses on trade accounts receivable whose carrying amount was € 2,738.3 million as of December 31, 2015 (2014: € 2,219.5 million).

Significant indicators for the identification of impaired receivables and the subsequent impairment tests are, in particular, payment default or delay in the payment of interest or principal, negative changes in economic or regional economic framework conditions as well as considerable financial difficulties of a debtor. These estimates are discretionary.

Other provisions and contingent liabilities

As a global company for high-tech products, Merck is exposed to a multitude of litigation risks. In particular, these include risks from product liability, competition and antitrust law, pharmaceutical law, patent law, tax law and environmental protection. Merck is engaged in legal proceedings and official investigations, the outcomes of which are uncertain. A detailed description of the most important legal matters as of the balance sheet date can be found in Notes [27] "Provisions" and [39] "Contingent liabilities". The provisions recognized for legal disputes mainly relate to the Healthcare business sector and amounted to € 490.6 million as of the balance sheet date (2014: € 393.1 million).

To assess the existence of a reporting obligation in relation to provisions and to quantify pending outflows of resources, Merck draws on the knowledge of the legal department as well as any other outside counsel. In spite of this, both the assessment of the existence of a present obligation and the estimate of the probability of a future outflow of resources are highly subject to uncertainty. Equally, the evaluation of a possible payment obligation is to be considered a major source of estimation uncertainty. Accordingly, the date of utilization may be determined reliably not earlier than after an out-of-court settlement is reached or upon the termination of judicial proceedings.

To a certain extent, Merck is obliged to take measures to protect the environment and reported provisions for environmental protection of € 126.9 million as of December 31, 2015 (2014: € 123.7 million). The underlying obligations were located mainly in Germany, Latin America and the United States. Provisions were recognized primarily for obligations from soil remediation and groundwater protection in connection with the discontinued crop protection business.

The calculation of the present value of the future settlement amount requires, among other things, estimates of the future settlement date, the actual severity of the identified contamination, the applicable remediation methods, the associated future costs, and the discount rate. The measurement is carried out regularly in consultation with independent experts. In spite of this, the determination of the future settlement amount of the provisions for environmental protection measures is subject to a considerable degree of uncertainty.

In the event of the discontinuation of clinical development projects, Merck is regularly required to bear unavoidable subsequent costs for a certain future period of time. The measurement of these provisions requires estimates regarding the length of time and the amount of the subsequent costs.

Apart from provisions, contingent liabilities are also subject to estimation uncertainties and discretionary judgment. Accordingly, contingent liabilities from legal and tax disputes are subject to the same estimation uncertainties and discretionary judgment as provisions for litigation. Therefore, the existence and the amount of the outflow of resources, which is not unlikely, is subject to estimation uncertainties similarly to the date on which a potential obligation arises.

Provisions for pensions and other post-employment benefits

Merck maintains several defined benefit pension plans, particularly in Germany, Switzerland and the United Kingdom. The determination of the present value of the obligation from these defined benefit pension plans primarily requires estimates of the discount rate, future salary increases, future pension increases and future cost increases for medical care.

Detailed information on the existing pension obligations and a sensitivity analysis of the parameters named above are provided in Note [26] "Provisions for pensions and other post-employment benefits" and under "Accounting and measurement principles" in Note [64] "Provisions for pensions and other post-employment benefits". As of the balance sheet date, the amount recorded in the consolidated balance sheet for provisions for pensions and other post-employment benefits was € 1,836.1 million (2014: € 1,820.1 million). The present value of the defined benefit pension obligation was € 4,152.7 million as of December 31, 2015 (2014: € 3,812.7 million).

Income taxes

The calculation of the reported assets and liabilities from current and deferred income taxes requires extensive discretionary judgments, assumptions and estimates. Income tax liabilities were € 1,011.3 million as of December 31, 2015 (2014: € 849.8 million). The carrying amounts of deferred tax assets and liabilities amounted to € 1,049.6 million and € 2,852.7 million, respectively, as of the balance sheet date (2014: € 992.9 million and € 818.4 million, respectively).

The recognized income tax liabilities and provisions are partially based on estimates and interpretations of tax laws and ordinances in different jurisdictions.

With regard to deferred tax items, there are degrees of uncertainty concerning the date on which an asset is realized or a liability settled and concerning the tax rate applicable on this date. This particularly relates to deferred tax liabilities recognized in the context of the acquisitions of the Sigma-Aldrich Corporation, the Millipore Corporation, Serono SA, and AZ Electronic Materials S.A. The recognition of deferred tax assets from loss carryforwards requires an estimate of the probability of the future realizability of loss carryforwards. Factors considered in this estimate are results history, results planning and any tax planning strategy of the respective Group company.

Assets held for sale, disposal groups and discontinued operations

The assessment as to when a non-current asset, disposal group or discontinued operation meets the prerequisites for a classification as "held for sale" is subject to significant discretionary judgment. Even in the case of an existing management decision to review a disposal, an assessment subject to uncertainties has to be made as to the probability that a corresponding disposal will occur during the year or not.

Applicable foreign exchange mechanism in Venezuela

Through subsidiaries, the Merck Group imports and distributes products in Venezuela. The translation of the local financial statements from Venezuelan bolivars as the functional currency to euros as the reporting currency must proceed in analogous application of IAS 21.26 using the exchange rate at which the future cash flows represented by the transaction or balance could have been settled if those cash flows had occurred at the measurement date.

The Venezuelan bolivar is not a freely convertible currency, meaning that its exchange into other currencies requires authorization and must take place at official exchange rates set by the government. As of December 31, 2015, the three following exchange rate mechanisms were in place:

- "CENCOEX" (6.3 bolivars per U.S. dollar): Official privileged exchange rate mechanism allowed only for imports of high-priority essential goods such as food and medicines;
- "SICAD" (13.5 bolivars per U.S. dollar): Official exchange rate mechanism whereby exchange rates are set based on the conducted auctions.
- "SIMADI" (Marginal Currency System) (198.7 bolivars per U.S. dollar): Official exchange rate mechanism that permits individuals and entities to buy and sell foreign currency with fewer restrictions than other exchange rate mechanisms in Venezuela.

In the past, Merck applied the privileged exchange rate mechanism CENCOEX for the translation of local financial statements prepared in Venezuelan bolivars, the functional currency, into euros, the reporting currency. In 2015, the Venezuelan authorities have been increasingly limiting authorizations to pay for imports using the privileged exchange rate. Against this background and owing to the development of payments received as well as the growing uncertainty since the last balance sheet date regarding the extent to which the privileged CENCOEX exchange rate mechanism will be available in the future, the Executive Board of Merck came to the conclusion that for the translation as of July 1, 2015 of local financial statements reported in Venezuelan bolivars, the functional currency, into euros as the reporting currency, it will be necessary to apply the SIMADI exchange rate mechanism.

This estimate is discretionary. Merck continues to closely monitor the development of payments received and the exchange rate mechanism. Should the payment rates improve or if it can no longer be assumed that the SIMADI exchange rate is the relevant exchange rate for the translation from local currency into the reporting currency, euros, this could lead to an amended estimate, which in turn could trigger an amended currency translation.

On this basis, in fiscal 2015 Merck generated sales of € 175.1 million, € 168.3 million of which was attributable to the first half of 2015. Net sales using the CENCOEX exchange rate amounted to € 221.1 million in 2014. Cash and cash equivalents in Venezuela, translated using the SIMADI exchange rate as of December 31, 2015, amounted to € 8.2 million. They were classified as restricted.

Other judgments, assumptions and sources of estimation uncertainty

Merck makes other judgments, assumptions and estimates in the following areas:

- Classification of financial assets and financial liabilities
- Cash flow hedging for highly probable forecast transactions
- Determination of the fair value of financial instruments classified as available-for-sale and of derivative financial instruments
- Determination of the fair value of the liability for share-based compensation
- Determination of the fair value of plan assets

Notes to the Consolidated Income Statement

(8) Net sales

Net sales were generated primarily from the sale of goods and to a limited degree also included revenues from services rendered and commission income. Since January 1, 2015, commission income has been disclosed as part of sales. In 2014, royalty, license and commission income was disclosed in a separate line in the consolidated income statement. More information in Note [6] "Changes to accounting and measurement principles and disclosure changes".

Merck Group net sales totaled € 12,844.7 million in 2015 (2014: € 11,362.8 million), which represented an increase of 13.0% compared with 2014 (increase of 5.5% in 2014). The breakdown of net sales is presented in the Segment Reporting in Note [32] "Information by business sector/countries and regions".

(9) Cost of sales

Cost of sales primarily included the cost of manufactured products sold as well as merchandise sold. Cost comprises overheads and, if necessary, inventory write-downs, in addition to directly attributable costs, such as the cost of materials, personnel and energy, as well as depreciation/amortization.

(10) Marketing and selling expenses

Marketing and selling expenses comprised the following:

€ million	**2015**	2014
Sales force	–913.1	–809.3
Internal sales services	–740.0	–613.6
Sales promotion	–521.9	–469.4
Logistics	–471.2	–412.6
Amortization of intangible assets[1]	–778.9	–719.0
Royalty and license expenses	–512.8	–484.2
Other marketing and selling expenses	–111.6	–81.0
Marketing and selling expenses[2]	**–4,049.5**	**–3,589.1**

[1] Excluding amortization of internally generated or separately acquired software.
[2] The composition of Marketing and selling expenses has been changed, see "Changes to accounting and measurement principles and disclosure changes".

Amortization of intangible assets was mainly attributable to marketing approvals, customer relationships, brands, trademarks and other, which could be functionally allocated to Marketing and Selling.

Royalty and license expenses arose mainly in connection with the commercialization of Erbitux® outside the United States and Canada amounting to € 93.5 million (2014: € 84.7 million) as well as for the commercialization of Rebif® in the United States amounting to € 333.6 million (2014: € 314.6 million).

(11) Research and development costs

Research and development costs totaled € 1,709.2 million in 2015 (2014: € 1,703.7 million).

Reimbursements for research and development amounting to € 88.0 million (2014: € 18.4 million) were offset against research and development costs. This figure also included government subsidies of € 3.4 million (2014: € 5.9 million). The increase was mainly due to reimbursements from the strategic alliance with Pfizer Inc., USA.

The breakdown of research and development costs by region is presented in the Segment Reporting (see Note [32] "Information by business sector/country and region").

(12) Other operating income

Other operating income was as follows:

OTHER OPERATING INCOME

€ million	2015	2014
Income from milestone payments, rights and royalties	261.7	138.0
Gains on disposal of non-current assets	52.4	3.7
Release of allowances for receivables	40.2	41.8
Gains from the release of provisions for litigation	35.3	260.3
Exchange rate differences from operating activities (net)	–	53.3
Income from miscellaneous services	21.7	26.4
Other operating income[1]	59.4	40.9
Total other operating income[2]	**470.7**	**564.4**

[1] Previous year's figure has been adjusted. It comprises Income from investments.
[2] The composition of Other operating income has been changed, see "Changes to accounting and measurement principles and disclosure changes".

In 2015, € 191.4 million (2014: € 15.9 million) of the income from milestone payments, rights and royalties amounting to € 261.7 million (2014: € 138.0 million) was attributable to the collaboration agreement entered into with Pfizer Inc., USA, in 2014 in the field of immuno-oncology. This related to the pro rata recognition of deferred income from the upfront payment as well as the value of the right to co-promote Xalkori® (see Note [5] "Joint arrangements of material significance"). Royalty and license income was mainly due to the products Viibryd® (Allergan, Inc., Ireland) and Puregon® (Merck & Co. Inc., USA).

Gains on disposal of non-current assets in the amount of € 52.4 million (2014: € 3.7 million) were primarily attributable to the disposal of marketing authorizations and distribution rights as well as other investments carried at amortized cost.

Income from the release of provisions for litigation amounting to € 35.3 million (2014: € 260.3 million) resulted primarily from the adjustment of the provision in connection with the paroxetine legal dispute (see Note [27] "Provisions"). In 2014, income related mainly to the resolution of the legal dispute with Israel Bio-Engineering Project Limited Partnership ("IBEP").

There was no income from investments in fiscal 2015; in the prior year, income from investments amounted to € 1.5 million and was reported as other operating income.

(13) Other operating expenses

The breakdown of other operating expenses was as follows:

OTHER OPERATING EXPENSES

€ million	2015	2014
Impairment losses	–128.4	–100.2
Acquisition costs	–101.6	–24.5
Litigation	–85.1	–95.5
Allowances for receivables	–84.1	–41.9
Integration costs/IT costs	–77.6	–87.2
Premiums, fees and contributions	–56.8	–55.2
Exchange rate differences from operating activities (net)	–48.8	–
Restructuring costs	–47.5	–83.9
Non-income related taxes	–44.5	–35.5
Profit share expenses	–26.3	–53.3
Expenses for miscellaneous services	–20.3	–21.8
Project costs	–16.2	–4.4
Other operating expenses[1]	–180.1	–134.0
Total other operating expenses[2]	**–917.3**	**–737.4**

[1] The figure for 2014 was adjusted and now includes losses on the divestment of businesses.
[2] The composition of Other operating expenses has been changed, see "Changes to accounting and measurement principles and disclosure changes".

Impairment losses totaled € 128.4 million (2014: € 100.2 million) and related in the amount of € 120.9 million (2014: € 84.9 million) to assets which were assigned to research and development, in the amount of € 6.9 million (2014: € 5.7 million) to administration, and in the amount of € 0.3 million (2014: € 0.1 million) to sales-related assets. Impairment losses on production plants amounted to € 0.3 million (2014: € 5.1 million). No impairments were recognized for non-consolidated investments and other financial instruments which were classified to the category "available-for-sale" (2014: € 4.4 million). Further information on impairments can be found in Note [17] "Intangible assets".

Acquisition costs amounting to € 101.6 million (2014: € 24.5 million) were incurred in 2015 in connection with the acquisition and the integration of the Sigma-Aldrich Corporation, USA. In 2014, the expenses were largely attributable to the acquisition of AZ Electronic Materials S.A., Luxembourg.

Integration and IT costs of € 77.6 million (2014: € 87.2 million) were incurred primarily for the global harmonization of the IT landscape and in connection with the integration of acquired and existing businesses.

The restructuring charges incurred in fiscal 2015 amounting to € 47.5 million (2014: € 83.9 million) arose completely in connection with the "Fit for 2018" transformation and growth program (2014: € 79.5 million). As in the previous year, these charges largely related to personnel measures, for instance the elimination of positions in order to create a leaner and more efficient organization. Of the recognized impairment losses, an amount of € 6.9 million (2014: € 4.5 million) was attributable to the program, which resulted in total expenses of € 54.4 million (2014: € 84.0 million) for the "Fit for 2018" program.

Other operating expenses also included special environmental protection costs as well as personnel expenses not allocable to the functional areas.

(14) Financial result

€ million	2015	2014
Interest income and similar income	32.0	30.6
Interest expenses and similar expenses	–291.6	–159.8
Interest expenses from interest rate derivatives	–11.4	–2.6
Interest component from currency hedging transactions	–	–5.1
Interest result	**–271.0**	**–136.9**
Interest component of the additions to pension provisions and other non-current provisions	–45.8	–55.2
Currency differences from financing activities	–39.9	–13.0
Result from financial investments	–	0.1
	–356.7	**–205.0**

Higher interest expenses year-on-year were mainly the result of expenses for the hybrid bond issued in December 2014, the U.S. bond issued in March 2015, as well as the euro bond placed in August 2015. All the bonds are part of the financing of the acquisition of the Sigma-Aldrich Corporation, USA. More information about Merck bonds can be found in Note [28] “Financial liabilities/Capital management”.

Currency differences from financing activities were mainly the result of expenses for hedging intragroup transactions in foreign currency. These expenses result from hedging at forward rates while intragroup transactions are measured at spot rates. The increase over 2014 is mainly attributable to lower interest rates in Europe as well as a higher hedging volume.

The decline in the interest component of the additions to pension provisions and other non-current provisions resulted largely from lower interest expenses in connection with non-current provisions.

(15) Income tax

€ million	2015	2014
Current taxes in the period	–704.6	–592.4
Taxes for previous periods	–95.1	–21.9
Deferred taxes in the period	431.7	222.1
	–368.0	**–392.2**

The following table presents the tax reconciliation from theoretical tax expense to tax expense according to the consolidated income statement. The theoretical tax expense is determined by applying the statutory tax rate of 30.7% of a corporation headquartered in Darmstadt.

€ million	**2015**	2014
Profit before income tax	1,486.5	1,557.0
Tax rate	30.7%	30.7%
Theoretical tax expense	−456.4	−478.0
Tax rate differences	151.1	100.8
Tax effect of companies with a negative contribution to consolidated profit	−22.0	−15.8
Tax for other periods	−95.1	−21.9
Tax credits	520.7	23.2
Tax effect on tax loss carryforwards	16.1	18.5
Tax effect of non-deductible expenses/Tax-free income/Other tax effects	−482.4	−19.0
Tax expense according to consolidated income statement	**−368.0**	**−392.2**
Tax ratio according to consolidated income statement	24.8%	25.2%

The tax expense consisted of corporation and trade taxes for the companies domiciled in Germany as well as comparable income taxes for foreign companies.

The higher tax credits arose primarily in the United States due to the consideration of dividend income from high-tax countries. However, this dividend income is also taxable in the United States; the related tax expense is included in the item "Tax effect of non-deductible expenses/Tax-free income/Other tax effects." The change in the item "Tax for other periods" results, among other things, from the addition to provisions for tax audits.

The reconciliation between deferred taxes in the consolidated balance sheet and deferred taxes in the consolidated income statement is presented in the following table:

€ million	**2015**	2014
Change in deferred tax assets (balance sheet)	56.7	256.5
Change in deferred tax liabilities (balance sheet)	−2,034.3	−152.9
Deferred taxes credited/debited to equity	41.4	−177.4
Changes in scope of consolidation/currency translation/other changes	2,367.9	295.9
Deferred taxes (consolidated income statement)	**431.7**	**222.1**

Tax loss carryforwards were structured as follows:

	Dec. 31, 2015			Dec. 31, 2014		
€ million	**Germany**	**Abroad**	**Total**	Germany	Abroad	Total
Tax loss carryforwards	22.3	1,183.7	**1,206.0**	8.0	948.4	**956.4**
thereof: Including deferred tax asset	5.4	447.5	**452.9**	3.1	292.5	**295.6**
Deferred tax asset	0.4	113.9	**114.3**	0.5	71.5	**72.0**
thereof: Excluding deferred tax asset	16.9	736.2	**753.1**	4.9	655.9	**660.8**
Theoretical deferred tax asset	2.5	186.0	**188.5**	0.8	106.5	**107.3**

The increase in non-German tax loss carryforwards was mainly due to the recognition of loss carryforwards in Luxembourg as well as the acquisition vehicle Mario Finance Corp., USA. The interest expenses incurred in connection with the financing of the acquisition of the Sigma-Aldrich Corporation, USA, led to a negative tax result and to a higher deferred tax asset.

Deferred tax assets are recognized for tax loss and interest carryforwards only if for tax loss carryforwards of less than

€ 5.0 million realization of the related tax benefits is probable within one year, and for tax loss carryforwards of more than € 5.0 million realization of the related tax benefits is probable within the next three years.

The vast majority of the tax loss carryforwards either has no expiry date or can be carried forward for up to 20 years.

The tax loss carryforwards accumulated in Germany for corporation and trade tax amounted to € 22.3 million (2014: € 8.0 million).

The additional theoretically possible deferred tax assets amounted to € 188.5 million (2014: € 107.3 million).

In 2015, the income tax expense was reduced by € 16.1 million (2014: € 18.5 million) due to the utilization of tax loss carryforwards from prior years for which no deferred tax asset had been recognized in prior periods.

Deferred tax assets and liabilities correspond to the following balance sheet items:

	Dec. 31, 2015		Dec. 31, 2014	
€ million	Assets	Liabilities	Assets	Liabilities
Intangible assets	80.1	2,859.9	72.2	1,047.5
Property, plant and equipment	23.4	169.3	16.1	69.8
Current and non-current financial assets	10.4	11.8	0.1	3.6
Inventories	627.0	28.7	507.6	10.2
Current and non-current receivables/Other assets	25.9	10.8	57.5	7.4
Provisions for pensions and other post-employment benefits	351.3	69.6	338.0	47.2
Current and non-current other provisions	308.2	35.8	308.1	72.5
Current and non-current liabilities	124.9	19.7	120.0	36.0
Tax loss carryforwards	114.3	–	72.0	–
Tax refund claims/Other	163.5	426.5	18.7	41.6
Offset deferred tax assets and liabilities	–779.4	–779.4	–517.4	–517.4
Deferred taxes (consolidated balance sheet)	**1,049.6**	**2,852.7**	**992.9**	**818.4**

The increase in deferred tax liabilities on assets is largely due to their recognition at fair value within the scope of the purchase price allocation of the Sigma-Aldrich Corporation, USA.

In addition to deferred tax assets on tax loss carryforwards amounting to € 114.3 million (2014: € 72.0 million), deferred tax assets of € 935.3 million were recognized for temporary differences (2014: € 920.9 million).

As of the balance sheet date, deferred taxes for temporary differences for interests in subsidiaries were recognized to the extent that these related to planned dividend payments and, in this context, the reversal of these differences was foreseeable. Deferred tax liabilities in a total amount of € 391.2 million (2014: € 31.0 million) were recognized for the higher or lower tax expense attributable to dividend payments. The increase resulted from the planned dividend payments of companies acquired in connection with the Sigma-Aldrich acquisition. Temporary differences relating to the retained earnings of subsidiaries amounted to € 5,247.7 million (2014: € 5,194.3 million).

(16) Earnings per share

Basic earnings per share are calculated by dividing the profit after tax attributable to the shareholders of Merck KGaA by the weighted average number of theoretical shares outstanding. The use of a theoretical number of shares takes into account the fact that the general partner's capital is not represented by shares.

The share capital of € 168.0 million was divided into 129,242,252 shares. Accordingly, the general partner's capital of € 397.2 million was divided into 305,535,626 theoretical shares. Overall, the total capital thus amounted to € 565.2 million or 434,777,878 theoretical shares outstanding. The weighted average number of shares in 2015 was likewise 434,777,878.

Earnings per share from discontinued operations resulted from the business operations acquired with a view to resale in connection with the acquisition of the Sigma-Aldrich Corporation, USA (see Note [4] "Acquisitions, assets held for sale and disposal groups").

As of December 31, 2015 there were no potentially dilutive shares. Diluted earnings per share were equivalent to basic earnings per share.

Notes to the Consolidated Balance Sheet

(17) Intangible assets

€ million	Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other – Finite useful life	Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other – Indefinite useful life	Goodwill	Software	Advance payments and software in development	Total
Cost at January 1, 2014	**10,932.7**	**656.0**	**4,583.2**	**304.3**	**42.3**	**16,518.5**
Changes in scope of consolidation	1,049.5	–	818.4	1.6	–	1,869.5
Additions	62.1	38.6	–	2.2	40.4	143.3
Disposals	–4.8	–61.5	–	–11.9	–0.2	–78.4
Transfers	0.2	–	–	47.0	–45.5	1.7
Classification as held for sale or transfer to a disposal group	–	–	–	–	–	–
Currency translation	285.3	0.6	292.3	10.8	–	589.0
December 31, 2014	**12,325.0**	**633.7**	**5,693.9**	**354.0**	**37.0**	**19,043.6**
Accumulated amortization and impairment losses January 1, 2014	**–5,992.6**	**–441.1**	**–**	**–217.6**	**–**	**–6,651.3**
Changes in scope of consolidation	–	–	–	–	–	–
Amortization	–841.6	–	–	–35.6	–	–877.2
Impairment losses	–	–84.8	–	–5.1	–0.2	–90.1
Disposals	4.7	61.5	–	10.1	–	76.3
Transfers	–	–	–	–	–	–
Reversals of impairment losses	–	–	–	–	–	–
Classification as held for sale or transfer to a disposal group	–	–	–	–	–	–
Currency translation	–96.6	–0.6	–	–8.6	–	–105.8
December 31, 2014	**–6,926.1**	**–465.0**	**–**	**–256.8**	**–0.2**	**–7,648.1**
	5,398.9	**168.7**	**5,693.9**	**97.2**	**36.8**	**11,395.5**
Net carrying amount as of December 31, 2014						
Cost at January 1, 2014	**12,325.0**	**633.7**	**5,693.9**	**354.0**	**37.0**	**19,043.6**
Changes in scope of consolidation	5,774.8	–	8,643.6	36.0	68.0	14,522.4
Additions	302.7	125.8	–	1.7	43.3	473.5
Disposals	–3.3	–0.4	–	–9.2	–	–12.9
Transfers	8.2	–2.0	–	36.5	–37.8	4.9
Classification as held for sale or transfer to a disposal group	–61.4	–	–21.6	–	–	–83.0
Currency translation	140.8	0.4	54.2	5.9	0.1	201.4
December 31, 2015	**18,486.8**	**757.5**	**14,370.1**	**424.9**	**110.6**	**34,149.9**
Accumulated amortization and impairment losses January 1, 2015	**–6,926.1**	**–465.0**	**–**	**–256.8**	**–0.2**	**–7,648.1**
Changes in scope of consolidation	–	–	–	–	–	–
Amortization	–948.2	–	–	–36.0	–	–984.2
Impairment losses	–5.9	–108.5	–	–0.4	–	–114.8
Disposals	3.3	0.1	–	8.7	–	12.1
Transfers	–4.1	–	–	0.2	–	–3.9
Reversals of impairment losses	–	–	–	–	–	–
Classification as held for sale or transfer to a disposal group	37.5	–	–	–	–	37.5
Currency translation	–104.2	–0.5	–	–4.8	–	–109.5
December 31, 2015	**–7,947.7**	**–573.9**	**–**	**–289.1**	**–0.2**	**–8,810.9**
Net carrying amount as of December 31, 2015	**10,539.1**	**183.6**	**14,370.1**	**135.8**	**110.4**	**25,339.0**

Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other

The changes in the scope of consolidation mainly include additions to intangible assets resulting from the acquisition of the Sigma-Aldrich Corporation, USA. A detailed presentation of this acquisition can be found in Note [4] “Acquisitions, assets held for sale and disposal groups”.

The net carrying amount of “Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other” with finite useful lives amounting to € 10,539.1 million (2014: € 5,398.9 million) mainly included the identified and capitalized assets from the purchase price allocations for the acquisition of the Sigma-Aldrich Corporation, AZ Electronic Materials S.A., the Millipore Corporation, and Serono SA. The vast majority was attributable to customer relationships. The remaining useful lives of these assets ranged between 0.3 and 23.9 years.

The additions to intangible assets with finite useful lives amounted to € 302.7 million in 2015 (2014: € 62.1 million). The Healthcare business sector accounted for € 295.6 million of this figure. Most of this amount, or € 294.4 million, was attributable to the co-marketing right for the product Xalkori® with Pfizer Inc., USA (see Note [5] “Joint arrangements of material significance”).

The item “Customer relationships, marketing authorizations, patents, licenses and similar rights, brand names, trademarks and other” with indefinite useful lives primarily related to rights that Merck had acquired for active ingredients, products or technologies that were still in the research and development stage. Owing to the uncertainty as to the extent to which these projects will ultimately lead to the marketing of marketable products, the period for which the resulting capitalized assets would generate an economic benefit for the company could not yet be determined. Amortization will only begin once the products receive marketing approval and is carried out on a straight-line basis over the shorter period of the patent or contract term or the expected useful life.

In 2015, additions to intangible assets with indefinite useful lives amounted to € 125.8 million (2014: € 38.6 million) and were almost exclusively attributable to the Healthcare business sector with € 125.4 million. The vast majority was attributable to a capitalized upfront payment of € 103.8 million (US$ 115 million) made to the Intrexon Corporation, USA, in connection with the strategic collaboration and license agreement to develop and commercialize Chimeric Antigen Receptor T-cell (CAR-T) cancer therapies. For the first two targets of interest selected by the Healthcare business sector, Intrexon will receive research funding and is eligible to receive up to US$ 826 million (€ 755.6 million, translated at the closing rate) for development, regulatory and commercial milestones, as well as tiered royalties on product sales.

Intangible assets with definite useful lives amounting to € 23.9 million (historical acquisition and manufacturing costs of € 61.4 million and accumulated amortization of € 37.5 million) as well as allocable goodwill of € 21.6 million were reclassified to “assets held for sale”. Details of this transaction are presented in Note [4] “Acquisitions, assets held for sale and disposal groups”.

In 2015, borrowing costs of € 3.4 million directly allocable to intangible assets were capitalized.

Goodwill

Goodwill was incurred mainly in connection with the acquisition of the Sigma-Aldrich Corporation, AZ Electronic Materials S.A., the Millipore Corporation, and Serono SA. The changes in goodwill caused by foreign exchange rates resulted almost exclusively from translating the goodwill from the acquisitions of the Sigma-Aldrich Corporation, AZ Electronic Materials S.A. and the Millipore Corporation, part of which is carried in U.S. dollars, into the reporting currency. More information on the acquisition of the Sigma-Aldrich Corporation can be found in Note [4] “Acquisitions, assets held for sale and disposal groups”.

The carrying amounts of “Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other” as well as goodwill were attributable to the business sectors as follows:

€ million	Remaining useful life in years	Healthcare	Life Science[1]	Performance Materials[1]	**Total Dec. 31, 2015**	Total Dec. 31, 2014
Customer relationships, marketing authorizations, patents, licenses and similar rights, brands, trademarks and other						
Finite useful life	**–**	**2,276.3**	**6,907.1**	**1,355.7**	**10,539.1**	**5,398.9**
Rebif®	4.0	1,472.9	–	–	1,472.9	1,841.0
Gonal-f®	3.0	284.9	–	–	284.9	379.8
Xalkori®	6.0	261.7	–	–	261.7	–
Saizen®	4.0	122.9	–	–	122.9	153.7
Other marketing authorizations	4.0 – 6.3	85.8	–	–	85.8	103.7
Technologies	0.3 – 12.0	–	512.2	1,003.5	1,515.7	1,462.7
Brands	0.5 – 11.9	6.6	1,154.2	31.5	1,192.3	269.7
Customer relationships	0.5 – 23.9	1.9	5,240.7	316.7	5,559.3	1,097.0
Others	2.3 – 18.5	39.6	–	4.0	43.6	91.3
Indefinite useful life	**–**	**183.2**	**0.4**	**–**	**183.6**	**168.7**
Goodwill	**–**	**1,822.9**	**11,130.4**	**1,416.8**	**14,370.1**	**5,693.9**

[1] Carrying amounts of the intangible assets acquired within the scope of the acquisition of the Sigma-Aldrich Corporation, USA, are preliminary.

Information on impairment tests of intangible assets with indefinite useful lives

In 2015, goodwill was not impaired. The assumptions used in the goodwill impairment test are presented in Note [7] “Management judgments and sources of estimation uncertainty”.

In 2015, impairment losses on intangible assets with indefinite useful lives totaled € 108.5 million (2014: € 84.8 million). Of this amount, an impairment loss of € 84.4 million was attributable to the capitalized upfront and milestone payments for evofosfamide. The reason for this impairment loss was that in the indications locally advanced inoperable or metastatic soft-tissue sarcoma as well as advanced pancreatic cancer, evofosfamide failed to meet the primary endpoints in two corresponding Phase III clinical trials. Merck therefore decided not to pursue evofosfamide further and not to submit it for approval. Moreover, four development projects were discontinued and their carrying amounts of € 22.3 million was recognized in full as an impairment loss.

All of these items were allocated in the consolidated income statement to the Biopharma business and recorded in impairment losses under operating expenses. In 2015, no intangible assets were pledged as security for liabilities.

(18) Property, plant and equipment

€ million	Land, land rights and buildings, including buildings on third-party land	Plant and machinery	Other facilities, operating and office equipment	Construction in progress and advance payments to vendors and contractors	Total
Cost at January 1, 2014	**2,412.5**	**3,200.8**	**925.0**	**263.5**	**6,801.8**
Changes in the scope of consolidation	89.8	58.9	33.5	3.6	185.8
Additions	20.5	23.9	30.9	410.9	486.2
Disposals	−14.3	−49.2	−46.8	−2.9	−113.2
Transfers	69.6	132.9	58.4	−253.2	7.7
Classification as held for sale or transfer to a disposal group	–	–	–	–	–
Currency translation	57.3	42.4	16.5	8.6	124.8
December 31, 2014	**2,635.4**	**3,409.7**	**1,017.5**	**430.5**	**7,493.1**
Accumulated depreciation and impairment losses January 1, 2014	**−1,069.8**	**−2,374.5**	**−709.4**	**−0.9**	**−4,154.6**
Changes in the scope of consolidation	–	–	–	–	–
Depreciation	−104.3	−189.8	−90.4	–	−384.5
Impairment losses	−0.4	−4.7	−0.6	–	−5.7
Disposals	10.7	46.1	44.9	0.1	101.8
Transfers	−4.1	−0.1	0.1	–	−4.1
Reversals of impairment losses	0.1	0.4	0.2	–	0.7
Classification as held for sale or transfer to a disposal group	–	–	–	–	–
Currency translation	−19.0	−25.6	−11.6	−0.1	−56.3
December 31, 2014	**−1,186.8**	**−2,548.2**	**−766.8**	**−0.9**	**−4,502.7**
Net carrying amount as of December 31, 2014	**1,448.6**	**861.5**	**250.7**	**429.6**	**2,990.4**
Cost at January 1, 2015	**2,635.4**	**3,409.7**	**1,017.5**	**430.5**	**7,493.1**
Changes in the scope of consolidation	517.1	233.7	10.3	80.0	841.1
Additions	5.9	27.5	28.2	502.4	564.0
Disposals	−44.8	−52.0	−54.1	−4.3	−155.2
Transfers	129.5	223.1	68.7	−417.4	3.9
Classification as held for sale or transfer to a disposal group	–	–	–	–	–
Currency translation	48.4	37.5	13.4	1.0	100.3
December 31, 2015	**3,291.5**	**3,879.5**	**1,084.0**	**592.2**	**8,847.2**
Accumulated depreciation and impairment losses January 1, 2015	**−1,186.8**	**−2,548.2**	**−766.8**	**−0.9**	**−4,502.7**
Changes in the scope of consolidation	–	–	–	–	–
Depreciation	−109.8	−196.6	−92.8	–	−399.2
Impairment losses	−7.7	−2.2	−3.6	−0.1	−13.6
Disposals	41.0	49.5	51.9	0.9	143.3
Transfers	−3.5	−5.0	3.9	–	−4.6
Reversals of impairment losses	–	0.9	–	–	0.9
Classification as held for sale or transfer to a disposal group	–	–	–	–	–
Currency translation	−22.2	−30.0	−9.9	−0.1	−62.2
December 31, 2015	**−1,289.0**	**−2,731.6**	**−817.3**	**−0.2**	**−4,838.1**
Net carrying amount as of December 31, 2015	**2,002.5**	**1,147.9**	**266.7**	**592.0**	**4,009.1**

Changes in the scope of consolidation mainly included the additions to property, plant and equipment from the acquisition of the Sigma-Aldrich Corporation, USA. A detailed presentation of this acquisition can be found in Note [4] "Acquisitions, assets held for sale and disposal groups".

Material additions to construction in progress are attributable to the expansion of global headquarters as well as the construction of a new modular Innovation Center and a second energy station at the Darmstadt site. Further investments at the Darmstadt site were made in a new OLED production plant and a new laboratory building. In addition, investments were made in a new pharmaceutical production plant in Nantong, China, as well as at the production sites in Bari, Italy, and Reinbek, Germany. Furthermore, construction work on a new packaging site in Aubonne, Switzerland, started, and investments were made to expand the production site. Transfers relating to construction in progress mainly include completed subprojects at Group headquarters in Darmstadt as well as investments in the United States, Ireland and Switzerland.

In 2015, impairment losses in the amount of € 13.6 million (2014: € 5.7 million) were recognized. These related mainly to assets allocated to the Healthcare business sector as well as central Group functions.

The total amount of property, plant and equipment used to secure financial liabilities as well as government grants and subsidies was immaterial.

Directly allocable borrowing costs on qualified assets in the amount of € 6.1 million (2014: € 3.2 million) were capitalized.

Property, plant and equipment also included assets that were leased. The total value of capitalized leased assets amounted to € 8.9 million (2014: € 9.4 million) and the corresponding obligations amounted to € 4.8 million (2014: € 6.5 million) (see Note [40] "Other financial obligations").

The carrying amounts of assets classified as finance leases were as follows:

€ million	**Dec. 31, 2015**	Dec. 31, 2014
Land and buildings	6.4	6.8
Vehicles	1.2	1.1
Other property, plant and equipment	1.3	1.5
	8.9	**9.4**

(19) Financial assets

€ million	**current**	**non-current**	**Dec. 31, 2015**	current	non-current	Dec. 31, 2014
Held to maturity investments	29.8	–	29.8	21.7	–	21.7
Available-for-sale financial assets	161.6	110.4	272.0	2,135.0	80.7	2,215.7
Loans and receivables	2.9	16.5	19.4	2.9	13.7	16.6
Derivative assets (financial transactions)	32.7	4.6	37.3	39.8	–	39.8
Total	**227.0**	**131.5**	**358.5**	**2,199.4**	**94.4**	**2,293.8**

Current financial assets primarily include available-for-sale financial assets amounting to € 161.6 million (2014: € 2,135.0 million). As of December 31, 2015 this item mainly included bonds amounting to € 143.0 million (2014: € 1,178.6 million). There were no investments in commercial paper in 2015 (2014: € 956.4 million).The decrease results from the liquidation of available-for-sale financial assets to make the purchase price payment for the acquisition of the Sigma-Aldrich Corporation, USA (see Note [4] "Acquisitions, assets held for sale and disposal groups").

The loans and receivables contained in current financial assets are neither past due nor impaired.

Non-current available-for-sale financial assets mainly include unconsolidated investments amounting to € 22.0 million (2014: € 21.5 million) and investments in associates and other companies amounting to € 87.5 million (2014: € 57.9 million). In 2015, no impairment losses were recognized for unconsolidated investments or for other available-for-sale non-current financial assets. The prior year's impairment losses amounting to € 4.4 million were recorded in the consolidated income statement under other operating expenses.

(20) Other assets

Other assets comprised:

€ million	**current**	**non-current**	**Dec. 31, 2015**	current	non-current	Dec. 31, 2014
Other receivables[1]	152.0	3.1	155.1	163.1	5.4	168.5
Derivative assets (operational)	7.6	6.2	13.8	468.5	2.9	471.4
Financial items	**159.6**	**9.3**	**168.9**	**631.6**	**8.3**	**639.9**
Receivables from non-income related taxes	176.3	29.1	205.4	199.8	24.5	224.3
Prepaid expenses	61.1	19.9	81.0	53.8	17.1	70.9
Assets from defined benefit plans	6.3	–	6.3	1.8	–	1.8
Other assets	92.9	69.5	162.4	339.3	6.6	345.9
Non-financial items	**336.6**	**118.5**	**455.1**	**594.7**	**48.2**	**642.9**
	496.2	**127.8**	**624.0**	**1,226.3**	**56.5**	**1,282.8**

[1] Previous year's figures have been adjusted, see "Changes to accounting and measurement principles and disclosure changes".

Other receivables included current receivables from related parties amounting to € 35.4 million (2014: € 76.5 million) as well as current receivables from affiliates amounting to € 6.3 million (2014: € 0.9 million). Moreover, this includes license receivables amounting to € 11.5 million (2014: € 16.1 million). Interest receivables amounted to € 1.4 million (2014: € 12.5 million). In addition, other prepayments were reported under this item. Owing to the completion of the acquisition of the Sigma-Aldrich Corporation, USA, and the realization of hedging transactions in this connection, derivative assets declined. The increase in other non-current assets is largely the result of the inclusion of Sigma-Aldrich. In 2014, other current assets included the entitlement to the joint marketing right for Xalkori® (crizotinib) with Pfizer Inc., USA, in the amount of € 294.4 million, which was reclassified to intangible assets in 2015.

Other receivables from third parties were as follows:

€ million	**Dec. 31, 2015**	Dec. 31, 2014
Neither past due nor impaired	152.5	164.6
Past due, but not impaired		
up to 3 months	0.7	2.2
up to 6 months	0.7	–
up to 12 months	0.2	–
up to 24 months	0.9	0.9
over 2 years	0.1	0.2
Impaired	–	0.6
Carrying amount[1]	**155.1**	**168.5**

[1] Previous year's figures have been adjusted, see "Changes to accounting and measurement principles and disclosure changes".

In 2015, no allowances for other receivables from third parties were necessary (2014: € 0.4 million). There were no reversals of allowances in this connection in 2015 or in 2014.

(21) Inventories

This item comprised:

€ million	Dec. 31, 2015	Dec. 31, 2014
Raw materials and supplies	493.3	377.3
Work in progress	679.1	496.6
Finished goods	1,405.9	726.9
Goods for resale	41.5	58.9
	2,619.8	**1,659.7**

Write-downs of inventories in 2015 amounted to € 133.3 million (2014: € 99.5 million). In 2015, reversals of inventory write-downs of € 47.3 million were recorded (2014: € 45.3 million). As of the balance sheet date, no inventories were pledged as security for liabilities. The increase in finished goods is largely due to inventories acquired from the Sigma-Aldrich Corporation, USA, which were recognized at their fair values.

(22) Trade accounts receivable

Trade accounts receivable amounting to € 2,738.3 million (2014: 2,219.5 million) exclusively existed vis-à-vis third parties.

The maturity structure of trade accounts receivable was as follows:

€ million	Dec. 31, 2015	Dec. 31, 2014
Neither past due nor impaired	2,320.6	1,793.4
Past due, but not impaired		
up to 3 months	234.1	143.3
up to 6 months	14.2	13.5
up to 12 months	4.7	5.8
up to 24 months	2.0	5.1
over 2 years	0.4	0.5
Impaired	162.3	257.9
Carrying amount[1]	**2,738.3**	**2,219.5**

[1] Previous year's figures have been adjusted, see "Changes to accounting and measurement principles and disclosure changes".

The corresponding allowances developed as follows:

€ million	2015	2014
January 1	**–126.2**	**–136.8**
Additions	–84.1	–41.5
Reversals	40.2	41.8
Utilizations	8.8	9.7
Currency translation and other changes	–4.2	0.6
December 31	**–165.5**	**–126.2**

In the period from January 1 to December 31, 2015 trade accounts receivable in Italy with a nominal value of € 130.8 million were sold for € 128.5 million. Previous impairments in this context amounting to € 3.9 million were reversed and disclosed under other operating income. The sold receivables do not involve any further rights of recovery against Merck.

(23) Income tax receivables

Income tax receivables amounted to € 391.0 million (2014: € 297.0 million). The increase largely resulted from higher tax credits in the United States due to the inclusion of dividend income from high-tax countries. In addition, tax receivables above all resulted from tax prepayments that exceeded the actual amount of tax payable for 2015 and prior fiscal years, and from refund claims for prior years.

(24) Cash and cash equivalents

This item comprised:

€ million	**Dec. 31, 2015**	Dec. 31, 2014
Cash, bank balances and cheques	577.5	546.7
Short-term cash investments (up to 3 months)	254.7	2,331.8
	832.2	**2,878.5**

Changes in cash and cash equivalents as defined by IAS 7 are presented in the consolidated cash flow statement.

Cash and cash equivalents include restricted cash amounting to € 326.6 million (2014: € 254.4 million). Restricted cash relates mainly to cash and cash equivalents with subsidiaries which the Group only has restricted access to owing to foreign exchange controls.

The maximum default risk is equivalent to the carrying value of the cash and cash equivalents.

(25) Equity

Equity capital

The total capital of the company consists of the share capital composed of shares and the equity interest held by the general partner E. Merck KG. As of the balance sheet date, the company's share capital amounting to € 168.0 million was divided into 129,242,251 no-par value bearer shares plus one registered share and is disclosed as subscribed capital. The amount resulting from the issue of shares by Merck KGaA exceeding the nominal amount was recognized in the capital reserves. The equity interest held by the general partner amounted to € 397.2 million.

E. Merck KG's share of net profit

E. Merck KG and Merck KGaA engage in reciprocal net profit transfers. This makes it possible for E. Merck KG, the general partner of Merck KGaA, and the shareholders to participate in the net profit/loss of Merck KGaA in accordance with the ratio of the general partner's equity interest and the share capital (70.274% or 29.726% of the total capital).

The allocation of net profit/loss is based on the net income of E. Merck KG determined in accordance with the provisions of the German Commercial Code as well as the income/loss from ordinary activities and the extraordinary result of Merck KGaA. These results are adjusted for trade tax and create the basis for the allocation of net profit/loss.

The reciprocal net profit/loss transfer between E. Merck KG and Merck KGaA as stipulated by the Articles of Association was as follows:

		2015		2014	
€ million		**E. Merck KG**	**Merck KGaA**	E. Merck KG	Merck KGaA
Result of E. Merck KG		– 19.6	–	– 17.9	–
Result of ordinary activities of Merck KGaA		–	609.2	–	651.2
Extraordinary result		–	–	–	–
Adjustment for trade tax in accordance with Art. 27 (1) Articles of Association of Merck KGaA		–	–	– 3.1	–
Trade tax in accordance with Art. 30 (1) Articles of Association of Merck KGaA		–	– 87.2	–	– 54.2
Basis for appropriation of profits	**(100%)**	**– 19.6**	**522.0**	**– 21.0**	**597.0**
Profit transfer to E. Merck KG Ratio of general partner's capital to total capital	(70.274%)	366.8	– 366.8	419.5	– 419.5
Profit transfer from E. Merck KG Ratio of share capital to total capital	(29.726%)	5.8	– 5.8	6.3	– 6.3
Trade tax		–	–	3.1	
Corporation tax		–	– 28.7		– 22.8
Net income		**353.0**	**120.7**	**407.9**	**148.4**

The result of E. Merck KG on which the appropriation of profits adjusted for trade tax is based amounted to € – 19.6 million (2014: € – 21.0 million). This resulted in a result transfer to Merck KGaA of € – 5.8 million (2014: € – 6.3 million). Merck KGaA's result from ordinary activities adjusted for trade tax and extraordinary result, on which the appropriation of its profit is based, amounted to € 522.0 million (2014: € 597.0 million). Merck KGaA transferred € 366.8 million of its profit to E. Merck KG (2014: € 419.5 million). In addition, an expense from corporation tax charges amounting to € 28.7 million resulted (2014: expense of € 22.8 million). Corporation tax is only calculated on the income received by shareholders. Its equivalent is the income tax applicable to E. Merck KG. However, this must be paid by the partners of E. Merck KG directly and is not disclosed in the annual financial statements.

Appropriation of profits

The profit distribution to be resolved upon by shareholders also defines the amount of that portion of net profit/loss freely available to E. Merck KG. If the shareholders resolve to carry forward or to allocate to retained earnings a portion of Merck KGaA's net retained profit to which they are entitled, then E. Merck KG is obligated to allocate to the profit brought forward/retained earnings of Merck KGaA a comparable sum determined in accordance with the ratio of share capital to general partner's capital. This ensures that the retained earnings and the profit carried forward of Merck KGaA correspond to the ownership ratios of the shareholders on the one hand and E. Merck KG on the other hand. Consequently, for distributions to E. Merck KG, only the amount is available that results after netting the profit transfer of Merck KGaA with the amount either allocated or withdrawn by E. Merck KG from retained earnings/profit carried forward. This amount corresponds to the amount that is paid as a dividend to the shareholders, and reflects their pro rata shareholding in the company.

€ million	2015 E. Merck KG	2015 Merck KGaA	2014 E. Merck KG	2014 Merck KGaA
Net income/loss	353.0	120.7	407.9	148.4
Profit carried forward from previous year	71.9	30.4	26.3	11.2
Withdrawal from revenue reserves	–	–	–	–
Transfer to revenue reserves	–	–	–	–
Retained earnings Merck KGaA		**151.1**		**159.6**
Withdrawal by E. Merck KG	–388.4		–362.3	
Dividend proposal		–135.7		–129.2
Profit carried forward	**36.5**	**15.4**	**71.9**	**30.4**

For 2014, a dividend of € 1.00 per share was distributed. The dividend proposal for fiscal 2015 will be € 1.05 per share, corresponding to a total dividend payment of € 135.7 million (2014: € 129.2 million) to shareholders. The amount withdrawn by E. Merck KG would amount to € 388.4 million (2014: € 362.3 million).

Changes in reserves

For 2015 the profit transfer to E. Merck KG including changes in reserves amounted to € 461.0 million. This consists of the profit transfer to E. Merck KG (€ –366.8 million), the result transfer from E. Merck KG to Merck KGaA (€ –5.8 million), the change in profit carried forward of E. Merck KG (€ –35.4 million) as well as the profit transfer from Merck & Cie to E. Merck KG (€ –53.0 million). Merck & Cie is a partnership under Swiss law that is controlled by Merck KGaA, but distributes its operating result directly to E. Merck KG. This distribution is a payment to shareholders and is therefore also presented under changes in equity.

Non-controlling interests

The disclosure of non-controlling interests was based on the stated equity of the subsidiaries concerned after any adjustment required to ensure compliance with the accounting policies of the Merck Group, as well as pro rata consolidation entries.

The net equity and profit attributable to non-controlling interests mainly related to the minority interests in the publicly traded companies Merck Ltd., India, and P.T. Merck Tbk, Indonesia, as well as Merck Ltd., Thailand and Merck (Pvt.) Ltd., Pakistan.

In 2014, for an interim period, non-controlling interests of € 161.9 million also existed in the course of the acquisition of AZ Electronic Materials S.A., Luxembourg. The acquisition of these interests after May 2, 2014 was recognized in equity as a transaction without a change of control. This lowered retained earnings by € 189.4 million. This amount represents the difference between the purchase price of € 351.3 million paid for the remaining shares and the disposal of non-controlling interests in the amount of € 161.9 million.

(26) Provisions for pensions and other post-employment benefits

Depending on the legal, economic and fiscal circumstances prevailing in each country, different retirement benefit systems are provided for the employees of the Merck Group. Generally these systems are based on the years of service and salaries of the employees. Pension obligations of the Merck Group include both defined benefit and defined contribution plans and comprise both obligations from current pensions and accrued benefits for pensions payable in the future. In the Merck Group, defined benefit plans are funded and unfunded. Provisions also contain other post-employment benefits, such as accrued future health care costs for retirees in the United States.

In order to limit the risks of changing capital market conditions and demographic developments, for many years now Merck has been offering newly hired employees plans that are largely structured as defined contribution systems.

The value recognized in the consolidated balance sheet for pensions and other post-employment benefits was derived as follows:

€ million	Dec. 31, 2015	Dec. 31, 2014
Present value of all defined benefit obligations	**4,152.7**	**3,812.7**
Fair value of the plan assets	–2,322.9	–1,994.4
Funded status	**1,829.8**	**1,818.3**
Effects of asset ceilings	–	–
Net defined benefit liability recognized in the balance sheet	**1,829.8**	**1,818.3**
Assets from defined benefit plans	6.3	1.8
Provisions for pensions and other post-employment benefits	**1,836.1**	**1,820.1**

The calculation of the defined benefit obligations as well as the relevant plan assets was based on the following actuarial parameters:

	Germany		Switzerland		United Kingdom		Other countries	
in %	**2015**	2014	**2015**	2014	**2015**	2014	**2015**	2014
Discount rate	2.40	2.00	0.70	1.00	3.86	3.66	3.72	4.16
Future salary increases	2.50	2.52	1.80	1.96	2.42	2.10	3.80	4.53
Future pension increases	1.75	1.75	–	–	3.07	3.06	1.91	1.58
Future cost increases for health care benefits	–	–	–	–	–	–	5.06	5.10

These are average values weighted by the present value of the respective benefit obligation.

The defined benefit obligations of the Merck Group were based on the following types of benefits provided by the respective plan:

	Germany	Other countries	Merck Group
Present value of defined benefit obligations in € million	Dec. 31, 2015	Dec. 31, 2015	Dec. 31, 2015
Benefit based on final salary			
Annuity	2,346.3	577.1	2,923.4
Lump sum	–	103.3	103.3
Installments	1.3	–	1.3
Benefit not based on final salary			
Annuity	205.8	834.9	1,040.7
Lump sum	–	42.1	42.1
Installments	6.8	–	6.8
Medical plan	–	35.1	35.1
	2,560.2	**1,592.5**	**4,152.7**

The main benefit rules are as follows:

Merck Group companies in Germany accounted for € 2,560.2 million of the defined benefit obligations (2014: € 2,692.5 million; due to the acquisition of the Sigma-Aldrich Corporation, USA, the obligations increased by € 21.4 million in 2015) as well as for € 1,103.9 million of the plan assets (2014: € 1,100.4 million). Of these amounts the vast majority in each case were attributable to plans that encompass old-age, disability and surviving dependent pensions. On the one hand, these obligations are based on benefit rules comprising benefit commitments dependent upon years of service and final salary from which newly hired employees have been excluded. On the other hand, the benefit rules applicable to employees newly hired since January 1, 2005 comprise a direct commitment basically in the form of a defined contribution pension plan. The benefit entitlement results from the cumulative total of annually determined pension components that are calculated on the basis of a defined benefit expense and an age-dependent annuity table. Statutory minimum funding obligations do not exist.

Pension plans in Switzerland accounted for € 767.9 million of the defined benefit obligations (2014: € 439.8 million; due to the acquisition of the Sigma-Aldrich Corporation the obligations increased by € 188.3 million in 2015) as well as for € 599.8 million of the plan assets (2014: € 391.7 million; due to the acquisition of the Sigma-Aldrich Corporation, the plan assets increased by € 146.5 million in 2015). These obligations are largely based on the granting of old-age, disability and surviving dependent benefits, which include the legally required benefits. Both employer and employee contributions are paid into the pension funds. Statutory minimum funding obligations exist.

Pension plans in the United Kingdom accounted for € 500.0 million of the defined benefit obligations (2014: € 390.0 million; due to the acquisition of Sigma-Aldrich, the obligations increased by € 103.9 million in 2015) as well as for € 465.8 million of the plan assets (2014: € 357.5 million; due to the acquisition of Sigma-Aldrich, the plan assets increased by € 93.6 million in 2015). These obligations result primarily from benefit plans which are based on years of service and final salary and were closed to newly hired employees in 2006. The agreed benefits comprise old-age, disability and surviving dependent benefits. The employer and the employees make contributions to the plans. Statutory minimum funding obligations exist.

In the reporting period, the following items were recognized in income:

€ million	**2015**	2014
Current service cost	134.4	83.5
Past service cost	0.1	–2.5
Gains (–) or losses (+) on settlement	–1.1	–4.3
Other effects recognized in income	5.5	1.8
Interest expense	82.8	101.9
Interest income	–44.8	–67.2
Total amount recognized in income	**176.9**	**113.2**

With the exception of the net balance of interest expense on the defined benefit obligations and interest income from the plan assets, which is recorded under the financial result, the relevant expenses for defined benefit and defined contribution pension systems are allocated to the individual functional areas.

During the reporting period, the present value of the defined benefit obligations changed as follows:

€ million	**Funded benefit obligations**	**Benefit obligations funded by provisions**	**2015**	Funded benefit obligations	Benefit obligations funded by provisions	2014
Present value of the defined benefit obligations on January 1	3,503.6	309.1	3,812.7	2,533.0	203.8	2,736.8
Currency translation differences recognized in equity	39.0	−3.2	35.8	33.7	3.1	36.8
Currency translation differences recognized in income	37.7	–	37.7	5.5	–	5.5
Current service cost	119.0	15.4	134.4	73.0	10.5	83.5
Past service cost	0.2	−0.1	0.1	−2.0	−0.5	−2.5
Gains (−) or losses (+) on settlement	−1.1	–	−1.1	−3.2	−1.1	−4.3
Interest expense	75.5	7.3	82.8	92.6	9.0	101.6
Actuarial gains (−)/losses (+)	−166.4	−22.9	−189.3	849.2	73.8	923.0
Contributions by plan participants	10.6	–	10.6	7.2	–	7.2
Pension payments	−146.4	−6.5	−152.9	−94.0	−5.9	−99.9
Changes in the scope of consolidation	342.5	43.2	385.7	8.3	17.4	25.7
Other effects recognized in income	0.1	−0.2	−0.1	–	0.1	0.1
Other changes	−4.8	1.1	−3.7	0.3	−1.1	−0.8
Present value of the defined benefit obligations on December 31	**3,809.5**	**343.2**	**4,152.7**	**3,503.6**	**309.1**	**3,812.7**

The following overview shows how the present value of all defined benefit obligations would have been influenced by changes to definitive actuarial assumptions. To determine the sensitivities, in principle each of the observed parameters was varied while keeping the measurement assumptions otherwise constant. Insofar as its development of social security is comparable to salary trends, the amounts for social security vary together with the salary trend.

€ million	**Dec. 31, 2015**
Present value of all defined benefit obligations if	
the discount rate is 50 basis points higher	3,779.9
the discount rate is 50 basis points lower	4,597.0
the expected rate of future salary increases is 50 basis points higher	4,278.3
the expected rate of future salary increases is 50 basis points lower	4,040.9
the expected rate of future pension increases is 50 basis points higher	4,386.6
the expected rate of future pension increases is 50 basis points lower	3,976.9
the medical cost trend rate is 50 basis points higher	4,154.1
the medical cost trend rate is 50 basis points lower	4,151.5

The fair value of the plan assets changed in the reporting period as follows:

€ million	**2015**	2014
Fair value of the plan assets on January 1	1,994.4	1,840.2
Currency translation differences recognized in equity	34.4	28.2
Currency translation differences recognized in income	34.4	5.5
Interest income from plan assets	44.8	67.2
Actuarial gains (+)/losses (–) arising from experience adjustments	–28.8	50.7
Employer contributions	30.0	27.2
Employee contributions	10.6	7.2
Pension payments from plan assets	–84.5	–32.8
Changes in the scope of consolidation	293.3	3.0
Plan administration costs paid from the plan assets recognized in income	–2.4	–1.9
Other effects recognized in income	0.1	0.2
Other changes	–3.4	–0.3
Fair value of the plan assets on December 31	**2,322.9**	**1,994.4**

The actual return on plan assets amounted to € 16.0 million in 2015 (2014: € 117.9 million).

In 2015, there were no changes in the effects of the asset ceilings in accordance with IAS 19.64. In the previous year, € 10.8 million was recognized as actuarial gains and € 0.3 million as interest expenses. In both years, there were no effects from the asset ceiling.

The development of cumulative actuarial gains (+) and losses (–) was as follows:

€ million	**2015**	2014
Cumulative actuarial gains (+)/losses (–) recognized in equity on January 1	–1,568.4	–694.8
Currency translation differences	–12.5	–12.1
Remeasurements of defined benefit obligations		
Actuarial gains (+)/losses (–) arising from changes in demographic assumptions	–37.8	19.1
Actuarial gains (+)/losses (–) arising from changes in financial assumptions	217.3	–915.2
Actuarial gains (+)/losses (–) arising from experience adjustments	9.8	–26.9
Remeasurements of plan assets		
Actuarial gains (+)/losses (–) arising from experience adjustments	–28.8	50.7
Effects of the asset ceilings		
Actuarial gains (+)/losses (–)	–	10.8
Reclassification within retained earnings	–	–
Cumulative actuarial gains (+)/losses (–) recognized in equity on December 31	**–1,420.4**	**–1,568.4**

Plan assets for funded defined benefit obligations primarily comprised fixed-income securities, stocks, and investment funds. They did not directly include financial instruments issued by Merck Group companies or real estate used by Group companies.

The plan assets serve exclusively to meet the defined benefit obligations. Covering the benefit obligations with financial assets represents a means of providing for future cash outflows, which occur in some countries (e.g. Switzerland and the United Kingdom) on the basis of legal requirements and in other countries (e.g. Germany) on a voluntary basis.

The ratio of the fair value of the plan assets to the present value of the defined benefit obligations is referred to as the degree of pension plan funding. If the benefit obligations exceed the plan assets, this represents underfunding of the pension fund.

It should be noted, however, that both the benefit obligations as well as the plan assets fluctuate over time. This could lead to an increase in underfunding. Depending on the statutory regulations, it could become necessary in some countries for the Merck Group to reduce underfunding through additions of liquid assets. The reasons for such fluctuations could include changes in market interest rates and thus the discount rate as well as adjustments to other actuarial assumptions (e.g. life expectancy, inflation rates).

In order to minimize such fluctuations, in managing its plan assets, the Merck Group also pays attention to potential fluctuations in liabilities. In the ideal case, assets and liabilities develop in opposite directions when exposed to exogenous factors, creating a natural defense against these factors. In order to achieve this effect, the corresponding use of financial instruments is considered in respect of individual pension plans.

The fair value of the plan assets can be allocated to the following categories:

	Dec. 31, 2015			Dec. 31, 2014		
€ million	**Quoted market price in an active market**	**No quoted market price in an active market**	**Total**	Quoted market price in an active market	No quoted market price in an active market	Total
Cash and cash equivalents	27.3	–	27.3	167.0	–	167.0
Equity instruments	740.3	–	740.3	544.9	–	544.9
Debt instruments	957.5	–	957.5	662.5	–	662.5
Direct investments in real estate	–	98.2	98.2	–	84.7	84.7
Investment funds	369.9	–	369.9	371.3	–	371.3
Insurance contracts	–	79.2	79.2	–	74.9	74.9
Other	50.5	–	50.5	88.2	0.9	89.1
Fair value of the plan assets	**2,145.5**	**177.4**	**2,322.9**	**1,833.9**	**160.5**	**1,994.4**

Employer contributions to plan assets and direct payments to beneficiaries will probably amount to around € 99.2 million in 2016. The weighted duration amounted to 20 years.

The cost of ongoing contributions for defined contribution plans that are financed exclusively by external funds and for which the companies of the Merck Group are only obliged to pay the contributions amounted to € 46.8 million (2014: € 38.7 million). In addition, employer contributions amounting to € 62.9 million (2014: € 57.2 million) were transferred to the German statutory pension insurance system and € 34.9 million (2014: € 28.5 million) to statutory pension insurance systems abroad.

(27) Provisions

Provisions developed as follows:

€ million	Litigation	Restructuring	Personnel	Environmental protection	Other	**Total**
January 1, 2015	**393.1**	**136.5**	**266.8**	**123.7**	**267.7**	**1,187.8**
Additions	114.7	33.0	180.0	9.9	184.1	521.7
Utilizations	–6.4	–72.8	–116.1	–9.7	–72.0	–277.0
Release	–35.3	–6.6	–36.2	–2.0	–59.2	–139.3
Interest portion	7.4	–	1.0	2.5	0.1	11.0
Currency translation	–1.3	1.9	2.7	0.5	2.7	6.5
Changes in scope of consolidation/Other	18.4	–	41.0	2.0	18.6	80.0
December 31, 2015	**490.6**	**92.0**	**339.2**	**126.9**	**342.0**	**1,390.7**
thereof current	77.9	37.7	97.0	24.1	298.7	535.4
thereof non-current	412.7	54.3	242.2	102.8	43.3	855.3

Litigation

As of December 31, 2015, the provisions for legal disputes amounted to € 490.6 million (2014: € 393.1 million). The legal matters described below represent the most significant legal risks.

Product-related and patent disputes

Rebif®: Merck is involved in a patent dispute with Biogen Inc., USA, (Biogen) in the United States. Biogen claims that the sale of Rebif® in the United States infringes on a Biogen patent. The disputed patent was granted to Biogen in 2009 in the United States. Subsequently, Biogen sued Merck and other pharmaceutical companies for infringement of this patent. Merck defended itself against all allegations and brought a countersuit claiming that the patent was invalid and not infringed on by Merck's actions. A Markman hearing was held in January 2012; a decision has not yet been announced. The parties are currently engaged in court-ordered mediation proceedings that have not yet officially ended. It is currently not clear when a first-instance decision will be made. Merck has taken appropriate accounting measures. Cash outflow is not expected to occur within the next twelve months.

In the Performance Materials business sector, Merck is in negotiations with a competitor regarding potential patent infringements. Merck maintains that the competitor's patent infringement assertion is invalid owing to relevant prior art and has filed the corresponding nullity actions. In the meantime, the competitor has filed two patent infringement lawsuits. Merck is prepared for this issue and has taken appropriate accounting measures. Merck anticipates that a final decision will be made only within the next two to five years, leading to a potential outflow of resources.

Antitrust proceedings

Raptiva®: In December 2011, the Brazilian federal state of São Paulo sued Merck for damages because of alleged collusion between various pharmaceutical companies and an association of patients suffering from psoriasis and vitiligo. The collusion is alleged to have aimed at an increase in the sales of the involved companies' drugs to the detriment of patients and state coffers. Moreover, in connection with the product Raptiva®, patients have filed suit to receive compensatory damages. Merck has taken appropriate accounting measures for these legal disputes. These are different legal disputes, and an outflow of cash in fiscal year 2016 cannot be ruled out.

Paroxetine: In connection with the divested generics business, the Group is subject to antitrust investigations by the British Competition and Market Authority ("CMA") in the United Kingdom. In March 2013, the CMA informed Merck of the assumption that a settlement agreement entered into in 2002 between Generics (UK) Ltd. and several GlaxoSmithKline companies in connection with the antidepressant drug paroxetine violates British and European competition law. As the owner of Generics (UK) Ltd. at the time, Merck was allegedly involved in the settlement negotiations and is therefore liable. The investigations into Generics (UK) Ltd. started in 2011, without Merck being aware of this. On February 11, 2016, the CMA imposed a fine in this matter. Merck intends to take legal action against this decision. Merck has recognized appropriate provisions in this connection; in 2015, the provision was released in part based on a re-assessment of the risk. A decision and an outflow of resources, if any, is expected for 2016.

Foreign exchange transfer restrictions

In one jurisdiction, Merck and other companies are subject to a government investigation regarding compliance with foreign exchange transfer restrictions. In this connection, the responsible authorities are investigating whether import prices led to impermissibly high foreign exchange transfers. Appropriate accounting measures have been taken for repayments and fines that are estimated to be probable due to the uncertain legal situation in the affected country. A cash outflow is not expected for 2016.

In addition to provisions for the mentioned litigation, provisions existed as of the balance sheet date for various smaller pending legal disputes. An outflow of cash is not expected to occur in fiscal year 2016.

Restructuring

Provisions for restructuring mainly include commitments to employees in connection with restructuring projects and provisions for onerous contracts. These were recognized once detailed restructuring plans had been prepared and communicated.

In 2012, the "Fit for 2018" transformation and growth program was established. The aim of this program is to secure the competitiveness and the growth of the Merck Group over the long term. The provisions of € 92.0 million as of December 31, 2015 (2014: € 136.5 million) in this connection mainly consist of commitments to employees from partial and early retirement arrangements. The payments made in 2015 in the amount of € 72.8 million are primarily due to severance or early retirement payments to employees. Cash flows owing to provisions for restructuring are for the most part expected within a period of up to 2019.

Provisions for employee benefits / Share-based payment

Provisions for employee benefits include obligations from long-term variable compensation programs. More information on these compensation programs can be found in Note [66] "Share-based compensation programs". The following table presents the key parameters as well as the development of the potential number of Merck Share Units ("MSUs") for the individual tranches:

	2013 tranche	2014 tranche	**2015 tranche**
Performance cycle	Jan. 1, 2013 – Dec. 31, 2015	Jan. 1, 2014 – Dec. 31, 2016	Jan. 1, 2015 – Dec. 31, 2017
Term	3 years	3 years	3 years
Reference price of Merck shares in € (60-day average Merck share price prior to the start of the performance cycle)	100.11[1]	122.84[1]	74.53
DAX® value (60-day average of the DAX® prior to the start of the performance cycle)	7,350.64	9,065.08	9,403.99
Potential number of MSUs			
Potential number offered for the first time in 2013	389,658	–	–
Expired	11,938	–	–
Status as on Dec. 31, 2013	377,720	–	–
Potential number offered for the first time in 2014	–	355,164	–
Expired	38,179	21,247	–
MSUs granted to employees of the AZ Electronic Materials Group on May 2, 2014	–	22,865	–
Status as on Dec. 31, 2014	339,541	356,782	–
Potential number offered for the first time in 2015	–	–	609,799
Expired	20,885	23,541	21,447
Further additional granted MSUs	–	2,167	–
Status as on Dec. 31, 2015	**318,656**	**335,408**	**588,352**

[1] Price of shares before share split in 2014.

The value of the provision for the vesting period already completed was € 123.9 million as of December 31, 2015 (2014: € 144.8 million). The net expense for fiscal 2015 was € 64.3 million (2014: € 81.3 million). The three-year tranche issued in 2012 ended at the end of 2014 and was paid out in 2015 in the amount of € 85.9 million.

Provisions for employee benefits also include obligations for the partial retirement program and other severance pay that were not set up in connection with the "Fit for 2018" transformation and growth program as well as obligations in connection with long-term working hour accounts and anniversary bonuses.

With respect to provisions for defined-benefit pensions and other post-employment benefits, see Note [26] "Provisions for pensions and other post-employment benefits".

Environmental protection

Provisions for environmental protection mainly existed in Germany, Latin America and the United States and were set up particularly for obligations from soil remediation and groundwater protection in connection with the crop protection business that was discontinued in 1987.

Other provisions

Other provisions mainly include provisions for purchase commitments, subsequent contract costs stemming from discontinued research projects, other guarantees, and provisions for uncertain commitments from contributions, duties and fees.

Provisions were recognized in 2015 for expected subsequent costs due to the discontinuation of the evofosfamide development program. In addition, provisions were recognized for interest and penalties resulting from tax audits. Releases and utilizations mainly related to provisions recognized in previous years for subsequent costs in relation to discontinued development programs in the Healthcare business sector.

(28) Financial liabilities / Capital management

The composition of financial liabilities as well as a reconciliation to net financial debt are presented in the following table:

	Book value Dec. 31, 2015 € million	Book value Dec. 31, 2014 € million	Maturity	Interest rate %	Nominal volume million	Currency
Eurobond 2010/2015	–	1,349.7	March 2015	3.375	1,350.0	€
Eurobond 2009/2015	–	100.0	Dec. 2015	3.615	100.0	€
Eurobond 2006/2016	214.4	–	June 2016	5.875	250.0	€
Eurobond 2009/2016	60.0	–	Nov. 2016	4.000	60.0	€
Total bonds (current)	**274.4**	**1,449.7**				
Commercial paper	999.2	–				
Loans to banks	2,136.8	67.4				
Liabilities to related parties	577.8	501.4				
Loans from third parties and other financial liabilities	26.6	18.6				
Liabilities from derivatives (financial transactions)	79.8	36.0				
Finance lease liabilities	2.0	2.8				
Total current financial liabilities	**4,096.6**	**2,075.9**				
Eurobond 2006/2016	–	218.4	June 2016	5.875	250.0	€
Eurobond 2009/2016	–	60.0	Nov. 2016	4.000	60.0	€
U.S. bond 2015/2017	228.5	–	March 2017	variable[1]	250.0	USD
Eurobond 2015/2017	699.0	–	Sept. 2017	variable[2]	700.0	€
U.S. bond 2015/2018	365.5	–	March 2018	1.700	400.0	USD
Eurobond 2009/2019	69.3	69.1	Dec. 2019	4.250	70.0	€
Eurobond 2015/2019	797.3	–	Sept. 2019	0.750	800.0	€
U.S. bond 2015/2020	683.8	–	March 2020	2.400	750.0	USD
Eurobond 2010/2020	1,345.1	1,344.1	March 2020	4.500	1,350.0	€
U.S. bond 2015/2022	909.6	–	March 2022	2.950	1,000.0	USD
Eurobond 2015/2022	546.8	–	Sept. 2022	1.375	550.0	€
U.S. bond 2015/2025	1,448.4	–	March 2025	3.250	1,600.0	USD
Hybrid bond 2014/2074	987.7	986.2	Dec. 2074[3]	2.625	1,000.0	€
Hybrid bond 2014/2074	496.8	496.7	Dec. 2074[4]	3.375	500.0	€
Total bonds (non-current)	**8,577.8**	**3,174.5**				
Loans to banks	869.2	200.0				
Liabilities to related parties	–	–				
Loans from third parties and other financial liabilities	62.6	65.9				
Liabilities from derivatives (financial transactions)	103.9	117.0				
Finance lease liabilities	2.8	3.7				
Total non-current financial liabilities	**9,616.3**	**3,561.1**				
Total financial liabilities	**13,712.9**	**5,637.0**				
less:						
Cash and cash equivalents	832.2	2,878.5				
Current financial assets	227.0	2,199.4				
Net financial debt	**12,653.7**	**559.1**				

[1] Interest rate: 0.35% spread over 3-month U.S. dollar LIBOR.
[2] Interest rate: 0.23% spread over 3-month EURIBOR.
[3] Merck has the right to prematurely repay this tranche of the hybrid bond issued in December 2014 for the first time in June 2021.
[4] Merck has the right to prematurely repay this tranche of the hybrid bond issued in December 2014 for the first time in December 2024.

Merck issued a U.S. bond with a five-tranche structure in March 2015, and a further euro bond with a three-tranche structure in August 2015. Both issuances are part of the financing of the acquisition of the Sigma-Aldrich Corporation, USA. Merck issued a bond with a volume of € 1.35 billion in March 2015, and repaid a further bond with a volume of € 100 million in December 2015. On December 18, 2015, Merck also repaid early a bond acquired within the scope of the acquisition of Sigma-Aldrich with a nominal volume of US$ 300 million.

For the hybrid bond 2014/2074 issued by Merck KGaA in two tranches, the two rating agencies Standard & Poor's and Moody's have given equity credit treatment to half of the issuance, thus making the issuance more favorable to Merck's credit rating than a classic bond issue. The bond is recognized in full as financial liabilities in the balance sheet. In addition to the issued bonds, to finance the purchase price payment for the acquisition of Sigma-Aldrich, Merck utilized a credit line of € 1.6 billion from a banking syndicate, as well as bilateral credit agreements amounting to € 1.35 billion.

The financial liabilities of the Merck Group are not secured by liens or similar forms of collateral. The loan agreements do not contain any financial covenants. The Merck Group's average borrowing cost as of the balance sheet date was 2.0% (2014: 3.3%).

Information on liabilities to related parties can be found in Note [46] "Related-party disclosures".

Capital management

The objective of capital management is to secure financial flexibility in order to maintain long-term business operations and to realize strategic options. Maintaining a stable investment grade rating, ensuring liquidity, limiting financial risks as well as optimizing the cost of capital are the objectives of our financial policy and set important framework conditions for capital management. The responsible committees decide on the capital structure of the balance sheet, the appropriation of net retained profit and the dividend level. In this context, net financial debt is one of the leading capital management indicators.

Traditionally, the capital market represents a major source of financing for Merck, for instance via bond issues. In addition, Merck has a € 2 billion multi-currency revolving credit facility, which was renewed in fiscal 2013 ("Syndicated Loan 2013"). The credit line was underwritten by an international group of banks and has a remaining term until March 2020. This credit line had not been utilized as of December 31, 2015. Merck still had access to a commercial paper program to meet short-term capital requirements with a volume of € 2 billion, of which € 1 billion had been utilized as of December 31, 2015 (2014: no utilization). Moreover, Merck utilized an amount of € 3.53 billion (2014: € 2.93 billion) of the debt issuance program with a volume of € 15.0 billion (2014: € 15.0 billion) as of December 31, 2015. As of December 31, 2015, further bank lines of € 206.5 million were available (2014: € 11,544.8 million). In 2014, these credit lines were available especially for the acquisition of Sigma-Aldrich. There are no indications that the availability of credit lines already extended was restricted.

On the balance sheet date, the bank financing commitments vis-à-vis the Merck Group were as follows:

€ million	Financing commitments from banks	**Utilization as of Dec. 31, 2015**	Interest	Maturity of financing commitments
Syndicated loan 2013	2,000.0	0.0	variable	2020
Loan agreement with banking syndicate for acquisition financing	1,600.0	1,600.0	variable	2018
Bilateral credit agreement with banks	700.0	700.0	variable	2019
Bilateral credit agreement with banks	400.0	400.0	variable	2020
Bilateral credit agreement with banks	250.0	250.0	variable	2022
Various bank credit lines	206.5	56.0	variable	< 1 year
	5,156.5	**3,006.0**		

(29) Other liabilities

This item comprised:

€ million	**current**	**non-current**	**Dec. 31, 2015**	current	non-current	Dec. 31, 2014
Other financial liabilities	889.9	14.4	904.3	692.9	3.2	696.1
Liabilities from derivatives (operational)	46.4	14.4	60.8	29.0	6.4	35.4
Financial items	**936.3**	**28.8**	**965.1**	**721.9**	**9.6**	**731.5**
Accruals for personnel expenses	535.5	–	535.5	474.3	–	474.3
Deferred income	226.1	576.0	802.1	220.9	768.6	989.5
Advance payments received from customers	15.1	–	15.1	15.0	–	15.0
Liabilities from non-income related taxes	105.5	3.7	109.2	142.5	3.8	146.3
Non-financial items	**882.2**	**579.7**	**1,461.9**	**852.7**	**772.4**	**1,625.1**
	1,818.5	**608.5**	**2,427.0**	**1,574.6**	**782.0**	**2,356.6**

As of December 31, 2015, other financial liabilities included liabilities to related companies amounting to € 453.6 million (2014: € 425.6 million). These are mainly profit entitlements of E. Merck KG. Moreover, this item contained liabilities to investments amounting to € 8.5 million (2014: € 3.1 million), interest accruals of € 97.4 million (2014: € 85.9 million) as well as payroll liabilities of € 179.5 million (2014: € 65.9 million). The remaining amount of € 165.3 million (2014: € 115.6 million) recorded under other financial liabilities included among other things liabilities to insurers as well as contractually agreed payment obligations vis-à-vis other companies. The deferred income results mainly from the collaboration agreement with Pfizer Inc., USA, in immuno-oncology and was released as planned on a pro rata basis in 2015 (see Note [5] “Joint arrangements of material significance”).

(30) Trade accounts payable

Trade accounts payable consisted of the following:

€ million	**Dec. 31, 2015**	Dec. 31, 2014
Liabilities to third parties	1,920.9	1,539.3
Liabilities to investments	0.3	0.1
	1,921.2	**1,539.4**

Trade accounts payable included an accrued amount of € 906.4 million (2014: € 831.0 million) for outstanding invoices and sales deductions.

(31) Tax liabilities

Tax liabilities and provisions for tax liabilities resulted in total income tax liabilities of € 1,011.3 million as of December 31, 2015 (2014: € 849.8 million). The increase in tax liabilities was primarily due to the acquisition of the Sigma-Aldrich Corporation, USA, higher income tax expenses in fiscal 2015 (see Note [15] “Income taxes”) as well as provisions for potential tax obligations.

Segment Reporting

(32) Information by business sector / country and region

INFORMATION BY BUSINESS SECTOR

€ million	Healthcare 2015	Healthcare 2014	Life Science 2015	Life Science 2014
Net sales[1]	**6,933.8**	**6,620.5**	**3,355.3**	**2,682.5**
Operating result (EBIT)	**1,096.7**	**1,106.4**	**300.8**	**289.2**
Depreciation and amortization	752.2	749.2	371.6	308.1
Impairment losses	121.5	90.8	2.0	1.6
Reversals of impairment losses	–	–	–0.1	–
EBITDA	**1,970.4**	**1,946.4**	**674.3**	**598.9**
Exceptionals	31.3	53.9	181.8	59.7
EBITDA pre exceptionals (Segment result)	**2,001.7**	**2,000.3**	**856.1**	**658.6**
EBITDA margin pre exceptionals (in % of net sales)	28.9	30.2	25.5	24.6
Net operating assets	5,813.1	6,041.0	21,441.3	6,196.3
Segment liabilities	–2,479.0	–2,507.9	–909.6	–434.6
Investments in property, plant and equipment[2]	232.3	225.1	133.4	130.6
Investments in intangible assets[2]	145.9	114.1	8.2	6.5
Net cash flows from operating activities	1,682.8	2,287.3	706.2	580.0
Business free cash flow	1,581.0	1,701.2	675.6	419.0

[1] The composition of net sales has been changed, see "Changes to accounting and measurement principles and disclosure changes".
[2] According to the consolidated cash flow statement.

INFORMATION BY COUNTRY AND REGION

€ million	Europe 2015	Europe 2014	thereof Germany 2015	thereof Germany 2014	thereof Switzerland 2015	thereof Switzerland 2014	North America 2015	North America 2014
Net sales by customer location[1]	4,102.7	4,016.7	850.8	845.5	159.6	149.3	2,722.9	2,152.3
Net sales by company location[1]	4,735.2	4,580.7	1,563.5	1,592.3	176.7	182.5	2,718.7	2,142.4
Intangible assets	8,427.6	7,966.3	595.2	448.9	4,235.6	4,151.4	15,959.7	2,522.5
Property, plant and equipment	2,401.2	2,163.1	1,104.2	1,032.8	527.5	498.2	1,027.0	416.2
Research and development costs	–1,509.7	–1,550.7	–835.0	–816.0	–529.6	–604.8	–123.5	–90.4
Number of employees	23,429	20,537	11,938	11,191	1,946	1,347	9,794	5,092

[1] The composition of net sales has been changed, see "Changes to accounting and measurement principles and disclosure changes".

Performance Materials		Corporate and Other		Group	
2015	2014	**2015**	2014	**2015**	2014
2,555.6	**2,059.8**	**–**	**–**	**12,844.7**	**11,362.8**
878.0	**611.5**	**–432.3**	**–245.1**	**1,843.2**	**1,762.0**
241.7	190.0	17.9	14.3	1,383.4	1,261.6
1.5	2.7	3.4	5.1	128.4	100.2
–0.8	–0.6	–	–0.3	–0.9	–0.9
1,120.4	**803.6**	**–411.0**	**–226.0**	**3,354.1**	**3,122.9**
11.7	91.2	50.9	60.0	275.7	264.8
1,132.1	**894.8**	**–360.1**	**–166.0**	**3,629.8**	**3,387.7**
44.3	43.4	–	–	28.3	29.8
4,278.6	3,348.6	112.4	126.1	31,645.4	15,712.0
–289.5	–355.4	–61.2	–56.5	–3,739.3	–3,354.4
102.9	91.5	45.3	33.6	513.9	480.9
9.7	7.5	15.3	15.2	179.1	143.3
1,138.9	900.4	–1,332.7	–1,062.2	2,195.2	2,705.5
930.8	699.6	–421.2	–214.7	2,766.2	2,605.1

thereof USA		Asia-Pacific		thereof China		Latin America		Middle East and Africa		Group	
2015	2014	**2015**	2014	**2015**	2014	**2015**	2014	**2015**	2014	**2015**	2014
2,566.5	2,009.9	4,240.8	3,442.9	1,104.7	805.7	1,265.3	1,285.1	513.0	465.8	12,844.7	11,362.8
2,586.7	2,022.3	4,014.4	3,266.3	668.7	472.3	1,238.1	1,256.5	138.3	116.9	12,844.7	11,362.8
15,959.6	2,522.3	940.7	904.0	52.2	54.3	5.0	2.4	6.0	0.3	25,339.0	11,395.5
1,025.0	415.1	443.4	314.8	123.7	58.1	93.0	88.4	44.5	7.9	4,009.1	2,990.4
–120.8	–88.7	–45.1	–37.8	–12.4	–7.0	–24.0	–20.7	–6.9	–4.1	–1,709.2	–1,703.7
9,629	4,939	11,096	9,488	2,619	2,172	4,352	3,883	942	639	49,613	39,639

(33) Information on segment reporting

Segmentation was performed in accordance with the organizational and reporting structure of the Merck Group that applied during 2015.

The Healthcare business sector comprises the businesses with prescription and over-the-counter pharmaceuticals and biopharmaceuticals as well as allergy products. The Life Science business sector offers solutions to research and analytical laboratories in the pharmaceutical / biotechnology industry or in academic institutions, and customers manufacturing large- and small-molecule drugs. The Performance Materials business sector consists of the entire specialty chemicals business. The fields of activity of the individual segments are described in detail in the sections about the business sectors in the combined 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 Merck Group. To permit a better understanding of operational performance, EBITDA pre exceptionals excludes depreciation and amortization, impairment losses, and reversals of impairment losses as well as specific income and expenses of a one-time nature 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.

Neither in 2015 nor in 2014 did any single customer account for more than 10% of Group sales.

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

€ million	2015	2014
Total EBITDA pre exceptionals of the operating businesses	**3,989.9**	**3,553.7**
Corporate and Other	–360.1	–166.0
EBITDA pre exceptionals of the Merck Group	**3,629.8**	**3,387.7**
Depreciation and amortization / impairment losses / reversals of impairments	–1,510.9	–1,360.9
Exceptionals	–275.7	–264.8
Operating result (EBIT)	**1,843.2**	**1,762.0**
Financial result	–356.7	–205.0
Profit before income tax	**1,486.5**	**1,557.0**

Exceptionals comprised the following:

€ million	2015	2014
Acquisition-related exceptionals	–132.7	–85.0
Integration costs / IT costs	–77.6	–87.2
Restructuring costs	–47.5	–83.9
Gains / losses on the divestment of businesses	–2.0	1.9
Other exceptionals	–15.9	–10.6
Exceptionals before impairment losses / reversals of impairments	**–275.7**	**–264.8**
Impairment losses	–91.5	–9.8
Reversals of impairments	–	–
Exceptionals (total)	**–367.2**	**–274.6**

Exceptionals are included in the consolidated income statement under cost of sales as well as under other operating expenses. The costs of € 132.7 million reported under acquisition-related exceptionals (2014: € 85.0 million) were largely incurred in connection with the acquisition of the Sigma-Aldrich Corporation, USA. Of this amount, € 41.6 million was attributable to integration planning activities; further expenses of € 60.0 million were incurred directly for the acquisition of the company. Both amounts were recorded under other operating expenses. A further amount of € 31.1 million was related to cost of sales and disclosed accordingly.

Business free cash flow was determined as follows:

€ million	**2015**	2014
EBITDA pre exceptionals	**3,629.8**	**3,387.7**
Investments in property, plant and equipment, software as well as advance payments for intangible assets	–609.0	–527.5
Changes in inventories as reported in the consolidated balance sheet	–960.1	–185.5
Changes in trade accounts receivable and receivables from royalties and licenses as reported in the consolidated balance sheet	–514.2	–214.2
Adjustment first-time consolidation of the Sigma-Aldrich Corporation	1,219.7	–
Adjustment first-time consolidation of AZ Electronic Materials S.A.	–	144.6
Business free cash flow	**2,766.2**	**2,605.1**

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

€ million	**Dec. 31, 2015**	Dec. 31, 2014
Assets	38,007.2	26,010.1
Monetary assets (cash and cash equivalents, current financial assets, loans and securities)	–1,093.0	–5,563.1
Non-operating receivables, income tax receivables, deferred taxes and net defined benefit assets	–1,483.8	–1,380.6
Assets held for sale	–45.7	–
Operating assets (gross)	**35,384.7**	**19,066.4**
Trade accounts payable	–1,921.2	–1,539.4
Other operating liabilities	–1,818.1	–1,815.0
Segment liabilities	**–3,739.3**	**–3,354.4**
Operating assets (net)	**31,645.4**	**15,712.0**

The following tables present the adjustments to the previous year's figures of the three business sectors owing to disclosure changes to royalty, license and commission expenses as well as royalty, license and commission income (see Note [6] "Changes to accounting and measurement principles and disclosure changes").

HEALTHCARE

2014 Adjustment

€ million	2014 old structure	2014 adjustment	2014 adjusted
Net sales	**6,549.4**	**71.2**	**6,620.5**
Royalty, license and commission income	194.4	–194.4	–
Total revenues	**6,743.8**	**–**	**–**
Cost of sales	–1,370.4	–0.1	–1,370.5
(of which: amortization of intangible assets)[1]	*(–)*	*(–)*	*(–)*
Gross profit	**5,373.4**	**–123.3**	**5,250.0**
Marketing and selling expenses	–2,083.3	–467.5	–2,550.8
(of which: amortization of intangible assets)[1]	*(–555.4)*	*(–)*	*(–555.4)*
Royalty, license and commission expenses	–520.9	520.9	–
Administration expenses	–246.9	–	–246.9
Research and development costs	–1,366.0	–	–1,366.0
(of which: amortization of intangible assets)[1]	*(–1.0)*	*(–)*	*(–1.0)*
Other operating income	324.6	123.2	447.8
Other operating expenses	–374.4	–53.3	–427.7
Operating result (EBIT)	**1,106.4**	**–**	**1,106.4**
Margin (% of net sales)	16.9	–0.2	16.7
EBITDA	**1,946.4**	**–**	**1,946.4**
Margin (% of net sales)	29.7	–0.3	29.4
EBITDA pre exceptionals	**2,000.3**	**–**	**2,000.3**
Margin (% of net sales)	30.5	–0.3	30.2

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

LIFE SCIENCE

2014 Adjustment

€ million	2014 old structure	2014 adjustment	2014 adjusted
Net sales	**2,682.5**	**–**	**2,682.5**
Royalty, license and commission income	14.0	–14.0	–
Total revenues	**2,696.5**	**–**	**–**
Cost of sales	–1,168.7	–	–1,168.7
(of which: amortization of intangible assets)[1]	*(–47.6)*	*(–)*	*(–47.6)*
Gross profit	**1,527.8**	**–14.1**	**1,513.8**
Marketing and selling expenses	–844.1	–15.6	–859.8
(of which: amortization of intangible assets)[1]	*(–151.8)*	*(–)*	*(–151.8)*
Royalty, license and commission expenses	–15.6	15.6	–
Administration expenses	–110.4	–	–110.4
Research and development costs	–162.6	–	–162.6
(of which: amortization of intangible assets)[1]	*(–)*	*(–)*	*(–)*
Other operating income	11.5	14.1	25.6
Other operating expenses	–117.4	–	–117.4
Operating result (EBIT)	**289.2**	**–**	**289.2**
Margin (% of net sales)	10.8	–	10.8
EBITDA	**598.9**	**–**	**598.9**
Margin (% of net sales)	22.3	–	22.3
EBITDA pre exceptionals	**658.6**	**–**	**658.6**
Margin (% of net sales)	24.6	–	24.6

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

PERFORMANCE MATERIALS

2014 Adjustment

€ million	2014 old structure	2014 adjustment	2014 adjusted
Net sales	**2,059.6**	**0.2**	**2,059.8**
Royalty, license and commission income	0.9	−0.9	–
Total revenues	**2,060.5**	**–**	**–**
Cost of sales	−983.2	–	−983.2
(of which: amortization of intangible assets)[1]	*(−46.4)*	*(–)*	*(−46.4)*
Gross profit	**1,077.3**	**−0.6**	**1,076.6**
Marketing and selling expenses	−177.8	−1.1	−178.8
(of which: amortization of intangible assets)[1]	*(−11.7)*	*(–)*	*(−11.7)*
Royalty, license and commission expenses	−1.1	1.1	–
Administration expenses	−56.1	–	−56.1
Research and development costs	−170.6	–	−170.6
(of which: amortization of intangible assets)[1]	*(−2.8)*	*(–)*	*(−2.8)*
Other operating income	6.4	0.6	7.0
Other operating expenses	−66.6	–	−66.6
Operating result (EBIT)	**611.5**	**–**	**611.5**
Margin (% of net sales)	29.7	–	29.7
EBITDA	**803.6**	**–**	**803.6**
Margin (% of net sales)	39.0	–	39.0
EBITDA pre exceptionals	**894.8**	**–**	**894.8**
Margin (% of net sales)	43.4	–	43.4

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

Notes to the Consolidated Cash Flow Statement

The consolidated cash flow statement presents the changes in cash and cash equivalents as a result of cash inflows and outflows from operating, investing and financing activities. Further information on cash flows can be found in the explanation of cash and cash equivalents (see Note [24] "Cash and cash equivalents"). The amount of undrawn borrowing facilities that could be tapped for future operating activities and to meet obligations is disclosed in Note [28] "Financial liabilities/Capital management".

The cash flows reported by Group companies in non-functional currencies are in principle translated at average exchange rates. Cash and cash equivalents are translated at the closing rates. The impact of foreign exchange rate changes is disclosed separately under changes in cash and cash equivalents.

Within net cash flows from operating activities, the figures for 2014 were adjusted in connection with the disclosure changes to license receivables (see Note [6] "Changes to accounting and measurement principles and disclosure changes").

(34) Net cash flows from operating activities

In 2015, tax payments totaled € 865.5 million (2014: € 667.8 million). Tax refunds totaled € 161.0 million (2014: € 54.9 million). Interest paid totaled € 297.4 million (2014: € 191.1 million). Interest received amounted to € 54.5 million (2014: € 89.4 million).

In 2014, the changes in provisions were affected by the payment following the written settlement reached with Israel Bio-Engineering Project Limited Partnership (IBEP). In 2014, the changes in other assets and liabilities included the upfront payment in the amount of US$ 850 million (€ 678.3 million) paid in cash by Pfizer Inc., USA, after the agreement had been entered into. The non-cash income from the pro rata reversal of the deferred item from the collaboration agreement with Pfizer was corrected in the reporting period.

Net cash flows from operating activities include € 5.6 million from discontinued operations. This amount relates to the operating result of those business activities of the Sigma-Aldrich Corporation, USA, that were acquired with a view to resale (see Note [4] "Acquisitions, assets held for sale and disposal groups".

(35) Net cash flows from investing activities and financing activities

The payments for the major acquisitions in fiscal 2015 were as follows:

€ million	Sigma-Aldrich	Other Acquisitions	Total
Purchase price payment	–15,973.8	–	–15,973.8
Cash income from hedges in fiscal 2014 and 2015	1,380.3	–	1,380.3
Purchase price in accordance with IFRS 3	–14,593.5	–29.3	–14,622.8
Acquired cash and cash equivalents	1,235.1	0.8	1,235.9
Purchase price in accordance with IFRS 3 less acquired cash and cash equivalents	**–13,358.4**	**–28.5**	**–13,386.9**
Thereof: cash income from hedges already received in fiscal 2014	*–95.4*	–	*–95.4*
Payments for acquisitions less acquired cash and cash equivalents as reported in the consolidated cash flow statement in 2015	**–13,453.8**	**–28.5**	**–13,482.3**

In 2014, a hedging gain of € 95.4 million in connection with the acquisition of the Sigma-Aldrich Corporation, USA, had already been reclassified from other comprehensive income to financial assets. Consequently, the payment for 100% of the shares less acquired cash and cash equivalents totaled € 13,453.8 million for 2014 and 2015. The figures for 2014 reflected the acquisition of AZ Electronic Materials S.A., Luxembourg, in the amount of € 1,419.3 million.

Net cash outflows from investments in current and non-current assets amounting to € 1,740.8 million (2014: € 3,143.3 million) mainly resulted from the purchase of short-term investments in securities not classified as cash and cash equivalents. Cash inflows from investing activities include € 84.4 million from discontinued operations in relation to those business activities of Sigma-Aldrich that were acquired with a view to resale (see Note [4] "Acquisitions, assets held for sale and disposal groups").

The cash flows from financing activities included the payments from new borrowings and the repayment of bonds as well as the repayment of the bond acquired in the context of the Sigma-Aldrich acquisition with a nominal volume of US$ 300 million. Further information on the bonds can be found in Note [28] "Financial liabilities / Capital management".

Other Disclosures

(36) Derivative financial instruments

Merck uses derivative financial instruments (hereinafter "derivatives") to hedge and reduce risks from currency and interest rate positions. Merck uses marketable forward exchange contracts, options and interest rate swaps as hedging instruments. Depending on the nature of the hedged item, changes in the fair values of derivatives are recorded in the consolidated income statement either in the operating result or in the financial result. The strategy to hedge interest rate and foreign exchange rate fluctuations arising from forecast transactions and transactions already recognized in the balance sheet is set by a Merck Group risk committee, which meets on a regular basis. Extensive guidelines regulate the use of derivatives. There is a ban on speculation. Derivative transactions are subject to continuous risk management procedures. Trading, settlement and control functions are strictly separated. Derivatives are only entered into with banks that have a good credit rating. Related default risks are continuously monitored.

The following derivatives were held as of the balance sheet date:

	Nominal volume		Fair value	
€ million	**Dec. 31, 2015**	Dec. 31, 2014	**Dec. 31, 2015**	Dec. 31, 2014
Cash flow hedge	2,161.0	10,041.8	–90.3	313.4
Interest	–	650.0	–	–99.9
Currency	2,161.0	9,391.8	–90.3	413.3
Fair value hedge	–	–	–	–
Interest	–	–	–	–
Currency	–	–	–	–
No hedge accounting	5,468.1	3,682.6	–103.1	9.4
Interest	1,100.0	–	–99.3	–
Currency	4,368.1	3,682.6	–3.8	9.4
	7,629.1	**13,724.4**	**–193.4**	**322.8**

Cash flow hedges include currency hedges in a nominal volume of € 1,386.6 million (2014: € 8,913.1 million) with a remaining term of up to one year and hedges in a nominal volume of € 774.4 million (2014: € 478.7 million) with a remaining term of more than one year. Of the interest rate hedges held in the prior year in the context of cash flow hedges in a total amount of € 650.0 million, € 100.0 million had a remaining term of up to one year and € 550.0 million had a remaining term of more than one year.

The nominal volume corresponds to the total of all nominal values of currency hedges (translated at the closing rate into euros) as well as all the nominal values of interest rate hedges. The fair value results from the actuarial valuation of the derivatives on the basis of quoted prices or current market data as of the balance sheet date provided by a recognized information service and the application of a discount for own credit risk or counterparty credit risk. Any offsetting effects from hedged items are not taken into account in the derivatives' fair value.

The maturities of the 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 Dec. 31, 2015**	Remaining maturity less than 1 year	Remaining maturity more than 1 year	Total Dec. 31, 2014
Forward exchange contracts	5,714.5	765.2	6,479.7	11,942.6	433.9	12,376.5
Currency options	40.2	9.2	49.4	653.1	44.8	697.9
Interest rate swaps	–	1,100.0	1,100.0	100.0	550.0	650.0
	5,754.7	**1,874.4**	**7,629.1**	**12,695.7**	**1,028.7**	**13,724.4**

Currency hedging serves to economically protect the company from the foreign exchange risks of the following types of transaction:

- Forecast transactions in non-functional currency, the expected probability of which is very high for the next 36 months,
- Off-balance sheet firm purchase commitments of the next 36 months in non-functional currency,
- Intragroup financing in non-functional currency as well as
- Receivables and liabilities in non-functional currency

Exchange rate fluctuations of mainly the following currencies against the euro were hedged:

Nominal volume € million	**Dec. 31, 2015**	Dec. 31, 2014
USD	3,673.8	10,233.5
CNY	480.2	–
JPY	458.3	920.8
CHF	401.9	431.2
TWD	343.2	255.5
GBP	311.6	383.6

Forecast transactions and firm purchase commitments in non-functional currency are hedged using forward exchange contracts and currency options which are due within the next 36 months. Overall, forecast transactions and firm purchase commitments in non-functional currency were hedged in the amount of € 1,920.8 million (2014: € 9,044.6 million). In 2014, a major portion related to the hedging of the U.S. dollar-denominated purchase price payment made for the acquisition of the Sigma-Aldrich Corporation, USA in 2015. The nominal amount of the forward exchange and currency option contracts for this purpose was US$ 9,900 million (€ 7,689 million). Based on the translation of the purchase price into euros at the exchange rate on the acquisition date, the hedge lowered the purchase price by € 1,380.3 billion.

All hedging transactions for forecast transactions and firm purchase commitments in non-functional currency represent cash flow hedges.

Intragroup financing as well as receivables and payables in non-functional currency are hedged exclusively using forward exchange contracts. Overall, balance sheet items amounting to € 4,608.3 million (2014: € 4,029.8 million) were hedged. In this context, the hedging transactions are largely purely economic hedges for which hedge accounting is not applied.

To fix the interest rate level of a bond issued in August 2015 for refinancing purposes with a volume of € 550 million, in 2012 and 2013 forward starting payer interest rate swaps were entered into with a nominal volume of € 550.0 million and interest payments from 2015 to 2022. Up until May 2015, these interest hedging relationships represented cash flow hedges. With entry into offsetting transactions in May 2015, the hedging relationship was terminated voluntarily. The original transactions as well as the offsetting transactions are now classified as “held for trading”. The changes in fair value are reflected in the income statement.

In 2015, the ineffective portion from hedge accounting amounted to € – 2.6 million. In the previous year, there was no ineffectiveness.

(37) Management of financial risks

Market fluctuations with respect to foreign exchange and interest rates represent significant profit and cash flow risks for Merck. Merck aggregates these Group-wide risks and steers them centrally also by using derivatives. Merck uses scenario analyses to estimate existing risks of foreign exchange and interest rate fluctuations. Merck is not subject to any material risk concentration from financial transactions. The Report on Risks and Opportunities included in the combined management report provides further information on the management of financial risks.

Foreign exchange risks

Owing to its international business focus, Merck is exposed to foreign exchange-related transaction risks within the scope of both ordinary business and financing activities. Different strategies are used to limit or eliminate these risks. Foreign exchange risks from transactions already recognized on the balance sheet are eliminated as far as possible through the use of forward exchange contracts. Foreign exchange risks arising from forecast transactions are analyzed regularly and reduced if necessary through forward exchange contracts or currency options by applying the hedge accounting rules.

The Merck Group is exposed to currency translation risks since many Merck companies are located outside the eurozone. The financial statements of these companies are translated into euros. Exchange differences resulting from currency translation of the assets and liabilities of these companies are recognized in equity. These effects are not taken into consideration in the following tables.

The following table presents the net exposure of the Merck Group in relation to exchange rate fluctuations of the major currencies against the euro:

€ million	CHF	CNY	JPY	TWD	USD
Net exposure Dec. 31, 2015	–265.3	202.9	135.0	214.7	1,406.9
Net exposure Dec. 31, 2014	–246.6	355.8	121.6	260.0	753.0

The net exposure by currency consists of the following components:

- Balance sheet items in the respective currency to the extent that these do not correspond to the functional currency of a company, as well as the derivative items used for hedging. Normally, balance sheet items not in functional currency are economically hedged in full.
- Planned cash flows in the next 12 months in the respective currency as well as
- Derivatives to hedge these planned cash flows. Usually, the hedging ratio is 30% – 70%.

The following table shows the effects of exchange rate movements of the key currencies against the euro in relation to the net income and equity of the Group on the balance sheet date. The effects of planned cash flows of the next 12 months are not taken into consideration here. By contrast, the effects of cash flow hedges are taken into consideration in the equity of the Group and are included in the following table.

€ million Dec. 31, 2015		CHF	CNY	JPY	TWD	USD
Exchange rate +10% (Appreciation vs. €)	Consolidated income statement	0.0	0.0	0.0	0.0	0.0
	Equity	12.0	–15.4	–15.3	–20.5	–108.7
Exchange rate –10% (Depreciation vs. €)	Consolidated income statement	0.0	0.0	0.0	0.0	0.0
	Equity	–14.7	18.9	16.9	25.1	132.9

€ million Dec. 31, 2014		CHF	CNY	JPY	TWD	USD
Exchange rate +10% (Appreciation vs. €)	Consolidated income statement	0.0	0.0	0.1	0.0	0.0
	Equity	0.0	0.0	–14.2	–10.8	844.1
Exchange rate –10% (Depreciation vs. €)	Consolidated income statement	0.0	0.0	32.1	0.0	0.0
	Equity	0.0	0.0	9.2	9.1	–681.7

Interest rate risks

The Merck Group's exposure to interest rate changes comprises the following:

€ million	Dec. 31, 2015	Dec. 31, 2014
Short-term or variable interest rate monetary deposits	1,059.2	5,131.9
Short-term or variable interest rate monetary borrowings	–5,799.7	–2,169.0
Net interest rate exposure	**–4,740.5**	**2,962.9**

The effects of a parallel shift in the yield curve by +100 or −100 basis points on the consolidated income statement as well as on equity relative to all current or variable interest rate balance sheet items, all securities classified as "available for sale" as well as all derivatives are presented in the following table.

€ million	2015		2014	
Change in market interest rate	+100 basis points	−100 basis points	+100 basis points	−100 basis points
Effects on consolidated income statement	–47.4	23.4	21.3	–1.3
Effects on equity	0.0	0.0	40.5	–22.9

The scenario calculations here assumed that for material variable interest-bearing loan agreements, the risk-free interest rate component (EURIBOR) cannot fall below 0%.

Changes in market interest rates did not have effects on equity since an interest rate hedge for a bond issued in August 2015 for refinancing purposes was voluntarily terminated in the reporting period with the entry into an offsetting transaction. Additionally, the level of interest-bearing securities declined significantly in comparison with 2014 and was immaterial as of the balance sheet date.

Share price risks

The shares in publicly listed companies amounting to € 15.6 million (2014: € 1.3 million) are generally exposed to a risk of fluctuations in fair value. A 10% change in the value of the stock market would impact equity by € 1.6 million (2014: € 0.1 million). This change in value would initially be recognized in equity and then in profit or loss at the time of disposal.

Liquidity risks

The liquidity risk, meaning the risk that Merck cannot meet its payment obligations resulting from financial liabilities, is limited by establishing the required financial flexibility and by effective cash management. Information on bonds issued by the Merck Group and other sources of financing can be found in Note [28] “Financial liabilities/Capital management”.

Liquidity risks are monitored and reported to management on a regular basis.

Trade payables amounting to € 1,921.2 million (2014: € 1,539.4 million) had a remaining term of less than one year.

The following tables present the contractual cash flows such as repayments and interest on financial liabilities and derivative financial instruments with a negative fair value:

€ million Dec. 31, 2015	Carrying amount	Cash flows < 1 year Interest	Repayment	Cash flows 1–5 years Interest	Repayment	Cash flows > 5 years Interest	Repayment
Bonds and commercial paper	9,851.4	236.8	1,272.1	852.0	4,200.8	400.7	4,428.6
Liabilities to banks	3,006.0	18.8	2,135.4	13.0	619.2	1.7	250.0
Liabilities to related parties	577.8	0.2	577.8	–	–	–	–
Loans from third parties and other financial liabilities	89.2	5.7	26.6	10.6	59.5	–	3.1
Liabilities from derivatives (financial transactions)	183.7	17.3	79.9	65.2	–	26.0	–
Financing leasing liabilities	4.8	0.2	2.0	0.1	2.8	–	–
	13,712.9	**279.0**	**4,093.8**	**940.9**	**4,882.3**	**428.4**	**4,681.7**

€ million Dec. 31, 2014	Carrying amount	Cash flows < 1 year Interest	Repayment	Cash flows 1–5 years Interest	Repayment	Cash flows > 5 years Interest	Repayment
Bonds and commercial paper	4,624.2	170.9	1,450.0	442.3	342.1	197.6	2,850.0
Liabilities to banks	267.4	5.1	67.4	2.8	200.0	–	–
Liabilities to related parties	501.4	1.6	501.4	–	–	–	–
Loans from third parties and other financial liabilities	84.5	5.8	18.6	11.8	61.6	–	4.3
Liabilities from derivatives (financial transactions)	153.0	2.5	36.0	63.7	17.3	40.7	–
Financing leasing liabilities	6.5	0.2	2.8	0.2	3.7	–	–
	5,637.0	**186.1**	**2,076.2**	**520.8**	**624.7**	**238.3**	**2,854.3**

Credit risks

Merck is only subject to a relatively low credit risk. On the one hand, financial contracts are only entered into with banks and industrial companies with good credit ratings, and on the other hand, the broad-based business structure with a large number of different customers results in a diversification of credit risks within the Merck Group. The credit risk from financial contracts is monitored daily on the basis of rating information as well as market information on credit default swap rates.

The credit risk with customers is monitored using established credit management processes that take the individual customer risks into account. This is done in particular by continuously analyzing the age structure of trade accounts receivable. Merck continuously reviews and monitors open positions of all trading partners in the affected countries and takes risk-mitigating measures if necessary. If there is objective evidence that particular accounts receivable are fully or partially impaired, respective impairment losses are recognized to provide for credit defaults. On the balance sheet date, the theoretically maximum default risk corresponded to the net carrying amounts less any compensation from credit insurance.

There were no indications of impairment for financial assets neither past due nor impaired on the balance sheet date.

(38) Other disclosures on financial instruments

The following table presents the reconciliation of the balance sheet items to 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 Dec. 31, 2015**	Amortized cost	At cost	Fair value	Carrying amount according to IAS 17	Non-financial items
Assets						
Cash and cash equivalents	832.2	832.2	–	–	–	–
Current financial assets	227.0	32.7	–	194.3	–	–
Held for trading (non-derivatives)	–	–	–	–	–	–
Derivatives without a hedging relationship	32.7	–	–	32.7	–	–
Held to maturity	29.8	29.8	–	–	–	–
Loans and receivables	2.9	2.9	–	–	–	–
Available for sale	161.6	–	–	161.6	–	–
Derivatives with a hedging relationship	–	–	–	–	–	–
Trade accounts receivable[1]	2,738.3	2,738.3	–	–	–	–
Loans and receivables[1]	2,738.3	2,738.3	–	–	–	–
Other current and non-current other assets[1]	624.0	155.1	–	13.8	–	455.1
Derivatives without a hedging relationship	1.6	–	–	1.6	–	–
Loans and receivables[1]	155.1	155.1	–	–	–	–
Derivatives with a hedging relationship	12.2	–	–	12.2	–	–
Non-financial items	455.1	–	–	–	–	455.1
Non-current financial assets	131.5	16.5	82.0	33.0	–	–
Derivatives without a hedging relationship	4.6	–	–	4.6	–	–
Held to maturity	–	–	–	–	–	–
Loans and receivables	16.5	16.5	–	–	–	–
Available for sale[1]	110.4	–	82.0	28.4	–	–
Derivatives with a hedging relationship	–	–	–	–	–	–
Liabilities						
Current and non-current financial liabilities	13,712.9	13,524.4	–	183.7	4.8	–
Derivatives without a hedging relationship	138.5	–	–	138.5	–	–
Other liabilities	13,524.4	13,524.4	–	–	–	–
Derivatives with a hedging relationship	45.2	–	–	45.2	–	–
Finance lease liabilities	4.8	–	–	–	4.8	–
Trade accounts payable	1,921.2	1,921.2	–	–	–	–
Other liabilities	1,921.2	1,921.2	–	–	–	–
Current and non-current other liabilities	2,427.0	904.3	–	60.8	–	1,461.9
Derivatives without a hedging relationship	3.5	–	–	3.5	–	–
Other liabilities	904.3	904.3	–	–	–	–
Derivatives with a hedging relationship	57.3	–	–	57.3	–	–
Non-financial items	1,461.9	–	–	–	–	1,461.9

[1] Some of the figures as of Dec. 31, 2014 have been adjusted.

		Subsequent measurement according to IAS 39					
Fair value, Dec. 31, 2015	Carrying amount Dec. 31, 2014	Amortized cost	At cost	Fair value	Carrying amount according to IAS 17	Non-financial items	Fair value Dec. 31, 2014
832.2	2,878.5	2,878.5	–	–	–	–	2,878.5
	2,199.4	24.6	–	2,174.8	–	–	
–	–	–	–	–	–	–	–
32.7	39.8	–	–	39.8	–	–	39.8
29.8	21.7	21.7	–	–	–	–	21.7
2.9	2.9	2.9	–	–	–	–	2.9
161.6	2,135.0	–	–	2,135.0	–	–	2,135.0
–	–	–	–	–	–	–	–
	2,219.5	2,219.5	–	–	–	–	
2,738.3	2,219.5	2,219.5	–	–	–	–	2,219.5
	1,282.8	168.5	–	471.4	–	642.9	
1.6	0.7	–	–	0.7	–	–	0.7
155.1	168.5	168.5	–	–	–	–	168.5
12.2	470.7	–	–	470.7	–	–	470.7
	642.9	–	–	–	–	642.9	
	94.4	13.7	66.9	13.8	–	–	
4.6	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
16.5	13.7	13.7	–	–	–	–	13.7
28.4	80.7	–	66.9	13.8	–	–	13.8
–	–	–	–	–	–	–	–
	5,637.0	5,477.5	–	153.0	6.5	–	
138.5	25.4	–	–	25.4	–	–	25.4
13,705.5	5,477.5	5,477.5	–	–	–	–	5,835.6
45.2	127.6	–	–	127.6	–	–	127.6
4.8	6.5	–	–	–	6.5	–	6.5
	1,539.4	1,539.4	–	–	–	–	
1,921.2	1,539.4	1,539.4	–	–	–	–	1,539.4
	2,356.6	696.1	–	35.4	–	1,625.1	
3.5	5.7	–	–	5.7	–	–	5.7
904.3	696.1	696.1	–	–	–	–	696.1
57.3	29.7	–	–	29.7	–	–	29.7
	1,625.1	–	–	–	–	1,625.1	

Net gains and losses on financial instruments mainly include measurement results from currency translation, fair value adjustments, impairments and reversals of impairments, disposal gains / losses as well as the recognition of premiums and discounts. Dividends and interest are not recognized in the net gains and losses on financial instruments, except for dividends and interest in the category "held for trading". At Merck, the category "held for trading" only includes derivatives not in a hedging relationship.

The net gains or losses on financial instruments by category were as follows:

€ million 2015	Interest	Net gains or losses Impairments	Reversals of impairment	Fair value adjustments	Disposal gains / losses
Financial instrument of the category					
Held for trading	–	–	–	–14.9	–
Held to maturity	2.7	–	–	–	–
Loans and receivables	18.4	–84.1	40.2	–	–
Available-for-sale	10.9	–	7.2	–	17.5
Other liabilities	–314.1	–	–	–	–

€ million 2014	Interest	Net gains or losses Impairments	Reversals of impairment	Fair value adjustments	Disposal gains / losses
Financial instrument of the category					
Held for trading	–	–	–	–90.8	–
Held to maturity	1.4	–	–	–	–
Loans and receivables	18.2	–41.9	41.8	–	–
Available-for-sale	10.0	–4.4	–	–	0.2
Other liabilities	–141.4	–	–	–	–

In 2015, foreign exchange losses of € –48.8 million resulting from receivables and payables in operating business, their economic hedging, as well as hedging of forecast transactions in operating business were recorded (2014: gains of € 53.3 million). Foreign exchange losses of € –39.9 million resulting from financial balance sheet items, their economic hedging as well as fair value fluctuations of option contracts to hedge forecast transactions were recorded (2014: losses of € –13.0 million).

The fair value of financial assets and liabilities is 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 comprise stocks and bonds and are classified as "available-for-sale", Level 1 liabilities comprise issued bonds and are classified as "other liabilities". Level 2 assets and liabilities are 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 value of interest-bearing securities as well as of the liabilities classified as "other liabilities" is determined by discounting future cash flows using market interest rates. The calculation of the fair value of forward exchange contracts and currency options uses market spot and forward rates as well as foreign exchange volatilities applying recognized mathematical principles. The fair value of interest rate swaps is determined with standard market valuation models using interest rate curves available in the market.

Level 3 assets comprise investments in equity instruments classified as "available-for-sale". These relate to non-controlling interests in a partnership. The fair value of these interests 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. The planning relates to a period of five years. Cash flows for periods beyond this are included by calculating the terminal value using a long-term growth rate of 0.5%. The discount rate used (after tax) was 7.0%.

Level 3 liabilities consist of contingent purchase price components from the acquisition of Qlight Nanotech Ltd., Israel. These are reported as "other liabilities" and amounted to € 0.9 million as of the balance sheet date.

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

The fair value of available-for-sale investments in equity instruments with a carrying amount of € 82.0 million (2014: € 66.9 million) could not be reliably determined since there is no quoted price for an identical instrument in an active market and it is not possible to make a reliable estimate of fair value. 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 Merck Group has no information on a market for these financial instruments.

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

€ million Dec. 31, 2015	Assets	Liabilities
Fair value determined by official prices and quoted market values (Level 1)	**178.1**	**9,021.8**
thereof available-for-sale	178.1	–
thereof other liabilities	–	9,021.8
Fair value determined using inputs observable in the market (Level 2)	**51.1**	**4,928.2**
thereof available-for-sale	–	–
thereof derivatives with a hedging relationship	12.2	102.5
thereof derivatives without a hedging relationship	38.9	142.0
thereof other liabilities	–	4,683.7
Fair value determined using inputs unobservable in the market (Level 3)	**11.9**	**0.9**
thereof available-for-sale	11.9	–
thereof other liabilities	–	0.9

€ million Dec. 31, 2014	Assets	Liabilities
Fair value determined by official prices and quoted market values (Level 1)	**1,178.6**	**4,970.2**
thereof available-for-sale	1,178.6	–
thereof other liabilities	–	4,970.2
Fair value determined using inputs observable in the market (Level 2)	**1,470.1**	**1,053.8**
thereof available-for-sale	958.9	–
thereof derivatives with a hedging relationship	470.7	157.3
thereof derivatives without a hedging relationship	40.5	31.1
thereof other liabilities	–	865.4
Fair value determined using inputs unobservable in the market (Level 3)	**11.3**	**–**
thereof available-for-sale	11.3	–

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

€ million	2015	2014
Net book values as of January 1	**11.3**	**–**
Additions due to acquisitions	– 0.9	10.8
Transfers into Level 3 out of Level 1 / Level 2	–	–
Fair value changes		
Gains (+) / losses (–) recognized in consolidated income statement	–	–
Gains (+) / losses (–) recognized in consolidated statement of comprehensive income	0.6	0.5
Sales	–	–
Transfers out of Level 3 into Level 1 / Level 2	–	–
Net book values as of December 31	**11.0**	**11.3**

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 € 2.3 million. By contrast, a decline in the discount rate by one percentage point would have increased other comprehensive income by € 3.1 million.

Balance sheet netting is not possible. From an economic perspective, netting is only possible for derivatives. This possibility results from the framework agreements on derivatives trading which Merck enters into with commercial banks. Merck does not offset financial assets and financial liabilities in its balance sheet.

The following table presents the potential netting volume of the reported derivative financial assets and liabilities:

€ million Dec. 31, 2015	**Gross presentation**	**Netting**	**Net presentation**	**Potential netting volume: due to master netting agreements**	**Potential netting volume: due to financial collateral**	**Potential net amount**
Derivative financial assets	51.1	–	51.1	45.7	–	5.4
Derivative financial liabilities	– 244.5	–	– 244.5	– 45.7	–	– 198.8

€ million Dec. 31, 2014	Gross presentation	Netting	Net presentation	Potential netting volume: due to master netting agreements	Potential netting volume: due to financial collateral	Potential net amount
Derivative financial assets	511.2	–	511.2	70.5	–	440.7
Derivative financial liabilities	–188.4	–	–188.4	– 70.5	–	–117.9

(39) Contingent liabilities

€ million	**Dec. 31, 2015**	**thereof affiliates**	Dec. 31, 2014	thereof affiliates
Contingent liabilities from legal disputes and tax matters	64.0	–	54.3	–
Guarantees	0.8	–	17.1	–
Warranties	0.2	–	0.5	–

Contingent liabilities from legal disputes included potential obligations, for which the probability of an outflow of resources did not suffice to recognize a provision as of the balance sheet date. These mainly related to obligations under civil law as well as under antitrust and environmental law. The potential civil law obligations primarily related to potential liabilities to pay damages due to a legal dispute under antitrust law. It was possible that Merck would be subject to claims for compensation for damages asserted by health insurance companies due to excessively high drug prices in case of a valid judgment under antitrust law.

Contingent liabilities pertaining to tax matters included various non-German income and non-income related tax matters that mainly related to intragroup business transfers as well as legal disputes attributable to the determination of earnings under tax law, customs regulations and transfer pricing adjustments.

(40) Other financial obligations

Other financial obligations comprised the following:

€ million	**Dec. 31, 2015**	**thereof affiliates**	Dec. 31, 2014	thereof affiliates
Obligation to purchase the entire share capital of Sigma-Aldrich Corporation	–	–	13,975.0	–
Obligations to acquire intangible assets and to pay due to collaboration agreements	3,021.2	–	2,897.6	–
Obligations to acquire property, plant and equipment	108.8	–	55.3	–
Future operating lease payments	343.7	–	199.7	–
Long-term purchase commitments	383.6	–	138.4	–
Other financial obligations	34.7	–	30.8	–
	3,892.0	**–**	**17,296.8**	**–**

In connection with the offer to acquire the Sigma-Aldrich Corporation, USA, which was announced by Merck on September 22, 2014, a contingent financial obligation amounting to € 13,975.0 million (US$ 16,985.2 million; based on the exchange rate on December 31, 2014) existed in 2014 to acquire the entire share capital of Sigma-Aldrich for a cash consideration.

Since the acquisition of Sigma-Aldrich was successfully completed on November 18, 2015, the obligation no longer existed on December 31, 2015.

Obligations to acquire intangible assets existed in particular owing to conditional purchase price components and within the scope of research and development collaborations. Here Merck has obligations to make milestone payments when certain objectives are reached. In the unlikely event that all contract partners achieve all milestones, Merck would be obligated to pay up to € 1,543.8 million (2014: € 1,494.8 million) for the acquisition of intangible assets.

Moreover, within the scope of collaboration agreements, individual research and development or commercialization budgets were contractually set upon the basis of which collaboration partners can commit Merck to make payments in the amount of up to € 1,447.4 million (2014: € 1,402.8 million).

The expected maturities of these obligations were as follows:

€ million	Dec. 31, 2015	Dec. 31, 2014
Obligations to acquire intangible assets and to pay due to collaboration agreements		
within one year	258.3	135.2
in 1–5 years	1,218.7	1,081.3
more than 5 years	1,544.2	1,681.1
	3,021.2	**2,897.6**

Other financial obligations were recognized at nominal value.

The maturities of liabilities from lease agreements were as follows:

€ million Dec. 31, 2015	within 1 year	1–5 years	more than 5 years	Total
Present value of future payments from finance leases	2.0	2.8	–	4.8
Interest component of finance leases	0.2	0.1	–	0.3
Future finance lease payments	**2.2**	**2.9**	**–**	**5.1**
Future operating lease payments	**98.5**	**207.2**	**38.0**	**343.7**

€ million Dec. 31, 2014	within 1 year	1–5 years	more than 5 years	Total
Present value of future payments from finance leases	2.8	3.7	–	6.5
Interest component of finance leases	0.2	0.2	–	0.4
Future finance lease payments	**3.0**	**3.9**	**–**	**6.9**
Future operating lease payments	**83.7**	**108.7**	**7.3**	**199.7**

Operating leasing agreements related mainly to leasing arrangements to lease real estate, company fleet vehicles as well as operating and office equipment. The payments resulting from operating leasing agreements amounted to € 112.5 million (2014: € 91.8 million) and were recorded as an expense in the reporting period.

(41) Personnel expenses / Headcount

Personnel expenses comprised the following:

€ million	2015	2014
Wages and salaries	2,992.8	2,630.9
Compulsory social security contributions and special financial assistance	431.6	376.6
Pension expenses	209.8	157.4
	3,634.2	**3,164.9**

As of December 31, 2015, the Merck Group had 49,613 employees (2014: 39,639). The average number of employees during the year was 41,511 (2014: 38,930). The increase was mainly due to the acquisition of the Sigma-Aldrich Corporation, USA, which was completed on November 18, 2015.

The breakdown of personnel by function was as follows:

Average number of employees	2015	2014
Production	11,563	10,176
Logistics	2,581	2,207
Marketing and Sales	12,871	12,113
Administration	6,763	6,342
Research and Development	5,097	4,738
Infrastructure and Other	2,636	3,354
	41,511	**38,930**

(42) Material costs

Material costs in 2015 amounted to € 1,736.8 million (2014: € 1,516.8 million) and were reported under cost of sales.

(43) Auditors' fees

The costs of the auditors (KPMG) of the financial statements of the Merck Group consisted of the following:

	2015		2014	
€ million	**Merck Group**	**thereof KPMG Germany**	Merck Group	thereof KPMG Germany
Audits of financial statements	7.9	2.2	5.4	1.6
Other audit-related services	1.0	0.8	0.6	0.5
Tax consultancy services	0.9	0.5	0.6	0.3
Other services	1.2	0.9	0.3	0.2
	11.0	**4.4**	**6.9**	**2.6**

(44) Corporate governance

The Statement of Compliance in accordance with section 161 of the German Stock Corporation Act (Aktiengesetz) was published in the corporate governance section of the website www.merckgroup.com/investors → corporate governance in March 2015 and thus made permanently available.

(45) Companies opting for exemption under section 264 (3) HGB or section 264 b HGB

The following companies, which have been consolidated in these financial statements, have opted for exemption:

Allergopharma GmbH & Co. KG, Reinbek
Allergopharma Verwaltungs GmbH, Darmstadt
Biochrom GmbH, Berlin
Chemitra GmbH, Darmstadt
Litec-LLL GmbH, Greifswald
Merck Accounting Solutions & Services Europe GmbH, Darmstadt
Merck Chemicals GmbH, Darmstadt
Merck Consumer Health Holding GmbH, Darmstadt
Merck Export GmbH, Darmstadt
Merck Life Science GmbH, Eppelheim
Merck Selbstmedikation GmbH, Darmstadt
Merck Serono GmbH, Darmstadt
Merck Versicherungsvermittlung GmbH, Darmstadt

(46) Related-party disclosures

Related parties in respect of the Merck Group are E. Merck KG, Emanuel-Merck-Vermögens-KG and E. Merck Beteiligungen KG. In principle, direct or indirect subsidiaries of Merck KGaA, associates of the Merck Group, jointly controlled companies where the Merck Group is involved, as well as pension funds that are classified as funded defined benefit plans in accordance with IAS 19 are also related parties within the meaning of IAS 24. Members of the Executive Board and the Supervisory Board of Merck KGaA, the Executive Board and the Board of Partners of E. Merck KG as well as close members of their families are also related parties.

As of December 31, 2015, there were liabilities by Merck Financial Services GmbH, Merck KGaA and Merck & Cie, Switzerland, to E. Merck KG in the amount of € 1,031.2 million (2014: € 926.9 million). Merck Financial Services GmbH had liabilities vis-à-vis Merck Capital Asset Management, Malta, amounting to € 0.1 million (2014: € 0.1 million). Moreover, as of December 31, 2015, Merck KGaA had receivables from E. Merck Beteiligungen KG in the amount of € 35.4 million (2014: € 76.5 million). The balances result mainly from the profit transfers by Merck & Cie, Switzerland, to E. Merck KG as well as the reciprocal profit transfers between Merck KGaA and E. Merck KG. They included financial payables of € 577.8 million (2014: € 501.4 million) which were subject to standard market interest rates. Neither collateral nor guarantees existed for any of the balances either in favor or to the disadvantage of Merck.

Moreover, as of December 31, 2015 Merck Serono SA, Switzerland, had a receivable from Calypso Biotech SA, Switzerland, amounting to € 1.2 million (2014: € 0.0 million) stemming from a convertible bond with a volume of CHF 1,350,000 and an annual coupon of 8% maturing on December 31, 2016.

From January to December 2015, Merck KGaA performed services for E. Merck KG with a value of € 0.9 million (2014: € 1.2 million), for E. Merck Beteiligungen KG with a value of € 0.3 million (2014: € 0.3 million), and for Emanuel-Merck-Vermögens-KG with a value of € 0.2 million (2014: € 0.3 million). During the same period, E. Merck KG performed services for Merck KGaA with a value of € 0.5 million (2014: € 0.5 million).

Business transactions with major subsidiaries were eliminated during consolidation. Information on pension funds that are classified as funded defined benefit plans in accordance with IAS 19 can be found in Note [26] “Provisions for pensions and other post-employment benefits”. There were no further material transactions with these pension funds.

As was the case in 2014, there were no transactions between companies of the Merck Group and associates from January to December 2015. As in the previous year, companies of the Merck Group had no receivables or liabilities vis-à-vis associates as of December 31, 2015.

There were no material transactions such as, for example, the provision of services or the granting of loans, between companies of the Merck Group and members of the Executive Board or the Supervisory Board of Merck KGaA, the Executive Board or the Board of Partners of E. Merck KG or members of their immediate families.

(47) Executive Board and Supervisory Board compensation

The compensation of the Executive Board of Merck KGaA is paid by the general partner, E. Merck KG, and recorded as an expense in its income statement. For the period from January to December 2015, fixed salaries of € 6.5 million (2014: € 5.3 million), variable compensation of € 22.3 million (2014: € 18.3 million), and additional benefits of € 0.3 million (2014: € 0.2 million) were recorded for members of the Executive Board. Furthermore, additions to the provisions of E. Merck KG for the Long-Term Incentive Plan totaled € 9.9 million (2014: € 12.7 million), and additions to the pension provisions of E. Merck KG include current service costs of € 4.2 million (2014: € 2.1 million) for members of the Executive Board of Merck KGaA.

The compensation of the Supervisory Board amounting to € 881.0 thousand (2014: € 882.1 thousand) consisted of a fixed portion of € 822.5 thousand (2014: € 823.6 thousand) and meeting attendance compensation of € 58.5 thousand (2014: € 58.5 thousand).

Further individualized information and details can be found in the Compensation Report on pages 150 et seq.

(48) Information on preparation and approval

The Executive Board of Merck KGaA prepared the consolidated financial statements on February 18, 2016 and approved them for forwarding to the Supervisory Board. The Supervisory Board has the responsibility to examine the consolidated financial statements and to declare whether it approves them.

(49) Subsequent events

At the beginning of January 2016, two contracts entered into with BioMarin Pharmaceutical Inc., USA (BioMarin), became effective. Firstly, the sale of the rights to Kuvan®, a drug used to treat the metabolic disorder known as phenylketonuria (PKU) was agreed. And secondly, Merck returned its option to develop and commercialize Peg-Pal to BioMarin. Based on these two agreements, in January 2016 Merck received an upfront payment of € 340 million for the sale of the rights to Kuvan® as well as an entitlement to milestone payments of up to € 185 million. More information can be found in Note [4] "Acquisitions, assets held for sale and disposal groups".

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

Accounting and Measurement Policies

(50) Measurement policies

The main assets and liabilities disclosed in the consolidated balance sheet are measured as follows:

Balance sheet item	Measurement principle
Assets	
Intangible assets	
With finite useful life	Amortized cost
With indefinite useful life	Amortized cost (subsequent measurement impairment-only approach)
Property, plant and equipment	Amortized cost
Financial assets (current / non-current)	
Held to maturity investments	Amortized cost
Available-for-sale financial assets	Fair value
Loans and receivables	Amortized cost
Derivative assets (financial transactions)	Fair value
Other assets	
Derivative assets (operational)	Fair value
Receivables from non-income related taxes	Amortized cost
Other receivables	Amortized cost
Deferred tax assets	Undiscounted measurement based on tax rates that are expected to apply to the period when the asset is realized or the liability is settled
Inventories	Lower of cost and net realizable value
Trade accounts receivable	Amortized cost
Income tax receivables	Expected tax refunds based on tax rates that have been enacted or substantively enacted by the end of the reporting period
Cash and cash equivalents	Nominal value
Assets held for sale	Lower of carrying amount and fair value less costs to sell

Balance sheet item	Measurement principle
Equity and liabilities	
Provisions for pensions and other post-employment benefits	Projected unit credit method
Provisions (current / non-current)	Present value of the expenditures expected to be required to settle the obligation
Financial liabilities (current / non-current)	
Bonds	Amortized cost
Liabilities to related parties	Amortized cost
Loans to banks	Amortized cost
Liabilities from derivatives (financial transactions)	Fair value
Finance lease liabilities	Amortized cost
Other liabilities (current / non-current)	
Liabilities from derivatives (operational)	Fair value
Liabilities from non-income related taxes	Settlement amount
Other liabilities	Settlement amount
Deferred tax liabilities	Undiscounted measurement based on tax rates that are expected to apply to the period when the asset is realized or the liability is settled
Trade accounts payable	Amortized cost
Income tax liabilities	Expected tax payments based on tax rates that have been enacted or substantively enacted by the end of the reporting period
Liabilities directly related to assets held for sale	Fair value

(51) Consolidation methods

The consolidated financial statements are based on the single-entity financial statements of the consolidated companies as of the balance sheet date, which were prepared applying consistent accounting policies in accordance with IFRS.

Acquisitions are accounted for using the purchase method in accordance with IFRS 3. Subsidiaries acquired and consolidated for the first time were measured at the carrying values at the time of acquisition. Differences resulting in this connection are recognized as assets and liabilities to the extent that their fair values differ from the values carried in the financial statements. Any remaining – and usually – positive difference is recognized as goodwill within intangible assets.

In cases where a company was not acquired in full, non-controlling interests are measured using the fair value of the proportionate share of net assets. The option to measure non-controlling interests at fair value on the date of their acquisition (full goodwill method) was not utilized.

When additional shares in non-controlling interests are acquired, the purchase price amount that exceeds the carrying amount of this interest is recognized immediately in equity.

IFRS 11 is applied for joint arrangements. A joint arrangement exists when, on the basis of a contractual arrangement, Merck and third parties jointly control business activities. Joint control means that decisions about the relevant activities require unanimous consent. Joint arrangements are either joint operations or joint ventures. Revenues and expenses as well as assets and liabilities from joint operations are included in the consolidated financial statements on a pro rata basis in accordance with Merck's rights and obligations. By contrast, interests in joint ventures as well as in material associates over which Merck has significant influence are included in accordance with IAS 28 using the equity method of accounting.

Intragroup sales, expenses and income, as well as all receivables and payables between the consolidated companies, were eliminated. The effects of intragroup deliveries reported under non-current assets and inventories were adjusted by eliminating any intragroup profits. In accordance with IAS 12, deferred taxes are applied to these consolidation measures.

(52) Currency translation

The functional currency concept applies to the translation of financial statements of consolidated companies prepared in foreign currencies. The subsidiaries of the Merck Group generally conduct their operations independently. The functional currency of these companies is normally the respective local currency. Assets and liabilities are measured at the closing rate, and income and expenses are measured at weighted average annual rates in euros, the reporting currency. Any currency translation differences arising during consolidation of

Group companies are taken directly to equity. If Group companies are deconsolidated, existing currency differences are reversed and reclassified to profit or loss. The local currency is not the functional currency at only a few subsidiaries. When the financial statements of consolidated companies are prepared, business transactions that are conducted in currencies other than the functional currency are recorded using the current exchange rate on the date of the transaction. Foreign currency monetary items (cash and cash equivalents, receivables and payables) in the year-end financial statements of the consolidated companies prepared in the functional currency are translated at the respective closing rates. Exchange differences from the translation of monetary items are recognized in the income statement with the exception of net investments in a foreign operation. Hedged items are likewise carried at the closing rate. The resulting gains or losses are eliminated in the consolidated income statement against offsetting amounts from the fair value measurement of derivatives.

Currency translation was based on the following key exchange rates:

	Average annual rate		Closing rate	
€ 1 =	**2015**	2014	**Dec. 31, 2015**	Dec. 31, 2014
British pound (GBP)	0.728	0.805	0.737	0.781
Chinese renminbi (CNY)	7.003	8.167	7.183	7.534
Japanese yen (JPY)	134.431	140.594	131.576	145.392
Swiss franc (CHF)	1.075	1.214	1.081	1.203
Taiwan dollar (TWD)	35.337	40.172	35.831	38.448
U.S. dollar (USD)	1.112	1.325	1.093	1.215

(53) Recognition of net sales and other revenue items

Net sales and revenues are recognized when the amount of revenue can be measured reliably, it is probable that the economic benefits will flow to the entity as well as when the following preconditions have been met.

Net sales are deemed realized once the goods are delivered or the services have been rendered and the significant risks and rewards of ownership have been transferred to the purchaser. In the case of sales of equipment in the Life Science business sector, these preconditions are only met after installation has been successfully completed to the extent that the installation requires specialized knowledge, does not represent a clear ancillary service and the relevant equipment can only be used by the customer once successfully set up.

Net sales are recognized net of sales-related taxes and sales deductions. When sales are recognized, estimated amounts are taken into account for expected sales deductions, for example rebates, discounts and returns.

The vast majority of Group sales are generated by the sale of goods.

In the Healthcare business sector, products are often sold to pharmaceutical wholesalers and to a lesser extent directly to pharmacies or hospitals. In the Life Science and Performance Materials business sectors, products are largely sold to business customers, and to a lesser extent to distributors.

In addition to revenue from the sale of goods, sales also include commission income, and in the Life Science business sector revenue from services, but the volume involved is insignificant. In the case of long-term service agreements, Merck records the sales revenues on a pro rata basis over the term of the agreement or in accordance with the degree to which the services have been rendered.

Royalty and license income is recognized when the contractual obligation has been met.

Dividend income is recognized when the shareholders' right to receive the dividend is established. This is normally the date of the dividend resolution.

Interest income is recognized in the period in which it is earned.

(54) Research and development costs

Research and development costs comprise the costs of research departments and process development, the expenses incurred as a result of research and development collaborations as well as the costs of clinical trials (both before and after approval is granted).

The costs of research cannot be capitalized and are expensed in full in the period in which they are incurred. As internally generated intangible assets, it is necessary to capitalize development expenses if the cost of the internally generated intangible asset can be reliably determined and the asset can be expected to lead to future economic benefits. The condition for this is that the necessary resources are available for the development of the asset, technical feasibility of the asset is given, its completion and use are intended, and marketability is given. Owing to the high risks up to the time that pharmaceutical products are approved, these criteria are not met in the Healthcare business sector. Costs incurred after regulatory approval are usually insignificant and are therefore not recognized as intangible assets. Owing to the risks existing up until market launch, development expenses in the Life Science and Performance Materials business sectors can likewise not be capitalized.

Reimbursements for R&D are offset against research and development costs.

(55) Financial instruments: Principles

A financial instrument is a contractual arrangement that gives rise to a financial asset of one entity and a financial liability or an equity instrument of another entity. A distinction is made between non-derivative and derivative financial instruments. Merck accounts for regular way purchases or sales of non-derivative financial instruments at the settlement date and of derivatives at the trade date.

Upon initial recognition, financial assets and financial liabilities are measured at fair value, taking into account any transaction costs, if necessary.

Financial assets are derecognized in part or in full if the contractual rights to the cash flows from the financial asset have expired or have been fulfilled or if control and substantially all the risks and rewards of ownership of the financial asset have been transferred to a third party. Financial liabilities are derecognized if the contractual obligations have been discharged, cancelled, or expired. Cash and cash equivalents are carried at nominal value.

(56) Financial instruments: Categories and classes of financial instruments

Financial assets and liabilities are classified into the following IAS 39 measurement categories and IFRS 7 classes. The classes required to be disclosed in accordance with IFRS 7 consist of the measurement categories set out here. Additionally, cash and cash equivalents with an original maturity of up to 90 days, finance lease liabilities, and derivatives designated as hedging instruments are also classes in accordance with IFRS 7.

Financial assets and financial liabilities at fair value through profit or loss

“Financial assets and financial liabilities at fair value through profit or loss” can be both non-derivative and derivative financial instruments. Financial instruments in this category are subsequently measured at fair value. Gains and losses on financial instruments in this measurement category are recognized directly in the consolidated income statement. This measurement category includes an option to designate non-derivative financial instruments as “at fair value through profit or loss” on initial recognition (fair value option) or as “financial instruments held for trading”. The fair value option was applied neither during the fiscal year nor the previous year. Merck only assigns derivatives to the “held for trading” measurement category. Special accounting rules apply to derivatives that are designated as hedging instruments in a hedging relationship.

Held to maturity investments

“Held to maturity investments” are non-derivative financial assets with fixed or determinable payments and a fixed maturity that are quoted in an active market. To be able to assign a financial asset to this measurement category, the entity must have the positive intention and ability to hold it to maturity. These investments are subsequently measured at amortized cost using the effective rate method. If there is objective evidence that such an asset is impaired, an impairment loss is recognized in profit or loss. Subsequent reversals of impairment losses are also recognized in profit or loss up to the amount of the amortized cost. At Merck, this measurement category is used for current financial assets.

Loans and receivables

“Loans and receivables” are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are subsequently measured at amortized cost using the effective rate method. If there is objective evidence that such assets are impaired, an impairment loss is recognized in profit or loss. Subsequent reversals of impairment losses are also recognized in profit or loss up to the amount of amortized cost. Long-term non-interest-bearing and low-interest receivables are measured at their present value. Merck primarily assigns trade receivables, loans, and miscellaneous other current and non-current receivables to this measurement category. Merck always uses a separate allowance account for impairment losses on trade and other receivables. Amounts from the allowance account are recognized in the carrying amount of the corresponding receivable as soon as this is derecognized due to irrecoverability.

Available-for-sale financial assets

"Available-for-sale financial assets" are those non-derivative financial assets that are not assigned to the measurement categories "financial assets and financial liabilities at fair value through profit or loss", "held-to-maturity investments" or "loans and receivables". Financial assets in this category are subsequently measured at fair value. Changes in fair value are recognized immediately in equity and are only transferred to the consolidated income statement when the financial asset is derecognized.

If there is substantial evidence of an asset impairment, the accumulated loss recognized immediately in equity is to be reclassified to the consolidated income statement, even if the financial asset has not been derecognized. Reversals of impairment losses on previously impaired equity instruments are recognized immediately in equity. Reversals of impairment losses on previously impaired debt instruments are recognized in profit or loss up to the amount of the impairment loss. Any amount in excess of this is recognized directly in equity. Financial assets in this category for which no fair value is available or fair value cannot be reliably determined are measured at cost less any accumulated impairment losses. Impairment losses on financial assets carried at cost may not be reversed. At Merck, this measurement category is used in particular for interest-bearing securities, financial assets, and financial investments in equity instruments as well as interests in subsidiaries that are not consolidated due to secondary importance (affiliates). Both interests in non-consolidated subsidiaries as well as to some extent financial investments in equity instruments are measured at cost.

Other liabilities

Other liabilities are non-derivative financial liabilities that are subsequently measured at amortized cost. Differences between the amount received and the amount to be repaid are amortized to profit or loss over the maturity of the instrument. Merck primarily assigns financial liabilities such as issued bonds and liabilities due to banks, trade payables, and miscellaneous other non-derivative current and non-current liabilities to this category.

(57) Financial instruments: Derivatives and hedge accounting

Merck uses derivatives solely to economically hedge recognized assets or liabilities and forecast transactions. The hedge accounting rules in accordance with IFRS are applied to some of these hedges. A distinction is made between fair value hedge accounting and cash flow hedge accounting. Designation of a hedging relationship requires a hedged item and a hedging instrument. Merck currently only uses derivatives as hedging instruments.

The hedging relationship must be effective at all times, i.e. the change in fair value of the hedging instrument almost fully offsets changes in the fair value of the hedged item. Merck uses the dollar offset method as well as regression analyses to measure hedge effectiveness. Derivatives that do not or no longer meet the documentation or effectiveness requirements for hedge accounting, whose hedged item no longer exists, or for which hedge accounting rules are not applied are classified as "financial assets and liabilities at fair value through profit or loss". Changes in fair value are then recognized in profit or loss.

At Merck, cash flow hedges normally relate to highly probable forecast transactions in foreign currency and to future interest payments. In cash flow hedges, the effective portion of the gains and losses on the hedging instrument taking deferred taxes into consideration is recognized in equity until the hedged expected cash flows affect profit or loss. This is also the case if the hedging instrument expires, is sold, or is terminated before the hedged transaction occurs and the occurrence of the hedged item remains likely. The ineffective portion of a cash flow hedge is recognized directly in profit or loss.

(58) Intangible assets

Acquired intangible assets are recognized at cost and are classified as assets with finite and indefinite useful lives. Self-developed intangible assets are only capitalized if the requirements specified by IAS 38 have been met. Intangible assets acquired in the course of business combinations are recognized at fair value on the acquisition date. If the development of intangible assets takes a substantial period of time, the directly attributable borrowing costs incurred up until completion are capitalized as part of the costs.

Intangible assets with indefinite useful lives

Intangible assets with indefinite useful lives are not amortized; however they are tested for impairment when a triggering event arises or at least once a year. Here, the respective carrying amounts are compared with the recoverable amount and impairments are recognized as required. Impairment losses recognized on indefinite-life intangible assets other than goodwill are reversed if the original reasons for impairment no longer apply.

Goodwill is allocated to cash-generating units or groups of cash-generating units and tested for impairment either annually or if there are indications of impairment. The carrying amounts of the cash-generating units or groups of cash-generating units are compared with their recoverable amounts and impairment losses are recognized where the recoverable amount is lower than the carrying amount. The recoverable amount of a cash-generating unit is determined as the higher of fair value less costs of disposal and value in use estimated using the discounted cash flow method.

Intangible assets with finite useful lives

Intangible assets with a finite useful life are amortized using the straight-line method. The useful lives of customer relationships, marketing authorizations, acquired patents, licenses and similar rights, brand names, trademarks and software are between three and 24 years. Amortization of intangible assets and software is allocated to the functional costs in the consolidated income statement. An impairment test is performed if there are indications of impairment. Impairment losses are determined using the same methodology as for indefinite-life intangible assets. Impairment losses are reversed if the original reasons for impairment no longer apply.

(59) Property, plant and equipment

Property, plant and equipment is measured at cost less depreciation and impairments plus reversals of impairments. The component approach is applied here in accordance with IAS 16. Subsequent costs are only capitalized if it is probable that future economic benefits will arise for the Group and the cost of the asset can be measured reliably. The cost of self-constructed property, plant and equipment is calculated on the basis of the directly attributable unit costs and an appropriate share of overheads. If the construction of property, plant and equipment takes a substantial period of time, the directly attributable borrowing costs incurred up until completion are capitalized as part of the costs. In accordance with IAS 20, costs are reduced by the amount of government grants in those cases where government grants or subsidies have been paid for the acquisition or manufacture of assets (grants related to assets). Grants related to expenses which no longer offset future expenses are recognized in profit or loss. Property, plant and equipment is depreciated by the straight-line method over the useful life of the asset concerned. Depreciation of property, plant and equipment is based on the following useful lives:

USEFUL LIFE OF PROPERTY, PLANT AND EQUIPMENT

	Useful life
Production buildings	maximum of 33 years
Administration buildings	maximum of 40 years
Plant and machinery	6 to 25 years
Operating and office equipment; other facilities	3 to 10 years

The useful lives of the assets are reviewed regularly and adjusted if necessary. If indications of a decline in value exist, an impairment test is performed. The determination of the possible need to recognize impairments proceeds in the same way as for intangible assets. If the reasons for an impairment loss no longer exist, a reversal of the impairment loss recognized in prior periods is recorded.

(60) Leasing

Where non-current assets are leased and economic ownership lies with Merck (finance lease), the asset is recognized at the present value of the minimum lease payments or the lower fair value in accordance with IAS 17 and depreciated over its useful life. The corresponding payment obligations from future lease payments are recorded as liabilities. If an operating lease is concerned, the associated expenses are recognized in the period in which they are incurred.

(61) Other non-financial assets and liabilities

Other non-financial assets are carried at amortized cost. Allowances are recognized for any credit risks. Long-term non-interest-bearing and low-interest receivables and liabilities are carried at their present value. Other non-financial liabilities are carried at the amount to be repaid.

(62) Deferred taxes

Deferred tax assets and liabilities result from temporary differences between the carrying amount of an asset or liability in the IFRS and tax balance sheets of consolidated companies as well as from consolidation activities, insofar as the reversal of these differences will occur in the future. In addition, deferred tax assets are recorded in particular for tax loss carryforwards if and insofar as their utilization is probable in the foreseeable future. In accordance with the liability method, the tax rates enacted and published as of the balance sheet date are used.

Deferred tax assets and liabilities are only offset on the balance sheet date if they meet the requirements of IAS 12.

(63) Inventories

Inventories are carried at the lower of cost or net realizable value. When determining cost, the "first-in, first-out" (FIFO) and weighted average cost formulas are used.

In addition to directly attributable unit costs, manufacturing costs also include overheads attributable to the production process, which are determined on the basis of normal capacity utilization of the production facilities.

Inventories are written down if the net realizable value is lower than the acquisition or manufacturing cost carried in the balance sheet.

Since the inventories are not manufactured within the scope of long-term production processes, the manufacturing cost does not include any borrowing cost.

(64) Provisions for pensions and other post-employment benefits

Provisions for pensions and other post-employment benefits are recorded in the balance sheet in accordance with IAS 19. The obligations under defined benefit plans are measured using the projected unit credit method. Under the projected unit credit method, dynamic parameters are taken into account in calculating the expected benefit payments after an insured event occurs; these payments are spread over the entire period of service of the participating employees. Annual actuarial opinions are prepared for this purpose. The actuarial assumptions, e.g. for discount rates, salary and pension trends, as well as health care cost increases, which were used to calculate the benefit obligation, were determined on a country-by-country basis in line with the economic conditions prevailing in each country; the latest country-specific actuarial mortality table was used in each case. The respective discount rates are generally determined on the basis of the returns on high-quality corporate bonds issued with adequate maturities and currencies. For euro-denominated obligations, bonds with ratings of at least "AA" from one of the three major rating agencies (Standard & Poor's, Moody's or Fitch), and a euro swap rate of adequate duration served as the basis for the data. Actuarial gains and losses resulting from changes in actuarial assumptions and/or experience adjustments (the effects of differences between the previous actuarial assumptions and what has actually occurred) are recognized immediately in equity as soon as they are incurred, taking deferred taxes into account. Consequently, the consolidated balance sheet discloses – after deduction of the plan assets – the full scope of the obligations while avoiding the fluctuations in expenses that can result especially when the calculation parameters change. The actuarial gains and losses recorded in the respective reporting period are presented separately in the Statement of Comprehensive Income.

(65) Provisions and contingent liabilities

Provisions are recognized in the balance sheet if it is more likely than not that a cash outflow will be required to settle the obligation and the amount of the obligation can be measured reliably. The carrying amount of provisions takes into account the amounts required to cover future payment obligations, recognizable risks and uncertain obligations of the Merck Group to third parties.

Measurement is based on the settlement amount with the highest probability or, if the probabilities are equivalent and a high number of similar cases exist, it is based on the expected value of the settlement amounts. Long-term provisions are discounted and carried at their present value as of the balance sheet date. To the extent that reimbursement claims exist as defined in IAS 37, they are recognized separately as an asset if their realization is virtually certain and the asset recognition criteria have been met.

Contingent liabilities comprise not only possible obligations arising from past events and whose existence is subject to the occurrence of uncertain future events, but also present obligations arising from past events where an outflow of resources embodying economic benefits is not probable or where the amount of the obligation cannot be measured with reliability. Contingent liabilities that were not assumed within the context of a business combination are not recognized in the consolidated balance sheet. Unless the possibility of an outflow of resources embodying economic benefits is remote, information on the relevant contingent liabilities is disclosed in the notes.

In this context, the present value of the future settlement amount is used as the basis for measurement. The settlement amount is determined in accordance with the rules set out in IAS 37 and is based on the best estimate.

(66) Share-based compensation programs

Provisions have been set up for obligations from share-based compensation programs. These share-based compensation programs with cash settlement are aligned not only with target achievement based on key performance indicators, but above all also with the long-term performance of Merck shares. Certain executives and employees could be eligible to receive a certain number of virtual shares – Merck Share Units (MSUs) – at the end of a three-year performance cycle. The number of MSUs that could be received depends on the total value defined for the respective person and the average closing price of Merck shares in Xetra® trading during the last 60 trading days prior to January 1 of the respective fiscal year (reference price). In order for members of top management to receive payment, they must personally own an investment in Merck shares dependent on their respective fixed annual compensation. When the three-year performance cycle ends, the number of MSUs to then be granted is determined based on the development of two key performance indicators (KPIs). These are on the one hand the performance of the Merck share price compared to the performance of the DAX® with a weighting of 70%, and on the other hand the development of the EBITDA pre margin during the performance cycle as a proportion of a defined target value with a weighting of 30%. Depending on the development of the KPIs, at the end of the respective performance cycle the eligible participants are granted between 0% and 150% of the MSUs they could be eligible to receive.

Based on the MSUs granted, the eligible participants receive a cash payment at a specified point in time in the year after the three-year performance cycle has ended. The value of a granted MSU, which is relevant for payment, corresponds to the average closing price of Merck shares in Xetra® trading during the last 60 trading days prior to January 1 after the performance cycle. The payment amount is limited to three times the reference price. The fair value of the obligations is recalculated on each balance sheet date using a Monte Carlo simulation based on the previously described KPIs. The expected volatilities are based on the implicit volatility of Merck shares and the DAX® in accordance with the remaining term of the respective tranche. The dividend payments incorporated into the valuation model orient towards medium-term dividend expectations.

The Executive Board members have their own Long-Term Incentive Plan, the conditions of which largely correspond to the Long-Term Incentive Plan described here. A description of the plan for the Executive Board can be found in the compensation report, which is part of the Statement on Corporate Governance.

List of Shareholdings

(67) List of shareholdings

The shareholdings of Merck KGaA as of December 31, 2015 are presented in the following table:

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
I. Fully consolidated companies				
Germany				
Germany	Merck KGaA	Darmstadt	Parent Company	
Germany	AB Allgemeine Pensions GmbH & Co. KG	Zossen	100.00	100.00
Germany	Allergopharma GmbH & Co. KG	Reinbek	100.00	
Germany	Allergopharma Verwaltungs GmbH	Darmstadt	100.00	100.00
Germany	Biochrom GmbH	Berlin	100.00	
Germany	Chemitra GmbH	Darmstadt	100.00	100.00
Germany	Emedia Export Company mbH	Gernsheim	100.00	
Germany	IHS – Intelligent Healthcare Solutions GmbH	Frankfurt-Main	100.00	
Germany	Litec-LLL GmbH	Greifswald	100.00	100.00
Germany	Merck 12. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 13. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck 15. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	
Germany	Merck Accounting Solutions & Services Europe GmbH	Darmstadt	100.00	100.00
Germany	Merck Chemicals GmbH	Darmstadt	100.00	
Germany	Merck China Chemicals Holding GmbH	Darmstadt	100.00	
Germany	Merck Consumer Health Holding GmbH	Darmstadt	100.00	100.00
Germany	Merck Export GmbH	Darmstadt	100.00	100.00
Germany	Merck Financial Services GmbH	Darmstadt	100.00	100.00
Germany	Merck Financial Trading GmbH	Gernsheim	100.00	100.00
Germany	Merck Holding GmbH	Gernsheim	100.00	100.00
Germany	Merck International GmbH	Darmstadt	100.00	100.00
Germany	Merck Internationale Beteiligungen GmbH	Darmstadt	100.00	
Germany	Merck Life Science GmbH	Eppelheim	100.00	100.00
Germany	Merck Performance Materials GmbH	Wiesbaden	100.00	
Germany	Merck Schuchardt OHG	Hohenbrunn	100.00	100.00
Germany	Merck Selbstmedikation GmbH	Darmstadt	100.00	
Germany	Merck Serono GmbH	Darmstadt	100.00	100.00
Germany	Merck Versicherungsvermittlung GmbH	Darmstadt	100.00	100.00
Germany	Merck Vierte Allgemeine Beteiligungsgesellschaft mbH	Gernsheim	100.00	
Germany	Sigma-Aldrich Biochemie GmbH	Steinheim	100.00	
Germany	Sigma-Aldrich Chemie GmbH	Steinheim	100.00	
Germany	Sigma-Aldrich Chemie Holding GmbH	Taufkirchen	100.00	
Germany	Sigma-Aldrich Grundstücks GmbH & Co. KG	Steinheim	100.00	
Germany	Sigma-Aldrich Logistik GmbH	Steinheim	100.00	
Germany	Sigma-Aldrich Produktions GmbH	Steinheim	100.00	
Germany	Sigma-Aldrich Verwaltungs GmbH	Steinheim	100.00	100.00
Other European countries				
Austria	Allergopharma Vertriebsgesellschaft m.b.H.	Vienna	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
Austria	Merck Chemicals and Life Science GesmbH	Vienna	100.00	
Austria	Merck Gesellschaft mbH	Vienna	100.00	
Austria	Merck KGaA & Co. Werk Spittal	Spittal	100.00	99.00
Austria	Sigma-Aldrich Handels GmbH	Vienna	100.00	
Belgium	Merck Chemicals N.V./S.A.	Overijse	100.00	
Belgium	Merck Consumer Healthcare N.V.-S.A.	Overijse	100.00	
Belgium	Merck N.V.-S.A.	Overijse	100.00	
Belgium	Sigma-Aldrich BVBA/SPRL	Diegem	100.00	
Bulgaria	Merck Bulgaria EAD	Sofia	100.00	
Croatia	Merck d.o.o.	Zagreb	100.00	
Czech Republic	Merck spol.s.r.o.	Prague	100.00	
Czech Republic	Sigma-Aldrich spol.s.r.o.	Prague	100.00	
Denmark	Merck A/S	Hellerup	100.00	
Denmark	Merck Life Science A/S	Hellerup	100.00	
Denmark	Sigma-Aldrich Denmark ApS	Broendby	100.00	
Denmark	Survac ApS	Frederiksberg	100.00	100.00
Estonia	Merck Serono OÜ	Tallinn	100.00	
Finland	Merck Life Science OY	Espoo	100.00	
Finland	Merck OY	Espoo	100.00	
Finland	Sigma-Aldrich Finland OY	Helsinki	100.00	
France	Gonnon S.A.S.	Lyon	100.00	
France	Laboratoire Médiflor S.A.S.	Lyon	100.00	
France	Merck Biodevelopment S.A.S.	Lyon	100.00	
France	Merck Chimie S.A.S.	Fontenay s/Bois	100.00	
France	Merck Médication Familiale S.A.S.	Lyon	100.00	
France	Merck Performance Materials S.A.S.	Trosly Breuil	100.00	
France	Merck S.A.	Lyon	99.84	
France	Merck Santé S.A.S.	Lyon	100.00	
France	Merck Serono S.A.S.	Lyon	100.00	
France	Millipore S.A.S.	Molsheim	100.00	
France	Sigma-Aldrich Chimie S.a.r.l.	St. Quentin Fallavier	100.00	
France	Sigma-Aldrich Chimie SNC Partnership	St. Quentin Fallavier	100.00	
France	Sigma-Aldrich Holding S.a.r.l.	St. Quentin Fallavier	100.00	
Greece	Merck A.E.	Maroussi, Athens	100.00	
Hungary	Merck Kft.	Budapest	100.00	
Hungary	Sigma-Aldrich Kft.	Budapest	100.00	
Ireland	Merck Millipore Ltd.	Carrigtwohill	100.00	
Ireland	Merck Serono (Ireland) Ltd.	Dublin	100.00	
Ireland	Millipore Cork	Carrigtwohill	100.00	
Ireland	Shrawdine Limited	Arklow	100.00	
Ireland	Sigma-Aldrich Financial Services Limited	Dublin	100.00	
Ireland	Sigma-Aldrich Ireland Ltd.	Arklow	100.00	
Ireland	Silverberry Limited	Arklow	100.00	
Italy	Allergopharma S.p.A.	Rome	100.00	
Italy	Istituto di Ricerche Biomediche Antoine Marxer RBM S.p.A.	Colleretto Giacosa	100.00	
Italy	Merck S.p.A.	Vimodrone	100.00	
Italy	Merck Serono S.p.A.	Rome	99.74	
Italy	Sigma-Aldrich Italia S.r.l.	Milan	100.00	
Italy	Sigma-Aldrich S.r.l.	Milan	100.00	
Latvia	Merck Serono SIA	Riga	100.00	
Lithuania	Merck Serono, UAB	Vilnius	100.00	
Luxembourg	AZ Electronic Materials (Luxembourg) S.a.r.l.	Luxembourg	100.00	
Luxembourg	AZ Electronic Materials Group S.a.r.l.	Luxembourg	100.00	
Luxembourg	AZ Electronic Materials S.a.r.l.	Luxembourg	100.00	
Luxembourg	AZ Electronic Materials TopCo S.a.r.l.	Luxembourg	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
Luxembourg	Mats Finance S.a.r.l.	Luxembourg	100.00	
Luxembourg	Merck Chemicals Holding S.a.r.l.	Luxembourg	100.00	
Luxembourg	Merck Finance S.a.r.l.	Luxembourg	100.00	
Luxembourg	Merck Finanz S.a.r.l.	Luxembourg	100.00	100.00
Luxembourg	Merck Holding S.a.r.l.	Luxembourg	100.00	
Luxembourg	Merck Invest SCS	Luxembourg	100.00	
Luxembourg	Merck Re S.A.	Luxembourg	100.00	
Luxembourg	Millilux S.a.r.l.	Luxembourg	100.00	
Luxembourg	Millipart S.a.r.l.	Luxembourg	100.00	
Luxembourg	Millipore International Holdings, S.a.r.l.	Luxembourg	100.00	
Luxembourg	Ridgefield Acquisition S.a.r.l.	Luxembourg	100.00	
Luxembourg	Ridgefield Holdco S.a.r.l.	Luxembourg	100.00	
Luxembourg	Sigma-Aldrich S.a.r.l.	Luxembourg	100.00	
Malta	Merck Capital Holding Ltd.	Pietà	100.00	
Malta	Merck Capital Ltd.	Pietà	100.00	
Netherlands	Merck B.V.	Schiphol-Rijk	100.00	
Netherlands	Merck Chemicals B.V.	Amsterdam Zuidoost	100.00	
Netherlands	Merck Holding Netherlands B.V.	Schiphol-Rijk	100.00	100.00
Netherlands	Serono Tri Holdings B.V.	Schiphol-Rijk	100.00	
Netherlands	Sigma-Aldrich B.V.	Zwijndrecht	100.00	
Netherlands	Sigma-Aldrich Chemie B.V.	Zwijndrecht	100.00	
Norway	Merck Life Science AS	Oslo	100.00	
Norway	Sigma-Aldrich Norway AS	Oslo	100.00	
Poland	Merck Sp.z o.o.	Warsaw	100.00	
Poland	Sigma-Aldrich Sp.z.o.o.	Posen	100.00	
Portugal	Merck, S.A.	Algés	100.00	
Romania	Merck Romania S.R.L.	Bucharest	100.00	
Russia	Merck LLC	Moscow	100.00	
Russia	Sigma-Aldrich Rus	Moscow	100.00	
Serbia	Merck d.o.o. Beograd	Belgrade	100.00	
Slovakia	Merck spol.s.r.o.	Bratislava	100.00	
Slovenia	Merck d.o.o.	Ljubljana	100.00	
Spain	Merck Chemicals and Life Science S.A.	Madrid	100.00	
Spain	Merck, S.L.U.	Madrid	100.00	
Spain	Sigma-Aldrich Quimica S.L.	Tres Cantos	100.00	
Sweden	Merck AB	Solna	100.00	
Sweden	Merck Chemicals and Life Science AB	Solna	100.00	
Sweden	Sigma-Aldrich Sweden AB	Stockholm	100.00	
Switzerland	Allergopharma AG	Therwil	100.00	
Switzerland	Ares Trading SA	Aubonne	100.00	
Switzerland	Merck & Cie	Altdorf	51.63	51.63
Switzerland	Merck (Schweiz) AG	Zug	100.00	
Switzerland	Merck Biosciences AG	Läufelfingen	100.00	
Switzerland	Merck Performance Materials (Suisse) SA	Coinsins	100.00	
Switzerland	Merck Serono SA	Coinsins	100.00	
Switzerland	SeroMer Holding SA	Chéserex	100.00	
Switzerland	Sigma-Aldrich (Switzerland) Holding AG	Buchs	100.00	
Switzerland	Sigma-Aldrich Chemie GmbH	Buchs	100.00	
Switzerland	Sigma-Aldrich International GmbH	St. Gallen	100.00	
Switzerland	Sigma-Aldrich Production GmbH	Buchs	100.00	
Turkey	Merck Ilac Ecza ve Kimya Ticaret AS	Istanbul	100.00	
United Kingdom	Aldrich Chemical Co. Ltd.	Gillingham	100.00	
United Kingdom	AZ Electronic Materials (UK) Ltd.	Stockley Park	100.00	
United Kingdom	BioReliance Limited	Aberdeen	100.00	
United Kingdom	BioReliance U.K. Acquisition Limited	London	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
United Kingdom	Epichem Group Limited	Bromborough	100.00	
United Kingdom	Lamberts Healthcare Ltd.	Tunbridge Wells	100.00	
United Kingdom	Merck Chemicals Ltd.	Nottingham	100.00	
United Kingdom	Merck Consumer Health Care Ltd.	Hull	100.00	
United Kingdom	Merck Holding Ltd.	Feltham	100.00	
United Kingdom	Merck Investments Ltd.	Hull	100.00	
United Kingdom	Merck Performance Materials Services UK Ltd.	Stockley Park	100.00	
United Kingdom	Merck Serono Europe Ltd.	London	100.00	
United Kingdom	Merck Serono Ltd.	Feltham	100.00	
United Kingdom	Millipore (U.K.) Ltd.	Feltham	100.00	
United Kingdom	Millipore UK Holdings LLP	London	100.00	
United Kingdom	SAFC Biosciences Limited	Gillingham	100.00	
United Kingdom	SAFC Hitech Limited	Bromborough	100.00	
United Kingdom	Seven Seas Limited	Hull	100.00	
United Kingdom	Sigma-Aldrich Company Limited	Gillingham	100.00	
United Kingdom	Sigma-Aldrich Holdings Ltd.	Gillingham	100.00	
United Kingdom	Sigma-Genosys Limited	Gillingham	100.00	
North America				
Canada	EMD Chemicals Canada Inc.	Toronto	100.00	
Canada	EMD Crop BioScience Canada Inc.	Toronto	100.00	
Canada	EMD Inc.	Mississauga	100.00	
Canada	Millipore (Canada) Ltd.	Toronto	100.00	
Canada	Sigma-Aldrich Canada Co.	Oakville	100.00	
United States	3506 South Broadway Redevelopment Corp.	St. Louis	100.00	
United States	Aldrich Chemical Co. LLC	Milwaukee	100.00	
United States	Aldrich Chemical Foreign Holding LLC	St. Louis	100.00	
United States	Aldrich-APL, LLC	Urbana	100.00	
United States	Amnis Corp.	Seattle	100.00	
United States	BioReliance Corporation	Rockville	100.00	
United States	BioReliance Holdings, Inc.	Rockville	100.00	
United States	BioReliance Intermediate, Inc.	Rockville	100.00	
United States	Cell Marque Corporation	Rocklin	100.00	
United States	Cerilliant Corporation	Round Rock	100.00	
United States	EMD Accounting Solutions & Services America, Inc.	Quincy	100.00	
United States	EMD Finance LLC	Wilmington	100.00	
United States	EMD Holding Corp.	Rockland	100.00	
United States	EMD Millipore Corporation	Billerica	100.00	
United States	EMD Performance Materials Corp.	Philadelphia	100.00	
United States	EMD Serono Holding Inc.	Rockland	100.00	
United States	EMD Serono Research & Development Institute, Inc.	Billerica	100.00	
United States	EMD Serono, Inc.	Rockland	100.00	
United States	KL Acquisition Corp.	St. Louis	100.00	
United States	Mario Finance Corp.	Wilmington	100.00	
United States	Millipore Asia Ltd.	Wilmington	100.00	
United States	Millipore Pacific Ltd.	Wilmington	100.00	
United States	Millipore UK Holdings I, LLC	Wilmington	100.00	
United States	Millipore UK Holdings II, LLC	Wilmington	100.00	
United States	Olive/Ewing/Laclede Redevelopment Corporation	St. Louis	100.00	
United States	Ormet Circuits, Inc.	San Diego	100.00	
United States	Research Organics, LLC	Cleveland	100.00	
United States	SAFC Biosciences, Inc.	Lenexa	100.00	
United States	SAFC Carlsbad, Inc.	Carlsbad	100.00	
United States	SAFC Hitech, Inc.	Haverhill	100.00	
United States	SAFC, Inc.	Madison	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
United States	SAFC-JRH Holding Company, Inc.	Lenexa	100.00	
United States	Serono Laboratories Inc.	Rockland	100.00	
United States	Sigma Chemical Foreign Holding LLC	St. Louis	100.00	
United States	Sigma Redevelopment Corporation	St. Louis	100.00	
United States	Sigma Second Street Redevelopment Corporation	St. Louis	100.00	
United States	Sigma-Aldrich Business Holdings, Inc.	St. Louis	100.00	
United States	Sigma-Aldrich Co. LLC	St. Louis	100.00	
United States	Sigma-Aldrich Corporation	St. Louis	100.00	
United States	Sigma-Aldrich Finance Co.	St. Louis	100.00	
United States	Sigma-Aldrich Foreign Holding Co.	St. Louis	100.00	
United States	Sigma-Aldrich Holding LLC	St. Louis	100.00	
United States	Sigma-Aldrich Lancaster, Inc.	St. Louis	100.00	
United States	Sigma-Aldrich Manufacturing LLC	St. Louis	100.00	
United States	Sigma-Aldrich Missouri Insurance Company	St. Louis	100.00	
United States	Sigma-Aldrich Research Biochemicals, Inc.	Natick	100.00	
United States	Sigma-Aldrich RTC, Inc.	Laramie	100.00	
United States	Sigma-Aldrich, Inc.	St. Louis	100.00	
United States	Sigma-Genosys of Texas LLC	The Woodlands	100.00	
United States	Supelco, Inc.	Bellefonte	100.00	
APAC				
Australia	Merck Pty. Ltd.	Bayswater	100.00	
Australia	Merck Serono Australia Pty. Ltd.	Sydney	100.00	
Australia	SAFC Biosciences Pty. Ltd.	Castle Hill	100.00	
Australia	Sigma-Aldrich Oceania Pty. Ltd.	Castle Hill	100.00	
Australia	Sigma-Aldrich Pty. Ltd.	Castle Hill	100.00	
China	AZ Electronic Materials (Hong Kong) Finance Ltd.	Hong Kong	100.00	
China	Beijing Skywing Technology Co., Ltd.	Beijing	100.00	
China	Merck Chemicals (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Merck Display Materials (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Merck Electronic Materials (Suzhou) Ltd.	Suzhou	100.00	
China	Merck Holding (China) Co., Ltd.	Shanghai	100.00	
China	Merck Ltd.	Hong Kong	100.00	
China	Merck Millipore Lab Equipment (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Merck Performance Materials Hong Kong Ltd.	Hong Kong	100.00	
China	Merck Performance Materials Hong Kong Services Ltd.	Hong Kong	100.00	
China	Merck Pharmaceutical (HK) Ltd.	Hong Kong	100.00	
China	Merck Pharmaceutical Manufacturing (Jiangsu) Co., Ltd.	Nantong	100.00	
China	Merck Serono (Beijing) Pharmaceutical Distribution Co., Ltd.	Beijing	100.00	
China	Merck Serono (Beijing) Pharmaceutical R&D Co., Ltd.	Beijing	100.00	
China	Merck Serono Co., Ltd.	Beijing	100.00	
China	SAFC Hitech (Shanghai) Co., Ltd.	Shanghai	100.00	
China	Sigma-Aldrich (Shanghai) Trading Co., Ltd.	Shanghai	100.00	
China	Sigma-Aldrich (Wuxi) Life Science & Technology Co., Ltd.	Wuxi	100.00	
China	Sigma-Aldrich Hong Kong Holding Ltd.	Hong Kong	100.00	
China	Suzhou Taizhu Technology Development Co., Ltd.	Taicang	100.00	
India	Merck Life Science Pvt. Ltd.	Mumbai	100.00	
India	Merck Ltd.	Mumbai	51.80	
India	Merck Performance Materials Pvt. Ltd.	Sanpada New Mumbai	100.00	
India	Merck Specialities Pvt. Ltd.	Mumbai	100.00	
India	Sigma-Aldrich Chemicals Private Limited	Bangalore	100.00	
Indonesia	P.T. Merck Chemicals and Life Sciences	Jakarta	100.00	
Indonesia	P.T. Merck Tbk.	Jakarta	86.65	
Japan	Merck Ltd.	Tokyo	100.00	
Japan	Merck Performance Materials G.K.	Tokyo	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
Japan	Merck Performance Materials IP G.K.	Tokyo	100.00	
Japan	Merck Performance Materials Manufacturing G.K.	Tokyo	100.00	
Japan	Merck Serono Co., Ltd.	Tokyo	100.00	
Japan	Sigma-Aldrich Japan G.K.	Tokyo	100.00	
Malaysia	Merck Sdn Bhd	Petaling Jaya	100.00	
Malaysia	Sigma-Aldrich (M) Sdn Bhd	Subang Jaya	100.00	
New Zealand	Merck Ltd.	Palmerston North	100.00	
Pakistan	Merck (Pvt.) Ltd.	Karachi	75.00	26.00
Pakistan	Merck Pharmaceuticals (Pvt.) Ltd.	Karachi	75.00	
Pakistan	Merck Specialities (Pvt.) Ltd.	Karachi	100.00	
Philippines	Merck Inc.	Makati City	100.00	
Singapore	Merck Performance Materials Pte. Ltd.	Singapore	100.00	
Singapore	Merck Pte. Ltd.	Singapore	100.00	
Singapore	Sigma-Aldrich Pte. Ltd.	Singapore	100.00	
South Korea	AZ Chem Korea Ltd.	Seoul	100.00	
South Korea	Merck Electronic Materials Ltd.	Seoul	100.00	
South Korea	Merck Ltd.	Seoul	100.00	
South Korea	Merck Performance Materials Ltd.	Pyungtaek-shi	100.00	
South Korea	Sigma-Aldrich Holding Ltd.	Yongin City	100.00	
South Korea	Sigma-Aldrich Korea Ltd.	Yongin City	100.00	
Taiwan	AZ EM Taiwan Holding Co. Ltd.	Taipei	100.00	
Taiwan	Merck Display Technologies Ltd.	Taipei	100.00	
Taiwan	Merck Ltd.	Taipei	100.00	
Taiwan	Merck Performance Materials Co., Ltd.	Taipei	100.00	100.00
Taiwan	SAFC Hitech Taiwan Co. Ltd.	Kaohsuing	100.00	
Thailand	Merck Ltd.	Bangkok	45.11	
Vietnam	Merck Vietnam Ltd.	Ho Chi Minh City	100.00	
Latin America				
Argentina	Merck S.A.	Buenos Aires	100.00	
Argentina	Sigma-Aldrich de Argentina S.r.l.	Buenos Aires	100.00	
Brazil	Merck S.A.	Rio de Janeiro	100.00	
Brazil	Sigma-Aldrich Brasil Ltda.	São Paulo	100.00	
Chile	Merck S.A.	Santiago de Chile	100.00	
Chile	Sigma-Aldrich Quimica Ltda.	Providencia	100.00	
Colombia	Merck S.A.	Bogota	100.00	
Ecuador	Merck C.A.	Quito	100.00	
Guatemala	Merck, S.A.	Guatemala City	100.00	
Mexico	Merck, S.A. de C.V.	Mexico City	100.00	
Mexico	Sigma-Aldrich Quimica, S. de R.L. de C.V.	Toluca	100.00	
Panama	Mesofarma Corporation	Panama City	100.00	
Peru	Merck Peruana S.A.	Lima	100.00	
Uruguay	ARES Trading Uruguay S.A.	Montevideo	100.00	
Venezuela	Merck S.A.	Caracas	100.00	
Venezuela	Representaciones MEPRO S.A.	Caracas	100.00	
MEA				
Egypt	Merck Ltd.	Cairo	100.00	
Israel	Inter-Lab Ltd.	Yavne	100.00	
Israel	InterPharm Industries Ltd.	Yavne	100.00	
Israel	InterPharm Laboratories Ltd.	Yavne	100.00	
Israel	Merck Serono Ltd.	Herzliya Pituach	100.00	
Israel	Qlight Nanotech Ltd.	Jerusalem	100.00	
Israel	Sigma-Aldrich Israel Ltd.	Rehovot	100.00	
Mauritius	Millipore Mauritius Ltd.	Cyber City	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
South Africa	Merck (Pty) Ltd.	Halfway House	100.00	
South Africa	Merck Pharmaceutical Manufacturing (Pty) Ltd.	Wadeville	100.00	
South Africa	Sigma-Aldrich (Pty) Ltd.	Kempton Park	100.00	
Tunisia	Merck Promotion SARL	Tunis	100.00	
Tunisia	Merck SARL	Tunis	100.00	
United Arab Emirates	Merck Serono Middle East FZ-LLC	Dubai	100.00	
II. Companies not consolidated due to secondary importance				
Germany				
Germany	AB Pensionsverwaltung GmbH	Zossen	100.00	100.00
Germany	Merck 16. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 17. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 18. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 19. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 20. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck 21. Allgemeine Beteiligungs-GmbH	Darmstadt	100.00	100.00
Germany	Merck Patent GmbH	Darmstadt	100.00	
Germany	Merck Wohnungs- und Grundstücksverwaltungsgesellschaft mbH	Darmstadt	100.00	100.00
Other European countries				
Greece	Sigma-Aldrich (OM) Ltd.	Athens	100.00	
Ireland	SAFC Arklow Ltd.	Arklow	100.00	
Luxembourg	Sigma-Aldrich Global S.a.r.l.	Luxembourg	100.00	
Netherlands	Merck Window Technologies B.V.	Eindhoven	100.00	100.00
Netherlands	MS Ventures B.V.	Amsterdam	100.00	
Portugal	Laquifa Laboratorios S.A.	Algés	100.00	
Russia	Chemical Trade Limited	Moscow	100.00	
Russia	MedChem Limited	Moscow	100.00	
Russia	SAF-LAB	Moscow	100.00	
Switzerland	Asceneuron SA	Lausanne	80.00	
Switzerland	Calypso Biotech SA	Plan-les-Ouates	75.00	
United Kingdom	B-Line Systems Limited	Gillingham	100.00	
United Kingdom	Bristol Organics Ltd.	Gillingham	100.00	
United Kingdom	Fluka Chemical Company, Ltd.	Gillingham	100.00	
United Kingdom	Merck Cross Border Trustees Ltd.	Hull	100.00	
United Kingdom	Merck Ltd.	Hull	100.00	
United Kingdom	Merck Pension Trustees Ltd.	Hull	100.00	
United Kingdom	Nature's Best Health Products Ltd.	Tunbridge Wells	100.00	
United Kingdom	Sigma Chemical Co. Ltd.	Poole	100.00	
United Kingdom	Sigma Entity One Limited	Gillingham	100.00	
United Kingdom	UFC Ltd.	Gillingham	100.00	
United Kingdom	Ultrafine Limited	Gillingham	100.00	
United Kingdom	Webnest Ltd.	Gillingham	100.00	
United Kingdom	Wessex Biochemicals Ltd.	Poole	100.00	
North America				
United States	Aldrich-Boranes, Inc.	Milwaukee	100.00	
United States	Barton Real Estate Holdings, Inc.	St. Louis	100.00	
United States	Barton/Second Streets Redevelopment Corp.	St. Louis	100.00	
United States	Fluka Chemical Corp.	St. Louis	100.00	
United States	FMI Holdings, Inc.	St. Louis	100.00	

Country	Company	Registered Office	Equity interest (%)	Thereof: Merck KGaA (%)
United States	GLM Holdings, Inc.	St. Louis	100.00	
United States	Midwest Consultants Co.	St. Louis	100.00	
United States	Research Organics Foreign Trade Corporation	Cleveland	100.00	
United States	S and F Properties, Inc.	Cleveland	100.00	
United States	Second President Properties Company	St. Louis	100.00	
United States	Sigma Chemical Corp.	St. Louis	100.00	
United States	Sigma-Aldrich China, Inc.	St. Louis	100.00	
United States	Sigma-Aldrich Subsidiary I Corp.	St. Louis	100.00	
United States	Techcare Systems, Inc.	St. Louis	100.00	
United States	TocopheRx, Inc.	Groton	65.78	
APAC				
Australia	Biochrom Australia Pty. Ltd.	Bayswater	100.00	
Australia	Proligo Australia Pty. Ltd.	Castle Hill	100.00	
Japan	BioReliance KK	Tokyo	100.00	
New Zealand	Sigma-Aldrich New Zealand Co.	Christchurch	100.00	
South Korea	SAFC Hitech Korea Ltd.	Yongin City	100.00	
Thailand	Sigma-Aldrich (Thailand) Co., Ltd.	Bangkok	100.00	
Latin America				
Dominican Republic	Merck Dominicana, S.R.L.	Santo Domingo	100.00	
MEA				
Morocco	Merck Maroc S.A.R.L.	Casablanca	100.00	
Nigeria	Merck Pharmaceutical and Life Sciences Ltd.	Lagos	100.00	
South Africa	Serono South Africa Ltd.	Johannesburg	100.00	
III. Associates not included at equity due to secondary importance				
Other European countries				
Switzerland	Prexton Therapeutics SA	Plan-les-Ouates	31.51	
Switzerland	Vaximm AG	Basel	24.66	
APAC				
South Korea	Soulbrain Sigma-Aldrich Ltd.	Gongju-Si	50.00	
MEA				
Israel	Neviah Genomics Ltd.	Yavne	69.00	7.75

Darmstadt, February 18, 2016

Karl-Ludwig Kley **Stefan Oschmann**

Kai Beckmann **Belén Garijo Lopez** **Marcus Kuhnert** **Bernd Reckmann**

RESPONSIBILITY STATEMENT

To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements of the Merck Group give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group, and the combined management report 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.

Darmstadt, February 18, 2016

Karl-Ludwig Kley

Stefan Oschmann

Kai Beckmann

Belén Garijo Lopez

Marcus Kuhnert

Bernd Reckmann

AUDITOR'S REPORT

We have audited the consolidated financial statements prepared by MERCK Kommanditgesellschaft auf Aktien, Darmstadt, 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 the Notes to the Group accounts, together with the Combined Management Report for the business year from January 1 to December 31, 2015. The preparation of the consolidated financial statements and the Combined Management Report in accordance with IFRSs, as adopted by the EU, and the additional requirements of German commercial law pursuant to § 315a (1) HGB [Handelsgesetzbuch "German Commercial Code"] and supplementary provisions of the articles of association are the responsibility of the parent company`s management. Our responsibility is to express an opinion on the consolidated financial statements and on the Combined Management Report based on our audit.

We conducted our audit of the consolidated financial statements in accordance with § 317 HGB [Handelsgesetzbuch "German Commercial Code"] and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Those standards require that we plan and perform the audit such that misstatements materially affecting the presentation of the net assets, financial position and results of operations in the consolidated financial statements in accordance with the applicable financial reporting framework and in the Combined Management Report are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the Group and expectations as to possible misstatements are taken into account in the determination of audit procedures. The effectiveness of the accounting related internal control system and the evidence supporting the disclosures in the consolidated financial statements and the Combined Management Report are examined primarily on a test basis within the framework of the audit. The audit includes assessing the annual financial statements of those entities included in consolidation, the determination of entities to be included in consolidation, the accounting and consolidation principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements and Combined Management Report. We believe that our audit provides a reasonable basis for our opinion.

Our audit has not led to any reservations.

In our opinion, based on the findings of our audit, the consolidated financial statements comply with IFRSs, as adopted by the EU, the additional requirements of German commercial law pursuant to § 315a (1) HGB and supplementary provisions of the articles of association and give a true and fair view of the net assets, financial position and results of operations of the Group in accordance with these requirements. The Combined Management Report is consistent with the consolidated financial statements and as a whole provides a suitable view of the Group's position and suitably presents the opportunities and risks of future development.

Frankfurt / Main, February 19, 2016

KPMG AG
Wirtschaftsprüfungsgesellschaft

Original German version signed by

Braun
Wirtschaftsprüfer

Rackwitz
Wirtschaftsprüfer