Merck & Co. Inc.
Form 10-K
February 27, 2014

As filed with the Securities and Exchange Commission on February 27, 2014

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D. C. 20549

FORM 10-K
(MARK ONE)

ý	Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 For the Fiscal Year Ended December 31, 2013
or	
o	Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 For the transition period from to

Commission File No. 1-6571

Merck & Co., Inc.
One Merck Drive
Whitehouse Station, N. J. 08889-0100
(908) 423-1000

Incorporated in New Jersey	I.R.S. Employer Identification No. 22-1918501

Securities Registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on which Registered
Common Stock ($0.50 par value)	New York Stock Exchange

Number of shares of Common Stock ($0.50 par value) outstanding as of January 31, 2014: 2,940,622,461.
Aggregate market value of Common Stock ($0.50 par value) held by non-affiliates on June 30, 2013 based on closing price on June 30, 2013: $135,893,000,000.
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No o
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o No ý
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ý No o
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ý No o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting

company" in Rule 12b-2 of the Exchange Act. (Check One):

Large accelerated filer ý Accelerated filer o Non-accelerated filer o Smaller reporting company o
(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No ý

Documents Incorporated by Reference:

Document	Part of Form 10-K
Proxy Statement for the Annual Meeting of Shareholders to be held May 27, 2014, to be filed with the Securities and Exchange Commission within 120 days after the close of the fiscal year covered by this report	Part III

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PART I

Item 1. Business.

Merck & Co., Inc. ("Merck" or the "Company") is a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies, animal health, and consumer care products, which it markets directly and through its joint ventures. The Company's operations are principally managed on a products basis and are comprised of four operating segments, which are the Pharmaceutical, Animal Health, Consumer Care and Alliances segments, and one reportable segment, which is the Pharmaceutical segment. The Pharmaceutical segment includes human health pharmaceutical and vaccine products marketed either directly by the Company or through joint ventures. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders. The Company sells these human health pharmaceutical products primarily to drug wholesalers and retailers, hospitals, government agencies and managed health care providers such as health maintenance organizations, pharmacy benefit managers and other institutions. Vaccine products consist of preventive pediatric, adolescent and adult vaccines, primarily administered at physician offices. The Company sells these human health vaccines primarily to physicians, wholesalers, physician distributors and government entities. The Company also has animal health operations that discover, develop, manufacture and market animal health products, including vaccines, which the Company sells to veterinarians, distributors and animal producers. Additionally, the Company has consumer care operations that develop, manufacture and market over-the-counter, foot care and sun care products, which are sold through wholesale and retail drug, food chain and mass merchandiser outlets, as well as club stores and specialty channels. The Company was incorporated in New Jersey in 1970.

For financial information and other information about the Company's segments, see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8. "Financial Statements and Supplementary Data" below.

All product or service marks appearing in type form different from that of the surrounding text are trademarks or service marks owned, licensed to, promoted or distributed by Merck, its subsidiaries or affiliates, except as noted. All other trademarks or services marks are those of their respective owners.

Product Sales

Sales of the Company's top pharmaceutical products, as well as total sales of animal health and consumer care products, were as follows:

($ in millions)	2013	2012	2011
Total Sales	$44,033	$47,267	$48,047
Pharmaceutical	37,437	40,601	41,289
Januvia	4,004	4,086	3,324
Zetia	2,658	2,567	2,428
Remicade	2,271	2,076	2,667
Gardasil	1,831	1,631	1,209
Janumet	1,829	1,659	1,363
Isentress	1,643	1,515	1,359
Vytorin	1,643	1,747	1,882
Nasonex	1,335	1,268	1,286
ProQuad/M-M-R II/Varivax	1,306	1,273	1,202
Singulair	1,196	3,853	5,479
Animal Health	3,362	3,399	3,253
Consumer Care	1,894	1,952	1,840
Other Revenues[1]	1,340	1,315	1,665

(1) Other revenues are primarily comprised of alliance revenue, miscellaneous corporate revenues and third-party manufacturing sales. On October 1, 2013, the Company divested a substantial portion of its third-party manufacturing sales.

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Pharmaceutical

The Company's pharmaceutical products include therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders. Certain of the products within the Company's franchises are as follows:

Primary Care and Women's Health

Cardiovascular: Zetia (ezetimibe) (marketed as Ezetrol outside the United States); and Vytorin (ezetimibe/simvastatin) (marketed as Inegy outside the United States), cholesterol modifying medicines.

Diabetes and Obesity: Januvia (sitagliptin) and Janumet (sitagliptin/metformin HCl) for the treatment of type 2 diabetes.

Respiratory: Nasonex (mometasone furoate monohydrate), an inhaled nasal corticosteroid for the treatment of nasal allergy symptoms; Singulair (montelukast), a medicine indicated for the chronic treatment of asthma and the relief of symptoms of allergic rhinitis; Dulera Inhalation Aerosol (mometasone furoate/formoterol fumarate dihydrate), a combination medicine for the treatment of asthma; and Asmanex Twisthaler (mometasone furoate inhalation powder), an inhaled corticosteroid for first-line maintenance treatment of asthma in patients 4 years of age and older.

Women's Health and Endocrine: NuvaRing (etonogestrel/ethinyl estradiol vaginal ring), a vaginal contraceptive ring; Fosamax (alendronate sodium) for the treatment and prevention of osteoporosis; Follistim AQ (follitropin beta injection), a fertility treatment; Implanon (etonogestrel implant), a single-rod subdermal contraceptive implant; and Cerazette (desogestrel), a progestin only oral contraceptive.

Other: Arcoxia (etoricoxib) for the treatment of arthritis and pain, which the Company markets outside the United States; and Avelox (moxifloxacin), a broad-spectrum fluoroquinolone antibiotic for the treatment of certain respiratory and skin infections, which the Company only markets in the United States.

Hospital and Specialty

Immunology: Remicade (infliximab) and Simponi (golimumab) for the treatment of inflammatory diseases, which the Company markets in Europe, Russia and Turkey.

Infectious Disease: Isentress (raltegravir), an antiretroviral therapy for use in combination therapy for the treatment of HIV-1 infection; Cancidas (caspofungin acetate), an anti-fungal product; PegIntron (peginterferon alpha-2b), a treatment for chronic hepatitis C; Invanz (ertapenem sodium) for the treatment of certain infections; Victrelis (boceprevir), a treatment for chronic hepatitis C; and Noxafil (posaconazole) for the prevention of invasive fungal infections.

Oncology: Temodar (temozolomide) (marketed as Temodal outside the United States), a treatment for certain types of brain tumors; and Emend (aprepitant) for the prevention of chemotherapy-induced and post-operative nausea and vomiting.

Other: Cosopt (dorzolamide hydrochloride-timolol maleate ophthalmic solution), which the Company markets outside the United States, and Trusopt (dorzolamide hydrochloride ophthalmic solution), ophthalmic products; Bridion (sugammadex sodium injection), a medication for the reversal of certain muscle relaxants used during surgery; and Integrilin (eptifibatide), a treatment for patients with acute coronary syndrome.

Diversified Brands

Cozaar (losartan potassium) and Hyzaar (losartan potassium and hydrochlorothiazide), treatments for hypertension; Primaxin (imipenem and cilastatin sodium), an anti-bacterial product; Zocor (simvastatin), a statin for modifying cholesterol; Propecia (finasteride), a product for the treatment of male pattern hair loss; Clarinex (desloratadine), a non-sedating antihistamine; Remeron (mirtazapine), an antidepressant; Claritin Rx (loratadine) for treatment of seasonal outdoor allergies and year-round indoor allergies; Proscar (finasteride), a urology product for the treatment of symptomatic benign prostate enlargement; and Maxalt (rizatriptan benzoate), a product for acute treatment of migraine.

Vaccines

Gardasil (Human Papillomavirus Quadrivalent [Types 6, 11, 16 and 18] Vaccine, Recombinant), a vaccine to help prevent certain diseases caused by four types of human papillomavirus ("HPV"); ProQuad (Measles, Mumps, Rubella and Varicella Virus Vaccine Live), a pediatric combination vaccine to help protect against measles, mumps,

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rubella and varicella; M-M-R II (Measles, Mumps and Rubella Virus Vaccine Live), a vaccine to help prevent measles, mumps and rubella; Varivax (Varicella Virus Vaccine Live), a vaccine to help prevent chickenpox (varicella); Zostavax (Zoster Vaccine Live), a vaccine to help prevent shingles (herpes zoster); Pneumovax 23 (pneumococcal vaccine polyvalent), a vaccine to help prevent pneumococcal disease; and RotaTeq (Rotavirus Vaccine, Live Oral, Pentavalent), a vaccine to help protect against rotavirus gastroenteritis in infants and children.

Animal Health

The Animal Health segment discovers, develops, manufactures and markets animal health products, including vaccines. Principal products in this segment include:

Livestock Products: Nuflor antibiotic range for use in cattle and swine; Bovilis/Vista vaccine lines for infectious diseases in cattle; Banamine bovine and swine anti-inflammatory; Estrumate for the treatment of fertility disorders in cattle; Regumate/Matrix fertility management for swine and horses; Resflor combination broad-spectrum antibiotic and non-steroidal anti-inflammatory drug for bovine respiratory disease; Zuprevo for bovine respiratory disease; Zilmax and Revalor to improve production efficiencies in beef cattle; M+Pac swine pneumonia vaccine; and Porcilis vaccine line for infectious diseases in swine.

Poultry Products: Nobilis/Innovax, vaccine lines for poultry; and Paracox and Coccivac coccidiosis vaccines.

Companion Animal Products: Nobivac vaccine lines for flexible dog and cat vaccination; Otomax/Mometamax/Posatex ear ointments for acute and chronic otitis; Caninsulin/Vetsulin diabetes mellitus treatment for dogs and cats; Panacur/Safeguard broad-spectrum anthelmintic (de-wormer) for use in many animals; and Activyl/Scalibor/Exspot for protecting against bites from fleas, ticks, mosquitoes and sandflies.

Aquaculture Products: Slice parasiticide for sea lice in salmon; Aquavac/Norvax vaccines against bacterial and viral disease in fish; Compact PD vaccine for salmon; and Aquaflor antibiotic for farm-raised fish.

Consumer Care

The Consumer Care segment develops, manufactures and markets over-the-counter, foot care and sun care products. Principal products in this segment include:

Over-the-Counter Products: Claritin non-drowsy antihistamines; MiraLAX for relief of occasional constipation; Coricidin HBP decongestant-free cold/flu medicine for people with high blood pressure; Afrin nasal decongestant spray; Zegerid OTC treatment for frequent heartburn; and Oxytrol For Women, a treatment for overactive bladder in women.

Foot Care: Dr. Scholl's foot care products; Lotrimin topical antifungal products; and Tinactin topical antifungal products and foot and sneaker odor/wetness products.

Sun Care: Coppertone sun care lotions, sprays and dry oils.

For a further discussion of sales of the Company's products, see Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" below.

Joint Ventures

AstraZeneca LP

In 1982, Merck entered into an agreement with Astra AB ("Astra") to develop and market Astra products in the United States. In 1994, Merck and Astra formed an equally owned joint venture that developed and marketed most of Astra's new prescription medicines in the United States including Prilosec (omeprazole), the first in a class of medications known as proton pump inhibitors, which slows the production of acid from the cells of the stomach lining.

In 1998, Merck and Astra restructured the joint venture whereby Merck acquired Astra's interest in the joint venture, renamed KBI Inc. ("KBI"), and contributed KBI's operating assets to a new U.S. limited partnership named Astra Pharmaceuticals, L.P. (the "Partnership"), in exchange for a 1% limited partner interest. Astra contributed the net assets of its wholly owned subsidiary, Astra USA, Inc., to the Partnership in exchange for a 99% general partner interest. The Partnership, renamed AstraZeneca LP ("AZLP") upon Astra's 1999 merger with Zeneca Group Plc, became the exclusive distributor of the products for which KBI retained rights.

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The Company earns certain Partnership returns as well as ongoing revenue based on sales of KBI products. The Partnership returns include a priority return provided for in the Partnership Agreement, a preferential return representing the Company's share of undistributed Partnership AZLP generally accepted accounting principles ("GAAP") earnings, and a variable return related to the Company's 1% limited partner interest.

In 2014, AstraZeneca has the option to purchase Merck's interest in KBI based in part on the value of Merck's interest in Nexium and Prilosec. AstraZeneca's option is exercisable between March 1, 2014 and April 30, 2014. If AstraZeneca chooses to exercise this option, the closing date is expected to be June 30, 2014. Under the amended agreement, AstraZeneca will make a payment to Merck upon closing of $327 million, reflecting an estimate of the fair value of Merck's interest in Nexium and Prilosec. This portion of the exercise price is subject to a true-up in 2018 based on actual sales from closing in 2014 to June 2018. The exercise price will also include an additional amount equal to a multiple of ten times Merck's average 1% annual profit allocation in the partnership for the three years prior to exercise. The Company believes that it is likely that AstraZeneca will exercise its option in 2014. If AstraZeneca exercises its option, the Company will no longer record equity income from AZLP and supply sales to AZLP will terminate. In addition, the Company will recognize a non-cash pretax gain of approximately $700 million.

Sanofi Pasteur MSD

In 1994, Merck and Pasteur Mérieux Connaught (now Sanofi Pasteur S.A.) formed a joint venture to market human vaccines in Europe and to collaborate in the development of combination vaccines for distribution in the then-existing European Union ("EU") and the European Free Trade Association. Merck and Sanofi Pasteur contributed, among other things, their European vaccine businesses for equal shares in the joint venture, known as Pasteur Mérieux MSD, S.N.C. (now Sanofi Pasteur MSD, S.N.C.). The joint venture maintains a presence, directly or through affiliates or branches, in Belgium, Italy, Germany, Spain, France, Austria, Ireland, Sweden, Portugal, the Netherlands, Switzerland and the United Kingdom and through distributors in the rest of its territory.

Licenses

In 1998, a subsidiary of Schering-Plough Corporation ("Schering-Plough") entered into a licensing agreement with Centocor Ortho Biotech Inc. ("Centocor"), a Johnson & Johnson ("J&J") company, to market Remicade, which is prescribed for the treatment of inflammatory diseases. In 2005, Schering-Plough's subsidiary exercised an option under its contract with Centocor for license rights to develop and commercialize Simponi, a fully human monoclonal antibody. The Company has exclusive marketing rights to both products throughout Europe, Russia and Turkey. In December 2007, Schering-Plough and Centocor revised their distribution agreement regarding the development, commercialization and distribution of both Remicade and Simponi, extending the Company's rights to exclusively market Remicade to match the duration of the Company's exclusive marketing rights for Simponi. In addition, Schering-Plough and Centocor agreed to share certain development costs relating to Simponi's auto-injector delivery system. On October 6, 2009, the European Commission ("EC") approved Simponi as a treatment for rheumatoid arthritis and other immune system disorders in two presentations — a novel auto-injector and a prefilled syringe. As a result, the Company's marketing rights for both products extend for 15 years from the first commercial sale of Simponi in the EU following the receipt of pricing and reimbursement approval within the EU. All profits derived from Merck's exclusive distribution of the two products in these countries are equally divided between Merck and J&J.

Competition and the Health Care Environment

Competition

The markets in which the Company conducts its business and the pharmaceutical industry are highly competitive and highly regulated. The Company's competitors include other worldwide research-based pharmaceutical companies, smaller research companies with more limited therapeutic focus, and generic drug and consumer and animal health care manufacturers. The Company's operations may be adversely affected by generic and biosimilar competition as the Company's products mature, as well as technological advances of competitors, industry consolidation, patents granted to competitors, competitive combination products, new products of competitors, the generic availability of competitors' branded products, and new information from clinical trials of marketed products or post-marketing surveillance. In addition, patent positions are increasingly being challenged by competitors, and the outcome can be highly uncertain. An adverse result in a patent dispute can preclude commercialization of products or negatively affect sales of existing products and could result in the recognition of an impairment charge with respect to intangible assets

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associated with certain products. Competitive pressures have intensified as pressures in the industry have grown. The effect on operations of competitive factors and patent disputes cannot be predicted.

Pharmaceutical competition involves a rigorous search for technological innovations and the ability to market these innovations effectively. With its long-standing emphasis on research and development, the Company is well positioned to compete in the search for technological innovations. Additional resources required to meet market challenges include quality control, flexibility to meet customer specifications, an efficient distribution system and a strong technical information service. The Company is active in acquiring and marketing products through external alliances, such as joint ventures and licenses, and has been refining its sales and marketing efforts to further address changing industry conditions. However, the introduction of new products and processes by competitors may result in price reductions and product displacements, even for products protected by patents. For example, the number of compounds available to treat a particular disease typically increases over time and can result in slowed sales growth or reduced sales for the Company's products in that therapeutic category.

The highly competitive animal health business is affected by several factors including regulatory and legislative issues, scientific and technological advances, product innovation, the quality and price of the Company's products, effective promotional efforts and the frequent introduction of generic products by competitors.

The Company's consumer care operations face competition from other consumer health care businesses as well as retailers who carry their own private label brands. The Company's competitive position is affected by several factors, including regulatory and legislative issues, scientific and technological advances, the quality and price of the Company's products, promotional efforts and the growth of lower cost private label brands.

Health Care Environment

Global efforts toward health care cost containment continue to exert pressure on product pricing and market access. In the United States, federal and state governments for many years also have pursued methods to reduce the cost of drugs and vaccines for which they pay. For example, federal laws require the Company to pay specified rebates for medicines reimbursed by Medicaid and to provide discounts for outpatient medicines purchased by certain Public Health Service entities and hospitals serving a disproportionate share of low income or uninsured patients.

Against this backdrop, the United States enacted major health care reform legislation in 2010, which began to be implemented in 2010. Various insurance market reforms have advanced and will continue through full implementation in 2014. The law is expected to expand access to health care to about 32 million Americans by the end of the decade who did not previously have insurance coverage. With respect to the effect of the law on the pharmaceutical industry, the law increased the mandated Medicaid rebate from 15.1% to 23.1%, expanded the rebate to Medicaid managed care utilization, and increased the types of entities eligible for the federal 340B drug discount program. The law also requires pharmaceutical manufacturers to pay a 50% point of service discount to Medicare Part D beneficiaries when they are in the Medicare Part D coverage gap (i.e., the so-called "donut hole"). Approximately $280 million, $210 million and $150 million was recorded by Merck as a reduction to revenue in 2013, 2012 and 2011, respectively, related to the donut hole provision. Also, pharmaceutical manufacturers are now required to pay an annual health care reform fee. The total annual industry fee was $2.8 billion in 2013 and will be $3.0 billion in 2014. The fee is assessed on each company in proportion to its share of sales to certain government programs, such as Medicare and Medicaid. The Company recorded $151 million, $190 million and $162 million of costs within Marketing and administrative expenses in 2013, 2012 and 2011, respectively, for the annual health care reform fee. The full impact of U.S. health care reform cannot be predicted at this time.

The Company also faces increasing pricing pressure globally from managed care organizations, government agencies and programs that could negatively affect the Company's sales and profit margins. In the United States, these include (i) practices of managed care groups, federal and state exchanges, and institutional and governmental purchasers, and (ii) U.S. federal laws and regulations related to Medicare and Medicaid, including the Medicare Prescription Drug Improvement and Modernization Act of 2003 and the Patient Protection and Affordable Care Act of 2010. Changes to the health care system enacted as part of health care reform in the United States, as well as increased purchasing power of entities that negotiate on behalf of Medicare, Medicaid, and private sector beneficiaries, could result in further pricing pressures.

In addition, in the effort to contain the U.S. federal deficit, the pharmaceutical industry could be considered a potential source of savings via legislative proposals that have been debated but not enacted. These types of revenue

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generating or cost saving proposals include additional direct price controls in the Medicare prescription drug program (Part D). In addition, Congress may again consider proposals to allow, under certain conditions, the importation of medicines from other countries. It remains very uncertain as to what proposals, if any, may be included as part of future federal budget deficit reduction proposals that would directly or indirectly affect the Company.

Efforts toward health care cost containment remain intense in several European countries. Many countries have continued to announce and execute austerity measures, which include the implementation of pricing actions to reduce prices of generic and patented drugs and mandatory switches to generic drugs. While the Company is taking steps to mitigate the impact in these countries, the austerity measures continued to negatively affect the Company's revenue performance in 2013 and the Company anticipates the austerity measures will continue to negatively affect revenue performance in 2014. In addition, a majority of countries attempt to contain drug costs by engaging in reference pricing in which authorities examine pre-determined markets for published prices of drugs by brand. The authorities then use price data from those markets to set new local prices for brand-name drugs, including the Company's. Guidelines for examining reference pricing are usually set in local markets and can be changed pursuant to local regulations.

In addition, in Japan, the pharmaceutical industry is subject to government-mandated biennial price reductions of pharmaceutical products and certain vaccines. Furthermore, the government can order repricings for classes of drugs if it determines that it is appropriate under applicable rules.

Certain markets outside of the United States have also implemented cost management strategies, such as health technology assessments, which require additional data, reviews and administrative processes, all of which increase the complexity, timing and costs of obtaining product reimbursement and exert downward pressure on available reimbursement.

The Company's focus on and share of revenue from emerging markets has increased. Governments in many emerging markets are also focused on constraining health care costs and have enacted price controls and related measures, such as compulsory licenses, that aim to put pressure on the price of pharmaceuticals and constrain market access. The Company anticipates that pricing pressures and market access challenges will continue in 2014 to varying degrees in the emerging markets.

Beyond pricing and market access challenges, other conditions in emerging market countries can affect the Company's efforts to continue to grow in these markets, including potential political instability, significant currency fluctuation and controls, financial crises, limited or changing availability of funding for health care, and other developments that may adversely impact the business environment for the Company. Further, the Company may engage third-party agents to assist in operating in emerging market countries, which may affect its ability to realize continued growth and may also increase the Company's risk exposure.

In addressing cost containment pressures, the Company engages in public policy advocacy with policymakers and continues to work to demonstrate that its medicines provide value to patients and to those who pay for health care. The Company advocates with government policymakers to encourage a long-term approach to sustainable health care financing that ensures access to innovative medicines and does not disproportionately target pharmaceuticals as a source of budget savings. In markets with historically low rates of health care spending, the Company encourages those governments to increase their investments and adopt market reforms in order to improve their citizens' access to appropriate health care, including medicines.

Operating conditions have become more challenging under the global pressures of competition, industry regulation and cost containment efforts. Although no one can predict the effect of these and other factors on the Company's business, the Company continually takes measures to evaluate, adapt and improve the organization and its business practices to better meet customer needs and believes that it is well positioned to respond to the evolving health care environment and market forces.

Government Regulation

The pharmaceutical industry is subject to regulation by regional, country, state and local agencies around the world. Governmental regulation and legislation tend to focus on standards and processes for determining drug safety and effectiveness, as well as conditions for sale or reimbursement, especially related to the pricing of products.

Of particular importance is the U.S. Food and Drug Administration (the “FDA”), which administers requirements covering the testing, approval, safety, effectiveness, manufacturing, labeling, and marketing of prescription

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pharmaceuticals. In many cases, the FDA requirements and practices have increased the amount of time and resources necessary to develop new products and bring them to market in the United States.

The EU has adopted directives and other legislation concerning the classification, labeling, advertising, wholesale distribution, integrity of the supply chain, enhanced pharmacovigilance monitoring and approval for marketing of medicinal products for human use. These provide mandatory standards throughout the EU, which may be supplemented or implemented with additional regulations by the EU member states. The Company's policies and procedures are already consistent with the substance of these directives; consequently, it is believed that they will not have any material effect on the Company's business.

The Company believes that it will continue to be able to conduct its operations, including launching new drugs, in this regulatory environment. (See "Research and Development" below for a discussion of the regulatory approval process.)

Access to Medicines

As a global health care company, Merck's primary role is to discover and develop innovative medicines and vaccines. The Company also recognizes that it has an important role to play in helping to improve access to its products around the world. The Company's efforts in this regard are wide-ranging and include a set of principles that the Company strives to embed into its operations and business strategies to guide the Company's worldwide approach to expanding access to health care. In addition, the Company has many far-reaching philanthropic programs. The Merck Patient Assistance Program provides medicines and adult vaccines for free to people in the United States who do not have prescription drug or health insurance coverage and who, without the Company's assistance, cannot afford their Merck medicine and vaccines. In 2011, Merck announced that it would launch "Merck for Mothers," a long-term effort with global health partners to end preventable deaths from complications of pregnancy and childbirth. Through this initiative, Merck is leveraging its scientific and business expertise to help make proven solutions more widely available, develop new technologies and improve public and policymaker awareness of these issues.

Merck has also in the past provided funds to the Merck Foundation, an independent organization, which has partnered with a variety of organizations dedicated to improving global health. One of these partnerships is the African Comprehensive HIV/AIDS Partnership in Botswana, a collaboration with the government of Botswana that was renewed in 2010 and supports Botswana's response to HIV/AIDS through a comprehensive and sustainable approach to HIV prevention, care, treatment, and support.

Privacy and Data Protection

The Company is subject to a number of privacy and data protection laws and regulations globally. The legislative and regulatory landscape for privacy and data protection continues to evolve. There has been increased attention to privacy and data protection issues in both developed and emerging markets with the potential to affect directly the Company's business, including recently enacted laws and regulations in the United States, Europe, Asia and Latin America, and increased enforcement and litigation activity in the United States and other developed markets.

Distribution

The Company sells its human health pharmaceutical products primarily to drug wholesalers and retailers, hospitals, government agencies and managed health care providers, such as health maintenance organizations, pharmacy benefit managers and other institutions. Human health vaccines are sold primarily to physicians, wholesalers, physician distributors and government entities. The Company's professional representatives communicate the effectiveness, safety and value of the Company's pharmaceutical and vaccine products to health care professionals in private practice, group practices, hospitals and managed care organizations. The Company sells its animal health products to veterinarians, distributors and animal producers. The Company's over-the-counter, foot care and sun care products are sold through wholesale and retail drug, food chain and mass merchandiser outlets, as well as club stores and specialty channels.

Raw Materials

Raw materials and supplies, which are generally available from multiple sources, are purchased worldwide and are normally available in quantities adequate to meet the needs of the Company's business.

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Patents, Trademarks and Licenses

Patent protection is considered, in the aggregate, to be of material importance in the Company's marketing of its products in the United States and in most major foreign markets. Patents may cover products per se, pharmaceutical formulations, processes for or intermediates useful in the manufacture of products or the uses of products. Protection for individual products extends for varying periods in accordance with the legal life of patents in the various countries. The protection afforded, which may also vary from country to country, depends upon the type of patent and its scope of coverage.

The Food and Drug Administration Modernization Act includes a Pediatric Exclusivity Provision that may provide an additional six months of market exclusivity in the United States for indications of new or currently marketed drugs if certain agreed upon pediatric studies are completed by the applicant. Current U.S. patent law provides additional patent term under Patent Term Restoration for periods when the patented product was under regulatory review by the FDA.

Patent portfolios developed for products introduced by the Company normally provide market exclusivity. The Company has the following key U.S. patent protection (including Patent Term Restoration and Pediatric Exclusivity) for major marketed products:

Product	Year of Expiration (in the U.S.)[1]
Asmanex	2014 (use)/2018 (formulation)
Dulera	2014 (use)/2017(formulation)/2020 (combination)
Integrilin	2014 (compound)/2015 (use/formulation)
Nasonex[2]	2014 (use/formulation)/2018(formulation)
Emend	2015
Follistim AQ	2015
PegIntron	2015 (conjugates)/2020 (Mature IFN-alpha)
Invanz	2016 (compound)/2017 (composition)
Zostavax	2016 (use)
Zetia[3]/Vytorin/Liptruzet	2017
NuvaRing	2018 (delivery system)
Emend for Injection	2019
Noxafil	2019
RotaTeq	2019
Intron A	2020
Recombivax	2020 (method of making/vectors)
Januvia/Janumet/Janumet XR	2022 (compound)/2026 (salt)
Zioptan	2022 (with pending Patent Term Restoration)
Isentress	2023
Victrelis	2024 (with pending Patent Term Restoration)
Gardasil	2028

(1) Compound patent unless otherwise noted. Certain of the products listed may be the subject of patent litigation. See Item 8. "Financial Statements and Supplementary Data," Note 10. "Contingencies and Environmental Liabilities" below.

(2) By agreement, Apotex, a generic manufacturer, has been granted rights under Merck's Nasonex use patent in the United States. In addition, a district court decision (upheld on appeal to the Court of Appeals for the Federal Circuit) found that Apotex's proposed generic product would not infringe on Merck's Nasonex formulation patent. Thus, if Apotex's application is approved by the FDA, it can enter the market in the United States with a generic version of Nasonex.

(3) By agreement, a generic manufacturer may launch a generic version of Zetia in the United States in December 2016.

While the expiration of a product patent normally results in a loss of market exclusivity for the covered pharmaceutical product, commercial benefits may continue to be derived from: (i) later-granted patents on processes

and intermediates related to the most economical method of manufacture of the active ingredient of such product; (ii) patents relating to the use of such product; (iii) patents relating to novel compositions and formulations; and (iv) in the United States and certain other countries, market exclusivity that may be available under relevant law. The effect of product patent expiration on pharmaceutical products also depends upon many other factors such as the nature of the market and the position of the product in it, the growth of the market, the complexities and economics of the process for manufacture of the active ingredient of the product and the requirements of new drug provisions of the Federal Food, Drug and Cosmetic Act or similar laws and regulations in other countries.

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By agreement, Apotex Inc. and Apotex Corp. (collectively, "Apotex") has been granted rights under Merck's Nasonex use patent in the United States. In addition, a district court decision (upheld on appeal to the Court of Appeals for the Federal Circuit) found that Apotex's proposed generic product would not infringe Merck's Nasonex formulation patent. Thus, if Apotex's application is approved by the FDA, it can enter the market in the United States with a generic version of Nasonex. The Company anticipates that sales of Nasonex in the United States will decline significantly after these patent expiries and generic entry.

Additions to market exclusivity are sought in the United States and other countries through all relevant laws, including laws increasing patent life. Some of the benefits of increases in patent life have been partially offset by an increase in the number of incentives for and use of generic products. Additionally, improvements in intellectual property laws are sought in the United States and other countries through reform of patent and other relevant laws and implementation of international treaties.

The Company has the following key U.S. patent protection for drug candidates under review in the United States by the FDA. Additional patent term may be provided for these pipeline candidates based on Patent Term Restoration and Pediatric Exclusivity.

Under Review	Currently Anticipated Year of Expiration (in the U.S.)
MK-8962 (corifollitropin alfa injection)	2018 (formulation/use)
MK-8616 (sugammadex sodium injection)[1]	2021
MK-5348 (vorapaxar)	2024
MK-7243 (Timothy grass pollen allergen extract)	2026 (use)
MK-3641 (short ragweed pollen allergen extract)	2026 (use)
V503 (HPV vaccine (9 valent))	2028
MK-4305 (suvorexant)[2]	2029

(1) In September 2013, Merck received a Complete Response Letter ("CRL") from the FDA for the resubmission of the New Drug Application for sugammadex sodium injection (MK-8616). To address the CRL, the Company is conducting a hypersensitivity study and anticipates filing a New Drug Application resubmission with the FDA in 2014.

(2) In June 2013, Merck received a CRL from the FDA for suvorexant (MK-4305). In February 2014, the Company resubmitted its New Drug Application to the FDA.

The Company also has the following key U.S. patent protection for drug candidates in Phase 3 development:

Phase 3 Drug Candidate	Currently Anticipated Year of Expiration (in the U.S.)
V212 (inactivated varicella zoster virus ("VZV") vaccine)	2016 (use)
V419 (pediatric hexavalent combination vaccine)	2020 (method of making/vectors)
MK-0822 (odanacatib)	2024
MK-8109 (vintafolide)	2024
MK-0859 (anacetrapib)	2027
MK-3222 (tildrakizumab)	2028 (composition)
MK-3415A (actoxumab/bezlotoxumab)	2028
MK-3475	2028
MK-3102 (omarigliptin)	2030
MK-8931	2030
MK-8835 (ertugliflozin)	2031

Unless otherwise noted, the patents in the above charts are compound patents. Each patent is subject to any future patent term restoration of up to five years and six month pediatric market exclusivity, either or both of which may be available. In addition, depending on the circumstances surrounding any final regulatory approval of the compound, there may be other listed patents or patent applications pending that could have relevance to the product as finally approved; the relevance of any such application would depend upon the claims that ultimately may be granted and the nature of the final regulatory approval of the product. Also, regulatory exclusivity tied to the protection of clinical data

is complementary to patent protection and, in some cases, may provide more effective or longer lasting marketing exclusivity than a compound’s patent estate. In the United States, the data protection generally runs five

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years from first marketing approval of a new chemical entity, extended to seven years for an orphan drug indication and 12 years from first marketing approval of a biological product.

For further information with respect to the Company's patents, see Item 1A. "Risk Factors" and Item 8. "Financial Statements and Supplementary Data," Note 10. "Contingencies and Environmental Liabilities" below.

Worldwide, all of the Company's important products are sold under trademarks that are considered in the aggregate to be of material importance. Trademark protection continues in some countries as long as used; in other countries, as long as registered. Registration is for fixed terms and can be renewed indefinitely.

Royalty income in 2013 on patent and know-how licenses and other rights amounted to $339 million. Merck also incurred royalty expenses amounting to $1.3 billion in 2013 under patent and know-how licenses it holds.

Research and Development

The Company's business is characterized by the introduction of new products or new uses for existing products through a strong research and development program. Approximately 12,300 people are employed in the Company's research activities. Research and development expenses were $7.5 billion in 2013, $8.2 billion in 2012, and $8.5 billion in 2011 (which included restructuring costs in all years, as well as $279 million, $200 million and $587 million of in-process research and development impairment charges in 2013, 2012 and 2011, respectively). The Company prioritizes its research and development efforts and focus on candidates that it believes represent breakthrough science that will make a difference for patients and payers, with an increased emphasis on externally sourced programs.

The Company maintains a number of long-term exploratory and fundamental research programs in biology and chemistry as well as research programs directed toward product development. The Company's research and development model is designed to increase productivity and improve the probability of success by prioritizing the Company's research and development resources on candidates the Company believes are capable of providing unambiguous, promotable advantages to patients and payers and delivering the maximum value of its approved medicines and vaccines through new indications and new formulations. Merck is pursuing emerging product opportunities independent of therapeutic area or modality (small molecule, biologics and vaccines) and is building its biologics capabilities. Further, Merck has moved to diversify its portfolio through a collaboration on the development of biosimilars, which have the potential to harness the market opportunity presented by biological medicine patent expiries by delivering high quality biosimilars to enhance access for patients worldwide. The Company is committed to making externally sourced programs a greater component of its pipeline strategy, with a renewed focus on supplementing its internal research with a licensing and external alliance strategy focused on the entire spectrum of collaborations from early research to late-stage compounds, as well as access to new technologies.

The Company also reviews its pipeline to examine candidates which may provide more value through out-licensing. The Company is evaluating certain late-stage clinical development and platform technology assets to determine their out-licensing or sale potential. In January 2014, the Company entered into an agreement to divest its Sirna Therapeutics, Inc. subsidiary and related RNAi technology assets.

The Company's clinical pipeline includes candidates in multiple disease areas, including atherosclerosis, cancer, cardiovascular diseases, diabetes, infectious diseases, inflammatory/autoimmune diseases, insomnia, neurodegenerative diseases, osteoporosis, respiratory diseases and women's health.

In the development of human health products, industry practice and government regulations in the United States and most foreign countries provide for the determination of effectiveness and safety of new chemical compounds through preclinical tests and controlled clinical evaluation. Before a new drug or vaccine may be marketed in the United States, recorded data on preclinical and clinical experience are included in the New Drug Application ("NDA") for a drug or the Biologics License Application ("BLA") for a vaccine or biologic submitted to the FDA for the required approval.

Once the Company's scientists discover a new small molecule compound or biologics molecule that they believe has promise to treat a medical condition, the Company commences preclinical testing with that compound. Preclinical testing includes laboratory testing and animal safety studies to gather data on chemistry, pharmacology, immunogenicity and toxicology. Pending acceptable preclinical data, the Company will initiate clinical testing in accordance with established regulatory requirements. The clinical testing begins with Phase 1 studies, which are designed to assess safety, tolerability, pharmacokinetics, and preliminary pharmacodynamic activity of the compound

in humans.

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If favorable, additional, larger Phase 2 studies are initiated to determine the efficacy of the compound in the affected population, define appropriate dosing for the compound, as well as identify any adverse effects that could limit the compound's usefulness. In some situations, the clinical program incorporates adaptive design methodology to use accumulating data to decide how to modify aspects of the ongoing clinical study as it continues, without undermining the validity and integrity of the trial. One type of adaptive clinical trial is an adaptive Phase 2a/2b trial design, a two-stage trial design consisting of a Phase 2a proof-of-concept stage and a Phase 2b dose-optimization finding stage. If data from the Phase 2 trials are satisfactory, the Company commences large-scale Phase 3 trials to confirm the compound's efficacy and safety. Another type of adaptive clinical trial is an adaptive Phase 2/3 trial design, a study that includes an interim analysis and an adaptation that changes the trial from having features common in a Phase 2 study (e.g. multiple dose groups) to a design similar to a Phase 3 trial. An adaptive Phase 2/3 trial design reduces timelines by eliminating activities which would be required to start a separate study. Upon completion of Phase 3 trials, if satisfactory, the Company submits regulatory filings with the appropriate regulatory agencies around the world to have the product candidate approved for marketing. There can be no assurance that a compound that is the result of any particular program will obtain the regulatory approvals necessary for it to be marketed.

Vaccine development follows the same general pathway as for drugs. Preclinical testing focuses on the vaccine's safety and ability to elicit a protective immune response (immunogenicity). Pre-marketing vaccine clinical trials are typically done in three phases. Initial Phase 1 clinical studies are conducted in normal subjects to evaluate the safety, tolerability and immunogenicity of the vaccine candidate. Phase 2 studies are dose-ranging studies. Finally, Phase 3 trials provide the necessary data on effectiveness and safety. If successful, the Company submits regulatory filings with the appropriate regulatory agencies. Also during this stage, the proposed manufacturing facility undergoes a pre-approval inspection during which production of the vaccine as it is in progress is examined in detail.

In the United States, the FDA review process begins once a complete NDA or BLA is submitted, received and accepted for review by the agency. Within 60 days after receipt, the FDA determines if the application is sufficiently complete to permit a substantive review. The FDA also assesses, at that time, whether the application will be granted a priority review or standard review. Pursuant to the Prescription Drug User Fee Act V, the FDA review period target for NDAs or original BLAs is either six months, for priority review, or ten months, for a standard review, from the time the application is deemed sufficiently complete. Once the review timelines are determined, the FDA will generally act upon the application within those timelines, unless a major amendment has been submitted (either at the Company's own initiative or the FDA's request) to the pending application. If this occurs, the FDA may extend the review period to allow for review of the new information, but by no more than three months. Extensions to the review period are communicated to the Company. The FDA can act on an application either by issuing an approval letter or by issuing a CRL stating that the application will not be approved in its present form and describing all deficiencies that the FDA has identified. Should the Company wish to pursue an application after receiving a CRL, it can resubmit the application with information that addresses the questions or issues identified by the FDA in order to support approval. Resubmissions are subject to review period targets, which vary depending on the underlying submission type and the content of the resubmission.

The FDA has four program designations — Fast Track, Breakthrough Therapy, Accelerated Approval, and Priority Review — to facilitate and expedite development and review of new drugs to address unmet medical needs in the treatment of serious or life-threatening conditions. The Fast Track designation provides pharmaceutical manufacturers with opportunities for frequent interactions with FDA reviewers during the product's development and the ability for the manufacturer to do a rolling submission of the NDA/BLA. A rolling submission allows completed portions of the application to be submitted and reviewed by the FDA on an ongoing basis. The Breakthrough Therapy designation provides manufacturers with all of the features of the Fast Track designation as well as intensive guidance on implementing an efficient development program for the product and a commitment by the FDA to involve senior managers and experienced review staff in the review. The Accelerated Approval designation allows the FDA to approve a product based on an effect on a surrogate or intermediate endpoint that is reasonably likely to predict a product's clinical benefit and generally requires the manufacturer to conduct required post-approval confirmatory trials to verify the clinical benefit. The Priority Review designation means that the FDA's goal is to take action on the NDA/BLA within six months, compared to ten months under standard review.

The primary method the Company uses to obtain marketing authorization of pharmaceutical products in the EU is through the “centralized procedure.” This procedure is compulsory for certain pharmaceutical products, in particular those using biotechnological processes, and is also available for certain new chemical compounds and

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products. A company seeking to market an innovative pharmaceutical product through the centralized procedure must file a complete set of safety data and efficacy data as part of a Marketing Authorization Application ("MAA") with the European Medicines Agency ("EMA"). After the EMA evaluates the MAA, it provides a recommendation to the EC and the EC then approves or denies the MAA. It is also possible for new chemical products to obtain marketing authorization in the EU through a "mutual recognition procedure" in which an application is made to a single member state and, if the member state approves the pharmaceutical product under a national procedure, the applicant may submit that approval to the mutual recognition procedure of some or all other member states.

Outside of the United States and the EU, the Company submits marketing applications to national regulatory authorities. Examples of such are the Pharmaceutical Medical Devices Agency in Japan, Health Canada, Agencia Nacional de Vigilancia in Brazil, Korea Food and Drug Administration in South Korea, and Therapeutic Goods Administration in Australia. Each country has a separate and independent review process and timeline. In many markets, approval times can be longer as the regulatory authority requires approval in a major market, such as the United States or the EU, and issuance of a Certificate of Pharmaceutical Product from that market before initiating their local review process.

Research and Development Update

The Company currently has several candidates under regulatory review in the United States or internationally.

MK-5348, vorapaxar, is an investigational anti-thrombotic medicine under review by the FDA and EMA. Merck is seeking approval of vorapaxar for the reduction of atherothrombotic events, when added to standard of care, in patients with a history of heart attack and no history of stroke or transient ischemic attack. In January 2014, the FDA's Cardiovascular and Renal Drugs Advisory Committee recommended approval of vorapaxar. The FDA is not bound by the committee's guidance, but takes its advice into consideration when reviewing investigational medicines.

V503, the Company's nine-valent HPV vaccine in development to help protect against certain HPV-related diseases, is under review by the FDA. V503 incorporates antigens against five additional cancer-causing HPV types as compared with Gardasil. The Company anticipates submitting an MAA to the EMA in the first half of 2014.

MK-8962, corifollitropin alfa injection, is an investigational fertility treatment under review by the FDA for controlled ovarian stimulation in women participating in assisted reproductive technology. If approved, corifollitropin alfa would be the first sustained follicular stimulant for use in a fertility treatment regimen in the United States. Merck's corifollitropin alfa is currently approved in more than 50 markets outside the United States, including the EU.

MK-7243, Grastek (Timothy Grass Pollen Allergen Extract), an investigational Timothy grass pollen allergy immunotherapy tablet ("AIT"), and MK-3641, Ragwitek (Short Ragweed Pollen Allergen Extract), an investigational ragweed pollen AIT, are both under review by the FDA. Grastek is the proposed trade name for MK-7243 and Ragwitek is the proposed trade name for MK-3641. MK-7243 and MK-3641 are investigational sublingual tablets designed to help treat the underlying cause of allergic rhinitis by generating an immune response to help protect allergic patients against effects triggered by the targeted allergen. Merck has partnered with ALK-Abello to develop its investigational sublingual allergy immunotherapy tablets for Timothy grass pollen, ragweed pollen and house dust mites in North America. In December 2013, the FDA's Allergenic Products Advisory Committee had a positive discussion of MK-7243. In January 2014, the same Advisory Committee had a positive discussion of MK-3641. The FDA is not bound by the committee's guidance, but takes its advice into consideration when reviewing investigational medicines. Merck expects the FDA's review for both MK-7243 and MK-3641 to be completed in the first half of 2014. In February 2014, the Company announced that Grastek received regulatory approval in Canada.

MK-4305, suvorexant, is an investigational insomnia medicine in a new class of medicines called orexin receptor antagonists for use in patients with difficulty falling or staying asleep. In July 2013, the Company announced that it had received a CRL from the FDA regarding the NDA for suvorexant. In the CRL, the FDA advised Merck that: (1) the efficacy of suvorexant has been established at doses of 10 mg to 40 mg in elderly and non-elderly adult patients; (2) 10 mg should be the starting dose for most patients and must be available before suvorexant can be approved; (3) 15 mg and 20 mg doses would be appropriate in patients in whom the 10 mg dose is well-tolerated but not effective; and (4), for patients taking concomitant moderate CYP3A4 inhibitors, a 5 mg dose would be necessary. In addition, the FDA determined that the safety data do not support the approval of suvorexant 30 mg and 40 mg. In February 2014, the Company resubmitted its NDA to the FDA. As previously disclosed, both FDA approval and a

separate scheduling

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determination by the U.S. Drug Enforcement Administration are required before Merck can introduce suvorexant in the United States. Insomnia is a condition characterized by difficulty falling asleep and/or staying asleep. The Company has submitted a new drug application for suvorexant to the health authorities in Japan and is continuing with plans to seek approval for suvorexant in other countries around the world.

MK-8616, sugammadex sodium injection, is an investigational agent for the reversal of neuromuscular blockade induced by rocuronium or vecuronium (neuromuscular blocking agents). Neuromuscular blockade is used in anesthesiology to induce muscle relaxation during surgery. In September 2013, Merck announced that it had received a CRL from the FDA for the resubmission of the NDA for sugammadex sodium injection. The FDA's letter raised concerns about operational aspects of a hypersensitivity study that the agency had requested in 2008. To address the CRL, the Company is conducting a hypersensitivity study and anticipates filing an NDA resubmission with the FDA in 2014. Sugammadex sodium injection is approved and has been launched in many countries outside of the United States where it is marketed as Bridion.

MK-8109, vintafolide, is an investigational cancer candidate under review by the EMA. As part of an exclusive license agreement with Endocyte, Inc. ("Endocyte"), Merck is responsible for the development and worldwide commercialization of vintafolide in oncology. The EMA accepted the MAA filings for vintafolide and Endocyte's investigational companion diagnostic imaging agent, etarfolatide, for the targeted treatment of patients with folate-receptor positive platinum-resistant ovarian cancer in combination with pegylated liposomal doxorubicin. Both vintafolide and etarfolatide have been granted orphan drug status by the EC. Vintafolide is in Phase 3 development in the United States.

MK-7009, vaniprevir, is an investigational, oral twice-daily protease inhibitor for the treatment of chronic hepatitis C virus ("HCV") infection under review in Japan.

In addition to the candidates under regulatory review, the Company has 12 drug candidates in Phase 3 development targeting a broad range of diseases. The Company anticipates filing an NDA or a BLA, as applicable, with the FDA with respect to several of these candidates in 2014.

MK-3475, an investigational anti-PD-1 immunotherapy, is currently being evaluated for the treatment of patients with advanced melanoma and other tumor types. In January 2014, the Company announced it has started a rolling submission to the FDA of a BLA for MK-3475 for patients with advanced melanoma who have previously been treated with ipilimumab. A rolling submission allows completed portions of the application to be submitted and reviewed by the FDA on an ongoing basis. The Company expects to complete the application in the first half of 2014. In April 2013, Merck announced that MK-3475 received a Breakthrough Therapy designation for advanced melanoma from the FDA. As noted above, the designation of an investigational drug as a Breakthrough Therapy is intended to expedite the development and review of a candidate that is planned for use, alone or in combination, to treat a serious or life-threatening disease or condition when preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints.

The MK-3475 clinical development program also includes studies across a broad range of cancer types including: bladder, colorectal, gastric, head and neck, melanoma, non-small cell lung, renal, triple negative breast and hematological malignancies. In addition, the Company has announced four collaborations with other pharmaceutical companies to evaluate novel combination regimens with MK-3475.

MK-0822, odanacatib, is an oral, once-weekly investigational treatment for patients with osteoporosis. Osteoporosis is a disease that reduces bone density and strength and results in an increased risk of bone fractures. Odanacatib is a cathepsin K inhibitor that selectively inhibits the cathepsin K enzyme. Cathepsin K is known to play a central role in the function of osteoclasts, which are cells that break down existing bone tissue, particularly the protein components of bone. Inhibition of cathepsin K is a novel approach to the treatment of osteoporosis. In July 2012, Merck announced an update on the Phase 3 trial assessing fracture risk reduction with odanacatib. The independent Data Monitoring Committee (the "DMC") for the study completed its first planned interim analysis for efficacy and recommended that the study be closed early due to robust efficacy and a favorable benefit-risk profile. The DMC noted that safety issues remain in certain selected areas and made recommendations with respect to following up on them. On February 1, 2013, Merck announced that it had recently received and was reviewing safety and efficacy data from the Phase 3 trial. As a result of its review of this data, the Company concluded that review of additional data

from the previously planned, ongoing extension study was warranted and that filing an application for approval with the FDA

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should be delayed. As previously announced, the Company is conducting a blinded extension of the trial in approximately 8,200 women, which will provide additional safety and efficacy data. Merck continues to anticipate that it will file applications for approval of odanacatib in 2014 with additional data from the extension trial. The Company continues to believe that odanacatib will have the potential to address unmet medical needs in patients with osteoporosis.

V419 is an investigational hexavalent pediatric combination vaccine, which contains components of current vaccines, designed to help protect against six potentially serious diseases — diphtheria, tetanus, whooping cough (Bordetella pertussis), polio (poliovirus types 1, 2, and 3), invasive disease caused by Haemophilus influenzae type b, and hepatitis B — that is being developed in collaboration with Sanofi-Pasteur. The Company continues to anticipate filing a BLA for V419 with the FDA in 2014.

MK-0859, anacetrapib, is an investigational inhibitor of the cholesteryl ester transfer protein ("CETP") that is being investigated in lipid management to raise HDL-C and reduce LDL-C. Anacetrapib is being evaluated in a large, event-driven cardiovascular clinical outcomes trial REVEAL (Randomized EValuation of the Effects of Anacetrapib Through Lipid-modification) involving patients with preexisting vascular disease that is predicted to be completed in 2017.

MK-8931 is Merck's novel investigational oral ß-amyloid precursor protein site-cleaving enzyme ("BACE") inhibitor for the treatment of Alzheimer's disease being evaluated in a Phase 2/3 clinical trial (EPOCH) designed to evaluate the safety and efficacy of MK-8931 versus placebo in patients with mild-to-moderate Alzheimer's disease. Based on a positive DMC recommendation made following a planned analysis of interim safety data that included a safety cohort of 200 patients treated with MK-8931 for at least three months, the Company recently began enrolling patients in the Phase 3 portion of the trial, as well as a new Phase 3 trial (APECS) designed to evaluate the safety and efficacy of MK-8931 versus placebo in patients with amnestic mild cognitive impairment due to Alzheimer's disease, also known as prodromal Alzheimer's disease.

MK-3415A, actoxumab/bezlotoxumab, an investigational candidate for the prevention of Clostridium difficile infection recurrence, is a combination of two monoclonal antibodies used to treat patients with a single infusion.

MK-3102, omarigliptin, is an investigational once-weekly dipeptidyl peptidase-4 ("DPP-4") inhibitor in development for the treatment of type 2 diabetes.

MK-8835, ertugliflozin, is an investigational oral sodium glucose cotransporter ("SGLT2") inhibitor being evaluated for the treatment of type 2 diabetes. During 2013, the Company entered into a worldwide (except Japan) collaboration agreement with Pfizer Inc. for the development and commercialization of ertugliflozin.

MK-1293 is an insulin glargine candidate for the treatment of patients with type 1 and type 2 diabetes. In February 2014, the Company announced that it had expanded its collaboration with Samsung Bioepis to develop, manufacture and commercialize MK-1293. Under the terms of the agreement, the companies will collaborate on clinical development, regulatory filings and manufacturing. If approved, Merck will commercialize this candidate.

V212 is an inactivated VZV vaccine in development for the prevention of herpes zoster. The Company is conducting two Phase 3 trials, one in autologous hematopoietic cell transplant patients and the other in patients with solid tumor malignancies undergoing chemotherapy and hematological malignancies.

MK-3222, tildrakizumab, is an anti-interleukin-23 monoclonal antibody candidate being investigated for the treatment of psoriasis.

MK-5172/MK-8742, an all-oral combination regimen in Phase 2 development consisting of MK-5172, an investigational HCV NS3/4A protease inhibitor, and MK-8742, an investigational HCV NS5A replication complex inhibitor, was granted a Breakthrough Therapy designation in October 2013 by the FDA for treatment of chronic HCV infection. MK-5172 and MK-8742 are being investigated in a broad clinical program that includes studies in patients with multiple HCV genotypes who are treatment-naïve, treatment failures as well as other important HCV subpopulations such as patients with cirrhosis and those co-infected with HIV.

MK-8175A, NOMAC/E2, which is being marketed as Zoely in the EU, is an investigational oral contraceptive for use by women to prevent pregnancy. In November 2011, Merck received a CRL from the FDA for NOMAC/E2. Merck has made the decision to discontinue the Phase 3 clinical trial for NOMAC/E2 being conducted in the United States. This decision is not based on any new safety or efficacy findings.

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In May 2013, the Company provided an update on the clinical program for preladenant, Merck's investigational adenosine A2A receptor antagonist for the treatment of Parkinson's disease. An initial review of data from three separate Phase 3 trials did not provide evidence of efficacy for preladenant compared with placebo. Based on these results, Merck has taken steps to discontinue the extension phases of these studies and no longer plans to pursue regulatory filings for preladenant. The decision to discontinue these studies was not based on any safety finding. The Company recorded an impairment charge of $181 million in 2013 related to the discontinuation of the clinical development program for preladenant.

The chart below reflects the Company's research pipeline as of February 21, 2014. Candidates shown in Phase 3 include specific products and the date such candidate entered into Phase 3 development. Candidates shown in Phase 2 include the most advanced compound with a specific mechanism or, if listed compounds have the same mechanism, they are each currently intended for commercialization in a given therapeutic area. Small molecules and biologics are given MK-number designations and vaccine candidates are given V-number designations. Except as otherwise noted, candidates in Phase 1, additional indications in the same therapeutic area and additional claims, line extensions or formulations for in-line products are not shown.

Phase 2
Allergy
MK-8237, Immunotherapy[1]
Alzheimer's Disease
MK-7622
Asthma
MK-1029
Bacterial Infection
MK-7655
Cancer
MK-0646 (dalotuzumab)
MK-2206
CMV Prophylaxis in Transplant Patients
MK-8228 (letermovir)
Contraception, Medicated IUS
MK-8342
Contraception, Next Generation Ring
MK-8175A
MK-8342B
Hepatitis C
MK-5172
MK-8742
HIV
MK-1439 (doravirine)
Non-Small Cell Lung Cancer
MK-3475[2,3]
Pneumoconjugate Vaccine
V114
Rheumatoid Arthritis
MK-8457

Phase 3 (Phase 3 entry date)
Atherosclerosis
MK-0859 (anacetrapib) (May 2008)
Alzheimer's Disease
MK-8931 (December 2013)
Clostridium difficile Infection
MK-3415A (actoxumab/bezlotoxumab) (November 2011)
Diabetes Mellitus
MK-3102 (omarigliptin) (September 2012)
MK-8835 (ertugliflozin) (November 2013)
MK-1293 (February 2014)
Herpes Zoster
V212 (inactivated VZV vaccine) (December 2010)
Melanoma
MK-3475 (August 2013)[2,4]
Osteoporosis
MK-0822 (odanacatib) (September 2007)
Pediatric Hexavalent Combination Vaccine
V419 (April 2011)
Platinum-Resistant Ovarian Cancer
MK-8109 (vintafolide) (U.S.) (April 2011)
Psoriasis
MK-3222 (tildrakizumab) (December 2012)

Under Review
Allergy
MK-7243, Grass pollen (U.S.)[1]
MK-3641, Ragweed (U.S.)[1]
Fertility
MK-8962 (corifollitropin alfa injection) (U.S.)
Hepatitis C
MK-7009 (vaniprevir) (Japan)
HPV-Related Cancers
V503 (HPV vaccine (9 valent)) (U.S.)
Insomnia
MK-4305 (suvorexant) (U.S.)[5]
Neuromuscular Blockade Reversal
MK-8616 (sugammadex sodium injection) (U.S.)[6]
Platinum-Resistant Ovarian Cancer
MK-8109 (vintafolide) (EU)
Thrombosis
MK-5348 (vorapaxar) (U.S./EU)

Footnotes:

[1] North American rights only.

[2] A new nonproprietary name for MK-3475 is under review.

[3] Phase 2/3 adaptive design.

[4] In January 2014, the Company announced it has started a rolling submission to the FDA of a BLA for MK-3475 for patients with advanced melanoma who have previously been treated with ipilimumab.

[5] In June 2013, Merck received a CRL from the FDA for suvorexant

(MK-4305). In February 2014, the Company resubmitted its NDA to the FDA.

(6) In September 2013, Merck received a CRL from the FDA for the resubmission of the NDA for sugammadex sodium injection (MK-8616). To address the CRL, the Company is conducting a hypersensitivity study and anticipates filing an NDA resubmission with the FDA in 2014.

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Employees

As of December 31, 2013, the Company had approximately 76,000 employees worldwide, with approximately 29,100 employed in the United States, including Puerto Rico. Approximately 32% of worldwide

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employees of the Company are represented by various collective bargaining groups. In addition, the Company's joint ventures in China and Brazil, which are included in the consolidated results of Merck, had about 1,300 employees.

2013 Restructuring Program

In October 2013, the Company announced a new global restructuring program (the "2013 Restructuring Program") as part of a global initiative to sharpen its commercial and research and development focus. As part of the new program, the Company expects to reduce its total workforce by approximately 8,500 positions. These workforce reductions will primarily come from the elimination of positions in sales, administrative and headquarters organizations, as well as research and development. The Company will also reduce its global real estate footprint and continue to improve the efficiency of its manufacturing and supply network. The Company will continue to hire employees in strategic growth areas of the business as necessary.

Merger Restructuring Program

In 2010, subsequent to the Merck and Schering-Plough merger (the "Merger"), the Company commenced actions under a global restructuring program (the "Merger Restructuring Program") designed to streamline the cost structure of the combined company. Further actions under this program were initiated in 2011. The actions under this program primarily reflect the elimination of positions in sales, administrative and headquarters organizations, as well as from the sale or closure of certain manufacturing and research and development sites and the consolidation of office facilities. Since inception of the Merger Restructuring Program through December 31, 2013, Merck has eliminated approximately 26,880 positions comprised of employee separations, as well as the elimination of contractors and vacant positions. Approximately 6,300 position eliminations remain pending under this program and an older program as of December 31, 2013. The restructuring actions under the Merger Restructuring Program were substantially completed by the end of 2013, with the exception of certain actions, principally manufacturing-related. Subsequent to the Merger, the Company has rationalized a number of manufacturing sites worldwide. The remaining actions under this program will result in additional manufacturing facility rationalizations, which are expected to be substantially completed by 2016.

Environmental Matters

The Company believes that there are no compliance issues associated with applicable environmental laws and regulations that would have a material adverse effect on the Company. The Company is also remediating environmental contamination resulting from past industrial activity at certain of its sites. Expenditures for remediation and environmental liabilities were $20 million in 2013, $14 million in 2012 and $25 million in 2011, and are estimated at $117 million in the aggregate for the years 2014 through 2018. These amounts do not consider potential recoveries from other parties. The Company has taken an active role in identifying and providing for these costs and, in management's opinion, the liabilities for all environmental matters, which are probable and reasonably estimable, have been accrued and totaled $213 million at December 31, 2013. Although it is not possible to predict with certainty the outcome of these environmental matters, or the ultimate costs of remediation, management does not believe that any reasonably possible expenditures that may be incurred in excess of the liabilities accrued should exceed $84 million in the aggregate. Management also does not believe that these expenditures should have a material adverse effect on the Company's financial position, results of operations, liquidity or capital resources for any year.

Merck believes that climate change could present risks to its business. Some of the potential impacts of climate change to its business include increased operating costs due to additional regulatory requirements, physical risks to the Company's facilities, water limitations and disruptions to its supply chain. These potential risks are integrated into the Company's business planning including investment in reducing energy, water use and greenhouse gas emissions. The Company does not believe these risks are material to its business at this time.

Geographic Area Information

The Company's operations outside the United States are conducted primarily through subsidiaries. Sales worldwide by subsidiaries outside the United States were 59% of sales in 2013, 57% of sales in 2012 and 57% of sales in 2011. The Company's worldwide business is subject to risks of currency fluctuations, governmental actions and other governmental proceedings abroad. The Company does not regard these risks as a deterrent to further expansion

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of its operations abroad. However, the Company closely reviews its methods of operations and adopts strategies responsive to changing economic and political conditions.

Merck has expanded its operations in countries located in Latin America, the Middle East, Africa, Eastern Europe and Asia Pacific. Business in these developing areas, while sometimes less stable, offers important opportunities for growth over time.

Financial information about geographic areas of the Company's business is provided in Item 8. "Financial Statements and Supplementary Data" below.

Available Information

The Company's Internet website address is www.merck.com. The Company will make available, free of charge at the "Investors" portion of its website, its Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and all amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC").

The Company's corporate governance guidelines and the charters of the Board of Directors' four standing committees are available on the Company's website at www.merck.com/about/leadership and all such information is available in print to any stockholder who requests it from the Company.

Item 1A. Risk Factors.

Investors should carefully consider all of the information set forth in this Form 10-K, including the following risk factors, before deciding to invest in any of the Company's securities. The risks below are not the only ones the Company faces. Additional risks not currently known to the Company or that the Company presently deems immaterial may also impair its business operations. The Company's business, financial condition, results of operations or prospects could be materially adversely affected by any of these risks. This Form 10-K also contains forward-looking statements that involve risks and uncertainties. The Company's results could materially differ from those anticipated in these forward-looking statements as a result of certain factors, including the risks it faces described below and elsewhere. See "Cautionary Factors that May Affect Future Results" below.

The Company is dependent on its patent rights, and if its patent rights are invalidated or circumvented, its business would be adversely affected.

Patent protection is considered, in the aggregate, to be of material importance in the Company's marketing of human health products in the United States and in most major foreign markets. Patents covering products that it has introduced normally provide market exclusivity, which is important for the successful marketing and sale of its products. The Company seeks patents covering each of its products in each of the markets where it intends to sell the products and where meaningful patent protection is available.

Even if the Company succeeds in obtaining patents covering its products, third parties or government authorities may challenge or seek to invalidate or circumvent its patents and patent applications. It is important for the Company's business to defend successfully the patent rights that provide market exclusivity for its products. The Company is often involved in patent disputes relating to challenges to its patents or infringement and similar claims against the Company. The Company aggressively defends its important patents both within and outside the United States, including by filing claims of infringement against other parties. See Item 8. "Financial Statements and Supplementary Data," Note 10. "Contingencies and Environmental Liabilities" below. In particular, manufacturers of generic pharmaceutical products from time to time file Abbreviated New Drug Applications with the FDA seeking to market generic forms of the Company's products prior to the expiration of relevant patents owned by the Company. The Company normally responds by vigorously defending its patent, including by filing lawsuits alleging patent infringement. Patent litigation and other challenges to the Company's patents are costly and unpredictable and may deprive the Company of market exclusivity for a patented product or, in some cases, third-party patents may prevent the Company from marketing and selling a product in a particular geographic area.

Additionally, certain foreign governments have indicated that compulsory licenses to patents may be granted in the case of national emergencies or in other circumstances, which could diminish or eliminate sales and profits from those regions and negatively affect the Company's results of operations. Further, court decisions relating to other

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companies' U.S. patents, potential U.S. legislation relating to patent reform, as well as regulatory initiatives may result in further erosion of intellectual property protection.

If one or more important products lose patent protection in profitable markets, sales of those products are likely to decline significantly as a result of generic versions of those products becoming available and, in the case of certain products, such a loss could result in a material non-cash impairment charge. The Company's results of operations may be adversely affected by the lost sales unless and until the Company has successfully launched commercially successful replacement products.

A chart listing the U.S. patent protection for the Company's major marketed products is set forth above in Item 1. "Business — Patents, Trademarks and Licenses."

As the Company's products lose market exclusivity, the Company generally experiences a significant and rapid loss of sales from those products.

The Company depends upon patents to provide it with exclusive marketing rights for its products for some period of time. Loss of patent protection for one of the Company's products typically leads to a significant and rapid loss of sales for that product, as lower priced generic versions of that drug become available. In the case of products that contribute significantly to the Company's sales, the loss of patent protection can have a material adverse effect on the Company's business, cash flow, results of operations, financial position and prospects. The patent that provides market exclusivity in the EU for Nasonex expired on January 1, 2014 and the Company anticipates that sales will decline significantly. Also, a court has ruled that a proposed generic form of Nasonex, made by Apotex, a generic manufacturer, does not infringe the Company's U.S. patent for Nasonex. If Apotex receives approval to market in the United States its generic form of Nasonex, the Company will experience a loss of Nasonex sales.

In addition, in September 2013, the EC approved a biosimilar for Remicade. While the Company is experiencing generic competition in certain smaller European markets, the Company anticipates a more substantial decline in Remicade sales following loss of market exclusivity in major European markets in February 2015.

Key Company products generate a significant amount of the Company's profits and cash flows, and any events that adversely affect the markets for its leading products could have a material and negative impact on results of operations and cash flows.

The Company's ability to generate profits and operating cash flow depends largely upon the continued profitability of the Company's key products, such as Januvia, Zetia, Remicade, Gardasil, Janumet, Isentress, Vytorin, and Nasonex. As a result of the Company's dependence on key products, any event that adversely affects any of these products or the markets for any of these products could have a significant impact on results of operations and cash flows. These events could include loss of patent protection, increased costs associated with manufacturing, generic or over-the-counter availability of the Company's product or a competitive product, the discovery of previously unknown side effects, results of post-market trials, increased competition from the introduction of new, more effective treatments and discontinuation or removal from the market of the product for any reason. If any of these events had a material adverse effect on the sales of certain products, such an event could result in a material non-cash impairment charge.

The Company's research and development efforts may not succeed in developing commercially successful products and the Company may not be able to acquire commercially successful products in other ways; in consequence, the Company may not be able to replace sales of successful products that have lost patent protection.

Like other major pharmaceutical companies, in order to remain competitive, the Company must continue to launch new products each year. Expected declines in sales of products after the loss of market exclusivity mean that the Company's future success is dependent on its pipeline of new products, including new products which it may develop through joint ventures and products which it is able to obtain through license or acquisition. To accomplish this, the Company commits substantial effort, funds and other resources to research and development, both through its own dedicated resources and through various collaborations with third parties. There is a high rate of failure inherent in the research and development process for new drugs. As a result, there is a high risk that funds invested by the Company in research programs will not generate financial returns. This risk profile is compounded by the fact that this research has a long investment cycle. To bring a pharmaceutical compound from the discovery phase to market may

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take a decade or more and failure can occur at any point in the process, including later in the process after significant funds have been invested.

For a description of the research and development process, see Item 1. “Business — Research and Development” above.

Each phase of testing is highly regulated and during each phase there is a substantial risk that the Company will encounter serious obstacles or will not achieve its goals, therefore, the Company may abandon a product in which it has invested substantial amounts of time and resources. Some of the risks encountered in the research and development process include the following: pre-clinical testing of a new compound may yield disappointing results; clinical trials of a new drug may not be successful; a new drug may not be effective or may have harmful side effects; a new drug may not be approved by the FDA for its intended use; it may not be possible to obtain a patent for a new drug; payers may refuse to cover or reimburse the new product; or sales of a new product may be disappointing.

The Company cannot state with certainty when or whether any of its products now under development will be approved or launched; whether it will be able to develop, license or otherwise acquire compounds, product candidates or products; or whether any products, once launched, will be commercially successful. The Company must maintain a continuous flow of successful new products and successful new indications or brand extensions for existing products sufficient both to cover its substantial research and development costs and to replace sales that are lost as profitable products lose market exclusivity or are displaced by competing products or therapies. Failure to do so in the short term or long term would have a material adverse effect on the Company’s business, results of operations, cash flow, financial position and prospects.

The Company’s success is dependent on the successful development and marketing of new products, which are subject to substantial risks.

Products that appear promising in development may fail to reach the market or fail to succeed for numerous reasons, including the following:

- findings of ineffectiveness, superior safety or efficacy of competing products, or harmful side effects in clinical or pre-clinical testing;
- failure to receive the necessary regulatory approvals, including delays in the approval of new products and new indications, and increasing uncertainties about the time required to obtain regulatory approvals and the benefit/risk standards applied by regulatory agencies in determining whether to grant approvals;
- failure in certain markets to obtain reimbursement commensurate with the level of innovation and clinical benefit presented by the product;
- lack of economic feasibility due to manufacturing costs or other factors; and
- preclusion from commercialization by the proprietary rights of others.

In the future, if certain pipeline programs are cancelled or if the Company believes that their commercial prospects have been reduced, the Company may recognize material non-cash impairment charges for those programs that were measured at fair value and capitalized in connection with mergers and acquisitions.

The Company is devoting substantial resources to the development of MK-3475, Merck’s anti-PD-1 immunotherapy, and there can be no assurance that it will be approved for marketing by the FDA.

On January 13, 2014, the Company announced that it had initiated a rolling submission to the FDA of a BLA for MK-3475, the Company's anti-PD-1 immunotherapy, for patients with advanced melanoma who have been previously treated with ipilimumab. The Company also stated that it expected to complete the submission in the first half of 2014. There can be no assurance that the Company will complete the submission, or that the FDA will approve MK-3475 for marketing and sale in the United States for the initial indication or for additional indications. In addition, if approved, there can be no assurance that MK-3475 will succeed in the marketplace.

The Company’s products, including products in development, can not be marketed unless the Company obtains and maintains regulatory approval.

The Company’s activities, including research, preclinical testing, clinical trials and manufacturing and marketing its products, are subject to extensive regulation by numerous federal, state and local governmental authorities

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in the United States, including the FDA, and by foreign regulatory authorities, including in the EU. In the United States, the FDA is of particular importance to the Company, as it administers requirements covering the testing, approval, safety, effectiveness, manufacturing, labeling and marketing of prescription pharmaceuticals. In many cases, the FDA requirements have increased the amount of time and money necessary to develop new products and bring them to market in the United States. Regulation outside the United States also is primarily focused on drug safety and effectiveness and, in many cases, cost reduction. The FDA and foreign regulatory authorities have substantial discretion to require additional testing, to delay or withhold registration and marketing approval and to otherwise preclude distribution and sale of a product.

Even if the Company is successful in developing new products, it will not be able to market any of those products unless and until it has obtained all required regulatory approvals in each jurisdiction where it proposes to market the new products. Once obtained, the Company must maintain approval as long as it plans to market its new products in each jurisdiction where approval is required. The Company's failure to obtain approval, significant delays in the approval process, or its failure to maintain approval in any jurisdiction will prevent it from selling the new products in that jurisdiction until approval is obtained, if ever. The Company would not be able to realize revenues for those new products in any jurisdiction where it does not have approval.

Developments following regulatory approval may adversely affect sales of the Company's products.

Even after a product reaches market, certain developments following regulatory approval, including results in post-marketing Phase 4 trials or other studies, may decrease demand for the Company's products, including the following:

- the re-review of products that are already marketed;
- new scientific information and evolution of scientific theories;
- the recall or loss of marketing approval of products that are already marketed;
- changing government standards or public expectations regarding safety, efficacy or labeling changes; and
- greater scrutiny in advertising and promotion.

In the past several years, clinical trials and post-marketing surveillance of certain marketed drugs of the Company and of competitors within the industry have raised concerns that have led to recalls, withdrawals or adverse labeling of marketed products. Clinical trials and post-marketing surveillance of certain marketed drugs also have raised concerns among some prescribers and patients relating to the safety or efficacy of pharmaceutical products in general that have negatively affected the sales of such products. In addition, increased scrutiny of the outcomes of clinical trials has led to increased volatility in market reaction. Further, these matters often attract litigation and, even where the basis for the litigation is groundless, considerable resources may be needed to respond.

In addition, following the wake of product withdrawals and other significant safety issues, health authorities such as the FDA, the EMA and Japan's Pharmaceutical and Medical Device Agency have increased their focus on safety when assessing the benefit/risk balance of drugs. Some health authorities appear to have become more cautious when making decisions about approvability of new products or indications and are re-reviewing select products that are already marketed, adding further to the uncertainties in the regulatory processes. There is also greater regulatory scrutiny, especially in the United States, on advertising and promotion and, in particular, direct-to-consumer advertising.

If previously unknown side effects are discovered or if there is an increase in negative publicity regarding known side effects of any of the Company's products, it could significantly reduce demand for the product or require the Company to take actions that could negatively affect sales, including removing the product from the market, restricting its distribution or applying for labeling changes. Further, in the current environment in which all pharmaceutical companies operate, the Company is at risk for product liability and consumer protection claims and civil and criminal governmental actions related to its products, research and/or marketing activities.

The Company faces intense competition from lower cost-generic products.

In general, the Company faces increasing competition from lower-cost generic products. The patent rights that protect its products are of varying strengths and durations. In addition, in some countries, patent protection is

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significantly weaker than in the United States or in the EU. In the United States and the EU, political pressure to reduce spending on prescription drugs has led to legislation and other measures which encourages the use of generic products. Although it is the Company's policy to actively protect its patent rights, generic challenges to the Company's products can arise at any time, and the Company's patents may not prevent the emergence of generic competition for its products.

Loss of patent protection for a product typically is followed promptly by generic substitutes, reducing the Company's sales of that product. Availability of generic substitutes for the Company's drugs may adversely affect its results of operations and cash flow. In addition, proposals emerge from time to time in the United States and other countries for legislation to further encourage the early and rapid approval of generic drugs. Any such proposal that is enacted into law could worsen this substantial negative effect on the Company's sales and, potentially, its business, cash flow, results of operations, financial position and prospects.

The Company faces intense competition from competitors' products which, in addition to other factors, could in certain circumstances lead to non-cash impairment charges.

The Company's products face intense competition from competitors' products. This competition may increase as new products enter the market. In such an event, the competitors' products may be safer or more effective, more convenient to use or more effectively marketed and sold than the Company's products. Alternatively, in the case of generic competition, including the generic availability of competitors' branded products, they may be equally safe and effective products that are sold at a substantially lower price than the Company's products. As a result, if the Company fails to maintain its competitive position, this could have a material adverse effect on its business, cash flow, results of operations, financial position and prospects. In addition, if products that were measured at fair value and capitalized in connection with mergers and acquisitions, such as the Company's portfolio products marketed for the treatment of chronic hepatitis C or Vytorin or Zetia, experience difficulties in the market that negatively impact product cash flows, the Company may recognize material non-cash impairment charges with respect to the value of those products.

The Company faces pricing pressure with respect to its products.

The Company faces increasing pricing pressure globally and, particularly in mature markets, from managed care organizations, government agencies and programs that could negatively affect the Company's sales and profit margins. In the United States, these include (i) practices of managed care groups and institutional and governmental purchasers, and (ii) U.S. federal laws and regulations related to Medicare and Medicaid, including the Medicare Prescription Drug Improvement and Modernization Act of 2003 and the Patient Protection and Affordable Care Act of 2010. Changes to the health care system enacted as part of health care reform in the United States, as well as increased purchasing power of entities that negotiate on behalf of Medicare, Medicaid, and private sector beneficiaries, could result in further pricing pressures. In addition, the Company faces the risk of litigation with the government over its pricing calculations.

Outside the United States, numerous major markets, including the EU and Japan, have pervasive government involvement in funding health care and, in that regard, fix the pricing and reimbursement of pharmaceutical and vaccine products. Consequently, in those markets, the Company is subject to government decision making and budgetary actions with respect to its products.

The Company expects pricing pressures to increase in the future.

The health care industry in the United States will continue to be subject to increasing regulation and political action. The Company believes that the health care industry will continue to be subject to increasing regulation as well as political and legal action, as future proposals to reform the health care system are considered by Congress and state legislatures.

In 2010, major health care reform was adopted into law and important market reforms have begun and will continue through full implementation in 2014. The new law is expected to expand access to health care to about 32 million Americans by the end of the decade. In 2010, the minimum rebate to states participating in the Medicaid program increased from 15.1% to 23.1% on the Company's branded prescription drugs; the Medicaid rebate was extended to Medicaid Managed Care Organizations; and eligibility for the federal 340B drug discount program was

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extended to rural referral centers, sole community hospitals, critical access hospitals, certain free standing cancer hospitals, and certain additional children's hospitals.

In addition, the law requires pharmaceutical manufacturers to pay a 50% point of service discount to Medicare Part D beneficiaries when they are in the Medicare Part D coverage gap (i.e., the so-called "donut hole"). Also, the Company is required to pay an annual health care reform fee, which is assessed on all branded prescription drug manufacturers and importers. The fee is calculated based on the industry's total sales of branded prescription drugs to specified government programs. The percentage of a manufacturer's sales that are included is determined by a tiered scale based on the manufacturer's individual revenues. Each manufacturer's portion of the total annual fee is based on the manufacturer's proportion of the total includable sales in the prior year. The annual industry fee for 2013 was $2.8 billion and will be $3.0 billion in 2014.

The Company cannot predict the likelihood of future changes in the health care industry in general, or the pharmaceutical industry in particular, or what impact they may have on the Company's results of operations, financial condition or business.

The uncertainty in global economic conditions together with austerity measures being taken by certain governments could negatively affect the Company's operating results.

The uncertainty in global economic conditions may result in a further slowdown to the global economy that could affect the Company's business by reducing the prices that drug wholesalers and retailers, hospitals, government agencies and managed health care providers may be able or willing to pay for the Company's products or by reducing the demand for the Company's products, which could in turn negatively impact the Company's sales and result in a material adverse effect on the Company's business, cash flow, results of operations, financial position and prospects. Global efforts toward health care cost containment continue to exert pressure on product pricing and market access. In many international markets, government-mandated pricing actions have reduced prices of generic and patented drugs. In addition, other austerity measures negatively affected the Company's revenue performance in 2013. The Company anticipates these pricing actions, including the biennial price reductions in Japan, and other austerity measures will continue to negatively affect revenue performance in 2014.

The Company continues to monitor the credit and economic conditions within Greece, Spain, Italy and Portugal, among other members of the EU. These economic conditions, as well as inherent variability of timing of cash receipts, have resulted in, and may continue to result in, an increase in the average length of time that it takes to collect on the accounts receivable outstanding in these countries and may also impact the likelihood of collecting 100% of outstanding accounts receivable. As of December 31, 2013, the Company's accounts receivable in Greece, Italy, Spain and Portugal totaled approximately $900 million. Of this amount, hospital and public sector receivables were approximately $600 million in the aggregate, of which approximately 9%, 41%, 40% and 10% related to Greece, Italy, Spain and Portugal, respectively. As of December 31, 2013, the Company's total accounts receivable outstanding for more than one year were approximately $200 million, of which approximately 50% related to accounts receivable in Greece, Italy, Spain and Portugal, mostly comprised of hospital and public sector receivables.

If credit and economic conditions in Europe worsen, the resulting economic and currency impacts in the affected markets and globally could have a material adverse effect on the Company's results.

The Company has significant global operations, which expose it to additional risks, and any adverse event could have a material negative impact on the Company's results of operations.

The extent of the Company's operations outside the United States is significant. Risks inherent in conducting a global business include:

- changes in medical reimbursement policies and programs and pricing restrictions in key markets;
- multiple regulatory requirements that could restrict the Company's ability to manufacture and sell its products in key markets;
- trade protection measures and import or export licensing requirements;
- foreign exchange fluctuations;

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- diminished protection of intellectual property in some countries; and
- possible nationalization and expropriation.

In addition, there may be changes to the Company's business and political position if there is instability, disruption or destruction in a significant geographic region, regardless of cause, including war, terrorism, riot, civil insurrection or social unrest; and natural or man-made disasters, including famine, flood, fire, earthquake, storm or disease.

The Company is evaluating the strategic options for its Merck Consumer Care and Animal Health businesses, however, there can be no assurance that any transactions will occur.

On January 13, 2014, the Company announced that it was evaluating the respective roles of Merck's Animal Health and Consumer Care businesses in the Company's strategy for long-term value creation. Furthermore, the Company stated that it expects to complete the evaluation process and take action, if any, in 2014. The Company could reach different decisions about the two businesses. There can be no assurance that the Company will determine to take action with respect to either business or that it will be able to effectuate any action it determines to take.

The Company has experienced difficulties and delays in manufacturing of certain of its products.

As previously disclosed, Merck has, in the past, experienced difficulties in manufacturing certain of its vaccines and other products. The Company may, in the future, experience difficulties and delays inherent in manufacturing its products, such as (i) failure of the Company or any of its vendors or suppliers to comply with Current Good Manufacturing Practices and other applicable regulations and quality assurance guidelines that could lead to manufacturing shutdowns, product shortages and delays in product manufacturing; (ii) construction delays related to the construction of new facilities or the expansion of existing facilities, including those intended to support future demand for the Company's products; and (iii) other manufacturing or distribution problems including changes in manufacturing production sites and limits to manufacturing capacity due to regulatory requirements, changes in types of products produced, or physical limitations that could impact continuous supply. Manufacturing difficulties can result in product shortages, leading to lost sales.

The Company faces significant litigation related to Vioxx.

On September 30, 2004, Merck voluntarily withdrew Vioxx, its arthritis and acute pain medication, from the market worldwide. Although Merck has settled the major portion of the U.S. Product Liability litigation, the Company still faces material litigation arising from the voluntary withdrawal of Vioxx.

In addition to the Vioxx Product Liability Lawsuits and lawsuits from certain states that did not participate in a previously-disclosed settlement, various purported class actions and individual lawsuits have been brought against Merck and several current and former officers and directors of Merck alleging that Merck made false and misleading statements regarding Vioxx in violation of the federal securities laws and state laws (all of these suits are referred to as the "Vioxx Securities Lawsuits"). The Vioxx Securities Lawsuits have been transferred by the Judicial Panel on Multidistrict Litigation to the U.S. District Court for the District of New Jersey before District Judge Stanley R. Chesler for inclusion in a nationwide multidistrict litigation, and have been consolidated for all purposes. Merck has also been named as a defendant in actions in various countries outside the United States. (All of these suits are referred to as the "Vioxx International Lawsuits".)

The Vioxx litigation is discussed more fully in Item 8. "Financial Statements and Supplementary Data," Note 10. "Contingencies and Environmental Liabilities" below. The Company believes that it has meritorious defenses to the Vioxx Product Liability Lawsuits, Vioxx Securities Lawsuits and Vioxx International Lawsuits (collectively, the "Vioxx Litigation") and will vigorously defend against them. The Company's insurance coverage with respect to the Vioxx Litigation will not be adequate to cover its defense costs and any losses.

The Company is not currently able to estimate any additional amounts that it may be required to pay in connection with the Vioxx Litigation. These proceedings are still expected to continue for years and the Company cannot predict the course the proceedings will take. In view of the inherent difficulty of predicting the outcome of litigation, the Company is unable to predict the outcome of these matters, and at this time cannot reasonably estimate the possible loss or range of loss with respect to the remaining Vioxx Litigation. The Company has not established any material reserves for any potential liability relating to the remaining Vioxx Litigation although it has established reserves related

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to the settlement of certain Vioxx International Lawsuits and with respect to certain other Vioxx Product Liability Lawsuits, all of which are discussed in Item 8. “Financial Statements and Supplementary Data,” Note 10. “Contingencies and Environmental Liabilities” below.

Unfavorable outcomes in the Vioxx Litigation resulting in the payment of substantial damages could have a material adverse effect on the Company’s business, cash flow, results of operations, financial position and prospects.

Issues concerning Vytorin and the ENHANCE clinical trial have had an adverse effect on sales of Vytorin and Zetia in the United States and results from the IMPROVE-IT trial could have a material adverse effect on such sales.

The Company sells Vytorin and Zetia. As previously disclosed, in January 2008, the Company announced the results of the ENHANCE clinical trial, an imaging trial in 720 patients with heterozygous familial hypercholesterolemia, a rare genetic condition that causes very high levels of LDL “bad” cholesterol and greatly increases the risk for premature coronary artery disease. As previously reported, despite the fact that ezetimibe/simvastatin 10/80 mg (Vytorin) significantly lowered LDL “bad” cholesterol more than simvastatin 80 mg alone, there was no significant difference between treatment with ezetimibe/simvastatin and simvastatin alone on the pre-specified primary endpoint, a change in the thickness of carotid artery walls over two years as measured by ultrasound. In January 2009, the FDA announced that it had completed its review of the final clinical study report of ENHANCE. The FDA stated that the results from ENHANCE did not change its position that elevated LDL cholesterol is a risk factor for cardiovascular disease and that lowering LDL cholesterol reduces the risk for cardiovascular disease.

The IMPROVE-IT trial, which is currently underway and is designed to provide cardiovascular outcomes data for ezetimibe/simvastatin in patients presenting with acute coronary syndrome, is scheduled for completion later in 2014. No incremental benefit of ezetimibe/simvastatin on cardiovascular morbidity and mortality over and above that demonstrated for simvastatin has been established. In the IMPROVE-IT trial, blinded interim efficacy analyses were conducted by the Data Safety Monitoring Board (“DSMB”) for the trial when approximately 50% and 75% of the endpoints were accrued, respectively. In each case, the DSMB recommended continuing the trial without change in design. The DSMB completed another planned interim review of the study data in March 2013 and again recommended that the study continue.

The issues concerning the ENHANCE clinical trial have had an adverse effect on sales of Vytorin and Zetia and could continue to have an adverse effect on such sales. If the results of the IMPROVE-IT trial fail to demonstrate an incremental benefit of ezetimibe/simvastatin on cardiovascular morbidity and mortality over and above that demonstrated for simvastatin, sales of Zetia and Vytorin could be materially adversely affected. If sales of such products are materially adversely affected, the Company’s business, cash flow, results of operations, financial position and prospects could also be materially adversely affected and the Company could be required to record a material non-cash impairment charge.

The Company may not be able to realize the expected benefits of its investments in emerging markets.

The Company has been taking steps to increase its presence in emerging markets. However, there is no guarantee that the Company’s efforts to expand sales in emerging markets will succeed. Some countries within emerging markets may be especially vulnerable to periods of global financial instability or may have very limited resources to spend on health care. In order for the Company to successfully implement its emerging markets strategy, it must attract and retain qualified personnel. The Company may also be required to increase its reliance on third-party agents within less developed markets. In addition, many of these countries have currencies that fluctuate substantially and if such currencies devalue and the Company cannot offset the devaluations, the Company’s financial performance within such countries could be adversely affected.

For instance, in February 2013, the Venezuelan government devalued its currency. As a result of that devaluation, the Company recognized losses due to exchange. If the Venezuelan government were to devalue its currency again in 2014, the Company would recognize additional losses due to exchange and the Company expects that the impact would be greater than in 2013.

In addition, in 2013 in China, governmental investigations involving other multinational pharmaceutical companies and domestic health care companies and medical institutes adversely affected the Company’s near term growth prospects in that market. While the Company continues to believe that China represents an important growth

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opportunity, these events, coupled with heightened scrutiny of the health care industry, may continue to have an impact on product pricing and market access generally. The Company anticipates that the reported inquiries made by various governmental authorities involving multinational pharmaceutical companies in China may continue.

For all these reasons, sales within emerging markets carry significant risks. However, a failure to continue to expand the Company's business in emerging markets could have a material adverse effect on the business, financial condition or results of the Company's operations.

The Company is exposed to market risk from fluctuations in currency exchange rates and interest rates.

The Company operates in multiple jurisdictions and, as such, virtually all sales are denominated in currencies of the local jurisdiction. Additionally, the Company has entered and will enter into acquisition, licensing, borrowings or other financial transactions that may give rise to currency and interest rate exposure.

Since the Company cannot, with certainty, foresee and mitigate against such adverse fluctuations, fluctuations in currency exchange rates and interest rates could negatively affect the Company's results of operations, financial position and cash flows as occurred in Venezuela in 2013.

In order to mitigate against the adverse impact of these market fluctuations, the Company will from time to time enter into hedging agreements. While hedging agreements, such as currency options and interest rate swaps, may limit some of the exposure to exchange rate and interest rate fluctuations, such attempts to mitigate these risks may be costly and not always successful.

The Company is subject to evolving and complex tax laws, which may result in additional liabilities that may affect results of operations.

The Company is subject to evolving and complex tax laws in the jurisdictions in which it operates. Significant judgment is required for determining the Company's tax liabilities, and the Company's tax returns are periodically examined by various tax authorities. The Company believes that its accrual for tax contingencies is adequate for all open years based on past experience, interpretations of tax law, and judgments about potential actions by tax authorities; however, due to the complexity of tax contingencies, the ultimate resolution of any tax matters may result in payments greater or less than amounts accrued.

In April 2013, President Obama's administration re-proposed significant changes to the U.S. international tax laws, including changes that would tax companies on "excess returns" attributable to certain offshore intangible assets, limit U.S. tax deductions for expenses related to un-repatriated foreign-source income and modify the U.S. foreign tax credit rules. Other potentially significant changes to the U.S. international laws, including a move toward a territorial tax system and taxing currently the accumulated unrepatriated foreign earnings of controlled foreign corporations, have been set out by various Congressional committees. The Company cannot determine whether these proposals will be enacted into law or what, if any, changes may be made to such proposals prior to their being enacted into law. If these or other changes to the U.S. international tax laws are enacted, they could have a significant impact on the financial results of the Company.

In addition, the Company may be affected by changes in tax laws, including tax rate changes, changes to the laws related to the remittance of foreign earnings (deferral), or other limitations impacting the U.S. tax treatment of foreign earnings, new tax laws, and revised tax law interpretations in domestic and foreign jurisdictions.

Pharmaceutical products can develop unexpected safety or efficacy concerns.

Unexpected safety or efficacy concerns can arise with respect to marketed products, whether or not scientifically justified, leading to product recalls, withdrawals, or declining sales, as well as product liability, consumer fraud and/or other claims, including potential civil or criminal governmental actions.

Changes in laws and regulations could adversely affect the Company's business.

All aspects of the Company's business, including research and development, manufacturing, marketing, pricing, sales, litigation and intellectual property rights, are subject to extensive legislation and regulation. Changes in applicable federal and state laws and agency regulations could have a material adverse effect on the Company's business.

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Reliance on third party relationships and outsourcing arrangements could adversely affect the Company's business.
The Company depends on third parties, including suppliers, alliances with other pharmaceutical and biotechnology companies, and third party service providers, for key aspects of its business including development, manufacture and commercialization of its products and support for its information technology systems. Failure of these third parties to meet their contractual, regulatory and other obligations to the Company or the development of factors that materially disrupt the relationships between the Company and these third parties could have a material adverse effect on the Company's business.
The Company is increasingly dependent on sophisticated information technology and infrastructure.
The Company is increasingly dependent on sophisticated information technology and infrastructure. The size and complexity of the Company's computer systems makes them potentially vulnerable to service interruption, malicious intrusion and random attacks. In addition, data privacy or security breaches by employees or others may pose a risk that data, including intellectual property or personal information, may be exposed to unauthorized individuals or to the public. There can be no assurance that the Company's efforts to protect its data and systems will prevent service interruption or the loss of critical or sensitive information which could result in financial, legal, business or reputational harm to the Company.
Negative events in the animal health industry could have a negative impact on future results of operations.
Future sales of key animal health products could be adversely affected by a number of risk factors including certain risks that are specific to the animal health business. For example, the outbreak of disease carried by animals, such as Bovine Spongiform Encephalopathy or mad cow disease, could lead to their widespread death and precautionary destruction as well as the reduced consumption and demand for animals, which could adversely impact the Company's results of operations. Also, the outbreak of any highly contagious diseases near the Company's main production sites could require the Company to immediately halt production of vaccines at such sites or force the Company to incur substantial expenses in procuring raw materials or vaccines elsewhere. Other risks specific to animal health include epidemics and pandemics, government procurement and pricing practices, weather and global agribusiness economic events. As the Animal Health segment of the Company's business becomes more significant, the impact of any such events on future results of operations would also become more significant.
In 2013, the Company voluntarily suspended sales of Zilmax, an animal feed supplement, in the United States and Canada after concerns were raised about cattle that had been fed Zilmax. The suspension materially reduced the sales of Zilmax. The Company can give no assurances as to when sales of Zilmax in the United States and Canada will resume.
Biologics carry unique risks and uncertainties, which could have a negative impact on future results of operations.
The successful development, testing, manufacturing and commercialization of biologics, particularly human and animal health vaccines, is a long, expensive and uncertain process. There are unique risks and uncertainties with biologics, including:

- There may be limited access to and supply of normal and diseased tissue samples, cell lines, pathogens, bacteria, viral strains and other biological materials. In addition, government regulations in multiple jurisdictions, such as the United States and the EU, could result in restricted access to, or transport or use of, such materials. If the Company loses access to sufficient sources of such materials, or if tighter restrictions are imposed on the use of such materials, the Company may not be able to conduct research activities as planned and may incur additional development costs.
- The development, manufacturing and marketing of biologics are subject to regulation by the FDA, the EMA and other regulatory bodies. These regulations are often more complex and extensive than the regulations applicable to other pharmaceutical products. For example, in the United States, a BLA, including both preclinical and clinical trial data and extensive data regarding the manufacturing

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procedures, is required for human vaccine candidates and FDA approval is required for the release of each manufactured commercial lot.

- Manufacturing biologics, especially in large quantities, is often complex and may require the use of innovative technologies to handle living micro-organisms. Each lot of an approved biologic must undergo thorough testing for identity, strength, quality, purity and potency. Manufacturing biologics requires facilities specifically designed for and validated for this purpose, and sophisticated quality assurance and quality control procedures are necessary. Slight deviations anywhere in the manufacturing process, including filling, labeling, packaging, storage and shipping and quality control and testing, may result in lot failures, product recalls or spoilage. When changes are made to the manufacturing process, the Company may be required to provide pre-clinical and clinical data showing the comparable identity, strength, quality, purity or potency of the products before and after such changes.
- Biologics are frequently costly to manufacture because production ingredients are derived from living animal or plant material, and most biologics cannot be made synthetically. In particular, keeping up with the demand for vaccines may be difficult due to the complexity of producing vaccines.
- The use of biologically derived ingredients can lead to allegations of harm, including infections or allergic reactions, or closure of product facilities due to possible contamination. Any of these events could result in substantial costs.

Product liability insurance for products may be limited, cost prohibitive or unavailable.

As a result of a number of factors, product liability insurance has become less available while the cost has increased significantly. With respect to product liability, the Company self-insures substantially all of its risk, as the availability of commercial insurance has become more restrictive. The Company has evaluated its risks and has determined that the cost of obtaining product liability insurance outweighs the likely benefits of the coverage that is available and, as such, has no insurance for certain product liabilities effective August 1, 2004, including liability for legacy Merck products first sold after that date. The Company will continually assess the most efficient means to address its risk; however, there can be no guarantee that insurance coverage will be obtained or, if obtained, will be sufficient to fully cover product liabilities that may arise.

Cautionary Factors that May Affect Future Results

(Cautionary Statements Under the Private Securities Litigation Reform Act of 1995)

This report and other written reports and oral statements made from time to time by the Company may contain so-called “forward-looking statements,” all of which are based on management’s current expectations and are subject to risks and uncertainties which may cause results to differ materially from those set forth in the statements. One can identify these forward-looking statements by their use of words such as “anticipates,” “expects,” “plans,” “will,” “estimates,” “forecasts,” “projects” and other words of similar meaning. One can also identify them by the fact that they do not relate strictly to historical or current facts. These statements are likely to address the Company’s growth strategy, financial results, product development, product approvals, product potential, and development programs. One must carefully consider any such statement and should understand that many factors could cause actual results to differ materially from the Company’s forward-looking statements. These factors include inaccurate assumptions and a broad variety of other risks and uncertainties, including some that are known and some that are not. No forward-looking statement can be guaranteed and actual future results may vary materially. The Company does not assume the obligation to update any forward-looking statement. The Company cautions you not to place undue reliance on these forward-looking statements. Although it is not possible to predict or identify all such factors, they may include the following:

- Competition from generic products as the Company’s products lose patent protection.
- Increased “brand” competition in therapeutic areas important to the Company’s long-term business performance.
- The difficulties and uncertainties inherent in new product development. The outcome of the lengthy and complex process of new product development is inherently uncertain. A drug candidate can fail at any stage of the process and one or more late-stage product candidates could fail to receive regulatory approval. New product candidates may appear promising in development but fail to reach the market because of efficacy or safety concerns, the inability

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to obtain necessary regulatory approvals, the difficulty or excessive cost to manufacture and/or the infringement of patents or intellectual property rights of others. Furthermore, the sales of new products may prove to be disappointing and fail to reach anticipated levels.

•Pricing pressures, both in the United States and abroad, including rules and practices of managed care groups, judicial decisions and governmental laws and regulations related to Medicare, Medicaid and health care reform, pharmaceutical reimbursement and pricing in general.

•Changes in government laws and regulations, including laws governing intellectual property, and the enforcement thereof affecting the Company's business.

•Efficacy or safety concerns with respect to marketed products, whether or not scientifically justified, leading to product recalls, withdrawals or declining sales.

•Significant litigation related to Vioxx and Fosamax.

•Legal factors, including product liability claims, antitrust litigation and governmental investigations, including tax disputes, environmental concerns and patent disputes with branded and generic competitors, any of which could preclude commercialization of products or negatively affect the profitability of existing products.

•Lost market opportunity resulting from delays and uncertainties in the approval process of the FDA and foreign regulatory authorities.

•Increased focus on privacy issues in countries around the world, including the United States and the EU. The legislative and regulatory landscape for privacy and data protection continues to evolve, and there has been an increasing amount of focus on privacy and data protection issues with the potential to affect directly the Company's business, including recently enacted laws in a majority of states in the United States requiring security breach notification.

•Changes in tax laws including changes related to the taxation of foreign earnings.

•Changes in accounting pronouncements promulgated by standard-setting or regulatory bodies, including the Financial Accounting Standards Board and the SEC, that are adverse to the Company.

•Economic factors over which the Company has no control, including changes in inflation, interest rates and foreign currency exchange rates.

This list should not be considered an exhaustive statement of all potential risks and uncertainties. See "Risk Factors" above.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

The Company's corporate headquarters is currently located in Whitehouse Station, New Jersey, although the Company has announced that it intends to move its headquarters to Kenilworth, New Jersey in 2015. The Company's U.S. commercial operations are headquartered in Upper Gwynedd, Pennsylvania. The Company's U.S. pharmaceutical business is conducted through divisional headquarters located in Upper Gwynedd and Whitehouse Station. The Company's vaccines business is conducted through divisional headquarters located in West Point, Pennsylvania. Merck's Animal Health and Consumer Care global headquarters functions are located in Summit, New Jersey, although the Company has announced it will vacate its Summit property. Principal U.S. research facilities are located in Rahway, Kenilworth and Summit, New Jersey, West Point, Pennsylvania, Palo Alto, California, Boston, Massachusetts, and Elkhorn, Nebraska (Animal Health). Principal research facilities outside the United States are located in the Netherlands, Switzerland and China. The Company also has production facilities for human health products at 12 locations in the United States and Puerto Rico. Outside the United States, through subsidiaries, the Company owns or has an interest in manufacturing plants or other properties in Australia, Canada, Japan, Singapore, South Africa, and other countries in Western Europe, Central and South America, and Asia.

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Capital expenditures were $1.5 billion in 2013, $2.0 billion in 2012 and $1.7 billion in 2011. In the United States, these amounted to $902 million for 2013, $1.3 billion for 2012 and $1.2 billion in 2011. Abroad, such expenditures amounted to $646 million for 2013, $662 million for 2012 and $516 million for 2011.

The Company and its subsidiaries own their principal facilities and manufacturing plants under titles that they consider to be satisfactory. The Company considers that its properties are in good operating condition and that its machinery and equipment have been well maintained. Plants for the manufacture of products are suitable for their intended purposes and have capacities and projected capacities adequate for current and projected needs for existing Company products. Some capacity of the plants is being converted, with any needed modification, to the requirements of newly introduced and future products.

Item 3. Legal Proceedings.

The information called for by this Item is incorporated herein by reference to Item 8. “Financial Statements and Supplementary Data,” Note 10. “Contingencies and Environmental Liabilities”.

Item 4. Mine Safety Disclosures.

Not Applicable

Executive Officers of the Registrant (ages as of February 1, 2014)

At the time of the Merger, November 3, 2009, certain executive officers assumed their position in the newly merged company as noted below.

KENNETH C. FRAZIER — Age 59

December 2011 — Chairman, President and Chief Executive Officer, Merck & Co., Inc.

January 2011 — President and Chief Executive Officer, Merck & Co., Inc.

May 2010 — President, Merck & Co., Inc. — responsible for the Company’s three largest worldwide divisions — Global Human Health, Merck Manufacturing Division and Merck Research Laboratories

Prior to May 2010, Mr. Frazier was Executive Vice President and President, Global Human Health, Merck & Co., Inc. from 2007 to 2010.

ADELE D. AMBROSE — Age 57

November 2009 — Senior Vice President and Chief Communications Officer, Merck & Co., Inc. — responsible for the Global Communications organization

December 2007 — Vice President and Chief Communications Officer, Merck & Co., Inc. — responsible for the Global Communications organization

JOHN CANAN — Age 57

November 2009 — Senior Vice President Finance-Global Controller, Merck & Co., Inc. — responsible for the Company’s global controller’s organization including all accounting, controls, external reporting and financial standards and policies

January 2008 — Senior Vice President and Controller, Merck & Co., Inc. — responsible for the Corporate Controller’s Group

WILLIE A. DEESE — Age 58

November 2009 — Executive Vice President and President, Merck Manufacturing Division, Merck & Co., Inc. — responsible for the Company’s global manufacturing, procurement, and distribution and logistics functions

January 2008 — Executive Vice President and President, Merck Manufacturing Division, Merck & Co., Inc. — responsible for the Company’s global manufacturing, procurement, and distribution and logistics functions

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RICHARD R. DELUCA, JR. — Age 51
September 2011 — Executive Vice President and President, Merck Animal Health, Merck & Co., Inc. — responsible for the Merck Animal Health organization
Prior to September 2011, Mr. DeLuca was Chief Financial Officer, Becton Dickinson Biosciences (a medical technology company) since 2010 and President, Wyeth's Fort Dodge Animal Health division from 2007 to 2010. He also served as Chief Operating Officer, Fort Dodge from 2006 to 2007 and Executive Vice President and Chief Financial Officer from 2002 to 2006.
CUONG VIET DO — Age 47
October 2011 — Executive Vice President and Chief Strategy Officer, Merck & Co., Inc. — responsible for leading the formulation and execution of the Company's long term strategic plan
Prior to October 2011, Mr. Do was Senior Vice President, Corporate Strategy and Business Development, TE Connectivity (a global company that designs, manufactures and markets products for customers in a variety of industries) from 2009 to 2011 and Senior Vice President and Chief Strategy Officer, Lenovo (a personal technology company) from 2006 to 2009.
CLARK GOLESTANI — Age 47
December 2012 — Executive Vice President and Chief Information Officer, Merck & Co., Inc. — responsible for Merck's global information technology (IT)
August 2008 — Vice President, Merck Research Laboratories Information Technology, Merck & Co., Inc. — responsible for global IT for Merck's Research & Development division, including Basic Research, PreClinical, Clinical and Regulatory
MIRIAN M. GRADDICK-WEIR — Age 59
November 2009 — Executive Vice President, Human Resources, Merck & Co., Inc. — responsible for the Global Human Resources organization
January 2008 — Executive Vice President, Human Resources, Merck & Co., Inc. — responsible for the Global Human Resources organization
BRIDGETTE P. HELLER — Age 52
March 2010 — Executive Vice President and President, Merck Consumer Care, Merck & Co., Inc. — responsible for the Merck Consumer Care organization
Prior to March 2010, Ms. Heller was President, Johnson & Johnson's Global Baby Business Unit from 2007 to 2010.
MICHAEL J. HOLSTON — Age 51
June 2012 — Executive Vice President and Chief Ethics and Compliance Officer, Merck & Co., Inc. — responsible for the Company's compliance function, including Global Safety & Environment, Systems Assurance, Ethics and Privacy
Prior to June 2012, Mr. Holston was Executive Vice President, General Counsel and Board Secretary for Hewlett-Packard Company (a technology company) since 2007, where he oversaw the legal, compliance, government affairs, privacy and ethics operations.
PETER N. KELLOGG — Age 57
November 2009 — Executive Vice President and Chief Financial Officer, Merck & Co., Inc. — responsible for the Company's worldwide financial organization, investor relations, corporate development, global facilities, and the Company's joint venture relationships
August 2007 — Executive Vice President and Chief Financial Officer, Merck & Co., Inc. — responsible for the Company's worldwide financial organization, investor relations, corporate development and licensing, and the Company's joint venture relationships

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BRUCE N. KUHLIK — Age 57
November 2009 — Executive Vice President and General Counsel, Merck & Co., Inc. — responsible for legal, communications, and public policy functions
January 2008 — Executive Vice President and General Counsel, Merck & Co., Inc. — responsible for legal, communications, and public policy functions
ROGER M. PERLMUTTER — Age 61
April 2013 — Executive Vice President and President, Merck Research Laboratories, Merck & Co., Inc. — responsible for the Company's research and development efforts worldwide
Prior to April 2013, Dr. Perlmutter was Executive Vice President of Research and Development, Amgen Inc. from 2001 to 2012.
MICHAEL ROSENBLATT, M.D. — Age 66
December 2009 — Executive Vice President and Chief Medical Officer, Merck & Co., Inc. — the Company's primary voice to the global medical community on critical issues such as patient safety and oversight for the Company's Global Center for Scientific Affairs
Prior to December 2009, Dr. Rosenblatt was the Dean of Tufts University School of Medicine since 2003.
ADAM H. SCHECHTER — Age 49
May 2010 — Executive Vice President and President, Global Human Health, Merck & Co., Inc. — responsible for the Company's pharmaceutical and vaccine worldwide business
November 2009 — President, Global Human Health, U.S. Market-Integration Leader, Merck & Co., Inc. — commercial responsibility in the United States for the Company's portfolio of prescription medicines. Leader for the integration efforts for the Merck/Schering-Plough merger across all divisions and functions.
August 2007 — President, Global Pharmaceuticals, Global Human Health, Merck & Co., Inc. — global responsibilities for the Company's atherosclerosis/cardiovascular, diabetes/obesity, oncology, specialty/neuroscience, respiratory, bone, arthritis and analgesia franchises as well as commercial responsibility in the United States for the Company's portfolio of prescription medicines
On February 3, 2014, the Board accepted the resignation of John Canan, who will retire from the Company on March 1, and elected Rita Karachun as Senior Vice President Finance - Global Controller, effective March 1, 2014, making her the Company's principal accounting officer. Ms. Karachun, age 50, has served as Assistant Controller of the Company since November 2009. Prior to her appointment as Assistant Controller of the Company, Ms. Karachun served as the Assistant Controller of Schering-Plough Corporation since February 2007, responsible for preparing financial statements and for the worldwide consolidation of international entities.
All officers listed above serve at the pleasure of the Board of Directors. None of these officers was elected pursuant to any arrangement or understanding between the officer and the Board.

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PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

The principal market for trading of the Company's Common Stock is the New York Stock Exchange ("NYSE") under the symbol MRK. The Common Stock market price information set forth in the table below is based on historical NYSE market prices.

The following table also sets forth, for the calendar periods indicated, the dividend per share information.

Cash Dividends Paid per Common Share

	Year	4th Q	3rd Q	2nd Q	1st Q
2013	$1.72	$0.43	$0.43	$0.43	$0.43
2012	$1.68	$0.42	$0.42	$0.42	$0.42

Common Stock Market Prices

2013	4th Q	3rd Q	2nd Q	1st Q
High	$50.42	$49.08	$50.16	$45.42
Low	$44.62	$46.03	$43.77	$40.83
2012				
High	$48.00	$45.70	$41.75	$39.43
Low	$40.02	$41.06	$37.02	$36.91

As of January 31, 2014, there were approximately 148,780 shareholders of record.

Issuer purchases of equity securities for the three months ended December 31, 2013 were as follows:

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased[1]	Average Price Paid Per Share	($ in millions) Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs[1]
October 1 — October 31	6,879,788[2]	$47.55	$10,506
November 1 — November 30	1,411,050	$46.69	$10,440
December 1 — December 31	1,265,007	$49.13	$10,378
Total	9,555,845	$47.63	$10,378

(1) All shares purchased during the period were made as part of a plan approved by the Board of Directors in May 2013 to purchase up to $15 billion in Merck shares.

(2) Includes 5.5 million shares received in October upon settlement of an accelerated share repurchase agreement for which no cash was paid during the period.

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Performance Graph

The following graph assumes a $100 investment on December 31, 2008, and reinvestment of all dividends, in each of the Company's Common Shares, the S&P 500 Index, and a composite peer group of the major U.S.-based pharmaceutical companies, which are: Abbott Laboratories, Bristol-Myers Squibb Company, Johnson & Johnson, Eli Lilly and Company, and Pfizer Inc.

Comparison of Five-Year Cumulative Total Return*

Merck & Co., Inc., Composite Peer Group and S&P 500 Index

	End of Period Value	2013/2008 CAGR**	
MERCK	$320	26	%
PEER GRP.***	196	14	
S&P 500	228	18	

	2008	2009	2010	2011	2012	2013
MERCK	100.00	199.24	204.95	224.50	252.10	319.67
PEER GRP.	100.00	107.89	107.41	130.56	150.00	196.15
S&P 500	100.00	126.47	145.55	148.59	172.34	228.11

* The Performance Graph reflects Schering-Plough's stock performance from December 31, 2008 through the close of the Merger and Merck's stock performance from November 3, 2009 through December 31, 2013. Assumes the cash component of the merger consideration was reinvested in Merck stock at the closing price on November 3, 2009.

** Compound Annual Growth Rate

*** As discussed above, on November 3, 2009, Merck and Schering-Plough completed the Merger in which Merck (subsequently renamed Merck Sharp & Dohme Corp. ("MSD")) became a wholly-owned subsidiary of Schering-Plough (subsequently renamed Merck & Co., Inc.). As a result of the Merger, MSD no longer exists as a publicly traded entity and ceased all trading of its common stock as of the close of business on the Merger date. MSD has been permanently removed from the peer group index. In addition, Abbott Laboratories ("Abbott") is currently included in the peer group; however, in 2013, Abbott spun off its pharmaceutical business into AbbVie Inc. In the future, the Company intends to remove Abbott from the peer group calculation.

This Performance Graph will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities and Exchange Act of 1934, except to the extent that the Company specifically incorporates it by reference. In addition, the Performance Graph will not be deemed to be "soliciting material" or to be "filed" with the Securities and Exchange Commission or subject to Regulation 14A or 14C, other than as provided in Regulation S-K, or to the liabilities of section 18 of the Securities Exchange Act of 1934, except to the extent that the Company specifically requests that such information be treated as soliciting material or specifically incorporates it by reference into a filing under the Securities Act or the Exchange Act.

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Item 6. Selected Financial Data.

The following selected financial data should be read in conjunction with Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and consolidated financial statements and notes thereto contained in Item 8. “Financial Statements and Supplementary Data” of this report.

Merck & Co., Inc. and Subsidiaries
($ in millions except per share amounts)

	2013[1]	2012[2]	2011[3]	2010[4]	2009[5]	
Results for Year:						
Sales	$44,033	$47,267	$48,047	$45,987	$27,428	
Materials and production	16,954	16,446	16,871	18,396	9,019	
Marketing and administrative	11,911	12,776	13,733	13,125	8,543	
Research and development	7,503	8,168	8,467	11,111	5,845	
Restructuring costs	1,709	664	1,306	985	1,634	
Equity income from affiliates	(404)	(642)	(610)	(587)	(2,235)	
Other (income) expense, net	815	1,116	946	1,304	(10,668)	
Income before taxes	5,545	8,739	7,334	1,653	15,290	
Taxes on income	1,028	2,440	942	671	2,268	
Net income	4,517	6,299	6,392	982	13,022	
Less: Net income attributable to noncontrolling interests	113	131	120	121	123	
Net income attributable to Merck & Co., Inc.	4,404	6,168	6,272	861	12,899	
Basic earnings per common share attributable to Merck & Co., Inc. common shareholders	$1.49	$2.03	$2.04	$0.28	$5.67	
Earnings per common share assuming dilution attributable to Merck & Co., Inc. common shareholders	$1.47	$2.00	$2.02	$0.28	$5.65	
Cash dividends declared	5,132	5,173	4,818	4,730	3,598	[6]
Cash dividends declared per common share	$1.73	$1.69	$1.56	$1.52	$1.52	
Capital expenditures	1,548	1,954	1,723	1,678	1,461	
Depreciation	2,225	1,999	2,351	2,638	1,654	
Average common shares outstanding (millions)	2,963	3,041	3,071	3,095	2,268	
Average common shares outstanding assuming dilution (millions)	2,996	3,076	3,094	3,120	2,273	
Year-End Position:						
Working capital	$17,817	$16,509	$16,936	$13,423	$12,791	
Property, plant and equipment, net	14,973	16,030	16,297	17,082	18,279	
Total assets	105,645	106,132	105,128	105,781	112,314	
Long-term debt	20,539	16,254	15,525	15,482	16,095	
Total equity	52,326	55,463	56,943	56,805	61,485	
Year-End Statistics:						
Number of stockholders of record	149,400	157,400	166,100	171,000	175,600	
Number of employees [7]	76,000	83,000	86,000	94,000	100,000	

(1) Amounts for 2013 include the amortization of purchase accounting adjustments, the impact of restructuring actions, intangible asset impairment charges, including in-process research and development impairment charges reflected in research and development expenses, and the favorable impact of certain tax items.

(2) Amounts for 2012 include the amortization of purchase accounting adjustments, a net charge recorded in connection with the settlement of certain shareholder litigation, in-process research and development impairment charges reflected in research and development expenses, the impact of restructuring actions and the favorable impact of certain tax items.

(3) Amounts for 2011 include the amortization of purchase accounting adjustments, in-process research and development impairment charges reflected in research and development expenses, the impact of restructuring actions, an arbitration settlement charge, and the favorable impact of certain tax items, including a net favorable impact of approximately $700 million relating to the settlement of a federal income tax audit.

(4) Amounts for 2010 include the amortization of purchase accounting adjustments, in-process research and development impairment charges of $2.4 billion reflected in research and development expenses, the impact of restructuring actions, a reserve related to Vioxx litigation, a gain recognized on AstraZeneca LP's exercise of its option to acquire certain assets from the Company and the favorable impact of certain tax items.

(5) Amounts for 2009 include the impact of the merger with Schering-Plough Corporation on November 3, 2009, including the recognition of a gain representing the fair value step-up of Merck's previously held interest in the Merck/Schering-Plough partnership as a result of obtaining a controlling interest and the amortization of purchase accounting adjustments recorded in the post-merger period. Also included in 2009, is a gain on the sale of Merck's interest in Merial Limited, the favorable impact of certain tax items and the impact of restructuring actions.

(6) Amount reflects dividends declared on Merck common stock. In addition, approximately $144 million of dividends were paid subsequent to the merger with Schering-Plough, and $431 million were paid prior to the merger, relating to common stock and preferred stock dividends declared by Schering-Plough in 2009.

(7) Number of employees at December 31, 2013, does not reflect 1,300 employees of the Company's joint ventures in China and Brazil, which are included in the consolidated results of Merck.

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Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Description of Merck's Business

Merck & Co., Inc. ("Merck" or the "Company") is a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies, animal health, and consumer care products, which it markets directly and through its joint ventures. The Company's operations are principally managed on a products basis and are comprised of four operating segments, which are the Pharmaceutical, Animal Health, Consumer Care and Alliances segments, and one reportable segment, which is the Pharmaceutical segment. The Pharmaceutical segment includes human health pharmaceutical and vaccine products marketed either directly by the Company or through joint ventures. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders. The Company sells these human health pharmaceutical products primarily to drug wholesalers and retailers, hospitals, government agencies and managed health care providers such as health maintenance organizations, pharmacy benefit managers and other institutions. Vaccine products consist of preventive pediatric, adolescent and adult vaccines, primarily administered at physician offices. The Company sells these human health vaccines primarily to physicians, wholesalers, physician distributors and government entities. The Company also has animal health operations that discover, develop, manufacture and market animal health products, including vaccines, which the Company sells to veterinarians, distributors and animal producers. Additionally, the Company has consumer care operations that develop, manufacture and market over-the-counter, foot care and sun care products, which are sold through wholesale and retail drug, food chain and mass merchandiser outlets, as well as club stores and specialty channels.

Overview

The Company's revenue performance in 2013 was tempered by ongoing business challenges, including recent product patent expiries and ongoing global efforts toward health care cost containment that continue to exert pressure on product pricing and market access. Worldwide sales were $44.0 billion in 2013, a decline of 7% compared with 2012, including a 2% unfavorable effect from foreign exchange. The decline was driven primarily by the recent loss of market exclusivity for several products, particularly Singulair, a medicine indicated for the chronic treatment of asthma and the relief of symptoms of allergic rhinitis, as well as Maxalt, a product for acute treatment of migraine, Propecia, a product for the treatment of male pattern hair loss, and Temodar, a treatment for certain types of brain tumors. The Company experienced a significant and rapid decline in sales of these products following loss of market exclusivity. These declines were partially offset by higher sales of vaccines, immunology, diabetes and HIV products.

The Company continued to successfully execute on its cost reduction initiatives in 2013. Marketing and administrative expenses and Research and development costs were down over $1.5 billion on a combined basis in 2013 as compared with 2012 reflecting targeted reductions in promotional spending and lower costs as a result of portfolio prioritization.

In an effort to drive further company-wide efficiencies, Merck is taking several strategic and operating actions in response to its business challenges and the rapidly changing external environment it is facing that are designed to drive short- and long-term growth. In October 2013, the Company announced a multi-year global initiative to sharpen its commercial and research and development focus designed to enable Merck to better allocate its resources on candidates that it believes are capable of providing unambiguous, promotable advantages to patients and payers. This includes bolstering its pipeline and implementing a more agile operating model, with a significantly reduced, more flexible cost structure while still maintaining a high level of cash returned to shareholders.

Geographically, the Company will increase its focus on ten prioritized markets, which account for the majority of revenue in its pharmaceutical and vaccine business. These markets are the United States, Japan, France, Germany, Canada, United Kingdom, China, Brazil, Russia and Korea. The Company will continue to invest in high-growth and key emerging markets.

Within the core human pharmaceutical and vaccine business, Merck will continue to support its in-line portfolio and prepare for promising launches in the pipeline. The Company will increase its focus on the key therapeutic areas that meet unmet medical needs, provide the best opportunities for the business and deliver the greatest value for customers – diabetes, acute hospital care, vaccines and oncology. As part of its intensified portfolio assessment process, the Company has divested a portion of its U.S. ophthalmics business and sold the U.S. marketing rights for Saphris,

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an antipsychotic indicated for the treatment of schizophrenia and bipolar I disorder in adults. The Company's portfolio assessment process is ongoing and future product divestitures may occur.

In addition, in January 2014, the Company announced that it was evaluating the respective roles of Merck's Animal Health and Consumer Care businesses in the Company's strategy for long-term value creation. The Company expects to complete the evaluation process and take action, if any, in 2014. The Company could reach different decisions about the two businesses.

The Company's re-focused research and development efforts include programs such as the Company's anti-PD-1 immunotherapy (MK-3475) in oncology, which has received a Breakthrough Therapy designation from the U.S. Food and Drug Administration (the "FDA") for advanced melanoma, Merck's BACE inhibitor for Alzheimer's disease (MK-8931), the Company's all oral combination regimen for the treatment of chronic hepatitis C virus infection (MK-5172/MK-8742), and V503, a nine-valent human papillomavirus ("HPV") vaccine. In January 2014, the Company announced it has initiated the rolling submission of a Biologics License Application ("BLA") to the FDA for MK-3475 in patients with advanced melanoma who have previously been treated with ipilimumab. During 2013, the Company received a Breakthrough Therapy designation for MK-5172/MK-8742 and has advanced the combination into Phase 2B in a diverse range of chronic hepatitis C patients. The Company has initiated Phase 3 trials for its BACE inhibitor (MK-8931) and filed a BLA with the FDA for V503.

Merck is pursuing emerging product opportunities independent of therapeutic area or modality and is building its biologics capabilities. The Company expects to make externally sourced programs a greater component of its pipeline strategy. During 2013, the Company entered into a collaboration agreement for the development and commercialization of ertugliflozin, an investigational oral sodium glucose cotransporter ("SGLT2") inhibitor being evaluated for the treatment of type 2 diabetes in Phase 3 clinical development.

The Company is out-licensing or discontinuing selected late-stage clinical development assets and reducing its focus on platform technologies. During 2013, the Company out-licensed MK-1775, an investigational treatment for certain types of ovarian cancer, and in January 2014 entered into an agreement to divest its Sirna Therapeutics, Inc. subsidiary and related RNAi technology assets.

The Company currently has several candidates under review with the FDA: MK-5348, vorapaxar, an investigational anti-thrombotic medicine (also under review in the European Union (the "EU")); V503, a nine-valent HPV vaccine; MK-8962, corifollitropin alfa injection, an investigational fertility treatment; MK-7243, Grastek, an investigational Timothy grass pollen allergy immunotherapy tablet ("AIT") and MK-3641, Ragwitek, an investigational ragweed pollen AIT. Also, MK-8109, vintafolide, an investigational cancer candidate, is under review in the EU and MK-7009, vaniprevir, an investigational, oral twice-daily protease inhibitor for the treatment of chronic hepatitis C virus infection is under review in Japan. In February 2014, the Company resubmitted its New Drug Application ("NDA") to the FDA for MK-4305, suvorexant, responding to the agency's Complete Response Letter ("CRL") received in 2013. In addition, the Company anticipates resubmitting its NDA application in 2014 to the FDA for MK-8616, sugammadex sodium injection, a medication for the reversal of certain muscle relaxants used during surgery for which the Company received a CRL in 2013 (see "Research and Development" below). The Company also has 12 candidates in Phase 3 development and anticipates filing a New Drug Application ("NDA") or a BLA, as applicable, with the FDA with respect to several of these candidates in 2014, including the completion of the rolling submission of the BLA for MK-3475 for patients with advanced melanoma who have previously been treated with ipilimumab.

In October 2013, in connection with the implementation of Company's new global initiative, the Company announced a global restructuring program (the "2013 Restructuring Program"). As part of the program, the Company expects to reduce its total workforce by approximately 8,500 positions. These workforce reductions will primarily come from the elimination of positions in sales, administrative and headquarters organizations, as well as research and development. The Company will also reduce its global real estate footprint and continue to improve the efficiency of its manufacturing and supply network. The Company recorded total pretax costs of $1.2 billion in 2013 related to this restructuring program. The actions under the 2013 Restructuring Program are expected to be substantially completed by the end of 2015 with the cumulative pretax costs estimated to be approximately $2.5 billion to $3.0 billion. The Company expects the actions under the 2013 Restructuring Program to result in annual net cost savings of approximately $2.0 billion by the end of 2015. The Company anticipates that the actions under the 2013 Restructuring

Program, combined with remaining actions under the Merger Restructuring Program (discussed below), will result in annual net cost savings of $2.5 billion by the end of 2015 compared with full-year 2012 expense levels.

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The global restructuring program (the "Merger Restructuring Program") that was initiated in 2010 subsequent to the Merck and Schering-Plough Corporation ("Schering-Plough") merger (the "Merger") is intended to streamline the cost structure of the combined company. The workforce reductions associated with this plan relate to the elimination of positions in sales, administrative and headquarters organizations, as well as from the sale or closure of certain manufacturing and research and development sites and the consolidation of office facilities. The Company recorded total pretax costs of $1.1 billion in 2013, $951 million in 2012 and $1.8 billion in 2011 related to this restructuring program. The restructuring actions under the Merger Restructuring Program were substantially completed by the end of 2013, with the exception of certain actions, principally manufacturing-related. Subsequent to the Merger, the Company has rationalized a number of manufacturing sites worldwide. The remaining actions under this program will result in additional manufacturing facility rationalizations, which are expected to be substantially completed by 2016. The Company expects the estimated total cumulative pretax costs for this program to be approximately $7.4 billion to $7.7 billion and to yield annual savings upon completion of the program of approximately $4.0 billion to $4.6 billion. Costs associated with the Company's restructuring actions are included in Materials and production costs, Marketing and administrative expenses, Research and development expenses and Restructuring costs. The Company estimates that of the projected costs associated with the above mentioned restructuring programs, approximately two-thirds of the cumulative pretax costs relate to cash outlays, primarily related to employee separation expense. Approximately one-third of the cumulative pretax costs are non-cash, relating primarily to the accelerated depreciation of facilities to be closed or divested.

During 2013, the Company returned $11.7 billion of cash to shareholders through stock buy-back activity and dividend payments. Pursuant to a $15 billion share repurchase program approved in May 2013 by Merck's Board of Directors, Merck entered into an accelerated share repurchase ("ASR") agreement with Goldman, Sachs & Co. ("Goldman Sachs"). Under the ASR, Merck repurchased 105 million shares of common stock for $5 billion utilizing funding from an underwritten public debt offering. Also, in November 2013, Merck's Board of Directors raised the Company's quarterly dividend to $0.44 per share from $0.43 per share.

Earnings per common share assuming dilution attributable to common shareholders ("EPS") for 2013 were $1.47 compared with $2.00 in 2012. EPS in both years reflect a net unfavorable impact resulting from acquisition-related costs and restructuring costs, and certain other items. Non-GAAP EPS, which excludes these items, were $3.49 in 2013 compared with $3.82 in 2012 (see "Non-GAAP Income and Non-GAAP EPS" below). The decline in Non-GAAP EPS in 2013 as compared with 2012 was due primarily to lower sales reflecting the loss of market exclusivity for certain products, particularly Singulair, lower equity income and higher foreign exchange losses, partially offset by lower operating expenses. EPS in 2013 benefited from lower average shares outstanding due to the ASR program discussed above.

Competition and the Health Care Environment

Competition

The markets in which the Company conducts its business and the pharmaceutical industry are highly competitive and highly regulated. The Company's competitors include other worldwide research-based pharmaceutical companies, smaller research companies with more limited therapeutic focus, and generic drug and consumer and animal health care manufacturers. The Company's operations may be adversely affected by generic and biosimilar competition as the Company's products mature, as well as technological advances of competitors, industry consolidation, patents granted to competitors, competitive combination products, new products of competitors, the generic availability of competitors' branded products, and new information from clinical trials of marketed products or post-marketing surveillance. In addition, patent positions are increasingly being challenged by competitors, and the outcome can be highly uncertain. An adverse result in a patent dispute can preclude commercialization of products or negatively affect sales of existing products and could result in the recognition of an impairment charge with respect to intangible assets associated with certain products. Competitive pressures have intensified as pressures in the industry have grown. The effect on operations of competitive factors and patent disputes cannot be predicted.

Pharmaceutical competition involves a rigorous search for technological innovations and the ability to market these innovations effectively. With its long-standing emphasis on research and development, the Company is well positioned to compete in the search for technological innovations. Additional resources required to meet market

challenges include quality control, flexibility to meet customer specifications, an efficient distribution system and a

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strong technical information service. The Company is active in acquiring and marketing products through external alliances, such as joint ventures and licenses, and has been refining its sales and marketing efforts to further address changing industry conditions. However, the introduction of new products and processes by competitors may result in price reductions and product displacements, even for products protected by patents. For example, the number of compounds available to treat a particular disease typically increases over time and can result in slowed sales growth or reduced sales for the Company's products in that therapeutic category.

The highly competitive animal health business is affected by several factors including regulatory and legislative issues, scientific and technological advances, product innovation, the quality and price of the Company's products, effective promotional efforts and the frequent introduction of generic products by competitors.

The Company's consumer care operations face competition from other consumer health care businesses as well as retailers who carry their own private label brands. The Company's competitive position is affected by several factors, including regulatory and legislative issues, scientific and technological advances, the quality and price of the Company's products, promotional efforts and the growth of lower cost private label brands.

Health Care Environment

Global efforts toward health care cost containment continue to exert pressure on product pricing and market access. In the United States, federal and state governments for many years also have pursued methods to reduce the cost of drugs and vaccines for which they pay. For example, federal laws require the Company to pay specified rebates for medicines reimbursed by Medicaid and to provide discounts for outpatient medicines purchased by certain Public Health Service entities and hospitals serving a disproportionate share of low income or uninsured patients.

Against this backdrop, the United States enacted major health care reform legislation in 2010, which began to be implemented in 2010. Various insurance market reforms have advanced and will continue through full implementation in 2014. The law is expected to expand access to health care to about 32 million Americans by the end of the decade who did not previously have insurance coverage. With respect to the effect of the law on the pharmaceutical industry, the law increased the mandated Medicaid rebate from 15.1% to 23.1%, expanded the rebate to Medicaid managed care utilization, and increased the types of entities eligible for the federal 340B drug discount program. The law also requires pharmaceutical manufacturers to pay a 50% point of service discount to Medicare Part D beneficiaries when they are in the Medicare Part D coverage gap (i.e., the so-called "donut hole"). Approximately $280 million, $210 million and $150 million was recorded by Merck as a reduction to revenue in 2013, 2012 and 2011, respectively, related to the donut hole provision. Also, pharmaceutical manufacturers are now required to pay an annual health care reform fee. The total annual industry fee was $2.8 billion in 2013 and will be $3.0 billion in 2014. The fee is assessed on each company in proportion to its share of sales to certain government programs, such as Medicare and Medicaid. The Company recorded $151 million, $190 million and $162 million of costs within Marketing and administrative expenses in 2013, 2012 and 2011, respectively, for the annual health care reform fee. The full impact of U.S. health care reform cannot be predicted at this time.

The Company also faces increasing pricing pressure globally from managed care organizations, government agencies and programs that could negatively affect the Company's sales and profit margins. In the United States, these include (i) practices of managed care groups, federal and state exchanges, and institutional and governmental purchasers, and (ii) U.S. federal laws and regulations related to Medicare and Medicaid, including the Medicare Prescription Drug Improvement and Modernization Act of 2003 and the Patient Protection and Affordable Care Act of 2010. Changes to the health care system enacted as part of health care reform in the United States, as well as increased purchasing power of entities that negotiate on behalf of Medicare, Medicaid, and private sector beneficiaries, could result in further pricing pressures.

In addition, in the effort to contain the U.S. federal deficit, the pharmaceutical industry could be considered a potential source of savings via legislative proposals that have been debated but not enacted. These types of revenue generating or cost saving proposals include additional direct price controls in the Medicare prescription drug program (Part D). In addition, Congress may again consider proposals to allow, under certain conditions, the importation of medicines from other countries. It remains very uncertain as to what proposals, if any, may be included as part of future federal budget deficit reduction proposals that would directly or indirectly affect the Company.

Efforts toward health care cost containment remain intense in several European countries. Many countries have continued to announce and execute austerity measures, which include the implementation of pricing actions to

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reduce prices of generic and patented drugs and mandatory switches to generic drugs. While the Company is taking steps to mitigate the impact in these countries, the austerity measures continued to negatively affect the Company's revenue performance in 2013 and the Company anticipates the austerity measures will continue to negatively affect revenue performance in 2014. In addition, a majority of countries attempt to contain drug costs by engaging in reference pricing in which authorities examine pre-determined markets for published prices of drugs by brand. The authorities then use price data from those markets to set new local prices for brand-name drugs, including the Company's. Guidelines for examining reference pricing are usually set in local markets and can be changed pursuant to local regulations.

In addition, in Japan, the pharmaceutical industry is subject to government-mandated biennial price reductions of pharmaceutical products and certain vaccines. Furthermore, the government can order repricings for classes of drugs if it determines that it is appropriate under applicable rules.

Certain markets outside of the United States have also implemented cost management strategies, such as health technology assessments, which require additional data, reviews and administrative processes, all of which increase the complexity, timing and costs of obtaining product reimbursement and exert downward pressure on available reimbursement.

The Company's focus on and share of revenue from emerging markets has increased. Governments in many emerging markets are also focused on constraining health care costs and have enacted price controls and related measures, such as compulsory licenses, that aim to put pressure on the price of pharmaceuticals and constrain market access. The Company anticipates that pricing pressures and market access challenges will continue in 2014 to varying degrees in the emerging markets.

Beyond pricing and market access challenges, other conditions in emerging market countries can affect the Company's efforts to continue to grow in these markets, including potential political instability, significant currency fluctuation and controls, financial crises, limited or changing availability of funding for health care, and other developments that may adversely impact the business environment for the Company. Further, the Company may engage third-party agents to assist in operating in emerging market countries, which may affect its ability to realize continued growth and may also increase the Company's risk exposure.

In addressing cost containment pressures, the Company engages in public policy advocacy with policymakers and continues to work to demonstrate that its medicines provide value to patients and to those who pay for health care. The Company advocates with government policymakers to encourage a long-term approach to sustainable health care financing that ensures access to innovative medicines and does not disproportionately target pharmaceuticals as a source of budget savings. In markets with historically low rates of health care spending, the Company encourages those governments to increase their investments and adopt market reforms in order to improve their citizens' access to appropriate health care, including medicines.

Operating conditions have become more challenging under the global pressures of competition, industry regulation and cost containment efforts. Although no one can predict the effect of these and other factors on the Company's business, the Company continually takes measures to evaluate, adapt and improve the organization and its business practices to better meet customer needs and believes that it is well positioned to respond to the evolving health care environment and market forces.

Government Regulation

The pharmaceutical industry is subject to regulation by regional, country, state and local agencies around the world. Governmental regulation and legislation tend to focus on standards and processes for determining drug safety and effectiveness, as well as conditions for sale or reimbursement, especially related to the pricing of products.

Of particular importance is the FDA in the United States, which administers requirements covering the testing, approval, safety, effectiveness, manufacturing, labeling, and marketing of prescription pharmaceuticals. In many cases, the FDA requirements and practices have increased the amount of time and resources necessary to develop new products and bring them to market in the United States.

The EU has adopted directives and other legislation concerning the classification, labeling, advertising, wholesale distribution, integrity of the supply chain, enhanced pharmacovigilance monitoring and approval for marketing of

medicinal products for human use. These provide mandatory standards throughout the EU, which may be supplemented or implemented with additional regulations by the EU member states. The Company's policies and

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procedures are already consistent with the substance of these directives; consequently, it is believed that they will not have any material effect on the Company's business.
The Company believes that it will continue to be able to conduct its operations, including launching new drugs, in this regulatory environment.

Access to Medicines
As a global health care company, Merck's primary role is to discover and develop innovative medicines and vaccines. The Company also recognizes that it has an important role to play in helping to improve access to its products around the world. The Company's efforts in this regard are wide-ranging and include a set of principles that the Company strives to embed into its operations and business strategies to guide the Company's worldwide approach to expanding access to health care. In addition, the Company has many far-reaching philanthropic programs. The Merck Patient Assistance Program provides medicines and adult vaccines for free to people in the United States who do not have prescription drug or health insurance coverage and who, without the Company's assistance, cannot afford their Merck medicine and vaccines. In 2011, Merck announced that it would launch "Merck for Mothers," a long-term effort with global health partners to end preventable deaths from complications of pregnancy and childbirth. Through this initiative, Merck is leveraging its scientific and business expertise to help make proven solutions more widely available, develop new technologies and improve public and policymaker awareness of these issues.
Merck has also in the past provided funds to the Merck Foundation, an independent organization, which has partnered with a variety of organizations dedicated to improving global health. One of these partnerships is The African Comprehensive HIV/AIDS Partnership in Botswana, a collaboration with the government of Botswana that was renewed in 2010 and supports Botswana's response to HIV/AIDS through a comprehensive and sustainable approach to HIV prevention, care, treatment, and support.

Privacy and Data Protection
The Company is subject to a number of privacy and data protection laws and regulations globally. The legislative and regulatory landscape for privacy and data protection continues to evolve. There has been increased attention to privacy and data protection issues in both developed and emerging markets with the potential to affect directly the Company's business, including recently enacted laws and regulations in the United States, Europe, Asia and Latin America, and increased enforcement and litigation activity in the United States and other developed markets.
Operating Results
Sales
Worldwide sales totaled $44.0 billion in 2013, a decline of 7% compared with $47.3 billion in 2012. The sales decline was driven primarily by lower sales of Singulair. The patents that provided U.S. market exclusivity and market exclusivity in a number of major European markets for Singulair expired in August 2012 and February 2013, respectively, and the Company experienced a significant and rapid decline in Singulair sales in those markets thereafter. Foreign exchange unfavorably affected global sales performance by 2% in 2013. The revenue decline in 2013 also reflects lower sales of Maxalt, Cozaar and Hyzaar, treatments for hypertension, Temodar, Clarinex, a non-sedating antihistamine, PegIntron, a treatment for chronic hepatitis C, Propecia, Fosamax, a treatment for osteoporosis, and Vytorin, a cholesterol modifying medicine. These declines were partially offset by growth in Gardasil, a vaccine to help prevent certain diseases caused by four types of HPV, Remicade and Simponi, treatments for inflammatory diseases, Janumet, a treatment for type 2 diabetes, Isentress, a treatment for HIV-1 infection, Dulera Inhalation Aerosol, a combination medicine for the treatment of asthma, and Zostavax, a vaccine to help prevent shingles (herpes zoster).
Sales in the United States were $18.2 billion in 2013, a decline of 11% compared with $20.4 billion in 2012. The sales decrease was driven primarily by lower sales of Singulair, as well as Maxalt, Temodar, Victrelis, an oral medicine for the treatment of chronic hepatitis C virus, and Clarinex, partially offset by higher sales of Gardasil, Zetia, a cholesterol absorption inhibitor, and Dulera Inhalation Aerosol.
International sales were $25.8 billion in 2013, a decline of 4% compared with $26.9 billion in 2012. Foreign exchange unfavorably affected international sales performance by 4% in 2013. The decline was driven primarily by lower sales

in the Pharmaceutical segment, reflecting declines in Japan, largely attributable to the unfavorable effect of foreign exchange, and Europe that were partially offset by growth in the emerging markets. Sales in Japan declined 21% in 2013, to $3.9 billion, of which 17% was due to the unfavorable effect of foreign exchange. The sales decline

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reflects the ongoing impacts of the loss of the market exclusivity for several products, including Cozaar and Hyzaar, as well as lower sales of Gardasil, reflecting the Japanese government's decision to suspend proactive recommendation of HPV vaccines, and declines in PegIntron and Rebetol, products for the treatment of chronic hepatitis C. These declines were partially offset by volume growth in Januvia, a treatment for type 2 diabetes, Nasonex, an inhaled nasal corticosteroid for the treatment of nasal allergy symptoms, Zetia, and RotaTeq, a vaccine to help protect against rotavirus gastroenteritis in infants and children. Sales in Europe declined 1% in 2013, to $9.6 billion, including a 2% favorable effect from foreign exchange driven by ongoing generic erosion and fiscal austerity measures in this region, partially offset by growth in Remicade, Simponi, Janumet, Januvia and Isentress. Sales in the emerging markets grew 3% in 2013, to $7.8 billion, including a 4% unfavorable effect from foreign exchange reflecting higher sales of vaccine, hospital, hepatitis and immunology products, partially offset by lower sales of Singulair and diversified brands. Total international sales represented 59% and 57% of total sales in 2013 and 2012, respectively.

Global efforts toward health care cost containment continue to exert pressure on product pricing and market access worldwide. In many international markets, government-mandated pricing actions have reduced prices of generic and patented drugs. In addition, other austerity measures negatively affected the Company's revenue performance in 2013. The Company anticipates these pricing actions, including the biennial price reductions in Japan, and other austerity measures will continue to negatively affect revenue performance in 2014.

In October 2013, the Company sold its active pharmaceutical ingredient ("API") manufacturing business and, effective December 31, 2013, certain related products within Diversified Brands. In November 2013, Merck sold the U.S. rights to certain ophthalmic products and in January 2014 sold the U.S. rights to Saphris. The aggregate annual sales associated with these divested assets were approximately $625 million. The annual sales associated with the divested products were approximately $425 million of which approximately $385 million related to the Pharmaceutical segment and $40 million related to the Consumer Care segment. The annual sales associated with the divested API manufacturing business were approximately $200 million and related to non-segment revenues.

Worldwide sales were $47.3 billion in 2012, a decline of 2% compared with $48.0 billion in 2011. Foreign exchange unfavorably affected global sales performance by 3%. The sales decrease was driven primarily by Singulair, which lost market exclusivity in the United States in August 2012 resulting in a significant and rapid decline in U.S. Singulair sales. The sales decline was also driven by lower sales of Remicade, largely as a result of the arbitration settlement agreement reached in 2011 as discussed below. In addition, lower sales of Cozaar and Hyzaar, Clarinex, Fosamax, Vytorin, Primaxin, an anti-bacterial product, and Avelox, a broad-spectrum fluoroquinolone antibiotic for the treatment of certain respiratory and skin infections, as well as lower revenue from the Company's relationship with AstraZeneca LP ("AZLP") also contributed to the sales decline in 2012. These declines were largely offset by higher sales of Januvia, Gardasil, Victrelis, Zostavax, Janumet, Isentress, Zetia, and Dulera Inhalation Aerosol, as well as by higher sales of the Company's animal health and consumer care products.

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Sales of the Company's products were as follows:

	2013	2012	2011
Primary Care and Women's Health			
Cardiovascular			
Zetia	$2,658	$2,567	$2,428
Vytorin	1,643	1,747	1,882
Diabetes and Obesity			
Januvia	4,004	4,086	3,324
Janumet	1,829	1,659	1,363
Respiratory			
Nasonex	1,335	1,268	1,286
Singulair	1,196	3,853	5,479
Dulera	324	207	96
Asmanex	184	185	206
Women's Health and Endocrine			
NuvaRing	686	623	623
Fosamax	560	676	855
Follistim AQ	481	468	530
Implanon	403	348	294
Cerazette	208	271	268
Other			
Arcoxia	484	453	431
Avelox	140	201	322
Hospital and Specialty			
Immunology			
Remicade	2,271	2,076	2,667
Simponi	500	331	264
Infectious Disease			
Isentress	1,643	1,515	1,359
Cancidas	660	619	640
PegIntron	496	653	657
Invanz	488	445	406
Victrelis	428	502	140
Noxafil	309	258	230
Oncology			
Temodar	708	917	935
Emend	507	489	419
Other			
Cosopt/Trusopt	416	444	477
Bridion	288	261	201
Integrilin	186	211	230
Diversified Brands			
Cozaar/Hyzaar	1,006	1,284	1,663
Primaxin	335	384	515
Zocor	301	383	456
Propecia	283	424	447
Clarinex	235	393	621
Remeron	206	232	241
Claritin Rx	204	244	314

Proscar	183	217	223
Maxalt	149	638	639
Vaccines [1]			
Gardasil	1,831	1,631	1,209
ProQuad/M-M-R II/Varivax	1,306	1,273	1,202
Zostavax	758	651	332
Pneumovax 23	653	580	498
RotaTeq	636	601	651
Other pharmaceutical [2]	4,316	4,333	4,266
Total Pharmaceutical segment sales	37,437	40,601	41,289
Other segment sales [3]	6,325	6,412	6,428
Total segment sales	43,762	47,013	47,717
Other [4]	271	254	330
	$44,033	$47,267	$48,047

(1) These amounts do not reflect sales of vaccines sold in most major European markets through the Company's joint venture, Sanofi Pasteur MSD, the results of which are reflected in Equity income from affiliates. These amounts do, however, reflect supply sales to Sanofi Pasteur MSD.

(2) Other pharmaceutical primarily reflects sales of other human health pharmaceutical products, including products within the franchises not listed separately.

(3) Represents the non-reportable segments of Animal Health, Consumer Care and Alliances. The Alliances segment includes revenue from the Company's relationship with AZLP.

(4) Other revenues are primarily comprised of miscellaneous corporate revenues, third-party manufacturing sales, sales related to divested products or businesses and other supply sales not included in segment results. As discussed above, on October 1, 2013, the Company divested a substantial portion of its third-party manufacturing sales. In addition, other revenues in 2013 reflect $50 million of revenue for the out-license of a pipeline compound.

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Pharmaceutical Segment

Primary Care and Women's Health

Cardiovascular

Worldwide sales of Zetia (also marketed as Ezetrol outside the United States), a cholesterol absorption inhibitor, were $2.7 billion in 2013, an increase of 4% compared with 2012 including a 2% unfavorable effect from foreign exchange. The sales increase primarily reflects favorable pricing in the United States and volume growth in Japan, partially offset by the unfavorable effect of foreign exchange particularly in Japan. Sales of Zetia increased 6% in 2012 to $2.6 billion, including a 2% unfavorable effect from foreign exchange. The sales increase reflects positive performance in the United States due to pricing, as well as volume growth in Japan, partially offset by volume declines in the United States.

Global sales of Vytorin (marketed outside the United States as Inegy), a combination product containing the active ingredients of both Zetia and Zocor, a statin for modifying cholesterol, were $1.6 billion in 2013, a decline of 6% compared with 2012, driven primarily by lower volumes in the United States and Latin America, partially offset by volume growth in the Asia Pacific region. Worldwide sales of Vytorin declined 7% in 2012 to $1.7 billion, including a 3% unfavorable effect from foreign exchange. The sales decline reflects volume declines in the United States, partially offset by pricing in the United States and volume growth in certain international markets.

In March 2013, the Data Safety Monitoring Board (the "DSMB") of the IMPROVE-IT trial, a large cardiovascular outcomes study evaluating ezetimibe/simvastatin against simvastatin alone in patients presenting with acute coronary syndrome, completed its planned review of study data and recommended that the study continue. Merck remains blinded to the actual results of this analysis and to other IMPROVE-IT safety and efficacy data. IMPROVE-IT is an 18,000 patient event-driven trial and, based on the targeted number of 5,250 clinical endpoints and the rate at which events are being reported, the trial is projected to conclude later in 2014. If the results of the IMPROVE-IT trial fail to demonstrate an incremental benefit of ezetimibe/simvastatin on cardiovascular morbidity and mortality over and above that demonstrated for simvastatin, sales of Zetia and Vytorin could be materially adversely affected and, if so, the Company may take non-cash impairment charges with respect to the carrying values of the Zetia and Vytorin intangible assets, which were $4.7 billion and $2.6 billion, respectively, at December 31, 2013 and such charges could be material.

Diabetes and Obesity

Global sales of Januvia, Merck's dipeptidyl peptidase-4 ("DPP-4") inhibitor for the treatment of type 2 diabetes, were $4.0 billion in 2013, a decline of 2% compared with 2012 including a 5% unfavorable effect from foreign exchange. Excluding the negative effect from foreign exchange, sales performance in 2013 compared with 2012 reflects volume growth in Japan, positive performance in Europe and the emerging markets, partially offset by declines in the United States reflecting lowering demand. Worldwide sales of Januvia rose 23% to $4.1 billion in 2012 compared with 2011 reflecting volume growth in the United States, as well as in international markets, particularly in Japan. Foreign exchange unfavorably affected sales performance by 2% in 2012. In 2014, the Company anticipates that all DPP-4 inhibitors, including Januvia, will be subject to repricing in Japan.

The Trial Evaluating Cardiovascular Outcomes after treatment with Sitagliptin ("TECOS"), an event-driven, cardiovascular outcomes study for sitagliptin, began in 2008 and has over 14,000 patients enrolled. TECOS will evaluate the impact of sitagliptin when added to usual care compared to usual care without sitagliptin in a large, high-risk type 2 diabetes population across multiple countries. TECOS is expected to be completed later in 2014.

Worldwide sales of Janumet, Merck's oral antihyperglycemic agent that combines sitagliptin (Januvia) with metformin in a single tablet, were $1.8 billion in 2013, an increase of 10% compared with 2012, driven primarily by volume growth outside the United States. Global sales of Janumet were $1.7 billion in 2012, an increase of 22% compared with 2011, reflecting volume growth in the United States, the emerging markets and Europe. Foreign exchange unfavorably affected sales performance by 4% in 2012.

Global sales of the combined diabetes franchise of Januvia/Janumet were $5.8 billion in 2013, an increase of 2% compared with 2012 including a 3% unfavorable effect from foreign exchange, and were $5.7 billion in 2012, an increase of 23% compared with 2011 including a 2% unfavorable effect from foreign exchange.

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Respiratory

Global sales of Nasonex, an inhaled nasal corticosteroid for the treatment of nasal allergy symptoms, increased 5% to $1.3 billion in 2013 compared with 2012 driven primarily by increases in the United States, reflecting net favorable adjustments to indirect customer discounts, as well as by volume growth in Japan, partially offset by declines in Latin America, Canada and Europe. Foreign exchange unfavorably affected global sales performance by 3% in 2013. By agreement, generic manufacturers were able to launch a generic version of Nasonex in most European markets on January 1, 2014 and generic versions of Nasonex have since launched in several of these markets. Accordingly, the Company anticipates a rapid decline in Nasonex sales in Europe in 2014. Sales of Nasonex in Europe were $207 million in 2013. In 2009, Apotex Inc. and Apotex Corp. (collectively, “Apotex”) filed an application with the FDA seeking approval to sell its generic version of Nasonex. In June 2012, the U.S. District Court for the District of New Jersey ruled against the Company in a patent infringement suit against Apotex holding that Apotex’s generic version of Nasonex does not infringe on the Company’s formulation patent. In June 2013, the Court of Appeals for the Federal Circuit issued a decision affirming the U.S. District Court decision and the Company has exhausted all of its appeal options. If Apotex’s generic version becomes available, significant losses of U.S. Nasonex sales could occur and the Company may take a non-cash impairment charge with respect to the carrying value of the Nasonex intangible asset, which was $1.3 billion at December 31, 2013. If the Nasonex intangible asset is determined to be impaired, the impairment charge could be material. U.S. sales of Nasonex were $681 million in 2013. Worldwide sales of Nasonex declined 1% in 2012 to $1.3 billion, including a 1% unfavorable impact from foreign exchange. Sales performance in 2012 compared with 2011 reflects price declines in Europe and lower volumes in the United States, largely offset by higher prices in the United States.

Worldwide sales of Singulair, a once-a-day oral medicine for the chronic treatment of asthma and for the relief of symptoms of allergic rhinitis, fell 69% to $1.2 billion in 2013 compared with 2012 driven primarily by lower sales in the United States and Europe as a result of generic competition. The patent that provided U.S. market exclusivity for Singulair expired in August 2012 and the Company has lost nearly all sales of Singulair in the United States. In addition, the patents that provided market exclusivity for Singulair expired in a number of major European markets in February 2013 and the Company experienced a significant and rapid reduction in sales of Singulair in those markets following the patent expiries and expects the decline to continue. The patent that provides market exclusivity for Singulair in Japan will expire in 2016. Singulair sales in Japan were $523 million in 2013. Global sales of Singulair declined 30% to $3.9 billion in 2012 compared with 2011 driven primarily by lower sales in the United States. Revenue declines in Europe, Canada and Latin America also contributed to the Singulair sales decline in 2012.

Global sales of Dulera Inhalation Aerosol, a combination medicine for the treatment of asthma, were $324 million in 2013, $207 million in 2012 and $96 million in 2011 reflecting higher demand in the United States. Dulera Inhalation Aerosol was approved by the FDA in June 2010. In January 2012, Merck received a CRL from the FDA on the Company’s supplemental New Drug Application for Dulera Inhalation Aerosol for the treatment of chronic obstructive pulmonary disease. The Company has determined not to conduct an additional clinical study and will no longer pursue an update to the application.

Women’s Health and Endocrine

Worldwide sales of NuvaRing, a vaginal contraceptive product, were $686 million in 2013, an increase of 10% compared with 2012, primarily reflecting volume growth and favorable pricing in the United States. Global sales of NuvaRing were $623 million in 2012, comparable with sales in 2011. Foreign exchange unfavorably affected sales performance by 3% in 2012. Excluding the unfavorable impact of foreign exchange, sales performance in 2012 reflects volume growth in the emerging markets and positive performance in Europe.

Worldwide sales of Fosamax (marketed as Fosamac in Japan) and Fosamax Plus D (marketed as Fosavance throughout the EU) for the treatment and, in the case of Fosamax, prevention of osteoporosis, declined 17% in 2013 to $560 million and decreased 21% in 2012 to $676 million driven by declines in most regions. These medicines have lost market exclusivity in the United States and in most major international markets. The Company expects the sales declines within the Fosamax product franchise to continue.

Global sales of Follistim AQ (marketed in most countries outside the United States as Puregon), a fertility treatment, grew 3% to $481 million in 2013 compared with 2012 driven largely by positive performance in the United States. Sales of Follistim AQ declined 12% in 2012 to $468 million, including a 3% unfavorable effect from foreign

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exchange, driven largely by declines in Europe resulting from supply issues and pricing. Puregon lost market exclusivity in the EU in August 2009.
Worldwide sales of Implanon, a single-rod subdermal contraceptive implant, grew 16% to $403 million in 2013 compared with 2012 driven primarily by volume growth in the United States that was partially offset by declines in the emerging markets from pricing pressures. Implanon sales increased 18% in 2012 to $348 million, including a 2% unfavorable effect from foreign exchange, reflecting volume growth in the emerging markets and in the United States.
In recent years, the Company experienced difficulties manufacturing certain women's health products. The Company has resolved these issues, which were not material to the Company's results of operations.

Other
Other products included in Primary Care and Women's Health include among others, Asmanex Twisthaler, an inhaled corticosteroid for asthma; Cerazette, a progestin only oral contraceptive; Arcoxia, for the treatment of arthritis and pain and Avelox, a broad-spectrum fluroquinolone antibiotic for the treatment of certain respiratory and skin infections marketed by the Company in the United States. The patent that provides U.S. market exclusivity for Avelox expires in March 2014.

Hospital and Specialty
Immunology
Sales of Remicade, a treatment for inflammatory diseases (marketed by the Company in Europe, Russia and Turkey), were $2.3 billion in 2013, an increase of 9% compared with 2012 including a 2% favorable effect from foreign exchange. Sales growth reflects volume growth in Europe, as well as Russia. In September 2013, the EC approved an infliximab biosimilar. While the Company is experiencing generic competition in certain smaller European markets, the Company anticipates a more substantial decline in Remicade sales following loss of market exclusivity in major European markets in February 2015. Sales of Remicade were $2.1 billion in 2012, a decline of 22% compared with 2011 including a 6% unfavorable effect from foreign exchange. Prior to July 1, 2011, Remicade was marketed by the Company outside of the United States (except in Japan and certain other Asian markets). As a result of the agreement reached in April 2011 to amend the agreement governing the distribution rights to Remicade and Simponi, effective July 1, 2011, Merck relinquished marketing rights for these products in certain territories including Canada, Central and South America, the Middle East, Africa and Asia Pacific. Merck retained exclusive marketing rights throughout Europe, Russia and Turkey (the "Retained Territories"). In the Retained Territories, Remicade sales declined 2% in 2012, which reflects an 8% unfavorable effect from foreign exchange and volume growth in Europe.
Sales of Simponi, a once-monthly subcutaneous treatment for certain inflammatory diseases (marketed by the Company in Europe, Russia and Turkey), were $500 million in 2013, $331 million in 2012 and $264 million in 2011 driven by continued launch activities. Simponi was approved by the European Commission (the "EC") in October 2009. In September 2013, the EC approved Simponi for the treatment of adult patients with moderately to severely active ulcerative colitis who have had an inadequate response to conventional therapy or who are intolerant to or have medical contraindications for such therapies.

Infectious Disease
Worldwide sales of Isentress, an HIV integrase inhibitor for use in combination with other antiretroviral agents for the treatment of HIV-1 infection, grew 8% to $1.6 billion in 2013 compared with 2012 driven primarily by volume growth in the United States and Europe. Global sales of Isentress grew 11% in 2012 to $1.5 billion compared with 2011 driven primarily by volume growth in the United States, Latin America and the Asia Pacific region. Foreign exchange unfavorably affected global sales performance by 1% in 2013 and 4% in 2012.
Global sales of Cancidas, an anti-fungal product, increased 7% to $660 million in 2013 compared with 2012 reflecting growth in most emerging markets, as well as in Europe and Japan. Sales of Cancidas declined 3% in 2012 to $619 million, which reflects a 5% unfavorable effect from foreign exchange and growth in the emerging markets.
Worldwide sales of PegIntron, a treatment for chronic hepatitis C, declined 24% to $496 million in 2013 compared with 2012 reflecting declines in all regions. The Company believes the sales declines are attributable in part to patient

treatment being delayed by health care providers in anticipation of new therapeutic options becoming available.

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Foreign exchange unfavorably affected global sales performance by 3% in 2013. Global sales of PegIntron declined 1% in 2012 to $653 million, including an unfavorable effect from foreign exchange of 4%. Excluding the unfavorable impact of foreign exchange, sales performance reflects volume growth and favorable pricing in the United States and volume growth in certain emerging markets.

Global sales of Victrelis, an oral medicine for the treatment of chronic hepatitis C, were $428 million in 2013, a decline of 15% compared with 2012 including a 1% unfavorable effect from foreign exchange. Sales declines in the United States, Europe and Canada were partially offset by growth across the emerging markets. The Company believes the sales declines in the United States, Europe and Canada are attributable in part to patient treatment being delayed by health care providers in anticipation of new therapeutic options becoming available. Sales of Victrelis were $502 million in 2012 compared with $140 million in 2011, driven by post-launch growth in the United States and internationally, particularly in Europe. Victrelis was approved by the FDA in May 2011 and by the EC in July 2011.

Sales of the Company's products indicated for treatment of chronic hepatitis C including Victrelis and PegIntron discussed above, as well as Rebetol, continued to be adversely affected in 2013 by patient treatment being delayed by health care providers in anticipation of new therapeutic options becoming available. Sales of Rebetol, a product sold almost entirely in international markets, were particularly adversely affected by this trend given the markets where Rebetol is sold, as well as from generic competition. Worldwide sales of Rebetol declined 43% in 2013 to $74 million driven by declines in Japan and Europe. Cash flow revisions in the fourth quarter of 2013 indicated that the Rebetol intangible asset value was not recoverable on an undiscounted cash flows basis. Utilizing market participant assumptions, the Company concluded that its best estimate of the fair value of the intangible asset related to Rebetol was $94 million at December 31 2013, which resulted in an impairment charge of $156 million recorded within Materials and production costs. In the event that the availability of new treatment options adversely affects sales of products currently marketed by the Company for the treatment of chronic hepatitis C to a greater extent than anticipated by the Company, or in the event other circumstances arise that significantly reduce cash flow projections for these products, the Company may record additional intangible asset impairment charges in the future and such charges could be material. The carrying value of the intangible assets related to these products was $1.3 billion in the aggregate at December 31, 2013.

Oncology

Sales of Temodar (marketed as Temodal outside the United States), a treatment for certain types of brain tumors, declined 23% to $708 million in 2013 compared with 2012. Foreign exchange unfavorably affected global sales performance by 3% in 2013. The sales decline was driven primarily by generic competition in the United States and Europe. As previously disclosed, by agreement, a generic manufacturer launched a generic version of Temodar in the United States in August 2013. The U.S. patent and exclusivity periods otherwise expired in February 2014. Temodar lost patent exclusivity in the EU in 2009. Accordingly, the Company is experiencing sales declines due to the loss of exclusivity in these markets and the Company expects these declines to continue. Sales of Temodar decreased 2% in 2012 to $917 million, including a 2% unfavorable effect from foreign exchange. Sales declines in Europe from generic competition were offset by price increases in the United States.

Global sales of Emend, for the prevention of chemotherapy-induced and post-operative nausea and vomiting, were $507 million in 2013, an increase of 4% compared with 2012 including a 1% unfavorable effect from foreign exchange, largely reflecting volume growth in the United States and the emerging markets, partially offset by a decline in Japan. Sales of Emend were $489 million in 2012, an increase of 17% compared with 2011 including a 2% unfavorable effect from foreign exchange, reflecting volume growth in the United States and Japan.

Other

Worldwide sales of ophthalmic products Cosopt and Trusopt were $416 million in 2013, a decline of 6% compared with 2012, reflecting a 7% unfavorable effect from foreign exchange and lower sales in Europe and Canada due to generic competition, partially offset by volume growth in Japan. The patent for Cosopt expired in a number of major European markets in March 2013 and the Company is experiencing sales declines in those markets. The patents that provided market exclusivity for Cosopt and Trusopt in the United States and for Trusopt in a number of major

European markets had previously expired. Sales of Cosopt and Trusopt were $444 million in 2012, a decline of 7% compared with 2011 including a 4% unfavorable effect from foreign exchange. The sales decline primarily reflects lower sales in Europe due to generic erosion and price reductions, mitigated in part by higher Cosopt sales in Japan.

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In November 2013, Merck sold the U.S. rights to ophthalmic products Cosopt, Cosopt PF and AzaSite to Akorn, Inc. The annual U.S. sales associated with these ophthalmic products were approximately $45 million.

Bridion (sugammadex sodium injection), for the reversal of certain muscle relaxants used during surgery, is approved and has been launched in many countries outside of the United States. Sales of Bridion were $288 million in 2013, an increase of 10% compared with 2012. The sales growth was driven by volume growth in Europe, the emerging markets and Japan, partially offset by a 13% unfavorable effect of foreign exchange primarily on sales in Japan. Sales of Bridion grew 30% in 2012 to $261 million driven primarily by higher sales in Japan and the emerging markets. In September 2013, the Company received a CRL from the FDA for the resubmission of the NDA for sugammadex sodium injection (see “Research and Development” below).

Saphris (asenapine), an antipsychotic indicated for the treatment of schizophrenia and bipolar I disorder in adults, was previously marketed by the Company in the United States. Merck’s sales of Saphris were $158 million in 2013, $166 million in 2012 and $120 million in 2011. Asenapine, sold under the brand name Sycrest, is also approved in the EU for the treatment of bipolar I disorder in adults. Under a commercialization agreement for Sycrest sublingual tablets (5 mg, 10 mg), H. Lundbeck A/S (“Lundbeck”) makes product supply payments in exchange for exclusive commercial rights to Sycrest in all markets outside the United States, China and Japan. During the second quarter of 2013, the Company reduced cash flow projections for Saphris/Sycrest as a result of reduced expectations in international markets and in the United States. These revisions to cash flows indicated that the Saphris/Sycrest intangible asset value was not recoverable on an undiscounted cash flows basis. The Company utilized market participant assumptions and considered several different scenarios to determine its best estimate of the fair value of the intangible asset related to Saphris/Sycrest that, when compared with its related carrying value, resulted in an impairment charge of $330 million reflected in Materials and production costs. In January 2014, Merck sold the U.S. rights to Saphris to Forest Laboratories, Inc. (“Forest”). Under the terms of the agreement, Forest will make upfront payments of approximately $230 million and will make additional payments to Merck based on defined sales milestones.

Other products contained in Hospital and Specialty include among others, Invanz, for the treatment of certain infections; Noxafil, for the prevention of certain invasive fungal infections; and Integrilin, a treatment for patients with acute coronary syndrome, which is sold by the Company in the United States and Canada.

Diversified Brands

Merck’s diversified brands include human health pharmaceutical products that are approaching the expiration of their marketing exclusivity or are no longer protected by patents in developed markets, but continue to be a core part of the Company’s offering in other markets around the world.

Global sales of Cozaar and its companion agent Hyzaar (a combination of Cozaar and hydrochlorothiazide), treatments for hypertension, were $1.0 billion in 2013, a decline of 22% compared with 2012 including an 8% unfavorable effect from foreign exchange. The decline was driven largely by lower sales in Japan, Europe and Canada due to generic competition and the unfavorable effect of foreign exchange, particularly on sales in Japan. Sales of Cozaar/Hyzaar decreased 23% in 2012 to $1.3 billion driven by declines in most regions. The patents that provided market exclusivity for Cozaar and Hyzaar in the United States and in a number of major international markets have expired. Accordingly, the Company is experiencing significant declines in Cozaar and Hyzaar sales and the Company expects the declines to continue.

Worldwide sales of Propecia, a product for the treatment of male pattern hair loss, were $283 million in 2013, a decline of 33% compared with 2012 including a 6% unfavorable impact from foreign exchange. The decline was driven primarily by generic competition in the United States, as well as by lower sales in Japan due largely to the unfavorable effect of foreign exchange. The Company lost U.S. market exclusivity for Propecia in 2013 and multiple generics have entered the market. Accordingly, the Company is experiencing a significant decline in U.S. sales of Propecia and expects the decline to continue. Sales of Propecia declined 5% in 2012 to $424 million compared with 2011 driven by declines in Europe and the United States, partially offset by increases in the Asia Pacific region.

Global sales of Clarinex (marketed as Aerius in many countries outside the United States), a non-sedating antihistamine, declined 40% in 2013 to $235 million and decreased 37% in 2012 to $393 million driven by lower volumes in the United States and Europe as a result of generic competition. The Company anticipates that sales of

Clarinex will continue to decline.

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Global sales of Maxalt, a product for the acute treatment of migraine, fell 77% in 2013 to $149 million as compared with 2012 driven primarily by lower volumes in the United States due to generic competition. The patent that provided U.S. market exclusivity for Maxalt expired in December 2012 and the Company experienced a significant and rapid decline in U.S. Maxalt sales thereafter. In addition, the patents that provided market exclusivity for Maxalt expired in a number of major European markets in August 2013 and the Company is experiencing sales declines in those markets as well. Sales of Maxalt were $638 million in 2012, comparable with sales in 2011, reflecting higher sales in the United States driven by favorable pricing, offset by volume declines in Europe and Canada due to generic erosion.

Other products contained in Diversified Brands include among others, Primaxin, an anti-bacterial product; Zocor, a statin for modifying cholesterol; prescription Claritin, a treatment for seasonal outdoor allergies and year-round indoor allergies; Remeron, an antidepressant; and Proscar, a urology product for the treatment of symptomatic benign prostate enlargement.

Vaccines

The following discussion of vaccines does not include sales of vaccines sold in most major European markets through Sanofi Pasteur MSD (“SPMSD”), the Company’s joint venture with Sanofi Pasteur, the results of which are reflected in Equity income from affiliates (see “Selected Joint Venture and Affiliate Information” below). Supply sales to SPMSD, however, are included.

Merck’s sales of Gardasil, a vaccine to help prevent certain diseases caused by four types of HPV, grew 12% to $1.8 billion in 2013 compared with 2012 driven primarily by volume growth in the United States, reflecting continued uptake in both males and females, and volume growth in Latin America, partially offset by lower volumes in Japan. Sales in 2013 and 2012 included $37 million and $44 million, respectively, of purchases for the U.S. Centers for Disease Control and Prevention (“CDC”) Pediatric Vaccine Stockpile. On June 14, 2013, the Japanese Health Ministry issued an advisory to suspend active promotion of HPV vaccines. Accordingly, the Company recorded almost no sales of Gardasil in Japan in the second half of 2013. Merck’s sales of Gardasil rose 35% in 2012 to $1.6 billion compared with 2011 driven primarily by growth in the United States, reflecting continued uptake in males and higher government purchases for the CDC Pediatric Vaccine Stockpile, as well as growth in the emerging markets, particularly in Latin America and the Asia Pacific region, and in Japan. The Company is a party to certain third-party license agreements with respect to Gardasil (including a cross-license and settlement agreement with GlaxoSmithKline). As a result of these agreements, the Company pays royalties on worldwide Gardasil sales of 21% to 27% which vary by country and are included in Materials and production costs.

Merck’s sales of ProQuad, a pediatric combination vaccine to help protect against measles, mumps, rubella and varicella, were $314 million in 2013, $61 million in 2012 and $34 million in 2011. Sales of ProQuad in 2012 and 2011 were affected by supply constraints. ProQuad became available again in the United States for ordering in October 2012.

Merck’s sales of Varivax, a vaccine to help prevent chickenpox (varicella), were $684 million in 2013, $846 million in 2012 and $831 million in 2011. Merck’s sales of M-M-R II, a vaccine to help protect against measles, mumps and rubella, were $307 million in 2013, $365 million in 2012 and $337 million in 2011. Sales of Varivax and M M R II declined in 2013 due to the availability of ProQuad discussed above.

Merck’s sales of Zostavax, a vaccine to help prevent shingles (herpes zoster) in adults 50 years of age and older, were $758 million in 2013, $651 million in 2012 and $332 million in 2011. Sales growth in 2013 as compared with 2012 was driven by higher demand in the United States and Canada, as well as by launches within the Asia Pacific region. The Company is continuing to launch Zostavax outside of the United States. Sales of Zostavax in 2011 were affected by supply issues.

Merck’s sales of Pneumovax 23, a vaccine to help prevent pneumococcal disease, grew 13% in 2013 to $653 million compared with 2012 driven primarily by volume growth in the emerging markets, as well as volume and price increases in the United States. Merck’s sales of Pneumovax 23 increased 17% in 2012 to $580 million due primarily to growth in the United States as a result of price increases and higher volumes, partially offset by declines in Japan.

Merck’s sales of RotaTeq, a vaccine to help protect against rotavirus gastroenteritis in infants and children, grew 6% in 2013 to $636 million compared with 2012 reflecting higher pricing in the United States and volume growth

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in Japan. Merck's sales of RotaTeq declined 8% in 2012 to $601 million reflecting favorable public sector inventory fluctuations in 2011, partially offset by volume growth in the emerging markets and Japan in 2012.

Other Segments

The Company's other segments are the Animal Health, Consumer Care and Alliances segments, which are not material for separate reporting. In January 2014, the Company announced that it was evaluating the respective roles of Merck's Animal Health and Consumer Care businesses in the Company's strategy for long-term value creation. The Company expects to complete the evaluation process and take action, if any, in 2014. The Company could reach different decisions about the two businesses.

Animal Health

Animal Health includes pharmaceutical and vaccine products for the prevention, treatment and control of disease in all major farm and companion animal species. Animal Health sales are affected by competition and the frequent introduction of generic products. Global sales of Animal Health products were $3.4 billion in 2013, a decline of 1% compared with 2012 including a 2% unfavorable effect from foreign exchange. The sales decline reflects lower sales of ruminant products, primarily Zilmax, partially offset by growth in companion animal and poultry products. In August 2013, Merck Animal Health voluntarily suspended sales of Zilmax, a feed supplement for beef cattle, in the United States and Canada. The suspension of Zilmax unfavorably affected Animal Health sales by 2% in 2013. Sales of Animal Health products were $3.4 billion in 2012, an increase of 4% compared with 2011 including a 5% unfavorable effect from foreign exchange, driven by positive performance among ruminant, poultry, companion animal and swine products.

Consumer Care

Consumer Care products include over-the-counter, foot care and sun care products such as Claritin non-drowsy antihistamines; MiraLAX, for the relief of occasional constipation; Dr. Scholl's foot care products; and Coppertone sun care products. Consumer Care product sales are affected by competition and consumer spending patterns. Global sales of Consumer Care products were $1.9 billion in 2013, a decline of 3% compared with 2012 including a 1% unfavorable effect from foreign exchange. The sales decline in 2013 resulted from the termination in China of certain Consumer Care distribution arrangements and a reversal of sales previously made to these distributors, together with associated termination costs. Excluding these items, Consumer Care global sales would have increased by 1% in 2013 compared with 2012, including a 1% unfavorable effect from foreign exchange, reflecting higher sales of women's health products, partially offset by lower sales of foot care products. In 2013, the Company launched Oxytrol for Women, the first and only over-the-counter treatment for overactive bladder in women. Consumer care product sales grew 6% in 2012, including a 1% unfavorable effect from foreign exchange, to $2.0 billion reflecting higher sales of Dr. Scholl's, Coppertone, MiraLAX and Claritin, partially offset by lower sales of Marvelon, an oral contraceptive, which is an over-the-counter product in China.

As discussed above, on December 31, 2013, the Company divested certain products to Aspen. Annual sales of these products reflected within Consumer Care were approximately $40 million.

Alliances

The alliances segment includes results from the Company's relationship with AZLP. Revenue from AZLP, primarily relating to sales of Nexium and Prilosec, was $920 million in 2013, $915 million in 2012 and $1.2 billion in 2011. AstraZeneca has an option to buy Merck's interest in a subsidiary, and through it, Merck's interest in Nexium and Prilosec, exercisable in 2014, and the Company believes that it is likely that AstraZeneca will exercise that option (see "Selected Joint Venture and Affiliate Information" below). If AstraZeneca exercises its option, the Company will no longer record equity income from AZLP and supply sales to AZLP will terminate. In addition, the Company will recognize a non-cash pretax gain of approximately $700 million.

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Costs, Expenses and Other

($ in millions)	2013	Change		2012	Change		2011
Materials and production	$16,954	3	%	$16,446	-3	%	$16,871
Marketing and administrative	11,911	-7	%	12,776	-7	%	13,733
Research and development [1]	7,503	-8	%	8,168	-4	%	8,467
Restructuring costs	1,709	*		664	-49	%	1,306
Equity income from affiliates	(404)	-37	%	(642)	5	%	(610)
Other (income) expense, net	815	-27	%	1,116	18	%	946
	$38,488	—	%	$38,528	-5	%	$40,713

* 100% or greater.

(1) Includes $279 million, $200 million and $587 million of IPR&D impairment charges in 2013, 2012 and 2011, respectively.

Materials and Production

Materials and production costs were $17.0 billion in 2013, $16.4 billion in 2012 and $16.9 billion in 2011. Costs include expenses for the amortization of intangible assets recorded in connection with mergers and acquisitions which totaled $4.7 billion in 2013 and $4.9 billion in each of 2012 and 2011. Additionally, expenses in 2011 include $89 million of amortization of purchase accounting adjustments to Schering-Plough's inventories recognized as a result of the Merger. Costs in 2013 and 2011 include intangible asset impairment charges of $486 million and $118 million, respectively. The impairment charges in 2013 related to changes in cash flow assumptions for currently marked products Saphris/Sycrest and Rebetol (see "Pharmaceutical Segment" above). The Company may recognize additional non-cash impairment charges in the future related to product intangibles that were measured at fair value and capitalized in connection with mergers and acquisitions and such charges could be material. Additionally, costs in 2013 include a $41 million intangible asset impairment charge related to a licensing agreement. Also included in materials and production were costs associated with restructuring activities which amounted to $446 million, $188 million and $348 million in 2013, 2012 and 2011, respectively, including accelerated depreciation and asset write-offs related to the planned sale or closure of manufacturing facilities. Separation costs associated with manufacturing-related headcount reductions have been incurred and are reflected in Restructuring costs as discussed below.

Gross margin was 61.5% in 2013 compared with 65.2% in 2012 and 64.9% in 2011. The amortization of intangible assets and purchase accounting adjustments to inventories, as well as the restructuring and impairment charges noted above reduced gross margin by 12.8 percentage points in 2013, 10.7 percentage points in 2012 and 11.4 percentage points in 2011. Excluding these impacts, the gross margin decline in 2013 as compared with 2012 was driven in part by the loss of Singulair sales as result of patent expiries in the United States in August 2012 and in major European markets in February 2013. In addition, generic competition in the United States for Maxalt, Temodar, Clarinex and Propecia coupled with changes in product mix and continued pricing pressures in mature markets also negatively affected gross margin in 2013. The gross margin decline in 2012 as compared with 2011 reflects the significant decline in Singulair sales as a result of the loss of U.S. market exclusivity, partially offset by improvements resulting from other changes in product mix. The Company anticipates that gross margin will continue to be negatively affected by the ongoing impacts of recent patent expiries and additional patent expiries that will occur in 2014.

Marketing and Administrative

Marketing and administrative expenses declined 7% in 2013 to $11.9 billion and decreased 7% in 2012 to $12.8 billion largely due to lower promotional spending and selling costs resulting from restructuring activities, and also reflecting the favorable effect of foreign exchange. Expenses for 2013, 2012 and 2011 include restructuring costs of $145 million, $90 million and $119 million, respectively, related primarily to accelerated depreciation for facilities to be closed or divested. Separation costs associated with sales force reductions have been incurred and are reflected in Restructuring costs as discussed below. Expenses also include $94 million, $272 million and $278 million of acquisition-related costs in 2013, 2012 and 2011, respectively, consisting of incremental, third-party integration costs

related to the Merger, including costs related to legal entity and system integration. Acquisition-related costs for 2011 also consist of severance costs associated with the acquisition of Inspire Pharmaceuticals, Inc., which are not part of the Company's formal restructuring programs.

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Research and Development

Research and development expenses were $7.5 billion in 2013, $8.2 billion in 2012 and $8.5 billion in 2011. Research and development expenses are comprised of the costs directly incurred by Merck Research Laboratories ("MRL"), the Company's research and development division that focuses on human health-related activities, which were approximately $4.2 billion in 2013 and $4.5 billion in each of 2012 and 2011. Also included in research and development expenses are costs incurred by other divisions in support of research and development activities, including depreciation, production and general and administrative, as well as licensing activity, certain costs from operating segments, including the Pharmaceutical, Animal Health and Consumer Care segments, which in the aggregate were $2.9 billion, $3.4 billion and $3.2 billion for 2013, 2012 and 2011, respectively. The decline in research and development costs in 2013 as compared with 2012 was due to targeted reductions and lower clinical development spend as a result of portfolio prioritization, as well as lower payments for licensing activity. Research and development expenses in 2013, 2012 and 2011 were favorably affected by cost savings resulting from restructuring activities.

Research and development expenses also include in-process research and development ("IPR&D") impairment charges of $279 million, $200 million and $587 million in 2013, 2012 and 2011, respectively (see "Research and Development" below). The Company may recognize additional non-cash impairment charges in the future for the cancellation or delay of other pipeline programs that were measured at fair value and capitalized in connection with mergers and acquisitions and such charges could be material. Research and development expenses in 2013, 2012 and 2011 reflect $101 million, $57 million and $138 million, respectively, of accelerated depreciation and asset abandonment costs associated with restructuring activities. In 2012, the Company recorded an adjustment to accelerated depreciation costs included in research and development expenses revising previously recorded amounts for certain facilities.

Restructuring Costs

Restructuring costs, primarily representing separation and other related costs associated with restructuring activities, were $1.7 billion, $664 million and $1.3 billion in 2013, 2012 and 2011, respectively. Costs in 2013 include $898 million of costs related to the 2013 Restructuring Program. Nearly all of the remaining costs recorded in 2013 and the costs recorded in 2012 and 2011 related to the Merger Restructuring Program. In 2013, 2012 and 2011, separation costs of $1.4 billion, $489 million and $1.1 billion, respectively, were incurred associated with actual headcount reductions, as well as estimated expenses under existing severance programs for headcount reductions that were probable and could be reasonably estimated. Merck eliminated approximately 6,070 positions in 2013 (of which 1,540 related to the 2013 Restructuring Program, 4,475 related to the Merger Restructuring Program and 55 related to the 2008 Restructuring Program), approximately 4,255 positions in 2012 (of which 3,975 related to the Merger Restructuring Program, 155 related to the 2008 Restructuring Program and 125 related to the legacy Schering-Plough program), and approximately 7,590 positions in 2011 (of which 6,880 related to the Merger Restructuring Program, 450 related to the 2008 Restructuring Program and 260 related to the legacy Schering-Plough program). These position eliminations are comprised of actual headcount reductions, and the elimination of contractors and vacant positions. Also included in restructuring costs are curtailment, settlement and termination charges associated with pension and other postretirement benefit plans, share-based compensation plan costs, as well as contract termination and shutdown costs. For segment reporting, restructuring costs are unallocated expenses. Additional costs associated with the Company's restructuring activities are included in Materials and production, Marketing and administrative and Research and development as discussed above.

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Equity Income from Affiliates

Equity income from affiliates, which reflects the performance of the Company's joint ventures and other equity method affiliates, declined 37% in 2013 to $404 million compared with 2012 driven primarily by lower equity income from AZLP, partially offset by higher equity income from SPMSD. Equity income from affiliates increased 5% in 2012 to $642 million due primarily to higher equity income from AZLP. During 2011, the Company divested its interest in the Johnson & Johnson°Merck Consumer Pharmaceuticals Company ("JJMCP") joint venture. (See "Selected Joint Venture and Affiliate Information" below.)

Other (Income) Expense, Net

Other (income) expense, net was $815 million of expense in 2013 compared with $1.1 billion of expense in 2012 reflecting a $493 million net charge in 2012 relating to the settlement of certain shareholder litigation (the ENHANCE Litigation") (see Note 10 to the consolidated financial statements), partially offset by higher exchange losses in 2013 driven by $140 million of exchange losses related to a Venezuelan currency devaluation (see Note 14 to the consolidated financial statements), as well as higher interest expense in 2013 resulting in part from issuances of debt in September 2012 and May 2013. Other (income) expense, net was $1.1 billion of expense in 2012 compared with $946 million of expense in 2011 reflecting the $493 million net charge in 2012 relating to the settlement of the ENHANCE Litigation and gains recognized in 2011 of $136 million on the disposition of the Company's interest in the JJMCP joint venture (see Note 8 to the consolidated financial statements) and $127 million on the sale of certain manufacturing facilities and related assets (see Note 4 to the consolidated financial statements), partially offset by a $500 million charge in 2011 related to the resolution of the arbitration proceeding involving the Company's rights to market Remicade and Simponi and higher interest income in 2012.

Segment Profits

($ in millions)	2013	2012	2011
Pharmaceutical segment profits	$22,983	$25,852	$25,617
Other non-reportable segment profits	3,094	3,163	2,995
Other	(20,532)	(20,276)	(21,278)
Income before income taxes	$5,545	$8,739	$7,334

Segment profits are comprised of segment sales less standard costs, certain operating expenses directly incurred by the segment, components of equity income or loss from affiliates and depreciation and amortization expenses. For internal management reporting presented to the chief operating decision maker, Merck does not allocate materials and production costs, other than standard costs, the majority of research and development expenses or general and administrative expenses, nor the cost of financing these activities. Separate divisions maintain responsibility for monitoring and managing these costs, including depreciation related to fixed assets utilized by these divisions and, therefore, they are not included in segment profits. Also excluded from the determination of segment profits are the amortization of purchase accounting adjustments and other acquisition-related costs, intangible asset impairment charges, restructuring costs, taxes paid at the joint venture level, a portion of equity income, other expenses from corporate and manufacturing cost centers and other miscellaneous income or expense. Additionally, segment profits do not reflect the charge related to the settlement of the ENHANCE Litigation recorded in 2012, the arbitration settlement charge, the gain on the divestiture of the Company's interest in the JJMCP joint venture and a gain on the sale of certain manufacturing facilities and related assets recorded in 2011. All of these unallocated items are reflected in "Other" in the above table. Also included in "Other" are miscellaneous corporate profits (losses), as well as operating profits (losses) related to third-party manufacturing sales, divested products or businesses, and other supply sales.

Pharmaceutical segment profits declined 11% in 2013 driven primarily by the effects of the loss of market exclusivity for certain products, particularly Singulair. Pharmaceutical segment profits increased 1% in 2012 driven primarily by lower operating expenses mostly offset by the effects of the loss of U.S. market exclusivity for Singulair.

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Taxes on Income

The effective income tax rates of 18.5% in 2013, 27.9% in 2012 and 12.8% in 2011 reflect the impacts of acquisition-related costs and restructuring costs, partially offset by the beneficial impact of foreign earnings. The effective tax rate in 2013 reflects a net benefit of $165 million from the settlements of certain federal income tax issues, net benefits from reductions in tax reserves upon expiration of applicable statutes of limitations, the favorable impact of tax legislation enacted in the first quarter of 2013 that extended the R&D tax credit for both 2012 and 2013, as well as an out-of-period net tax benefit of approximately $160 million associated with the resolution of a previously disclosed legacy Schering-Plough federal income tax issue (see Note 15 to the consolidated financial statements). The effective tax rate for 2012 also reflects the favorable impacts of a tax settlement with the Canada Revenue Agency (the "CRA"), the realization of foreign tax credits and the impact of a favorable ruling on a state tax matter. In addition, the 2012 effective tax rate reflects the unfavorable impact of the net charge recorded in connection with the settlement of the ENHANCE Litigation for which no tax benefit was recorded and does not reflect any impacts for the R&D tax credit, which expired on December 31, 2011. As a result of legislation passed in 2013 that extended the R&D tax credit, both the 2012 and 2013 R&D tax credits were recognized in 2013 as noted above. The effective tax rate for 2011 reflects a net favorable impact of approximately $700 million relating to the settlement of Merck's 2002-2005 federal income tax audit, the favorable impact of certain foreign and state tax rate changes that resulted in a net $270 million reduction of deferred tax liabilities on intangibles established in purchase accounting, and the unfavorable impact of a $500 million charge related to the resolution of the arbitration proceeding involving the Company's rights to market Remicade and Simponi.

Net Income and Earnings per Common Share

Net income attributable to Merck & Co., Inc. was $4.4 billion in 2013, $6.2 billion in 2012 and $6.3 billion in 2011. EPS was $1.47 in 2013, $2.00 in 2012 and $2.02 in 2011. The declines in net income and EPS in 2013 as compared with 2012 were due primarily to lower sales reflecting the loss of market exclusivity for certain products, particularly Singulair, as well as higher restructuring costs, intangible asset impairment charges and exchange losses, partially offset by the favorable impact of certain tax items and lower operating expenses. EPS in 2013 benefited from lower average shares outstanding due to the ASR program (see Note 11 to the consolidated financial statements). The decreases in net income and EPS in 2012 as compared with 2011 were due primarily to the net charge recorded in connection with the settlement of the ENHANCE Litigation, the effects of the loss of U.S. market exclusivity for Singulair in 2012 and the favorable impact of tax items in 2011, partially offset by lower marketing and administrative expenses, lower restructuring costs and lower intangible asset impairment charges in 2012 and the arbitration settlement charge recorded in 2011.

Non-GAAP Income and Non-GAAP EPS

Non-GAAP income and non-GAAP EPS are alternative views of the Company's performance used by management that Merck is providing because management believes this information enhances investors' understanding of the Company's results. Non-GAAP income and non-GAAP EPS exclude certain items because of the nature of these items and the impact that they have on the analysis of underlying business performance and trends. The excluded items consist of acquisition-related costs, restructuring costs and certain other items. These excluded items are significant components in understanding and assessing financial performance. Therefore, the information on non-GAAP income and non-GAAP EPS should be considered in addition to, but not in lieu of, net income and EPS prepared in accordance with generally accepted accounting principles in the United States ("GAAP"). Additionally, since non-GAAP income and non-GAAP EPS are not measures determined in accordance with GAAP, they have no standardized meaning prescribed by GAAP and, therefore, may not be comparable to the calculation of similar measures of other companies.

Non-GAAP income and non-GAAP EPS are important internal measures for the Company. Senior management receives a monthly analysis of operating results that includes non-GAAP income and non-GAAP EPS and the performance of the Company is measured on this basis along with other performance metrics. Senior management's annual compensation is derived in part using non-GAAP income and non-GAAP EPS.

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A reconciliation between GAAP financial measures and non-GAAP financial measures is as follows:

($ in millions except per share amounts)	2013	2012	2011
Pretax income as reported under GAAP	$5,545	$8,739	$7,334
Increase (decrease) for excluded items:			
Acquisition-related costs	5,549	5,344	5,939
Restructuring costs	2,401	999	1,911
Other items:			
Net charge related to settlement of ENHANCE Litigation	—	493	—
Arbitration settlement charge	—	—	500
Gain on disposition of interest in JJMCP joint venture	—	—	(136)
Gain on sale of manufacturing facilities and related assets	—	—	(127)
Other	(13)	—	5
	13,482	15,575	15,426
Taxes on income as reported under GAAP	1,028	2,440	942
Estimated tax benefit on excluded items	1,573	1,261	1,697
Net tax benefits from settlements of federal income tax issues	325	—	700
Tax benefit from foreign and state tax rate changes	—	—	270
	2,926	3,701	3,609
Non-GAAP net income	10,556	11,874	11,817
Less: Net income attributable to noncontrolling interests	113	131	120
Non-GAAP net income attributable to Merck & Co., Inc.	$10,443	$11,743	$11,697
EPS assuming dilution as reported under GAAP	$1.47	$2.00	$2.02
EPS difference [1]	2.02	1.82	1.75
Non-GAAP EPS assuming dilution	$3.49	$3.82	$3.77

[1] Represents the difference between calculated GAAP EPS and calculated non-GAAP EPS, which may be different than the amount calculated by dividing the impact of the excluded items by the weighted-average shares for the applicable year.

Acquisition-Related Costs

Non-GAAP income and non-GAAP EPS exclude the impact of certain amounts recorded in connection with mergers and acquisitions. These amounts include the amortization of intangible assets and inventory step-up, as well as intangible asset impairment charges. Also excluded are incremental, third-party integration costs associated with the Merger, such as costs related to legal entity and system integration, as well as other costs associated with mergers and acquisitions, such as severance costs which are not part of the Company’s formal restructuring programs. These costs are excluded because management believes that these costs are not representative of ongoing normal business activities.

Restructuring Costs

Non-GAAP income and non-GAAP EPS exclude costs related to restructuring actions (see Note 3 to the consolidated financial statements). These amounts include employee separation costs and accelerated depreciation associated with facilities to be closed or divested. Accelerated depreciation costs represent the difference between the depreciation expense to be recognized over the revised useful life of the site, based upon the anticipated date the site will be closed or divested, and depreciation expense as determined utilizing the useful life prior to the restructuring actions. Restructuring costs also include asset abandonment, shut-down and other related costs, as well as employee-related costs such as curtailment, settlement and termination charges associated with pension and other postretirement benefit plans and share-based compensation costs. The Company has undertaken restructurings of different types during the covered periods and, therefore, these charges should not be considered non-recurring; however, management excludes these amounts from non-GAAP income and non-GAAP EPS because it believes it is helpful for understanding the performance of the continuing business.

Certain Other Items

Non-GAAP income and non-GAAP EPS exclude certain other items. These items represent substantive, unusual items that are evaluated on an individual basis. Such evaluation considers both the quantitative and the qualitative aspect of their unusual nature and generally represent items that, either as a result of their nature or magnitude, management would not anticipate that they would occur as part of the Company’s normal business on a regular basis.

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Certain other items are comprised of the net charge recorded in connection with the settlement of the ENHANCE Litigation, the arbitration settlement charge, the gain on the disposition of the Company's interest in the JJMCP joint venture and the gain associated with the sale of certain manufacturing facilities and related assets. Also excluded from non-GAAP income and non-GAAP EPS are tax benefits from the resolution of certain federal income tax issues.

Research and Development

A chart reflecting the Company's current research pipeline as of February 21, 2014 is set forth in Item 1. "Business — Research and Development" above.

Research and Development Update

The Company currently has several candidates under regulatory review in the United States or internationally.

MK-5348, vorapaxar, is an investigational anti-thrombotic medicine under review by the FDA and the European Medicines Agency (the "EMA"). Merck is seeking approval of vorapaxar for the reduction of atherothrombotic events, when added to standard of care, in patients with a history of heart attack and no history of stroke or transient ischemic attack. In January 2014, the FDA's Cardiovascular and Renal Drugs Advisory Committee recommended approval of vorapaxar. The FDA is not bound by the committee's guidance, but takes its advice into consideration when reviewing investigational medicines.

V503, the Company's nine-valent HPV vaccine in development to help protect against certain HPV-related diseases, is under review by the FDA. V503 incorporates antigens against five additional cancer-causing HPV types as compared with Gardasil. The Company anticipates submitting a Marketing Authorization Application ("MAA") to the EMA in the first half of 2014.

MK-8962, corifollitropin alfa injection, is an investigational fertility treatment under review by the FDA for controlled ovarian stimulation in women participating in assisted reproductive technology. If approved, corifollitropin alfa would be the first sustained follicular stimulant for use in a fertility treatment regimen in the United States. Merck's corifollitropin alfa is currently approved in more than 50 markets outside the United States, including the EU.

MK-7243, Grastek, an investigational Timothy grass pollen allergy immunotherapy tablet ("AIT"), and MK-3641, Ragwitek, an investigational ragweed pollen AIT, are both under review by the FDA. MK-7243 and MK-3641 are investigational sublingual tablets designed to help treat the underlying cause of allergic rhinitis by generating an immune response to help protect allergic patients against effects triggered by the targeted allergen. Merck has partnered with ALK-Abello to develop its investigational sublingual allergy immunotherapy tablets for Timothy grass pollen, ragweed pollen and house dust mites in North America. In December 2013, the FDA's Allergenic Products Advisory Committee had a positive discussion of MK-7243. In January 2014, the same Advisory Committee had a positive discussion of MK-3641. The FDA is not bound by the committee's guidance, but takes its advice into consideration when reviewing investigational medicines. Merck expects the FDA's review for both MK-7243 and MK-3641 to be completed in the first half of 2014. In February 2014, the Company announced that Grastek received regulatory approval in Canada.

MK-4305, suvorexant, is an investigational insomnia medicine in a new class of medicines called orexin receptor antagonists for use in patients with difficulty falling or staying asleep. In July 2013, the Company announced that it had received a CRL from the FDA regarding the NDA for suvorexant. In the CRL, the FDA advised Merck that: (1) the efficacy of suvorexant has been established at doses of 10 mg to 40 mg in elderly and non-elderly adult patients; (2) 10 mg should be the starting dose for most patients and must be available before suvorexant can be approved; (3) 15 mg and 20 mg doses would be appropriate in patients in whom the 10 mg dose is well-tolerated but not effective; and (4), for patients taking concomitant moderate CYP3A4 inhibitors, a 5 mg dose would be necessary. In addition, the FDA determined that the safety data do not support the approval of suvorexant 30 mg and 40 mg. In February, 2014, the Company resubmitted its NDA to the FDA. As previously disclosed, both FDA approval and a separate scheduling determination by the U.S. Drug Enforcement Administration are required before Merck can introduce suvorexant in the United States. Insomnia is a condition characterized by difficulty falling asleep and/or staying asleep. The Company has submitted a new drug application for suvorexant to the health authorities in Japan and is continuing with plans to seek approval for suvorexant in other countries around the world.

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MK-8616, sugammadex sodium injection, is an investigational agent for the reversal of neuromuscular blockade induced by rocuronium or vecuronium (neuromuscular blocking agents). Neuromuscular blockade is used in anesthesiology to induce muscle relaxation during surgery. In September 2013, Merck announced that it had received a CRL from the FDA for the resubmission of the NDA for sugammadex sodium injection. The FDA's letter raised concerns about operational aspects of a hypersensitivity study that the agency had requested in 2008. To address the CRL, the Company is conducting a hypersensitivity study and anticipates filing an NDA resubmission with the FDA in 2014. Sugammadex sodium injection is approved and has been launched in many countries outside of the United States where it is marketed as Bridion.

MK-8109, vintafolide, is an investigational cancer candidate under review by the EMA. As part of an exclusive license agreement with Endocyte, Inc. ("Endocyte"), Merck is responsible for the development and worldwide commercialization of vintafolide in oncology. The EMA accepted the MAA filings for vintafolide and Endocyte's investigational companion diagnostic imaging agent, etarfolatide, for the targeted treatment of patients with folate-receptor positive platinum-resistant ovarian cancer in combination with pegylated liposomal doxorubicin. Both vintafolide and etarfolatide have been granted orphan drug status by the EC. Vintafolide is in Phase 3 development in the United States.

MK-7009, vaniprevir, is an investigational, oral twice-daily protease inhibitor for the treatment of chronic hepatitis C virus infection under review in Japan.

In addition to the candidates under regulatory review, the Company has 12 drug candidates in Phase 3 development targeting a broad range of diseases. The Company anticipates filing an NDA or a BLA, as applicable, with the FDA with respect to several of these candidates in 2014.

MK-3475, an investigational anti-PD-1 immunotherapy, is currently being evaluated for the treatment of patients with advanced melanoma and other tumor types. In January 2014, the Company announced it has started a rolling submission to the FDA of a BLA for MK-3475 for patients with advanced melanoma who have previously been treated with ipilimumab. A rolling submission allows completed portions of the application to be submitted and reviewed by the FDA on an ongoing basis. The Company expects to complete the application in the first half of 2014. In April 2013, Merck announced that MK-3475 received a Breakthrough Therapy designation for advanced melanoma from the FDA. The designation of an investigational drug as a Breakthrough Therapy is intended to expedite the development and review of a candidate that is planned for use, alone or in combination, to treat a serious or life-threatening disease or condition when preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints.

The MK-3475 clinical development program also includes studies across a broad range of cancer types including: bladder, colorectal, gastric, head and neck, melanoma, non-small cell lung, renal, triple negative breast and hematological malignancies. In addition, the Company has announced four collaborations with other pharmaceutical companies to evaluate novel combination regimens with MK-3475.

MK-0822, odanacatib, is an oral, once-weekly investigational treatment for patients with osteoporosis. Osteoporosis is a disease that reduces bone density and strength and results in an increased risk of bone fractures. Odanacatib is a cathepsin K inhibitor that selectively inhibits the cathepsin K enzyme. Cathepsin K is known to play a central role in the function of osteoclasts, which are cells that break down existing bone tissue, particularly the protein components of bone. Inhibition of cathepsin K is a novel approach to the treatment of osteoporosis. In July 2012, Merck announced an update on the Phase 3 trial assessing fracture risk reduction with odanacatib. The independent Data Monitoring Committee (the "DMC") for the study completed its first planned interim analysis for efficacy and recommended that the study be closed early due to robust efficacy and a favorable benefit-risk profile. The DMC noted that safety issues remain in certain selected areas and made recommendations with respect to following up on them. On February 1, 2013, Merck announced that it had recently received and was reviewing safety and efficacy data from the Phase 3 trial. As a result of its review of this data, the Company concluded that review of additional data from the previously planned, ongoing extension study was warranted and that filing an application for approval with the FDA should be delayed. As previously announced, the Company is conducting a blinded extension of the trial in approximately 8,200 women, which will provide additional safety and efficacy data. Merck continues to anticipate that it will file applications for approval of odanacatib in 2014 with additional data from the extension trial. The

Company continues to believe that odanacatib will have the potential to address unmet medical needs in patients with osteoporosis.

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V419 is an investigational hexavalent pediatric combination vaccine, which contains components of current vaccines, designed to help protect against six potentially serious diseases — diphtheria, tetanus, whooping cough (Bordetella pertussis), polio (poliovirus types 1, 2, and 3), invasive disease caused by Haemophilus influenzae type b, and hepatitis B — that is being developed in collaboration with Sanofi-Pasteur. The Company continues to anticipate filing a BLA for V419 with the FDA in 2014.

MK-0859, anacetrapib, is an investigational inhibitor of the cholesteryl ester transfer protein ("CETP") that is being investigated in lipid management to raise HDL-C and reduce LDL-C. Anacetrapib is being evaluated in a large, event-driven cardiovascular clinical outcomes trial REVEAL (Randomized EValuation of the Effects of Anacetrapib Through Lipid-modification) involving patients with preexisting vascular disease that is predicted to be completed in 2017.

MK-8931 is Merck's novel investigational oral ß-amyloid precursor protein site-cleaving enzyme ("BACE") inhibitor for the treatment of Alzheimer's disease being evaluated in a Phase 2/3 clinical trial (EPOCH) designed to evaluate the safety and efficacy of MK-8931 versus placebo in patients with mild-to-moderate Alzheimer's disease. Based on a positive DMC recommendation made following a planned analysis of interim safety data that included a safety cohort of 200 patients treated with MK-8931 for at least three months, the Company recently began enrolling patients in the Phase 3 portion of the trial, as well as a new Phase 3 trial (APECS) designed to evaluate the safety and efficacy of MK-8931 versus placebo in patients with amnestic mild cognitive impairment due to Alzheimer's disease, also known as prodromal Alzheimer's disease.

MK-3415A, actoxumab/bezlotoxumab, an investigational candidate for the prevention of Clostridium difficile infection recurrence, is a combination of two monoclonal antibodies used to treat patients with a single infusion.

MK-3102, omarigliptin, is an investigational once-weekly DPP-4 inhibitor in development for the treatment of type 2 diabetes.

MK-8835, ertugliflozin, is an investigational oral sodium glucose cotransporter ("SGLT2") inhibitor being evaluated for the treatment of type 2 diabetes. During 2013, the Company entered into a worldwide (except Japan) collaboration agreement with Pfizer Inc. ("Pfizer") for the development and commercialization of ertugliflozin as discussed below.

MK-1293 is an insulin glargine candidate for the treatment of patients with type 1 and type 2 diabetes. In February 2014, the Company announced that it had expanded its collaboration with Samsung Bioepis to develop, manufacture and commercialize MK-1293. Under the terms of the agreement, the companies will collaborate on clinical development, regulatory filings and manufacturing. If approved, Merck will commercialize this candidate.

V212 is an inactivated varicella zoster virus vaccine in development for the prevention of herpes zoster. The Company is conducting two Phase 3 trials, one in autologous hematopoietic cell transplant patients and the other in patients with solid tumor malignancies undergoing chemotherapy and hematological malignancies.

MK-3222, tildrakizumab, is an anti-interleukin-23 monoclonal antibody candidate being investigated for the treatment of psoriasis.

MK-5172/MK-8742, an all-oral combination regimen in Phase 2 development consisting of MK-5172, an investigational hepatitis C virus NS3/4A protease inhibitor, and MK-8742, an investigational hepatitis C virus NS5A replication complex inhibitor, was granted a Breakthrough Therapy designation in October 2013 by the FDA for treatment of chronic hepatitis C virus infection. MK-5172 and MK-8742 are being investigated in a broad clinical program that includes studies in patients with multiple hepatitis C virus genotypes who are treatment-naïve, treatment failures as well as other important hepatitis C virus subpopulations such as patients with cirrhosis and those co-infected with HIV.

MK-8175A, NOMAC/E2, which is being marketed as Zoely in the EU, is an investigational oral contraceptive for use by women to prevent pregnancy. In November 2011, Merck received a CRL from the FDA for NOMAC/E2. Merck has made the decision to discontinue the Phase 3 clinical trial for NOMAC/E2 being conducted in the United States. This decision is not based on any new safety or efficacy findings.

In May 2013, the Company provided an update on the clinical program for preladenant, Merck's investigational adenosine A2A receptor antagonist for the treatment of Parkinson's disease. An initial review of data

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from three separate Phase 3 trials did not provide evidence of efficacy for preladenant compared with placebo. Based on these results, Merck has taken steps to discontinue the extension phases of these studies and no longer plans to pursue regulatory filings for preladenant. The decision to discontinue these studies was not based on any safety finding. The Company recorded an impairment charge of $181 million in 2013 related to the discontinuation of the clinical development program for preladenant.

The Company maintains a number of long-term exploratory and fundamental research programs in biology and chemistry as well as research programs directed toward product development. The Company's research and development model is designed to increase productivity and improve the probability of success by prioritizing the Company's research and development resources on candidates the Company believes are capable of providing unambiguous, promotable advantages to patients and payers and delivering the maximum value of its approved medicines and vaccines through new indications and new formulations. Merck is pursuing emerging product opportunities independent of therapeutic area or modality (small molecule, biologics and vaccines) and is building its biologics capabilities. Further, Merck has moved to diversify its portfolio through a collaboration on the development of biosimilars, which have the potential to harness the market opportunity presented by biological medicine patent expiries by delivering high quality biosimilars to enhance access for patients worldwide. The Company is committed to making externally sourced programs a greater component of its pipeline strategy, with a renewed focus on supplementing its internal research with a licensing and external alliance strategy focused on the entire spectrum of collaborations from early research to late-stage compounds, as well as access to new technologies.

The Company also reviews its pipeline to examine candidates which may provide more value through out-licensing. The Company is evaluating certain late-stage clinical development and platform technology assets to determine their out-licensing or sale potential.

The Company's clinical pipeline includes candidates in multiple disease areas, including atherosclerosis, cancer, cardiovascular diseases, diabetes, infectious diseases, inflammatory/autoimmune diseases, insomnia, neurodegenerative diseases, osteoporosis, respiratory diseases and women's health.

In-Process Research and Development

In connection with mergers and acquisitions, the Company has recorded the fair value of incomplete research projects which, at the time of acquisition, had not yet reached technological feasibility. At December 31, 2013, the balance of IPR&D was $1.9 billion. Some of the more significant projects in late-stage development include vorapaxar, the Company's BACE inhibitor, sugammadex sodium injection and the AIT programs discussed above.

During 2013, 2012 and 2011, approximately $346 million, $78 million and $666 million, respectively, of IPR&D projects received marketing approval in a major market and the Company began amortizing these assets based on their estimated useful lives.

All of the IPR&D projects that remain in development are subject to the inherent risks and uncertainties in drug development and it is possible that the Company will not be able to successfully develop and complete the IPR&D programs and profitably commercialize the underlying product candidates. The time periods to receive approvals from the FDA and other regulatory agencies are subject to uncertainty. Significant delays in the approval process, or the Company's failure to obtain approval at all, would delay or prevent the Company from realizing revenues from these products. Additionally, if certain of the IPR&D programs fail or are abandoned during development, then the Company will not realize the future cash flows it has estimated and recorded as IPR&D as of the acquisition date, and the Company may also not recover the research and development expenditures made since the acquisition to further develop such program. If such circumstances were to occur, the Company's future operating results could be adversely affected and the Company may recognize impairment charges and such charges could be material.

During 2013, the Company recorded $279 million of IPR&D impairment charges within Research and development expenses. Of this amount, $181 million related to the write-off of the intangible asset associated with preladenant as a result of the discontinuation of the clinical development program for this compound. In addition, the Company recorded impairment charges resulting from changes in cash flow assumptions for certain compounds, as well as for pipeline programs that had previously been deprioritized and were subsequently deemed to have no alternative use in the period. During 2012, the Company recorded $200 million of IPR&D impairment charges primarily for pipeline

programs that had previously been deprioritized and were subsequently deemed to have no alternative use during the period. During 2011, the Company recorded $587 million of IPR&D impairment charges primarily for

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pipeline programs that were abandoned and determined to have no alternative use, as well as for expected delays in the launch timing or changes in the cash flow assumptions for certain compounds. In addition, the impairment charges in 2011 related to pipeline programs that had previously been deprioritized and were either deemed to have no alternative use during the period or were out-licensed to a third party for consideration that was less than the related asset's carrying value.

Additional research and development will be required before any of the remaining programs reach technological feasibility. The costs to complete the research projects will depend on whether the projects are brought to their final stages of development and are ultimately submitted to the FDA or other regulatory agencies for approval. As of December 31, 2013, the estimated costs to complete projects acquired in connection with mergers and acquisitions in Phase 3 development for human health and the analogous stage of development for animal health were approximately $1.2 billion.

Acquisitions, Divestitures, Research Collaborations and License Agreements

Merck continues to remain focused on pursuing opportunities that have the potential to drive both near- and long-term growth. During 2013, the Company completed transactions across a broad range of therapeutic categories. Merck is actively monitoring the landscape for growth opportunities that meet the Company's strategic criteria.

In April 2013, Merck and Pfizer announced that they had entered into a worldwide (except Japan) collaboration agreement for the development and commercialization of Pfizer's ertugliflozin, an investigational oral sodium glucose cotransporter ("SGLT2") inhibitor being evaluated for the treatment of type 2 diabetes. The Company has initiated Phase 3 clinical trials for ertugliflozin with Pfizer. Under the terms of the agreement, Merck and Pfizer will collaborate on the clinical development and commercialization of ertugliflozin and ertugliflozin-containing fixed-dose combinations with metformin and with Januvia (sitagliptin) tablets. Merck will continue to retain the rights to its existing portfolio of sitagliptin-containing products. Through the end of 2013, Merck recorded research and development expenses of $125 million for upfront and milestone payments made to Pfizer. Pfizer will be eligible for additional payments associated with the achievement of pre-specified future clinical, regulatory and commercial milestones. The companies will share potential revenues and certain costs 60% to Merck and 40% to Pfizer. Each party will have certain manufacturing and supply obligations. The Company and Pfizer each have the right to terminate the agreement due to a material, uncured breach by, or insolvency of, the other party, or in the event of a safety issue. Pfizer has the right to terminate the agreement upon 12 months notice at any time following the first anniversary of the first commercial sale of a collaboration product, but must assign all rights to ertugliflozin to Merck. Upon termination of the agreement, depending upon the circumstances, the parties have varying rights and obligations with respect to the continued development and commercialization of ertugliflozin and certain payment obligations.

In September 2013, Merck and AstraZeneca announced a worldwide out-licensing agreement for Merck's oral small molecule inhibitor of WEE1 kinase (MK-1775). MK-1775 is currently being evaluated in Phase 2a clinical studies in combination with standard-of-care therapies for the treatment of patients with certain types of ovarian cancer. Under the terms of the agreement, AstraZeneca paid Merck a $50 million upfront fee, which the Company recorded as revenue. In addition, Merck will be eligible to receive future payments tied to development and regulatory milestones, plus sales-related payments and tiered royalties. AstraZeneca will be responsible for all future clinical development, manufacturing and marketing.

In January 2014, the Company entered into an agreement to divest its Sirna Therapeutics, Inc. subsidiary and related RNAi technology assets to Alnylam Pharmaceuticals, Inc. ("Alnylam"). Under the terms of the agreement, the consideration to be paid by Alnylam to Merck will consist of $25 million in cash and 2,520,044 shares of Alnylam common stock (valued at approximately $165 million at the time of the agreement). In addition, Merck is eligible to receive up to $115 million in developmental and sales milestone payments, as well as single-digit royalties associated with certain preclinical candidates. The transaction is subject to customary closing conditions and is expected to close during the first quarter of 2014.

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Selected Joint Venture and Affiliate Information

To expand its research base and realize synergies from combining capabilities, opportunities and assets, in previous years Merck has formed a number of joint ventures.

AstraZeneca LP

In 1982, Merck entered into an agreement with Astra AB ("Astra") to develop and market Astra products under a royalty-bearing license. In 1993, Merck's total sales of Astra products reached a level that triggered the first step in the establishment of a joint venture business carried on by Astra Merck Inc. ("AMI"), in which Merck and Astra each owned a 50% share. This joint venture, formed in 1994, developed and marketed most of Astra's new prescription medicines in the United States including Prilosec, the first of a class of medications known as proton pump inhibitors, which slows the production of acid from the cells of the stomach lining.

In 1998, Merck and Astra completed the restructuring of the ownership and operations of the joint venture whereby Merck acquired Astra's interest in AMI, renamed KBI Inc. ("KBI"), and contributed KBI's operating assets to a new U.S. limited partnership, Astra Pharmaceuticals L.P. (the "Partnership"), in exchange for a 1% limited partner interest. Astra contributed the net assets of its wholly owned subsidiary, Astra USA, Inc., to the Partnership in exchange for a 99% general partner interest. The Partnership, renamed AstraZeneca LP ("AZLP") upon Astra's 1999 merger with Zeneca Group Plc, became the exclusive distributor of the products for which KBI retained rights.

While maintaining a 1% limited partner interest in AZLP, Merck has consent and protective rights intended to preserve its business and economic interests, including restrictions on the power of the general partner to make certain distributions or dispositions. Furthermore, in limited events of default, additional rights will be granted to the Company, including powers to direct the actions of, or remove and replace, the Partnership's chief executive officer and chief financial officer. Merck earns ongoing revenue based on sales of KBI products and such revenue was $920 million, $915 million and 1.2 billion in 2013, 2012 and 2011, respectively, primarily relating to sales of Nexium, as well as Prilosec. In addition, Merck earns certain Partnership returns which are recorded in Equity income from affiliates. Such returns include a priority return provided for in the Partnership Agreement, a preferential return representing Merck's share of undistributed AZLP GAAP earnings, and a variable return related to the Company's 1% limited partner interest. These returns aggregated $352 million, $621 million and $574 million in 2013, 2012 and 2011, respectively.

In 2014, AstraZeneca has the option to purchase Merck's interest in KBI based in part on the value of Merck's interest in Nexium and Prilosec. AstraZeneca's option is exercisable between March 1, 2014 and April 30, 2014. If AstraZeneca chooses to exercise this option, the closing date is expected to be June 30, 2014. Under the amended agreement, AstraZeneca will make a payment to Merck upon closing of $327 million, reflecting an estimate of the fair value of Merck's interest in Nexium and Prilosec. This portion of the exercise price is subject to a true-up in 2018 based on actual sales from closing in 2014 to June 2018. The exercise price will also include an additional amount equal to a multiple of ten times Merck's average 1% annual profit allocation in the partnership for the three years prior to exercise. The Company believes that it is likely that AstraZeneca will exercise its option in 2014. If AstraZeneca exercises its option, the Company will no longer record equity income from AZLP and supply sales to AZLP will terminate. In addition, the Company will recognize a non-cash pretax gain of approximately $700 million.

Sanofi Pasteur MSD

In 1994, Merck and Pasteur Mérieux Connaught (now Sanofi Pasteur S.A.) established an equally-owned joint venture to market vaccines in Europe and to collaborate in the development of combination vaccines for distribution in Europe.

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Sales of joint venture products were as follows:

($ in millions)	2013	2012	2011
Gardasil	$291	$264	$253
Influenza vaccines	162	161	183
Other viral vaccines	104	107	105
Zostavax	68	—	—
RotaTeq	55	47	44
Hepatitis vaccines	31	31	39
Other vaccines	453	474	486
	$1,164	$1,084	$1,110

Johnson & Johnson°Merck Consumer Pharmaceuticals Company

In 2011, Merck sold its 50% interest in the JJMCP joint venture to J&J. The venture between Merck and J&J was formed in 1989 to develop, manufacture, market and distribute certain over-the-counter consumer products in the United States and Canada. Merck received a one-time payment of $175 million and recognized a pretax gain of $136 million in 2011 reflected in Other (income) expense, net. The partnership assets also included a manufacturing facility. Sales of products marketed by the joint venture were $62 million for the period from January 1, 2011 until the September 29, 2011 divestiture date.

Capital Expenditures

Capital expenditures were $1.5 billion in 2013, $2.0 billion in 2012 and $1.7 billion in 2011. Expenditures in the United States were $902 million in 2013, $1.3 billion in 2012 and $1.2 billion in 2011.

Depreciation expense was $2.2 billion in 2013, $2.0 billion in 2012 and $2.4 billion in 2011 of which $1.5 billion, $1.3 billion and $1.4 billion, respectively, applied to locations in the United States. Total depreciation expense in 2013, 2012 and 2011 included accelerated depreciation of $577 million, $235 million and $589 million, respectively, associated with restructuring activities (see Note 3 to the consolidated financial statements).

Analysis of Liquidity and Capital Resources

Merck’s strong financial profile enables it to fully fund research and development, focus on external alliances, support in-line products and maximize upcoming launches while providing significant cash returns to shareholders.

Selected Data

($ in millions)	2013	2012	2011
Working capital	$17,817	$16,509	$16,936
Total debt to total liabilities and equity	23.7 %	19.4 %	16.7 %
Cash provided by operations to total debt	0.5:1	0.5:1	0.7:1

Cash provided by operating activities was $11.7 billion in 2013, $10.0 billion in 2012 and $12.4 billion in 2011. Cash provided by operating activities in 2013 includes a payment made by the Company of $480 million in connection with the previously disclosed settlement of the ENHANCE Litigation (see Note 10 to the consolidated financial statements). Cash provided by operating activities in 2012 reflects higher contributions to its defined benefit plans as compared with 2013 and 2011. Cash provided by operating activities in 2012 also includes a payment of $960 million related to the resolution of certain litigation related to Vioxx. Cash provided by operating activities in 2011 includes a $500 million payment made to J&J as a result of the arbitration settlement, as well as net payments of approximately $465 million to the Internal Revenue Service as a result of the conclusion of its examination of certain of Merck’s federal income tax returns. Cash provided by operating activities continues to be the Company’s primary source of funds to finance operating needs, capital expenditures, treasury stock purchases and dividends paid to shareholders. Global economic conditions and ongoing sovereign debt issues, among other factors, have adversely affected foreign receivables in certain European countries (see Note 5 to the consolidated financial statements). The Company received significant collections during 2013 and 2012, and has been successful in completing factoring arrangements for a portion of these receivables. Additionally, the Company continues to expand in the emerging markets where payment terms tend to be longer. The conditions in the EU and the emerging markets have resulted in an increase

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in the average length of time it takes to collect accounts receivable outstanding thereby adversely affecting cash provided by operating activities.

Cash used in investing activities was $3.1 billion in 2013 compared with $6.8 billion in 2012 primarily reflecting higher proceeds from the sales of securities and other investments and lower capital expenditures, partially offset by higher purchases of securities and other investments. Cash used in investing activities was $6.8 billion in 2012 compared with $2.9 billion in 2011 primarily reflecting higher purchases of securities and other investments, partially offset by higher proceeds from the sales of securities and other investments.

Cash used in financing activities was $6.0 billion in 2013 compared with $3.3 billion in 2012. The higher use of cash in financing activities was driven primarily by higher purchases of treasury stock (largely under an ASR agreement as discussed below), as well as higher payments on debt and a decrease in short-term borrowings, partially offset by higher proceeds from the issuance of debt. Cash used in financing activities in 2012 was $3.3 billion compared with $6.9 billion in 2011. The lower use of cash in financing activities was primarily driven by proceeds from the issuance of debt, lower payments on debt and higher proceeds from the exercise of stock options, partially offset by increased purchases of treasury stock, a decrease in short-term borrowings and higher dividends paid to stockholders.

At December 31, 2013, the total of worldwide cash and investments was $27.3 billion, including $17.5 billion of cash, cash equivalents and short-term investments, and $9.8 billion of long-term investments. Generally 80%-90% of these cash and investments are held by foreign subsidiaries and would be subject to significant tax payments if such cash and investments were repatriated in the form of dividends. The Company records U.S. deferred tax liabilities for certain unremitted earnings, but when amounts earned overseas are expected to be indefinitely reinvested outside of the United States, no accrual for U.S. taxes is provided. The amount of cash and investments held by U.S. and foreign subsidiaries fluctuates due to a variety of factors including the timing and receipt of payments in the normal course of business. Cash provided by operating activities in the United States continues to be the Company's primary source of funds to finance domestic operating needs, capital expenditures, a portion of treasury stock purchases and dividends paid to shareholders.

The Company's contractual obligations as of December 31, 2013 are as follows:

Payments Due by Period					
($ in millions)	Total	2014	2015—2016	2017—2018	Thereafter
Purchase obligations [1]	$2,948	$762	$791	$462	$933
Loans payable and current portion of long-term debt	4,492	4,492	—	—	—
Long-term debt	20,086	—	4,374	4,043	11,669
Interest related to debt obligations	10,052	841	1,342	1,179	6,690
Unrecognized tax benefits [2]	59	59	—	—	—
Operating leases	898	259	340	155	144
	$38,535	$6,413	$6,847	$5,839	$19,436

(1) Includes future bulk supply purchases the Company has committed to in connection with certain divestitures, including the disposition of its API manufacturing business in 2013 discussed above.

(2) As of December 31, 2013, the Company's Consolidated Balance Sheet reflects liabilities for unrecognized tax benefits, interest and penalties of $4.2 billion, including $59 million reflected as a current liability. Due to the high degree of uncertainty regarding the timing of future cash outflows of liabilities for unrecognized tax benefits beyond one year, a reasonable estimate of the period of cash settlement for years beyond 2014 cannot be made.

Purchase obligations are enforceable and legally binding obligations for purchases of goods and services including minimum inventory contracts, research and development and advertising. Amounts reflected for research and development obligations do not include contingent milestone payments. Also excluded from research and development obligations are potential future funding commitments of up to approximately $100 million for investments in research venture capital funds. Loans payable and current portion of long-term debt reflects $370 million of long-dated notes that are subject to repayment at the option of the holders. Required funding obligations for 2014 relating to the Company's pension and other postretirement benefit plans are not expected to be material. However, the Company currently anticipates contributing approximately $250 million and $75 million, respectively,

to its pension plans and other postretirement benefit plans during 2014.

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The Company has a $4.0 billion, five-year credit facility maturing in May 2017. The facility provides backup liquidity for the Company's commercial paper borrowing facility and is to be used for general corporate purposes. The Company has not drawn funding from this facility.

In May 2013, the Company completed an underwritten public offering of $6.5 billion senior unsecured notes consisting of $1.0 billion aggregate principal amount of 0.70% notes due in 2016, $500 million aggregate principal amount of floating rate notes due in 2016, $1.0 billion aggregate principal amount of 1.30% notes due in 2018, $1.0 billion aggregate principal amount of floating rate notes due in 2018, $1.75 billion aggregate principal amount of 2.80% notes due in 2023 and $1.25 billion aggregate principal amount of 4.15% notes due in 2043. Interest on the notes is payable semi-annually. The notes of each series are redeemable in whole or in part at any time at the Company's option at varying redemption prices. A substantial portion of the net proceeds from the notes were used to repurchase the Company's common stock pursuant to an accelerated share repurchase agreement in May 2013 as discussed below.

In December 2012, the Company filed a securities registration statement with the Securities and Exchange Commission ("SEC") under the automatic shelf registration process available to "well-known seasoned issuers" which is effective for three years.

Effective as of November 3, 2009, the Company executed a full and unconditional guarantee of the then existing debt of its subsidiary Merck Sharp & Dohme Corp. ("MSD") and MSD executed a full and unconditional guarantee of the then existing debt of the Company (excluding commercial paper), including for payments of principal and interest. These guarantees do not extend to debt issued subsequent to that date.

The Company's long-term credit ratings assigned by Moody's Investors Service and Standard & Poor's are A1 with a stable outlook and AA with a stable outlook, respectively. These ratings continue to allow access to the capital markets and flexibility in obtaining funds on competitive terms. The Company continues to maintain a conservative financial profile. The Company places its cash and investments in instruments that meet high credit quality standards, as specified in its investment policy guidelines. These guidelines also limit the amount of credit exposure to any one issuer. Despite this strong financial profile, certain contingent events, if realized, which are discussed in Note 10 to the consolidated financial statements, could have a material adverse impact on the Company's liquidity and capital resources. The Company does not participate in any off-balance sheet arrangements involving unconsolidated subsidiaries that provide financing or potentially expose the Company to unrecorded financial obligations.

In November 2013, the Board of Directors declared a quarterly dividend of $0.44 per share on the Company's common stock payable in January 2014.

On May 1, 2013, the Company announced that its board of directors authorized additional purchases of up to $15 billion of Merck's common stock for its treasury. The Company expects to repurchase approximately $7.5 billion of common stock within 12 months following the date of the announcement, financed through a combination of debt issuance and operating cash flows, with the remainder to be repurchased over time with no time limit. Purchases may be made in open-market transactions, block transactions, on or off an exchange, or in privately negotiated transactions. The Company purchased $6.5 billion of its common stock (139 million shares) for its treasury during 2013, which includes shares under an ASR agreement discussed below. The Company has approximately $10.4 billion remaining under the May share repurchase program. The Company purchased $2.6 billion and $1.9 billion of its common stock during 2012 and 2011, respectively, under previously authorized share repurchase programs.

On May 20, 2013, Merck entered into an ASR agreement with Goldman Sachs. Under the ASR, Merck agreed to purchase $5.0 billion of Merck's common stock, in total, with an initial delivery of approximately 99.5 million shares of Merck's common stock, based on current market price, made by Goldman Sachs to Merck, and payment of $5.0 billion made by Merck to Goldman Sachs, on May 21, 2013. Upon settlement of the ASR on October 31, 2013, Merck received an additional 5.5 million shares as determined by the average daily volume weighted-average price of Merck's common stock during the term of the ASR program bringing the total shares received by Merck under this program to 105 million. The ASR was entered into pursuant to the share repurchase program announced on May 1, 2013.

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Financial Instruments Market Risk Disclosures

The Company manages the impact of foreign exchange rate movements and interest rate movements on its earnings, cash flows and fair values of assets and liabilities through operational means and through the use of various financial instruments, including derivative instruments.

A significant portion of the Company's revenues and earnings in foreign affiliates is exposed to changes in foreign exchange rates. The objectives and accounting related to the Company's foreign currency risk management program, as well as its interest rate risk management activities are discussed below.

Foreign Currency Risk Management

The Company has established revenue hedging, balance sheet risk management, and net investment hedging programs to protect against volatility of future foreign currency cash flows and changes in fair value caused by volatility in foreign exchange rates.

The objective of the revenue hedging program is to reduce the potential for longer-term unfavorable changes in foreign exchange rates to decrease the U.S. dollar value of future cash flows derived from foreign currency denominated sales, primarily the euro and Japanese yen. To achieve this objective, the Company will hedge a portion of its forecasted foreign currency denominated third-party and intercompany distributor entity sales that are expected to occur over its planning cycle, typically no more than three years into the future. The Company will layer in hedges over time, increasing the portion of third-party and intercompany distributor entity sales hedged as it gets closer to the expected date of the forecasted foreign currency denominated sales. The portion of sales hedged is based on assessments of cost-benefit profiles that consider natural offsetting exposures, revenue and exchange rate volatilities and correlations, and the cost of hedging instruments. The hedged anticipated sales are a specified component of a portfolio of similarly denominated foreign currency-based sales transactions, each of which responds to the hedged currency risk in the same manner. The Company manages its anticipated transaction exposure principally with purchased local currency put options, which provide the Company with a right, but not an obligation, to sell foreign currencies in the future at a predetermined price. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, total changes in the options' cash flows offset the decline in the expected future U.S. dollar equivalent cash flows of the hedged foreign currency sales. Conversely, if the U.S. dollar weakens, the options' value reduces to zero, but the Company benefits from the increase in the U.S. dollar equivalent value of the anticipated foreign currency cash flows.

In connection with the Company's revenue hedging program, a purchased collar option strategy may be utilized. With a purchased collar option strategy, the Company writes a local currency call option and purchases a local currency put option. As compared to a purchased put option strategy alone, a purchased collar strategy reduces the upfront costs associated with purchasing puts through the collection of premium by writing call options. If the U.S. dollar weakens relative to the currency of the hedged anticipated sales, the purchased put option value of the collar strategy reduces to zero and the Company benefits from the increase in the U.S. dollar equivalent value of its anticipated foreign currency cash flows, however this benefit would be capped at the strike level of the written call. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, the written call option value of the collar strategy reduces to zero and the changes in the purchased put cash flows of the collar strategy would offset the decline in the expected future U.S. dollar equivalent cash flows of the hedged foreign currency sales.

The Company may also utilize forward contracts in its revenue hedging program. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, the increase in the fair value of the forward contracts offsets the decrease in the expected future U.S. dollar cash flows of the hedged foreign currency sales. Conversely, if the U.S. dollar weakens, the decrease in the fair value of the forward contracts offsets the increase in the value of the anticipated foreign currency cash flows. While a weaker U.S. dollar would result in a net benefit, the market value of Merck's hedges would have declined by an estimated $547 million and $453 million at December 31, 2013 and 2012, respectively, from a uniform 10% weakening of the U.S. dollar. The market value was determined using a foreign exchange option pricing model and holding all factors except exchange rates constant. Because Merck principally uses purchased local currency put options, a uniform weakening of the U.S. dollar would yield the largest overall potential loss in the market value of these options. The sensitivity measurement assumes that a change in one foreign currency

relative to the U.S. dollar would not affect other foreign currencies relative to the U.S. dollar. Although not predictive in nature, the Company believes that a 10% threshold reflects reasonably possible near-term changes in Merck's major foreign currency exposures relative to the U.S. dollar. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

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The primary objective of the balance sheet risk management program is to mitigate the exposure of foreign currency denominated net monetary assets of foreign subsidiaries where the U.S. dollar is the functional currency from the effects of volatility in foreign exchange. In these instances, Merck principally utilizes forward exchange contracts, which enable the Company to buy and sell foreign currencies in the future at fixed exchange rates and economically offset the consequences of changes in foreign exchange from the monetary assets. Merck routinely enters into contracts to offset the effects of exchange on exposures denominated in developed country currencies, primarily the euro and Japanese yen. For exposures in developing country currencies, the Company will enter into forward contracts to partially offset the effects of exchange on exposures when it is deemed economical to do so based on a cost-benefit analysis that considers the magnitude of the exposure, the volatility of the exchange rate and the cost of the hedging instrument. The Company will also minimize the effect of exchange on monetary assets and liabilities by managing operating activities and net asset positions at the local level.

A sensitivity analysis to changes in the value of the U.S. dollar on foreign currency denominated derivatives, investments and monetary assets and liabilities indicated that if the U.S. dollar uniformly strengthened by 10% against all currency exposures of the Company at December 31, 2013, Income before taxes would have declined by approximately $109 million in 2013. Because the Company was in a net long position relative to its major foreign currencies after consideration of forward contracts, a uniform strengthening of the U.S. dollar will yield the largest overall potential net loss in earnings due to exchange. At December 31, 2012, the Company was in a net short position relative to its major foreign currencies after consideration of forward contracts, therefore a uniform 10% weakening of the U.S. dollar would have reduced Income before taxes by approximately $20 million. This measurement assumes that a change in one foreign currency relative to the U.S. dollar would not affect other foreign currencies relative to the U.S. dollar. Although not predictive in nature, the Company believes that a 10% threshold reflects reasonably possible near-term changes in Merck’s major foreign currency exposures relative to the U.S. dollar. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

In February 2013, the Venezuelan government devalued its currency (Bolívar Fuertes) from 4.30 VEF per U.S. dollar to 6.30 VEF per U.S. dollar. The Company recognized losses due to exchange of approximately $140 million in 2013 resulting from the remeasurement of the local monetary assets and liabilities at the new rate. Since January 2010, Venezuela has been designated hyperinflationary and, as a result, local foreign operations are remeasured in U.S. dollars with the impact recorded in results of operations.

In March 2013, the Venezuelan government announced the creation of a new foreign exchange mechanism called the “Complimentary System of Foreign Currency Acquirement” (known as SICAD) that operates similar to an auction system and allows entities in specific sectors to bid for U.S. dollars to be used for specified import transactions. In December 2013, the regulation that created the SICAD auction mechanism was amended to require the Central Bank of Venezuela to include on its website the weekly average exchange rate implied by transactions settled via the SICAD auction mechanism, which for the week of December 30, 2013, was 11.3 BsF per U.S. dollar. The Company has not used the SICAD auction mechanism to settle any transactions. While the SICAD mechanism is described as an auction, it has several attributes that are inconsistent with a free market auction. Accordingly, the Company does not believe it is appropriate to use the SICAD rate for remeasurement under U.S. GAAP. The Company will continue to monitor the SICAD auction mechanism. It is possible that circumstances may change such that the SICAD mechanism takes on the attributes of a true free market auction and the SICAD rate can be utilized for remeasurement purposes. If this occurs, or if a devaluation of the official rate occurs, it could result in a material charge to the Company’s future results of operations.

The Company also uses forward exchange contracts to hedge its net investment in foreign operations against movements in exchange rates. The forward contracts are designated as hedges of the net investment in a foreign operation. The Company hedges a portion of the net investment in certain of its foreign operations and measures ineffectiveness based upon changes in spot foreign exchange rates. The effective portion of the unrealized gains or losses on these contracts is recorded in foreign currency translation adjustment within Other Comprehensive Income (“OCI”), and remains in Accumulated Other Comprehensive Income (“AOCI”) until either the sale or complete or substantially complete liquidation of the subsidiary. The cash flows from these contracts are reported as investing activities in the Consolidated Statement of Cash Flows.

Foreign exchange risk is also managed through the use of foreign currency debt. The Company's senior unsecured euro-denominated notes have been designated as, and are effective as, economic hedges of the net investment

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in a foreign operation. Accordingly, foreign currency transaction gains or losses due to spot rate fluctuations on the euro-denominated debt instruments are included in foreign currency translation adjustment within OCI.

Interest Rate Risk Management

The Company may use interest rate swap contracts on certain investing and borrowing transactions to manage its net exposure to interest rate changes and to reduce its overall cost of borrowing. The Company does not use leveraged swaps and, in general, does not leverage any of its investment activities that would put principal capital at risk.

During 2013, the Company entered into 15 pay-floating, received-fixed interest rate swap contracts designated as fair value hedges of fixed-rate notes in which the notional amounts match the amount of the hedged fixed-rate notes. There are four swaps maturing in 2016 with notional amounts of $250 million each that effectively convert the Company's 0.70% fixed-rate notes due in 2016 to floating-rate instruments; four swaps maturing in 2018 with notional amounts of $250 million each that effectively convert the Company's 1.30% fixed-rate notes due in 2018 to floating-rate instruments; four swaps maturing in 2017, one with a notional amount of $200 million, two with notional amounts of $250 million each, and one with a notional amount of $300 million, that effectively convert the Company's 6.00% fixed-rate notes due in 2017 to floating-rate instruments; and three swaps maturing in 2019, two with notional amounts of $200 million each, and one with a notional amount of $150 million, that effectively convert a portion of the Company's 5.00% notes due in 2019 to floating rate instruments. The interest rate swap contracts are designated hedges of the fair value changes in the notes attributable to changes in the benchmark London Interbank Offered Rate ("LIBOR") swap rate. The fair value changes in the notes attributable to changes in the LIBOR are recorded in interest expense and offset by the fair value changes in the swap contracts. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

There were no interest rate swaps outstanding as of December 31, 2012. During 2011, the Company terminated pay-floating, receive-fixed interest rate swap contracts designated as fair value hedges of fixed-rate notes in which the notional amounts match the amount of the hedged fixed-rate notes. These swaps effectively converted certain of its fixed-rate notes to floating-rate instruments. The interest rate swap contracts were designated hedges of the fair value changes in the notes attributable to changes in the benchmark LIBOR swap rate. As a result of the swap terminations, the Company received $288 million in cash, which included $43 million in accrued interest. The corresponding $245 million basis adjustment of the debt associated with the terminated interest rate swap contracts was deferred and is being amortized as a reduction of interest expense over the respective term of the notes. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

The Company's investment portfolio includes cash equivalents and short-term investments, the market values of which are not significantly affected by changes in interest rates. The market value of the Company's medium- to long-term fixed-rate investments is modestly affected by changes in U.S. interest rates. Changes in medium- to long-term U.S. interest rates have a more significant impact on the market value of the Company's fixed-rate borrowings, which generally have longer maturities. A sensitivity analysis to measure potential changes in the market value of Merck's investments and debt from a change in interest rates indicated that a one percentage point increase in interest rates at December 31, 2013 and 2012 would have positively affected the net aggregate market value of these instruments by $1.1 billion and $1.2 billion, respectively. A one percentage point decrease at December 31, 2013 and 2012 would have negatively affected the net aggregate market value by $1.3 billion and $1.4 billion, respectively. The fair value of Merck's debt was determined using pricing models reflecting one percentage point shifts in the appropriate yield curves. The fair values of Merck's investments were determined using a combination of pricing and duration models.

Critical Accounting Policies

The Company's consolidated financial statements are prepared in conformity with GAAP and, accordingly, include certain amounts that are based on management's best estimates and judgments. Estimates are used when accounting for amounts recorded in connection with mergers and acquisitions, including initial fair value determinations of assets and liabilities, primarily IPR&D and other intangible assets, as well as subsequent fair value measurement. Additionally, estimates are used in determining such items as provisions for sales discounts and returns, depreciable and amortizable lives, recoverability of inventories, including those produced in preparation for product launches, amounts recorded for contingencies, environmental liabilities and other reserves, pension and other postretirement benefit plan

assumptions, share-based compensation assumptions, restructuring costs, impairments of long-lived assets (including intangible assets and goodwill) and investments, and taxes on income. Because of the uncertainty inherent

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in such estimates, actual results may differ from these estimates. Application of the following accounting policies result in accounting estimates having the potential for the most significant impact on the financial statements.

Mergers and Acquisitions

In a business combination, the acquisition method of accounting requires that the assets acquired and liabilities assumed be recorded as of the date of the merger or acquisition at their respective fair values with limited exceptions. Assets acquired and liabilities assumed in a business combination that arise from contingencies are recognized at fair value if fair value can reasonably be estimated. If the acquisition date fair value of an asset acquired or liability assumed that arises from a contingency cannot be determined, the asset or liability is recognized if probable and reasonably estimable; if these criteria are not met, no asset or liability is recognized. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Accordingly, the Company may be required to value assets at fair value measures that do not reflect the Company's intended use of those assets. Any excess of the purchase price (consideration transferred) over the estimated fair values of net assets acquired is recorded as goodwill. Transaction costs and costs to restructure the acquired company are expensed as incurred. The operating results of the acquired business are reflected in the Company's consolidated financial statements after the date of the merger or acquisition. If the Company determines the assets acquired do not meet the definition of a business under the acquisition method of accounting, the transaction will be accounted for as an acquisition of assets rather than a business combination and, therefore, no goodwill will be recorded. The fair values of intangible assets, including acquired IPR&D, are determined utilizing information available near the merger or acquisition date based on expectations and assumptions that are deemed reasonable by management. Given the considerable judgment involved in determining fair values, the Company typically obtains assistance from third-party valuation specialists for significant items. Amounts allocated to acquired IPR&D are capitalized and accounted for as indefinite-lived intangible assets, subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, Merck will make a separate determination as to the then useful life of the asset and begin amortization. The judgments made in determining estimated fair values assigned to assets acquired and liabilities assumed in a business combination, as well as asset lives, can materially affect the Company's results of operations.

The fair values of identifiable intangible assets related to currently marketed products and product rights are primarily determined by using an "income approach" through which fair value is estimated based on each asset's discounted projected net cash flows. The Company's estimates of market participant net cash flows consider historical and projected pricing, margins and expense levels; the performance of competing products where applicable; relevant industry and therapeutic area growth drivers and factors; current and expected trends in technology and product life cycles; the time and investment that will be required to develop products and technologies; the ability to obtain marketing and regulatory approvals; the ability to manufacture and commercialize the products; the extent and timing of potential new product introductions by the Company's competitors; and the life of each asset's underlying patent, if any. The net cash flows are then probability-adjusted where appropriate to consider the uncertainties associated with the underlying assumptions, as well as the risk profile of the net cash flows utilized in the valuation. The probability-adjusted future net cash flows of each product are then discounted to present value utilizing an appropriate discount rate.

The fair values of identifiable intangible assets related to IPR&D are determined using an income approach, through which fair value is estimated based on each asset's probability-adjusted future net cash flows, which reflect the different stages of development of each product and the associated probability of successful completion. The net cash flows are then discounted to present value using an appropriate discount rate.

Revenue Recognition

Revenues from sales of products are recognized at the time of delivery when title and risk of loss passes to the customer. Recognition of revenue also requires reasonable assurance of collection of sales proceeds and completion of all performance obligations. Domestically, sales discounts are issued to customers as direct discounts at the point-of-sale or indirectly through an intermediary wholesaler, known as chargebacks, or indirectly in the form of rebates. Additionally, sales are generally made with a limited right of return under certain conditions. Revenues are

recorded net of provisions for sales discounts and returns, which are established at the time of sale. In addition, revenues are

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recorded net of time value of money discounts for customers for which collection of accounts receivable is expected to be in excess of one year.

The provision for aggregate indirect customer discounts covers chargebacks and rebates. Chargebacks are discounts that occur when a contracted customer purchases directly through an intermediary wholesaler. The contracted customer generally purchases product at its contracted price plus a mark-up from the wholesaler. The wholesaler, in turn, charges the Company back for the difference between the price initially paid by the wholesaler and the contract price paid to the wholesaler by the customer. The provision for chargebacks is based on expected sell-through levels by the Company's wholesale customers to contracted customers, as well as estimated wholesaler inventory levels. Rebates are amounts owed based upon definitive contractual agreements or legal requirements with private sector and public sector (Medicaid and Medicare Part D) benefit providers, after the final dispensing of the product by a pharmacy to a benefit plan participant. The provision is based on expected payments, which are driven by patient usage and contract performance by the benefit provider customers.

The Company uses historical customer segment mix, adjusted for other known events, in order to estimate the expected provision. Amounts accrued for aggregate indirect customer discounts are evaluated on a quarterly basis through comparison of information provided by the wholesalers, health maintenance organizations, pharmacy benefit managers and other customers to the amounts accrued. Adjustments are recorded when trends or significant events indicate that a change in the estimated provision is appropriate.

The Company continually monitors its provision for aggregate indirect customer discounts. There were no material adjustments to estimates associated with the aggregate indirect customer discount provision in 2013, 2012 or 2011.

Summarized information about changes in the aggregate indirect customer discount accrual is as follows:

($ in millions)	2013	2012
Balance January 1	$1,873	$1,824
Current provision	5,451	5,694
Adjustments to prior years	(70)	89
Payments	(5,566)	(5,734)
Balance December 31	$1,688	$1,873

Accruals for chargebacks are reflected as a direct reduction to accounts receivable and accruals for rebates as current liabilities. The accrued balances relative to these provisions included in Accounts receivable and Accrued and other current liabilities were $87 million and $1.6 billion, respectively, at December 31, 2013 and were $120 million and $1.8 billion, respectively, at December 31, 2012.

The Company maintains a returns policy that allows its U.S. pharmaceutical customers to return product within a specified period prior to and subsequent to the expiration date (generally, three to six months before and 12 months after product expiration). The estimate of the provision for returns is based upon historical experience with actual returns. Additionally, the Company considers factors such as levels of inventory in the distribution channel, product dating and expiration period, whether products have been discontinued, entrance in the market of additional generic competition, changes in formularies or launch of over-the-counter products, among others. The product returns provision for U.S. pharmaceutical sales as a percentage of U.S. net pharmaceutical sales was 1.5% in 2013, 1.4% in 2012 and 1.3% in 2011.

Through its distribution programs with U.S. wholesalers, the Company encourages wholesalers to align purchases with underlying demand and maintain inventories below specified levels. The terms of the programs allow the wholesalers to earn fees upon providing visibility into their inventory levels, as well as by achieving certain performance parameters such as inventory management, customer service levels, reducing shortage claims and reducing product returns. Information provided through the wholesaler distribution programs includes items such as sales trends, inventory on-hand, on-order quantity and product returns.

Wholesalers generally provide only the above mentioned data to the Company, as there is no regulatory requirement to report lot level information to manufacturers, which is the level of information needed to determine the remaining shelf life and original sale date of inventory. Given current wholesaler inventory levels, which are generally less than a month, the Company believes that collection of order lot information across all wholesale customers would have limited use in estimating sales discounts and returns.

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Inventories Produced in Preparation for Product Launches

The Company capitalizes inventories produced in preparation for product launches sufficient to support estimated initial market demand. Typically, capitalization of such inventory does not begin until the related product candidates are in Phase 3 clinical trials and are considered to have a high probability of regulatory approval. The Company monitors the status of each respective product within the regulatory approval process; however, the Company generally does not disclose specific timing for regulatory approval. If the Company is aware of any specific risks or contingencies other than the normal regulatory approval process or if there are any specific issues identified during the research process relating to safety, efficacy, manufacturing, marketing or labeling, the related inventory would generally not be capitalized. Expiry dates of the inventory are affected by the stage of completion. The Company manages the levels of inventory at each stage to optimize the shelf life of the inventory in relation to anticipated market demand in order to avoid product expiry issues. For inventories that are capitalized, anticipated future sales and shelf lives support the realization of the inventory value as the inventory shelf life is sufficient to meet initial product launch requirements. Inventories produced in preparation for product launches capitalized at December 31, 2013 and 2012 were $177 million and $196 million, respectively.

Contingencies and Environmental Liabilities

The Company is involved in various claims and legal proceedings of a nature considered normal to its business, including product liability, intellectual property and commercial litigation, as well as additional matters such as antitrust actions (see Note 10 to the consolidated financial statements.) The Company records accruals for contingencies when it is probable that a liability has been incurred and the amount can be reasonably estimated. These accruals are adjusted periodically as assessments change or additional information becomes available. For product liability claims, a portion of the overall accrual is actuarially determined and considers such factors as past experience, number of claims reported and estimates of claims incurred but not yet reported. Individually significant contingent losses are accrued when probable and reasonably estimable.

Legal defense costs expected to be incurred in connection with a loss contingency are accrued when probable and reasonably estimable. Some of the significant factors considered in the review of these legal defense reserves are as follows: the actual costs incurred by the Company; the development of the Company’s legal defense strategy and structure in light of the scope of its litigation; the number of cases being brought against the Company; the costs and outcomes of completed trials and the most current information regarding anticipated timing, progression, and related costs of pre-trial activities and trials in the associated litigation. The amount of legal defense reserves as of December 31, 2013 and 2012 of approximately $160 million and $260 million, respectively, represents the Company’s best estimate of the minimum amount of defense costs to be incurred in connection with its outstanding litigation; however, events such as additional trials and other events that could arise in the course of its litigation could affect the ultimate amount of legal defense costs to be incurred by the Company. The Company will continue to monitor its legal defense costs and review the adequacy of the associated reserves and may determine to increase the reserves at any time in the future if, based upon the factors set forth, it believes it would be appropriate to do so.

The Company and its subsidiaries are parties to a number of proceedings brought under the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund, and other federal and state equivalents. When a legitimate claim for contribution is asserted, a liability is initially accrued based upon the estimated transaction costs to manage the site. Accruals are adjusted as site investigations, feasibility studies and related cost assessments of remedial techniques are completed, and as the extent to which other potentially responsible parties who may be jointly and severally liable can be expected to contribute is determined.

The Company is also remediating environmental contamination resulting from past industrial activity at certain of its sites and takes an active role in identifying and providing for these costs. In the past, Merck performed a worldwide survey to assess all sites for potential contamination resulting from past industrial activities. Where assessment indicated that physical investigation was warranted, such investigation was performed, providing a better evaluation of the need for remedial action. Where such need was identified, remedial action was then initiated. As definitive information became available during the course of investigations and/or remedial efforts at each site, estimates were refined and accruals were established or adjusted accordingly. These estimates and related accruals continue to be refined annually.

The Company believes that there are no compliance issues associated with applicable environmental laws and regulations that would have a material adverse effect on the Company. Expenditures for remediation and

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environmental liabilities were $20 million in 2013, and are estimated at $117 million in the aggregate for the years 2014 through 2018. In management's opinion, the liabilities for all environmental matters that are probable and reasonably estimable have been accrued and totaled $213 million and $145 million at December 31, 2013 and 2012, respectively. These liabilities are undiscounted, do not consider potential recoveries from other parties and will be paid out over the periods of remediation for the applicable sites, which are expected to occur primarily over the next 15 years. Although it is not possible to predict with certainty the outcome of these matters, or the ultimate costs of remediation, management does not believe that any reasonably possible expenditures that may be incurred in excess of the liabilities accrued should exceed $84 million in the aggregate. Management also does not believe that these expenditures should result in a material adverse effect on the Company's financial position, results of operations, liquidity or capital resources for any year.

Share-Based Compensation

The Company expenses all share-based payment awards to employees, including grants of stock options, over the requisite service period based on the grant date fair value of the awards. The Company determines the fair value of certain share-based awards using the Black-Scholes option-pricing model which uses both historical and current market data to estimate the fair value. This method incorporates various assumptions such as the risk-free interest rate, expected volatility, expected dividend yield and expected life of the options. Total pretax share-based compensation expense was $276 million in 2013, $335 million in 2012 and $369 million in 2011. At December 31, 2013, there was $374 million of total pretax unrecognized compensation expense related to nonvested stock option, restricted stock unit and performance share unit awards which will be recognized over a weighted average period of 1.9 years. For segment reporting, share-based compensation costs are unallocated expenses.

Pensions and Other Postretirement Benefit Plans

Net periodic benefit cost for pension and other postretirement benefit plans totaled $716 million in 2013, $509 million in 2012 and $665 million in 2011. Pension and other postretirement benefit plan information for financial reporting purposes is calculated using actuarial assumptions including a discount rate for plan benefit obligations and an expected rate of return on plan assets.

The Company reassesses its benefit plan assumptions on a regular basis. For both the pension and other postretirement benefit plans, the discount rate is evaluated on measurement dates and modified to reflect the prevailing market rate of a portfolio of high-quality fixed-income debt instruments that would provide the future cash flows needed to pay the benefits included in the benefit obligation as they come due. At December 31, 2013, the discount rates for the Company's U.S. pension and other postretirement benefit plans ranged from 3.60% to 5.20% compared with a range of 3.00% to 4.20% at December 31, 2012.

The expected rate of return for both the pension and other postretirement benefit plans represents the average rate of return to be earned on plan assets over the period the benefits included in the benefit obligation are to be paid. In developing the expected rate of return, the Company considers long-term compound annualized returns of historical market data as well as actual returns on the Company's plan assets. Using this reference information, the Company develops forward-looking return expectations for each asset category and a weighted-average expected long-term rate of return for a target portfolio allocated across these investment categories. The expected portfolio performance reflects the contribution of active management as appropriate. As a result of this analysis, for 2014, the Company's expected rate of return will range from 7.30% to 8.75% compared to a range of 6.00% to 8.75% in 2013 for its U.S. pension and other postretirement benefit plans.

The Company has established investment guidelines for its U.S. pension and other postretirement plans to create an asset allocation that is expected to deliver a rate of return sufficient to meet the long-term obligation of each plan, given an acceptable level of risk. The target investment portfolio of the Company's U.S. pension and other postretirement benefit plans is allocated 40% to 60% in U.S. equities, 20% to 40% in international equities, 15% to 25% in fixed-income investments, and up to 5% in cash and other investments. The portfolio's equity weighting is consistent with the long-term nature of the plans' benefit obligations. The expected annual standard deviation of returns of the target portfolio, which approximates 13%, reflects both the equity allocation and the diversification benefits among the asset classes in which the portfolio invests. For non-U.S. pension plans, the targeted investment portfolio varies based on the duration of pension liabilities and local government rules and regulations. Although a

significant percentage of plan assets are invested in U.S. equities, concentration risk is mitigated through the use of strategies that are diversified within management guidelines.

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Actuarial assumptions are based upon management's best estimates and judgment. A reasonably possible change of plus (minus) 25 basis points in the discount rate assumption, with other assumptions held constant, would have an estimated $87 million favorable (unfavorable) impact on its net periodic benefit cost. A reasonably possible change of plus (minus) 25 basis points in the expected rate of return assumption, with other assumptions held constant, would have an estimated $39 million favorable (unfavorable) impact on its net periodic benefit cost. Required funding obligations for 2014 relating to the Company's pension and other postretirement benefit plans are not expected to be material. The preceding hypothetical changes in the discount rate and expected rate of return assumptions would not impact the Company's funding requirements.

Net loss amounts, which reflect experience differentials primarily relating to differences between expected and actual returns on plan assets as well as the effects of changes in actuarial assumptions, are recorded as a component of AOCI. Expected returns for pension plans are based on a calculated market-related value of assets. Under this methodology, asset gains/losses resulting from actual returns that differ from the Company's expected returns are recognized in the market-related value of assets ratably over a five-year period. Also, net loss amounts in AOCI in excess of certain thresholds are amortized into net periodic benefit cost over the average remaining service life of employees.

Restructuring Costs

Restructuring costs have been recorded in connection with restructuring programs designed to reduce the cost structure, increase efficiency and enhance competitiveness. As a result, the Company has made estimates and judgments regarding its future plans, including future termination benefits and other exit costs to be incurred when the restructuring actions take place. When accruing these costs, the Company will recognize the amount within a range of costs that is the best estimate within the range. When no amount within the range is a better estimate than any other amount, the Company recognizes the minimum amount within the range. In connection with these actions, management also assesses the recoverability of long-lived assets employed in the business. In certain instances, asset lives have been shortened based on changes in the expected useful lives of the affected assets. Severance and other related costs are reflected within Restructuring costs. Asset-related charges are reflected within Materials and production costs, Marketing and administrative expenses and Research and development expenses depending upon the nature of the asset.

Impairments of Long-Lived Assets

The Company assesses changes in economic, regulatory and legal conditions and makes assumptions regarding estimated future cash flows in evaluating the value of the Company's property, plant and equipment, goodwill and other intangible assets.

The Company periodically evaluates whether current facts or circumstances indicate that the carrying values of its long-lived assets to be held and used may not be recoverable. If such circumstances are determined to exist, an estimate of the undiscounted future cash flows of these assets, or appropriate asset groupings, is compared to the carrying value to determine whether an impairment exists. If the asset is determined to be impaired, the loss is measured based on the difference between the asset's fair value and its carrying value. If quoted market prices are not available, the Company will estimate fair value using a discounted value of estimated future cash flows approach.

Goodwill represents the excess of the consideration transferred over the fair value of net assets of businesses purchased and is assigned to reporting units. The Company tests its goodwill for impairment on at least an annual basis, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. Some of the factors considered in the assessment include general macro economic conditions, conditions specific to the industry and market, cost factors which could have a significant effect on earnings or cash flows, the overall financial performance of the reporting unit, and whether there have been sustained declines in the Company's share price. Additionally, the Company evaluates the extent to which the fair value exceeded the carrying value of the reporting unit at the last date a valuation was performed. If the Company concludes it is more likely than not that the fair value of a reporting unit is less than its carrying amount, a quantitative fair value test is performed.

Other acquired intangibles (excluding IPR&D) are recorded at fair value, assigned an estimated useful life, and are amortized primarily on a straight-line basis over their estimated useful lives. When events or circumstances warrant a review, the Company will assess recoverability from future operations using pretax undiscounted cash flows derived

from the lowest appropriate asset groupings. Impairments are recognized in operating results to the extent that

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the carrying value of the intangible asset exceeds its fair value, which is determined based on the net present value of estimated future cash flows.

IPR&D represents the fair value assigned to incomplete research projects that the Company acquires through business combinations which, at the time of acquisition, have not reached technological feasibility. The amounts are capitalized and accounted for as indefinite-lived intangible assets, subject to impairment testing until completion or abandonment of the project. The Company tests IPR&D for impairment at least annually, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of the IPR&D intangible asset is less than its carrying amount. If the Company concludes it is more likely than not that the fair value is less than the carrying amount, a quantitative test that compares the fair value of the IPR&D intangible asset with its carrying value is performed. For impairment testing purposes, the Company may combine separately recorded IPR&D intangible assets into one unit of account based on the relevant facts and circumstances. Generally, the Company will combine IPR&D intangible assets for testing purposes if they operate as a single asset and are essentially inseparable. If the fair value is less than the carrying amount, an impairment loss is recognized within the Company's operating results.

Impairments of Investments

The Company reviews its investments for impairments based on the determination of whether the decline in market value of the investment below the carrying value is other-than-temporary. The Company considers available evidence in evaluating potential impairments of its investments, including the duration and extent to which fair value is less than cost and, for equity securities, the Company's ability and intent to hold the investments. For debt securities, an other-than-temporary impairment has occurred if the Company does not expect to recover the entire amortized cost basis of the debt security. If the Company does not intend to sell the impaired debt security, and it is not more likely than not it will be required to sell the debt security before the recovery of its amortized cost basis, the amount of the other-than-temporary impairment recognized in earnings is limited to the portion attributed to credit loss. The remaining portion of the other-than-temporary impairment related to other factors is recognized in OCI.

Taxes on Income

The Company's effective tax rate is based on pretax income, statutory tax rates and tax planning opportunities available in the various jurisdictions in which the Company operates. An estimated effective tax rate for a year is applied to the Company's quarterly operating results. In the event that there is a significant unusual or one-time item recognized, or expected to be recognized, in the Company's quarterly operating results, the tax attributable to that item would be separately calculated and recorded at the same time as the unusual or one-time item. The Company considers the resolution of prior year tax matters to be such items. Significant judgment is required in determining the Company's tax provision and in evaluating its tax positions. The recognition and measurement of a tax position is based on management's best judgment given the facts, circumstances and information available at the reporting date. The Company evaluates tax positions to determine whether the benefits of tax positions are more likely than not of being sustained upon audit based on the technical merits of the tax position. For tax positions that are more likely than not of being sustained upon audit, the Company recognizes the largest amount of the benefit that is greater than 50% likely of being realized upon ultimate settlement in the financial statements. For tax positions that are not more likely than not of being sustained upon audit, the Company does not recognize any portion of the benefit in the financial statements. If the more likely than not threshold is not met in the period for which a tax position is taken, the Company may subsequently recognize the benefit of that tax position if the tax matter is effectively settled, the statute of limitations expires, or if the more likely than not threshold is met in a subsequent period (see Note 15 to the consolidated financial statements.)

Tax regulations require items to be included in the tax return at different times than the items are reflected in the financial statements. Timing differences create deferred tax assets and liabilities. Deferred tax assets generally represent items that can be used as a tax deduction or credit in the tax return in future years for which the Company has already recorded the tax benefit in the financial statements. The Company establishes valuation allowances for its deferred tax assets when the amount of expected future taxable income is not likely to support the use of the deduction or credit. Deferred tax liabilities generally represent tax expense recognized in the financial statements for which payment has been deferred or expense for which the Company has already taken a deduction on the tax return, but has

not yet recognized as expense in the financial statements. At December 31, 2013, foreign earnings of $57.1 billion have been retained indefinitely by subsidiary companies for reinvestment; therefore, no provision has been made for income

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taxes that would be payable upon the distribution of such earnings and it would not be practicable to determine the amount of the related unrecognized deferred income tax liability.

Cautionary Factors That May Affect Future Results

This report and other written reports and oral statements made from time to time by the Company may contain so-called “forward-looking statements,” all of which are based on management’s current expectations and are subject to risks and uncertainties which may cause results to differ materially from those set forth in the statements. One can identify these forward-looking statements by their use of words such as “anticipates,” “expects,” “plans,” “will,” “estimates,” “forecasts,” “projects” and other words of similar meaning. One can also identify them by the fact that they do not relate strictly to historical or current facts. These statements are likely to address the Company’s growth strategy, financial results, product development, product approvals, product potential and development programs. One must carefully consider any such statement and should understand that many factors could cause actual results to differ materially from the Company’s forward-looking statements. These factors include inaccurate assumptions and a broad variety of other risks and uncertainties, including some that are known and some that are not. No forward-looking statement can be guaranteed and actual future results may vary materially.

The Company does not assume the obligation to update any forward-looking statement. One should carefully evaluate such statements in light of factors, including risk factors, described in the Company’s filings with the Securities and Exchange Commission, especially on this Form 10-K and Forms 10-Q and 8-K. In Item 1A. “Risk Factors” of this annual report on Form 10-K the Company discusses in more detail various important risk factors that could cause actual results to differ from expected or historic results. The Company notes these factors for investors as permitted by the Private Securities Litigation Reform Act of 1995. One should understand that it is not possible to predict or identify all such factors. Consequently, the reader should not consider any such list to be a complete statement of all potential risks or uncertainties.

Item 7a. Quantitative and Qualitative Disclosures about Market Risk.

The information required by this Item is incorporated by reference to the discussion under “Financial Instruments Market Risk Disclosures” in Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

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Item 8. Financial Statements and Supplementary Data.

(a) Financial Statements

The consolidated balance sheet of Merck & Co., Inc. and subsidiaries as of December 31, 2013 and 2012, and the related consolidated statements of income, of comprehensive income, of equity and of cash flows for each of the three years in the period ended December 31, 2013, the notes to consolidated financial statements, and the report dated February 27, 2014 of PricewaterhouseCoopers LLP, independent registered public accounting firm, are as follows:

Consolidated Statement of Income
Merck & Co., Inc. and Subsidiaries
Years Ended December 31
($ in millions except per share amounts)

	2013	2012	2011
Sales	$44,033	$47,267	$48,047
Costs, Expenses and Other			
Materials and production	16,954	16,446	16,871
Marketing and administrative	11,911	12,776	13,733
Research and development	7,503	8,168	8,467
Restructuring costs	1,709	664	1,306
Equity income from affiliates	(404)	(642)	(610)
Other (income) expense, net	815	1,116	946
	38,488	38,528	40,713
Income Before Taxes	5,545	8,739	7,334
Taxes on Income	1,028	2,440	942
Net Income	4,517	6,299	6,392
Less: Net Income Attributable to Noncontrolling Interests	113	131	120
Net Income Attributable to Merck & Co., Inc.	$4,404	$6,168	$6,272
Basic Earnings per Common Share Attributable to Merck & Co., Inc. Common Shareholders	$1.49	$2.03	$2.04
Earnings per Common Share Assuming Dilution Attributable to Merck & Co., Inc. Common Shareholders	$1.47	$2.00	$2.02

Consolidated Statement of Comprehensive Income
Merck & Co., Inc. and Subsidiaries
Years Ended December 31
($ in millions)

	2013	2012	2011
Net Income Attributable to Merck & Co., Inc.	$4,404	$6,168	$6,272
Other Comprehensive Income (Loss) Net of Taxes:			
Net unrealized gain (loss) on derivatives, net of reclassifications	229	(101)	(37)
Net unrealized (loss) gain on investments, net of reclassifications	(19)	52	(10)
Benefit plan net gain (loss) and prior service cost (credit), net of amortization	2,758	(1,321)	(303)
Cumulative translation adjustment	(483)	(180)	434
	2,485	(1,550)	84
Comprehensive Income Attributable to Merck & Co., Inc.	$6,889	$4,618	$6,356

The accompanying notes are an integral part of these consolidated financial statements.

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Consolidated Balance Sheet
Merck & Co., Inc. and Subsidiaries
December 31
($ in millions except per share amounts)

	2013	2012
Assets		
Current Assets		
Cash and cash equivalents	$15,621	$13,451
Short-term investments	1,865	2,690
Accounts receivable (net of allowance for doubtful accounts of $146 in 2013 and $163 in 2012) (excludes accounts receivable of $275 in 2013 and $473 in 2012 classified in Other assets - see Note 5)	7,184	7,672
Inventories (excludes inventories of $1,704 in 2013 and $1,606 in 2012 classified in Other assets - see Note 6)	6,226	6,535
Deferred income taxes and other current assets	4,789	4,509
Total current assets	35,685	34,857
Investments	9,770	7,305
Property, Plant and Equipment (at cost)		
Land	550	591
Buildings	13,627	13,196
Machinery, equipment and office furnishings	17,106	17,188
Construction in progress	1,811	2,440
	33,094	33,415
Less: accumulated depreciation	18,121	17,385
	14,973	16,030
Goodwill	12,301	12,134
Other Intangibles, Net	23,801	29,083
Other Assets	9,115	6,723
	$105,645	$106,132
Liabilities and Equity		
Current Liabilities		
Loans payable and current portion of long-term debt	$4,521	$4,315
Trade accounts payable	2,274	1,753
Accrued and other current liabilities	9,501	9,737
Income taxes payable	251	1,200
Dividends payable	1,321	1,343
Total current liabilities	17,868	18,348
Long-Term Debt	20,539	16,254
Deferred Income Taxes	6,776	5,740
Other Noncurrent Liabilities	8,136	10,327
Merck & Co., Inc. Stockholders' Equity		
Common stock, $0.50 par value		
Authorized - 6,500,000,000 shares	1,788	1,788
Issued - 3,577,103,522 shares in 2013 and 2012		
Other paid-in capital	40,508	40,646
Retained earnings	39,257	39,985
Accumulated other comprehensive loss	(2,197)	(4,682)
	79,356	77,737
Less treasury stock, at cost:	29,591	24,717

649,576,808 shares in 2013 and 550,468,221 shares in 2012		
Total Merck & Co., Inc. stockholders' equity	49,765	53,020
Noncontrolling Interests	2,561	2,443
Total equity	52,326	55,463
	$105,645	$106,132

The accompanying notes are an integral part of this consolidated financial statement.

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Consolidated Statement of Equity
Merck & Co., Inc. and Subsidiaries
Years Ended December 31
($ in millions except per share amounts)

	Common Stock	Other Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Treasury Stock	Non-controlling Interests	Total
Balance January 1, 2011	$1,788	$40,701	$37,536	$ (3,216)	$(22,433)	$ 2,429	$56,805
Net income attributable to Merck & Co., Inc.	—	—	6,272	—	—	—	6,272
Other comprehensive income, net of tax	—	—	—	84	—	—	84
Cash dividends declared on common stock ($1.56 per share)	—	—	(4,818)	—	—	—	(4,818)
Treasury stock shares purchased	—	—	—	—	(1,921)		(1,921)
Net income attributable to noncontrolling interests	—	—	—	—	—	120	120
Distributions attributable to noncontrolling interests	—	—	—	—		(120)	(120)
Share-based compensation plans and other	—	(38)	—	—	562	(3)	521
Balance December 31, 2011	1,788	40,663	38,990	(3,132)	(23,792)	2,426	56,943
Net income attributable to Merck & Co., Inc.	—	—	6,168	—	—	—	6,168
Other comprehensive loss, net of tax	—	—	—	(1,550)	—	—	(1,550)
Cash dividends declared on common stock ($1.69 per share)	—	—	(5,173)	—	—	—	(5,173)
Treasury stock shares purchased	—	—	—	—	(2,591)	—	(2,591)
Net income attributable to noncontrolling interests	—	—	—	—	—	131	131
Distributions attributable to noncontrolling interests	—	—	—	—	—	(120)	(120)
Share-based compensation plans and other	—	(17)	—	—	1,666	6	1,655
Balance December 31, 2012	1,788	40,646	39,985	(4,682)	(24,717)	2,443	55,463
Net income attributable to Merck & Co., Inc.	—	—	4,404	—	—	—	4,404
Other comprehensive income, net of tax	—	—	—	2,485	—	—	2,485
Cash dividends declared on common stock ($1.73 per share)	—	—	(5,132)	—	—	—	(5,132)
Treasury stock shares purchased	—	—	—	—	(6,516)	—	(6,516)
Supera joint venture formation	—	116	—	—	—	112	228
Net income attributable to noncontrolling interests	—	—	—	—	—	113	113
Distributions attributable to noncontrolling interests	—	—	—	—	—	(120)	(120)
	—	(254)	—	—	1,642	13	1,401

Share-based compensation plans and other							
Balance December 31, 2013	$1,788	$40,508	$39,257	$ (2,197)	$(29,591)	$ 2,561	$52,326

The accompanying notes are an integral part of this consolidated financial statement.

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Consolidated Statement of Cash Flows
Merck & Co., Inc. and Subsidiaries
Years Ended December 31
($ in millions)

	2013	2012	2011
Cash Flows from Operating Activities			
Net income	$4,517	$6,299	$6,392
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	6,988	6,978	7,427
Intangible asset impairment charges	765	200	705
Gain on disposition of interest in equity method investment	—	—	(136)
Equity income from affiliates	(404)	(642)	(610)
Dividends and distributions from equity affiliates	237	291	216
Deferred income taxes	(330)	669	(1,537)
Share-based compensation	276	335	369
Other	399	28	323
Net changes in assets and liabilities:			
Accounts receivable	436	349	(1,168)
Inventories	(365)	(482)	(678)
Trade accounts payable	522	(302)	182
Accrued and other current liabilities	(397)	(717)	1,444
Income taxes payable	(1,421)	(34)	(277)
Noncurrent liabilities	(132)	(1,747)	(7)
Other	563	(1,203)	(262)
Net Cash Provided by Operating Activities	11,654	10,022	12,383
Cash Flows from Investing Activities			
Capital expenditures	(1,548)	(1,954)	(1,723)
Purchases of securities and other investments	(17,991)	(12,841)	(7,325)
Proceeds from sales of securities and other investments	16,298	7,783	6,149
Proceeds from sale of interest in equity method investment	—	—	175
Acquisitions of businesses, net of cash acquired	(246)	—	(373)
Dispositions of businesses, net of cash divested	46	—	323
Cash inflows (outflows) from net investment hedges	350	39	(86)
Other	(57)	168	(30)
Net Cash Used in Investing Activities	(3,148)	(6,805)	(2,890)
Cash Flows from Financing Activities			
Net change in short-term borrowings	(159)	624	1,076
Payments on debt	(1,775)	(22)	(1,547)
Proceeds from issuance of debt	6,467	2,562	—
Purchases of treasury stock	(6,516)	(2,591)	(1,921)
Dividends paid to stockholders	(5,157)	(5,116)	(4,691)
Other dividends paid	(120)	(120)	(120)
Proceeds from exercise of stock options	1,210	1,310	321
Other	60	86	(22)
Net Cash Used in Financing Activities	(5,990)	(3,267)	(6,904)
Effect of Exchange Rate Changes on Cash and Cash Equivalents	(346)	(30)	42
Net Increase (Decrease) in Cash and Cash Equivalents	2,170	(80)	2,631
Cash and Cash Equivalents at Beginning of Year	13,451	13,531	10,900
Cash and Cash Equivalents at End of Year	$15,621	$13,451	$13,531

The accompanying notes are an integral part of this consolidated financial statement.

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Notes to Consolidated Financial Statements
Merck & Co., Inc. and Subsidiaries
($ in millions except per share amounts)

1. Nature of Operations

Merck & Co., Inc. (“Merck” or “the Company”) is a global health care company that delivers innovative health solutions through its prescription medicines, vaccines, biologic therapies, animal health, and consumer care products, which it markets directly and through its joint ventures. The Company’s operations are principally managed on a products basis and are comprised of four operating segments, which are the Pharmaceutical, Animal Health, Consumer Care and Alliances segments, and one reportable segment, which is the Pharmaceutical segment. The Pharmaceutical segment includes human health pharmaceutical and vaccine products marketed either directly by the Company or through joint ventures. Human health pharmaceutical products consist of therapeutic and preventive agents, generally sold by prescription, for the treatment of human disorders. The Company sells these human health pharmaceutical products primarily to drug wholesalers and retailers, hospitals, government agencies and managed health care providers such as health maintenance organizations, pharmacy benefit managers and other institutions. Vaccine products consist of preventive pediatric, adolescent and adult vaccines, primarily administered at physician offices. The Company sells these human health vaccines primarily to physicians, wholesalers, physician distributors and government entities. The Company also has animal health operations that discover, develop, manufacture and market animal health products, including vaccines, which the Company sells to veterinarians, distributors and animal producers. Additionally, the Company has consumer care operations that develop, manufacture and market over-the-counter, foot care and sun care products, which are sold through wholesale and retail drug, food chain and mass merchandiser outlets, as well as club stores and specialty channels.

2. Summary of Accounting Policies

Principles of Consolidation — The consolidated financial statements include the accounts of the Company and all of its subsidiaries in which a controlling interest is maintained. Intercompany balances and transactions are eliminated. Controlling interest is determined by majority ownership interest and the absence of substantive third-party participating rights or, in the case of variable interest entities, by majority exposure to expected losses, residual returns or both. For those consolidated subsidiaries where Merck ownership is less than 100%, the outside shareholders’ interests are shown as Noncontrolling interests in equity. Investments in affiliates over which the Company has significant influence but not a controlling interest, such as interests in entities owned equally by the Company and a third party that are under shared control, are carried on the equity basis.

Mergers and Acquisitions — In a business combination, the acquisition method of accounting requires that the assets acquired and liabilities assumed be recorded as of the date of the merger or acquisition at their respective fair values with limited exceptions. Assets acquired and liabilities assumed in a business combination that arise from contingencies are recognized at fair value if fair value can reasonably be estimated. If the acquisition date fair value of an asset acquired or liability assumed that arises from a contingency cannot be determined, the asset or liability is recognized if probable and reasonably estimable; if these criteria are not met, no asset or liability is recognized. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Accordingly, the Company may be required to value assets at fair value measures that do not reflect the Company’s intended use of those assets. Any excess of the purchase price (consideration transferred) over the estimated fair values of net assets acquired is recorded as goodwill. Transaction costs and costs to restructure the acquired company are expensed as incurred. The operating results of the acquired business are reflected in the Company’s consolidated financial statements after the date of the merger or acquisition. If the Company determines the assets acquired do not meet the definition of a business under the acquisition method of accounting, the transaction will be accounted for as an acquisition of assets rather than a business combination and, therefore, no goodwill will be recorded.

Foreign Currency Translation — The net assets of international subsidiaries where the local currencies have been determined to be the functional currencies are translated into U.S. dollars using current exchange rates. The U.S. dollar effects that arise from translating the net assets of these subsidiaries at changing rates are recorded in the

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foreign currency translation account, which is included in Accumulated other comprehensive income (loss) ("AOCI") and reflected as a separate component of equity. For those subsidiaries that operate in highly inflationary economies and for those subsidiaries where the U.S. dollar has been determined to be the functional currency, non-monetary foreign currency assets and liabilities are translated using historical rates, while monetary assets and liabilities are translated at current rates, with the U.S. dollar effects of rate changes included in Other (income) expense, net.

Cash Equivalents — Cash equivalents are comprised of certain highly liquid investments with original maturities of less than three months.

Inventories — Inventories are valued at the lower of cost or market. The cost of a substantial majority of domestic pharmaceutical and vaccine inventories is determined using the last-in, first-out ("LIFO") method for both financial reporting and tax purposes. The cost of all other inventories is determined using the first-in, first-out ("FIFO") method. Inventories consist of currently marketed products and certain products awaiting regulatory approval. In evaluating the recoverability of inventories produced in preparation for product launches, the Company considers the likelihood that revenue will be obtained from the future sale of the related inventory together with the status of the product within the regulatory approval process.

Investments — Investments in marketable debt and equity securities classified as available-for-sale are reported at fair value. Fair values of the Company's investments are determined using quoted market prices in active markets for identical assets or liabilities or quoted prices for similar assets or liabilities or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. Changes in fair value that are considered temporary are reported net of tax in Other Comprehensive Income ("OCI"). For declines in the fair value of equity securities that are considered other-than-temporary, impairment losses are charged to Other (income) expense, net. The Company considers available evidence in evaluating potential impairments of its investments, including the duration and extent to which fair value is less than cost and, for equity securities, the Company's ability and intent to hold the investments. For debt securities, an other-than-temporary impairment has occurred if the Company does not expect to recover the entire amortized cost basis of the debt security. If the Company does not intend to sell the impaired debt security, and it is not more likely than not it will be required to sell the debt security before the recovery of its amortized cost basis, the amount of the other-than-temporary impairment recognized in earnings, recorded in Other (income) expense, net, is limited to the portion attributed to credit loss. The remaining portion of the other-than-temporary impairment related to other factors is recognized in OCI. Realized gains and losses for both debt and equity securities are included in Other (income) expense, net.

Revenue Recognition — Revenues from sales of products are recognized at the time of delivery when title and risk of loss passes to the customer. Recognition of revenue also requires reasonable assurance of collection of sales proceeds and completion of all performance obligations. Domestically, sales discounts are issued to customers as direct discounts at the point-of-sale or indirectly through an intermediary wholesaler, known as chargebacks, or indirectly in the form of rebates. Additionally, sales are generally made with a limited right of return under certain conditions. Revenues are recorded net of provisions for sales discounts and returns, which are established at the time of sale. In addition, revenues are recorded net of time value of money discounts if collection of accounts receivable is expected to be in excess of one year. Accruals for chargebacks are reflected as a direct reduction to accounts receivable and accruals for rebates are recorded as current liabilities. The accrued balances relative to the provisions for chargebacks and rebates included in Accounts receivable and Accrued and other current liabilities were $87 million and $1.6 billion, respectively, at December 31, 2013 and $120 million and $1.8 billion, respectively, at December 31, 2012. The Company recognizes revenue from the sales of vaccines to the Federal government for placement into vaccine stockpiles in accordance with Securities and Exchange Commission ("SEC") Interpretation, Commission Guidance Regarding Accounting for Sales of Vaccines and BioTerror Countermeasures to the Federal Government for Placement into the Pediatric Vaccine Stockpile or the Strategic National Stockpile.

Depreciation — Depreciation is provided over the estimated useful lives of the assets, principally using the straight-line method. For tax purposes, accelerated tax methods are used. The estimated useful lives primarily range from 10 to 50 years for Buildings, and from 3 to 15 years for Machinery, equipment and office furnishings. Depreciation expense was $2.2 billion in 2013, $2.0 billion in 2012 and $2.4 billion in 2011.

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Advertising and Promotion Costs — Advertising and promotion costs are expensed as incurred. The Company recorded advertising and promotion expenses of $2.5 billion, $2.8 billion and $3.1 billion in 2013, 2012 and 2011, respectively.

Software Capitalization — The Company capitalizes certain costs incurred in connection with obtaining or developing internal-use software including external direct costs of material and services, and payroll costs for employees directly involved with the software development. Capitalized software costs are included in Property, plant and equipment and amortized beginning when the software project is substantially complete and the asset is ready for its intended use. Capitalized software costs associated with projects that are being amortized over 6 to 10 years (including the Company's on-going multi-year implementation of an enterprise-wide resource planning system) were $529 million and $428 million, at December 31, 2013 and 2012, respectively. All other capitalized software costs are being amortized over periods ranging from 3 to 5 years. Costs incurred during the preliminary project stage and post-implementation stage, as well as maintenance and training costs, are expensed as incurred.

Goodwill — Goodwill represents the excess of the consideration transferred over the fair value of net assets of businesses purchased. Goodwill is assigned to reporting units and evaluated for impairment on at least an annual basis, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If the Company concludes it is more likely than not that the fair value of a reporting unit is less than its carrying amount, a quantitative fair value test is performed. Based upon the Company's most recent annual impairment test completed as of October 1, 2013, the Company concluded goodwill was not impaired.

Acquired Intangibles — Acquired intangibles include products and product rights, tradenames and patents, which are recorded at fair value, assigned an estimated useful life, and are amortized primarily on a straight-line basis over their estimated useful lives ranging from 3 to 40 years (see Note 7). The Company periodically evaluates whether current facts or circumstances indicate that the carrying values of its acquired intangibles may not be recoverable. If such circumstances are determined to exist, an estimate of the undiscounted future cash flows of these assets, or appropriate asset groupings, is compared to the carrying value to determine whether an impairment exists. If the asset is determined to be impaired, the loss is measured based on the difference between the carrying value of the intangible asset and its fair value, which is determined based on the net present value of estimated future cash flows.

In-Process Research and Development — In-process research and development ("IPR&D") represents the fair value assigned to incomplete research projects that the Company acquires through business combinations which, at the time of acquisition, have not reached technological feasibility. The amounts are capitalized and are accounted for as indefinite-lived intangible assets, subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, Merck will make a determination as to the then useful life of the intangible asset, generally determined by the period in which the substantial majority of the cash flows are expected to be generated, and begin amortization. The Company tests IPR&D for impairment at least annually, or more frequently if impairment indicators exist, by first assessing qualitative factors to determine whether it is more likely than not that the fair value of the IPR&D intangible asset is less than its carrying amount. If the Company concludes it is more likely than not that the fair value is less than the carrying amount, a quantitative test that compares the fair value of the IPR&D intangible asset with its carrying value is performed. If the fair value is less than the carrying amount, an impairment loss is recognized in operating results.

Research and Development — Research and development is expensed as incurred. Upfront and milestone payments due to third parties in connection with research and development collaborations prior to regulatory approval are expensed as incurred. Payments due to third parties upon or subsequent to regulatory approval are capitalized and amortized over the shorter of the remaining license or product patent life. Amounts due from collaborative partners related to development activities are generally reflected as a reduction of research and development expenses when the specific milestone has been achieved. Nonrefundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made. Research and development expenses include restructuring costs and IPR&D impairment charges in all periods.

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Share-Based Compensation — The Company expenses all share-based payments to employees over the requisite service period based on the grant-date fair value of the awards.

Restructuring Costs — The Company records liabilities for costs associated with exit or disposal activities in the period in which the liability is incurred. In accordance with existing benefit arrangements, employee termination costs are accrued when the restructuring actions are probable and estimable. When accruing these costs, the Company will recognize the amount within a range of costs that is the best estimate within the range. When no amount within the range is a better estimate than any other amount, the Company recognizes the minimum amount within the range. Costs for one-time termination benefits in which the employee is required to render service until termination in order to receive the benefits are recognized ratably over the future service period.

Contingencies and Legal Defense Costs — The Company records accruals for contingencies and legal defense costs expected to be incurred in connection with a loss contingency when it is probable that a liability has been incurred and the amount can be reasonably estimated.

Taxes on Income — Deferred taxes are recognized for the future tax effects of temporary differences between financial and income tax reporting based on enacted tax laws and rates. The Company evaluates tax positions to determine whether the benefits of tax positions are more likely than not of being sustained upon audit based on the technical merits of the tax position. For tax positions that are more likely than not of being sustained upon audit, the Company recognizes the largest amount of the benefit that is greater than 50% likely of being realized upon ultimate settlement in the financial statements. For tax positions that are not more likely than not of being sustained upon audit, the Company does not recognize any portion of the benefit in the financial statements. The Company recognizes interest and penalties associated with uncertain tax positions as a component of Taxes on income in the Consolidated Statement of Income.

Use of Estimates — The consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (“GAAP”) and, accordingly, include certain amounts that are based on management’s best estimates and judgments. Estimates are used when accounting for amounts recorded in connection with mergers and acquisitions, including initial fair value determinations of assets and liabilities, primarily IPR&D and other intangible assets, as well as subsequent fair value measurements. Additionally, estimates are used in determining such items as provisions for sales discounts and returns, depreciable and amortizable lives, recoverability of inventories, including those produced in preparation for product launches, amounts recorded for contingencies, environmental liabilities and other reserves, pension and other postretirement benefit plan assumptions, share-based compensation assumptions, restructuring costs, impairments of long-lived assets (including intangible assets and goodwill) and investments, and taxes on income. Because of the uncertainty inherent in such estimates, actual results may differ from these estimates.

Reclassifications — Certain reclassifications have been made to prior year amounts to conform to the current year presentation.

Recently Adopted Accounting Standards — In the first quarter of 2013, the Company adopted guidance issued by the Financial Accounting Standards Board (the “FASB”) that simplifies how an entity tests indefinite-lived intangibles for impairment. The amended guidance allows companies to first assess qualitative factors to determine whether it is more-likely-than-not that an indefinite-lived intangible asset is impaired as a basis for determining whether it is necessary to perform the quantitative impairment test. The adoption of this guidance had no impact on the Company’s financial position and results of operations.

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3. Restructuring

2013 Restructuring Program

In October 2013, the Company announced a new global restructuring program (the "2013 Restructuring Program") as part of a global initiative to sharpen its commercial and research and development focus. As part of the new program, the Company expects to reduce its total workforce by approximately 8,500 positions. These workforce reductions will primarily come from the elimination of positions in sales, administrative and headquarters organizations, as well as research and development. The Company will also reduce its global real estate footprint and continue to improve the efficiency of its manufacturing and supply network. The Company will continue to hire employees in strategic growth areas of the business as necessary.

The Company recorded total pretax costs of $1.2 billion in 2013 related to this restructuring program. The actions under the 2013 Restructuring Program are expected to be substantially completed by the end of 2015 with the cumulative pretax costs estimated to be approximately $2.5 billion to $3.0 billion. The Company estimates that approximately two-thirds of the cumulative pretax costs will result in cash outlays, primarily related to employee separation expense. Approximately one-third of the cumulative pretax costs are non-cash, relating primarily to the accelerated depreciation of facilities to be closed or divested.

Merger Restructuring Program

In 2010, subsequent to the Merck and Schering-Plough Corporation ("Schering-Plough") merger (the "Merger"), the Company commenced actions under a global restructuring program (the "Merger Restructuring Program") designed to streamline the cost structure of the combined company. Further actions under this program were initiated in 2011. The actions under this program primarily reflect the elimination of positions in sales, administrative and headquarters organizations, as well as from the sale or closure of certain manufacturing and research and development sites and the consolidation of office facilities.

On October 1, 2013, the Company sold its active pharmaceutical ingredient ("API") manufacturing business, including the related manufacturing facility, in the Netherlands to Aspen Holdings ("Aspen") as part of planned manufacturing facility rationalizations under the Merger Restructuring Program. In conjunction with the sale, the parties entered into a strategic long-term supply agreement whereby Aspen will supply API to the Company and approximately 960 employees who support the API business were transferred from Merck to Aspen. Also in connection with the sale, Aspen acquired certain branded products from Merck, which transferred to Aspen effective December 31, 2013. Consideration for the transaction included cash of $705 million and notes receivable with a present value of $198 million at the time of disposition. The notes receivable consist of a $261 million note with a present value of $138 million due in 2023 and a $67.5 million note with a present value of $60 million that is payable over five years beginning on December 31, 2014. Of the cash portion of the consideration, the Company received $172 million in the fourth quarter of 2013. The remaining $533 million was received by the Company in January 2014; therefore, at December 31, 2013, this amount was recorded as a receivable within Deferred income taxes and other current assets on the Consolidated Balance Sheet. In conjunction with this transaction, the Company transferred inventory of $420 million, property, plant and equipment of $220 million and cash of $125 million to Aspen, reduced goodwill by $45 million, other intangible assets by $45 million and other assets by $23 million and recorded $90 million of transaction-related liabilities. This transaction resulted in a loss of $65 million that was recorded within Restructuring costs in 2013.

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The Company recorded total pretax costs of $1.1 billion in 2013, $951 million in 2012 and $1.8 billion in 2011 related to this restructuring program. Since inception of the Merger Restructuring Program through December 31, 2013, Merck has recorded total pretax accumulated costs of approximately $7.2 billion and eliminated approximately 26,880 positions comprised of employee separations, as well as the elimination of contractors and vacant positions. Approximately 6,300 position eliminations remain pending under this program as of December 31, 2013, which include the remaining actions under the 2008 Restructuring Program that are now being reported as part of the Merger Restructuring Program as discussed below. The restructuring actions under the Merger Restructuring Program were substantially completed by the end of 2013, with the exception of certain actions, principally manufacturing-related. Subsequent to the Merger, the Company has rationalized a number of manufacturing sites worldwide. The remaining actions under this program will result in additional manufacturing facility rationalizations, which are expected to be substantially completed by 2016. The Company expects the estimated total cumulative pretax costs for this program to be approximately $7.4 billion to $7.7 billion. The Company estimates that approximately two-thirds of the cumulative pretax costs relate to cash outlays, primarily related to employee separation expense. Approximately one-third of the cumulative pretax costs are non-cash, relating primarily to the accelerated depreciation of facilities to be closed or divested.

2008 Restructuring Program

In October 2008, Merck announced a global restructuring program (the “2008 Restructuring Program”) to reduce its cost structure, increase efficiency, and enhance competitiveness. Pretax costs of $54 million, $48 million and $45 million were recorded in 2013, 2012 and 2011, respectively, related to the 2008 Restructuring Program. Since inception of the 2008 Restructuring Program through June 30, 2013, Merck has recorded total pretax accumulated costs of $1.7 billion and eliminated approximately 6,460 positions comprised of employee separations and the elimination of contractors and vacant positions. The 2008 Restructuring Program was substantially completed in 2011, with the exception of certain manufacturing-related actions, which are expected to be completed by 2015. As of July 1, 2013, the remaining accrued liability for future separations under the 2008 Restructuring Program was transferred to the Merger Restructuring Program and any remaining activities under the 2008 Restructuring Program are now being accounted for as part of the Merger Restructuring Program.

For segment reporting, restructuring charges are unallocated expenses.

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The following table summarizes the charges related to restructuring program activities by type of cost:

Year Ended December 31, 2013	Separation Costs	Accelerated Depreciation	Other	Total
2013 Restructuring Program				
Materials and production	$—	$186	$7	$193
Marketing and administrative	—	72	3	75
Research and development	—	76	(1)	75
Restructuring costs	866	—	32	898
	866	334	41	1,241
Merger Restructuring Program				
Materials and production	—	151	98	249
Marketing and administrative	—	63	3	66
Research and development	—	27	(1)	26
Restructuring costs	481	—	284	765
	481	241	384	1,106
2008 Restructuring Program				
Materials and production	—	(2)	6	4
Marketing and administrative	—	4	—	4
Restructuring costs	34	—	12	46
	34	2	18	54
	$1,381	$577	$443	$2,401
Year Ended December 31, 2012				
Merger Restructuring Program				
Materials and production	$—	$92	$70	$162
Marketing and administrative	—	75	6	81
Research and development	—	53	4	57
Restructuring costs	497	—	154	651
	497	220	234	951
2008 Restructuring Program				
Materials and production	—	7	19	26
Marketing and administrative	—	8	1	9
Restructuring costs	(8)	—	21	13
	(8)	15	41	48
	$489	$235	$275	$999
Year Ended December 31, 2011				
Merger Restructuring Program				
Materials and production	$—	$282	$17	$299
Marketing and administrative	—	108	11	119
Research and development	—	151	(17)	134
Restructuring costs	1,117	—	177	1,294
	1,117	541	188	1,846
2008 Restructuring Program				
Materials and production	—	24	5	29
Research and development	—	4	—	4
Restructuring costs	(6)	—	18	12
	(6)	28	23	45
	$1,111	$569	$211	$1,891

Separation costs are associated with actual headcount reductions, as well as those headcount reductions which were probable and could be reasonably estimated. In 2013, approximately 1,540 positions were eliminated under the 2013

Restructuring Program. Positions eliminated under the Merger Restructuring Program were approximately 4,475 in 2013, 3,975 in 2012 and 6,880 in 2011 and positions eliminated under the 2008 Restructuring Program were approximately 55 in 2013, 155 in 2012 and 450 in 2011. These position eliminations were comprised of actual headcount reductions and the elimination of contractors and vacant positions.

Accelerated depreciation costs primarily relate to manufacturing, research and administrative facilities and equipment to be sold or closed as part of the programs. Accelerated depreciation costs represent the difference between the depreciation expense to be recognized over the revised useful life of the site, based upon the anticipated date the

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site will be closed or divested, and depreciation expense as determined utilizing the useful life prior to the restructuring actions. All of the sites have and will continue to operate up through the respective closure dates and, since future undiscounted cash flows were sufficient to recover the respective book values, Merck was required to accelerate depreciation of the site assets rather than record an impairment charge. Anticipated site closure dates, particularly related to manufacturing locations, have been and may continue to be adjusted to reflect changes resulting from regulatory or other factors.

Other activity in 2013, 2012 and 2011 includes $259 million, $155 million and $72 million, respectively, of asset abandonment, shut-down and other related costs. Additionally, other activity includes certain employee-related costs associated with pension and other postretirement benefit plans (see Note 13) and share-based compensation. Other activity also reflects net pretax (losses) gains resulting from sales of facilities and related assets of $(64) million in 2013 (primarily reflecting the loss on the transaction with Aspen discussed above), $28 million in 2012 and $10 million in 2011.

Adjustments to the recorded amounts were not material in any period.

The following table summarizes the charges and spending relating to restructuring activities by program:

	Separation Costs	Accelerated Depreciation	Other	Total
2013 Restructuring Program				
Restructuring reserves January 1, 2013	$—	$—	$—	$—
Expenses	866	334	41	1,241
(Payments) receipts, net	(121)	—	9	(112)
Non-cash activity	—	(334)	(27)	(361)
Restructuring reserves December 31, 2013 [1]	$745	$—	$23	$768
Merger Restructuring Program				
Restructuring reserves January 1, 2012	$1,144	$—	$51	$1,195
Expenses	497	220	234	951
(Payments) receipts, net	(942)	—	(170)	(1,112)
Non-cash activity	—	(220)	(96)	(316)
Restructuring reserves December 31, 2012	699	—	19	718
Expenses	481	241	384	1,106
(Payments) receipts, net	(517)	—	(258)	(775)
Non-cash activity	62	(241)	(133)	(312)
Restructuring reserves December 31, 2013 [1]	$725	$—	$12	$737
2008 Restructuring Program				
Restructuring reserves January 1, 2012	$126	$—	$—	$126
Expenses	(8)	15	41	48
(Payments) receipts, net	(41)	—	(21)	(62)
Non-cash activity	—	(15)	(20)	(35)
Restructuring reserves December 31, 2012	77	—	—	77
Expenses	34	2	18	54
(Payments) receipts, net	(49)	—	(11)	(60)
Non-cash activity	(62)	(2)	(7)	(71)
Restructuring reserves December 31, 2013	$—	$—	$—	$—

(1) The cash outlays associated with the 2013 Restructuring Program are expected to be substantially completed by the end of 2015. The cash outlays associated with the Merger Restructuring Program were substantially completed by the end of 2013 with the exception of certain actions, principally manufacturing-related, which are expected to be substantially completed by 2016.

Legacy Schering-Plough Program

Prior to the Merger, Schering-Plough commenced a Productivity Transformation Program which was designed to reduce and avoid costs and increase productivity. During 2011, the Company recorded $20 million of accelerated depreciation costs included in Materials and production costs for this program which was substantially complete at the end of 2011.

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4. Acquisitions, Divestitures, Research Collaborations and License Agreements

The Company continues its strategy of establishing external alliances to complement its substantial internal research capabilities, including research collaborations, licensing preclinical and clinical compounds and technology platforms to drive both near- and long-term growth. The Company supplements its internal research with a licensing and external alliance strategy focused on the entire spectrum of collaborations from early research to late-stage compounds. These arrangements often include upfront payments and royalty or profit share payments, contingent upon the occurrence of certain future events linked to the success of the asset in development, as well as expense reimbursements or payments to the third party.

In September 2013, Merck and AstraZeneca announced a worldwide out-licensing agreement for Merck's oral small molecule inhibitor of WEE1 kinase (MK-1775). MK-1775 is currently being evaluated in Phase 2a clinical studies in combination with standard-of-care therapies for the treatment of patients with certain types of ovarian cancer. Under the terms of the agreement, AstraZeneca paid Merck a $50 million upfront fee, which the Company recorded as revenue. In addition, Merck will be eligible to receive future payments tied to development and regulatory milestones, plus sales-related payments and tiered royalties. AstraZeneca will be responsible for all future clinical development, manufacturing and marketing.

In April 2013, Merck and Pfizer Inc. ("Pfizer") announced that they had entered into a worldwide (except Japan) collaboration agreement for the development and commercialization of Pfizer's ertugliflozin, an investigational oral sodium glucose cotransporter ("SGLT2") inhibitor being evaluated for the treatment of type 2 diabetes. The Company has initiated Phase 3 clinical trials for ertugliflozin with Pfizer. Under the terms of the agreement, Merck and Pfizer will collaborate on the clinical development and commercialization of ertugliflozin and ertugliflozin-containing fixed-dose combinations with metformin and with Januvia (sitagliptin) tablets. Merck will continue to retain the rights to its existing portfolio of sitagliptin-containing products. Through the end of 2013, Merck recorded research and development expenses of $125 million for upfront and milestone payments made to Pfizer. Pfizer will be eligible for additional payments associated with the achievement of pre-specified future clinical, regulatory and commercial milestones. The companies will share potential revenues and certain costs 60% to Merck and 40% to Pfizer. Each party will have certain manufacturing and supply obligations. The Company and Pfizer each have the right to terminate the agreement due to a material, uncured breach by, or insolvency of, the other party, or in the event of a safety issue. Pfizer has the right to terminate the agreement upon 12 months notice at any time following the first anniversary of the first commercial sale of a collaboration product, but must assign all rights to ertugliflozin to Merck. Upon termination of the agreement, depending upon the circumstances, the parties have varying rights and obligations with respect to the continued development and commercialization of ertugliflozin and certain payment obligations.

In February 2013, Merck and Supera Farma Laboratorios S.A. ("Supera"), a Brazilian pharmaceutical company co-owned by Cristália and Eurofarma, established the previously announced joint venture that markets, distributes and sells a portfolio of pharmaceutical and branded generic products from Merck, Cristália and Eurofarma in Brazil. Merck owns 51% of the joint venture, and Cristália and Eurofarma collectively own 49%. The transaction was accounted for as an acquisition of a business; accordingly, the assets acquired and liabilities assumed were recorded at their respective fair values. This resulted in Merck recognizing intangible assets for currently marketed products of $89 million, IPR&D of $100 million, goodwill of $103 million, and deferred tax liabilities of $64 million. The Company also recorded increases to Noncontrolling interests and Other paid-in capital in the amounts of $112 million and $116 million, respectively. This transaction closed on February 1, 2013, and accordingly, the results of operations of the acquired business have been included in the Company's results of operations beginning after that date. During the fourth quarter of 2013, as a result of changes in cash flows assumptions for certain compounds, the Company recorded $15 million of impairment charges related to the IPR&D recorded in the Supera transaction.

In October 2012, Merck and AiCuris entered into an exclusive licensing agreement which provides Merck with worldwide rights to develop and commercialize candidates in AiCuris' novel portfolio of investigational medicines targeting human cytomegalovirus ("HCMV"), including letermovir (MK-8228), an oral, late-stage antiviral candidate being investigated for the treatment and prevention of HCMV infection in transplant recipients. AiCuris received an upfront payment of €110 million (approximately $140 million), which the Company recorded as research and development expense, and is eligible for milestone payments of up to €332.5 million based on successful achievement

of development, regulatory and commercialization goals for HCMV candidates, including letermovir, an additional

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back-up candidate as well as other Phase 1 candidates designed to act via an alternate mechanism. In addition, AiCuris will be entitled to receive royalty payments reflecting the advanced stage of the clinical program on any potential products that result from the agreement. Merck will be responsible for all development activities and costs. The agreement may be terminated by either party in the event of a material uncured breach or insolvency. The agreement may be terminated by Merck at any time in the event that any of the compounds licensed from AiCuris develop an adverse safety profile or any material adverse issue arises related to the development, efficacy or dosing regimen of any of the compounds, and/or in the event that certain patents are invalid and/or unenforceable in certain jurisdictions. Merck (i) may terminate the agreement with respect to certain compounds after successful completion of the first proof of concept clinical trial or (ii) must terminate the agreement with respect to certain compounds if Merck fails to minimally invest in such compounds. In addition, Merck may terminate the agreement as a whole at any time upon six months prior written notice at any time after completion of the first Phase 3 clinical trial for a compound. AiCuris may terminate the agreement in the event that Merck challenges any AiCuris patent covering the compounds licensed from AiCuris. Upon termination of the agreement, depending upon the circumstances, the parties have varying rights and obligations with respect to the continued development and commercialization of compounds and, in the case of termination for cause by Merck, certain royalty obligations.

In April 2012, the Company entered into an agreement with Endocyte, Inc. (“Endocyte”) to develop and commercialize Endocyte’s novel investigational therapeutic candidate vintafolide (MK-8109). Vintafolide is currently being evaluated in a Phase 3 clinical trial for folate-receptor positive platinum-resistant ovarian cancer (PROCEED) and a Phase 2 trial for non-small cell lung cancer. Under the agreement, Merck gained worldwide rights to develop and commercialize vintafolide. Endocyte received a $120 million upfront payment, which the Company recorded as research and development expense, and is eligible for milestone payments of up to $880 million based on the successful achievement of development, regulatory and commercialization goals for vintafolide for a total of six cancer indications. In addition, if vintafolide receives regulatory approval, Merck and Endocyte will share equally profits and losses in the United States. Endocyte will receive a royalty on sales of the product in the rest of the world. Endocyte has retained the right to co-promote vintafolide with Merck in the United States and Merck has the exclusive right to promote vintafolide in the rest of world. Endocyte will be responsible for the majority of funding and completion of the PROCEED trial. Merck will be responsible for all other development activities and development costs and have all decision rights for vintafolide. Merck has the right to terminate the agreement on 90 days notice. Merck and Endocyte both have the right to terminate the agreement due to the material breach or insolvency of the other party. Endocyte has the right to terminate the agreement in the event that Merck challenges an Endocyte patent right relating to vintafolide. Upon termination of the agreement, depending upon the circumstances, the parties have varying rights and obligations with respect to the continued development and commercialization of vintafolide and, in the case of termination for cause by Merck, certain royalty obligations and U.S. profit and loss sharing.

In May 2011, Merck completed the acquisition of Inspire Pharmaceuticals, Inc. (“Inspire”), a specialty pharmaceutical company focused on developing and commercializing ophthalmic products. Under the terms of the merger agreement, Merck acquired all outstanding shares of common stock of Inspire at a price of $5.00 per share in cash for a total of approximately $420 million. The transaction was accounted for as an acquisition of a business; accordingly, the assets acquired and liabilities assumed were recorded at their respective fair values as of the acquisition date. The determination of fair value requires management to make significant estimates and assumptions. In connection with the acquisition, substantially all of the purchase price was allocated to Inspire’s product and product right intangible assets and related deferred tax liabilities, a deferred tax asset relating to Inspire’s net operating loss carryforwards, and goodwill. In November 2013, Merck sold the U.S. rights to certain ophthalmic products to Akorn, Inc., including AzaSite which was acquired from Inspire in this transaction.

In March 2011, the Company sold the Merck BioManufacturing Network, a provider of contract manufacturing and development services for the biopharmaceutical industry and wholly owned by Merck, to Fujifilm Corporation (“Fujifilm”). Under the terms of the agreement, Fujifilm purchased all of the equity interests in two Merck subsidiaries which together owned all of the assets of the Merck BioManufacturing Network comprising facilities located in Research Triangle Park, North Carolina and Billingham, United Kingdom. As part of the agreement with Fujifilm, Merck committed to purchase certain development and manufacturing services at fair value from Fujifilm over a

three-year period following the closing of the transaction. The transaction resulted in a gain of $127 million in 2011 reflected in Other (income) expense, net.

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Remicade/Simponi

In 1998, a subsidiary of Schering-Plough entered into a licensing agreement with Centocor Ortho Biotech Inc. ("Centocor"), a Johnson & Johnson ("J&J") company, to market Remicade, which is prescribed for the treatment of inflammatory diseases. In 2005, Schering-Plough's subsidiary exercised an option under its contract with Centocor for license rights to develop and commercialize Simponi, a fully human monoclonal antibody. The Company has exclusive marketing rights to both products throughout Europe, Russia and Turkey. In December 2007, Schering-Plough and Centocor revised their distribution agreement regarding the development, commercialization and distribution of both Remicade and Simponi, extending the Company's rights to exclusively market Remicade to match the duration of the Company's exclusive marketing rights for Simponi. In addition, Schering-Plough and Centocor agreed to share certain development costs relating to Simponi's auto-injector delivery system. On October 6, 2009, the European Commission approved Simponi as a treatment for rheumatoid arthritis and other immune system disorders in two presentations — a novel auto-injector and a prefilled syringe. As a result, the Company's marketing rights for both products extend for 15 years from the first commercial sale of Simponi in the European Union (the "EU") following the receipt of pricing and reimbursement approval within the EU. All profits derived from Merck's exclusive distribution of the two products are equally divided between Merck and J&J. In April 2011, in connection with an agreement between Merck and J&J to amend the agreement governing the distribution rights to Remicade and Simponi, J&J received a one-time payment from Merck of $500 million, which the Company recorded as a charge to Other (income) expense, net in 2011.

5. Financial Instruments

Derivative Instruments and Hedging Activities

The Company manages the impact of foreign exchange rate movements and interest rate movements on its earnings, cash flows and fair values of assets and liabilities through operational means and through the use of various financial instruments, including derivative instruments.

A significant portion of the Company's revenues and earnings in foreign affiliates is exposed to changes in foreign exchange rates. The objectives and accounting related to the Company's foreign currency risk management program, as well as its interest rate risk management activities are discussed below.

Foreign Currency Risk Management

The Company has established revenue hedging, balance sheet risk management and net investment hedging programs to protect against volatility of future foreign currency cash flows and changes in fair value caused by volatility in foreign exchange rates.

The objective of the revenue hedging program is to reduce the potential for longer-term unfavorable changes in foreign exchange rates to decrease the U.S. dollar value of future cash flows derived from foreign currency denominated sales, primarily the euro and Japanese yen. To achieve this objective, the Company will hedge a portion of its forecasted foreign currency denominated third-party and intercompany distributor entity sales that are expected to occur over its planning cycle, typically no more than three years into the future. The Company will layer in hedges over time, increasing the portion of third-party and intercompany distributor entity sales hedged as it gets closer to the expected date of the forecasted foreign currency denominated sales. The portion of sales hedged is based on assessments of cost-benefit profiles that consider natural offsetting exposures, revenue and exchange rate volatilities and correlations, and the cost of hedging instruments. The hedged anticipated sales are a specified component of a portfolio of similarly denominated foreign currency-based sales transactions, each of which responds to the hedged currency risk in the same manner. The Company manages its anticipated transaction exposure principally with purchased local currency put options, which provide the Company with a right, but not an obligation, to sell foreign currencies in the future at a predetermined price. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, total changes in the options' cash flows offset the decline in the expected future U.S. dollar equivalent cash flows of the hedged foreign currency sales. Conversely, if the U.S. dollar weakens, the options' value reduces to zero, but the Company benefits from the increase in the U.S. dollar equivalent value of the anticipated foreign currency cash flows.

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In connection with the Company's revenue hedging program, a purchased collar option strategy may be utilized. With a purchased collar option strategy, the Company writes a local currency call option and purchases a local currency put option. As compared to a purchased put option strategy alone, a purchased collar strategy reduces the upfront costs associated with purchasing puts through the collection of premium by writing call options. If the U.S. dollar weakens relative to the currency of the hedged anticipated sales, the purchased put option value of the collar strategy reduces to zero and the Company benefits from the increase in the U.S. dollar equivalent value of its anticipated foreign currency cash flows, however this benefit would be capped at the strike level of the written call. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, the written call option value of the collar strategy reduces to zero and the changes in the purchased put cash flows of the collar strategy would offset the decline in the expected future U.S. dollar equivalent cash flows of the hedged foreign currency sales.

The Company may also utilize forward contracts in its revenue hedging program. If the U.S. dollar strengthens relative to the currency of the hedged anticipated sales, the increase in the fair value of the forward contracts offsets the decrease in the expected future U.S. dollar cash flows of the hedged foreign currency sales. Conversely, if the U.S. dollar weakens, the decrease in the fair value of the forward contracts offsets the increase in the value of the anticipated foreign currency cash flows.

The fair values of these derivative contracts are recorded as either assets (gain positions) or liabilities (loss positions) in the Consolidated Balance Sheet. Changes in the fair value of derivative contracts are recorded each period in either current earnings or OCI, depending on whether the derivative is designated as part of a hedge transaction and, if so, the type of hedge transaction. For derivatives that are designated as cash flow hedges, the effective portion of the unrealized gains or losses on these contracts is recorded in AOCI and reclassified into Sales when the hedged anticipated revenue is recognized. The hedge relationship is highly effective and hedge ineffectiveness has been de minimis. For those derivatives which are not designated as cash flow hedges, but serve as economic hedges of forecasted sales, unrealized gains or losses are recorded in Sales each period. The cash flows from both designated and non-designated contracts are reported as operating activities in the Consolidated Statement of Cash Flows. The Company does not enter into derivatives for trading or speculative purposes.

The primary objective of the balance sheet risk management program is to mitigate the exposure of foreign currency denominated net monetary assets of foreign subsidiaries where the U.S. dollar is the functional currency from the effects of volatility in foreign exchange. In these instances, Merck principally utilizes forward exchange contracts, which enable the Company to buy and sell foreign currencies in the future at fixed exchange rates and economically offset the consequences of changes in foreign exchange from the monetary assets. Merck routinely enters into contracts to offset the effects of exchange on exposures denominated in developed country currencies, primarily the euro and Japanese yen. For exposures in developing country currencies, the Company will enter into forward contracts to partially offset the effects of exchange on exposures when it is deemed economical to do so based on a cost-benefit analysis that considers the magnitude of the exposure, the volatility of the exchange rate and the cost of the hedging instrument. The Company will also minimize the effect of exchange on monetary assets and liabilities by managing operating activities and net asset positions at the local level.

Monetary assets and liabilities denominated in a currency other than the functional currency of a given subsidiary are remeasured at spot rates in effect on the balance sheet date with the effects of changes in spot rates reported in Other (income) expense, net. The forward contracts are not designated as hedges and are marked to market through Other (income) expense, net. Accordingly, fair value changes in the forward contracts help mitigate the changes in the value of the remeasured assets and liabilities attributable to changes in foreign currency exchange rates, except to the extent of the spot-forward differences. These differences are not significant due to the short-term nature of the contracts, which typically have average maturities at inception of less than one year.

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The Company also uses forward exchange contracts to hedge its net investment in foreign operations against movements in exchange rates. The forward contracts are designated as hedges of the net investment in a foreign operation. The Company hedges a portion of the net investment in certain of its foreign operations and measures ineffectiveness based upon changes in spot foreign exchange rates. The effective portion of the unrealized gains or losses on these contracts is recorded in foreign currency translation adjustment within OCI, and remains in AOCI until either the sale or complete or substantially complete liquidation of the subsidiary. The cash flows from these contracts are reported as investing activities in the Consolidated Statement of Cash Flows.

Foreign exchange risk is also managed through the use of foreign currency debt. The Company's senior unsecured euro-denominated notes have been designated as, and are effective as, economic hedges of the net investment in a foreign operation. Accordingly, foreign currency transaction gains or losses due to spot rate fluctuations on the euro-denominated debt instruments are included in foreign currency translation adjustment within OCI. Included in the cumulative translation adjustment are pretax losses of $84 million in 2013 and $31 million in 2012 and pretax gains of $6 million in 2011 from the euro-denominated notes.

Interest Rate Risk Management

The Company may use interest rate swap contracts on certain investing and borrowing transactions to manage its net exposure to interest rate changes and to reduce its overall cost of borrowing. The Company does not use leveraged swaps and, in general, does not leverage any of its investment activities that would put principal capital at risk.

During 2013, the Company entered into 15 pay-floating, receive-fixed interest rate swap contracts designated as fair value hedges of fixed-rate notes in which the notional amounts match the amount of the hedged fixed-rate notes. There are four swaps maturing in 2016 with notional amounts of $250 million each that effectively convert the Company's 0.70% fixed-rate notes due in 2016 to floating-rate instruments; four swaps maturing in 2018 with notional amounts of $250 million each that effectively convert the Company's 1.30% fixed-rate notes due in 2018 to floating-rate instruments; four swaps maturing in 2017, one with a notional amount of $200 million, two with notional amounts of $250 million each, and one with a notional amount of $300 million, that effectively convert the Company's 6.00% fixed-rate notes due in 2017 to floating-rate instruments; and three swaps maturing in 2019, two with notional amounts of $200 million each, and one with a notional amount of $150 million, that effectively convert a portion of the Company's 5.00% notes due in 2019 to floating rate instruments. The interest rate swap contracts are designated hedges of the fair value changes in the notes attributable to changes in the benchmark London Interbank Offered Rate ("LIBOR") swap rate. The fair value changes in the notes attributable to changes in the LIBOR are recorded in interest expense and offset by the fair value changes in the swap contracts. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

There were no interest rate swaps outstanding as of December 31, 2012. During 2011, the Company terminated pay-floating, receive-fixed interest rate swap contracts designated as fair value hedges of fixed-rate notes in which the notional amounts match the amount of the hedged fixed-rate notes. These swaps effectively converted certain of its fixed-rate notes to floating-rate instruments. The interest rate swap contracts were designated hedges of the fair value changes in the notes attributable to changes in the benchmark LIBOR swap rate. As a result of the swap terminations, the Company received $288 million in cash, which included $43 million in accrued interest. The corresponding $245 million basis adjustment of the debt associated with the terminated interest rate swap contracts was deferred and is being amortized as a reduction of interest expense over the respective term of the notes. The cash flows from these contracts are reported as operating activities in the Consolidated Statement of Cash Flows.

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Presented in the table below is the fair value of derivatives on a gross basis segregated between those derivatives that are designated as hedging instruments and those that are not designated as hedging instruments as of December 31:

		2013			2012		
		Fair Value of Derivative		U.S. Dollar Notional	Fair Value of Derivative		U.S. Dollar Notional
	Balance Sheet Caption	Asset	Liability		Asset	Liability	
Derivatives Designated as Hedging Instruments							
Interest rate swap contracts (non-current)	Other assets	$13	$—	$1,550	$—	$—	$—
Interest rate swap contracts (non-current)	Other noncurrent liabilities	—	25	2,000	—	—	—
Foreign exchange contracts (current)	Deferred income taxes and other current assets	493	—	4,427	281	—	6,646
Foreign exchange contracts (non-current)	Other assets	515	—	6,676	387	—	5,989
Foreign exchange contracts (current)	Accrued and other current liabilities	—	19	1,659	—	13	938
		$1,021	$44	$16,312	$668	$13	$13,573
Derivatives Not Designated as Hedging Instruments							
Foreign exchange contracts (current)	Deferred income taxes and other current assets	$69	$—	$5,705	$55	$—	$4,548
Foreign exchange contracts (non-current)	Other assets	—	—	—	8	—	232
Foreign exchange contracts (current)	Accrued and other current liabilities	—	140	7,892	—	216	8,203
		$69	$140	$13,597	$63	$216	$12,983
		$1,090	$184	$29,909	$731	$229	$26,556

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As noted above, the Company records its derivatives on a gross basis in the Consolidated Balance Sheet. The Company has master netting agreements with several of its financial institution counterparties (see Concentrations of Credit Risk below). The following table provides information on the Company's derivative positions subject to these master netting arrangements as if they were presented on a net basis, allowing for the right of offset by counterparty and cash collateral exchanged per the master agreements and related credit support annexes at December 31:

	2013		2012	
	Asset	Liability	Asset	Liability
Gross amounts recognized in the consolidated balance sheet	$1,090	$184	$731	$229
Gross amount subject to offset in master netting arrangements not offset in the consolidated balance sheet	(147)	(147)	(195)	(195)
Cash collateral (received) posted	(652)	—	(305)	—
Net amounts	$291	$37	$231	$34

The table below provides information on the location and pretax gain or loss amounts for derivatives that are: (i) designated in a fair value hedging relationship, (ii) designated in a foreign currency cash flow hedging relationship, (iii) designated in a foreign currency net investment hedging relationship and (iv) not designated in a hedging relationship:

Years Ended December 31	2013	2012	2011
Derivatives designated in a fair value hedging relationship			
Interest rate swap contracts			
Amount of loss (gain) recognized in Other (income) expense, net on derivatives [1]	$12	$—	$(196)
Amount of (gain) loss recognized in Other (income) expense, net on hedged item [1]	(14)	—	196
Derivatives designated in foreign currency cash flow hedging relationships			
Foreign exchange contracts			
Amount of loss reclassified from AOCI to Sales	45	50	85
Amount of (gain) loss recognized in OCI on derivatives	(306)	204	143
Derivatives designated in foreign currency net investment hedging relationships			
Foreign exchange contracts			
Amount of gain recognized in Other (income) expense, net on derivatives [2]	(10)	(20)	(10)
Amount of (gain) loss recognized in OCI on derivatives	(363)	(208)	122
Derivatives not designated in a hedging relationship			
Foreign exchange contracts			
Amount of loss (gain) recognized in Other (income) expense, net on derivatives [3]	183	382	(113)
Amount of loss recognized in Sales	8	30	—

(1) There was $2 million of ineffectiveness on the hedge during 2013.

(2) There was no ineffectiveness on the hedge. Represents the amount excluded from hedge effectiveness testing.

(3) These derivative contracts mitigate changes in the value of remeasured foreign currency denominated monetary assets and liabilities attributable to changes in foreign currency exchange rates.

At December 31, 2013, the Company estimates $66 million of pretax net unrealized gains on derivatives maturing within the next 12 months that hedge foreign currency denominated sales over that same period will be reclassified from AOCI to Sales. The amount ultimately reclassified to Sales may differ as foreign exchange rates change. Realized gains and losses are ultimately determined by actual exchange rates at maturity.

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Investments in Debt and Equity Securities

Information on available-for-sale investments at December 31 is as follows:

	2013				2012			
	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses
Corporate notes and bonds	$7,054	$7,037	$32	$(15)	$5,063	$5,013	$52	$(2)
Asset-backed securities	1,300	1,303	1	(4)	837	835	3	(1)
U.S. government and agency securities	1,236	1,239	1	(4)	1,206	1,204	2	—
Commercial paper	1,206	1,206	—	—	2,150	2,150	—	—
Mortgage-backed securities	476	479	2	(5)	435	436	2	(3)
Foreign government bonds	125	126	—	(1)	108	107	1	—
Equity securities	471	397	74	—	403	370	33	—
	$11,868	$11,787	$110	$(29)	$10,202	$10,115	$93	$(6)

Available-for-sale debt securities included in Short-term investments totaled $1.9 billion at December 31, 2013. Of the remaining debt securities, $8.8 billion mature within five years. At December 31, 2013 and 2012, there were no debt securities pledged as collateral.

Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The Company uses a fair value hierarchy which maximizes the use of observable inputs and minimizes the use of unobservable inputs when measuring fair value. There are three levels of inputs used to measure fair value with Level 1 having the highest priority and Level 3 having the lowest:

Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 — Unobservable inputs that are supported by little or no market activity. Level 3 assets are those whose values are determined using pricing models, discounted cash flow methodologies, or similar techniques with significant unobservable inputs, as well as instruments for which the determination of fair value requires significant judgment or estimation.

If the inputs used to measure the financial assets and liabilities fall within more than one level described above, the categorization is based on the lowest level input that is significant to the fair value measurement of the instrument.

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Financial Assets and Liabilities Measured at Fair Value on a Recurring Basis

Financial assets and liabilities measured at fair value on a recurring basis at December 31 are summarized below:

	Fair Value Measurements Using				Fair Value Measurements Using			
	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	2013				2012			
Assets								
Investments								
Corporate notes and bonds	$—	$ 7,054	$ —	$ 7,054	$—	$ 5,063	$ —	$ 5,063
Asset-backed securities [1]	—	1,300	—	1,300	—	837	—	837
U.S. government and agency securities	—	1,236	—	1,236	—	1,206	—	1,206
Commercial paper	—	1,206	—	1,206	—	2,150	—	2,150
Mortgage-backed securities [1]	—	476	—	476	—	435	—	435
Foreign government bonds	—	125	—	125	—	108	—	108
Equity securities	238	—	—	238	196	—	—	196
	238	11,397	—	11,635	196	9,799	—	9,995
Other assets								
Securities held for employee compensation	186	47	—	233	169	38	—	207
Derivative assets [2]								
Purchased currency options	—	868	—	868	—	546	—	546
Forward exchange contracts	—	209	—	209	—	185	—	185
Interest rate swaps	—	13	—	13	—	—	—	—
	—	1,090	—	1,090	—	731	—	731
Total assets	$424	$ 12,534	$ —	$ 12,958	$365	$ 10,568	$ —	$ 10,933
Liabilities								
Derivative liabilities [2]								
Forward exchange contracts	$—	$ 134	$ —	$ 134	$—	$ 216	$ —	$ 216
Written currency options	—	25	—	25	—	13	—	13
Interest rate swaps	—	25	—	25	—	—	—	—
Total liabilities	$—	$ 184	$ —	$ 184	$—	$ 229	$ —	$ 229

(1) Primarily all of the asset-backed securities are highly-rated (Standard & Poor's rating of AAA and Moody's Investors Service rating of Aaa), secured primarily by credit card, auto loan, and home equity receivables, with weighted-average lives of primarily 5 years or less. Mortgage-backed securities represent AAA-rated securities issued or unconditionally guaranteed as to payment of principal and interest by U.S. government agencies.

(2) The fair value determination of derivatives includes the impact of the credit risk of counterparties to the derivatives and the Company's own credit risk, the effects of which were not significant.

There were no transfers between Level 1 and Level 2 during 2013. As of December 31, 2013, Cash and cash equivalents of $15.6 billion included $14.7 billion of cash equivalents (considered Level 2 in the fair value hierarchy). The Company has liabilities related to contingent consideration (considered Level 3 in the fair value hierarchy) associated with business combinations, the fair values of which were $69 million and $49 million at December 31, 2013 and 2012, respectively.

Other Fair Value Measurements

Some of the Company's financial instruments, such as cash and cash equivalents, receivables and payables, are reflected in the balance sheet at carrying value, which approximates fair value due to their short-term nature. The estimated fair value of loans payable and long-term debt (including current portion) at December 31, 2013, was $25.5 billion compared with a carrying value of $25.1 billion and at December 31, 2012, was $22.8 billion compared with a carrying value of $20.6 billion. Fair value was estimated using recent observable market prices and would be considered Level 2 in the fair value hierarchy.

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Concentrations of Credit Risk

On an ongoing basis, the Company monitors concentrations of credit risk associated with corporate and government issuers of securities and financial institutions with which it conducts business. Credit exposure limits are established to limit a concentration with any single issuer or institution. Cash and investments are placed in instruments that meet high credit quality standards, as specified in the Company's investment policy guidelines. Approximately one-third of the Company's cash and cash equivalents are invested in five highly rated money market funds.

The majority of the Company's accounts receivable arise from product sales in the United States and Europe and are primarily due from drug wholesalers and retailers, hospitals, government agencies, managed health care providers and pharmacy benefit managers. The Company monitors the financial performance and creditworthiness of its customers so that it can properly assess and respond to changes in their credit profile. The Company also continues to monitor economic conditions, including the volatility associated with international sovereign economies, and associated impacts on the financial markets and its business, taking into consideration global economic conditions and the ongoing sovereign debt issues in certain European countries. The Company continues to monitor the credit and economic conditions within Greece, Italy, Spain and Portugal, among other members of the EU. These economic conditions, as well as inherent variability of timing of cash receipts, have resulted in, and may continue to result in, an increase in the average length of time that it takes to collect accounts receivable outstanding. As such, time value of money discounts have been recorded for those customers for which collection of accounts receivable is expected to be in excess of one year. At December 31, 2013 and 2012, Other assets included $275 million and $473 million, respectively, of accounts receivable not expected to be collected within one year. The Company does not expect to have write-offs or adjustments to accounts receivable which would have a material adverse effect on its financial position, liquidity or results of operations.

As of December 31, 2013, the Company's accounts receivable in Greece, Italy, Spain and Portugal totaled approximately $900 million. Of this amount, hospital and public sector receivables were approximately $600 million in the aggregate, of which approximately 9%, 41%, 40% and 10% related to Greece, Italy, Spain and Portugal, respectively. As of December 31, 2013, the Company's total accounts receivable outstanding for more than one year were approximately $200 million, of which approximately 50% related to accounts receivable in Greece, Italy, Spain and Portugal, mostly comprised of hospital and public sector receivables.

During 2013, the Company completed non-recourse factorings of approximately $210 million of hospital and public sector receivables in Spain. During 2012, the Company collected approximately $500 million of accounts receivable in connection with the Spanish government's debt stabilization/stimulus plan. In addition, the Company completed non-recourse factorings of approximately $230 million in 2012 of hospital and public sector accounts receivable in Italy.

Additionally, the Company continues to expand in the emerging markets. Payment terms in these markets tend to be longer, resulting in an increase in accounts receivable balances in certain of these markets.

The Company's customers with the largest accounts receivable balances are: AmerisourceBergen Corporation, Cardinal Health, Inc., McKesson Corporation, Zuellig Pharma Ltd. (Asia Pacific) and Alliance Healthcare, which represented, in aggregate, approximately one-fourth of total accounts receivable at December 31, 2013. The Company monitors the creditworthiness of its customers to which it grants credit terms in the normal course of business. Bad debts have been minimal. The Company does not normally require collateral or other security to support credit sales.

Derivative financial instruments are executed under International Swaps and Derivatives Association master agreements. The master agreements with several of the Company's financial institution counterparties also include credit support annexes. These annexes contain provisions that require collateral to be exchanged depending on the value of the derivative assets and liabilities, the Company's credit rating, and the credit rating of the counterparty. As of December 31, 2013 and 2012, the Company had received cash collateral of $652 million and $305 million, respectively, from various counterparties and the obligation to return such collateral is recorded in Accrued and other current liabilities. The Company had not advanced any cash collateral to counterparties as of December 31, 2013 or 2012.

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6. Inventories

Inventories at December 31 consisted of:

	2013	2012
Finished goods	$1,738	$1,924
Raw materials and work in process	5,894	5,921
Supplies	225	244
Total (approximates current cost)	7,857	8,089
Increase to LIFO costs	73	52
	$7,930	$8,141
Recognized as:		
Inventories	$6,226	$6,535
Other assets	1,704	1,606

Inventories valued under the LIFO method comprised approximately $2.3 billion and $2.1 billion of inventories at December 31, 2013 and 2012, respectively. Amounts recognized as Other assets are comprised almost entirely of raw materials and work in process inventories. At December 31, 2013 and 2012, these amounts included $1.5 billion and $1.4 billion, respectively, of inventories not expected to be sold within one year. In addition, these amounts included $177 million and $196 million at December 31, 2013 and 2012, respectively, of inventories produced in preparation for product launches.

7. Goodwill and Other Intangibles

The following table summarizes goodwill activity by segment:

	Pharmaceutical	All Other	Total
Goodwill balance January 1, 2012	$10,107	$2,048	$12,155
Other [1]	(21)	—	(21)
Goodwill balance December 31, 2012	10,086	2,048	12,134
Acquisitions	103	188	291
Divestitures	(45)	—	(45)
Other [1]	(79)	—	(79)
Goodwill balance December 31, 2013	$10,065	$2,236	$12,301

[1] Other includes cumulative translation adjustments on goodwill balances and certain other adjustments.

The additions to Pharmaceutical segment goodwill in 2013 resulted from the formation of the Supera joint venture (see Note 4) and the reductions resulted from the divestiture of the Company's API manufacturing business and related branded products (see Note 3).

In July 2013, the Company acquired the remaining shares of Physicians Interactive, a provider of on-line and mobile clinical resources and solutions for health care professionals in which Merck had an existing 24% ownership interest, for $97 million. In November 2013, Merck acquired Health Management Resources Corporation, a leader in medical weight management, for $87 million. These transactions collectively resulted in the addition of approximately $175 million of goodwill during 2013 included in other segments. Pro forma financial information has not been included for these transactions because the historical financial results are not significant when compared with the Company's financial results.

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Other intangibles at December 31 consisted of:

	2013 Gross Carrying Amount	Accumulated Amortization	Net	2012 Gross Carrying Amount	Accumulated Amortization	Net
Products and product rights	$41,691	$21,216	$20,475	$41,932	$16,678	$25,254
In-process research and development	1,856	—	1,856	2,393	—	2,393
Tradenames	1,632	310	1,322	1,521	236	1,285
Other	958	810	148	896	745	151
	$46,137	$22,336	$23,801	$46,742	$17,659	$29,083

Acquired intangibles include products and product rights, tradenames and patents, which are recorded at fair value, assigned an estimated useful life, and are amortized primarily on a straight-line basis over their estimated useful lives. Some of the Company's more significant acquired intangibles related to marketed products at December 31, 2013 include Zetia, $4.7 billion; Vytorin, $2.6 billion; Nasonex, $1.3 billion, Claritin, $1.5 billion, NuvaRing, $867 million, as well as $1.3 billion in the aggregate related to several products marketed for the treatment of chronic hepatitis C (Victrelis, PegIntron and Rebetol).

During 2013 and 2011, the Company recorded impairment charges related to marketed products of $486 million and $118 million, respectively, within Material and production costs. Of the amount recorded in 2013, $330 million resulted from lower cash flow projections for Saphris/Sycrest, due to reduced expectations in international markets and in the United States. These revisions to cash flows indicated that the Saphris/Sycrest intangible asset value was not recoverable on an undiscounted cash flows basis. The Company utilized market participant assumptions and considered several different scenarios to determine its best estimate of the fair value of the intangible asset related to Saphris/Sycrest that, when compared with its related carrying value, resulted in the impairment charge noted above. The remaining $156 million of impairment charges in 2013 resulted from lower cash flow projections for Rebetol due to reduced expectations in Japan and Europe. These revisions to cash flows indicated that the Rebetol intangible asset value was not recoverable on an undiscounted cash flows basis. The Company utilized market participant assumptions to determine its best estimate of the fair value of the intangible asset related to Rebetol that, when compared with its related carrying value, resulted in the impairment charge noted above.

IPR&D represents the fair value assigned to incomplete research projects that the Company acquires through business combinations which, at the time of acquisition, have not reached technological feasibility. Amounts capitalized as IPR&D are accounted for as indefinite-lived intangible assets, subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, the Company will make a separate determination as to the then useful life of the assets and begin amortization. During 2013, 2012 and 2011, $346 million, $78 million and $666 million, respectively, of IPR&D was reclassified to products and product rights upon receipt of marketing approval in a major market.

During 2013, the Company recorded $279 million of IPR&D impairment charges within Research and development expenses. Of this amount, $181 million related to the write-off of the intangible asset associated with preladenant as a result of the discontinuation of the clinical development program for this compound. In addition, the Company recorded impairment charges resulting from changes in cash flow assumptions for certain compounds, as well as for pipeline programs that had previously been deprioritized and were subsequently deemed to have no alternative use in the period. During 2012, the Company recorded $200 million of IPR&D impairment charges primarily for pipeline programs that had previously been deprioritized and were subsequently deemed to have no alternative use during the period. During 2011, the Company recorded $587 million of IPR&D impairment charges primarily for pipeline programs that were abandoned and determined to have no alternative use, as well as for expected delays in the launch timing or changes in the cash flow assumptions for certain compounds. In addition, the impairment charges in 2011 related to pipeline programs that had previously been deprioritized and were either deemed to have no alternative use during the period or were out-licensed to a third party for consideration that was less than the related asset's carrying value.

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All of the IPR&D projects that remain in development are subject to the inherent risks and uncertainties in drug development and it is possible that the Company will not be able to successfully develop and complete the IPR&D programs and profitably commercialize the underlying product candidates.

The Company may recognize additional non-cash impairment charges in the future related to other marketed products or pipeline programs and such charges could be material.

Aggregate amortization expense primarily recorded within Materials and production costs was $4.8 billion in 2013, $5.0 billion in 2012 and $5.1 billion in 2011. The estimated aggregate amortization expense for each of the next five years is as follows: 2014, $4.3 billion; 2015, $4.1 billion; 2016, $3.4 billion; 2017, $3.1 billion; 2018, $1.6 billion.

8. Joint Ventures and Other Equity Method Affiliates

Equity income from affiliates reflects the performance of the Company's joint ventures and other equity method affiliates and was comprised of the following:

Years Ended December 31	2013	2012	2011
AstraZeneca LP	$352	$621	$574
Other [1]	52	21	36
	$404	$642	$610

[1] Primarily reflects results from Sanofi Pasteur MSD and Johnson & Johnson°Merck Consumer Pharmaceuticals Company (which was disposed of on September 29, 2011).

AstraZeneca LP

In 1982, Merck entered into an agreement with Astra AB ("Astra") to develop and market Astra products under a royalty-bearing license. In 1993, Merck's total sales of Astra products reached a level that triggered the first step in the establishment of a joint venture business carried on by Astra Merck Inc. ("AMI"), in which Merck and Astra each owned a 50% share. This joint venture, formed in 1994, developed and marketed most of Astra's new prescription medicines in the United States including Prilosec, the first of a class of medications known as proton pump inhibitors, which slows the production of acid from the cells of the stomach lining.

In 1998, Merck and Astra completed the restructuring of the ownership and operations of the joint venture whereby Merck acquired Astra's interest in AMI, renamed KBI Inc. ("KBI"), and contributed KBI's operating assets to a new U.S. limited partnership, Astra Pharmaceuticals L.P. (the "Partnership"), in exchange for a 1% limited partner interest. Astra contributed the net assets of its wholly owned subsidiary, Astra USA, Inc., to the Partnership in exchange for a 99% general partner interest. The Partnership, renamed AstraZeneca LP ("AZLP") upon Astra's 1999 merger with Zeneca Group Plc, became the exclusive distributor of the products for which KBI retained rights.

While maintaining a 1% limited partner interest in AZLP, Merck has consent and protective rights intended to preserve its business and economic interests, including restrictions on the power of the general partner to make certain distributions or dispositions. Furthermore, in limited events of default, additional rights will be granted to the Company, including powers to direct the actions of, or remove and replace, the Partnership's chief executive officer and chief financial officer. Merck earns ongoing revenue based on sales of KBI products and such revenue was $920 million, $915 million and $1.2 billion in 2013, 2012 and 2011, respectively, primarily relating to sales of Nexium, as well as Prilosec. In addition, Merck earns certain Partnership returns, which are recorded in Equity income from affiliates, as reflected in the table above. Such returns include a priority return provided for in the Partnership Agreement, a preferential return representing Merck's share of undistributed AZLP GAAP earnings, and a variable return related to the Company's 1% limited partner interest.

In 2014, AstraZeneca has the option to purchase Merck's interest in KBI based in part on the value of Merck's interest in Nexium and Prilosec. AstraZeneca's option is exercisable between March 1, 2014 and April 30, 2014. If AstraZeneca chooses to exercise this option, the closing date is expected to be June 30, 2014. Under the amended agreement, AstraZeneca will make a payment to Merck upon closing of $327 million, reflecting an estimate of the fair value of Merck's interest in Nexium and Prilosec. This portion of the exercise price is subject to a true-up in 2018 based on actual sales from closing in 2014 to June 2018. The exercise price will also include an additional amount equal to

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a multiple of ten times Merck's average 1% annual profit allocation in the partnership for the three years prior to exercise. The Company believes that it is likely that AstraZeneca will exercise its option in 2014.

Summarized financial information for AZLP is as follows:

Years Ended December 31	2013	2012	2011
Sales	$4,611	$4,694	$4,659
Materials and production costs	2,222	2,177	2,023
Other expense, net	1,175	1,312	1,392
Income before taxes [1]	$1,214	$1,205	$1,244
December 31		2013	2012
Current assets		$4,832	$3,662
Noncurrent assets		182	206
Current liabilities		3,958	3,145

[1] Merck's partnership returns from AZLP are generally contractually determined as noted above and are not based on a percentage of income from AZLP, other than with respect to Merck's 1% limited partnership interest.

Sanofi Pasteur MSD

In 1994, Merck and Pasteur Mérieux Connaught (now Sanofi Pasteur S.A.) established an equally-owned joint venture to market vaccines in Europe and to collaborate in the development of combination vaccines for distribution in Europe. Joint venture vaccine sales were $1.2 billion for 2013, $1.1 billion for 2012 and $1.1 billion for 2011.

Johnson & Johnson°Merck Consumer Pharmaceuticals Company

In 2011, Merck sold its 50% interest in the Johnson & Johnson°Merck Consumer Pharmaceuticals Company ("JJMCP") joint venture to J&J. The venture between Merck and J&J was formed in 1989 to develop, manufacture, market and distribute certain over-the-counter consumer products in the United States and Canada. Merck received a one-time payment of $175 million and recognized a pretax gain of $136 million in 2011 reflected in Other (income) expense, net. The partnership assets also included a manufacturing facility. Sales of products marketed by the joint venture were $62 million for the period from January 1, 2011 until the September 29, 2011 divestiture date.

Investments in affiliates accounted for using the equity method, including the above joint ventures, totaled $1.6 billion at December 31, 2013 and $1.3 billion at December 31, 2012. These amounts are reported in Other assets. Amounts due from the above joint ventures included in Deferred income taxes and other current assets were $277 million at December 31, 2013 and $302 million at December 31, 2012.

Summarized information for those affiliates (excluding AZLP disclosed separately above) is as follows:

Years Ended December 31	2013	2012	2011[1]
Sales	$1,326	$1,295	$1,331
Materials and production costs	581	573	584
Other expense, net	691	705	642
Income before taxes	54	17	105
December 31		2013	2012
Current assets		$1,486	$971
Noncurrent assets		149	112
Current liabilities		456	480
Noncurrent liabilities		154	97

[1] Includes information for the JJMCP joint venture until its divestiture on September 29, 2011.

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9. Loans Payable, Long-Term Debt and Other Commitments

Loans payable at December 31, 2013 included $2.1 billion of notes due in 2014, $1.6 billion of commercial paper, $402 million of short-term foreign borrowings and $370 million of long-dated notes that are subject to repayment at the option of the holder. Loans payable at December 31, 2012 included $1.8 billion of notes due in 2013, $1.7 billion of commercial paper, $454 million of short-term foreign borrowings and $328 million of long-dated notes that are subject to repayment at the option of the holders. The weighted-average interest rate of the commercial paper borrowings was 0.09% and 0.15% at December 31, 2013 and 2012, respectively.

Long-term debt at December 31 consisted of:

	2013	2012
2.80% notes due 2023	$1,749	$—
6.50% notes due 2033	1,306	1,310
5.00% notes due 2019	1,293	1,294
4.15% notes due 2043	1,246	—
3.875% notes due 2021	1,148	1,147
6.55% notes due 2037	1,143	1,146
6.00% notes due 2017	1,095	1,112
4.00% notes due 2015	1,029	1,049
4.75% notes due 2015	1,023	1,044
2.40% notes due 2022	1,000	1,000
Floating-rate borrowing due 2018	1,000	—
1.10% notes due 2018	998	998
0.70% notes due 2016	997	—
1.30% notes due 2018	975	—
2.25% notes due 2016	866	874
5.85% notes due 2039	749	749
Floating-rate borrowing due 2016	500	—
6.40% debentures due 2028	499	499
5.75% notes due 2036	498	498
5.95% debentures due 2028	498	498
3.60% notes due 2042	492	492
6.30% debentures due 2026	249	248
5.375% euro-denominated notes due 2014	—	2,058
Other	186	238
	$20,539	$16,254

Other (as presented in the table above) included $119 million and $165 million at December 31, 2013 and 2012, respectively, of borrowings at variable rates averaging 0.0% for 2013 and 0.1% for 2012. Other also included foreign borrowings of $64 million and $70 million at December 31, 2013 and 2012, respectively, at varying rates up to 4.5% and 8.5%, respectively.

With the exception of the 6.3% debentures due 2026, the notes listed in the table above are redeemable in whole or in part, at Merck’s option at any time, at varying redemption prices.

In May 2013, the Company completed an underwritten public offering of $6.5 billion senior unsecured notes consisting of $1.0 billion aggregate principal amount of 0.70% notes due in 2016, $500 million aggregate principal amount of floating rate notes due in 2016, $1.0 billion aggregate principal amount of 1.30% notes due in 2018, $1.0 billion aggregate principal amount of floating rate notes due in 2018, $1.75 billion aggregate principal amount of 2.80% notes due in 2023 and $1.25 billion aggregate principal amount of 4.15% notes due in 2043. Interest on the notes is payable semi-annually. The notes of each series are redeemable in whole or in part at any time at the Company’s option at varying redemption prices. A substantial portion of the net proceeds from the notes were used to repurchase the Company’s common stock pursuant to an accelerated share repurchase agreement in May 2013 (see Note 11).

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Effective as of November 3, 2009, the Company executed a full and unconditional guarantee of the then existing debt of its subsidiary Merck Sharp & Dohme Corp. ("MSD") and MSD executed a full and unconditional guarantee of the then existing debt of the Company (excluding commercial paper), including for payments of principal and interest. These guarantees do not extend to debt issued subsequent to that date.

Certain of the Company's borrowings require that Merck comply with financial covenants including a requirement that the Total Debt to Capitalization Ratio (as defined in the applicable agreements) not exceed 60%. At December 31, 2013, the Company was in compliance with these covenants.

The aggregate maturities of long-term debt for each of the next five years are as follows: 2014, $2.1 billion; 2015, $2.1 billion; 2016, $2.4 billion; 2017, $1.1 billion; 2018, $3.0 billion.

In May 2012, the Company entered into a $4.0 billion, five-year credit facility maturing in May 2017. The facility provides backup liquidity for the Company's commercial paper borrowing facility and is to be used for general corporate purposes. The Company has not drawn funding from this facility.

Rental expense under operating leases, net of sublease income, was $367 million in 2013, $396 million in 2012 and $411 million in 2011. The minimum aggregate rental commitments under noncancellable leases are as follows: 2014, $259 million; 2015, $208 million; 2016, $132 million; 2017, $91 million; 2018, $64 million and thereafter, $144 million. The Company has no significant capital leases.

10. Contingencies and Environmental Liabilities

The Company is involved in various claims and legal proceedings of a nature considered normal to its business, including product liability, intellectual property, and commercial litigation, as well as additional matters such as antitrust actions and environmental matters. Except for the Vioxx Litigation (as defined below) for which a separate assessment is provided in this Note, in the opinion of the Company, it is unlikely that the resolution of these matters will be material to the Company's financial position, results of operations or cash flows.

Given the nature of the litigation discussed below, including the Vioxx Litigation, and the complexities involved in these matters, the Company is unable to reasonably estimate a possible loss or range of possible loss for such matters until the Company knows, among other factors, (i) what claims, if any, will survive dispositive motion practice, (ii) the extent of the claims, including the size of any potential class, particularly when damages are not specified or are indeterminate, (iii) how the discovery process will affect the litigation, (iv) the settlement posture of the other parties to the litigation and (v) any other factors that may have a material effect on the litigation.

The Company records accruals for contingencies when it is probable that a liability has been incurred and the amount can be reasonably estimated. These accruals are adjusted periodically as assessments change or additional information becomes available. For product liability claims, a portion of the overall accrual is actuarially determined and considers such factors as past experience, number of claims reported and estimates of claims incurred but not yet reported. Individually significant contingent losses are accrued when probable and reasonably estimable. Legal defense costs expected to be incurred in connection with a loss contingency are accrued when probable and reasonably estimable.

The Company's decision to obtain insurance coverage is dependent on market conditions, including cost and availability, existing at the time such decisions are made. The Company has evaluated its risks and has determined that the cost of obtaining product liability insurance outweighs the likely benefits of the coverage that is available and, as such, has no insurance for certain product liabilities effective August 1, 2004.

Vioxx Litigation

Product Liability Lawsuits

As previously disclosed, Merck is a defendant in approximately 90 federal and state lawsuits (the "Vioxx Product Liability Lawsuits") alleging personal injury or economic loss as a result of the purchase or use of Vioxx. Most of the remaining cases are coordinated in a multidistrict litigation in the U.S. District Court for the Eastern District of Louisiana (the "Vioxx MDL") before Judge Eldon E. Fallon.

Merck has reached a resolution, approved by Judge Fallon, of all remaining federal court putative class actions that were brought on behalf of individual purchasers or users of Vioxx seeking reimbursement for alleged economic loss. Under the settlement, Merck will pay up to $23 million to pay all properly documented claims submitted

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by class members, approved attorneys' fees and expenses, and approved settlement notice costs and certain other administrative expenses. The court entered an order approving the settlement on January 6, 2014. The period for members to submit claims under the settlement is still pending.

Merck also settled a Missouri state court class action of plaintiffs who sought reimbursement for out-of-pocket costs relating to Vioxx. The Company established a reserve of $39 million in 2012 in connection with that settlement agreement, which is the minimum amount that the Company is required to pay under the agreement. The settlement was approved, and final judgment in the action has been entered. The court-approved process for class members to submit claims under the settlement closed in October 2013.

In Indiana, plaintiffs filed a motion to certify a class of Indiana Vioxx purchasers in a case pending before the Circuit Court of Marion County, Indiana. That case has been dormant for several years. In April 2010, a Kentucky state court denied Merck's motion for summary judgment and certified a class of Kentucky plaintiffs seeking reimbursement for out-of-pocket costs relating to Vioxx. The trial court subsequently entered an amended class certification order in January 2011. The matter was settled on a named-plaintiff-only basis in December 2013.

Merck is also a defendant in lawsuits brought by state Attorneys General of four states — Alaska, Mississippi, Montana and Utah. All of these actions are pending in the Vioxx MDL proceeding. These actions allege that Merck misrepresented the safety of Vioxx. These suits seek recovery for expenditures on Vioxx by government-funded health care programs, such as Medicaid, and/or penalties for alleged Consumer Fraud Act violations. In November 2013, the Circuit Court of Franklin County, Kentucky approved a settlement in an action filed by the Kentucky Attorney General, under which Merck agreed to pay Kentucky $25 million to resolve its lawsuit and the related appeals.

Shareholder Lawsuits

As previously disclosed, in addition to the Vioxx Product Liability Lawsuits, various putative class actions and individual lawsuits under federal securities laws and state laws have been filed against Merck and various current and former officers and directors (the "Vioxx Securities Lawsuits"). The Vioxx Securities Lawsuits are coordinated in a multidistrict litigation in the U.S. District Court for the District of New Jersey before Judge Stanley R. Chesler, and have been consolidated for all purposes. In August 2011, Judge Chesler granted in part and denied in part Merck's motion to dismiss the Fifth Amended Class Action Complaint in the consolidated securities action. Among other things, the claims based on statements made on or after the voluntary withdrawal of Vioxx on September 30, 2004, have been dismissed. In October 2011, defendants answered the Fifth Amended Class Action Complaint. In April 2012, plaintiffs filed a motion for class certification and, in January 2013, Judge Chesler granted that motion. In March 2013, plaintiffs filed a motion for leave to amend their complaint to add certain allegations to expand the class period. In May 2013, the court denied plaintiffs' motion for leave to amend their complaint to expand the class period, but granted plaintiffs' leave to amend their complaint to add certain allegations within the existing class period. In June 2013, plaintiffs filed their Sixth Amended Class Action Complaint. In July 2013, defendants answered the Sixth Amended Class Action Complaint. Discovery has been completed and is now closed. Under the court's scheduling order, dispositive motions were filed on January 17, 2014.

As previously disclosed, several individual securities lawsuits filed by foreign institutional investors also are consolidated with the Vioxx Securities Lawsuits. In October 2011, plaintiffs filed amended complaints in each of the pending individual securities lawsuits. Also in October 2011, a new individual securities lawsuit (the "KBC Lawsuit") was filed in the District of New Jersey by several foreign institutional investors; that case is also consolidated with the Vioxx Securities Lawsuits. In January 2012, defendants filed motions to dismiss in one of the individual lawsuits (the "ABP Lawsuit"). Briefing on the motions to dismiss was completed in March 2012. In August 2012, Judge Chesler granted in part and denied in part the motions to dismiss the ABP Lawsuit. Among other things, certain alleged misstatements and omissions were dismissed as inactionable and all state law claims were dismissed in full. In September 2012, defendants answered the complaints in all individual actions other than the KBC Lawsuit; on the same day, defendants moved to dismiss the complaint in the KBC Lawsuit on statute of limitations grounds. In December 2012, Judge Chesler denied the motion to dismiss the KBC Lawsuit and, in January 2013, defendants answered the complaint in the KBC Lawsuit. Discovery has been completed and is now closed. Under the court's

scheduling order, dispositive motions were filed on January 24, 2014.

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Insurance

The Company has Directors and Officers insurance coverage applicable to the Vioxx Securities Lawsuits with remaining stated upper limits of approximately $165 million, which is currently being used to partially fund the Company's legal fees. As a result of the previously disclosed insurance arbitration, additional insurance coverage for these claims should also be available, if needed, under upper-level excess policies that provide coverage for a variety of risks. There are disputes with the insurers about the availability of some or all of the Company's insurance coverage for these claims and there are likely to be additional disputes. The amounts actually recovered under the policies discussed in this paragraph may be less than the stated upper limits.

International Lawsuits

As previously disclosed, in addition to the lawsuits discussed above, Merck has been named as a defendant in litigation relating to Vioxx in Brazil, Canada, Europe and Israel (collectively, the "Vioxx International Lawsuits"). As previously disclosed, the Company has entered into an agreement to resolve all claims related to Vioxx in Canada pursuant to which the Company will pay a minimum of approximately $21 million but not more than an aggregate maximum of approximately $36 million. The agreement has been approved by courts in Canada's provinces.

Reserves

The Company believes that it has meritorious defenses to the remaining Vioxx Product Liability Lawsuits, Vioxx Securities Lawsuits and Vioxx International Lawsuits (collectively, the "Vioxx Litigation") and will vigorously defend against them. In view of the inherent difficulty of predicting the outcome of litigation, particularly where there are many claimants and the claimants seek indeterminate damages, the Company is unable to predict the outcome of these matters and, at this time, cannot reasonably estimate the possible loss or range of loss with respect to the remaining Vioxx Litigation. The Company has established a reserve with respect to the Canadian settlement, certain other Vioxx Product Liability Lawsuits and other immaterial settlements related to certain Vioxx International Lawsuits. The Company also has an immaterial remaining reserve relating to the previously disclosed Vioxx investigation for the non-participating states with which litigation is continuing. The Company has established no other liability reserves with respect to the Vioxx Litigation. Unfavorable outcomes in the Vioxx Litigation could have a material adverse effect on the Company's financial position, liquidity and results of operations.

Other Product Liability Litigation

Fosamax

As previously disclosed, Merck is a defendant in product liability lawsuits in the United States involving Fosamax (the "Fosamax Litigation"). As of December 31, 2013, approximately 5,415 cases, which include approximately 5,680 plaintiff groups, had been filed and were pending against Merck in either federal or state court, including one case which seeks class action certification, as well as damages and/or medical monitoring. In approximately 1,140 of these actions, plaintiffs allege, among other things, that they have suffered osteonecrosis of the jaw ("ONJ"), generally subsequent to invasive dental procedures, such as tooth extraction or dental implants and/or delayed healing, in association with the use of Fosamax. In addition, plaintiffs in approximately 4,275 of these actions generally allege that they sustained femur fractures and/or other bone injuries ("Femur Fractures") in association with the use of Fosamax.

In December 2013, Merck reached an agreement in principle with the Plaintiffs' Steering Committee in the Fosamax ONJ MDL (as defined below) to resolve pending ONJ cases not on appeal in the Fosamax ONJ MDL and in the state courts for an aggregate amount of $27.7 million, which the Company recorded as liability in the fourth quarter of 2013. All of plaintiffs' counsel have advised the Company that they intend to participate in the settlement plan. As a condition to the settlement, 100% of the state and federal ONJ plaintiffs must also agree to participate in the settlement plan by March 31, 2014. If 100% participation is not achieved, Merck has until May 15, 2014, to determine whether it will terminate the agreement, waive the 100% participation requirement, or agree to a lesser funding amount for the settlement fund. This tentative settlement has no effect on the cases alleging Femur Fractures discussed below.

Cases Alleging ONJ and/or Other Jaw Related Injuries

In August 2006, the Judicial Panel on Multidistrict Litigation ("JPML") ordered that certain Fosamax product liability cases pending in federal courts nationwide should be transferred and consolidated into one multidistrict litigation

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(the "Fosamax ONJ MDL") for coordinated pre-trial proceedings. The Fosamax ONJ MDL has been transferred to Judge John Keenan in the U.S. District Court for the Southern District of New York. As a result of the JPML order, approximately 855 of the cases are before Judge Keenan. In the first Fosamax ONJ MDL trial, Boles v. Merck, the Fosamax ONJ MDL court declared a mistrial because the eight person jury could not reach a unanimous verdict. The Boles case was retried in June 2010 and resulted in a verdict in favor of the plaintiff in the amount of $8 million. Merck filed post-trial motions seeking judgment as a matter of law or, in the alternative, a new trial. In October 2010, the court denied Merck's post-trial motions but sua sponte ordered a remittitur reducing the verdict to $1.5 million. Plaintiff rejected the remittitur ordered by the court and requested a new trial on damages. Plaintiff and Merck subsequently entered into a confidential stipulation as to the amount of plaintiff's damages that enabled Merck to appeal the underlying judgment, and Merck filed its appeal in the Boles case in October 2012. Prior to 2013, three other cases were tried to verdict in the Fosamax ONJ MDL. Defense verdicts in favor of Merck were returned in each of those three cases. Plaintiffs have filed an appeal in two of the cases – Graves v. Merck and Secrest v. Merck. In January 2013, the U.S. Court of Appeals for the Second Circuit affirmed the judgment in Merck's favor in Secrest. Plaintiff in the Secrest case subsequently filed a petition for a writ of certiorari with the U.S. Supreme Court, which was denied in June 2013.

In February 2011, Judge Keenan ordered that two further bellwether trials be conducted in the Fosamax ONJ MDL. Spano v. Merck and Jellema v. Merck were selected by the court to be tried in 2012, but each case was dismissed by the plaintiffs. In March 2012, the court selected Scheinberg v. Merck as the next case to be tried. Trial in the Scheinberg case began in January 2013 and, in February 2013, the jury returned a mixed verdict, finding in favor of Merck on plaintiff's design defect claim and finding in favor of plaintiff on her failure to warn claim, and awarded her $285 thousand in compensatory damages. Merck's post-trial motion for judgment as a matter of law in the Scheinberg case was denied in July 2013, and the Company has filed an appeal with the U.S. Court of Appeals for the Second Circuit.

In November 2012, Judge Keenan issued an order requiring plaintiffs who do not allege certain types of specific injuries to provide expert reports in support of their claims. The deadlines for submission of these reports were staggered throughout the first half of 2013. To date, the claims of approximately 425 plaintiffs subject to the order have been dismissed with prejudice. In August 2013, Judge Keenan denied Merck's request to extend his order to additional groups of plaintiffs and also decided to start winding down the Fosamax ONJ MDL by the remand/transfer of the remaining cases back to their proper venues at a rate of 200 cases per month beginning November 1, 2013. That date was subsequently changed at plaintiffs' request to December 1, 2013, and was later suspended indefinitely.

In addition, in July 2008, an application was made by the Atlantic County Superior Court of New Jersey requesting that all of the Fosamax cases pending in New Jersey be considered for mass tort designation and centralized management before one judge in New Jersey. In October 2008, the New Jersey Supreme Court ordered that all pending and future actions filed in New Jersey arising out of the use of Fosamax and seeking damages for existing dental and jaw-related injuries, including ONJ, but not solely seeking medical monitoring, be designated as a mass tort for centralized management purposes before Judge Carol E. Higbee in Atlantic County Superior Court. As of December 31, 2013, approximately 280 ONJ cases were pending against Merck in Atlantic County, New Jersey. In July 2009, Judge Higbee entered a Case Management Order (and various amendments thereto) setting forth a schedule that contemplates completing fact and expert discovery in an initial group of cases to be reviewed for trial. In February 2011, the jury in Rosenberg v. Merck, the first trial in the New Jersey coordinated proceeding, returned a verdict in Merck's favor. In April 2012, the jury in Sessner v. Merck, the second case tried in New Jersey, also returned a verdict in Merck's favor. Plaintiffs have filed an appeal in both cases. In March 2013, the New Jersey Appellate Division affirmed the judgment in Merck's favor in the Rosenberg case.

Cases Alleging Femur Fractures

In March 2011, Merck submitted a Motion to Transfer to the JPML seeking to have all federal cases alleging Femur Fractures consolidated into one multidistrict litigation for coordinated pre-trial proceedings. The Motion to Transfer was granted in May 2011, and all federal cases involving allegations of Femur Fracture have been or will be transferred to a multidistrict litigation in the District of New Jersey (the "Fosamax Femur Fracture MDL"). As a result

of the JPML order, approximately 1,105 cases were pending in the Fosamax Femur Fracture MDL as of December 31, 2013. A Case Management Order was entered requiring the parties to review 40 cases (later reduced to 33 cases). Judge Joel Pisano selected four cases from that group to be tried as the initial bellwether cases in the Fosamax Femur Fracture MDL. The first bellwether case, Glynn v. Merck, began on April 8, 2013, and the jury returned a verdict in Merck's

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favor on April 29, 2013; in addition, on June 27, 2013, Judge Pisano granted Merck's motion for judgment as a matter of law in the Glynn case and held that the plaintiff's failure to warn claim was preempted by federal law. Judge Pisano set a May 5, 2014, trial date for the bellwether trial of a case in which the alleged injury took place after January 31, 2011. Following the completion of fact discovery, the court selected Sweet v. Merck as the next Fosamax Femur Fracture MDL case to be tried on May 5, 2014, but plaintiffs subsequently dismissed that case. As a result, the May 2014 trial date was withdrawn and the court is expected to set an October 1, 2014 trial date for the next bellwether trial in the Fosamax Femur Fracture MDL.

In addition, Judge Pisano entered an order in August 2013 requiring plaintiffs in the Fosamax Femur Fracture MDL to show cause why those cases asserting claims for a femur fracture injury that took place prior to September 14, 2010, should not be dismissed based on the court's preemption decision in the Glynn case. Plaintiffs filed their responses to the show cause order at the end of September 2013 and Merck filed its reply to those responses at the end of October 2013. A hearing on the show cause order was held on January 29, 2014 and a final ruling from the court is pending.

As of December 31, 2013, approximately 2,655 cases alleging Femur Fractures have been filed in New Jersey state court and are pending before Judge Higbee in Atlantic County Superior Court. The parties selected an initial group of 30 cases to be reviewed through fact discovery. The first trial of the New Jersey state Femur Fracture cases, Su v. Merck, began in early March 2013, but a mistrial was declared later in March 2013 after the plaintiff suffered a serious medical issue unrelated to her use of Fosamax that prevented her from proceeding with the trial. The next trial, Unanski v. Merck, was set to be tried beginning in November 2013, but was continued and is now set for trial, potentially along with one or two other cases (Love v. Merck and Caravello v. Merck), beginning on March 17, 2014. An additional group of 50 cases to be reviewed through fact discovery was selected in November 2013.

As of December 31, 2013, approximately 510 cases alleging Femur Fractures have been filed in California state court. A petition was filed seeking to coordinate all Femur Fracture cases filed in California state court before a single judge in Orange County, California. The petition was granted and Judge Steven Perk is now presiding over the coordinated proceedings. In November 2013, the court ordered that fact discovery commence. The parties are expected to select the first round of cases to be included in a bellwether discovery pool in May 2014.

Additionally, there are seven Femur Fracture cases pending in other state courts.

Discovery is ongoing in the Fosamax Femur Fracture MDL and in state courts where Femur Fracture cases are pending and the Company intends to defend against these lawsuits.

Januvia/Janumet

As previously disclosed, Merck is a defendant in product liability lawsuits in the United States involving Januvia and/or Janumet. As of December 31, 2013, approximately 165 cases were served on, and are pending against, Merck alleging generally that use of Januvia and/or Janumet caused the development of pancreatic cancer. These complaints were filed in several different state and federal courts. Most of the claims are pending in a consolidated multidistrict litigation proceeding in the U.S. District Court for the Southern District of California called "In re Incretin-Based Therapies Products Liability Litigation." That proceeding includes federal lawsuits alleging pancreatic cancer due to use of the following medicines: Januvia, Janumet, Byetta and Victoza, the latter two of which are products manufactured by other pharmaceutical companies. In addition to the cases noted above, the Company has agreed, as of December 31, 2013, to toll the statute of limitations for two additional claims. The Company intends to defend against these lawsuits.

NuvaRing

As previously disclosed, beginning in May 2007, a number of complaints were filed in various jurisdictions asserting claims against the Company's subsidiaries Organon USA, Inc., Organon Pharmaceuticals USA, Inc., Organon International (collectively, "Organon"), and the Company arising from Organon's marketing and sale of NuvaRing (the "NuvaRing Litigation"), a combined hormonal contraceptive vaginal ring. The plaintiffs contend that Organon and Schering-Plough, among other things, failed to adequately design and manufacture NuvaRing and failed to adequately warn of the alleged increased risk of venous thromboembolism ("VTE") posed by NuvaRing, and/or downplayed the risk of VTE. The plaintiffs seek damages for injuries allegedly sustained from their product use, including some

alleged deaths, heart attacks and strokes. The majority of the cases are currently pending in a federal multidistrict litigation (the “NuvaRing MDL”) venued in Missouri and in a coordinated proceeding in New Jersey state court.

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As of December 31, 2013, there were approximately 1,880 filed NuvaRing cases, and approximately 1,405 unfiled claims that were identified in response to census orders issued in the NuvaRing MDL and New Jersey proceedings. Of the filed cases, approximately 1,660 are or will be pending in the NuvaRing MDL in the U.S. District Court for the Eastern District of Missouri before Judge Rodney Sippel, and approximately 210 are pending in coordinated proceedings in the Bergen County Superior Court of New Jersey before Judge Brian R. Martinotti. Proceedings in the NuvaRing MDL and New Jersey are stayed until May 31, 2014. Seven additional cases are pending in various other state courts, including cases in a coordinated state proceeding in the San Francisco Superior Court in California before Judge John E. Munter. Certain state court cases are scheduled for trial in 2014.

Merck and negotiating plaintiffs' counsel have agreed to a settlement of the NuvaRing Litigation that is intended to resolve at least 95% of cases filed as of February 7, 2014, and unfiled claims under retainer by counsel prior to that date. Merck has agreed to a lump total settlement of $100 million, provided there is participation in the settlement of at least 95% of plaintiffs and eligible claimants overall and in certain categories. The Company has certain insurance coverage available to it, which is currently being used to partially fund the Company's legal fees. This insurance coverage will also be used to fund the settlement. Accordingly, at December 31, 2013, the Company's consolidated balance sheet includes a current liability for the settlement amount and a corresponding current asset reflecting anticipated insurance recoveries.

Propecia/Proscar

As previously disclosed, Merck is a defendant in product liability lawsuits in the United States involving Propecia and/or Proscar. As of December 31, 2013, approximately 1,140 lawsuits involving a total of approximately 1,390 plaintiffs (in a few instances spouses are joined as plaintiffs in the suits) who allege that they have experienced persistent sexual side effects following cessation of treatment with Propecia and/or Proscar have been filed against Merck. Approximately 20 of the plaintiffs also allege that Propecia or Proscar has caused or can cause prostate cancer or male breast cancer. The lawsuits have been filed in various federal courts and in state court in New Jersey. The federal lawsuits have been consolidated for pretrial purposes in a federal multidistrict litigation before Judge John Gleeson of the Eastern District of New York. The matters pending in state court in New Jersey have been consolidated before Judge Jessica Mayer in Middlesex County. In addition, there is one matter pending in federal court in Massachusetts and one matter pending in state court in St. Louis, Missouri. The Company intends to defend against these lawsuits.

Vytorin/Zetia Litigation

As previously disclosed, in April 2008, a Merck shareholder filed a putative class action lawsuit in federal court which was consolidated in the District of New Jersey under the caption, In re Merck & Co., Inc. Vytorin/Zetia Securities Litigation. The complaint alleged that Merck and other defendants delayed releasing unfavorable results of the ENHANCE clinical trial regarding the efficacy of Vytorin and that Merck made false and misleading statements about expected earnings knowing that, once the results of the ENHANCE study were released, sales of Vytorin would decline and Merck's earnings would suffer. In February 2013, Merck announced an agreement in principle with plaintiffs to settle this matter for $215 million. The settlement agreement was executed by the parties in June 2013, and approved by the court in October 2013. The settlement was reflected in the Company's 2012 financial results as discussed below.

There was a similar consolidated securities class action lawsuit pending in the District of New Jersey against Schering-Plough and other defendants under the caption, In re Schering-Plough Corporation/ENHANCE Securities Litigation. In February 2013, Merck announced an agreement in principle with plaintiffs to settle this matter for $473 million. The settlement agreement was executed in June 2013, and approved by the court in October 2013. The settlement was reflected in the Company's 2012 financial results and, together with the settlement described in the preceding paragraph (collectively, the "ENHANCE Litigation"), resulted in an aggregate charge of $493 million after taking into account anticipated insurance recoveries of $195 million. In the second quarter of 2013, the Company paid $480 million into a settlement fund. The Company's insurers subsequently paid the remaining $208 million, which reflects an additional $13 million of insurance recoveries not previously recognized.

On November 14, 2013, two complaints were filed in the District of New Jersey against Merck as successor to Schering-Plough, and other defendants, by certain institutional investors who “opted-out” of the ENHANCE securities class action against Schering-Plough. In addition, on January 14, 2014, two complaints were filed in the District of New Jersey against Merck and other defendants by certain institutional investors who “opted-out” of the Vytorin/Zetia

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securities class action against Merck. The "opt-out" complaints contain allegations similar to those made by plaintiffs in the settled class actions against Schering-Plough and Merck. The Company intends to move to dismiss these complaints and otherwise to defend itself in the litigation.

Governmental Proceedings

As previously disclosed, Merck has received a Civil Investigative Demand ("CID") issued by the U.S. Department of Justice (the "DOJ") addressed to Inspire, a company acquired by Merck in May 2011. The CID advises that it relates to a False Claims Act investigation concerning allegations that Inspire caused the submission of false claims to federal health benefits programs for the drug AzaSite by marketing it for the treatment of indications not approved by the U.S. Food and Drug Administration (the "FDA"). The Company is cooperating with the DOJ in its investigation.

As previously disclosed, the Company received a subpoena from the U.S. Attorney's Office for the Eastern District of California in 2010 requesting information in a civil federal health care investigation relating to the Company's marketing and selling activities with respect to Integrilin and Avelox from January 2003 to June 2010. In December 2012, the U.S. District Court for the Eastern District of California unsealed a complaint that a former employee of the Company had filed against it in 2009 under the federal False Claims Act and the False Claims Acts of various states. The complaint alleges that the Company caused false claims to be made to federal and state health care programs by promoting Integrilin for unapproved indications and providing unlawful payments and benefits to physicians and others to increase the utilization of Integrilin and Avelox. The federal government and the states under whose statutes the suit was filed each had the right, after investigating these allegations, to intervene in this suit and assume responsibility for its direction, but each of them has notified the court that they decline to intervene. The Company intends to defend against this lawsuit.

As previously disclosed, on June 21, 2012, the U.S. District Court for the Eastern District of Pennsylvania unsealed a complaint that has been filed against the Company under the federal False Claims Act by two former employees alleging, among other things, that the Company defrauded the U.S. government by falsifying data in connection with a clinical study conducted on the mumps component of the Company's M-M-R II vaccine. The complaint alleges the fraud took place between 1999 and 2001. The U.S. government had the right to participate in and take over the prosecution of this lawsuit, but has notified the court that it declined to exercise that right. The two former employees are pursuing the lawsuit without the involvement of the U.S. government. In addition, a putative class action lawsuit has been filed against the Company in the Eastern District of Pennsylvania on behalf of direct purchasers of the M M R II vaccine which is predicated on the allegations in the False Claims Act complaint and charges that the Company misrepresented the efficacy of the M-M-R II vaccine in violation of federal antitrust laws and various state consumer protection laws. The Company intends to defend against these lawsuits.

The Company has received a subpoena from the Office of Inspector General of the U.S. Department of Health and Human Services on behalf of the U.S. Attorney's Office for the District of Maryland and the Civil Division of the DOJ which requests information relating to the Company's marketing of Singulair and Dulera and certain of its other marketing activities from January 1, 2006 to the present. The Company is cooperating with the government.

As previously disclosed, the Company has received letters from the DOJ and the SEC that seek information about activities in a number of countries and reference the Foreign Corrupt Practices Act. The Company has cooperated with the agencies in their requests and believes that this inquiry is part of a broader review of pharmaceutical industry practices in foreign countries. The Company has been advised by the DOJ that, based on the information that it has received, it has closed its inquiry into this matter as it relates to the Company. In the future, the Company may receive additional requests for information from either or both of the DOJ and the SEC.

The Company's subsidiaries in China have received and may continue to receive inquiries regarding their operations from various Chinese governmental agencies. Some of these inquiries may be related to matters involving other multinational pharmaceutical companies, as well as Chinese entities doing business with such companies. The Company's policy is to cooperate with these authorities and to provide responses as appropriate.

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Commercial Litigation

AWP Litigation

As previously disclosed, the Company and/or certain of its subsidiaries have been named as defendants in cases brought by various states alleging manipulation by pharmaceutical manufacturers of Average Wholesale Prices ("AWP"), which are sometimes used by public and private payors in calculating provider reimbursement levels. The outcome of these lawsuits could include substantial damages, the imposition of substantial fines and penalties and injunctive or administrative remedies.

Since the start of 2012, the Company has settled AWP cases brought by the states of Alabama, Alaska, Kansas, Illinois, Kentucky, Louisiana, Oklahoma, Mississippi, and Wisconsin. A subsidiary of the Company continues to be a defendant in a case brought by one state, Utah.

The Company has also been reinstated as a defendant in a putative class action in New Jersey Superior Court which alleges on behalf of third-party payers and individuals that manufacturers inflated drug prices by manipulation of AWPs and other means. This case was originally dismissed against the Company without prejudice in 2007. The Company intends to defend against this lawsuit.

K-DUR Antitrust Litigation

As previously disclosed, in June 1997 and January 1998, Schering-Plough settled patent litigation with Upsher-Smith, Inc. ("Upsher-Smith") and ESI Lederle, Inc. ("Lederle"), respectively, relating to generic versions of K-DUR, Schering-Plough's long-acting potassium chloride product supplement used by cardiac patients, for which Lederle and Upsher-Smith had filed Abbreviated New Drug Applications ("ANDAs"). Following the commencement of an administrative proceeding by the U.S. Federal Trade Commission (the "FTC") in 2001 alleging anti-competitive effects from those settlements (which has been resolved in Schering-Plough's favor), putative class and non-class action suits were filed on behalf of direct and indirect purchasers of K-DUR against Schering-Plough, Upsher-Smith and Lederle and were consolidated in a multi-district litigation in the U.S. District Court for the District of New Jersey. These suits claimed violations of federal and state antitrust laws, as well as other state statutory and common law causes of action, and sought unspecified damages. In April 2008, the indirect purchasers voluntarily dismissed their case. In March 2010, the District Court granted summary judgment to the defendants on the remaining lawsuits and dismissed the matter in its entirety. In July 2012, the Third Circuit Court of Appeals reversed the District Court's grant of summary judgment and remanded the case for further proceedings. At the same time, the Third Circuit upheld a December 2008 decision by the District Court to certify certain direct purchaser plaintiffs' claims as a class action.

In August 2012, the Company filed a petition for certiorari with the U.S. Supreme Court seeking review of the Third Circuit's decision. In June 2013, the Supreme Court granted that petition, vacated the judgment of the Third Circuit, and remanded the case for further consideration in light of its recent decision in FTC v. Actavis, Inc. That decision held that whether a so-called "reverse payment" — i.e., a payment from the holder of a pharmaceutical patent to a party challenging the patent made in connection with a settlement of their dispute — violates the antitrust laws should be determined on the basis of a "rule of reason" analysis. In September 2013, the Third Circuit returned the case to the District Court for further proceedings in accordance with the Actavis standard.

Coupon Litigation

In 2012, as previously disclosed, a number of private health plans filed separate putative class action lawsuits against the Company alleging that Merck's coupon programs injured health insurers by reducing beneficiary co-payment amounts and, thereby, allegedly causing beneficiaries to purchase higher-priced drugs than they otherwise would have purchased and increasing the insurers' reimbursement costs. The actions, which were assigned to a District Judge in the U.S. District Court for the District of New Jersey, sought damages and injunctive relief barring the Company from issuing coupons that would reduce beneficiary co-pays on behalf of putative nationwide classes of health insurers. Similar actions relating to manufacturer coupon programs have been filed against several other pharmaceutical manufacturers in a variety of federal courts. On April 29, 2013, the District Court dismissed all the actions against Merck without prejudice on the grounds that plaintiffs had failed to demonstrate their standing to sue. Plaintiffs subsequently filed a consolidated amended complaint, and Merck has filed a motion to dismiss that

complaint.

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Sales Force Litigation

On May 9, 2013, Ms. Kelli Smith filed a complaint against the Company in the United States District Court for the District of New Jersey of behalf of herself and a putative class of female sales representatives and a putative sub-class of female sales representatives with children, claiming (a) discriminatory policies and practices in selection, promotion and advancement, (b) disparate pay, (c) differential treatment, (d) hostile work environment and (e) retaliation under federal and state discrimination laws. On November 27, 2013, the Company filed a motion to dismiss the class claims. Plaintiffs sought and were granted leave to file an amended complaint. On January 16, 2014, plaintiffs filed an amended complaint adding four additional named plaintiffs. The Company intends to re-file its motion to dismiss the class allegations and to otherwise defend itself.

Patent Litigation

From time to time, generic manufacturers of pharmaceutical products file ANDAs with the FDA seeking to market generic forms of the Company's products prior to the expiration of relevant patents owned by the Company. To protect its patent rights, the Company may file patent infringement lawsuits against such generic companies. Certain products of the Company (or products marketed via agreements with other companies) currently involved in such patent infringement litigation in the United States include: Emend for Injection, Integrilin, Nexium, and NuvaRing. Similar lawsuits defending the Company's patent rights may exist in other countries. The Company intends to vigorously defend its patents, which it believes are valid, against infringement by generic companies attempting to market products prior to the expiration of such patents. As with any litigation, there can be no assurance of the outcomes, which, if adverse, could result in significantly shortened periods of exclusivity for these products and, with respect to products acquired through mergers and acquisitions, potentially significant intangible asset impairment charges.

Emend for Injection — In May 2012, a patent infringement lawsuit was filed in the United States against Sandoz Inc. ("Sandoz") in respect of Sandoz's application to the FDA seeking pre-patent expiry approval to market a generic version of Emend for Injection. The lawsuit automatically stays FDA approval of Sandoz's application until July 2015 or until an adverse court decision, if any, whichever may occur earlier. In June 2012, a patent infringement lawsuit was filed in the United States against Accord Healthcare, Inc. US, Accord Healthcare, Inc. and Intas Pharmaceuticals Ltd (collectively, "Intas") in respect of Intas' application to the FDA seeking pre-patent expiry approval to market a generic version of Emend for Injection. The Company has agreed with Intas to stay the lawsuit pending the outcome of the lawsuit with Sandoz.

Integrilin — In February 2009, a patent infringement lawsuit was filed (jointly with Millennium Pharmaceuticals, Inc.) in the United States against Teva Parenteral Medicines, Inc. ("TPM") in respect of TPM's application to the FDA seeking pre-patent expiry approval to sell a generic version of Integrilin. In October 2011, the parties entered into a settlement agreement allowing TPM to sell a generic version of Integrilin beginning June 2, 2015. In November 2012, a patent infringement lawsuit was filed against APP Pharmaceuticals, Inc. and Fresenius Kabi USA Inc. (collectively, "APP") in respect of APP's application to the FDA seeking pre-patent expiry approval to sell a generic version of Integrilin. In March 2013, the parties entered into a settlement agreement allowing APP to sell a generic version of Integrilin beginning June 2, 2015. In September 2013, a patent infringement lawsuit was filed against Ben Venue Laboratories d/b/a Bedford Laboratories ("Bedford") in respect of Bedford's application to the FDA seeking pre-patent expiry approval to sell a generic version of Integrilin. The lawsuit automatically stays FDA approval of Bedford's application until February 2016 or until an adverse court decision, if any, whichever may occur earlier.

Nexium — Patent infringement lawsuits were brought (jointly with AstraZeneca) in the United States against the following generic companies: Ranbaxy Laboratories Ltd., IVAX Pharmaceuticals, Inc. (later acquired by Teva Pharmaceuticals, Inc.), Dr. Reddy's Laboratories, Sandoz, Lupin Ltd., Hetero Drugs Limited Unit III and Torrent Pharmaceuticals Ltd. in response to each generic company's application seeking pre-patent expiry approval to sell a generic version of Nexium. Settlements have been reached in each of these lawsuits, the terms of which provide that the respective generic company may bring a generic version of esomeprazole product to market on May 27, 2014. In addition, a patent infringement lawsuit was also filed (jointly with AstraZeneca) in February 2010 in the United States against Sun Pharma Global Fze ("Sun Pharma") in respect of its application to the FDA seeking pre-patent expiry approval to sell a generic version of Nexium IV, which lawsuit was settled with an agreement which provided that

Sun Pharma was entitled to bring its generic esomeprazole IV product to market in the United States on January 1, 2014. A patent infringement lawsuit was also filed (jointly with AstraZeneca) in the United States against Hanmi USA, Inc. (“Hanmi”) related to its application to the FDA seeking pre-patent expiry approval to sell a different salt of esomeprazole

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than is found in Nexium (the "Hanmi Product"). In a May 2013 agreement, Hanmi conceded the validity and enforceability of the patents in the lawsuit. The parties also agreed that the Hanmi Product would not infringe those patents under the District Court's December 2012 claim interpretation order, which AstraZeneca and KBI appealed. On December 19, 2013, the Court of Appeals for the Federal Circuit denied the appeal and affirmed the District Court's claim interpretation order. Hanmi has launched its esomeprazole product at risk. The Company continues to believe the court's order was incorrect and is considering its options for further review. Finally, additional patent infringement lawsuits have been filed (jointly with AstraZeneca) in the United States against Mylan Laboratories Limited ("Mylan Labs") and Actavis, Inc./Watson Pharma Company (collectively, "Actavis/Watson") related to their applications to the FDA seeking pre-patent expiry approval to sell generic versions of Nexium. The Mylan Labs and Actavis/Watson applications to the FDA remain stayed until August 2014 and October 2015, respectively, or until earlier adverse court decisions, if any, whichever may occur earlier.

NuvaRing — In December 2013, the Company filed a lawsuit against Warner Chilcott Company LLC ("Warner Chilcott") in the United States in respect of Warner Chilcott's application to the FDA seeking pre-patent expiry approval to sell a generic version of NuvaRing.

Patent Oppositions

Ono Pharmaceutical Co. ("Ono") has a European patent that broadly claims the use of an anti-PD-1 antibody, such as the Company's immunotherapy, MK-3475, for the treatment of cancer. Ono has previously licensed its commercial rights to an anti-PD-1 antibody to Bristol-Myers Squibb ("BMS") in certain markets. The Company believes that this patent is invalid and has filed an opposition in the European Patent Office (the "EPO") seeking its revocation. The Opposition Division of the EPO has scheduled a hearing in June 2014. The hearing panel has issued a preliminary opinion that the claims in the patent are valid. The hearing panel usually renders a decision, which is subject to further appeal, at the close of a hearing. If the patent survives these proceedings with similar breadth, Merck can file actions seeking to revoke the patent in each relevant national court in Europe. Ono could file patent infringement actions against the Company in each relevant national court in Europe at or around the time the company launches MK-3475 (if approved). If a national court determines that the Company infringed a valid claim in Ono's patent, Ono may be entitled to monetary damages, including royalties on future sales of MK-3475, and potentially could seek an injunction to prevent the Company from marketing MK-3475 in that country. In addition, Ono and BMS have similar and other patents and applications, which the Company is closely monitoring, pending in the United States, Japan and other countries. The Company is confident that it will be able to market MK-3475 in any country in which it is approved and that it will not be prevented from doing so by the Ono patent or any pending patent.

Environmental Litigation

As previously disclosed, Merck was involved in pending litigation against it related to alleged injuries caused by alleged emissions from the site of a former Merck subsidiary in Merced, California. Also as previously disclosed, the parties to that litigation reached an agreement in 2013 intended to resolve the litigation, subject to sufficient plaintiff participation, which was obtained. The parties have now finalized the settlement and this litigation was dismissed with prejudice on January 16, 2014 as to all plaintiffs.

Other Litigation

There are various other pending legal proceedings involving the Company, principally product liability and intellectual property lawsuits. While it is not feasible to predict the outcome of such proceedings, in the opinion of the Company, either the likelihood of loss is remote or any reasonably possible loss associated with the resolution of such proceedings is not expected to be material to the Company's financial position, results of operations or cash flows either individually or in the aggregate.

Legal Defense Reserves

Legal defense costs expected to be incurred in connection with a loss contingency are accrued when probable and reasonably estimable. Some of the significant factors considered in the review of these legal defense reserves are as

follows: the actual costs incurred by the Company; the development of the Company's legal defense strategy and structure in light of the scope of its litigation; the number of cases being brought against the Company; the costs and

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outcomes of completed trials and the most current information regarding anticipated timing, progression, and related costs of pre-trial activities and trials in the associated litigation. The amount of legal defense reserves as of December 31, 2013 and December 31, 2012 of approximately $160 million and $260 million, respectively, represents the Company's best estimate of the minimum amount of defense costs to be incurred in connection with its outstanding litigation; however, events such as additional trials and other events that could arise in the course of its litigation could affect the ultimate amount of legal defense costs to be incurred by the Company. The Company will continue to monitor its legal defense costs and review the adequacy of the associated reserves and may determine to increase the reserves at any time in the future if, based upon the factors set forth, it believes it would be appropriate to do so.

Environmental Matters

The Company and its subsidiaries are parties to a number of proceedings brought under the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund, and other federal and state equivalents. These proceedings seek to require the operators of hazardous waste disposal facilities, transporters of waste to the sites and generators of hazardous waste disposed of at the sites to clean up the sites or to reimburse the government for cleanup costs. The Company has been made a party to these proceedings as an alleged generator of waste disposed of at the sites. In each case, the government alleges that the defendants are jointly and severally liable for the cleanup costs. Although joint and several liability is alleged, these proceedings are frequently resolved so that the allocation of cleanup costs among the parties more nearly reflects the relative contributions of the parties to the site situation. The Company's potential liability varies greatly from site to site. For some sites the potential liability is de minimis and for others the final costs of cleanup have not yet been determined. While it is not feasible to predict the outcome of many of these proceedings brought by federal or state agencies or private litigants, in the opinion of the Company, such proceedings should not ultimately result in any liability which would have a material adverse effect on the financial position, results of operations, liquidity or capital resources of the Company. The Company has taken an active role in identifying and providing for these costs and such amounts do not include any reduction for anticipated recoveries of cleanup costs from former site owners or operators or other recalcitrant potentially responsible parties.

In management's opinion, the liabilities for all environmental matters that are probable and reasonably estimable have been accrued and totaled $213 million and $145 million at December 31, 2013 and 2012, respectively. These liabilities are undiscounted, do not consider potential recoveries from other parties and will be paid out over the periods of remediation for the applicable sites, which are expected to occur primarily over the next 15 years. Although it is not possible to predict with certainty the outcome of these matters, or the ultimate costs of remediation, management does not believe that any reasonably possible expenditures that may be incurred in excess of the liabilities accrued should exceed $84 million in the aggregate. Management also does not believe that these expenditures should result in a material adverse effect on the Company's financial position, results of operations, liquidity or capital resources for any year.

11. Equity

The Merck certificate of incorporation authorizes 6,500,000,000 shares of common stock and 20,000,000 shares of preferred stock.

Capital Stock

A summary of common stock and treasury stock transactions (shares in millions) is as follows:

	2013		2012		2011	
	Common Stock	Treasury Stock	Common Stock	Treasury Stock	Common Stock	Treasury Stock
Balance January 1	3,577	550	3,577	536	3,577	495
Purchases of treasury stock [1]	—	139	—	62	—	58
Issuances [2]	—	(39)	—	(48)	—	(17)
Balance December 31	3,577	650	3,577	550	3,577	536

(1) Purchases of treasury stock in 2013 include 105 million shares purchased pursuant to an accelerated share repurchase agreement as discussed below.

(2) Issuances primarily reflect activity under share-based compensation plans.

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On May 20, 2013, Merck entered into an accelerated share repurchase ("ASR") agreement with Goldman, Sachs & Co. ("Goldman Sachs"). Under the ASR, Merck agreed to purchase $5.0 billion of Merck's common stock, in total, with an initial delivery of approximately 99.5 million shares of Merck's common stock, based on current market price, made by Goldman Sachs to Merck, and payment of $5.0 billion made by Merck to Goldman Sachs, on May 21, 2013. Upon settlement of the ASR on October 31, 2013, Merck received an additional 5.5 million shares as determined by the average daily volume weighted-average price of Merck's common stock during the term of the ASR program bringing the total shares received by Merck under this program to 105 million. The ASR was entered into pursuant to a share repurchase program announced on May 1, 2013.

Noncontrolling Interests

In connection with the 1998 restructuring of AMI, Merck assumed $2.4 billion par value preferred stock with a dividend rate of 5% per annum, which is carried by KBI and included in Noncontrolling interests. If AstraZeneca exercises its option to acquire Merck's interest in AZLP (see Note 8) this preferred stock obligation will be retired.

12. Share-Based Compensation Plans

The Company has share-based compensation plans under which the Company grants restricted stock units ("RSUs") and performance share units ("PSUs") to certain management level employees. In addition, employees, non-employee directors and employees of certain of the Company's equity method investees may be granted options to purchase shares of Company common stock at the fair market value at the time of grant. These plans were approved by the Company's shareholders.

At December 31, 2013, 143 million shares collectively were authorized for future grants under the Company's share-based compensation plans. These awards are settled primarily with treasury shares.

Employee stock options are granted to purchase shares of Company stock at the fair market value at the time of grant. These awards generally vest one-third each year over a three-year period, with a contractual term of 7-10 years. RSUs are stock awards that are granted to employees and entitle the holder to shares of common stock as the awards vest. The fair value of the stock option and RSU awards is determined and fixed on the grant date based on the Company's stock price. PSUs are stock awards where the ultimate number of shares issued will be contingent on the Company's performance against a pre-set objective or set of objectives. The fair value of each PSU is determined on the date of grant based on the Company's stock price. For RSUs and certain PSUs granted before December 31, 2009 employees participate in dividends on the same basis as common shares and such dividends are nonforfeitable by the holder. For RSUs and PSUs issued on or after January 1, 2010, dividends declared during the vesting period are payable to the employees only upon vesting. Over the PSU performance period, the number of shares of stock that are expected to be issued will be adjusted based on the probability of achievement of a performance target and final compensation expense will be recognized based on the ultimate number of shares issued. RSU and PSU distributions will be in shares of Company stock after the end of the vesting or performance period, generally three years, subject to the terms applicable to such awards.

Total pretax share-based compensation cost recorded in 2013, 2012 and 2011 was $276 million, $335 million and $369 million, respectively, with related income tax benefits of $84 million, $105 million and $118 million, respectively.

The Company uses the Black-Scholes option pricing model for determining the fair value of option grants. In applying this model, the Company uses both historical data and current market data to estimate the fair value of its options. The Black-Scholes model requires several assumptions including expected dividend yield, risk-free interest rate, volatility, and term of the options. The expected dividend yield is based on historical patterns of dividend payments. The risk-free rate is based on the rate at grant date of zero-coupon U.S. Treasury Notes with a term equal to the expected term of the option. Expected volatility is estimated using a blend of historical and implied volatility. The historical component is based on historical monthly price changes. The implied volatility is obtained from market data on the Company's traded options. The expected life represents the amount of time that options granted are expected to be outstanding, based on historical and forecasted exercise behavior.

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The weighted average exercise price of options granted in 2013, 2012 and 2011 was $45.01, $39.51 and $36.47 per option, respectively. The weighted average fair value of options granted in 2013, 2012 and 2011 was $6.21, $5.47 and $5.39 per option, respectively, and were determined using the following assumptions:

Years Ended December 31	2013	2012	2011
Expected dividend yield	4.2 %	4.4 %	4.3 %
Risk-free interest rate	1.2 %	1.3 %	2.5 %
Expected volatility	25.0 %	25.2 %	23.4 %
Expected life (years)	7.0	7.0	7.0

Summarized information relative to stock option plan activity (options in thousands) is as follows:

	Number of Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value
Outstanding January 1, 2013	165,941	$39.46		
Granted	5,703	45.01		
Exercised	(33,278)	36.37		
Forfeited	(22,561)	49.01		
Outstanding December 31, 2013	115,805	$38.75	3.79	$1,320
Exercisable December 31, 2013	101,600	$38.48	3.25	$1,187

Additional information pertaining to stock option plans is provided in the table below:

Years Ended December 31	2013	2012	2011
Total intrinsic value of stock options exercised	$374	$528	$125
Fair value of stock options vested	42	80	189
Cash received from the exercise of stock options	1,210	1,310	321

A summary of nonvested RSU and PSU activity (shares in thousands) is as follows:

	RSUs		PSUs	
	Number of Shares	Weighted Average Grant Date Fair Value	Number of Shares	Weighted Average Grant Date Fair Value
Nonvested January 1, 2013	22,743	$36.38	1,648	$33.78
Granted	6,394	45.04	963	38.25
Vested	(8,705)	34.10	(839)	34.17
Forfeited	(1,298)	40.02	(99)	36.71
Nonvested December 31, 2013	19,134	$40.07	1,673	$35.98

At December 31, 2013, there was $374 million of total pretax unrecognized compensation expense related to nonvested stock options, RSU and PSU awards which will be recognized over a weighted average period of 1.9 years. For segment reporting, share-based compensation costs are unallocated expenses.

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13. Pension and Other Postretirement Benefit Plans

The Company has defined benefit pension plans covering eligible employees in the United States and in certain of its international subsidiaries. As a result of plan design changes approved in 2011, beginning on January 1, 2013, active participants in Merck's primary U.S. defined benefit pension plans are accruing pension benefits using new cash balance formulas based on age, service, pay and interest. However, during a transition period from January 1, 2013 through December 31, 2019, participants will earn the greater of the benefit as calculated under the employee's legacy final average pay formula or their new cash balance formula. For all years of service after December 31, 2019, participants will earn future benefits under only the cash balance formula. In addition, the Company provides medical benefits, principally to its eligible U.S. retirees and their dependents, through its other postretirement benefit plans. The Company uses December 31 as the year-end measurement date for all of its pension plans and other postretirement benefit plans.

Net Periodic Benefit Cost

The net periodic benefit cost for pension and other postretirement benefit plans consisted of the following components:

	Pension Benefits			Other Postretirement Benefits		
Years Ended December 31	2013	2012	2011	2013	2012	2011
Service cost	$682	$555	$619	$102	$82	$110
Interest cost	665	661	718	107	121	141
Expected return on plan assets	(1,097)	(970)	(972)	(126)	(136)	(142)
Net amortization	336	185	201	(50)	(35)	(17)
Termination benefits	58	27	59	50	18	29
Curtailments	(23)	(10)	(86)	(11)	(7)	1
Settlements	23	18	4	—	—	—
Net periodic benefit cost	$644	$466	$543	$72	$43	$122

The increase in net periodic benefit cost for pension and other postretirement benefit plans in 2013 as compared with 2012 is largely attributable to a change in the discount rate. The net periodic benefit cost attributable to U.S. pension plans included in the above table was $348 million in 2013, $268 million in 2012 and $406 million in 2011.

In connection with restructuring actions (see Note 3), termination charges were recorded in 2013, 2012 and 2011 on pension and other postretirement benefit plans related to expanded eligibility for certain employees exiting Merck. Also, in connection with these restructuring activities, curtailments were recorded in 2013, 2012 and 2011 on pension and other postretirement benefit plans.

In addition, settlements were recorded in 2013, 2012 and 2011 on certain domestic and international pension plans.

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Obligations and Funded Status

Summarized information about the changes in plan assets and benefit obligation, the funded status and the amounts recorded at December 31 is as follows:

	Pension Benefits		Other Postretirement Benefits	
	2013	2012	2013	2012
Fair value of plan assets January 1	$15,349	$12,481	$1,760	$1,628
Actual return on plan assets	2,524	1,739	199	200
Company contributions	645	1,853	73	48
Effects of exchange rate changes	(84)	3	—	—
Benefits paid	(780)	(673)	(119)	(115)
Settlements	(236)	(75)	—	—
Other	17	21	—	(1)
Fair value of plan assets December 31	$17,435	$15,349	$1,913	$1,760
Benefit obligation January 1	17,646	14,416	2,650	2,529
Service cost	682	555	102	82
Interest cost	665	661	107	121
Actuarial (gains) losses	(1,689)	2,660	(428)	88
Benefits paid	(780)	(673)	(119)	(115)
Effects of exchange rate changes	(21)	67	(5)	—
Plan amendments	(225)	2	(38)	(86)
Curtailments	(61)	(17)	—	1
Termination benefits	58	27	50	18
Settlements	(236)	(75)	—	—
Other	16	23	10	12
Benefit obligation December 31	$16,055	$17,646	$2,329	$2,650
Funded status December 31	$1,380	$(2,297)	$(416)	$(890)
Recognized as:				
Other assets	$2,811	$355	$—	$506
Accrued and other current liabilities	(53)	(50)	(8)	(9)
Other noncurrent liabilities	(1,378)	(2,602)	(408)	(1,387)

The fair value of U.S. pension plan assets included in the preceding table was $10.0 billion and $8.7 billion at December 31, 2013 and 2012, respectively, and the projected benefit obligation of U.S. pension plans was $8.7 billion and $10.0 billion, respectively. Approximately 46% and 44% of the Company's pension projected benefit obligation at December 31, 2013 and 2012, respectively, relates to international defined benefit plans, of which each individual plan is not significant relative to the total projected benefit obligation.

At December 31, 2013 and 2012, the accumulated benefit obligation was $14.8 billion and $15.9 billion, respectively, for all pension plans, of which $8.0 billion and $9.0 billion, respectively, related to U.S. pension plans.

For pension plans with projected benefit obligations in excess of plan assets at December 31, 2013 and 2012, the fair value of plan assets was $1.5 billion and $12.8 billion, respectively, and the benefit obligations were $3.0 billion and $15.5 billion, respectively. For those plans with accumulated benefit obligations in excess of plan assets at December 31, 2013 and 2012, the fair value of plan assets was $1.4 billion and $6.1 billion, respectively, and the accumulated benefit obligations were $2.5 billion and $7.7 billion, respectively.

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Plan Assets

Entities are required to use a fair value hierarchy which maximizes the use of observable inputs and minimizes the use of unobservable inputs when measuring fair value. There are three levels of inputs used to measure fair value with Level 1 having the highest priority and Level 3 having the lowest:

Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 — Unobservable inputs that are supported by little or no market activity. The Level 3 assets are those whose values are determined using pricing models, discounted cash flow methodologies, or similar techniques with significant unobservable inputs, as well as instruments for which the determination of fair value requires significant judgment or estimation. At December 31, 2013 and 2012, $622 million and $692 million, respectively, or approximately 4% and 5%, respectively, of the Company's pension investments at each year end, were categorized as Level 3 assets.

If the inputs used to measure the financial assets fall within more than one level described above, the categorization is based on the lowest level input that is significant to the fair value measurement of the instrument.

The fair values of the Company's pension plan assets at December 31 by asset category are as follows:

	Fair Value Measurements Using				Fair Value Measurements Using			
	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
	2013				2012			
Assets								
Cash and cash equivalents	$88	$247	$—	$335	$142	$587	$—	$729
Investment funds								
Developed markets equities	808	7,643	—	8,451	683	5,986	—	6,669
Emerging markets equities	163	1,036	—	1,199	121	771	—	892
Government and agency obligations	293	1,180	—	1,473	279	720	—	999
Corporate obligations	188	77	—	265	166	94	—	260
Fixed income obligations	17	145	—	162	14	206	—	220
Real estate [1]	4	57	49	110	4	14	141	159
Equity securities								
Developed markets	2,546	—	—	2,546	2,277	—	—	2,277
Fixed income securities								
Government and agency obligations	2	1,096	—	1,098	2	1,052	—	1,054
Corporate obligations	—	741	—	741	—	1,008	—	1,008
Mortgage and asset-backed	—	299	—	299	—	269	—	269

securities								
Other investments								
Insurance contracts [2]	—	128	540	668	—	117	496	613
Derivatives	1	—	—	1	—	162	—	162
Other	—	54	33	87	—	53	55	108
Liabilities								
Derivatives	$—	$—	$—	$—	$—	$ 70	$ —	$ 70
	$4,110							