



[MSDresponsibility.com](http://MSDresponsibility.com)

**MERCK & CO., INC.**  
Kenilworth, N.J., U.S.A.

CUSTOMIZED  
REPORT  
**2016/2017**

# CORPORATE RESPONSIBILITY



**INVENTING**  
FOR LIFE

## OUR APPROACH

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- Letter from Our CEO
- Reporting Frameworks
- Materiality
- Corporate Responsibility Governance
- Stakeholder Engagement
- Public Policy
- Our Business
- About This Report
- Awards & Recognition
- Performance Data

## ACCESS TO HEALTH

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- Access Principles
- Key Initiatives
- Global Population Health
- Research & Development
- Manufacturing & Supply Chain
- Product Registration
- Pricing & Commercialization
- Health Literacy
- Community Investment
- Animal Health
- Infectious Diseases
- Vaccines
- Women's Health

## EMPLOYEES

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- Positive Work Environment
- Engaging Our Employees
- Learning & Development
- Employee Well-Being
- Global Diversity & Inclusion

## ENVIRONMENTAL SUSTAINABILITY

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- Environmental Goals
- EHS Management & Compliance
- Climate Change & Energy Use
- Air Emissions
- Water
- Materials & Waste
- Product Stewardship

## ETHICS & TRANSPARENCY

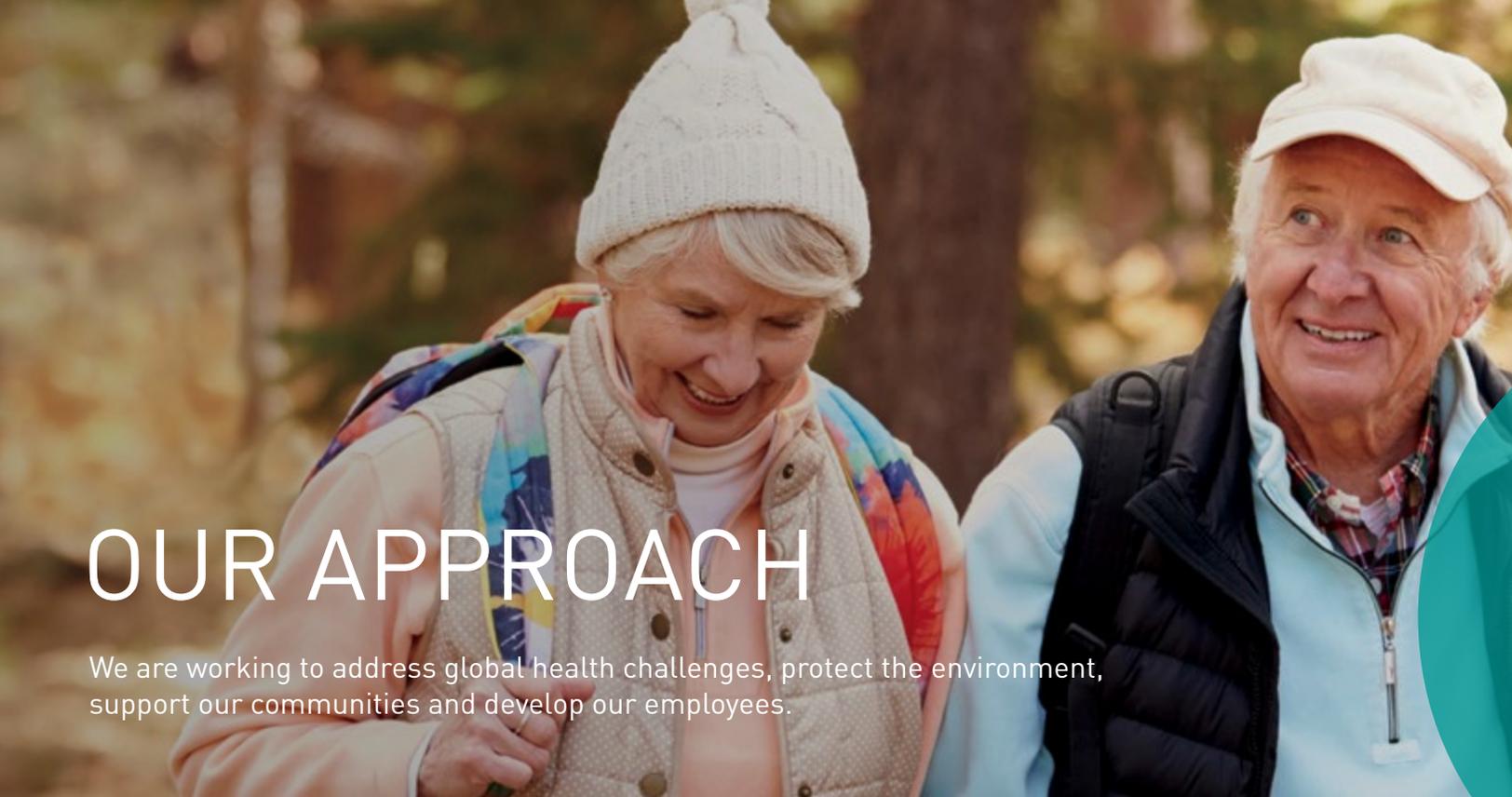
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- Office of Ethics
- Code of Conduct
- Global Privacy Program
- Human Rights
- Transparency Disclosures
- Sales & Marketing
- Procurement & Supplier Relations
- Corporate Governance
- Global Compliance Program

## OUR GIVING

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- Priorities & Performance
- Health
- Community
- Foundation
- Product Donations
- Giving Governance
- Employee Giving
- MSD Fellowship for Global Health



# OUR APPROACH

We are working to address global health challenges, protect the environment, support our communities and develop our employees.

**As a leading biopharmaceutical company, we continue to invent new approaches that save and improve lives so that people can positively contribute to a healthier and more hopeful world.**

## AREAS OF FOCUS

Our corporate responsibility approach is aligned with the company's focus on invention, and underscores our commitment to overcoming the greatest obstacles to health and well-being, developing and rewarding our employees, protecting the environment and operating with the highest standards of ethics and transparency.



**ACCESS TO HEALTH**



**EMPLOYEES**



**ENVIRONMENTAL SUSTAINABILITY**



**ETHICS & TRANSPARENCY**

## THE SDGs & OUR APPROACH

Our corporate responsibility strategy includes our alignment with the UN Sustainable Development Goals (SDGs). While all of the SDGs are essential to fostering sustainable development, and are being addressed by our company, we have prioritized eight global goals as those where we are positioned to have the biggest impact.



## EXPANDING OUR IMPACT

We have recently expanded our social investments through impact investing. This involves making financial investments in companies, organizations and funds with the intent to generate social and environmental impact along with a financial return.

One example of this is our recent \$5 million investment in the Abraaj Growth Markets Health Fund, which focuses on health infrastructure expansion for low- and middle-income populations.

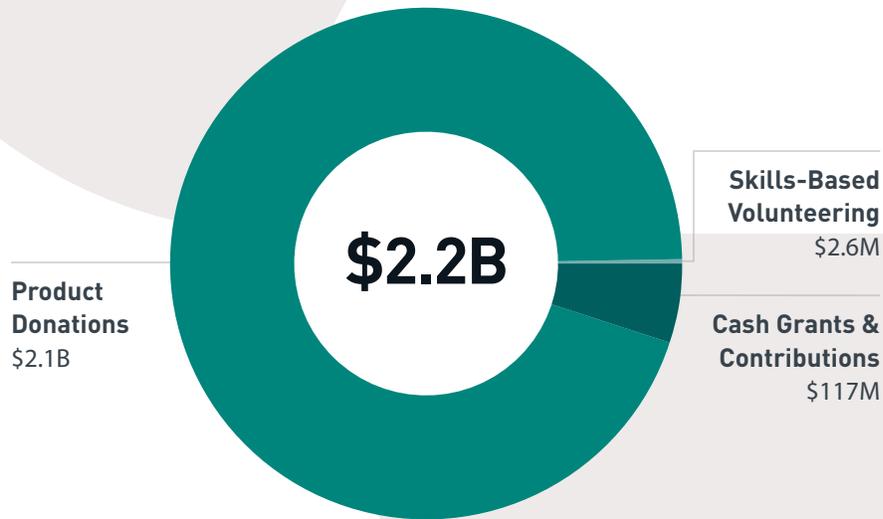


# ADDRESSING OUR MOST IMPORTANT ISSUES

Within our four focus areas, we have identified the topics that are most critical to our business and to our external stakeholders, based on a formal corporate responsibility materiality assessment.



## Total Giving 2016



## OUR GIVING

Through our philanthropic contributions and volunteering, we strive to find sustainable solutions to key global health challenges and to strengthen communities where our employees live and work.

Our program investments aim to support interventions that have shown evidence of effectiveness in advancing the quality of health services delivery, reducing health care disparities, fostering innovation in the delivery of health care, and empowering patients as active participants in managing their own health.

## MSD FOR MOTHERS: COMMITTED TO SAVING LIVES

*MSD for Mothers* is our company's 10-year, \$500 million initiative that applies our scientific and business expertise, as well as our financial resources, to reduce preventable maternal mortality worldwide by catalyzing transformative

solutions. We are applying private-sector approaches to improve access to quality maternal health care that women receive in health facilities at the time of childbirth, and to improve access to family planning services.

## AWARDS & RECOGNITION

We have been recognized for our commitment to corporate responsibility.





# LETTER FROM OUR CEO

We have always been and always will be inventing, and we do it for the single greatest purpose: life.



**For more than a century, our company has been inventing medicines and vaccines for the world's most challenging diseases. That same commitment to overcoming the greatest obstacles to improving health and well-being extends to how we seek new ways to develop and reward our employees, protect the environment and operate with the highest standards of ethics and integrity.**

Our 2016/2017 Corporate Responsibility Report reviews our progress and highlights how we operate as a responsible company while building a sustainable business — contributing to a healthier and more hopeful world for everyone.

As a company with an enduring mission to save and improve lives, we are focused on finding solutions to many of the world's most devastating diseases, such as cancer, Alzheimer's disease, diabetes, HIV, Ebola, antibiotic-resistant infections and more. We also are committed to pursuing the science of healthier animals, reflecting our dedication to providing veterinarians with new medicines and vaccines to advance optimal animal care.

We know that the world is waiting for cures. For that reason, we have a legacy of investing in research and development. We see it as our responsibility to invent solutions that fundamentally transform the future of human and animal health. Our people work relentlessly to push the boundaries of science with the hope and expectation that the medicines and vaccines we invent will lead to better health for generations to come.

Our passion to save and improve lives extends to our commitment to protecting and sustaining the environment. We are proud that we met our previous environmental sustainability goals in 2015, five years ahead of schedule, and we recently developed a new set of environmental goals by assessing the external influences that could potentially impact our company and, in turn, our patients over the near and long term. These new goals address the rising expectations that our customers, investors, employees and other stakeholders have of our responsibility to manage the environmental impact of our operations, supply chain, products and packaging. The new environmental goals also will improve the health of our business and drive innovation as our scientists and engineers develop

new ways to operate more efficiently, reduce risk and drive down costs.

With a commitment to being the world's premier research-intensive biopharmaceutical company, we look to foster an environment that engages and develops our diverse and talented people. For example, to help celebrate our 125th anniversary and honor our long-standing tradition of giving back to the communities in which we live and work, the company set a goal of recording 125,000 employee volunteer hours in 2016. Our colleagues around the world rose to the occasion — handily beating the company target and logging more than 214,000 volunteer hours. We also support our employees by promoting diversity and inclusion across our organization. From how we respect and learn from each other as colleagues to how we conduct our clinical trials, one thing is clear: maintaining

a diverse and inclusive environment is not just good for business, it is essential to our future success.

For all of these activities, the foundation of our strategy is our unwavering commitment to ethics and integrity. We aspire to be the most trusted biopharmaceutical company in the world. Our values and standards play an essential role in how we build trust and confidence with patients, customers, shareholders, employees and other stakeholders.

As part of our ongoing commitment to transparency about our business, we disclosed information in early 2017 to help people better understand our pricing practices in the United States. This information — which will be updated annually — includes the average annual list and net price increases across our product portfolio since 2010. It also includes the average discount rate for our medicines and vaccines each year. These disclosures are just one of the ways in which we are responding to concerns about access and affordability. We have a history of making our inventions available to people who need them. We welcome opportunities to partner with stakeholders to find sustainable solutions to the global challenge of access to health care.

One platform for connecting with external stakeholders to improve the health of society and our planet is the Sustainable Development Goals (SDGs), a set of 17 global goals adopted by the United Nations (UN) in 2015 to help end poverty, protect the environment and ensure prosperity. We see support of the SDGs as both a responsibility and an opportunity, a lens through which we can identify ways to contribute to societal needs while strengthening our business. In addition, to guide our company's efforts on sustainability issues, we remain committed to supporting the 10 universally accepted principles of the UN Global Compact.

We have a central purpose: to help people live longer, healthier and more productive lives. Whether it is by inventing breakthrough medicines and vaccines that address critical areas of growing, global medical need, improving access to health care, protecting the environment or engaging employees, we are committed to making the world a better place today and for generations to come.

Sincerely,



**KENNETH C. FRAZIER**  
Chairman and  
Chief Executive Officer

**We remain committed to supporting the 10 universally accepted principles of the UN Global Compact.**



Since the release of our first corporate responsibility report in 2005, our company has been committed to using established frameworks to report our performance on environmental, social and governance (ESG) issues.

#### RESOURCES

[GHG + Water Assurance Letter](#)

We currently utilize the [Global Reporting Initiative \(GRI\)](#) in combination with the [UN Global Compact \(UNGC\)](#), the [UN Sustainable Development Goals \(SDGs\)](#) and the [Access to Medicine Index \(ATMI\)](#) as frameworks to guide our reporting.

[ACCESS TO MEDICINE INDEX >](#)

[GRI INDEX >](#)

[UN GLOBAL COMPACT >](#)

[UN SUSTAINABLE DEVELOPMENT GOALS >](#)



In preparing our disclosures relating to access to health, for 2016–2017 we referred to the Access to Medicine Index.

The [Access to Medicine Index](#) is a framework that encourages reporting about efforts to improve access to medicine and which can help inform our stakeholders and also enable us to compare our performance with that of peers on relevant metrics.

We ranked number 5 on the 2016 Access to Medicine Index, up from number 7 in the last Index, published in 2014. The Index, published every two years, assesses the efforts of research-based pharmaceutical companies to improve access in developing countries.

The table below summarizes where our disclosures can be found on the website in relation to the ATMI criteria.

**ATMI CRITERIA & REPORT LOCATION**

#### GENERAL ACCESS TO MEDICINE MANAGEMENT

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Access Principles  
Access to Health Statement of Guiding Principles  
CR Governance  
Public Policy Statements: Access & Affordability  
Stakeholder Engagement  
Transparency Disclosures

#### MARKET INFLUENCE & COMPLIANCE

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Global Privacy Program  
Office of Ethics  
Public Policy  
Sales & Marketing

#### RESEARCH & DEVELOPMENT

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Access to Health Statement of Guiding Principles  
Clinical Research  
Global Burden of Disease  
HIV/AIDS  
Infectious Diseases  
Manufacturing & Supply Chain  
MSD for Mothers  
Neglected Tropical Diseases  
Public Policy  
Public Policy Position Statements  
Research & Development  
Vaccines  
Women's Health

#### PRICING, MANUFACTURING & DISTRIBUTION

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Access Principles  
Access to Health Statement of Guiding Principles  
HIV/AIDS  
Manufacturing & Supply Chain  
Quality & Safety Standards  
Pricing & Commercialization  
Product & Patient Safety  
Product Registration  
Public Policy Position Statements  
Sales & Marketing  
Vaccines  
Women's Health

#### PATENTS & LICENSING

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Access to Health Statement of Guiding Principles  
Anti-Counterfeiting  
HIV/AIDS  
Manufacturing & Supply Chain  
Neglected Tropical Diseases  
Product & Patient Safety  
Product Patents  
Product Registration  
Public Policy Position Statements  
Research & Development  
Vaccines  
Women's Health

#### CAPACITY BUILDING

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Access to Health Statement of Guiding Principles  
Health  
Infectious Diseases  
Key Initiatives  
Research & Development

#### PRODUCT DONATIONS

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Community  
Community Investment  
Foundation  
Key Initiatives  
Medical Outreach Program  
Priorities & Performance  
Product Donations  
Public Policy Position Statements



## This report references the Global Reporting Initiative (GRI) Sustainability Standards.

The [GRI Standards](#) represent global best practices for reporting publicly on a range of economic, environmental and social impacts.

We believe that this report provides an inclusive picture of our material topics, their related impacts, and how they are managed.

Throughout this report, flags denote which GRI disclosures are relevant to the text, where applicable. Roll over a flag to see a brief description of the disclosure.

Additionally, for ease of online navigation of PDFs, the page numbers referenced below for the Form 10-K and proxy are for the PDF, not the number on the page.

## ASSURANCE

[WSP Environment & Energy](#), one of the world's leading engineering and professional services consulting firms, conducted an independent third party review of our 2016 greenhouse gas and water inventories, and provided limited assurance for the data that we submit to CDP and for the corporate responsibility report. This data can be found on our [Water](#) and [Climate Change & Energy Use](#) pages. Please see WSP's limited assurance of our environmental data [here](#).

The table below summarizes where the disclosures can be found throughout this report.

Index #	Description	Report Location/Direct Answer
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### Foundation

GRI 101: REPORTING PRINCIPLES

GRI 101	Defining report content and quality	About This Report
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### General Disclosures

GRI 102: ORGANIZATIONAL PROFILE

GRI 102-1	Organization name	Merck & Co., Inc. Kenilworth, N.J., USA
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GRI 102-2	Primary brands, products, and services	Our Business 2016 Form 10-K (pages 3–5)
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GRI 102-3	Headquarters location	Kenilworth, N.J., USA
GRI 102-4	Location of operations	2016 Form 10-K (pages 30, 215–224)
GRI 102-5	Ownership and legal form	2016 Form 10-K (page 1)
GRI 102-6	Markets served	Our Business 2016 Form 10-K (pages 10, 19, 78, 130)
GRI 102-7	Scale of the organization	Economic Impact 2016 Form 10-K (pages 3, 18, 30, 39–40, 73, 75)
GRI 102-9	Supply chain	Manufacturing & Supply Chain 2016 Form 10-K (page 3)
GRI 102-10	Organizational changes during the reporting period	About This Report 2016 Form 10-K (pages 1, 35, 56–57, 73, 84–85)
GRI 102-11	Precautionary principle	Product Stewardship
GRI 102-12	External initiatives	Reporting Frameworks Access Principles Water Human Rights
GRI 102-13	Membership associations	Public Policy
GRI 102: STRATEGY		
GRI 102-14	CEO Letter	CEO Letter
GRI 102: ETHICS & INTEGRITY		
GRI 102-16	Values, principles, standards, and norms of behavior	Code of Conduct
GRI 102-17	Mechanisms for advice and concerns about ethics	Office of Ethics
GRI 102: GOVERNANCE		
GRI 102-18	Governance structure of the organization	Corporate Governance CR Governance Leadership
GRI 102-22	Composition of the board and its committees	Corporate Governance CR Governance Leadership
GRI 102-23	Chair of the highest governance body	Kenneth C. Frazier is both the chairman of the board and the chief executive officer. Corporate Governance 2017 Proxy Statement (pages 70–71)
GRI 102-24	Board nomination and selection processes	Policies of the Board

GRI 102-25	Board conflicts of interest	Corporate Governance Policies of the Board
GRI 102-26	Board and executive roles	Corporate Governance CR Governance
GRI 102-29	Board identification of ESG impacts, risks and opportunities	CR Governance Board of Directors Materiality
GRI 102-30	Board ESG review of risk management processes	Governance Committee Charter
GRI 102-31	Frequency of board review	The Governance Committee shall meet no less frequently than twice each year. Meetings may be called by the Chairperson of the Committee or upon the vote of a majority of the Board.
GRI 102-32	Report review	Governance Committee of the Board
GRI 102-33	Board communication	2017 Proxy Statement (page 22)
GRI 102-35	Remuneration policies for the board and senior executives	2017 Proxy Statement (pages 39-51)
GRI 102-36	Process for determining remuneration	2017 Proxy Statement (page 46)
GRI 102-37	Remuneration shareholder resolutions	2017 Proxy Statement (page 41)
<b>GRI 102: STAKEHOLDER ENGAGEMENT</b>		
GRI 102-40	Stakeholder engagement	Stakeholder Engagement
GRI 102-41	Union representation	Office of Ethics
GRI 102-42	Stakeholder identification	Stakeholder Engagement
GRI 102-43	Approach to stakeholder engagement	Stakeholder Engagement Engaging Our Employees
GRI 102-44	Key topics and concerns raised	2017 Proxy Statement (pages 23, 26, 37, 38, 69, 71, 73, 75, 77)
<b>GRI 102: REPORTING PRACTICE</b>		
GRI 102-45	Entities included in financial statements	2016 Form 10-K (pages 215–224) Data regarding employees who are part of underrepresented ethnic groups are provided for the U.S. only.
GRI 102-46	Defining report content and topic boundaries	About This Report
GRI 102-47	Material Aspects included	Materiality

GRI 102-48	Restatements	Any restatements of information are included in the footnotes beneath the specific performance data tables.
GRI 102-49	Reporting changes	None
GRI 102-50	Reporting period	January 1, 2016 – December 31, 2016
GRI 102-51	Date of most recent report	Released in September 2016, covering 2015 programs and data
GRI 102-52	Reporting cycle	Annual
GRI 102-53	Report contact	Contact Us
GRI 102-54	Claims of reporting in accordance with the GRI Standards	While many aspects are in alignment with the Core level, this is a GRI-referenced report.
GRI 102-55	GRI content index	GRI Index
GRI 102-56	External assurance	FAQ

GRI 103: MANAGEMENT APPROACH

GRI 103-1	Explanation of the material topic and its boundary	Materiality
GRI 103-2	The management approach and its components	Materiality
GRI 103-3	Evaluation of the management approach	Materiality

**Economic**

GRI 201: ECONOMIC PERFORMANCE

GRI 201-1	Direct economic value generated and distributed	Economic Impact Community Community Investment 2016 Form 10-K (pages 72–77)
GRI 201-2	Financial implications and other risks and opportunities due to climate change	Climate Change & Energy Use 2016 Form 10-K (page 19) CDP Climate Change (CC5.1–CC5.1c, CC6.1–CC6.1c)
GRI 201-3	Benefit plan coverage	Financial Well-Being 2016 Form 10-K (pages 115–122)

GRI 203: INDIRECT ECONOMIC IMPACTS

GRI 203-1	Infrastructure investments and services supported	Health Community Investment MSD Fellowship
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GRI 203-2	Indirect economic impacts	Pricing & Commercialization U.S. Patient Assistance Programs Key Initiatives
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GRI 205: ANTI-CORRUPTION

GRI 205-2	Communications and training on anti-corruption	Sales & Marketing Code of Conduct Procurement & Supplier Relations Compliance Health Care Professionals
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GRI 206: ANTI-COMPETITIVE BEHAVIOR

GRI 206-1	Anti-competitive behavior	2016 Form 10-K (pages 108–112)
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**Environmental**

GRI 302: ENERGY

GRI 302-1	Energy consumption within the organization (Scopes 1 + 2)	Climate Change & Energy Use
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GRI 302-4	Energy reductions	Climate Change & Energy Use
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GRI 303: WATER

GRI 303-1	Water withdrawals by source	Water CDP Water (W1.2a, W5.1a)
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GRI 303-2	Water sources affected by withdrawals	CDP Water 2016 (W2.6, W3.2a, W5.1)
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GRI 303-3	Water recycled and reused	Water
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GRI 305: EMISSIONS

GRI 305-1	Direct GHG emissions (Scope 1)	Climate Change & Energy Use
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GRI 305-2	Indirect GHG emissions (Scope 2)	Climate Change & Energy Use
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GRI 305-3	Other indirect GHG emissions (Scope 3)	Climate Change & Energy Use
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GRI 305-4	GHG emissions intensity	CDP Climate Change (CC12.2–CC12.4)
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GRI 305-5	Reduction of GHG emissions	Climate Change & Energy Use
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GRI 305-6	Ozone-depleting substances (ODS)	Air Emissions
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GRI 305-7	NOx, SOx and other emissions	Air Emissions
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GRI 306: EFFLUENTS & WASTE

GRI 306-1	Water discharge	CDP Water (W0.3, W1.2, W1.2b)
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GRI 306-2	Waste by type and disposal method	Materials & Waste
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GRI 306-3	Significant spills	None
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GRI 306-4	Transport of hazardous waste	Materials & Waste
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GRI 307: ENVIRONMENTAL COMPLIANCE

GRI 307-1	Non-compliance with environmental laws and regulations	EHS Management & Compliance
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GRI 308: SUPPLIER ENVIRONMENTAL ASSESSMENT

GRI 308-1	New suppliers screened using environmental criteria	Procurement & Supplier Relations
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**Social**

GRI 401: EMPLOYMENT

GRI 401-1	New employee hires and turnover	Global Diversity & Inclusion Positive Work Environment
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GRI 401-2	Benefits provided to full-time employees	Employee Well-Being
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GRI 403: OCCUPATIONAL HEALTH & SAFETY

GRI 403-2	Rates of injury, occupational disease, lost days, absenteeism, and work-related fatalities	Employee Safety
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GRI 403-3	Workers with high risk of diseases related to their occupation	Employee Safety Positive Work Environment
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GRI 404: TRAINING & EDUCATION

GRI 404-1	Average hours of employee training	Learning & Development EHS Management & Compliance We conduct extensive training programs worldwide; however, we do not currently track the average number of hours of training per employee.
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GRI 404-2	Programs for upgrading employee skills and transition assistance programs	Learning & Development
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GRI 404-3	Percentage of employees receiving regular performance reviews	Learning & Development
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GRI 405: DIVERSITY & EQUAL OPPORTUNITY

GRI 405-1	Diversity of governance bodies and employees	Global Diversity & Inclusion
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GRI 407: FREEDOM OF ASSOCIATION & COLLECTIVE BARGAINING

GRI 407-1	Operations and suppliers in which the right to freedom of association may be at risk	Human Rights Procurement & Supplier Relations
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GRI 409: FORCED OR COMPULSORY LABOR

GRI 409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Human Rights Procurement & Supplier Relations
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GRI 413: LOCAL COMMUNITIES

GRI 413-1	Operations with local community engagement, impact assessment, and development programs	Community
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GRI 414: SUPPLIER SOCIAL ASSESSMENT

GRI 414-1	New suppliers screened using social criteria	Procurement & Supplier Relations
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GRI 415: PUBLIC POLICY

GRI 415-1	Political contributions	Public Policy
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GRI 416: CUSTOMER HEALTH & SAFETY

GRI 416-1	Assessment of the health and safety impacts of product and service categories	Quality & Safety Standards Manufacturing & Supply Chain
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GRI 416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Quality & Safety Standards
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GRI 417: MARKETING & LABELING

GRI 417-1	Requirements for product and service information and labeling	Product & Patient Safety
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GRI 417-2	Incidents of non-compliance concerning product and service information and labeling	Sales & Marketing
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GRI 417-3	Incidents of non-compliance concerning marketing communications	Sales & Marketing
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GRI 418: CUSTOMER PRIVACY

GRI 418-1	Substantiated complaints regarding breaches of customer privacy and losses of customer data	Global Privacy Program
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The United Nations' Sustainable Development Goals represent the international community's plan of action for "people, planet and prosperity."

#### RESOURCES

[Taking Action on the Sustainable Development Goals \(PDF\)](#)  
[Performance Data Spreadsheet \(Excel\)](#)

On September 25, 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030.

The United Nations has called for broad-based support of the SDGs, including active involvement by the private sector. We are committed to helping facilitate industry engagement and to identifying ways to work creatively to have an impact on people's lives while achieving our company's business objectives.

## Our Priorities

While all of the 17 SDGs are essential to foster sustainable development, we have prioritized eight global goals as being the most closely aligned to our mission—in particular SDG 3—Good Health & Well-Being.

For our eight priority SDGs, we have identified existing metrics that enable us to quantitatively demonstrate our progress in support of the global goals.

The UN has identified subtargets for all of the global goals, against which corporate and governmental progress can be measured. While there are 169 targets in all, we have identified 11 targets for our priority SDGs that most closely align with our business.

## SDG 3: Good Health & Well-Being



As a global health care company, we believe we have an important role and responsibility in improving access to medicines and vaccines, and in helping to reduce the burden of disease around the world.

**UN Target 3.1:** Reduce the global maternal mortality ratio to less than 70 per 100,000 live births.

PROGRESS ON TARGET 3.1	2014	2015	2016
Women with improved access to quality care in priority countries through MSD for Mothers	3,534,889	4,948,803	5,760,968

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**UN Target 3.7:** Ensure universal access to sexual and reproductive health care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.

PROGRESS ON TARGET 3.7	2014	2015	2016
Women potentially reached in FP2020 countries that were supplied with contraceptive products (IMPLANON® or IMPLANON NXT®, EXLUTON® and MARVELON 28®) <sup>1</sup>	4,574,620	6,142,541	4,407,902

Note: To learn more about the Family Planning 2020 (FP2020) initiative, visit <http://www.familyplanning2020.org/>.

1. Number represents potential number of women who could be reached based on number of products provided.

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**UN Target 3.b:** Support the research and development of vaccines and medicines for the communicable and noncommunicable diseases that primarily affect developing countries, and provide access to affordable essential medicines and vaccines.

PROGRESS ON TARGET 3.B	2013	2014	2015	2016
Products that are supported with differential pricing <sup>1,2</sup>	24	35	35	40
Low- and lower-middle-income countries where inter- and/or intra-country pricing has been implemented <sup>3</sup>	70	114	121	123

1. Differential pricing intended to facilitate access for the at-need population.

2. Products include HIV treatments, vaccines and other patented products.

3. Countries as defined by World Bank 2013 GNI classification; includes UN-defined least developed countries.

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## SDG 5: Gender Equality



Our company promotes and values global diversity and inclusion at every level of the organization.

**UN Target 5.5:** *Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.*

PROGRESS ON TARGET 5.5	2012	2013	2014	2015	2016
Women in executive roles <sup>1</sup>	31%	31%	31%	34%	31%
Women in the workforce	47%	47%	48%	48%	48%
New hires that were female	45%	46%	49%	50%	51%

Note: Our company has publicly disclosed EEO-1 information since 1999. Our 2016 data is available [here](#).

1. "Executive" is defined as the chief executive officer and two structural levels below.

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## SDG 6: Clean Water & Sanitation



Our business, suppliers, communities and customers all need access to clean water, and we are committed to managing the environmental impacts of our products throughout their life cycles—from discovery through manufacturing, use and disposal.

**UN Target 6.4:** *By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.*

PROGRESS ON TARGET 6.4	2016
Total water use (billion gallons)	5.5
Water use in extremely-high-risk areas (billion gallons)	0.8
Water use in high-risk areas (billion gallons)	0.9

**Our Environmental Goals:** By 2020, we will develop water conservation plans for sites in “high water risk” locations. By 2025, we will maintain global water use at or below 2015 levels.

## SDG 7: Affordable & Clean Energy



We believe the private sector has an increasingly important role to play to ensure that we meet the goal of access to affordable, reliable and sustainable energy for all by 2030. We have made a commitment to reduce GHG emissions and other associated air pollutants by driving energy efficiency improvements and purchasing more electricity from renewable sources of energy, such as wind and solar.

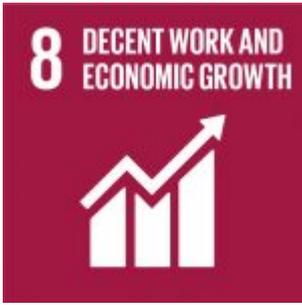
**UN Target 7.2:** By 2030, increase substantially the share of renewable energy in the global energy mix.

PROGRESS ON TARGET 7.2	2016
Purchased electricity from renewable sources <sup>1</sup>	0.04%

1. We have defined “purchased electricity” as electricity sourced from external suppliers as well as renewable electricity that was generated and utilized on-site where we retained the renewable attributes or where we have obtained renewable attributes through contract.

**Our Environmental Goals:** By 2025, 50 percent of our purchased electricity will come from renewable sources. By 2040, 100 percent of our purchased electricity will come from renewable sources.

## SDG 8: Decent Work & Economic Growth



Our company is dedicated to actively promoting opportunities for people regardless of race, gender, ethnicity, culture, age, disability, religion, gender identity, gender expression or veteran status.

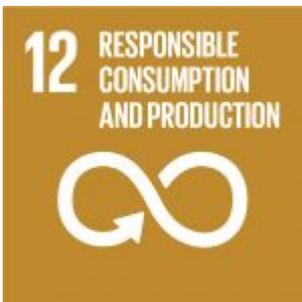
**UN Target 8.5:** *Achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.*

PROGRESS ON TARGET 8.5	2012	2013	2014	2015	2016
New hires that were members of underrepresented ethnic groups (U.S.)	27%	25%	22%	33%	37%

Note: Our company has publicly disclosed EEO-1 information since 1999. Our 2016 data is available [here](#).

LEARN MORE

## SDG 12: Responsible Consumption & Production



Our product stewardship programs focus on identifying, and either preventing or minimizing, potential safety and environmental hazards throughout a product’s life cycle.

**UN Target 12.4:** *By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed upon international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.*

PROGRESS ON TARGET 12.4	2012	2013	2014	2015	2016
Nitrogen oxides (NOx) (MT)	580	550	509	474	435
Sulfur oxides (SOx) (MT)	65	56	53	47	35
Volatile organic compounds (VOC) (MT)	611	533	523	453	441

LEARN MORE

**UN Target 12.5:** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

PROGRESS ON TARGET 12.5	2012	2013	2014	2015	2016
Operational waste sent to landfills and incineration	29%	24%	22%	28%	30%
Landfill	10%	10%	10%	15%	10%
Incineration	18%	14%	13%	13%	20%
Hazardous waste generated (MT)	58,813	50,782	44,120	30,344	35,246
Non-hazardous waste generated (MT)	50,658	45,475	39,612	39,511	37,353

Note: Totals may be slightly off due to rounding.

**Our Environmental Goals:** By 2025, 20 percent of our global operational waste will be sent to landfills and incinerators, and 50 percent of sites will send zero waste to landfill.

LEARN MORE

## SDG 13: Climate Action



We support science-based, international and national actions to address the challenges presented by climate change, including economic incentives for researching, developing and deploying low-carbon and renewable-energy technologies.

**UN Target 13.1:** Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

PROGRESS ON TARGET 13.1	2012	2013	2014	2015	2016
Scopes 1 and 2 GHG emissions (MT CO <sub>2</sub> e)	1,856,000	1,760,000	1,630,700	1,501,000	847,400
Scope 3 GHG emissions (MT CO <sub>2</sub> e)	N/A	N/A	5,760,000	5,510,700	7,975,100

Note: Tracking of all of our Scope 3 emissions began in 2014. In accordance with the Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired or sold. Adjustments also reflect changes in methodology to ensure consistency from year to year. Scopes 1 and 2 emissions are calculated using the market-based approach.

**Our Environmental Goal:** By 2025, we will reduce global Scope 1 and market-based Scope 2 GHG emissions 40 percent from 2015 levels.

[LEARN MORE](#)

## SDG 17: Partnerships for the Goals



Given the immensity of the challenge of discovering smart, sustainable ways to expand access to health care, especially in areas with limited infrastructure and resources, it is only by working with others that we can make the strongest contribution.

**UN Target 17.17:** *Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.*

PROGRESS ON TARGET 17.17	2012	2013	2014	2015	2016
Health care workers trained through our major programs and partnerships <sup>1</sup>	38,000	22,000	137,000	18,669	32,218
Investment in partnerships for activities that address underlying barriers to health, such as health-system strengthening and capacity-building (in millions) <sup>1</sup>	\$24	\$24	\$32	\$31	\$28
People reached through our major programs and partnerships (in millions)	269	302	267	188	293

1. Includes investments by the Office of Corporate Responsibility, MSD for Mothers and our company's Foundation.

[LEARN MORE](#)

PROGRESS ON TARGET 17.17	2012	2013	2014	2015	2016
Total recorded volunteer hours <sup>1</sup>	221,050	NA	186,400	80,585	214,862

1. 2015 figures are based on employee self-recorded volunteer hours through MSD Gives Back in the U.S. and Puerto Rico, and volunteer hours communicated directly to the Office of Corporate Responsibility for all other countries. 2015 marks the first year in which volunteer hour reporting is based solely on employee self-report. Prior years included estimates for unrecorded volunteer hours.

[LEARN MORE](#)

“We are honored to play a role in the global efforts to achieve the SDGs. Through our ongoing commitments to address important health challenges, we are mobilizing the best of our company to help save and improve lives around the world.”

Kenneth C. Frazier, Chairman and CEO

## **SDG Index**

While we have prioritized eight of the SDGs, our company is working toward all of the 17 global goals in some capacity. See below for links to information on our activities for each of the SDGs.

**SDG 1: NO POVERTY**

Community Investment

**SDG 2: ZERO HUNGER**

Supporting a Sustainable Food Supply

**SDG 3: GOOD HEALTH & WELL-BEING**

Access to Reproductive Health  
Air Emissions  
Community Investment  
Health  
Infectious Diseases  
Materials & Waste  
MSD for Mothers  
Pricing & Commercialization  
Product Stewardship  
Research & Development  
Vaccines  
Water  
Women's Health

**SDG 4: QUALITY EDUCATION**

Protecting Animal Health  
Community

**SDG 5: GENDER EQUALITY**

Access to Reproductive Health  
Global Diversity & Inclusion  
Human Rights

**SDG 6: CLEAN WATER & SANITATION**

Pharmaceuticals in the Environment  
Water

**SDG 7: AFFORDABLE & CLEAN ENERGY**

Climate & Energy Use  
Environmental Goals

**SDG 8: DECENT WORK & ECONOMIC GROWTH**

Global Diversity & Inclusion  
Human Rights  
Manufacturing & Supply Chain  
Procurement & Supplier Relations

**SDG 9: INDUSTRY, INNOVATION & INFRASTRUCTURE**

Manufacturing & Supply Chain  
Research & Development

**SDG 10: REDUCED INEQUALITIES**

Global Diversity & Inclusion  
Human Rights  
Manufacturing & Supply Chain

**SDG 11: CITIES & COMMUNITIES**

Community  
Medical Outreach Program  
Product Donations

**SDG 12: RESPONSIBLE CONSUMPTION & PRODUCTION**

Materials & Waste  
Air Emissions  
Environmental Goals  
Packaging  
Procurement & Supplier Relations  
Product Stewardship

**SDG 13: CLIMATE ACTION**

CDP Climate Change  
Climate Change & Energy Use  
Public Policy Position Statement: Climate Change

**SDG 14: LIFE BELOW WATER**

Pharmaceuticals in the Environment  
Supporting a Sustainable Food Supply

**SDG 15: LIFE ON LAND**

Environmental Goals  
Materials & Waste  
Packaging  
Water

**SDG 16: PEACE, JUSTICE & STRONG INSTITUTIONS**

Corporate Responsibility Governance  
Human Rights

**SDG 17: PARTNERSHIPS FOR THE GOALS**

Community Investment  
Foundation  
Health  
Manufacturing & Supply Chain  
Neglected Tropical Diseases  
Priorities & Performance  
Product Donations

To learn more about all 17 SDGs, please visit the United Nations' [website](#).



The [United Nations Global Compact](#) is a strategic initiative that helps companies align their business activities and strategies with ten universally recognized principles in the areas of human rights, labor standards, environmental protection and the fight against corruption.

Our company signed on to the United Nations Global Compact in January 2009.

Signatories to the compact are required to report each year on their activities in support of their commitment to instill accountability, drive continuous improvement, safeguard the integrity of the UN Global Compact as a whole and contribute to the development of a repository of corporate practices.

The table below summarizes where these disclosures can be found on our website. In addition, this [letter from our CEO](#) serves as our statement of continued support for the initiative.

## 2016 COMMUNICATION ON PROGRESS

Index #	Description	Report Location/Direct Answer
Human Rights		
UNGC-1	Businesses should support and respect the protection of internationally proclaimed human rights	Human Rights
UNGC-2	Businesses should make sure that they are not complicit in human rights abuses	Human Rights Procurement & Supplier Relations
Labor		
UNGC-3	Businesses should uphold the freedom of association and the effective recognition of the rights to collective bargaining	Human Rights
UNGC-4	Businesses should support the elimination of all	Human Rights

forms of forced and compulsory labor

UNGC-5	Businesses should support the effective abolition of child labor	Human Rights
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UNGC-6	Businesses should support the elimination of discrimination in respect of employment and occupation	Global Diversity & Inclusion Office of Ethics Human Rights
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Environment

UNGC-7	Businesses should support a precautionary approach to environmental challenges	Product Stewardship
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UNGC-8	Businesses should undertake initiatives to promote greater environmental responsibility	Product Stewardship EHS Management & Compliance Procurement & Supplier Relations
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UNGC-9	Businesses should encourage the development and diffusion of environmentally friendly technologies	Product Stewardship Green & Sustainable Science
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Anti-Corruption

UNGC-10	Businesses should work against corruption in all its forms, including extortion and bribery	Code of Conduct Office of Ethics Procurement & Supplier Relations
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We prioritize the issues that are most important to our business, and to our external stakeholders, based on the outcome of a formal corporate responsibility (CR) materiality assessment.

The resulting materiality matrix, shown below, represents the issues that internal and external stakeholders have identified as having significant financial, operational or reputational impact on the company and illustrates where our company can have a significant impact on society and the environment.



For how we define each of our material topics in the matrix above, please see the definitions at the bottom of the page.

# Materiality Process

The assessment, which concluded in 2014, included desktop research, a review of corporate objectives and strategies, analysis of media coverage, stakeholder feedback on prior reporting, industry benchmarking, consultative interviews with stakeholders both inside and outside the company and intensive internal workshops and socialization sessions across the business.

We used the findings from our survey submissions to CDP (formerly the Carbon Disclosure Project), the Dow Jones Sustainability Index (DJSI) and the Access to Medicine Index (ATMI), in addition to referencing the most current sustainability and corporate responsibility research reports, to select and refine a list of environmental, social and governance (ESG) issues for further analysis.

Internally, we engaged with senior executives from key functional areas and business units and asked these business leaders to identify the issues of highest importance with respect to their impact on:

- Financial value and revenue
- Operational excellence
- Compliance with regulations
- Corporate reputation
- Shareholder value
- Employees and their level of engagement

Externally, we engaged more than 30 stakeholder groups that represented a cross section of advocacy interests, including on-the-ground implementation partners, socially responsible investors and mainstream investors, environmental NGOs, customers, public health advocates and others considered important to our industry and our business. Through in-person interviews, we asked our stakeholders to indicate which issues were important to their groups or communities, where action from the private sector, and from our company in particular, is critical and how we can drive excellence through our corporate responsibility efforts.

Stakeholders were asked to rank the list of material issues and impacts, assess our company's performance on these priority issues and share their expectations related to strategy, reporting and stakeholder engagement.

The final results were endorsed by our own [Social Business Investment Council](#), comprising senior executives from key company functions and divisions, and by the company's [Board Governance Committee](#).

We will continue to use this approach to identify corporate responsibility-relevant opportunities and risks and to help us prioritize our efforts addressing the issues of greatest significance to stakeholders and to our company's future success. We intend to update our materiality matrix by conducting a materiality analysis among our stakeholders beginning in 2018.

## Definitions

### ACCESS TO HEALTH

#### Animal-Based Research

- Internal standards
- Transparent reporting
- Consideration of alternatives to animal testing
- Training

[Learn more.](#)

### **Anti-Counterfeiting**

- Strategy and operations
- Monitoring and evaluation
- Supply chain security

[Learn more.](#)

### **Bioethics**

- Genetic resources
- Stem cells
- GMOs
- Nanotechnology

[Learn more.](#)

### **Capacity Building**

- Training and educational programs
- Local infrastructure improvements
- Skills and technology transfer to emerging countries

[Learn more.](#)

### **Clinical Trials**

- Gender balance
- Enrolling diverse patient populations
- Development of trial sites outside the U.S.
- Post-trial access (including compassionate use)
- Transparent management of clinical trial data
- Global standards to ensure ethics in R&D
- Sharing of data within the scientific community

[Learn more.](#)

### **Community Relations**

- Engagement and dialogue with external stakeholders (including local communities, NGOs, local governments, academia, etc.)

Learn more on our [Stakeholder Engagement](#) and [Community](#) pages.

### **Continuity of Supply**

- Assurance of manufacturing
- Inventory tracking
- Pandemic readiness

[Learn more.](#)

### **Disease Focus**

- Development of medications/treatments based on health needs rather than lifestyle

[Learn more.](#)

#### **Health Adherence**

- Engagement with patients and health care providers to promote adherence to medication/treatment regimens

[Learn more.](#)

#### **Health Literacy**

- The degree to which individuals have the capacity to obtain, communicate, process and understand basic health information and services to make appropriate health decisions

[Learn more.](#)

#### **Intellectual Property**

- Patent protections and flexibility
- Licensing agreements
- Generics policies

[Learn more.](#)

#### **Local Development**

- Contribution to local economic development

[Learn more.](#)

#### **Philanthropy**

- Foundation
- Cash donations
- Product donations
- Disaster relief

[Learn more.](#)

#### **Pricing and Commercialization**

- Pricing strategies
- Differential pricing
- Affordability
- Availability
- Registration
- Pricing transparency
- Reimbursement strategies

[Learn more.](#)

#### **Product Quality**

- Compliance
- Trusted products

[Learn more.](#)

#### **Product Safety**

- Management standards
- Post-market surveillance

[Learn more.](#)

#### **Research & Development**

- Research in unmet medical needs
- Driving innovation that creates value for society (not simply “me too” drugs)

[Learn more.](#)

## **EMPLOYEES**

#### **Diversity and Inclusion**

- Employee diversity and inclusion
- Prevention of discrimination
- Equal opportunity

[Learn more.](#)

#### **Employee Volunteerism**

- Employee volunteer programs

[Learn more.](#)

#### **Labor Practices**

- Management-worker relationships
- Freedom of expression and association
- Right to collective bargaining

[Learn more.](#)

#### **Occupational Health and Safety**

- Hazard minimization precautions
- Promotion of employee health, safety and well-being
- Assessments
- Provision of personal protective equipment
- Emergency response plans

[Learn more.](#)

### **Restructuring**

- Workforce reduction
- Reorganization

[Learn more.](#)

### **Talent Development and Recruitment**

- Training and development
- Recruitment
- Leadership development
- Retention
- Career management and promotion
- Compensation and benefits

[Learn more.](#)

### **Work-Life Balance and Wellness**

- Employee well-being
- Employee safety
- Rewards and incentives
- Positive work environment

[Learn more.](#)

## **ENVIRONMENTAL SUSTAINABILITY**

### **Climate and Energy (Climate)**

- Energy management practices
- Carbon footprint reductions (Scopes 1, 2 and 3)
- Renewable energy projects

[Learn more.](#)

### **Ecosystem Impacts**

- Use of natural substances (e.g., plants and animals) and materials
- Biodiversity preservation

[Learn more.](#)

### **Green Chemistry**

- Use of substances and processes that are more environmentally beneficial
- Avoidance of chemicals of concern

[Learn more.](#)

### Non-GHG Emissions

- Air emissions such as VOCs, SO<sub>x</sub>, NO<sub>x</sub>, etc.

[Learn more.](#)

### Packaging

- Impact of design, materials, processing and disposal: the full product life cycle

[Learn more.](#)

### Pharmaceuticals in the Environment

- Biological waste from patients/animals
- Unused/expired medicines

[Learn more.](#)

### Waste Management

- Handling, management and disposal of both hazardous and non-hazardous waste

[Learn more.](#)

### Water Use and Management

- Influent and effluent parameters, including source, scarcity, recharge rates, quality, treatment and impacts on local communities

[Learn more.](#)

## ETHICS & TRANSPARENCY

### Corporate Governance

- Corporate management
- Board structure
- Board independence
- Risk management
- Executive compensation
- Accountability

[Learn more.](#)

### Distribution of Profits

- Distribution of revenue
- Value sharing
- Tax strategy
- Investments in local markets

[Learn more.](#)

### **Ethics in Sales and Marketing**

- Brand management and promotion
- Ethical marketing
- Competitive behavior
- Prevention of anti-competitive practices
- Compliance with regulatory authorities
- Anti-corruption/anti-bribery

[Learn more.](#)

### **Human Rights**

- Human rights
- Supply chain
- Health as a human right

[Learn more.](#)

### **Internal Controls**

- Policies
- Standards
- Code of conduct
- Audits

[Learn more.](#)

### **Lobbying**

- Lobbying
- Political contributions
- Public policy
- Market influence

[Learn more.](#)

### **Privacy of Patient Data**

- Policies
- Standards
- Procedures
- Training

[Learn more.](#)

### **Responsible Procurement**

- Supply chain policies
- Sourcing guidelines
- Auditing
- Sustainable materials guidelines
- Design for the environment practices

- Social/environmental criteria to tender requests
- Alternative methodologies or inputs to reduce the environmental impact

[Learn more.](#)

### **Transparency and Reporting**

- Transparency disclosures
- Sustainability reporting (GRI, CDP, etc.)

[Learn more.](#)



We aspire to being open and transparent about how we operate, in order to earn and retain the trust and confidence of our customers, employees, shareholders and other important stakeholders. Our reporting and governance structure is an integral part of this commitment.

#### RESOURCES

[Governance Committee Charter](#)  
[Code of Conduct](#)

Our corporate responsibility performance is dependent on all of our employees—from our chairman and CEO to staff in each business unit, subsidiary, manufacturing plant and research laboratory. All employees are informed of our corporate responsibilities through our company's [Code of Conduct](#), but we also recognize that a central coordinating function is necessary in order to ensure a comprehensive approach to corporate responsibility.

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Six independent directors constitute our company's Board Governance Committee.

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#### THE OFFICE OF CORPORATE RESPONSIBILITY

The Office of Corporate Responsibility coordinates the development, implementation and communication of our global approach and, with strategic guidance from the Public Policy and Responsibility Council, is responsible for reporting on our company's performance. The Office of Corporate Responsibility works with business units and functional areas to integrate our corporate responsibility principles into business policies, strategies and practices, and brings the voice of external stakeholders into decision-making processes.

The Office of Corporate Responsibility, which supports the company's business strategy, is accountable for publishing the annual corporate responsibility report. To contact members of the Office of Corporate Responsibility, please [click here](#).

## THE CORPORATE RESPONSIBILITY REPORT WORKING GROUP

The members of the Corporate Responsibility Report Working Group, a diverse selection of employees from all divisions of the company, serve as subject matter experts in their respective areas and work closely with the Office of Corporate Responsibility to help set goals and develop metrics that support and measure our overall corporate responsibility strategy and objectives. Individual members have been chosen to be active advocates for corporate responsibility within their respective areas.

## THE PUBLIC POLICY AND RESPONSIBILITY COUNCIL

In early 2016, the Social Business Investment Council (SBIC) at our company was reconfigured to become the Public Policy and Responsibility Council (PPRC), a high-level forum for strategic input and guidance on our social business investments, corporate responsibility approach and public policy issues and positions. The diverse, cross-functional membership of the Council provides vision, leadership and cross-divisional input and alignment on policy and responsibility strategy, issues and initiatives.

Specifically, the company's PPRC enables policy and corporate responsibility issue identification and debate; makes decisions on policy and corporate responsibility issues or makes recommendations to the Executive Committee, the company's top leadership, as necessary; informs policy and corporate responsibility strategy; and reviews performance and reporting against defined objectives. Overall, the PPRC promotes further integration of corporate responsibility and policy considerations into our business activities.

## ENVIRONMENT, HEALTH AND SAFETY COUNCIL

Our company's Environmental, Health and Safety Council drives enterprise-wide excellence in environmental, health and safety management and performance to protect, enhance and create business value for the company.

## BOARD GOVERNANCE COMMITTEE

Six independent directors constitute our company's [Board Governance Committee](#). Chaired by Leslie A. Brun, the company's lead independent director, the committee is responsible for advising the company's Board of Directors and management on company policies and practices that pertain to the company's responsibilities as a global corporate citizen, its special obligations as a health care company whose products and services affect health and quality of life around the world, and its commitment to the highest standards of ethics and integrity in all of its dealings.

Additionally, the committee is responsible for taking a leadership role in shaping the corporate governance of the company, including the development of a set of corporate governance guidelines for Board approval.

In addition to the Governance Committee, other [Board committees](#) oversee issues indirectly related to corporate responsibility, such as audit and compliance, executive compensation and research.



We recognize that we can't address major health, environmental and economic challenges alone, so we collaborate with others who share our commitment and who bring their own unique expertise to the table.

We conduct stakeholder engagement at both the corporate and the local level, depending on the issue. We engage with industry, governments, policy makers, nongovernmental organizations (NGOs), opinion leaders, patient groups, academic organizations, our employees, and others to inform our policies, our practices, and the development of our products. Our intention is to build lasting relationships with our stakeholders; to understand their objectives, their expectations of our company, and the potential for collaboration; and to enhance mutual trust and understanding.

We strive to exchange information, views and recommendations; to share activities and progress toward key goals; and to work in partnership toward common objectives. Engagement may take the form of one-on-one meetings, expert-input forums, roundtable discussions, industry coalitions, or formal partnerships.

## Stakeholder Groups

We engage with a diverse group of stakeholders to more fully understand their needs and expectations, and to gain insights that can inform our efforts to improve access to health care and foster progress toward solutions that benefit society and support our business.

### PATIENTS AND CAREGIVERS

We embrace the opportunity to engage with patient organizations and to actively listen to patients to better understand their health care journeys, expected outcomes and decision-making considerations. For more information on our work with patient groups, please [click here](#).

## HEALTH CARE PROFESSIONALS

We are committed to providing appropriate and balanced information to physicians and other health care providers about our medicines, vaccines and ongoing research. For more information on our interactions with health care professionals, please [click here](#).

## PAYERS

We work with payers worldwide to inform their understanding of the relationship between the prices of our products and the true value they deliver to patients and health care systems. [Learn more](#) about our access initiatives.

## GOVERNMENTS, MULTILATERAL ORGANIZATIONS AND REGULATORS

We work with policy makers, legislators, multilateral organizations, and governments worldwide to ensure that policy and regulatory environments globally, nationally, and locally foster patient access to medicines and vaccines, and that they are conducive to ethical business practices, science and innovation. [Learn more](#) about our public policy and advocacy positions.

## SHAREHOLDERS

We strive to create shareholder value by identifying opportunities to meet customer needs and by managing our business responsibly to achieve superior financial results over the long term. [Learn more](#) about how we engage with shareholders.

## INTERNATIONAL AND LOCAL ORGANIZATIONS

We work hard to identify the best organizations and individuals to collaborate with in order to address societal challenges and to inform debate on pressing issues. For more information about how we collaborate with others, please [click here](#).

## LOCAL COMMUNITIES

We work toward developing culturally appropriate mechanisms to engage and build relationships with our local community stakeholders. For more information on our contributions to communities, please [click here](#).

## ENVIRONMENTAL STAKEHOLDERS

We work to reduce the environmental effects of our operations and products and to promote sustainable environmental practices within the company, among our partners, and throughout our supply chain. For more information on our environmental performance, please [click here](#).

## EMPLOYEES

We strive to foster a positive and inclusive working environment for our employees by providing resources to improve their health and that of their families, opportunities to further their professional development, and ways to get more involved in the communities where they live. For more information on our employee relations, please [click here](#).

## SUPPLIERS AND BUSINESS PARTNERS

We strive to engage a diverse supplier base and to encourage responsible approaches on the part of suppliers regarding labor, employment, human rights, health and safety, ethics, diversity, and protection of the environment. For more information on our approach to procurement and supplier relations, please [click here](#).

## TRADE AND INDUSTRY ASSOCIATIONS

We engage with stakeholders through membership in numerous organizations. Within these groups, we aim to inform relevant debates in ways that are constructive and that ultimately foster improved patient access to medicines and vaccines globally. For more information, please [click here](#).

We welcome your comments, questions and feedback to help guide the development of our programs, our reporting efforts and our corporate responsibility website. [Contact us](#).

# Patient Engagement

Our company's mission is to continue to improve people's health through the discovery, development and marketing of innovative products that contribute to the quality of life.

We embrace the opportunity to engage with patient organizations and to actively listen to patients to better understand their health care journeys, expected outcomes and decision-making—particularly as it relates to how they take medication—and the challenges they may encounter when taking several medications or treating multiple conditions. We feel that listening to patients is critical to inspiring effective and relevant medical and scientific innovation.

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Julie Gerberding, M.D., M.P.H., was appointed Chief Patient Officer in June 2016.

In this newly established role, Dr. Gerberding leads the company's efforts to engage with patients and patient organizations to bring their perspectives into the company and help inform company decisions, and represents our company globally on patient-related matters.

We are committed to learning from the patient's perspective and to empowering patients, caregivers and health care professionals by making public the results of clinical trials in a timely manner, whether the outcomes are positive or negative. [Learn more.](#)

We have a strong commitment to health literacy, and we believe that clear, simple information about clinical trials, diseases and medicine should be made easily available to people across a range of health-literacy levels. [Learn more.](#)

Because of the gaps in patient care and changes to health policy in such areas as vaccination, oncology, heart disease, HIV, hepatitis C infection, and other chronic conditions, there is a compelling need for the pharmaceutical industry to work more closely with patient organizations and other key stakeholders to better understand outcomes from the patient's point of view, and to improve access to therapies, validate measurement tools, and increase awareness of diseases. We have a long history of collaboration with patient groups and health-related charities, including work aimed at improving knowledge and understanding of diseases and treatment options, resulting in informed decision-making among consumers in health care.

### PRINCIPLES

Because patients are at the core of health systems, it is especially important to support patient societies and associations. Working with patient groups, we develop appropriate programs and projects that support their important efforts. We believe in collaborating with health care stakeholders—including government and other payers, health care providers, and patient organizations—to engage in programs that aim to improve patient education and patient care in therapeutic areas where we have expertise.

For these reasons, we support and participate in programs that help patient organizations increase disease awareness and improve access to medicines and better health care. We work with patient organizations to disseminate and share quality medical, scientific and pharmaco-economic information, in accordance with legal and regulatory obligations and with respect for their independence.

Because we recognize the legal and reputational risks of inappropriate donations or sponsorships, we have guidance documents, policies and compliance controls in place to ensure the integrity of our practices. We also comply with all applicable laws and regulations.



We are committed to participating constructively and responsibly in the political process, and to providing clarifying analysis and information regarding the issues that affect our business and patient care.

#### RESOURCES

[Public Policy Position Statements](#)

A major element of our corporate responsibility approach is our public policy advocacy work and our outreach to stakeholders. Our outreach helps to advocate for public policies that foster research into innovative medicines and that improve access to medicines, vaccines and health care. We believe this engagement is also fundamental to our understanding of—and response to—society’s expectations of our company. Our engagement with stakeholders guides our business strategy and decisions, and strengthens stakeholders’ understanding of—and trust in—our business.

We recognize that our outreach can help highlight and address important issues, leveraging the expertise of all our stakeholders to develop sustainable solutions to such challenges as disease, lack of education, environmental challenges and corruption. We continue to pioneer far-reaching programs and partnerships, the results of which demonstrate that more can be achieved by working together than by individual stakeholders working alone—and that we can make a sustainable difference.

## ENGAGING RESPONSIBLY

Government proposals to regulate the health care system may directly affect our business and our incentives for pharmaceutical innovation. Important policy initiatives can also increase patient access to medicines and vaccines and to health care insurance coverage—particularly for patients in disadvantaged communities and regions.

Consequently, the company has chosen to help inform the debate on these issues in the U.S. and other countries. Our participation in the political process is guided by the following principles:

- Improve patient access to health care, including medicines and vaccines
- Encourage innovation by protecting intellectual property rights, advocating for government support of basic research, and supporting efficient and effective regulatory systems, among other issues

Our company’s Executive Committee has overall governing responsibility for our public policy strategy, as guided by the Governance Committee of the Board of Directors. Our Global Public Policy Leadership Team leads the development and communication of policy positions on major issues. Statements summarizing our position on key public policy issues are

posted on our corporate headquarters' website. [Learn more](#).

## HOW WE ENGAGE

We engage in public policy debates primarily by communicating information to government officials and policy makers.

Our U.S. Federal Policy and Government Relations office in Washington, D.C., is responsible for advocacy activities with the U.S. Congress and other bodies of the federal government. Advocacy at the state level is managed by our State Government Affairs & Policy organization. Outside the U.S., advocacy activities are managed at the regional, country or local level, with support from regional and corporate policy staff.

To assist in our advocacy and policy analysis work, our company and our affiliates contract with a range of private firms specializing in government affairs advocacy. These firms employ government affairs consultants with particular expertise on issues of importance to our company. Our U.S. Action Network also informs our U.S.-based employees and retirees about important legislative issues, and serves as a conduit through which they can communicate with their representatives in Congress.

All of our employees must abide by our global corporate [Code of Conduct](#), "Our Values and Standards," which applies to our interactions with government officials and to advocacy activities on public policy issues. This code is intended to ensure that all information provided to government entities is complete and accurate to the best of an employee's knowledge and belief. In the U.S., there are also important federal and state lobbying-registration and disclosure laws with which we comply.

Our corporate policy on ethical business practices includes guidelines conforming to the U.S. anti-kickback laws and Foreign Corrupt Practices Act, making clear that no illegal payments of any kind (monetary or otherwise) are to be offered or made to individuals or entities—including local, state or federal government or political party officials or candidates in the U.S.; government or political party officials or candidates of any other nation; or officials of public international organizations—at any time or under any circumstances.

To improve access to information about our advocacy activities, we disclose costs associated with lobbying in the EU and the U.S. [Click here](#) for our 2016 reporting to the EU Transparency Register. Costs reflect the pro rata salary costs of MSD staff and the proportion of employee time and outsourcing spent on initiatives involving interest representation to European institutions.

In the U.S., in compliance with the [Lobbying Disclosure Act](#), we file quarterly reports with the U.S. Congress disclosing the issues we are lobbying about and the amount of money we spend each quarter. These reports incorporate the expenses associated with lobbying the federal government, including those incurred by our U.S. Federal Policy and Government Relations office, and the portion of our trade association dues associated with federal lobbying.

## OUR TOP LOBBYING ISSUES

In the U.S. in 2016, the top issues at the federal level for which our company lobbied were:

- Defense of Medicare Part B
- Defense of Medicare Part D
- The 340B drug pricing program
- Comprehensive tax reform
- Patent reform
- The Trans-Pacific Partnership

In the U.S. in 2016, our company lobbied at the state level for these key issues:

- State implementation of the Affordable Care Act
- Access and reimbursement for pharmaceutical, vaccine and biologic products in public and private programs
- Maintaining a strong business environment for U.S. operations in the states
- Access to animal health products

In Europe in 2016, our advocacy focused on:

- Fostering a framework for a sound pricing and procurement regime in and across diverse EU member state economies
- Support for government vaccination, hepatitis and diabetes programs
- Launch dialogue for sustainable models to fund future cancer care
- Standards for health technology assessment and health literacy
- Science-based policies for biological medicines

The company's advocacy priorities are presented annually to the members of our Executive Committee and the Governance Committee of the Board of Directors, with periodic updates throughout the year.

## Political Contributions

Where permitted by law in the U.S., Canada and Australia, our company makes corporate political contributions, primarily to the electoral campaigns of individual candidates.

Our U.S. employees can also participate in the political process by joining a nonpartisan political action committee (PAC), through which they can pool their financial resources to support federal and state candidates. Except for administrative expenses, our company's [Employees Political Action Committee \(PAC\)](#) is funded completely by voluntary contributions from eligible employees. The PAC supports legislators from both major parties who understand and appreciate the work we do to discover and develop medicines and to make them available to the patients who need them.

In addition to our corporate policy governing corporate and PAC contributions, we have developed [Principles Governing Corporate and Political Action Committee Spending](#). These principles are modeled on provisions in the [Model Code for Political Spending](#), established by the [Center for Corporate Political Accountability](#), and are intended to promote corporate accountability.

Our company achieved a ranking in the top 7 percent of S&P 500 companies on the Center for Political Accountability's 2016 CPA-Zicklin Index of Corporate Political Disclosure and Accountability. The CPA specifically recognized our internal process for ensuring compliance with our own political spending policies as a best practice.

Our formal [PAC Contributions Committee](#) makes decisions on spending for the PAC. This committee also makes decisions on our company's corporate political contributions. The committee is chaired by our executive vice president and general counsel and includes senior managers representing different divisions and corporate functions. The executive vice president and general counsel approves contribution recommendations, following review and approval by the committee.

To ensure compliance with our company policy and federal and state law, outside legal experts provide periodic guidance to our company on required disclosure of its political activities. We also perform periodic audits to assess and enforce compliance with our policy governing our corporate and PAC contributions, and we require those individuals who recommend corporate political contributions in the U.S. to certify their knowledge of and adherence to our corporate Policy and Principles Governing Corporate Political and Political Action Committee Contributions.

As required by our company policy and procedures, our executive vice president and general counsel sends an annual report on the company's corporate political contributions for the previous year to [our company's Board of Directors](#). The report discloses contributions made in the U.S., Australia and Canada, including the name of each candidate, committee or

event contributed to and the amount disbursed. It also includes all trade association dues spent on lobbying and political activity in the U.S. that are greater than \$25,000. We also submit a midyear report on corporate political contributions to the Board for its review. In addition, our contributions, policies and practices are reviewed and overseen by the [Governance Board Committee](#). We invite comments and questions on both reports, which also describe any changes in our policies.

To improve access to information about our corporate political and PAC contributions in the U.S., we post them semiannually to this website, categorized by state, candidate and amount.

## OUR CORPORATE POLITICAL CONTRIBUTIONS

In 2016, we spent a total of \$866,500. These contributions supported the campaigns of candidates for state-level offices in 25 states plus the District of Columbia. They also supported state legislative leadership committees of both parties, industry-affiliated PACs, and a number of national organizations representing elected state officials. These organizations meet periodically to discuss policy issues. Two examples are the Republican Governors Association and the Democratic Governors Association. Information on all contributions can be accessed [here](#). Our representatives involved in state-government-affairs activities made the recommendations for specific contributions. These recommendations were reviewed and approved by the Corporate Political Contributions Committee, which mirrors our company's PAC Contributions Committee in membership and oversight procedures. Outside legal counsel conducted a thorough review of all proposed contributions to ensure that they were permitted under state law. Final approval was provided by the executive vice president and general counsel of our company.

To view a listing of our corporate and PAC contributions made within the U.S. during 2016, please [click here](#).

We also provide grants to organizations whose role is to represent elected officials in support of public policy advocacy. State Government Affairs & Policy reviews its grants and corporate memberships on an annual basis to decide which of them may be considered for the upcoming calendar year, considering budget constraints and policy priorities. We disclose all [public policy grants](#) as part of our general grants disclosure.

The only other countries in which we provide corporate contributions to candidates or political parties are Canada and Australia. These contributions are subject to the same policies and governance procedures discussed above. To view our company's contributions made in Canada during 2016, please [click here](#). To view our company's contributions made in Australia during 2016, please [click here](#).

Archived corporate political contribution reports are available [here](#).

## Industry Associations

Our company is a member of numerous industry and trade groups.

We work with these groups because they represent the pharmaceutical industry and business community in debates led by governments and other stakeholders, and because they help the industry reach consensus on policy issues.

When our trade associations actively lobby on our core business issues, we seek to align their positions with our own. There are times, however, when we may not share the views of our peers or associations—both on issues that are central to our business and on those that, while important, are not directly material to our mission. With representatives on the boards and committees of industry groups and trade associations, we can voice questions or concerns we may have about policy or related activities. We may even recuse ourselves from related trade association or industry group activities when appropriate.

Our executive vice president and general counsel sends an annual report to our company's Board of Directors on trade association dues greater than \$25,000 that were spent in the previous year on lobbying and political activity in the U.S. The

Governance Committee of the Board of Directors has ongoing oversight of the company's membership in trade associations and grassroots lobbying activities.

For a list of industry and trade groups of which we are a member, and our trade association dues (those greater than \$25,000) that are used for political purposes, please [click here](#).

Through our top three trade associations (listed below), we engaged on the following policy issues in 2016:

- **Pharmaceutical Research and Manufacturers of America (PhRMA):** Protecting incentives for innovation; defense of Medicare Part D; implementation of the Affordable Care Act; patent reform; and the Trans-Pacific Partnership
- **U.S. Chamber of Commerce:** Defense of Medicare Part D; corporate tax reform; the Trans-Pacific Partnership; and Trade Promotion Authority
- **Biotechnology Industry Organization (BIO):** Protecting incentives for innovation; defense of Medicare Part D; patent reform; and the Trans-Pacific Partnership



For more than a century, our company has been inventing medicines and vaccines for many of the world’s most challenging diseases. We have always been and always will be inventing, and we do it for the single greatest purpose: Life.

#### RESOURCES

10K

[Product Pipeline](#)

[Company Fact Sheet](#)

With a steady focus on innovation and sound science, we aspire to improving the health and wellness of people and animals worldwide, and to expanding access to our medicines and vaccines.

Our core product categories include diabetes, cancer, vaccines, and hospital acute care. We continue to focus our research on conditions that represent some of today’s most significant health challenges—like cancer, hepatitis C, cardio-metabolic disease, antibiotic-resistant infection and Alzheimer’s disease—and we are on the front lines in the fight against emerging global pandemics, such as Ebola.

We also devote extensive time and energy to increasing access to medicines and vaccines through far-reaching programs that donate and deliver our products to the people who need them.

We’re applying our global reach, financial strength and scientific excellence to doing more of what we’re passionate about: improving health and improving lives.

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“Our company is built on the simple premise that great medicines change the world. We believe that a research-driven enterprise dedicated to world-class science can create medicines and vaccines that will make a difference for society and deliver value to shareholders at the same time.”

Kenneth C. Frazier  
Chairman and CEO

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## PRESCRIPTION PRODUCTS

Our core business is the discovery and development of prescription medicines for diseases and conditions that impact millions of people.

We invest billions of research dollars to find medicines that can help improve lives. Today, our company has more than 50 prescription products in key therapeutic areas such as cardiovascular disease, respiratory disease, oncology, neuroscience, infectious disease, immunology and women's health.

To learn more, [click here](#).

## VACCINES

Vaccines are one of the greatest public health success stories in history, and our company has played its part in that story.

We have been working to discover and develop vaccines for more than a century. Our unique vaccines have helped prevent a number of diseases, including some never thought to be preventable. Today, we remain dedicated to the complex business of researching and producing vaccines.

To learn more, [click here](#).

## ANIMAL HEALTH

Our Animal Health business is a global leader in the research, development, manufacturing and sale of veterinary medicines.

We offer a broad choice of vaccines, anti-infective medicines and antiparasitic drugs; a complete range of fertility management products; pharmaceutical specialty products; innovative delivery solutions; performance technologies; and value-added programs, such as pet recovery services and livestock data management tools.

To learn more, [click here](#).

## PRODUCTS

We are a global health care company that delivers innovative health solutions through our prescription medicines, vaccines, biologic therapies, and animal health products. View the [list of products](#) marketed in the United States.

## PIPELINE

Our company has a robust pipeline, with a wide range of product candidates across each phase of development. [View the pipeline](#).

## SENIOR LEADERSHIP

Kenneth C. Frazier, chairman of the board, president and chief executive officer

View the list of [Executive Committee](#) members.

## NAME

The company, Merck & Co., Inc., Kenilworth, N.J., USA, is known as MSD outside the United States and Canada and is listed on the New York Stock Exchange under the symbol "MRK."

Visit our corporate [website](#).



Long-term business success depends on making relevant, quality products through sustainable and ethical practices.

RESOURCES

[Investor Relations](#)

Globalization and the expanding reach of firms during the past decade have increased expectations that multinational enterprises will create more social value, beyond just regulatory compliance and philanthropic contributions. Corporate responsibility has evolved to be an important element of the private sector’s response to these expectations.

While it can be seen either as a way to improve corporate reputation or simply as a response to a moral imperative to do good, we believe that corporate responsibility is critical to our business success and can provide us with new opportunities to create shared, or integrated, value—that is, addressing social issues through business solutions. At the most basic level of delivering integrated value, our principal economic contribution to society is made through the discovery, development, manufacturing and marketing of our products, which directly improve and maintain the health of individuals and communities around the world, helping them to lead more productive lives.

For additional information about our business and economic performance, please see our [Form 10-K](#) for the year ended December 31, 2016.

## Performance

FINANCIAL INFORMATION	2012	2013	2014	2015	2016
Sales (in millions)	\$47,267	\$44,033	\$42,237	\$39,498	\$39,807
Research and development expenses (in millions) <sup>1</sup>	\$8,168	\$7,503	\$7,180	\$6,704	\$10,124
Number of employees	83,000	76,000	70,000	68,000	68,000
Number of stockholders on record	157,400	149,400	142,000	135,500	129,500
Annual cash dividend paid per share	\$1.69	\$1.73	\$1.77	\$1.81	\$1.85
Global tax expense as reported on income statement (in millions)	\$2,440	\$1,028	\$5,349	\$942	\$718

1. Excludes restructuring and merger-related expenses



Our company contributes substantial economic and social value to the countries and local communities in which we operate.

As of December 31, 2016, Merck & Co. Inc., Kenilworth, N.J., USA (including its Banyu subsidiary in Japan), had a physical presence in 75 countries, with 406 active (occupied) research, manufacturing, sales and administrative sites. In all of these locations, we recognize that our success depends in large part on our relationships and interactions with local communities, including elected officials, business and community leaders, charitable organizations, neighbors, educators, local media and our own employees.

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We have a presence in 75 countries, with 406 active research, manufacturing, sales and administrative sites.

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We aspire to have a positive effect on the communities in which we operate worldwide, and we recognize our responsibility toward those affected directly or indirectly by our operations and activities. We rely on local communities not only for our workforce, but also for some of our suppliers and for our ability to do business. Through ongoing engagement and dialogue, we work to understand the concerns and needs of our communities, and we seek to respond by addressing local challenges in ways that build stronger communities and support the sustainability of our business.

We contribute to our communities in three key ways:

- Making direct and indirect economic contributions, such as employment, training, support of local suppliers and local R&D, and paying taxes
- Managing our community impact—for example, by ensuring confidence in our environmental and safety performance and by respecting human rights
- Addressing community needs through philanthropy, social investments and community involvement

Underlying our community approach is our commitment to respecting human rights. As a signatory to the [United Nations Global Compact](#), we are committed to protecting and promoting fundamental human rights not only within our immediate workforce but also within our broader sphere of influence, including our local communities. [Learn more](#) about our commitment to protecting and promoting fundamental human rights.

## COMMUNITY ENGAGEMENT

Our community engagement programs reflect the priorities that we share with the local community. Our signature [Neighbor of Choice \(NOC\)](#) program is designed to help build strong and vibrant communities by promoting a healthier society and preserving the environment in localities where we have a major site presence. The program provides financial support and [enables our employees to contribute](#) to the well-being of their communities.

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Throughout 2016, a total of \$3.1 million in grants was awarded to 118 local community organizations in support of a wide range of environmental and health services initiatives through the Neighbor of Choice program.

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Established in the 1990s, our NOC program helps to build relationships of trust and support with these local organizations and residents by responding to needs identified by the communities themselves. We take seriously the shared responsibility of helping to improve the quality of life of neighbors in need. [Learn more.](#)



As part of our commitment to being transparent about our corporate responsibility initiatives, including our business activities and operations, we publish an annual corporate responsibility report.

#### RESOURCES

[2016/2017 Executive Summary](#)  
[Performance Data Spreadsheet \(Excel\)](#)  
[GRI Index](#)

In this 2016/2017 Corporate Responsibility Report, all of the quantitative data covers the calendar year from January 1 to December 31, 2016, unless otherwise noted. To ensure that readers have the most up-to-date information, some of the narrative in the report is about decisions and initiatives that took place in 2017. We also regularly report updated information about our transparency initiatives and performance [here](#).

We use several external guidelines and measurement frameworks to inform the scope of our reporting. These include the [Global Reporting Initiative \(GRI\)](#), the UN [Sustainable Development Goals](#), the 10 principles of the [UN Global Compact](#) and the [Access to Medicine Index](#). We also have completed a [materiality analysis](#), which represents the issues that internal and external stakeholders have identified as having the potential to have significant financial, operational or reputational impacts on the company, and illustrates where our company can have a significant impact on society and the environment.

This report covers our company's global operations, including those of subsidiaries, unless stated otherwise. It includes activities at all facilities, owned and leased, over which we have operational control, unless otherwise noted. The basis for reporting on other matters specific to the operations of our business—including joint ventures, subsidiaries, leased facilities, outsourced operations and other entities that can affect comparability from period to period—can be found in our [2016 Form 10-K](#), which is filed with the United States Securities and Exchange Commission and is also available in the "Financial Reports" section of our [corporate website](#).

There have been no significant changes from previous reporting periods in the scope, boundary or measurement methods applied in this report. Acquisitions and divestitures are thoroughly discussed in our [2016 Form 10-K](#).

We have sought to provide a comprehensive view of how our company operates, and have focused on what is most important to our business success as well as to our external stakeholders. Wherever possible, we have guided readers to sources of more information, including [our corporate headquarters' website](#) and our [annual finance reports](#). We plan to publish our next comprehensive corporate responsibility report in 2018.



Over the years, we have received numerous awards and recognition for our comprehensive approach to corporate responsibility. The following is a selection of awards and recognition received throughout 2016 and 2017.

## GLOBAL RECOGNITION

### **Access to Medicine Index (ATMI)**

Our company ranked number five on the 2016 Access to Medicine Index, up from number seven in the last index, published in 2014. The Index, published every two years, provides an independent assessment of the efforts of research-based pharmaceutical companies to improve access in developing countries. (November 2016)

### ***Corporate Knights***

Our company ranked among *Corporate Knights*' 2017 Global 100 Most Sustainable Corporations in the World. We were one of three U.S. pharmaceutical companies to make the list, which was announced during the Annual Meeting of the World Economic Forum in Davos, Switzerland. *Corporate Knights* analyzed 4,973 companies against global industry peers on a suite of 14 quantitative key performance indicators (KPIs). (January 2017)

### ***Dividend Channel***

Our company has been named a Top Socially Responsible Dividend Stock by *Dividend Channel*, signifying a stock with above-average "Dividend Rank" statistics, including a strong 3 percent yield, as well as being recognized by prominent asset managers as being a socially responsible investment, through analysis of social and environmental criteria. (January 2017)

### **Dow Jones Sustainability Index**

Our company has earned a place on the prestigious Dow Jones Sustainability Index (DJSI) North America for the second consecutive year. The index recognizes public companies for outstanding performance across economic, environmental and social factors, and serves as a benchmark for investors who integrate sustainability considerations into their portfolios. (September 2017)

### ***Fortune***

Our company ranked number four in the pharmaceutical industry, up from number five in 2016, in *Fortune* magazine's 2017 list of the "World's Most Admired Companies." To determine the best regarded companies, enterprises are rated on nine criteria from investment value and quality of management and products to social responsibility and ability to attract talent. (February 2017)

#### **FTSE4Good Index**

Our company remains a constituent of the FTSE4Good Index. The FTSE4Good Index series measures the performance of companies that meet globally recognized corporate responsibility standards. We have been a part of this leading index since 2008. (June 2017)

#### **MSCI Global Sustainability Index Series**

We are a top 10 constituent of MSCI Inc., a leading provider of global benchmark indexes that has over 500 equity and fixed-income environmental, social and governance (ESG) indexes. The family of MSCI Global Sustainability Indexes includes the MSCI World ESG Index, the MSCI EM ESG Index and the MSCI ACWI ESG Index. (May 2017)

#### **Premier Inc.**

We were among the recipient companies honored by Premier Inc., a leading health care improvement company, as 2017 Breakthroughs Awards winners, recognizing industry leaders for outstanding work to improve health care quality and costs. Our company received the Supplier Legacy Award for our longstanding work to support Premier members through exceptional local customer service and engagement, value creation through clinical excellence and commitment to lower costs. (June 2017)

#### **Reputation Institute**

MSD was ranked number 36 among the 100 most reputable companies in Brazil by Reputation Institute's Brazil Reputation Pulse Survey 2017. Known internationally as the Global RepTrak® 100, the annual study evaluates the reputation of the world's most highly-regarded global companies in the 15 largest economies in the world. (April 2017)

#### **2020 Women on Boards**

We have been recognized as a 2020 Women on Boards Winning "W" Company for the year 2016. Winning companies champion board diversity by having 20 percent or more of their board seats held by women. (February 2017)

## **ACCESS TO HEALTH**

#### **Frost & Sullivan Manufacturing Leadership Council**

Our company has once again been recognized by the Manufacturing Leadership Council as a winner in three categories: "Big Data and Advanced Analytics Leadership" for our Turnaround Advanced Logic Planning Support, "Enterprise Technology Leadership," for our Guided Method Execution for Global Quality Laboratories, and "Mobility in Manufacturing Leadership," for our Problem Solving System. These awards honor organizations and individuals that are shaping the future of global manufacturing, and winning organizations are recognized for leveraging best-in-class processes, technologies and engaged teams to distinguish themselves from the competition. (March 2017)

#### **National Kidney Foundation (NKF)**

We were honored by the National Kidney Foundation at their 26th Annual Spring Clinical Meeting in Orlando, Florida. This recognition acknowledged the company's innovative treatment for hepatitis C, ZEPATIER® (elbasvir and grazoprevir)—the only direct antiviral agent specifically tested and approved for use in patients with chronic kidney disease stages four and five. The NKF's Corporate Innovator Award recognizes industry partners that advance the field of nephrology by addressing an unmet medical need or improving upon an existing practice, therapeutic area or technology. (April 2017)

## **EMPLOYEES**

#### **American Heart Association (AHA)**

The AHA has recognized our company in its first-ever 2016 Workplace Health Achievement Index, a science-based and

evidence-informed measurement that assesses and recognizes workplace health programs. (February 2017)

#### **American Indian Science and Engineering Society (AISES)**

Our company was named to the 2017 list of Top 50 Places to Work for Native American STEM Professionals by the American Indian Science and Engineering Society (AISES) in the spring edition of *Winds of Change*. AISES represents American Indians, Alaska Natives, Native Hawaiians, Pacific Islanders, First Nations and other indigenous peoples of North America in science, technology, engineering and math (STEM) studies and careers. (Spring 2017)

#### **Best Employer in China**

MSD China was awarded the 2017 Best Employer in China Award from Aon Hewitt, a global leader in human resources solutions. This is third consecutive year that MSD has been honored with this award. (August 2017)

#### **AscendNAAMBA (National Association of Asian MBAs)**

Our company was recognized with the "Employer of Choice Award for High Achieving Pan Asian Millennials" at the AscendNAAMBA 7<sup>th</sup> Annual Conference and Career Exposition in New York City. (September 2016)

#### **CAREERS & the disABLED Magazine**

We were ranked number 17, up from 33 in 2016, on the "Readers' Choice 2017 Top 50 Employers" list by *CAREERS & the disABLED* magazine, the nation's first and only career-guidance and recruitment magazine for people with disabilities. The list honors corporations for creating a progressive environment for people with disabilities, as reported by readers of the magazine. (March 2017)

#### **Disability Equality Index®**

We received a score of 90 percent on the 2017 Disability Equality Index® (DEI), a joint initiative of the U.S. Business Leadership Network® (USBLN) and the American Association of People with Disabilities (AAPD). The index is aimed at promoting inclusivity and understanding of people with disabilities in the workplace. As a top-scoring company, we have also been recognized as one of the "2017 DEI Best Places to Work." (July 2017)

#### **Equal Opportunity Magazine**

Our company ranked number 13 in the 23rd annual "Top 50 Employers 2017 Readers Choice Awards" in *Equal Opportunity* magazine. Readers selected the top companies in the country for which they would most prefer to work or that they believed would provide a positive working environment for members of minority groups. (March 2017)

#### **Executive Leadership Council**

Based on our commitment to leadership development of African-American executives, we were listed as one of thirty 2016 Executive Leadership Council Ambassador Companies. (January 2017)

#### **G.I. Jobs Magazine**

Our company was designated as one of the "Most Military-Friendly Employers" by *G.I. Jobs* magazine in its 2016 annual survey. This is the eighth consecutive year that we have enjoyed this honor. More than 5,000 companies with revenues exceeding \$500 million annually were surveyed. (November 2016)

#### **Human Resource**

MSD in Singapore garnered two silver awards at the 2016 Human Resources Asia Recruitment Awards event, organized by Human Resource, Asia's only regional HR media and events organization. In recognition of the staffing team's unique ability to help MSD build a world-class data science team within a year, awards were received in the categories of "Best Recruitment Innovation by a Corporate HR Team" and "Best In-house Recruitment Team." (April 2016)

#### **Human Rights Campaign (HRC) Foundation**

Our company scored 100 percent and earned the designation as a 2017 Best Place to Work for LGBT Equality on the HRC Corporate Equality Index. This HRC Index is the national benchmarking tool on corporate policies and practices pertinent to lesbian, gay, bisexual and transgender employees. (March 2017)

#### **LATINA Style Magazine**

We were selected by *LATINA Style Magazine* as one of the Top 50 Companies of the Year for Latinas to work, in the 2016 annual *LATINA Style 50* report. This annual study recognizes companies that encourage training, mentoring and promoting of Latinas, as well as opportunities for Hispanic women. (September 2016)

#### ***Military Times Magazine***

Our company ranked number 16, up from 50 in last year's rankings, on the *Military Times* magazine list of prestigious top 75 "Best for Vets: Employers 2017" for the many initiatives underway across the company to attract, select, engage and retain employees with past military service. Our company is being recognized for the third consecutive year, and we are the only pharmaceutical company to receive this distinction. (May 2017)

#### **National Association for Female Executives (NAFE)**

Our company earned a place on the 2017 list of Top Companies for Executive Women, as one of 60 companies recognized by NAFE for this prestigious award. (February 2017)

#### **National Business Group on Health (NBGH)**

Recognizing our company's admirable achievements in workforce well-being, the National Business Group on Health, a nonprofit association of 425 large U.S. employers, recognized our company for having one of the best workforce well-being programs in the nation. We were among 55 U.S. employers that received the 2016 Best Employers for Healthy Lifestyles® award. (September 2016)

#### ***Professional Woman's Magazine***

*Professional Woman's Magazine* once again named our company to its "Best of the Best" list of Top Healthcare, Pharmaceutical & Biotech Companies in 2017. The magazine polled hundreds of *Fortune* 1000 companies for its 2017 Best of the Best evaluations. It provides unbiased results that are a valuable resource for job seekers. (March 2017)

#### **Top Employers Institute**

We were awarded the distinction of 2017 "Top Employer" by Top Employers Institute, a global certifier recognizing excellence in employee conditions. This certification is awarded only to organizations that achieve the highest standards of excellence in employee conditions. The Institute analyzes human resources management and employee conditions within organizations all over the world, looks at each company's strategy, priorities and executive management, and surveys each company's programs across many areas. (February 2017)

#### ***U.S. Veterans Magazine***

Our company was listed among those recognized in *U.S. Veterans Magazine's* 2017 evaluation of the nation's Best of the Best Top Veteran-Friendly Companies. The annual review is an evaluation of the nation's employers, initiatives, government agencies and educational institutions. (May 2017)

#### ***Working Mother Magazine***

For the 31st consecutive year, we were named to the *Working Mother* top 100 companies. The magazine highlighted our company's numerous employee programs, from on-site childcare to college coaching sessions and executive coaching for working families. (October 2017)

## **ENVIRONMENTAL SUSTAINABILITY**

#### **Green Chemistry Challenge Award**

The Environmental Protection Agency (EPA) recognizes landmark green chemistry technologies developed by industrial pioneers and leading scientists that turn potential environmental issues into business opportunities, spurring innovation and economic development. Our company's Research Laboratories, in Rahway, New Jersey was presented with the 2017 Green Chemistry Challenge Award for successfully applying green chemistry design principles to Letermovir, an antiviral drug candidate that is currently in Phase III clinical trials. (June 2017)

### ***Newsweek Green Rankings***

We ranked number 150 on *Newsweek's* "2016 Global 500 Green Rankings" list and number 82 on the 2016 U.S. 500 list. The 2016 *Newsweek* rankings measure the environmental performance of large public companies using eight key performance indicators, including energy use, greenhouse gas emissions, water use and waste generation. (June 2016)

### **U.S. Environmental Protection Agency**

Our company received an ENERGY STAR "2017 Partner of the Year—Sustained Excellence" award from the U.S. Environmental Protection Agency (EPA) for our continued improvement in energy performance and leadership in energy management, in both the pharmaceutical and industrial sectors. We have been an ENERGY STAR Partner since 1995 and have been recognized by the EPA for 12 consecutive years—twice as "Partner of the Year," and now for a 10<sup>th</sup> time for "Sustained Excellence." (April 2017)

## **ETHICS & TRANSPARENCY**

### **Billion Dollar Roundtable (BDR)**

Our company was certified as a member of the Billion Dollar Roundtable, a top-level corporate advocacy organization that promotes excellence in supply chain diversity. We were accepted into the BDR for our demonstrated leadership in economic inclusion and supplier diversity. (March 2017)

### **CPA-Zicklin Index**

We have been recognized by the Center for Political Accountability (CPA) as a "trendsetter" for corporate disclosures related to political spending. The CPA-Zicklin Index of Corporate Political Disclosure and Accountability provides a comprehensive portrait of how S&P 500 companies are navigating political spending around disclosure and board oversight. (September 2017)

### **Women's Business Enterprise National Council (WBENC)**

We were named one of the WBENC's Top Corporations for Women-Owned Businesses in 2016 for our work in enabling growth and reducing barriers for women-owned businesses. (January 2017)

## **PHILANTHROPY**

### ***The Chronicle of Philanthropy***

We ranked number 12 on the *Chronicle of Philanthropy's* list of the most charitable public companies in corporate America. The rankings are based on a survey of the top 150 U.S. companies in the *Fortune* 500 as well as on information from public documents filed with the IRS and the SEC. Also, in its annual survey of philanthropic giving by U.S. corporations, the *Chronicle* ranked our company third in "in-kind" giving among organizations that donated more than \$1 billion in products and services. (June 2016)

### **CECP: The CEO Force for Good**

In a leading study on corporate social engagement, [CECP: The CEO Force for Good](#), in association with The Conference Board, ranked our company in the top quartile of respondent companies for total giving in their annual *Giving in Numbers: 2017 Edition* report. (October 2017)

### **Community Hope**

Community Hope honored our company with the "Hero's Award" for our role in creating the Veterans Justice Initiative. This award recognizes the company's pro bono legal work and financial support for this New Jersey organization that aids veterans facing homelessness and other issues. (October 2016)

### **Seeding Labs**

Our company was honored with Seeding Labs' Global Catalyst Award in recognition of our unmatched worldwide impact in advancement of science in the developing world, through partnerships with Seeding Labs in providing new scientific opportunities for international scientists and their students. Since 2010, our company has donated more than 1,200 pieces of lab equipment, mostly from our Boston, Massachusetts site, that have benefited universities in seven developing countries. (March 2017)



Below are key performance indicators (KPIs) for each of our four focus areas (Access to Health, Employees, Environmental Sustainability, and Ethics & Transparency), as well as links to the performance data tables found throughout this site.

RESOURCES

- Performance Data (Excel)
- 2016/2017 Executive Summary
- CDP website

These KPIs serve as baseline measurements for our corporate responsibility activities, are measured globally unless otherwise noted, and cover all of [our business units](#) with the exception of joint ventures.

## Access to Health

KPIs<sup>1</sup>

RESEARCH & DEVELOPMENT	2012	2013	2014	2015	2016
Top 20 global burdens of illness addressed by our products and pipeline <sup>2</sup>	55%	88%	88%	88%	88%
GCP/PV audits by regulatory agencies or clinical trial investigators that led to significant fines, penalties, warning letters or product seizures*	0	-	0	0	-
Established significant external licenses and collaborations <sup>3</sup>	61	40	35	64	57
Narrative of compounds provided to product-development partnerships <sup>4</sup>					<a href="#">Link</a>

\* Complete response letter received for Sugammadex (MK-8616) in 2013 and complete response letter received for Januvia [sitagliptin; MK-0431] in 2016.

MANUFACTURING & SUPPLY	2012	2013	2014	2015	2016
Annual percentage of units manufactured/sold and recalled during a given year (recall rate globally) <sup>5, 6</sup>	0.19%	0.11%	0.22%	0.07%	0.01%
Number of local and regional manufacturing partnerships to enable access	84	68	104	179	179
Number of products available by local and regional partnerships <sup>7</sup>	34	354	499	1,157	941

REGISTRATION	2012	2013	2014	2015	2016
New product and device registrations <sup>8, 9, 10</sup>	204	179	176	156	143
Local regulatory agency GCP/PV training requests fulfilled that will help strengthen agency capabilities with their GCP/PV compliance oversight role <sup>11</sup>					<a href="#">Link</a>
Products submitted that have achieved WHO prequalification	10	11	11	11	11

PRICING & COMMERCIALIZATION	2012	2013	2014	2015	2016
Number of products which are supported with differential pricing <sup>12, 13</sup>	NA	24	35	35	40
Number of low and lower-middle income countries where inter- and/or intra-country pricing has been implemented <sup>14</sup>	NA	70	114	121	123
Investment in patient- and provider-education programs (in millions)	\$71.4	\$61.3	\$52.3	\$80.0	\$80.2

COMMUNITY INVESTMENT	2012	2013	2014	2015	2016
Health care workers trained through major programs and partnerships <sup>15</sup>	38,000	22,000	137,000	18,669	32,218
Investment in partnerships for activities to address underlying barriers to health, such as health-system strengthening and capacity building (in millions) <sup>15</sup>	\$24	\$24	\$32	\$31	\$28
People reached through major programs & partnerships (in millions) <sup>15</sup>	269	302	267	188	293

NA: Not available.

1. Unless otherwise stated, data for Access to Health are reflective of our Human Health business only; information on our company's Animal Health is reported separately.

2. As defined by the Institute for Health Metrics and Evaluation (IHME), which replaces the previously used WHO chart of leading causes of disease, condition or injury.

3. Starting in 2014, this metric no longer includes select early licenses and research collaborations that were included in the metric for previous years.

4. For information on product-development partnerships, visit the [Research & Development](#) page.

5. Definition of Recall Classifications: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049070.htm#RecallClassifications>.

6. Beginning in 2014, product recalls include data from our Animal Health business.

7. Increase represented in 2015 is due in part by better visibility to global partner information.

8. Data includes new products and new indications.

9. For information on new registrations by region, visit our [Clinical Research](#) page.

10. Data for all years have been updated based on a tracking system upgrade that corrected miscounts in prior years.

11. For information on local regulatory agency GCP/PV training requests, visit our [Clinical Research](#) page.

12. Differential pricing intended to facilitate access for the at-need population.

13. Products include HIV treatments, vaccines and other patented products.

14. Countries as defined by the World Bank 2013 GNI Classification, including UN-defined Least Developed Countries.

15. Includes investments by the Office of Corporate Responsibility, MSD for Mothers and/or our company's Foundation.

## PERFORMANCE DATA

- [Access to Reproductive Health](#)
- [Animal Health](#)
- [Anti-Counterfeiting](#)
- [Clinical Research](#)
- [Community Investment](#)
- [Manufacturing & Supply Chain](#)
- [MECTIZAN® Donation Program](#)
- [Medical Outreach Program \(MMOP\)](#)
- [MSD for Mothers](#)
- [Pricing & Commercialization](#)
- [Product Registration](#)
- [Research & Development](#)
- [Patient Assistance Programs](#)

## Employees

### KPIs

DIVERSITY & INCLUSION	2012	2013	2014	2015	2016
Women in executive roles <sup>1</sup>	31%	31%	31%	34%	31%
Women on the Board	17%	17%	17%	21%	23%
Members of underrepresented ethnic groups on the Board	25%	25%	25%	21%	23%
Members of underrepresented ethnic groups in executive roles (U.S.)	17%	20%	20%	20%	23%
Members of underrepresented ethnic groups in the workforce (U.S.)	24%	24%	24%	26%	26%

WELL-BEING	2012	2013	2014	2015	2016
Response rate to the Voice Survey	77%	77%	78%	NA	85%
Employees who completed a health assessment (U.S.)	58%	62%	57%	58%	57%
Lost-time incident rate (LTIR)	0.27	0.28	0.20	0.21	0.13
Recordable injury rate (RIR)	0.62	0.61	0.57	0.47	0.35

VOLUNTEERISM	2012	2013	2014	2015	2016
Employees who took release time according to the global policy on employee volunteerism <sup>2</sup>	NA	NA	NA	9%	21%
Total recorded volunteer hours <sup>3</sup>	NA	NA	109,932	80,585	214,862

NA: Not available.

1. "Executive" is defined as the chief executive officer and two structural levels below.

2. Figures involve some estimate where specific data was not available.

3. 2016 figures are based on employee self-recorded volunteer hours and volunteer hours communicated directly to the Office of Corporate Responsibility for certain countries. 2015 marked the first year in which volunteer-hour reporting was based solely on employee self-reporting. Prior years included estimates for unrecorded volunteer hours.

## PERFORMANCE DATA

- [Employee Safety](#)
- [Engaging Our Employees](#)
- [Financial Well-Being](#)
- [Global Diversity & Inclusion](#)
- [Learning & Development](#)
- [Positive Work Environment](#)

# Environmental Sustainability<sup>1</sup>

## KPIs

	2012	2013	2014	2015	2016
Greenhouse gas emissions (Scope 1 & 2) (MT CO2e) <sup>2</sup>	1,856,000	1,760,000	1,630,700	1,501,000	1,409,600
Water usage (billion gallons)	8.6	7.5	7.1	6.3	5.5
Operational waste generated (MT)	109,470	96,256	83,733	69,856	72,599

1. Includes facilities worldwide.

2. In accordance with the Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired or sold. Adjustments also reflect changes in methodology to ensure consistency from year to year.

## PERFORMANCE DATA

- [Air Emissions](#)

- [Climate Change & Energy Use](#)
- [EHS Management & Compliance](#)
- [Materials & Waste](#)
- [Water](#)

## Ethics & Transparency

### KPIs

	2012	2013	2014	2015	2016
Employees trained on our Code of Conduct	92%	99%	99%	99%	100%
Ratio of substantiated allegations to concerns/issues raised	60%	58%	60%	58%	55%
Reported concerns regarding privacy practices, breaches of privacy and losses of personal data and devices that were substantiated <sup>1</sup>	23%	26%	18%	96%	98%

1. Privacy concerns include all concerns escalated to our Privacy Office about the company's privacy practices. Substantiated concerns are those that are determined to be inconsistent with our privacy standards or that involve the loss of, theft of or unauthorized access to personal data.

### PERFORMANCE DATA

- [Corporate Governance](#)
- [Global Privacy Program](#)
- [Office of Ethics](#)
- [Procurement & Supplier Relations](#)
- [Sales & Marketing](#)

## Our Giving

### PERFORMANCE DATA

- [Community Contributions](#)
- [Disaster Relief](#)
- [Employee Giving](#)
- [Grants & Contributions](#)
- [Neighbor of Choice](#)

- [Product Donations](#)

## Economic Impact

### PERFORMANCE DATA

- [Financial Information Summary](#)
- [2016 Form 10-K](#)

# ACCESS TO HEALTH

We aspire to improve access to health by discovering, developing and providing innovative products and services that save and improve lives.



**We believe we have an important role and responsibility in improving access to medicines, vaccines and quality health care worldwide, thereby helping to reduce the burden of disease around the world.**

## ACCESS TO HEALTH GUIDING PRINCIPLES

Our mission to improve the health and wellness of people around the world by expanding access to medicines and vaccines is one of our company's **five core values**. To guide our efforts, we follow our companywide **Access to Health Statement of Guiding Principles** and our Institutional Business Africa (IBA) Principles, which articulate our approach.

Expanding access is a business imperative for optimizing and sustaining our business over the long term. As we strive for continuous improvement in our access approach, we will reevaluate our policies, practices and programs, as well as the metrics we employ to measure our progress, on an ongoing basis.



**RESEARCH & DEVELOPMENT**



**MANUFACTURING & SUPPLY**



**REGISTRATION**



**COMMERCIALIZATION**



**COMMUNITY INVESTMENT**



## THE SDGs & ACCESS TO HEALTH

This graphic illustrates which of the UN SDGs most closely align with our mission to save and improve lives.



### SDG 3

#### Good Health and Well-Being

Ensure healthy lives and promote well-being for all at all ages

### SDG 17

#### Partnerships for the Goals

Strengthen the means of implementation and revitalize the global partnership for sustainable development

## GLOBAL BURDEN OF DISEASE



Our company is addressing 88 percent of the top 20 global burdens of disease with our products and pipeline, including cancer, HIV, diabetes and Alzheimer's disease.

Barriers to quality care and medical treatment — such as a lack of trained health care professionals, weak infrastructure, civil strife and a shortage of safe water in many parts of the world — make even basic health care

delivery difficult at best, and these challenges go well beyond what we can directly address alone.

We believe our role is to work in partnership with others — local communities, governments, donors, patient organizations, health care professionals, nongovernmental organizations, multilateral organizations and others in the private sector — to contribute our expertise and knowledge.

## POPULATION HEALTH

We also look at our contributions to improving health through a global population health lens. Because our medicines and vaccines target important health problems that affect millions of people on a global basis, we are — by definition — in the population health business.



## AWARDS & RECOGNITION

We have been recognized for our commitment to improve access to health around the world.





Various stakeholders are calling on the global pharmaceutical industry to provide greater transparency regarding the impact of access strategies and initiatives, as well as evidence of how access strategies are integrated into an overall business strategy.

#### RESOURCES

[Access to Health Statement of Guiding Principles](#)

In response, we developed [Access to Health Statement of Guiding Principles](#) to guide our worldwide approach to access to health.

## ACCESS TO HEALTH GUIDING PRINCIPLES

### [Research & Development](#)

We will engage in R&D to provide medicines and vaccines that address vital global health needs.

### [Manufacturing & Supply](#)

We are committed to providing patients and customers with high-quality products and a reliable supply of safe and effective medicines and vaccines.

### [Registration](#)

We will register our products in a timely fashion in markets where they are needed.

### [Commercialization](#)

We will commercialize our products in a way that develops our company's business and meets local needs in a responsible and efficient manner.

### [Community Investment](#)

We recognize that we cannot address complex public health challenges on our own; therefore, we will engage in community investment to address the barriers to access where we believe we can make the strongest contribution.

Because of our leadership in this area, our Principles and key performance indicators informed the global health work of the Interfaith Center on Corporate Responsibility (ICCR) and the development of their [Statement of Principles and Recommended Corporate Practices to Promote Global Health](#), and also informed an industry-wide effort through the Business for Social Responsibility (BSR) Healthcare Working Group to develop their [Guiding Principles on Access to Healthcare \(GPAH\)](#).

## INSTITUTIONAL BUSINESS AFRICA (IBA) PRINCIPLES

We also have a group dedicated to ensuring access to essential medicines in Africa, called the Institutional Business Africa (IBA) unit. IBA consists of a dedicated team of public health and medical specialists based across sub-Saharan Africa that fosters strategic collaborations and provides policy and technical guidance to countries focused on the areas of family planning and vaccines to achieve sustainable benefits for people and communities in Africa.

IBA is guided by four important principles, represented by the abbreviation PASS:

- P:** Public health outcomes, guided by leading global alliances focused on reproductive health (RHSC, FP2020) and immunizations (GAVI), aligned with country public health goals
- A:** Affordability, focusing on economic levels and optimization of available funding
- S:** Sustainability for countries, ensuring that a long-term perspective is in place for country programs using our products
- S:** Sustainability for our business, ensuring that we can maintain our commitment to long-term partnerships that leverage our innovative products and services

Through IBA, we are reaching an increasing number of people in sub-Saharan Africa for both family planning products and vaccines. For example, in Rwanda vaccinations for HPV have reached 120,000 girls, nearly 100 percent of the eligible population.

Measuring how we're doing is a challenging but important component of our access strategy, as it enables us, through relevant quantitative indicators, to demonstrate our progress in implementing our Principles and to measure the effectiveness of our efforts.

## ACCESS ACCELERATED

To give one example of how our efforts align with our access principles, we joined 21 other biopharmaceutical companies to launch [Access Accelerated](#), a global initiative to advance access to non-communicable disease (NCD) prevention and care in low and lower-middle income countries. The [announcement](#) was made during the 2017 annual meeting of the World Economic Forum. Building on long-standing individual company investments in global health, Access Accelerated will address a variety of access barriers to NCD prevention, treatment and care. Efforts will be evaluated with the support of independent experts at Boston University to establish a framework for progress, measure effectiveness and deliver ongoing reporting.



We believe we have an important role and responsibility in improving access to medicines, vaccines and quality health care worldwide, helping to reduce the burden of disease in the parts of the world that need it most.

We work in collaboration with others—local communities, governments, donors, patient organizations, health care professionals, nongovernmental organizations (NGOs), multilateral organizations, and others in the private sector—to contribute our expertise and knowledge.

## Active Programs

The programs highlighted below are examples of our ongoing efforts.

### ALLIANCE TO ADVANCE PATIENT-CENTERED CANCER CARE



In 2016, our company's Foundation announced a new initiative, the Alliance to Advance Patient-Centered Cancer Care. The Alliance aims to increase timely access to patient-centered care and reduce disparities in cancer care, especially for vulnerable and underserved adult populations in the United States. [Learn more.](#)

### BRIDGING THE GAP: REDUCING DISPARITIES IN DIABETES CARE



With funding from our company's Foundation, Bridging the Gap aims to improve access to high-quality diabetes care and to reduce health disparities among vulnerable and underserved populations with type 2 diabetes in the United States. For a backgrounder on the Alliance to Reduce Disparities in Diabetes, [click here](#). To see an infographic on how our Foundation is working with the Alliance to Reduce Disparities in Diabetes to bridge the gap in diabetes care, [click here](#). [Learn more](#).

## MECTIZAN<sup>®</sup> DONATION PROGRAM



The MECTIZAN<sup>®</sup> (ivermectin) Donation Program is the longest-running disease-specific drug donation program and public-private partnership of its kind, and is widely regarded as one of the most successful public-private health collaborations in the world. [Learn more](#).

## MEDICAL OUTREACH PROGRAM



Our company's Medical Outreach Program was established in 1958. It is the primary mechanism through which our company donates its pharmaceuticals and vaccines for humanitarian assistance in the developing world and in support of disaster relief and emergency situations worldwide. [Learn more](#).

## MSD FOR MOTHERS



MSD for Mothers is a 10-year, \$500 million initiative focused on creating a world where no woman dies giving life. Working together with committed partners, we believe we can help make pregnancy and childbirth a safe, healthy and joyful experience for women. [Learn more.](#)

## U.S. PATIENT ASSISTANCE PROGRAMS



More than 55 years ago, our company created our first U.S. patient assistance program (PAP) to keep affordable medicines within patients' reach. Today, our patient assistance offerings include several programs. [Learn more.](#)

## Completed Programs

The programs highlighted below are examples of our past programs and initiatives.

### AFRICAN COMPREHENSIVE HIV/AIDS PARTNERSHIPS



Together with our company's Foundation and the Bill & Melinda Gates Foundation, we established the African Comprehensive HIV/AIDS Partnerships (ACHAP) in 2002 to support Botswana, a country disproportionately affected by HIV/AIDS. [Learn more.](#)

For lessons from ACHAP's contributions to the fight against HIV/AIDS in Botswana, [click here](#).

## ALLIANCE TO REDUCE DISPARITIES IN DIABETES



To address the growing problem of health care disparities related to type 2 diabetes in the U.S. among low-income and underserved adult populations, our company's Foundation launched the [Alliance to Reduce Disparities in Diabetes](#), with a commitment of \$15 million. [Learn more](#).

For a backgrounder on the Alliance to Reduce Disparities in Diabetes, [click here](#). To see an infographic on how our Foundation is working with the Alliance to Reduce Disparities in Diabetes to bridge the gap in diabetes care, [click here](#).

## CHINA-MSD HIV/AIDS PARTNERSHIP



Our company's Foundation committed \$36 million to establish the China-MSD HIV/AIDS Partnership (C-MAP). C-MAP was the first large-scale public-private partnership between the Chinese government and a multinational company to focus on HIV/AIDS prevention and control. [Learn more](#).

## HIV CARE COLLABORATIVE



In 2012, to help address remaining barriers to HIV care, especially among underserved populations, our company's Foundation launched the HIV Care "Collaborative" for Underserved Populations in the U.S. with the goal of connecting more people living with HIV to the care they need to stay healthy. [Learn More](#).

## GARDASIL® ACCESS PROGRAM



Through the GARDASIL® (Human Papillomavirus Quadrivalent [Types 6, 11, 16, 18] vaccine, recombinant) Access Program, we pledged to donate at least 3 million doses of GARDASIL for use in smaller-scale human papillomavirus (HPV) vaccination projects in eligible lowest-income countries around the world. [Learn more.](#)

## MCAN



MCAN, a U.S.-based organization established in 2005, was the only private foundation focused solely on addressing the complex and growing problem of childhood asthma within the United States. MCAN's mission was to enhance the quality of life for children with asthma and their families, and to reduce the burden of the disease on them and on society. This program concluded in 2015.



An estimated 30 million Americans—about 9 percent of the population—are living with diabetes, according to the U.S. Centers for Disease Control and Prevention.

#### RESOURCES

[Bridging the Gap Backgrounder](#)  
[Bridging the Gap Infographic](#)

Vulnerable and underserved populations bear a disproportionate burden of diabetes and its related complications. These populations also experience persistent inequities in access to high-quality diabetes care.

Promoting health equity among people with diabetes requires a multifaceted approach that improves the delivery of health care while addressing the complex array of interrelated factors that influence health. Multi-sectoral collaborations can reduce health disparities by integrating high-quality medical care with resources drawn from the social and environmental sectors, such as food, housing, and neighborhood and physical environments. For example, multi-sectoral collaborations can help improve access to nutritious food and increase options for physical activity, both of which are important to better health outcomes.

#### GOALS

Our company's Foundation recently launched *Bridging the Gap: Reducing Disparities in Diabetes Care* (*Bridging the Gap*). This initiative aims to improve access to high-quality diabetes care and reduce disparities in health outcomes among vulnerable and underserved populations with type 2 diabetes in the United States. The Foundation is committing \$16 million over five years to support *Bridging the Gap* and its program partners in selected communities across the country.

*Bridging the Gap* aims to:

- **Build sustainable partnerships** between the health care sector and other sectors to address the medical and social determinants of health
- **Redesign health care systems**, including the transformation of primary care, to improve the delivery of diabetes care for vulnerable and underserved populations
- **Increase access to high-quality health care** for adults with type 2 diabetes and related comorbidities and complications
- **Improve health outcomes** for individuals with type 2 diabetes through measures such as better glucose and lipid control

## BRIDGING THE GAP PROGRAM SITES

Through grants to eight organizations, our company's Foundation is supporting evidence-based, multi-sector approaches to promote sustainable improvements in the delivery of diabetes care.

- [Alameda County Public Health Department](#) (Oakland, CA)
- [Clearwater Valley Hospital and Clinics](#) (Orofino, ID)
- [La Clínica del Pueblo](#) (Washington, DC)
- [Marshall University](#) (Huntington, WV)
- [Minneapolis Health Department](#) (Minneapolis, MN)
- [Providence St. Joseph Health](#) (Renton, WA)
- [Trenton Health Team](#) (Trenton, NJ)
- [Western Maryland Health System](#) (Cumberland, MD)

The Foundation has selected [The University of Chicago](#) (Chicago, IL) to serve as the National Program Office for *Bridging the Gap*. It will support the program efforts of the grantee organizations and provide leadership in building a national public-private partnership to help reduce disparities in diabetes care.

## APPROACH

*Bridging the Gap* programs will:

- Use multi-sectoral collaborations to address factors inside and outside the health care system that influence diabetes outcomes
- Transform the delivery of primary care, including team-based, coordinated care tailored to the patient's level of risk for complications from diabetes and social factors that can complicate treatment and care management
- Engage multiple levels of the health care system, such as the patient, family support system, health care team, and health care organization levels

The Foundation will assess the impact of *Bridging the Gap* and its programs through a comprehensive cross-site evaluation. The findings and program results will be widely disseminated to advance multi-sectoral collaborations that will help improve diabetes care and reduce health disparities in the United States.



One of the most significant initiatives undertaken by our company to help improve access to medicines in developing countries is the MECTIZAN® (ivermectin) Donation Program.

In 1987, we announced that we would donate MECTIZAN, our medicine for the treatment of onchocerciasis, to all who needed it, for as long as needed.

To facilitate the donation and delivery of MECTIZAN, we established a multi-sectoral partnership involving the World Health Organization (WHO), the World Bank, ministries of health, nongovernmental development organizations (NGDOs) and local communities. In 1988, we established the [MECTIZAN Donation Program](#) at the [Task Force for Global Health](#), as well as the MECTIZAN Expert Committee to provide technical and scientific advice on the implementation of the program.

In 1998, this donation was expanded to include mass treatment for the elimination of lymphatic filariasis (LF) in African countries where onchocerciasis and lymphatic filariasis are co-endemic. The MECTIZAN Donation Program is the longest-running disease-specific drug donation program and public-private partnership of its kind.

This balanced governance and organizational structure continues to support and facilitate the donation of MECTIZAN. For more information on the MECTIZAN Donation Program, review the [MDP Annual Highlights](#).

## ONCHOCERCIASIS

More commonly known as river blindness, onchocerciasis is transmitted through the bite of black flies and can cause intense itching, disfiguring dermatitis, eye lesions and, eventually, blindness. At the inception of the program, the disease was one of the leading causes of preventable blindness worldwide, and approximately 130 million people were at risk for the disease.

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To date, WHO has verified that river blindness has been eliminated in Colombia, Ecuador, Guatemala and Mexico.

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MECTIZAN relieves the agonizing itching that accompanies the disease and halts progression toward blindness—thereby

addressing characteristics of the disease that dramatically affect the quality of life. MECTIZAN is well suited for distribution in remote areas by community health workers through mass distribution programs. It is the only well-tolerated drug known to halt the development of river blindness.

William C. Campbell, a retired scientist from our company's research laboratories, was jointly named the 2015 Nobel Prize winner in Physiology or Medicine with Satoshi Omura, for the discovery of avermectin, which led to our company's development of MECTIZAN.

## LYMPHATIC FILARIASIS

Lymphatic filariasis (LF) is a devastating parasitic infection spread by mosquitoes. It is caused by threadlike parasitic worms that damage the human lymphatic system. The main symptoms are swollen limbs with thickened, hard, rough and fissured skin, a condition known as elephantiasis, and, in men, swelling of the scrotum, called hydrocele. An annual single dose of MECTIZAN, administered together with a second drug, albendazole (donated by GlaxoSmithKline), is the recommended treatment in countries where onchocerciasis coexists with LF. The two diseases coexist in 29 African countries and in Yemen.

## RESPONSIBLE DONATIONS AND ADVERSE-EXPERIENCE MONITORING AND REPORTING

While side effects following treatment with MECTIZAN are rare, we have developed a rigorous program for monitoring and reporting any adverse experiences (AEs) in the field. With the help of local NGOs, all field-based distributors are trained in AE detection, management and reporting; all AEs must be reported to the company, which then reports them to drug safety and regulatory agencies in the U.S. and internationally.

The MECTIZAN Expert Committee, ministries of health, and WHO also play key roles in making sure that best practices are applied to surveillance and management of AEs at the community level. The AE reporting form itself has been revised several times throughout the program's history to streamline and standardize reporting.

## Impact

- Since 2013, Colombia, Ecuador, Guatemala and Mexico have received verification from the World Health Organization that river blindness has been eliminated. The remaining two affected countries in Latin America, Brazil and Venezuela, are continuing treatment in an area in the Amazon jungle.
- For LF, Togo has received verification from the World Health Organization that LF has been eliminated as a public health problem. Two other countries, Malawi and Yemen have stopped treatment with MECTIZAN in all endemic communities to allow for post-treatment surveillance and validation.
- The donation of MECTIZAN has led to the development of CDTI (community-directed treatment with ivermectin) programs, through which trained community volunteers distribute medicines, a critical element in effective mass-treatment programs in remote areas that often lack trained healthcare workers.
- An estimated 40,000 cases of blindness are prevented by the MECTIZAN Donation Program annually.

For more information on our neglected tropical disease (NTD) research, visit [Infectious Diseases](#).

# Performance

## COMMITMENTS

While much has been achieved in the treatment of onchocerciasis (river blindness) and progress has been made toward its elimination, there remain a number of additional challenges that we and our partners are committed to actively addressing.

## PRODUCT DONATION COMMITMENT

To ensure a continued supply of MECTIZAN in order to support the activities of our program partners, we remain committed to continuing to donate as much MECTIZAN as is necessary to eliminate river blindness globally, and to eliminate lymphatic filariasis in the African countries and in Yemen where the diseases coexist.

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Since 1987, we have provided financial support for the MECTIZAN Donation Program.

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Beyond addressing river blindness and LF, the MECTIZAN Donation Program is a key component of the growing trend toward integrated programs addressing neglected tropical diseases (NTDs). In fact, the integration of onchocerciasis and LF efforts via the MECTIZAN Donation Program, beginning in 1998, set the foundation for many of these initiatives, and we will remain engaged with key stakeholders to help with integration of the programs where feasible.

## FINANCIAL COMMITMENT

Since 1987, we have provided financial support for the MECTIZAN Donation Program, housed at the Task Force for Global Health. Our funding covers the activities of the program's secretariat and includes support of the MECTIZAN Expert Committee for the technical and scientific oversight of the donation program.

To help provide the necessary ongoing technical support for country-led neglected tropical disease (NTD) programs, including support for onchocerciasis and lymphatic filariasis, WHO launched the [Expanded Special Program to Eliminate NTDs](#) (ESPEN) in early 2016. Our company provided \$250,000 in financial support to ESPEN, and we were invited to join with other partners in designing the ESPEN strategy to provide technical and other resources in support of country-led NTD elimination programs.

In February of 2016, our company and the MECTIZAN Donation Program made a donation of [\\$1 million to the END Fund](#) in support of a new initiative that will foster country-led efforts in Africa to determine when treatment for river blindness can be safely stopped. The END Fund's activities are coordinated with ESPEN to ensure alignment among partners at the regional and the country level.

## PARTNERSHIP COMMITMENT

As a reflection of our overall commitment to partnership in eliminating neglected tropical diseases (NTDs) including onchocerciasis and LF, our company is an original signatory of the London Declaration, a collaborative effort to accelerate progress toward eliminating or controlling 10 NTDs by the end of this decade.

We joined 12 other global pharmaceutical companies and many other stakeholders, including endemic country governments, WHO, the Bill & Melinda Gates Foundation, USAID, the U.K. Department for International Development (DFID), NGOs, and other organizations in this effort. Together with several other pharmaceutical companies, we committed to continuing or increasing our donations of medicines to treat or prevent these diseases; donors committed financial resources, and NGOs agreed to support implementation needs.

The partners came together in an initiative called Uniting to Combat NTDs to track progress and identify gaps (e.g., in NTD research and additional funding) that need to be addressed in order to reach the goals of the London Declaration. In April 2017, to mark the fifth anniversary of the London Declaration, the members of Uniting to Combat NTDs were recognized by the *Guinness Book of World Records* for achieving the new record of the most medicines donated in a 24-hour period. [Learn more](#) about the London Declaration.

## MILESTONES AND IMPACT

WHO has verified that in Latin America, River Blindness has been eliminated in Colombia, Ecuador, Guatemala and Mexico. The remaining two affected countries in Latin America, Brazil and Venezuela, are continuing treatment in an area in the Amazon jungle shared by the two countries.

In Africa, while the original goal of the program was to control onchocerciasis, current research by WHO indicates that elimination is now feasible. As a result, the program's strategy has shifted from disease control to disease elimination, and the partners in this program are now working toward the goals established through the WHO Roadmap for Neglected Tropical Diseases, to eliminate LF and onchocerciasis by 2020 and 2025, respectively.

In addition, through an approach called CDTI (community-directed treatment with ivermectin), the delivery infrastructure for addressing onchocerciasis and LF is also being used to deliver other health interventions including the provision of vitamin A, cataract identification, bed nets, and immunizations and treatment for other NTDs.

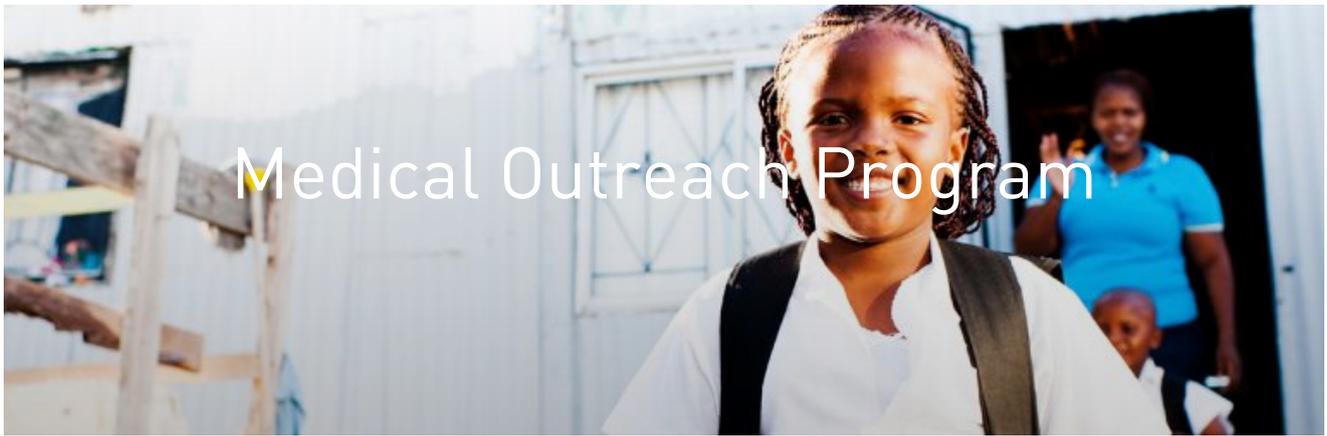
### RIVER BLINDNESS AND LYMPHATIC FILARIASIS (LF) SUMMARY

	2012	2013	2014	2015	2016
Direct investment in the MECTIZAN® (ivermectin) Donation Program (in millions) <sup>1</sup>	\$5.50	\$5.50	\$5.50	\$5.80	\$3.74
Total treatments approved (in millions)	229	295	257	176	283
Treatments approved for river blindness (in millions)	85	128	39	55	64
Treatments approved for lymphatic filariasis (LF) (in millions)	109	127	147	94	141
Treatments approved for joint river blindness and LF programs (in millions)	35	40	71	27	78
Market value of MECTIZAN donations (in millions)	\$906	\$1,092	\$861	\$1,083	\$1,187
Countries where elimination of LF has been validated by the World Health Organization (target = 30)	0	0	0	0	0
Latin American countries where the elimination of river blindness has been verified by the World Health Organization (target: 6)	1	2	3	3	4

1. Total investment decreased due to successful completion of 8-year grant in support of the African Program for Onchocerciasis Control.

In 2016, 283 million treatments with MECTIZAN were approved for onchocerciasis and LF. To enhance our reporting, we are now breaking down our approval figures to reflect the range of programmatic uses of the donation (river blindness, LF, and

both). We are also adding a new metric and target related to LF elimination: counting the number of countries where LF elimination has been verified by the World Health Organization.



## Medical Outreach Program

Established in 1958, our company's Medical Outreach Program (MMOP) is the primary mechanism through which our company donates its pharmaceuticals and vaccines for humanitarian assistance in the developing world and in support of disaster relief and emergency situations worldwide.

The program, managed by our Office of Corporate Responsibility, is one mechanism through which we help to expand access to our products, particularly in the developing world. Through this program, we donate critical pharmaceuticals and vaccines to a limited number of qualified, U.S.-based nongovernmental organization (NGO) partners. The scope of the program varies from year to year and is influenced by changing medical needs in developing countries, the quantity of our medicines available for donation, and the random nature of disasters.

Donations of our medicines are made primarily through these qualified NGOs:

- [AmeriCares](#)
- [The Catholic Medical Mission Board \(CMMB\)](#)
- [Direct Relief](#)
- [MAP International](#)
- [Project HOPE](#)

Each of these organizations has a long-standing relationship with the company, demonstrates integrity of purpose, provides assurance that our products will be securely warehoused, and has well-established programs for the ill and needy in developing countries. Through the program, we have the ability to monitor the NGOs and to be assured of the proper distribution and handling of our medicines. In addition, we donate only products with adequate dating to ensure proper administration prior to expiry.

Through supply chain and facility assessments of our program partners, we add value beyond our donated medicines. As of October 2016, we had completed collaborative site assessments of all partners' warehouse facilities to jointly identify improvements in medicine storage and handling to optimize supply chain effectiveness. Recommendations have included such items as regular storage-rack inspection and maintenance, strengthening of delivery receipt procedures, and improvements in material-handling procedures. We continue to collaborate with our partners to address any corrective actions needed to improve the safety, security and storage of our medicines. Future site assessments will be conducted in coordination with our partners as needed.

The MMOP comprises three components:

## ANNUAL ALLOTMENT PROGRAM

Through this program, the NGOs with which we work can request medicines of their choice from our company's current product line, up to an annually authorized amount. Through this approach to donations, our partners can receive a sustained and predictable supply of needed medicines, as is crucial to the effective planning of ongoing humanitarian programs.

## ONGOING DONATIONS OF PHARMACEUTICALS & VACCINES

Donations of our pharmaceuticals and vaccines are also made in response to proposals from our partners to address some of the specific needs of their programs around the world. In addition, we offer products to our partners proactively, based on supply, for use in their ongoing humanitarian programs.

## DISASTER & EMERGENCY RELIEF

Our disaster relief program is designed to provide assistance in response to major disasters and to support efforts in preparedness and recovery. We may provide donations of medicines and vaccines as well as financial support, where appropriate, through our program partners.

We are a member of the [Partnership for Quality Medical Donations \(PQMD\)](#), an alliance of NGOs and medical product manufacturers dedicated to raising the standards of medical donations in order to meet the needs of underserved populations and disaster victims around the world. We also observe the [World Health Organization \(WHO\) Guidelines for Drug Donations](#). Both of these efforts help to ensure and maintain the effectiveness of our donation program.

## Performance

Throughout 2016, the donations of our medicines and vaccines provided disaster assistance in the Dominican Republic, Ecuador, Haiti, and the United States, supported partner medical mission programs, and reached many thousands more worldwide through the ongoing medical programs of the NGOs with which we work.

MMOP SUMMARY	2012	2013	2014	2015	2016
Countries and territories reached by the MMOP	92	86	91	72	55
People reached by the MMOP <sup>1</sup>	NA	NA	433,624	78,555	109,398
Value of donations of medicines, vaccines and consumer care products (in millions) <sup>2,3,4</sup>	\$86.30	\$69.40	\$110.20	\$31.10	\$31.12
Disaster relief product contributions (in millions) <sup>2</sup>	\$0.80	\$2.40	\$8.50	\$4.70	\$13.41

1. Based on converting volume of medicines and vaccines donated in 2016. Conversion factors for this estimate were developed using a combination of QuintilesIMS SMART Data and U.S. product information found on our company's product website. 2. We set the value of our product donations based on the U.S. wholesale acquisition cost. 3. Figure includes the value of product donations through the MMOP only. 4. Effective October 1, 2014, Bayer AG purchased our company's consumer care business.



The death of a woman from complications of pregnancy and childbirth is a tragedy with devastating effects on families, communities and nations.

#### RESOURCES

MSD for Mothers

MSD Fellowship for Global Health: 2016 Impact Report

According to the World Health Organization, most maternal deaths are preventable, and over the last 25 years we've seen a nearly 50 percent decline in the number of women who die from complications of pregnancy and childbirth globally. Thanks to the commitment of the global health community and national governments we've made great strides in getting women the care they need.

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*MSD for Mothers* is our company's 10-year, \$500 million initiative to help end preventable maternal mortality.

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Today, maternal mortality is prioritized under [Sustainable Development Goal 3.1](#), which calls for a global reduction in the maternal mortality ratio to less than 70 deaths per 100,000 live births by 2030.

Although there has been impressive progress and we have much to be proud of, we also have more work left to do.



## OUR APPROACH

[MSD for Mothers](#) is our company's 10-year, \$500 million initiative that applies our scientific and business expertise, as well as our financial resources, to reduce preventable maternal mortality worldwide by catalyzing transformative solutions. We are applying private-sector approaches to improve access to quality maternal health care that women receive in health facilities at the time of childbirth, and to improve access to family planning services.

We are focused on:

- Equipping health care providers with the skills, tools and technologies they need to deliver high-quality services wherever women seek care
- Placing lifesaving maternal health products in the hands of women and their providers
- Empowering women to make informed choices about contraceptives and to get the quality care they need for a healthy pregnancy and safe childbirth

We have more than 50 projects in more than 30 countries around the world. Our major programs are based in five countries—India, Senegal, Uganda, the United States, and Zambia—where our goal is to design, test and advocate for the scale-up of innovative models that expand women's access to quality care.

We are also collaborating with MSD offices around the world, to support projects that are responsive to local maternal health needs through our Global Giving program. In countries as diverse as Canada, Greece, the Philippines and South Africa, these grant-based programs are providing training for health providers in maternal care services, linking pregnant women to care and promoting health-seeking behaviors.

In 2016, *MSD for Mothers* supported 10 new projects to improve global maternal health.

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Working alongside more than 90 partners, we have improved access to quality maternal care and family planning services for more than 6 million women around the world.

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Our fellowship program, the MSD Fellowship for Global Health, has grown to 40 employees who participated in 12-week assignments with our partners on the ground in India, Uganda and Zambia, providing assistance in business training, business planning, branding, marketing and demand, generation strategy development, data management, quality assurance, feasibility studies and recommendations for income-generating activities.

In addition, more than 50 employees across the company are heavily engaged in *MSD for Mothers*, providing technical expertise to support our product innovation efforts and strengthen our programs. Our experts complete a range of activities, from developing a communications program for maternity providers in India to providing advice to improve the digital-based tools of our partners.

We also continue to raise awareness among our employees about *MSD for Mothers* and provide opportunities for them to become further engaged. There are now more than 430 employee ambassadors in 28 countries who help support the annual "May is for Mothers" campaign, which reaches employees at more than 80 of our sites worldwide. Employees have participated in additional activities, including assembling postnatal kits for mothers in Uganda, coordinating mobile phone collections and donations, sharing information about *MSD for Mothers* with their peers at internal meetings, and volunteering with local nonprofit organizations related to maternal health care.

## 2016 HIGHLIGHTS

Working alongside our global partners, our major achievements in 2016 included:

- Partnered with Ferring Pharmaceuticals and the World Health Organization to evaluate heat-stable carbetocin, a medicine that could significantly improve the management of severe bleeding after childbirth in countries where reliable refrigeration is challenging.
- Strengthened private maternity care in India and Uganda and developed a first-of-its-kind tool kit to help private maternity providers—from midwives in rural villages to doctors at large, urban hospitals—measure and improve the quality of care they offer.
- Helped transform the public health supply chain in Senegal by integrating private commercial practices that have greatly reduced stockouts of contraceptives and increased reliable access to a full range of contraceptive and other public health products.
- Nearly halved maternal mortality in facilities in target districts in Uganda and Zambia through our partnership with the U.S. government (*Saving Mothers, Giving Life*).
- Completed the construction of 24 mothers' shelters in Zambia to help women overcome the distance barrier to reaching quality care.
- Implemented evidence-based practices to manage the leading causes of maternal death in the U.S., now used in more than 300 hospitals in five states.
- Published the first citywide analysis of severe maternal morbidity (life-threatening complications during childbirth), including its prevalence and economic impact on health care systems in New York City.

## Improving Access

*MSD for Mothers* supports projects in more than 30 countries around the world, with an intensive focus in India, Senegal, Uganda, the U.S and Zambia.

Our goal is to design, test and advocate for innovative models that expand women's access to quality care and can be scaled for greater impact. We're striving to find solutions to end preventable maternal mortality, today and for years to come.

### STRENGTHENING LOCAL PRIVATE HEALTH CARE

One way we're working to increase access to quality maternal health services is by improving the care delivered by local private providers, such as independent doctors, midwives and drug shop owners. In the developing world, maternal health is typically thought to be a responsibility of the public sector even though women often turn to private providers as a critical source of care. Women seek care from private providers for a range of reasons, including proximity to their home, flexible hours, a sense of personalized care and sensitivity to local needs and customs. However, this care can be unregulated, expensive and of variable quality.

Given the surprisingly high proportion of women who receive health services from private maternity providers, we believe that strengthening the ability of these providers to meet the health needs of pregnant women could have an impact on reducing maternal mortality. In 2015, we continued to support our partners in India and Uganda to set, maintain and deliver standards for quality care in the local private health sector.

In August 2016, we helped launch the Private Maternity Care Quality Toolkit (PMC-QT) to help measure and improve the quality of private maternity care. The practical, user-friendly tool kit incorporates lessons from three years of

programming and input from health providers on the front lines and was developed in consultation with dozens of stakeholders in India and Uganda. Key features include clinical standards targeting the most essential evidence-based practices for maternal health care, clear metrics for measurement and simple data collection tools that are useful for doctors at larger, urban hospitals as well as midwives in rural villages. [Learn more](#) about the tool kit.

In Uganda, we partnered with Population Services International (PSI) and its local affiliate, PACE, on a project called *MSD for Ugandan Mothers (MUM)*. Together, we worked to ensure that pregnant women have access to quality maternal health services and products through the ProFam network of privately owned franchise clinics. This comprehensive project worked beyond the clinic setting, helping women overcome common barriers to care, such as cost, transportation and limited supplies.

By the end of the project, *MUM* trained more than 800 health workers, strengthened 142 facilities, and expanded access to quality maternal health care for an estimated 200,000 women in more than 40 districts. Additionally, more than 50,000 women delivered in facilities with high-quality care.

In India, we've partnered with leading health organizations to strengthen private maternal health care in Jharkhand, Rajasthan and Uttar Pradesh—three states with some of the highest rates of maternal mortality in the country.

- **Pathfinder International** and **World Health Partners** expanded access to maternal health care by linking the public and private sectors, adding maternal health services to an existing health franchise, connecting remote providers to higher-level care through referral and telemedicine, and ensuring that quality supplies reach the last mile. [Learn more](#).
- **Jhpiego**, the **Federation of Obstetric and Gynaecological Societies of India** and the **National Accreditation Board of Hospitals** developed standards of quality care and helped private providers meet those standards through training, continuous quality improvement and accreditation. [Learn more](#).
- **Hindustan Latex Family Planning Promotion Trust** adapted a sustainable franchise network of private hospitals and health workers to a new context so women in rural and peri-urban areas have better access to care throughout their pregnancy. [Learn more](#). These projects have strengthened more than 800 health facilities, trained more than 6,500 health workers and improved access to quality care for nearly 450,000 women.

Our goal is to ensure that women have access to affordable, quality maternal health services *wherever* they seek care, through public or private sources. That's why we are raising awareness among policy makers, donors and other global health stakeholders about the complementary role of private providers and the importance of working with them to help end preventable maternal deaths.

To support our programmatic and advocacy efforts, we continue to work with the [London School of Hygiene and Tropical Medicine](#) to measure and evaluate our programs and better understand the providers who deliver maternal health care to women.

In 2016, we worked with our research partners at the London School, our NGO partners on the ground, and other influential groups like the World Bank and USAID to better understand and advocate for a more global focus on leveraging the reach of local, private providers to help save women's lives. Our partners continue to evaluate select *MSD for Mothers* supported models such as social franchising for maternal health in Uganda and India, as well as supply chain innovation in Senegal, the Informed Push Model (IPM-3PL).

## ADDRESSING THE DISTANCE PROBLEM

In Zambia, distance challenges are considered a leading contributor to the country's high maternal mortality ratio of 224 maternal deaths for every 100,000 live births. Women often have to travel long distances to reach the nearest health facility, making it difficult for them to get the care they need during pregnancy, childbirth and immediately postpartum.

The Mothers' Shelters Alliance was launched in 2015 to address this challenge by building and strengthening mothers' shelters—residences near health facilities where pregnant women can stay until they go into labor and immediately after childbirth.

The goal was to make these shelters and the services they offer sustainable by empowering local communities to both

effectively manage them and generate income to support their operations through creative entrepreneurial activities.

The shelters are now fully operational and the Mothers' Shelters Alliance has trained nearly 600 health workers and expanded access to quality maternal health care for more than 7,000 women across eight districts of Zambia.

The Alliance is a collaboration among *MSD for Mothers*, the Bill & Melinda Gates Foundation and The ELMA Foundation, with partners Africare, the University of Michigan, Boston University and the Zambia Center for Applied Health Research and Development. The Alliance is working in conjunction with *Saving Mothers, Giving Life*, a public-private partnership among the U.S. Government, the Norwegian Ministry of Foreign Affairs, the American College of Obstetricians and Gynecologists, Every Mother Counts, Project C.U.R.E and *MSD for Mothers* to reduce maternal mortality in sub-Saharan Africa.

## EXPANDING ACCESS TO FAMILY PLANNING AND IMPROVING ACCESS TO QUALITY MODERN CONTRACEPTIVES

Family planning is recognized as one of the most cost-effective ways to lower maternal mortality rates, potentially averting one-third of maternal deaths by reducing the overall number of pregnancies and helping women plan and space their pregnancies.

In Senegal, as part of our collaboration with the Bill & Melinda Gates Foundation, we supported the scale-up of the Informed Push Model (IPM-3PL), an innovative supply chain model that has been highly successful in eliminating stockouts of contraceptives at health facilities—a serious barrier to family planning.

Working with our partner IntraHealth, we implemented a phased national expansion of IPM-3PL and, in 2016, the government of Senegal agreed to the model as part of a broader national supply chain reform effort called *Yeksi Naa* (meaning “I have arrived,” in Wolof). With support from *MSD for Mothers*, the government will adapt and expand the model to include more than 100 essential products for maternal and child health as well as HIV/AIDS, tuberculosis, malaria and other conditions.

## BOLSTERING MATERNAL HEALTH IN THE UNITED STATES

In collaboration with national and local organizations in the U.S., we are supporting efforts at the community, hospital and policy levels to help make sure that all women across the country have a healthy pregnancy and safe childbirth.

*MSD for Mothers* supports work in 16 states to respond to major challenges that contribute to maternal mortality in the U.S. by:

1. Improving and standardizing the quality of care women receive during a childbirth emergency
2. Collecting stronger data to understand why maternal deaths and morbidities (life-threatening complications during childbirth) are occurring
3. Pioneering community initiatives to help women with chronic health conditions receive appropriate care

The key accomplishments of our U.S. projects in 2016 are:

- **The American Congress of Obstetricians and Gynecologists—District II** worked with more than 10,000 health care providers in New York to develop and implement standard approaches for handling three of the most common childbirth emergencies: hemorrhage (severe bleeding), venous thromboembolism (blood clots) and severe hypertension (high blood pressure) in nearly all of the state's birthing facilities
- **The Association of Women's Health, Obstetric and Neonatal Nurses** worked with nearly 60 hospitals to assess and improve clinicians' ability to recognize women at the greatest risk of obstetric hemorrhage and respond appropriately based on specific indicators. They also educated nurses about the importance of the postpartum period and developed simple checklists for nurses to review with new mothers as they advise them on identifying signs and symptoms that may require medical attention following childbirth.

- **The California Maternal Quality Care Collaborative** collaborated with more than 120 hospitals in the state to put in place evidence-based practices for managing obstetric hemorrhage and preeclampsia
- **The Association of Maternal and Child Health Programs** helped 12 states strengthen their ability to review maternal deaths and understand why they are occurring. Early results have identified a need for state departments of health to focus more intensely on chronic conditions like hypertension, cardiovascular disease, substance abuse and mental health problems among pregnant women.
- **The Fund for Public Health of New York** completed the first city-wide investigation of the cost and prevalence of severe maternal morbidity.
- **MSD for Mothers** supported community-based projects in Camden, New Jersey; New York City; and Philadelphia, to help women struggling with chronic health problems receive appropriate care before, during, and after pregnancy

## PARTNERING WITH THE U.S. GOVERNMENT TO SAVE WOMEN'S LIVES IN SUB-SAHARAN AFRICA

Launched in 2012, *Saving Mothers, Giving Life (SMGL)* is a five-year public-private partnership led by the U.S. Government to reduce maternal and newborn mortality in sub-Saharan Africa. *MSD for Mothers* is a founding partner of the initiative, and our programs in Uganda and Zambia contribute to *SMGL*'s work to put in place lifesaving maternal and newborn health interventions. *SMGL* has produced impressive results: maternal mortality ratios have fallen by 44 percent in target facilities in Uganda and by 55 percent in target facilities in Zambia.

For a complete list of our partners, please visit the [MSD for Mothers website](#).

## Innovation

### ADVANCING LIFE-SAVING PRODUCTS

As a research-based health care company, innovations in lifesaving products are one of the most important and distinct contributions we can make to improve maternal health. Our scientists and others are deeply involved in identifying, developing and advancing new and/or improved products to address unmet maternal health needs in the developing world.

In 2013, *MSD for Mothers*, Ferring Pharmaceuticals and the World Health Organization (WHO) established a collaboration to develop a proprietary formulation of carbetocin, used to prevent PPH in women after childbirth, that is designed to be heat stable—even in hot and tropical climates.

The development of a medicine that can be stored at elevated temperatures has the potential to significantly improve management of bleeding following childbirth in many countries where refrigeration during storage and distribution of the medicine are difficult to achieve and maintain. The availability of a heat-stable carbetocin product could help reduce maternal deaths in these countries.

In 2016, the WHO continued a multi-country clinical study of 30,000 women to evaluate the effectiveness of heat-stable carbetocin in vaginal deliveries compared to the current standard of treatment, oxytocin. Participating countries include: Argentina, Egypt, India, Kenya, Nigeria, Singapore, South Africa, Thailand, Uganda and the UK. By the end of 2016, more than 15,000 women had been recruited into the trial. The study will be completed in 2017, and, if the results of the study are positive and the medicine is approved by the appropriate regulatory authorities, the collaboration intends to make it available at an affordable and sustainable price in the public sector of developing countries that have a high burden of maternal mortality.

*MSD for Mothers* is also interested in devising an easier-to-administer dosing regimen for magnesium sulfate, the current gold standard for managing seizures in pregnant women suffering from preeclampsia/eclampsia. The first step toward this goal, identifying a dose range using our internal modeling and simulation expertise and data from collaborating universities

and hospitals around the world, is scheduled to be completed by the end of 2017.

Maternal sepsis, an illness that develops in some pregnant women, as well as women who have recently delivered, is a relatively neglected and highly lethal cause of maternal mortality. To address this unmet need, in 2016, *MSD for Mothers* initiated support for initiatives focused on the prevention, early detection and early treatment of infections that may lead to sepsis.

## DIGITAL INNOVATIONS

Digital innovations, especially mobile technology solutions, are playing an increasingly important role in advancing global health and development efforts, empowering people to learn and make decisions about their health and receive much-needed health services in new and interactive ways. *MSD for Mothers* believes that disruptive innovation through digital technology has the power to transform the quality of maternal health care around the world and reduce the number of women who die during pregnancy and childbirth. That's why we are identifying and developing technology solutions that tackle some of the most critical obstacles to delivering quality care.

In 2016, we continued developing digital-based tool kits to help pregnant and postpartum women receive the care they need when they need it, as well as identify the right services and products for their needs. While these projects are currently being tested in India and Kenya, our goal is to adapt them for health providers and women in other countries.

Beyond providing financial resources to develop digital innovations, our digital experts are providing technical support and strategic insights into technology trends that may have implications for the solutions' design. *MSD for Mothers* aims to be a catalyst in helping to leverage technology to address critical and potentially lifesaving needs for mothers around the world.

## Performance

### MSD FOR MOTHERS SUMMARY (FOR PRIORITY COUNTRIES)

	2014	2015	2016
Providers/community health workers trained	4,370	6,814	8,120
Districts/regions reached	143	110	145
Women with improved access to quality care	3,534,889	4,948,803	5,760,968
Women with improved access to modern contraception (in Senegal and India)	2,619,805	3,607,496	3,714,997
Facilities strengthened to provide quality care	1,682	2,575	2,736
Women delivering in facilities providing high-quality care	69,260	272,744	358,870

Note: Priority countries include India, Senegal, Uganda, the U.S. and Zambia.



According to the American Cancer Society, an estimated 1.7 million people in the United States receive a cancer diagnosis each year, and this number is projected to grow as the population ages.

#### RESOURCES

[Alliance to Advance Patient-Centered Cancer Care Profile](#)

[Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis](#)

[Alliance website](#)

While the past decade has marked significant advancements in cancer treatment, many cancer patients still do not receive timely, patient-centered care. Additionally, cancer care is often fragmented and poorly coordinated.

In its landmark 2013 publication, [Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis](#), the Institute of Medicine (now the National Academy of Medicine) highlighted important gaps in the delivery of cancer care in the United States. In particular, the IOM underscored the need to strengthen patient-centered care and reduce disparities in care for underserved and vulnerable populations.

#### GOALS

In response to these needs, our company's Foundation launched the [Alliance to Advance Patient-Centered Cancer Care](#) (the Alliance) to increase timely access to patient-centered care and to reduce disparities in cancer care for vulnerable and underserved populations in the United States. The Foundation has committed \$15 million over five years (2017–2021) to support the Alliance and its program partners in selected communities across the country. The Alliance aims to:

- Promote evidence-based, multifaceted interventions that:
  - Improve care coordination and integration
  - Enhance patient-provider communication
  - Empower patients to actively engage in their health care and treatment planning
  - Offer psychosocial support and other support services
  
- Reduce disparities in access to high-quality cancer care for vulnerable and underserved populations
- Improve patients' satisfaction with their care and quality of life

- Build sustainable community partnerships that advance patient-centered cancer care
- Identify and disseminate best practices in patient-centered cancer care

## ALLIANCE PROGRAM SITES

Through grants to six organizations, our company's Foundation is supporting evidence-based, multifaceted programs to promote sustainable improvements in the delivery of cancer care. The program sites are:

- [Georgia Cancer Center for Excellence at Grady Health System](#)  
(Atlanta, Georgia)



- [The Johns Hopkins University School of Medicine](#)  
(Baltimore, Maryland)



- [Massachusetts General Hospital Cancer Center](#)  
(Boston, Massachusetts)



- [Northwestern University Feinberg School of Medicine](#)  
(Chicago, Illinois)



- [Ohio State University Comprehensive Cancer Center](#)  
(Columbus, Ohio)



- [The University of Arizona Cancer Center](#)  
(Tucson, Arizona)



The [University of Michigan's School of Nursing](#) (Ann Arbor, Michigan) is serving as the Alliance's National Program Office.

## APPROACH

The Alliance programs will:

- Strengthen patient-centered cancer care by implementing interventions in three critical areas: (1) coordination of cancer care and its integration with primary care and other specialty care; (2) patient-provider communication and patient engagement in care; and (3) psychosocial care and other supportive care
- Implement cross-cutting interventions that address multiple cancer types
- Integrate components at different levels of the health care ecosystem: (1) patient; (2) health care provider / health care team; (3) health care system
- Collaborate with community partners to foster sustainable programs to improve the delivery of cancer care

The Foundation will assess the impact of the Alliance and its programs through an independent cross-site evaluation. The evaluation findings and program results will be widely disseminated to help advance patient-centered cancer care in the United States.



Throughout Asia, many patients have difficulty accessing the health services they need, particularly for chronic or complex conditions. This situation is due to many factors, including an insufficient number of skilled or adequately trained healthcare professionals.

#### RESOURCES

[Project ECHO Fact Sheet](#)

According to the World Health Organization, Southeast Asia and South Asia have significantly fewer doctors, nurses and midwives per capita than developed nations. These regions also have limited access to specialty services, making it challenging for many communities and residents to obtain specialty care for complex or chronic conditions, such as mental health illnesses, tuberculosis, HIV, hepatitis C and diabetes.

In rural areas of these regions, much of the healthcare workforce is composed of primary care providers, community health workers (CHWs) and other grassroots health networks that focus mainly on basic primary care. These frontline health workers often have insufficient knowledge and skills to provide their patients with the right care at the right place and the right time. Without the necessary training and ongoing support that a wide range of health workers need to treat patients with complex diseases, providing patients with best-practice care is difficult or impossible.

### **PARTNERSHIP WITH PROJECT ECHO®**

To help build healthcare capacity and expand access to specialty care for complex or chronic conditions among underserved populations in Asia, our company's Foundation has launched a new partnership with [Project ECHO](#) (Extension for Community Healthcare Outcomes) through a \$7 million commitment over five years (2017–2021) to expand the replication of Project ECHO in India and Vietnam. The [ECHO Model™](#) provides the necessary knowledge and tools to healthcare providers in their own communities so they can become a critical frontline healthcare workforce while maintaining responsibility for managing their complex patients. Primary care providers and CHWs trained through the ECHO model can together provide care that is safe and effective, thereby increasing access to high-quality healthcare in these remote communities.

## THE ECHO MODEL

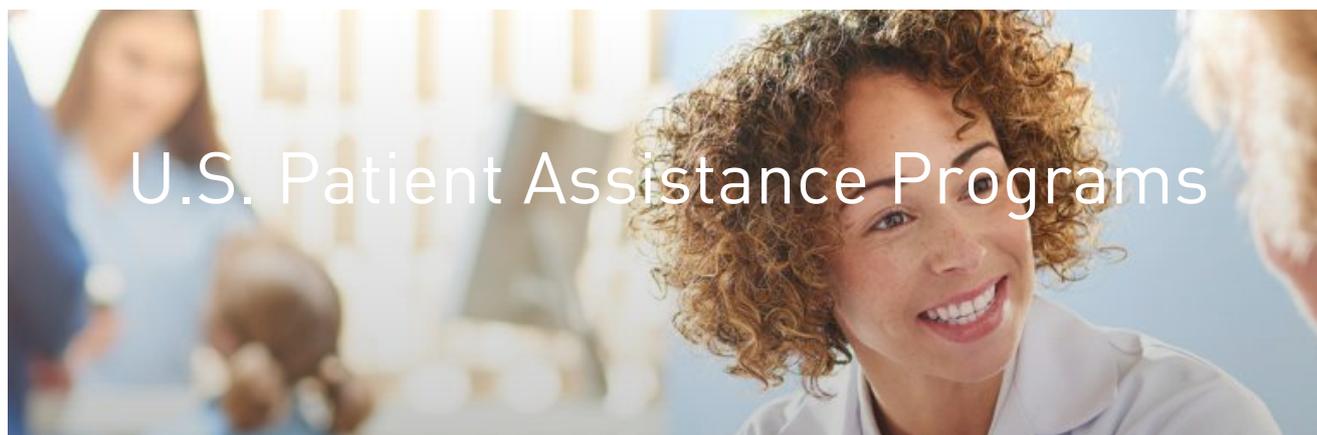
Project ECHO is a tele-mentoring model that links multidisciplinary medical specialist teams at an academic hub with multiple primary care providers (PCPs) through virtual teleECHO™ clinics around the world. These clinics allow experts to mentor and share their expertise via case-based learning across a virtual network, training PCPs to treat patients with complex conditions in their own communities.

## PROGRAM GOALS

Given the substantial need to improve the delivery of healthcare throughout India and Vietnam, Project ECHO has four goals over the next five years:

- Further develop ECHO superhubs (training sites) in India to provide technical assistance for ECHO projects throughout Southeast and South Asia
- Develop and expand ECHO hubs across India and Vietnam in targeted disease areas: hepatitis C, tuberculosis, HIV, diabetes, mental health illnesses, and other noncommunicable diseases
- Establish ECHO hubs in India and Vietnam for developing and implementing training programs for CHWs to further improve the quality and availability of treatment and care
- Document the effectiveness of the ECHO model in improving access to specialty care for patients in rural and underserved areas in India and Vietnam

Project ECHO plans to evaluate the impact and outcomes of the ECHO model to determine its success in improving access to best-practice specialty care for patients—particularly those with complex or chronic conditions—in rural and underserved areas in India and Vietnam. This evaluation will aid in the continued improvement of the replication of the ECHO model in India and Vietnam and around the world.



We believe that no one should go without the medicines or adult vaccines they need.

Consequently, our company provides our medicines and adult vaccines free to people who do not have prescription drug or health insurance coverage and who, without our assistance, could not afford these medicines and vaccines. This approach is consistent with our company's long-held values and tradition of putting patients first.

More than 56 years ago, our company created our first U.S. patient assistance program (PAP) to keep affordable medicines within patients' reach. Through these programs, we have provided more than 37.3 million free prescriptions and adult vaccines, representing a total value (at wholesale acquisition cost) of more than \$4.89 billion.

[Learn more](#) about our U.S. patient assistance programs, including eligibility requirements.

## COMMUNICATING OUR PROGRAMS TO DOCTORS & CONSUMERS

We work to raise awareness of our patient assistance programs among doctors and eligible patients via brochures and via enrollment forms posted on our [website](#) and other company communications, including social media. All toll-free phone lines for our medicines and/or vaccines include an option for patients to learn about our patient assistance programs.

## PARTNERSHIP FOR PRESCRIPTION ASSISTANCE

We also participate in the [Partnership for Prescription Assistance](#) (PPA), a pharmaceutical industry initiative. The initiative brings together America's pharmaceutical companies, as well as doctors, patient advocacy organizations and civic groups, to help low-income, uninsured patients get free or nearly free brand-name medicines. PPA does this through a single website that provides information for and access to more than 475 public and private patient assistance programs, including approximately 200 programs offered by biopharmaceutical companies. To date, PPA has helped millions of Americans get free or reduced-cost prescription medicines.

Our participation in PPA underscores our commitment to helping low-income, uninsured patients gain access to our medicines and adult vaccines. [Learn more](#) about the Partnership for Prescription Assistance.

# Performance

## PATIENT ASSISTANCE PROGRAMS SUMMARY

	2012	2013	2014	2015	2016
Patients utilizing our U.S. Patient Assistance Program <sup>1</sup> (thousands)	444	400	301	293	306
30-day prescriptions filled (millions)	2.2	1.2	1.6	1.6	1.7
Total value of our company's medicines dispensed under our U.S. Patient Assistance Program (in millions) <sup>2</sup>	\$559.00	\$566.40	\$432.90	\$566.60	\$798.27

1. Totals represent 2012 to 2016 volumes of our U.S. Patient Assistance Program.

2. Totals are based on the U.S. wholesale acquisition cost (WAC) and cover all programs.

Changes within the patient and prescription volumes for 2013–2016 are a result of periodic changes in the products covered in the U.S. Patient Assistance Program. Product changes are due, in part, to the inclusion of new products, and as a result from company divestitures, introductions of competing products, and the availability of generic alternatives.



# Global Population Health

Established in 2015, our Global Population Health organization focuses on the complex intersections between the world’s health needs and our company’s priorities and expertise. Because our medicines and vaccines target important health problems that affect millions of people on a global basis, we are—by definition—in the population health business.

Improving population health is an overarching goal for health care stakeholders: countries, payers and providers who are seeking better prevention, population health management and community interventions to protect and promote good health. Because of our unique and differentiated reach, and our science and capabilities that can be leveraged in collaboration with partners, we are able to contribute to significant population health improvements.

Our three main goals are:

1. To make a material difference in contributing to improved population health
2. To create significant and sustained corporate value
3. To show improvements in our own employee population health with exemplary best practices in the industry

In support of these goals, we work across different business units to develop sustainable models of population health management and high-impact initiatives to improve population outcomes at scale, with a focus on reducing disparities, building capacity and skills, and measuring impact.

The examples below highlight our population health engagement on antimicrobial stewardship, health protection, employee population health, and health literacy. Other focus areas include animal health, cancer, diabetes, emergency preparedness, vaccine-preventable disease and women’s health.

## ANTIMICROBIAL STEWARDSHIP TO IMPROVE HEALTH OUTCOMES

According to the World Health Organization, antimicrobial resistance is a major global threat to population health, with significant associated morbidity, mortality and costs. Recognizing the need to address this global health threat, our company is committed to working with health care providers, patients and governments to promote antimicrobial stewardship (AMS)—or, the appropriate use of antimicrobials—through education, implementation, research and advocacy initiatives across both human and animal health, with an emphasis on patient outcomes, population health, and value of care. For additional detail, please visit the section on AMS of this report, which highlights some specific activities in the United States and throughout the world.

Learn more about [AMS](#).

## HEALTH PROTECTION MODELS – ZIKA

In August 2016, we entered into a partnership with the CDC Foundation under which our company agreed to improve access to long-acting reversible contraceptives for eligible local providers and women of childbearing age who live in Puerto Rico.

This agreement supports Z-CAN, or the [Zika-Contraceptive Access Network](#). Z-CAN is a multi-sector public health initiative spearheaded by the CDC Foundation, in partnership with other local agencies and organizations such as the Puerto Rico Department of Health and the Puerto Rico Obstetrics and Gynecology Association, in response to the Zika epidemic.

The goal of the partnership is to give women who want to delay or avoid pregnancy an effective means to do so, and the option to prevent the devastating, lifelong consequences of severe birth defects the Zika virus can cause.

Since the agreement was finalized, our Medical Affairs team has worked with our colleagues in Puerto Rico to support the training of 150 local health care providers in counseling, insertion and removal of our contraceptives.

## EMPLOYEE POPULATION HEALTH

As an employer with over 68,000 employees worldwide, we have the opportunity to apply the principles that support population health to our own employee population—including dependents and, potentially, other members of our communities. We strive to offer services and programs and create work environments that address the continuum of population health management—for those who are well, those at risk, those with acute or chronic illnesses, and those requiring highly complex care.

We are actively collaborating in and integrating programs and policies that share the common goals of improving employee health and safety, reducing injury and illness, and improving workforce productivity. Our goal is twofold:

1. Improve the health of our employee population in targeted areas such as cardiometabolic risk, improve routine vaccination rates and screenings and reduce stress
2. Establish a workplace culture of well-being that promotes health and wellness and emphasizes daily habits

These goals include increasing physical movement/activity, expanding access to healthier foods, providing education and tools to help mitigate the effects of stress, enhancing policies to eliminate tobacco within our campuses, and collaborating with Environmental, Health & Safety to build a culture of health in addition to our long-standing commitment to a culture of safety.

Learn more about [Employee Well-Being](#).

Learn more about [Employee Safety](#).

## HEALTH LITERACY

As part of our commitment to improving global population health, we work to empower patients by addressing health literacy. We have identified opportunities to communicate more clearly with patients, from clinical trials and patient education to packaging. We are also helping health care providers address health literacy, and are influencing policies concerning health literacy at the national and the international level. For additional detail, please visit the section on health literacy, which highlights the problem and our commitment, as well as specific activities in the United States and throughout the world.

Learn more about [Health Literacy](#).



Inventing is our passion. We embrace our responsibility to address the health needs of patients and society through world-class science.

#### RESOURCES

[Pipeline](#)

[Access to Health Statement of Guiding Principles](#)

We are committed to addressing unmet medical needs through innovative research and development (R&D). R&D expenses were \$10.1 billion in 2016, \$6.7 billion in 2015 and \$7.2 billion in 2014 (which included restructuring costs and acquisition- and divestiture-related costs in all years). The talent of our scientists, combined with recent scientific and technological advances, is leading to an exciting period for research as we seek new and more effective ways to treat diseases.

Our R&D model is designed to increase productivity and improve the probability of success by prioritizing resources based on medical need, scientific opportunity and commercial potential.

We are committed to advancing our most promising research and clinical development to bring forward new medicines and vaccines that will make a meaningful difference in patients' lives.

Faced with the complex challenges of bringing important new therapies to patients while simultaneously controlling the rising costs of R&D, we are using important new preclinical, clinical and quantitative tools to help us rapidly differentiate between developmental candidates that will clearly meet patient needs and those that will not. A focus on genetics, genomics and translational medicine is also critical to these efforts.

For instance, we are able to develop biomarkers—those characteristics that can be objectively measured and evaluated as indicators (or markers) of normal biologic processes, disease processes or responses to therapy. Since biomarkers provide critical information in the drug discovery and development processes, our intent is to apply them very early in the development of novel therapeutic candidates to provide preliminary evidence of their potential benefit before proceeding with further development.

In addition, we are using novel quantitative approaches that harness the power of mathematical modeling to analyze preclinical experiments to inform our clinical trial designs and to develop models based on published literature. We now have the capability to first simulate a trial thousands of times, exploring the impact of different factors that influence a specific disease and/or patient population, as well as the related efficacy and safety of responses.

With this integrated approach, we can optimize the next phase of clinical trials and, importantly, make pivotal decisions earlier and more confidently, increasing productivity and the efficient use of our resources. By eliminating likely failures sooner and focusing on those mechanisms that appear more promising, we believe we can bring innovative products to patients faster and more efficiently, while still maintaining a rigorous focus on scientific excellence and patient safety.

We recognize that real-world evidence has an increasing role in how medicines and vaccines are developed and evaluated. Through the contributions of epidemiologists, health economists, outcome researchers, data specialists and other health-

policy researchers across our company, we strive to comprehensively assess the best available information on the value of our medicines and vaccines.

## PEDIATRIC R&D

We are including pediatric development programs in the company's new drug and vaccine development strategies worldwide, where relevant, in response to unmet clinical needs.

When appropriate, we will develop and seek approval for pediatric indications and develop age-specific formulations. We rely on an internal Pediatric Development Committee to review and provide input into all pediatric development strategies across various therapeutic areas. The Committee serves as a Center of Excellence within our company to consult on pediatric development issues and key pediatric policy questions. For a listing of all clinical trials, including pediatric clinical trials, [click here](#).

## Our Pipeline

We prioritize our R&D efforts on advancing candidates that we believe represent the next areas of breakthrough science that will make a difference and deliver value for patients, physicians and payers.

Our company is prominently positioned at the intersection of invention and the burden of disease. Our products and research priorities are aligned with the current and projected [global burden of disease](#) as defined by the World Health Organization (WHO), as well as with the increasing need for new therapies targeted at diseases such as chronic hepatitis C and antibiotic-resistant infections.

[Our research pipeline](#) illustrates the productivity of our R&D efforts. We currently have a number of candidates under regulatory review in the U.S. and internationally. An update on our R&D activities can be found in our [Form 10K](#) or on our [corporate website](#).

## External Outreach

We support academic and community-based physicians and researchers in expanding clinical and scientific knowledge, and in improving understanding of the appropriate use of our products.

Our Investigator Studies Program is an example of our efforts to advance science and improve patient care by supporting, through the provision of drugs and vaccines and/or funding, high-quality research that is initiated, designed, implemented and sponsored by external investigators. This program encourages research in emerging scientific areas of interest, and has an established track record of presentations and the publication of results in peer-reviewed journals.

We are a member of and support numerous professional associations, including the American Association for the Advancement of Science (AAAS), the U.S. National Institutes of Health (NIH), the U.S. National Science Foundation (NSF), the World Medical Association (WMA) and the Council for International Organizations of Medical Societies (CIOMS). In

In addition to promoting dialogue and the exchange of ideas in research, we sponsor research conferences—such as selected Gordon Research Conferences, an international forum in which researchers discuss advances in biologic, chemical and physical science—that cover areas in which our company is conducting research.

As an early supporter of the Physician Payments Sunshine Act (PPSA), we believe in broad disclosure of financial relationships between physicians and the pharmaceutical industry. In October 2009, our company began voluntarily disclosing all payments to U.S.-based health care professionals who speak on behalf of our company, about our products and other health care issues.

We comply with the PPSA provisions of the U.S. Affordable Care Act, which requires pharmaceutical manufacturers to annually disclose information on payments and other transfers of value furnished to U.S.-licensed physicians and U.S. teaching hospitals to the Department of Health and Human Services (HHS). [Learn more.](#)

We also collaborate with external researchers and other members of the pharmaceutical industry by participating in selected scientific consortia. Consortia are an important mechanism by which researchers can work together in a precompetitive manner to address complex scientific challenges common to all parties. These consortia are typically in the form of public-private partnerships.

## PUBLIC-PRIVATE RESEARCH PARTNERSHIPS

We recognize that individuals or companies cannot successfully develop drugs single-handedly. Most cases of true innovation come from robust and honest collaboration among individuals and organizations with diverse backgrounds and capabilities, brought together by the idea of changing the course of human health.

As part of our R&D strategy, we pursue opportunities to establish external alliances to complement our substantial internal research capabilities, including research collaborations, as well as [licensing agreements](#) for preclinical and clinical compounds that have the potential to drive both near- and long-term growth. Our research laboratories establish significant external alliances to advance drug discovery and development, improve R&D productivity, and successfully commercialize novel therapeutics and vaccines.

## DRUG DISCOVERY COLLABORATIONS

### Innovative Medicines Initiative – Accelerating Research

Within Europe, we participate in a number of Innovative Medicines Initiative (IMI) projects. IMI, Europe's largest public-private initiative aiming to speed drug development and improve safety, supports collaborative research projects and builds networks of industrial and academic experts to boost pharmaceutical innovation.

One ongoing IMI project centers on collaboration with the European Patients' Academy on Therapeutic Innovation (EUPATI) by developing standards and training for patient advocacy group leaders. EUPATI launched the in-depth Patient Expert Training Course in 2014 and, in 2016, launched a web-based educational toolbox, hosting educational material in English, Italian, Spanish, Polish, German, French and Russian aiming to reach 12,000 patient advocates across Europe.

## BIOMARKER COLLABORATIONS

### Accelerating Medicines Partnership – New Diagnostics & Therapies

We are a member of the Accelerating Medicines Partnership, a venture among the National Institutes of Health, 10 biopharmaceutical companies and several nonprofit organizations to transform the current model for developing new

diagnostics and treatments by jointly identifying and validating promising biological targets of disease. The ultimate goal is to increase the number of new diagnostics and therapies for patients and reduce the time and cost of developing them.

#### **Biomarkers Consortium – Biomarker-Based Technologies**

The Biomarkers Consortium, in which we participate, is a public-private biomedical research partnership managed by the [Foundation for the National Institutes of Health](#) (FNIH). Its goal is to combine the forces of the public and private sectors to accelerate development of biomarker-based technologies, medicines and therapies for the prevention, early detection, diagnosis and treatment of disease. Working together, the members of the Biomarkers Consortium are building uniquely powerful collaborations that are accelerating the development of biomarker-based technologies, medicines and therapies.

To date, the Biomarkers Consortium has launched 10 projects in areas as diverse as Alzheimer’s disease, cardiovascular disease, osteoporosis and breast cancer. A number of other promising projects are also moving toward implementation. Our company contributes to a number of FNIH projects within this consortium.

#### **Multi-Regional Clinical Trials Center of Brigham and Women’s Hospital and Harvard**

We are a participating member of the Harvard Multi-Regional Clinical Trials (MRCT) Center. The MRCT Center develops guidance, training resources and tools that promote safe and ethical clinical trials. We perform our work by convening representatives from industry, not-for-profit organizations and academia, as well as investigators, patients and patient advocacy groups, to create practical resources for the ethical design and conduct of multiregional clinical trials.

Current areas of focus include working with global leaders to promote regulatory convergence and internationally accepted best practices; developing guidance and tools to promote safe and ethical trials; and training clinical trial professionals with a particular focus on low- and middle-income countries.

#### **National Institutes of Health Alzheimer’s Disease Neuroimaging Initiative**

We continue to participate in the [National Institutes of Health Alzheimer’s Disease Neuroimaging Initiative](#) (ADNI), the largest public-private partnership in Alzheimer’s disease research. This study, which is designed to gain new insights into the onset and progression of Alzheimer’s disease, has now expanded to ADNI3, with the goal of improving clinical trial design and aiding drug development. ADNI3 will seek to identify and track early changes in the brain before the onset of Alzheimer’s symptoms by using imaging techniques, including the newly developed tau PET ligands, and biomarker measures in blood and cerebrospinal fluid.

#### **Predictive Safety Testing Consortium – Safety-Testing Methods**

We are a member of the [Predictive Safety Testing Consortium](#) (PSTC), a unique public-private partnership led by the nonprofit Critical Path Institute (C-Path). The PSTC brings together pharmaceutical companies to share and validate their safety-testing methods under the advisement of the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA).

The 18 corporate members of the consortium share internal experiences with preclinical and clinical safety biomarkers in kidney, liver, skeletal muscle, testicular toxicity, vascular injury and cardiac hypertrophy. All biomarker research programs have a strong translational focus to select new safety tools that are applicable across the drug-development spectrum. Advancing the science and use of biomarkers in drug development is a critical area of focus for our company.

The following are notable PSTC achievements:

- The FDA and EMA qualified seven new urine tests that signal kidney injury
- The PSTC opened a biomarker-qualification process with the FDA for new biomarkers of drug-induced liver and skeletal muscle injury
- The Japanese Pharmaceuticals and Medical Devices Agency (PMDA) qualified new biomarker laboratory tests that signal kidney injury

## **CLINICAL COLLABORATIONS**

#### **Clinical Trials Transformation Initiative/Duke University – FDA**

We continue to focus efforts on improving the way in which clinical trials are recruited and conducted. To further those efforts, we are an active member of the Clinical Trials Transformation Initiative (CTTI), a public-private partnership led by FDA and the Duke Clinical Research Institute. CTTI works with industry and academic partners to identify and promote practices that will increase the quality and efficiency of clinical trials, and will foster a high-quality clinical trial system that is patient-centered and efficient, enabling reliable and timely access to evidence-based prevention and treatment options. Current working groups focus on patient-informed consent processes and standards, Investigational New Drug safety reporting and on best practices for Data Monitoring Committees.

#### **TransCelerate BioPharma Inc.**

We are a participating member of TransCelerate BioPharma Inc., a nonprofit organization focused on improving the health of people around the world by simplifying and accelerating the research and development of innovative new therapies. We support the philosophy that collaboration on topics across the biopharmaceutical research and development community is the best way to address our industry's most complex challenges and drive positive change.

We actively participate in all five of the strategic priority areas: (1) Improve the Site Investigator Experience; (2) Facilitate Information Sharing; (3) Enable Harmonization of Clinical Trial Processes; (4) Enhance Sponsor Efficiencies; and (5) Improve the Patient Experience. Additionally, we participate in the newly launched Pharmacovigilance initiative. Our colleagues contribute across a broad range of responsibilities. These include serving on the Board of Directors and fulfilling Executive Committee, Sponsor, Workstream lead and Workstream member roles.

We remain committed to developing partnerships and ideas to help improve care and access to medicine around the world. [Read more](#) about Business Development & Licensing.

## **Governance**

**Our governance structure is as vital to our success as the life-changing products we bring to market.**

Our Research Leadership Team develops the divisional strategy, allocates resources and manages the R&D portfolio. The team comprises the heads of functional areas within our company's research laboratories, and each area provides expert, efficient support of our drug candidates—ushering them from drug discovery through product life-cycle management.

### **CODE OF CONDUCT**

All of our employees must abide by our [Code of Conduct](#), which applies to the way we work with external researchers, doctors and academics. According to our Guiding Principles for Business Practices Involving the Medical and Scientific Community, all activities involving the medical and scientific community that are sponsored or supported by our company, including our subsidiaries, are to have a legitimate, well-articulated business purpose. In addition, all activities are to be implemented in accordance with the highest standards of ethics and integrity, having the utmost regard for patient health and safety.

In accordance with our company policy, we do not tolerate fraud or misconduct in our research activities—whether by an employee or by an external business partner. We deal promptly, directly and appropriately with all reported cases. MRL policy is aligned with our company's Corporate Policy on Reporting and Responding to Misconduct.

## COMPLIANCE

To help ensure compliance, we have clear policies in place to provide guidance to employees on ethical and lawful conduct. It is the responsibility of all employees to conduct themselves ethically and lawfully.

Our company's compliance program is based on chapter 8 of the U.S. Federal Sentencing Guidelines, "Sentencing of Organizations," as amended, which sets forth the elements of an effective compliance program, as well as more specific guidance for the pharmaceutical industry issued by the Office of the Inspector General in 2001. [Learn more](#) about our company's compliance program.

The company has allocated responsibility and accountability for compliance to the divisional level. Therefore, each division has established its own compliance committee to tackle specific divisional issues and requirements.

The stated objective of the Compliance Committee Charter within our research laboratories is to ensure ongoing compliance with applicable laws and requirements in all business areas through appropriate management structure, processes and training. In order to manage compliance, the Committee is composed of members of the Research Leadership Team. As a result, compliance efforts encompass the entire division and go beyond simply addressing the conduct of clinical trials.

The Committee also promotes ethical science and provides guidance to MRL employees on our company's standards and corporate policies, as well as necessary education related to specific requirements applicable to the research community.

## Performance

R&D SUMMARY	2012	2013	2014	2015	2016
Research and Development expenses (in billions) <sup>1</sup>	\$8.2	\$7.5	\$7.2	\$6.7	\$10.1
Employees involved in research activities	13,600	12,300	11,400	11,900	12,300
New products approved <sup>2</sup>	3	0	7	2	3
Products in the pipeline and under regulatory review <sup>2</sup>	41	35	33	31	39
Top 20 global burdens of illness addressed by our products and pipeline <sup>3</sup>	55%	88%	88%	88%	88%
Established significant external licenses and collaborations <sup>4</sup>	61	40	35	64	57
Filed U.S. patent applications	192	159	125	185	195

1. In 2016, the increase was driven primarily by higher acquired in-process research and development (IPR&D) impairment charges, increased clinical development spending, higher restructuring and licensing costs, partially offset by a reduction in expenses associated with a decrease in the estimated fair value measurement of liabilities for contingent consideration, as well as by the favorable effects of foreign exchange.

2. Candidates in our company's research pipeline or under regulatory review as reported in the United States Securities and Exchange Commission Form 10-K, page 16, filed on February 28, 2017. This includes candidates in Phase II, Phase III, or under regulatory review as of February 24, 2017. When candidates attain regulatory approval they are removed from this pipeline view.

3. As defined by the Institute for Health Metrics and Evaluation (IHME) using GBD2015 data.

4. Starting in 2014, we no longer capture select early licenses and research collaborations that were included in the metric for previous years.



We recognize that when people take our medicines and vaccines they must have confidence in their efficacy and safety.

Our company's medicines and vaccines are widely tested before they are approved for marketing. This testing is governed by a comprehensive regulatory scheme and by our research policies. We assess the safety of our products in rigorous nonclinical and clinical trials before they are approved. [Learn more](#) about our clinical trials.

Our company's chief medical officer holds overall responsibility for the benefit/risk of our pipeline and marketed products, provides medical oversight for all clinical programs, supervises the development and implementation of medical policies (including those related to data transparency and the sharing of clinical data) and has authority over the design, execution and implementation of pre-registration expanded access ("compassionate use") programs.

Our company's Global Safety function manages a global system for the collection, management and reporting of adverse experience (AE) reports received by our company worldwide.

## MONITORING & QUALITY ASSURANCE

MRL Quality Assurance (QA) provides independent assurance that we safeguard the rights and well-being of patients and the welfare of animals, deliver high-quality data, and comply with applicable regulatory requirements through sound processes and procedures.

MRL QA is responsible for monitoring and maintaining the MRL Quality Management System, assures the strength of our company's pharmacovigilance system, assures that clinical trials and regulated research are conducted in alignment with relevant regulations and guidance, and provides monitoring over MRL's Animal Care and Use Program.

The MRL QA Good Clinical Practice (GCP) and Good Pharmacovigilance Practice (GPVP) audit programs are comprehensive, risk-based audit and oversight programs that encompass a broad range of assessments including those listed below:

- **Clinical investigator sites:** Audits to assess compliance with the protocol and with relevant global and local regulations/guidance (e.g., GCP & GPVP regulations)
- **Vendors:** Pre-contractual assessments and selected post-contractual audits of contracted research organizations (CROs), central laboratories and other third-party business partners or service providers supporting clinical and/or post-authorization activities
- **Computerized systems and technology:** Audits and assessments of the relevant computerized systems and technology that support MRL
- **Internal process/systems audits:** Systematic evaluations of adherence to relevant internal policies, standard operating procedures and guidelines as well as applicable global and local regulations/guidance
- **Country operations audits:** Periodic and systematic audits of our company's activities carried out by our subsidiaries

worldwide

- **Business partner audits:** Audits of external companies with which a licensing or development agreement exists and where compliance with contractual and regulatory requirements is assessed
- **Patient support programs and marketing research:** Audits of vendors engaged in customer engagement programs that may solicit data relating to pharmacovigilance

The MRL QA GLP audit program is a global, comprehensive, risk-based audit and oversight program that is designed to meet the explicit responsibilities set forth in the Good Laboratory Practice Regulations. Additionally, quality assurance oversight is provided for internal clinical bioanalysis and vaccine clinical assay testing, assuring adherence to regulatory expectations. The scope of the audit program includes the following:

- **In-lab audits:** Audits of ongoing study activities ensuring adherence to study protocols, associated procedures, and regulatory expectations enhancing quality by design
- **Document and data audits:** Audits of study outcomes for efficacy and/or safety profiles supporting research and marketing submissions
- **Vendor audits:** Audits of contract research organizations conducting or supporting nonclinical studies for the purposes of assuring study, systems and facilities adherence to global regulatory requirements

The MRL QA Animal Welfare audit program is a global, comprehensive, risk-based audit and oversight program function designed to ensure that the Animal Care and Use Program at each MRL research site meets required standards and is in compliance with all applicable legal requirements covering animal research.

The scope of the audit program includes the following:

- **Post-approval monitoring audits:** Audits of ongoing animal research activities to ensure that research is conducted in accordance with the protocol approved by our Institutional Animal Care and Use Committee (IACUC)
- **Vendor audits:** Due diligence audits of contract research organizations conducting animal research studies on behalf of our company. The purpose of these audits is to ensure that vendors utilize the highest standards of humane handling, care and treatment of research animals and adhere to applicable regulatory requirements covering animal research
- **Animal Care and Use Program audits:** Audits of MRL research sites to ensure that the Animal Care and Use Program is in compliance with internal policies and guidelines and meets regulatory standards and requirements covering animal research

MRL QA provides evidence of monitoring and independent assurance at various levels of governance throughout our company, as well as assurance that we comply with applicable regulations, guidance and guidelines and internal company policies and procedures.

## CLINICAL SAFETY & RISK MANAGEMENT

Clinical Safety and Risk Management (CSRM) leads the Risk Management & Safety teams for all products, from the beginning of Phase IIb through the end of the product life cycle. CSRM is responsible for the formation of a proactive clinical safety risk-management strategy, including the Risk Management Plan, which is a regulatory requirement in many countries for marketed drugs and vaccines.

Development of the overall risk-management strategy incorporates all available internal information (e.g., basic research data and animal and human studies with the product and/or related products) and external information (e.g., literature and public data related to the class of drugs and/or therapeutic target) that contribute to the overall risk-benefit assessment of the product. The strategy focuses on activities needed to identify, evaluate and manage potential patient-safety risks. The Risk Management & Safety teams address patient safety using product labeling, physician and patient educational programs, and other risk-minimization strategies, as appropriate. The Risk Management & Safety teams also implement strategies to determine the effectiveness of these interventions, as appropriate.

**SafetyMatters Initiative:** The goal of our company's SafetyMatters Initiative is to explore and implement the appropriate use of emerging technologies and methods for the identification and evaluation of health outcomes of interest (HOIs), and to further improve post-licensure monitoring and evaluation of our marketed products. A cornerstone of SafetyMatters is the proactive development and utilization, as needed, of disease cohorts (i.e., groups of patients identified as having specific conditions of interest) based on data contained in large medical claims and electronic health-record databases licensed by our company. As of May 1, 2017, our company's Pharmacoepidemiology and Database Research Unit has successfully created and utilized 30 SafetyMatters Disease Cohorts in 18 product-specific areas. The proactive development of these cohorts greatly facilitates our ability to effectively and promptly respond to many internal or external inquiries about the epidemiology of these diseases and their treatment.

**Product label reviews:** The ongoing oversight and monitoring of our product labels are a major focus of our safety efforts. Our label review teams monitor information on our products and work with our product Risk Management & Safety teams to develop or update product labeling. We communicate relevant information regularly to regulatory agencies worldwide.

**Innovation in Medical Evidence Development and Surveillance (IMEDS):** The IMEDS program is a public-private partnership within the Reagan-Udall Foundation for the Food and Drug Administration (FDA). The aims of IMEDS are to advance the science and tools necessary to support post-marketing evidence generation on regulated products, including safety surveillance and evaluations, and to facilitate the utilization of a robust secondary electronic health care data platform for generating better evidence on the safety and effectiveness of regulated products in post-market settings. Partners in IMEDS include the FDA, pharmaceutical companies, academia and patient organizations.

Our company supports IMEDS by providing an annual grant as a founding member to support its mission as well as through representation on the Scientific Advisory Committee of IMEDS. We continue to explore synergies and linkages between IMEDS and our own SafetyMatters Initiative to establish standards for the use of modern epidemiology data sources and analytic techniques for evaluating product safety in observational claims and electronic health-record databases.

## PRODUCT SAFETY

We rigorously study our products, and work with regulators and health care professionals over many years to characterize their safety profiles. Initially, test compounds are evaluated in the laboratory. If they pass stringent laboratory tests, the compounds move into [next-stage testing in animals](#). Only a few compounds ever make it that far. If the compound makes it through the animal-testing stage, we then begin [clinical development](#), during which multiple studies are conducted over several years.

Clinical testing begins in Phase I in a small number of people and progresses through Phase III, during which the safety and efficacy of a medicine is rigorously evaluated. If the clinical studies are successful, we submit extensive documentation and data to regulators in a product-licensing application. Before approving a medicine or vaccine for use, regulators scrutinize these extensive data and analyses. Even after a product is approved, we continue to actively monitor the safety of our medicines and vaccines in various ways, including post-marketing studies. If we identify safety issues following a product's approval, we work closely with the regulatory authorities to communicate promptly and appropriately with health care professionals and patients.

## COMMUNICATING ABOUT PRODUCT RISKS

The information leaflets in our product packaging contain information on possible side effects and, if appropriate, how to avoid some potential problems. We include contact details on our corporate website for patients, caregivers and health professionals to report adverse experiences in the United States. Outside the United States, adverse events are reported in accordance with global and any additional local laws and practices.

Depending on label changes and their context, we may determine, in consultation with regulatory agencies, that more extensive communications are appropriate. In such cases, we work with regulatory authorities to contact health care

professionals in a timely manner, so that they can communicate these findings to patients through appropriate mechanisms. Contacting health care professionals might include “Dear Doctor” letters and media releases.

## Adverse Event Reporting

Global Safety manages a global system for the collection, evaluation and reporting of adverse experience (AE) reports received by our company worldwide.

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### REPORTING AN “ADVERSE EXPERIENCE” IN THE U.S.

To speak with one of our health care professionals about our company’s products, or to report an adverse experience with a specific product, please call our company’s National Service Center at 800-444-2080. The Center can assist you Monday through Friday from 8 a.m. to 7 p.m., Eastern Time. Adverse experiences and product-related emergencies can be reported at any time by dialing 800-444-2080.

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Although regulations vary by country, most countries require drug manufacturers to promptly review AE information they receive from any source, domestic or foreign, relating to the use of their products. Manufacturers are also required to have written procedures in place for evaluating and reporting adverse experiences.

In accordance with global regulatory reporting requirements, we have developed a written procedure to provide personnel worldwide (including all contractors) with a consistent and thorough process for identifying, evaluating and reporting AEs occurring in association with the use of our products. Additional detail is provided in procedures covering the reporting of AEs originating in clinical studies and those associated with the use of marketed products. Adherence to these procedures ensures timely and accurate monitoring of the safety profile of our investigational and marketed products globally.

In addition to the submission of individual AE reports to regulatory authorities in accordance with global and local timelines, we also produce aggregate safety reports quarterly, twice a year, or annually as required, for as long as we develop and market a product, for submission to regulatory authorities.

Our Risk Management & Safety teams review adverse experience information received from all sources (foreign or domestic, clinical trials or published literature, or post-marketing) for our products and determine what actions may need to be taken with reference to the evolving safety profile of our products. These teams include physicians and epidemiologists who are trained to review this type of data.

It can be difficult to determine the exact cause of an adverse experience because many patients have more than one condition and may be taking multiple products. Our Global Safety staff takes great care to make sure that AE reporting is as accurate as possible. We review the data to determine if there are any patterns or emerging trends that need additional surveillance or action.

Employees responsible for monitoring and reporting adverse experiences undergo rigorous training. New employees within our research laboratories (including all contract personnel) working in areas related to clinical research and global safety undergo training on our AE policies and procedures when they join the company. All other employees are trained in

AE reporting procedures as part of our [Code of Conduct](#) training.



We conduct clinical trials worldwide to evaluate the safety and efficacy of our products.

#### RESOURCES

[Public Policy Position Statement: Clinical Trial Ethics](#)

[Merck Clinical Trials](#)

[Select Post-Marketing Safety Studies](#)

These trials are fundamental to the development of innovative medicines and vaccines that treat and prevent illness in humans.

Pharmacokinetics refers to what the body does to the drug, while pharmacodynamics refers to what the drug does to the body. If initial testing of these is favorable, additional, larger Phase II studies are initiated to determine the effectiveness of a compound in the affected population, to define appropriate dosing for the compound and to identify any adverse effects that could limit the compound's usefulness.

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In addition to disclosing results of clinical trials, we respond to requests from external researchers to share our clinical trial data.

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If data from the Phase II trials are satisfactory, companies will invest in large-scale Phase III trials to rigorously evaluate the compound's safety and efficacy. Upon satisfactory completion of those trials, companies submit regulatory filings for marketing approval with the appropriate regulatory agencies around the world to have the product candidate approved for marketing.

It is our company's [policy](#) that all investigational studies in human subjects must be conducted in a manner consistent with laws, regulations and guidelines for the protection of human subjects, including those issued by the [International Conference on Harmonisation Good Clinical Practice](#) (ICH GCP). However, individual country regulations and guidelines should remain the primary determinant of specific requirements for the conduct of medical research.

In keeping with the trend in the pharmaceutical industry, significantly more than half of the patients participating in our clinical trials are enrolled outside the U.S., in more than 50 countries. We have a commitment to the study of diverse patient populations, including minorities, women and children, in our clinical trials in all regions of the world. As a result, we strive to obtain information among diverse populations, ensuring a thorough evaluation of the safety and efficacy of our medicines and vaccines. These efforts allow us to seek regulatory approvals throughout the world and thereby offer our

medicines globally to patients who need them.

## Clinical Trials

Our company is committed to the timely registration of clinical trial information and the disclosure of trial results—regardless of their outcome.

We comply with all applicable laws and regulations associated with the registration of clinical trials in publicly accessible registries and subsequent posting of the results from these trials. We have put into place the processes necessary for compliance with the Food and Drug Administration Amendments Act of 2007 and the European Medicines Agency (EMA) clinical trial Directive 2001/20/EC, including those related to clinical trial registration and posting results.

Registration provides patients and physicians with information about clinical trials that are open and are recruiting patients. The registration of trials and posting of results after trials are completed enable medical researchers to have timely information about our medicines and vaccines.

### CLINICAL TRIAL REGISTRATION

We believe that clinical trial registries serve an important function for patients and their health care providers by enabling them to learn about and gain access to relevant clinical trials of experimental treatments or preventive agents. We continually assess changing global requirements for clinical trial registration, and update our clinical processes and practices to make sure the company is compliant with them.

For those who analyze, report or publish the results of clinical trials, a clinical trial registry also provides information on trials in progress and the ability to track such trials over the course of development. We register clinical trials in patients of investigational and marketed products, in which treatment is assigned, that we sponsor and conduct on [www.clinicaltrials.gov](http://www.clinicaltrials.gov), [www.clinicaltrialsregister.eu](http://www.clinicaltrialsregister.eu) and [www.encepp.eu](http://www.encepp.eu) at trial initiation.

For our position on clinical trial registries, [click here](#).

### DISCLOSURE OF CLINICAL TRIAL RESULTS

Our company has long been committed to sharing the results of our clinical trials, regardless of their outcome, in a timely manner. If a clinical trial of a marketed product is terminated early for safety reasons, we will promptly disclose medically important information to regulatory authorities and the public, update the status on [clinicaltrials.gov](http://clinicaltrials.gov) within 30 days, and submit a manuscript to a journal (or post a summary online) within 12 months after the last patient's last visit occurs. If the trial was terminated for efficacy reasons, the results will be disclosed within 12 months after the last patient's last visit occurs. Summaries of terminated trials will provide information about patient disposition, safety and adverse experiences, as well as an explanation as to why the trial was terminated early.

For many years, our company has been committed to publishing the results of hypothesis-testing trials in the peer-reviewed medical literature. Our [Publication Guidelines](#) have been in place since 2003 and are posted online, with periodic updates to incorporate any changes in good publication practices for industry-sponsored clinical trials. These guidelines describe our commitment to publishing complete, balanced and accurate information about the results of our registered clinical trials regardless of their outcome.

How we work with external investigators in order for our clinical trials to produce high-quality manuscripts is also outlined

in our Publication Guidelines. We adhere to the [International Committee of Medical Journal Editors \(ICMJE\)](#) recommendations for authorship, requiring that authors meet all of the following criteria:

- Make substantial contributions to study conception and design, or to acquisition, analysis, or interpretation of data for the work
- Draft the article or revise it critically for important intellectual content
- Give final approval of the version to be published
- Be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Our company adheres to the authorship criteria of respected biomedical journals if their criteria differ from those of the ICMJE. In addition, individuals who do not meet the criteria for authorship, but who provide support, are recognized in acknowledgments when the manuscript is published. Our staff or the contract writers we hire may facilitate the development of a manuscript when the lead author provides oversight and direction; the efforts of the writers will then be acknowledged in the publication.

Our company also adheres to ICMJE or journal-specific guidelines for disclosure of potential conflicts of interest, including both financial and nonfinancial conflicts, for the full author team. Our Protocol Transparency Initiative, a voluntary practice of providing the clinical study protocol to biomedical journals upon submission of a manuscript reporting clinical trial results, allows journal editors and peer reviewers to use this protocol in their evaluation of the manuscript for publication. If the journal accepts the manuscript, we then allow the journal—at its sole discretion—to post key sections of the protocol on its website when the manuscript is published.

## ACCESS TO OUR CLINICAL TRIAL DATA

In addition to disclosing the results of clinical trials, we respond to requests from external researchers to share our clinical trial data. We have multiple clinical trial databases that are of high value to the external clinical research community. We evaluate each request based on criteria that balance the need to advance science with the need to protect intellectual property and confidential information. Our evaluations comply with applicable privacy and data-protection laws, rules and regulations. We are committed to the [PhRMA/EFPIA Principles for Responsible Clinical Trial Data Sharing](#).

Learn more about our policies and perspectives on data sharing:

- [Procedure on Access to Clinical Trial Data](#)
- [Procedure on CSR Synopsis Posting](#)
- [External Scientific Review Board \(ESRB\) Charter](#)

Scientific and medical researchers who wish to submit a proposal for access to our data may send an inquiry by clicking [here](#).

## Clinical Trial Design

All of our clinical trials are designed, conducted and monitored in accordance with the same global standards, whether they take place in the U.S. or elsewhere around the world.

We consider many factors when we design a clinical trial:

- **Our questions and objectives:** Clinical study designs vary according to the specific objectives of the study. For example, the design of a study to assess the efficacy of a medicine in treating a particular condition is different from that of one seeking to determine the optimal dose of a medicine in a particular group of people.
- **Statistical appropriateness and feasibility of conducting the study:** To make sure that trial results are statistically meaningful, it is necessary before the trial begins to determine the number of patients needed to participate. It is also necessary to assess the feasibility of successfully conducting the trial.
- **Acceptability of the trial design by regulatory agencies:** When necessary, our Research Laboratories consult with regulatory agencies on design issues.
- **Ethical perspectives:** We enable patient diversity in our clinical trials to broaden the knowledge of the safety and efficacy of a new drug across different patient populations.

All of our company studies, regardless of the study design, use a standard format:

- The study objectives and endpoints (i.e., measurements) must be clearly stated before the study begins.
- The hypothesis or scientific question being asked by the study must be clearly defined.
- A plan for the analysis of the data must be developed before the trial begins, and finalized before the trial is completed.

The benefits of this format include strengthening the scientific credibility and regulatory acceptability of the results and ensuring the timely data analysis and publication of results.

## CLINICAL TRIAL SITE MONITORING DESIGN, CONDUCT AND OVERSIGHT

In addition to complying with our company's global standards, the conduct of our clinical trials adheres to the [International Conference on Harmonisation Good Clinical Practice](#) (ICH GCP) standards and to the principles that have their origin in the Declaration of Helsinki.

We seek input from local clinical investigators and external consultants with specific, relevant experience when designing our clinical trials. For early clinical trials in Phase II, studies are monitored on an ongoing basis by the clinical director and study team; when appropriate, an internal standing data-monitoring committee (DMC) of MRL senior managers reviews unblinded data from ongoing trials in a prespecified, scientifically acceptable manner. The goals of the DMC are to protect the safety of trial participants and assess whether the risk-benefit profile is favorable. The DMC's recommendations are communicated internally to relevant scientists and can be distributed externally to clinical investigators, review boards or regulatory agencies, as appropriate.

For all Phase III and other clinical trials intended to support registration, studies are monitored by the clinical director and study team. In addition, if unblinded data will need to be monitored to ensure patient safety or to make decisions about continuing a study, a DMC composed of external experts independent of our company is assembled to review and make recommendations to us about the further conduct of the study.

In addition, it is our policy to establish scientific advisory committees composed of both external scientific leaders and our own scientists. With the participation of these committees, we can obtain expert advice on the design of a trial, provide for transparent review and discussion of data, and foster a collaborative approach to the publication and presentation of findings. We also have established a companywide, global approach for assessing clinical safety by implementing internal organ-specific safety boards to support the evaluation and management of organ-specific safety issues.

All protocols and related documents are reviewed and approved by external and independent Institutional Review Boards (IRBs) or Ethical Review Committees (ERCs). We require assurance that patients involved in trials, and/or their legal representatives, understand the procedures and the use and disclosure of personal health information, the use of biological samples, and the risks/benefits involved in a clinical study. A consent form, approved by both our company and the IRB/ERC and translated into a language familiar to the study subject, must be carefully reviewed and signed by all participants to document that their participation in the study is voluntary and informed.

Informed consent is obtained prior to the initiation of any clinical study procedures, including those performed solely to determine eligibility for participation in the trial. In circumstances where patients receive payment or reimbursement for trial participation, the compensation is appropriate for the cost and inconvenience incurred and is clearly outlined in the consent form for full transparency. The consent procedures conform to applicable legal statutes and government regulations concerning research in human subjects and the privacy and security of medical information. If a prospective study participant cannot read the consent form, a patient advocate may read it, with consent documented and witnessed.

In accordance with ICH GCP guidelines, trial sponsors should appoint clinical trial monitors who are trained to monitor the trial adequately. Accordingly, ICH GCP training is mandatory for all of our clinical research associates (CRAs) who monitor clinical trials, as well as for all contract research organizations (CROs) that monitor clinical trials on behalf of our company.

CRAs monitoring on behalf of our company will visit sites throughout the study to ensure that:

- The principal investigator and site staff are qualified and have adequate facilities and equipment to conduct clinical research throughout the duration of the study
- Site staff are adequately trained on the protocol, procedures and equipment
- Site staff adhere to protocol requirements, sponsor's development procedures (DPs) and ICH guidelines
- Clinical supplies are stored and dispensed per protocol
- Regulatory file documents are accurate and maintained per ICH guidelines and sponsor's DPs
- Source documentation, including drug accountability logs, is maintained per ALCOA (attributable, legible, contemporaneous, original and accurate) guidelines
- Subject safety is maintained through review of source documentation, including drug accountability logs
- Data reported to the sponsor are accurate and reported per sponsor requirements

## PROTECTING PERSONAL HEALTH INFORMATION

We are a member of the [International Pharmaceutical Privacy Consortium](#) (IPPC), an association of research-based pharmaceutical companies formed in 2002 that has worldwide responsibility for the protection of personal health information and other types of personal data. We have been actively involved in the IPPC since 2006, in order to engage in a constructive dialogue with European data-protection authorities and other regulators on privacy standards for biomedical research.

## CONTRACT RESEARCH ORGANIZATIONS

Our company's primary clinical trial operating model includes the use of clinical research organizations on a limited basis. The use of CROs is generally reserved for circumstances such as:

- A company acquisition that includes clinical trial work already outsourced to CROs
- Clinical trial work that requires a large, rapid and global deployment of resources for a finite period of time
- A need for access to development markets that fall outside our company's own development footprint
- Therapeutic indications that draw on a CRO's specific development expertise in areas where our company does not have specific development execution experience (this is infrequent, given our breadth and depth)

When engaging a CRO, we perform rigorous capability assessments to ensure that the CRO has procedures, infrastructure and expertise that are adequate to ensure compliance with Good Clinical Practice (GCP) standards, and are aligned with our own [Code of Conduct](#).

Due diligence is performed and remedies implemented on CROs previously working for a company that is then acquired by

our company. Clinical trial teams within our company oversee the studies being run by CROs, and periodic audits are performed on CROs with which we do business. If and when we identify violations of the contract or GCP standards, we work with the CRO on a corrective action plan.

If improvements are not made within a defined period of time, or if repeat violations are noted and unsatisfactorily remediated, we will limit and possibly cease future award opportunities with the CRO until the issues have been fully remediated. Importantly, our expectations of the performance of CROs we engage with are no different from the expectations we have of our internally managed projects.

## Post-Marketing

We regularly monitor the effectiveness and safety profiles of our marketed products and conduct formal post-marketing studies to evaluate signals of serious safety concerns about our products, including those requested by regulatory agencies.

We conduct several types of studies after approval, as appropriate:

- **Commitments to regulatory authorities:** For some products, regulatory authorities require companies to conduct additional interventional or noninterventional studies after the product is approved. A study could be required for multiple reasons, such as obtaining further information on the safety of the product. We work closely with regulatory authorities to design a study that will fulfill the specific requirement.
- **Epidemiological studies:** We have a long history of working closely with external experts in pharmacoepidemiology to understand the types of patients utilizing our products, as well as to examine the effectiveness and safety profiles of many of our marketed products as they are used in clinical practice in health care systems based in several different populations.
- **Pregnancy registries:** For some products, we have systems of active data collection that can facilitate the early detection of teratogenicity, or interactions that alter normal embryonic development, and other serious adverse experiences in patients who, inadvertently or purposefully, use a particular drug during pregnancy. Useful information about the effects of exposure in pregnancy can best be obtained by the careful collection and analysis of post-marketing surveillance data. Reports of the aggregate data in each registry are updated annually and shared with regulatory authorities.

### POST-MARKETING SAFETY STUDIES

We monitor the use and safety of our products, and we have a long history of conducting post-marketing safety studies to examine our products as they are used in clinical practice.

We also work closely with external experts in pharmacoepidemiology and drug utilization to examine the utilization and safety of our marketed products as they are used in health care systems based in several populations. These include Kaiser-Permanente (KP) Southern California, KP Northern California, United Healthcare, Pennsylvania and New Jersey Medicare, Harvard Pilgrim Health Care, Nordic Country Registries, the Clinical Practice Research Database, and Mayo Clinic Olmsted County, Minnesota.

To see select post-marketing safety studies, please [click here](#).

# Performance

## PHASE II-V CLINICAL TRIALS

PATIENTS BY REGION	2012	2013	2014	2015	2016
Asia Pacific	16%	35%	49%	21%	25%
Central & Eastern Europe, Middle East & Africa	5%	8%	7%	7%	12%
European Economic Area	26%	33%	21%	22%	36%
The Americas	6%	10%	7%	5%	10%
U.S.	46%	14%	16%	46%	17%

TRIAL DISCLOSURE ACTIVITIES	2012	2013	2014	2015	2016
Manuscripts of clinical trial results and related papers submitted to peer-reviewed journals	238	137	146	216	152
Number of GCP/PV inspections conducted by regulatory agencies worldwide	44	149	99	119	103

NUMBER OF NEW PRODUCT & DEVICE REGISTRATIONS	2012	2013	2014	2015	2016
Asia Pacific	64	39	31	43	38
Central & Eastern Europe, Middle East & Africa	61	60	63	49	54
European Economic Area	29	28	22	22	8
The Americas	47	50	52	39	40
U.S.	3	2	8	3	3

GCP/PV AUDITS	2012	2013*	2014	2015	2016**
GCP/PV audits by regulatory agencies of the company or clinical trial investigators that led to significant fines, penalties, warning letters or product seizures	0	-	0	0	-

\* Complete Response Letter Received for Sugammadex (MK-8616)

\*\* Complete Response Letter Received for Januvia (sitagliptin; MK-0431)



Laboratory animal research is indispensable to the discovery, development, manufacture and marketing of innovative medicines that treat and prevent disease.

Our company is dedicated to the ethical and responsible treatment of all animals used in the development of medicines and vaccines. Decisions regarding animal care, use and welfare are made by balancing scientific knowledge and regulatory requirements with consideration of ethical and societal values.

Any investigator proposing a study that may involve discomfort or distress, even if it is relieved by analgesics or anesthetics, must perform a literature search to assure that there is no viable alternative methodology. It is important to note that a large variety of nonanimal (in vitro, or test tube) studies are performed at our company prior to or instead of animal studies. Research animals are used only to address important scientific questions or fulfill a regulatory requirement. Animals involved in research within MRL are all bred specifically for research purposes.

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To promote our commitment, we subscribe to the “3 Rs”—replacement, reduction and refinement—for animal-based research.

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In our research laboratories, 96.8 percent of the research animals are rodents. The care and use of laboratory animals in biomedical research is highly regulated. In general, the regulations govern housing, feeding, veterinary care, and research project review conducted by the Institutional Animal Care and Use Committee (IACUC)/Ethical Review Committee (ERC), as well as unannounced government inspections. Our animal facilities are staffed with veterinarians and professional animal care technicians trained and certified as research-animal experts.

## ANIMAL RESEARCH OVERSIGHT

Animal research is highly regulated and monitored by the government, and is also internally monitored by our Quality Assurance (QA) Animal Welfare department. The QA Animal Welfare audit program is a comprehensive, risk-based audit and oversight program function designed to ensure that the Animal Care and Use Program at each research site meets relevant, local standards and is in compliance with all applicable legal requirements covering animal research.

Additionally, all of our company sites hosting animal-based research have active and engaged IACUCs or ERCs that review,

approve and monitor research studies. The committee membership includes veterinarians and scientists knowledgeable in animal-based research and, often, nonscientists and community members. Committees review proposed animal studies and animal care facilities and investigate, as appropriate, any research-animal welfare concerns. The IACUCs/ERCs regularly communicate with and provide status reports to our company's institutional officials regarding animal welfare compliance.

Global policies and guidelines governing appropriate animal research practices are in place and are kept up to date. These standards for the care and use of animals in studies meet or exceed applicable local, national and international laws and regulations.

U.S. regulations and annual inspection results can be found [here](#).

The European Directive 2010/63/EU can be found [here](#).

As further evidence of our commitment to the highest level of animal care, our research sites voluntarily secured a third-party review and accreditation of our animal research programs and facilities by the [Association for Assessment and Accreditation of Laboratory Animal Care International](#) (AAALAC), an external, independent organization.

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**As of the end of 2016, all of our MRL research facilities were accredited by  
AAALAC.**

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Our scientists whose work involves research animals are trained to perform the duties required. Training includes review of regulations and policies, instruction on how to search for animal research alternatives, explanation of the role of the IACUCs/ERCs and training on how to raise concerns about misconduct. Qualified veterinarians work with the scientific staff to consult on and assist with all animal-related research projects. Our company places a high value on its animal welfare stewardship responsibility; violation of these policies is grounds for employee disciplinary action, up to and including dismissal.

## **CONTRACT RESEARCH**

We perform due diligence on and monitor contract laboratories that perform animal studies on our behalf to ensure that our company's expectations for animal care and use and regulatory compliance are met. All agreements with contract laboratories include terms regarding our company's expectations for animal care and use as well as regulatory compliance. Additionally, animal research conducted at contract laboratories is subject to protocol review by a company's IACUC/ERC or an equivalent committee. Noncompliance with regulations or standards can lead to termination of the relationship.

## **SUPPORT FOR ANIMAL SCIENCE AND RESEARCH ANIMAL WELL-BEING**

We also advocate for the development of best practices and dissemination of information by supporting and participating with nongovernmental organizations to foster a greater understanding of biomedical research, advancements in research-animal science and the development of alternatives to animal use.

## REPLACEMENT, REDUCTION AND REFINEMENT

We are committed to the philosophy of using the best scientific methodologies and animal alternatives whenever possible or permissible by law. To promote this commitment we subscribe to the “3 Rs”—replacement, reduction and refinement—for animal-based research.

**Replacement** — using nonanimal systems or less-sentient species (e.g., cell cultures, computer modeling, bacterial assays, and fly or worm models). Our scientists have access to specialized software that searches the scientific literature for viable alternatives to animal research. In addition, the company employs information specialists in our research library, trained by the Animal Welfare Information Center of the U.S. National Agricultural Library, to assist our scientists in identifying potential animal alternatives. We also have extensive in vitro expertise and investments, including an in vitro department that develops and utilizes nonanimal research methods (cell cultures) in the discovery and development of new medicines and therapies, and experts in computer modeling and simulation.

**Reduction** — using the minimum number of research animals necessary to obtain valid scientific data. Sophisticated animal models that yield precise data, such as telemetric monitoring models that monitor ECG and blood pressure, reduce the number of animals needed. In addition to state-of-the-art data collection and sharing systems, we have statisticians on staff who advise on study design and analysis in order to minimize the number of animals included in a study.

**Refinement** — minimizing distress or discomfort. Our scientists conduct extensive literature reviews to choose the best scientific models and design the most effective studies. When animals are required for a study, anesthetics, analgesics and tranquilizers are used whenever possible to minimize or eliminate potential pain or distress.

Our company’s Animal Welfare group collects, promotes and internally disseminates information on the principles and practice of the 3 Rs. Training on the 3 Rs is part of staff orientation for animal research. It is our responsibility to use the most appropriate methodology and to aggressively seek scientifically valid 3-R approaches to animal research. As an example of the third R, refinement, we have created a world-class imaging department that allows scientists to view cancers and other pathologic diseases in animals and monitor the long-term effectiveness of new treatments in a noninvasive manner. In addition, we have voluntarily made the decision not to use chimpanzees (nor to fund their use directly or indirectly in studies by external research partners) in biomedical research in the foreseeable future. Recent scientific advances now allow researchers to use alternative methodologies that in many circumstances replace the need for chimpanzees in biomedical research.

## INTERNAL ANIMAL ALTERNATIVE AWARD

Since 1994, in support of the 3-R philosophy, we have presented an Animal Alternative Award annually to the team or teams of our company’s scientists that develop new techniques to support the alternative principle and publish their work to share innovations with the greater scientific community. Awards have been given for developing and utilizing an in vitro liver screening assay, reducing the number of animals used by utilizing sophisticated telemetric monitoring, replacing a dog model with a guinea pig model, and applying imaging techniques such as MRI to reduce the number of animals needed for tumor studies.



## We're collaborating with academia, globally, to educate tomorrow's doctors about biopharmaceutical development.

The rigorous medical school curriculum is designed to give future physicians the information and skills they need to begin clinical practice. For most, clinical practice will inevitably mean prescribing a medicine or vaccine to a patient. Yet few medical students are trained to understand the drug development process or how pharmaceutical research can be applied to patient care. In 2010, our company and the Yale School of Medicine collaborated to bridge this knowledge gap.

Our Drug Development Program, in partnership with Yale University, is a comprehensive, seven-module, 10-hour Web-based course established for second-year medical students and graduate students in health sciences, and includes a new module on vaccine development and clinical vaccinology.

Authored by our company's scientists and medical professionals and approved by Yale faculty, the program has been implemented by more than 75 academic institutions in 21 countries. It consists of an interactive course that takes students through the development process, from target identification and validation through clinical trials, the regulatory review process and post-approval monitoring.

A second course, the Principles of Clinical Research and Design (PCRD), was developed in 2011 in response to a call for action from the then newly created National Center for Advancing Translational Sciences' Clinical and Translational Science Awards (CTSA) program to foster new collaborations between academia and industry.

Additionally, many universities outside of the U.S. requested information to help them better understand how clinical studies are designed and implemented. The course includes topics addressing both interventional and non-interventional studies, and addresses the concepts of bias and confounding, randomization, and blinding, among others.

Today, these courses are part of the Global Scientific Education Initiative in our Global Center of Scientific Affairs, within our company's research laboratories. The Web-based initiative focuses on working with academia to develop and share high-quality, balanced, unbranded education on translational science topics.

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**“We are very pleased to continue supporting the Global Scientific Education Initiative, which is a unique platform for students and investigators to learn about the drug development process.”**

**Sean P. Curtis, MD**  
**Head, Global Scientific Affairs**

Since the Global Scientific Education Initiative was first introduced, the courses have been translated from English into five additional languages (Spanish, Mandarin Chinese, Japanese, Turkish and Russian). The program has expanded to serve students in other health disciplines and graduate programs. At the University of Texas Graduate School of Biomedical Sciences, the courses are open to all students interested in potential careers in biotechnology and the pharmaceutical industry.

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“The students like the interactivity and big-picture approach of this translational educational material and how it explains the complexity of drug development.”

Zhiqiang An, Ph.D.

Professor and Robert A. Welch Distinguished University Chair in Chemistry  
University of Texas Health Science Center at Houston

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All six language versions of the new Web program are completed and a new version in Vietnamese will be completed by the end of 2017.



## Many of the most advanced scientific technologies in regenerative medicine involve animal or human embryonic stem cells.

Together with the scientific community, we believe that research using stem cells has the potential to help identify medicines, therapies and vaccines that will treat, cure or prevent diseases and alleviate the suffering of patients with significant unmet medical needs. Examples include Parkinson's disease, cancer, cardiovascular disease, diabetes, osteoarthritis and trauma. We have been conducting research into the biology of stem cells for more than a decade. This research has involved the use of animal and human stem cells, as well as induced pluripotent stem cells.

We conduct research using stem cells in full accordance with all applicable laws and regulations and our own internal research policies. Our research policy involving stem cells adheres to the [U.S. National Academy of Sciences](#) guidelines as well as those of the [International Society of Stem Cell Research](#). Our company's Regenerative Medicine Oversight Committee, which comprises both internal and external experts, oversees company-sponsored research involving stem cells, including highly targeted research using human embryonic stem cells and induced pluripotent stem cells. The committee is responsible for ensuring that all projects involving stem cells adhere to our policies.



The rapid development of new technologies that interrogate variability in human DNA, combined with powerful computing hardware and software, has made it practical to investigate genetic determinants for risk of human disease or predictors of human response to drugs.

Our company conducts genetic research within our own clinical trials and in collaboration with external organizations that have collected human genetic samples and health data.

Collecting genetic samples is a critical foundation for human genetic research strategies. We collect genetic samples in our clinical trials primarily to understand how variable genetics impact patient response to medicines. This enables us to communicate information to regulatory authorities and prescribers that will improve the use of our medicines. It also enables us to understand how genetics contribute to the underlying disease, which has potential to identify new drug targets for that disease. We also collect genetic samples outside of our clinical trials, often in collaboration with academic institutions or pre-competitive consortia. This is an important way of leveraging many of the large-scale “biobanking” efforts that are underway globally.

During clinical trials, we obtain appropriate subject consent for use of the genetic samples in accordance with the ethical principles that have their origin in the Declaration of Helsinki, U.S. FDA requirements (21 CFR 50.20, 50.25 and 50.27), the International Conference on Harmonisation (ICH) E6 Good Clinical Practices guidelines, and the 1997 UNESCO Declaration on the Human Genome and Human Rights.

When collaborating with external organizations, we ensure that consent has been obtained by individuals who have contributed DNA and/or health-related data to the organization via these same standards.



## Biologics & Biosimilars

We focus on building our biologics capabilities and pipeline and delivering high-quality biosimilar products to help meet the growing needs of patients and health care systems worldwide.

### RESOURCES

[Public Policy Position Statement: Biosimilars and Originator Biologics](#)

Biologics have revolutionized the treatment of patients suffering from some of the most debilitating and life-threatening diseases, and the potential for discovering novel biological therapies remains high.

In addition to our robust and expanding pipeline of originator biological products to address unmet medical needs, we believe high-quality biosimilars can facilitate access to these lifesaving biological medicines for patients across the globe, while respecting the intellectual property rights of the originator.

### PORTFOLIO AND PARTNERSHIPS

We are developing a diversified portfolio of innovative biologic candidates targeting several important clinical indications, including oncology (building on our knowledge of immune evasion by cancer), infectious diseases and cardiovascular disease.

In February 2015, we entered into a broad strategic collaboration with [NGM Biopharmaceuticals, Inc.](#), to discover, develop and commercialize novel biologic therapies across a wide range of therapeutic areas. The collaboration includes multiple therapeutic candidates currently in preclinical development at NGM, including one being evaluated for the treatment of diabetes, obesity and nonalcoholic steatohepatitis (NASH).

In September 2014, we entered into an exclusive worldwide licensing agreement (through respective subsidiaries) with [Sun Pharmaceuticals Industries, Ltd.](#), for licensing out tildrakizumab, our investigational therapeutic antibody candidate currently in late-stage clinical trials for the treatment of chronic plaque psoriasis.

In 2013, we entered into an agreement with [Samsung Bioepis Co., Ltd.](#), to develop and commercialize multiple biosimilar candidates in our partnered territories. Since 2013, this partnership has made significant progress on a portfolio that includes biosimilar candidates in immunology, oncology and diabetes, with six late-stage biosimilar candidates expected to be filed with regulatory authorities in our territories. Through April 2017, RENFLEXIS (infliximab) has been approved in Australia, Korea and the United States; BRENZYS (etanercept) has been approved in Australia, Canada and Korea; and LUSDUNA (insulin glargine) has been approved in the European Union.

## PUBLIC POLICY

Our advocacy position on biologics and biosimilars is built upon a foundational objective of seeking to improve health outcomes while maintaining patient safety. All of our policies associated with biologics, biosimilars or any other drug regulation are motivated first and foremost by our focus on the patient.

Our advocacy recognizes the complexity of all biologic products, both innovator biologics and biosimilars, and seeks to establish sound policy parameters for the development and use of biologics to ensure that patients have access to high-quality, safe and effective medicines. Our policies regarding biologics and biosimilars are based on science, and reflect a balanced approach consistent with our status as a developer of both biosimilars and originator biologics.

For more information, please refer to our public policy statement on [Biosimilars and Originator Biologics](#).



Through a systematic and critical evaluation of our capabilities and an analysis of unmet medical needs, we prioritize our research and development efforts and focus on candidates that we believe represent breakthrough science that will make a difference for patients and payers.

Our current pipeline and list of marketed products are aligned with major global burdens of disease, based on the [Global Burden of Disease 2015 \(GBD 2015\)](#) study.

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Our company addresses 88 percent of the top 20 global burdens of illness.

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As defined by the GBD2010 Visualization tools developed by the [Institute for Health Metrics and Evaluation](#) (IHME), the diseases that we address rank high on the list of worldwide causes of death. Our research into vaccines and infectious diseases addresses major burdens of disease that are prevalent in all countries, and our preventive treatments could have the greatest impact in the developing world, where health care infrastructure is weak or nonexistent. Considering [our pipeline](#) and the list of products we currently market, we estimate that our company addresses 88 percent of the top 20 global burdens of disease as defined by the IHME, excluding road injury, self-harm and preterm birth complications.



Our vision is to be the most trusted and competitive supplier of pharmaceuticals, animal health products, vaccines and biologics to the world's patients and customers.

Our company is committed to providing patients and customers with a reliable supply of high-quality, safe and effective medicines and vaccines. Our global supply strategy leverages both our internal manufacturing capabilities and those of external manufacturers that provide specialized skills, expertise and various types of manufacturing services.

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We manufacture and package products that we distribute to more than 163 markets.

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## OUR COMMITMENTS

- We will maintain strict quality standards and effective supply-chain management to ensure the efficacy, safety and supply of our products no matter where they are manufactured
- We will sustain an interdependent, flexible supply chain to take into account global and local market supply needs
- We will engage and invest in local and regional partnerships to enable market access

We manufacture and package products that we distribute to more than 163 markets around the world. Our facilities, along with those of our external contractors, suppliers and partners, make up an integrated, interdependent global manufacturing network that is committed to delivering compliant, reliable supply to customers and patients on time, all the time, and every time.

Our product quality and safety processes and procedures are broad in scope and include stringent standards as well as compliance education and training. We also support industry and regulatory efforts to develop and optimize quality and manufacturing standards worldwide, including alignment with those of the [International Conference on Harmonization](#). Our commitments in this area are unequivocal, and are essential to our role as a global healthcare leader.

We seek to develop the capacity and capability to serve a significant proportion of the world's population. Our manufacturing division has undertaken an ambitious program to reduce the cost of production by reducing underutilized capacity, increasing efficiency through Lean and Six Sigma projects at manufacturing sites, reducing procurement

spending and improving supply performance, including on-time deliveries and the reduction of supply shortages.

We have entered into manufacturing and supply agreements with local manufacturing partners to broaden access to our products in local markets. We strive to forge relationships with partners that meet our standards for quality manufacturing and distribution, and today have 148 external manufacturing sites, 34 global alliances and 145 regional alliances that we engage with to provide access to our products.

We manufacture approximately 12,000 product size finishes, and in 2016 produced approximately 90 billion doses of animal health vaccines.

Our global supply-chain strategy is designed to ensure that we are operating a lean and efficient network while complying with rigorous quality, safety and environmental standards.

We remain committed to the development and commercialization of our products and to ensuring that we are a reliable global supplier of quality vaccines and medicines. In 2016, we launched new products in major markets with eleven filings and five launches with sustained supply. We are implementing continuous manufacturing for six small-molecule products with planned submissions in 2017 and beyond.

We continue to optimize our manufacturing capacity for most vaccines, including, as appropriate, redundancy in our supply chain for certain vaccines, so that we eliminate supply disruptions when temporary issues arise in manufacturing.

In 2016 we launched our new “Manufacturing the Future” strategy to continue our mission of achieving world-class manufacturing and supply status by 2020: Delivering uninterrupted, unconstrained, highest-quality supply at the lowest cost and with the shortest lead times. In this strategy, we will maintain our priorities of compliance, supply, profit plan and people, embracing a mantra of “Safety First. Quality Always.”

There are five principal elements to the strategy:

- **Stability:** Striving for safety, regulatory compliance and reliable supply
- **Responsiveness:** Advancing agile end-to-end supply chains, best-in-class cost of goods sold (COGS) and working capital
- **Innovation:** Demonstrating excellence in key technologies and novel approaches to operations and customers
- **Biologics:** Building our large-molecule capacities and mind-sets
- **Diverse Talent:** Developing new and enhanced capabilities in all Manufacturing Division people

This strategy will ensure that we enable our company to bring, in the words of George W. Merck, “our finest achievements to everyone.”

For example, we remain on track to have our facility in Carlow, Ireland, approved to fill GARDASIL®9 (Human Papillomavirus 9-valent Vaccine, Recombinant), our 9-valent HPV vaccine, in 2017.

In addition, [we have committed to investing \\$168 million](#) to upgrade and expand our manufacturing operation in Elkton, Virginia. In future years we will upgrade plant infrastructure, add manufacturing-related facilities and equipment, and undertake a personnel-training initiative to support the bioprocessing environment.

We continue to focus on internal and external strategies that reduce cost and increase capacity to meet growing supply needs around the world.

## Performance

MANUFACTURING & SUPPLY SUMMARY	2012	2013	2014	2015	2016
Number of local and regional manufacturing partnerships to enable access	84	68	104	179	179
Number of products available through local and regional partnerships	34	354	499	1,157	941



## Quality & Safety Standards

In everything we do—from research and development to the manufacturing and distribution of our medicines, vaccines and other products—safety, quality and efficacy are our primary considerations.

Our quality strategy is focused on ensuring reliable, compliant supply to our customers, assuring that our products are there when people need them, and having an engaged and capable workforce to ensure and sustain future success.

We apply and adhere to a strict set of quality standards, and we have policies and procedures in place to identify, measure, control and sustain product-quality excellence. We continuously strive to improve these standards in order to enhance procedures and ensure ongoing compliance with [Current Good Manufacturing Practices \(CGMPs\)](#).

We provide appropriate and ongoing training on quality and CGMPs for our employees, so they are prepared to perform their duties effectively. Our system not only ensures that all applicable employees are trained, but also monitors the effectiveness of training.

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**We maintain strict quality standards no matter where our products are manufactured.**

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All manufacturing facilities that we own and operate, and any company from which we purchase formulated pharmaceuticals, active ingredients or sterile products, must comply with CGMPs. These standards include requirements for incoming materials and the manufacturing, storage, handling and distribution of products.

Counterfeit products are a growing global problem and a serious threat to public health. We believe that maintaining the integrity of our supply chain is of paramount importance. Our corporate global anti-counterfeiting program has three primary goals: securing the supply chain; deterring, rapidly detecting and responding to counterfeit activity; and raising public awareness of the risks posed by counterfeits. To learn more about our anti-counterfeiting program, [click here](#).

### **SUPPLIER SELECTION**

We maintain strict quality standards no matter where our products are manufactured. Once we have made a decision to

engage an external manufacturer, that manufacturer is required to comply with our business requirements set forth in the contract, regardless of geography.

We conduct audits of every potential new supplier of active pharmaceutical ingredients or formulated products and sterile products, to determine its acceptability and compliance with CGMPs. We review the systems that the potential supplier uses to purchase materials in order to ensure the quality of the products the supplier hopes to provide to us. Only if a supplier meets our stringent criteria, which include a review of the company’s regulatory inspection and outcome history, will we then negotiate a commercial agreement. These agreements include detailed provisions relating to the quality standards we require suppliers to uphold in order for them to manufacture a product for our use. To learn more about how we work with external suppliers, [click here](#).

## AUDITS AND INSPECTIONS

Our manufacturing facilities are inspected by international health authorities. In 2016, we had 70 regulatory inspections at our human health and animal health facilities, all of which concluded with satisfactory outcomes.

We conduct periodic audits to further ensure that suppliers continue to meet CGMPs. Through such audits, we evaluate the continued acceptability of the facility from a quality assurance and regulatory compliance perspective.

The frequency of quality auditing depends on a number of factors, including:

- The nature and complexity of the product being manufactured (e.g., whether it is a formulated pharmaceutical, active ingredient or sterile product) and how it is used by our company
- The degree of reliance on supplier test results and previous audit results

Quality tests are performed on all active pharmaceutical ingredients that we purchase as part of our overall supplier-qualification process, and further tests are performed during subsequent stages of manufacturing. Quality tests are performed on all formulated products before we release them to the marketplace.

Testing of chemicals used in the manufacturing of our products is conducted in accordance with our specifications, which in many cases include the applicable pharmacopeia standards (i.e., the United States Pharmacopeia [USP], the European Pharmacopeia [EUP] and the Japanese Pharmacopeia [JP]). The USP is the official standard for all prescription and over-the-counter medicines, dietary supplements and other health care products manufactured and sold in the U.S. These standards are also recognized and used in more than 130 countries.

## Performance

QUALITY & PRODUCT SAFETY	2012	2013	2014	2015	2016
Number of product recalls in the United States <sup>1,2</sup>	4	2	3	3	1
Annual percentage of units manufactured/sold and recalled during a given year (our global recall rate) <sup>1,2</sup>	0.19%	0.11%	0.22%	0.07%	0.01%

NR: Not reported.

1. Definition of Recall Classifications:

<http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049070.htm#RecallClassifications>.

2. Beginning in 2014, product recalls include data from our Animal Health business.

In 2016, we initiated a total of one product recall in the U.S. This was a voluntary action undertaken by the company as part

of our commitment to ensuring product quality. The voluntary recall was for an animal health biological vaccine agreed with and under the jurisdiction of the [U.S. Department of Agriculture](#).



Since 2009, we have invested in a rigorous, intelligence-led anti-counterfeiting strategy that is solely focused on protecting patients from the harm associated with counterfeit, diverted and other illicit medicines. The program today is recognized as an industry-leading effort.

#### RESOURCES

[Public Policy Position Statement: Counterfeiting of Medical Products](#)

Producing, distributing, marketing and/or selling counterfeit pharmaceutical products are serious criminal offenses, and the threat of these actions has become a real and significant risk to global public health. Counterfeit pharmaceuticals can include the wrong doses of an active ingredient, no active ingredient or, in some cases, harmful or poisonous ingredients.

We define a counterfeit medicine as a product that exhibits an unauthorized use of trademark, trade name, other identifying mark, imprint or device, or any likeness thereof, to adulterate, falsely purport or falsely represent a product's or material's identity, source or history. As counterfeiters have become more sophisticated, counterfeit products have become so similar in appearance to authentic products that, without laboratory testing, it is often difficult to tell the authentic from the counterfeit medicines.

The threat to patient safety from counterfeit medicines is not specific to our company. Consequently, we work with industry peers and proactively share anti-counterfeiting intelligence with other pharmaceutical companies as a way of protecting the public and raising awareness.

#### COMMITMENTS

- Continue in the execution of a proactive, worldwide corporate anti-counterfeiting strategy focused on securing the supply chain, detecting and responding to counterfeit events, and raising awareness of the risks of counterfeit pharmaceutical products.
- Take proactive measures to identify, assess and mitigate threats to our patients associated with counterfeit and other fraudulent products.
- Take actions to raise public awareness of the risks posed by counterfeits and advocate for increased enforcement to shape relevant regulatory requirements.
- Maintain the capability and capacity to provide robust forensic analysis of suspect counterfeit, diverted, and illicit medicines. To this end, we have invested in a global forensic laboratory capability that facilitates more innovation and significantly increases our capacity to test suspect products and support enforcement actions.
- Train key stakeholders and business partners in the identification of suspicious activities and/or suspected counterfeit

products.

- Continue to partner with industry groups to provide advocacy on high-priority anti-counterfeiting policy initiatives, and explore new partnership opportunities with patients and other external stakeholders.
- Develop metrics to gauge the impact of specific actions to ensure that resources remain focused on the areas that can have the greatest benefit.
- Continue advocacy efforts to support the development of a standardized system to identify and code medical products, following the passage of the Drug Quality and Security Act (DQSA) in the U.S.
- Develop data analytics and intelligence management capabilities to enhance threat detection and mitigation activities associated with counterfeit and other illicit events, including increased levels of intelligence-sharing within the Pharmaceutical Security Institute (PSI) and other public and private partnerships.
- Comply with all DQSA reporting requirements and associated actions regarding suspect and illegitimate products impacting the U.S. patient population, as set forth in the regulation.

## ANTI-COUNTERFEITING STRATEGY

Ensuring product efficacy and patient safety and protecting our reputation are paramount. We maintain a comprehensive, worldwide anti-counterfeiting strategy and operational program that has three primary strategic deliverables:

- **Product & Supply Chain Security:** Enable product protection through the use of sophisticated product-security features and supply chain security measures. In 2016, we expanded our capacity to provide product protection services with additional resources dedicated to this area of focus.
- **Investigations & Enforcement:** Deter, detect and respond to suspected and/or confirmed counterfeit activity in ways that mitigate risks to patient safety. While we support the entire company product portfolio, in 2016, we established select products for increased focus, specifically: Belsomra<sup>®</sup> (suvorexant), Gardasil<sup>®</sup> [Human Papillomavirus Quadrivalent (Types 6, 11, 16, and 18) Vaccine, Recombinant], Januvia<sup>®</sup> (sitagliptin), Keytruda<sup>®</sup> (pembrolizumab), Zepatier<sup>®</sup> (elbasvir and grazoprevir). These products were selected due to their medical significance and the ensuing threat to patients if counterfeited or sold outside of the regulated supply chain.
- **Advocacy, Engagement & Awareness:** Raise public and stakeholder awareness of the risks posed by counterfeits, and advocate for increased enforcement to shape relevant regulatory requirements. In 2016, we evaluated our current allocation of resources and committed to increasing our focus in this area to strategically enhance our ability to make a long-term impact on patient safety.

To focus our work in this area, our Anti-Counterfeiting Steering Committee oversees our global anti-counterfeiting strategy to ensure that our goals are reached.

The cross-functional team is led by senior leaders from Global Human Health, Quality, Manufacturing, and Global Security. These areas are responsible for marketing and selling our products worldwide, investigating suspected counterfeit events, testing suspected counterfeit products, implementing innovative security measures, and preparing investigative reports.

Other functional areas involved in our anti-counterfeiting efforts include Legal, which manages trademarks and other forms of intellectual property and provides Global Security with information necessary to assist law enforcement and regulators in enforcement efforts; Global Public Policy, which coordinates our advocacy activities to support stronger anti-counterfeiting laws; and Compliance, which liaises with federal regulators in relation to the management of controlled substances.

## ANTI-COUNTERFEITING OPERATIONS

In keeping with our long-standing commitment to providing high-quality, safe and effective medicines and vaccines to patients who need them, we have executed a comprehensive Anti-Counterfeiting Operations Program that delivers on our three primary strategic deliverables.

### Product & Supply Chain Security

We carefully manage our supply chain through strict policies and procedures designed to keep the legitimate drug distribution system safe and secure. In the U.S., for example, we require customers to purchase our products directly from our company or from distributors authorized by our company. In addition, we publish the names of authorized distributors on our corporate [website](#). We conduct risk-based audits of our distributors to ensure compliance with our policies and procedures. Proactive threat assessments are also completed for facilities and supply routes identified to be at risk of cargo thefts and other illicit activity.

Product-security features deployed on our products are a key measure taken to protect patients who use our products. Our pharmaceutical products are protected with best-in-class product-security features, uniquely applied on the basis of a global, risk-based assessment methodology. Our key focus in this assessment is the patient-safety threat should a counterfeit or illegally diverted product of our company be introduced into the supply chain.

Each of our new medicines and vaccines is assessed for risk using this methodology prior to regulatory approval. The risk level assigned to a new product is used to determine which product-security features will be included on the product and packaging prior to the product's market release. A complementary threat assessment is also performed on marketed products for which a credible counterfeit threat has been identified and for which updates to packaging security features may be required.

These product-security features, along with our advanced forensic detection capabilities, enable us to accurately authenticate all finished products in our portfolio.

### Serialization

Serialization—or putting a unique identification number on each package that goes to market—is one of the tools we are investing in to secure our supply chain and prevent counterfeiting. A serial number on individual packages enables anyone along the supply chain—from a distributor to a pharmacist to a patient—to scan the code and authenticate it as a genuine product of our company.

Serialization adds a robust layer to the company's product-security platform. It provides the ability to uniquely identify and rapidly authenticate individual packs. When associated with a regulatory mandate that specifies effective implementation, this method of product tracking can become a more meaningful product-security tool.

Many jurisdictions around the world are requiring serialization on pharmaceutical packages or are considering such mandates. Serialization is required today in China, Turkey, Argentina, South Korea, Nigeria and India, and will soon be required in Saudi Arabia, Brazil, the U.S. and Europe. Unfortunately, each country's regulations are different, making it very challenging for our packaging sites and distribution networks to meet these diverse and complex requirements.

We responded by launching the Global Product Serialization Initiative in 2012, with the goal of meeting these varying requirements in a robust, standardized and effective way. We are working with industry associations and regulatory authorities to help shape these new requirements, and advocate for simple, standardized and common-sense regulations that can be effective at protecting against counterfeit medicines.

### Investigation & Enforcement

Our company's anti-counterfeiting operations are driven by intelligence-led decisions to identify, prioritize and aggressively pursue criminal enterprises responsible for the manufacture and distribution of counterfeit and other illicit medications, and to identify and enable meaningful enforcement actions against those offenders.

We respond to every notification of suspected counterfeit or illicit medicine, in alignment with local regulatory requirements and in support of our global patient-safety mission. We also proactively conduct threat assessments and other risk-based operations to identify offenses that threaten the health and safety of patients. These proactive activities

are intended to identify, assess and develop effective enforcement actions for high-value targets engaged in illegal activities involving our products that have the potential for negative patient-safety impact.

In 2016, the biggest risks to patient safety involved counterfeit versions of our company's products sold in multiple countries, some involving the legitimate supply chain. Several incidents of both inter-market and intra-market diversion of our pharmaceutical products, and multiple cargo thefts and product thefts from MSD or third-party facilities, are also a concern.

Global Security addressed 806 events in 66 countries in 2016 involving counterfeiting, diversion, product theft/loss (including cargo theft), tampering and brand security (non-company, unapproved generic products), which led to 249 arrests and the seizure of more than 66,000 units of counterfeit versions of company products.

Another key aspect of investigations is the forensic analysis of suspect products. This forensic testing is aimed at concluding whether a suspect product is counterfeit, diverted, or otherwise illicit. Counterfeit products are characterized in order to gain further intelligence and understanding of the counterfeiters and the threats to public health. Our company also has forensic detection devices in the field to analyze and detect counterfeits in regions around the world. As counterfeiters improve their skills and techniques, our forensic scientists have pioneered the use of several analytical tools for pharmaceutical-counterfeits detection, and continue to explore new analytical tools that would increase their forensic testing capabilities. Lab findings are shared with regulatory and/or law enforcement agencies, and may be used to support subsequent enforcement actions and legal proceedings. There were 533 unique suspect samples received as evidence and prepared for forensic testing in relation to active events in 2016.

To support and enable enforcement actions, we partner with law enforcement agencies to detect and respond to threats due to counterfeit products. This includes working with U.S. authorities on the importation of counterfeit pharmaceuticals and with EU authorities on the importation and/or trans-shipment of counterfeit pharmaceuticals through the EU. Working with customs authorities, we have helped identify high-risk ports, borders and postal depots, and have provided a framework of action for use by customs authorities to detect and respond to counterfeit activities. This training enables customs agents to identify suspicious pharmaceutical shipments and take appropriate actions to detain suspicious shipments and/or have suspect products analyzed.

### **Advocacy, Engagement and Awareness**

We are committed to cooperating with relevant government agencies, other pharmaceutical manufacturers, wholesalers, distributors, health professionals, consumer groups and key related organizations in fighting the problem of counterfeit pharmaceutical products and in educating the public about the risks of counterfeit products and how to protect against them.

This effort includes a multi-pronged approach to communicating the threat that counterfeit medicines pose and to mitigating this threat as effectively as possible, while recognizing that it cannot be entirely eliminated.

Collaboration and information-sharing in order to raise public and stakeholder awareness of the issue and risks are a crucial focus of our anti-counterfeiting program. Through active partnerships with other pharmaceutical companies, and with organizations focused on security, patient safety and public health, we provide effective advocacy on high-priority anti-counterfeiting policy initiatives.

Highlights of our 2016 activities include:

- We assisted in the distribution and educational efforts of an Asia-Pacific Economic Cooperation (APEC) Online Pharmacy Best Practices Toolkit and Internet Pharmacy Survey for APEC health regulators and law enforcement, educating and engaging 19 APEC economies in the process.
- We launched an awareness campaign in California regarding the dangers of counterfeit medicine with the support of the Los Angeles Sheriff's Department and the Crimestoppers program.
- In the U.S., we maintain strong relationships with key U.S. Government officials such as the U.S.T.R. and the U.S. Intellectual Property Enforcement Coordinator (IPEC) in an effort to promote intra- and intergovernmental action.
- We contributed to multiple educational campaigns regarding the dangers of imported and counterfeit medicine sold through online pharmacies that reached thousands of health care providers, caregivers and older Americans in 2016, including coverage by major media outlets.
- We supported a global Best Practices Guide for IP Enforcement that was distributed to thousands of stakeholders in 2016.

- We launched a joint program focused on improvement of policy and enforcement of pharmaceutical crime in Latin America.
- Our Global Security staff trained more than 7,600 law enforcement and customs officials worldwide.

In keeping with our mission to protect global public health, we actively collaborate with international law enforcement agencies that prioritize the investigation, prosecution and disruption of counterfeit medicines and associated criminal enterprises.

We further support efforts to educate the public about the risks of counterfeit drugs and how to protect against them, as well as efforts to develop industry collaborations to support a unified response to the threat of counterfeit medicines. We have deep partnerships and/or leadership positions with the following organizations:

- [Pharmaceutical Security Institute \(PSI\)](#)
- Association of Industrial Manufacturers Anti-Counterfeit Workstream (ANDI)
- [Alliance for Safe Online Pharmacies—Global \(ASOP Global\)](#)
- [International Chamber of Commerce’s Business Action to Stop Counterfeiting and Piracy \(BASCAP\)](#)
- [International Anti-Counterfeiting Coalition \(IACC\)](#)
- [International Trademark Association Anti-Counterfeit Committee \(INTA ACC\)](#)
- [International Federation of Pharmaceutical Manufacturers \(IFPMA\) Fight the Fakes partnership](#)
- [U.S. Chamber of Commerce’s Global Intellectual Property Center \(GIPC\)](#)
- [Partnership for Safe Medicines \(PSM\)](#)
- [Quality Brands Protection Committee of China Association of Enterprises with Foreign Investment \(QBPC\)](#)
- [Rx360 Consortium](#)

These collaborative efforts support the production of reports, white papers and data-circulation initiatives, as well as promoting the intelligence-sharing necessary to combat threats from counterfeit medicines.

## Public Policy

We support the increased enforcement of existing anti-counterfeiting laws and the adoption of new public policies to strengthen existing laws and enforcement programs, including increased criminal and civil penalties for counterfeiters.

We advocate for such change in a number of ways:

- As a member of the [Alliance for Safe Online Pharmacies – Global](#) and [ASOP-EU](#) we support initiatives and advocacy in the U.S., Europe and Asia to raise awareness about the dangers of illegal online drug sellers and to steer patients to safe sources of medicines.
- As a member of the [Global Intellectual Property Center](#), we support the White House’s Intellectual Property Enforcement Coordinator as well as policy matters related to anti-counterfeiting and enforcement in Congress and with federal agencies.
- As a member of the Pharmaceutical Distribution Security Alliance (PDSA), we supported the passage of the Drug Quality and Security Act (DQSA), U.S. legislation that creates a national system and uniform standards for tracking products across the pharmaceutical supply chain. PDSA includes over 20 partners in the domestic pharmaceutical distribution supply chain working to achieve a national solution toward product tracking.
- We support the [Anti-Counterfeiting Trade Agreement](#), which increases protection against a wide range of intellectual property infringements.
- In 1997, our company and other pharmaceutical companies created the [Pharmaceutical Security Institute \(PSI\)](#) to develop global security strategies focused on both prevention and enforcement in order to ensure public safety and product integrity. We continue to be an active participant in this organization, and are advocating for increased levels of

intelligence sharing among the members.

- Our company supported the SAFE DOSES Act, which was signed into law in the U.S. in October 2012. The bipartisan legislation modernizes the U.S. Criminal Code to increase criminal penalties for medical-product cargo theft and provides law enforcement tools to deter this criminal behavior and take down the organizations that are perpetrating it.
- Our company supported the Trade Facilitation and Enforcement Act, which was signed into law in February 2016. Known as the Customs Reauthorization Act, this bill provides additional resources to Customs and Border Protection (CBP), and formalizes the capacity for public-private partnership to strengthen Intellectual Property enforcement.

## Performance

In 2016 our company addressed 806 active product-integrity events. More than 40 percent of these events have been proactively investigated by Global Security to identify new or emerging product-integrity threats, or to further characterize and mitigate known product-integrity threats.

When a new product-integrity event is initially reviewed, it is assigned to one of five categories:

- Product Theft/Loss
- Brand Security
- Diversion
- Tampering
- Counterfeiting

The following table details the number of Suspected and Substantiated Counterfeit events handled in 2016. The category for any event can change as the event develops and further information is collected, typically as a result of forensic testing or other review of associated samples.

ANTI-COUNTERFEITING SUMMARY	2012	2013	2014	2015	2016
Investigations of suspected counterfeit products	116	222	434	213	220
Substantiated cases of counterfeit products	48	40	107	123	70



We are committed to registering our products in a timely fashion in markets where they are needed in order to better address public health needs.

#### RESOURCES

[Access to Health Statement of Guiding Principles](#)

[Public Policy Statement - IP and Access to Medicines in the Developing World](#)

#### OUR COMMITMENTS

- We will work to initiate registration of our products in all countries where there is a public health need, in a timely manner and in conjunction with local regulatory authorities
- We will work to strengthen the regulatory science capabilities of local regulatory authorities to expedite product registrations
- We will work with the World Health Organization (WHO) to prequalify our products, where appropriate, to expedite access in low-income countries (LICs)

An important goal for our company is to reduce the historic gap in product introduction between developed and developing countries.

One way in which we strive to reach this goal is by prequalifying medicines and vaccines through WHO. WHO prequalification facilitates procurement by UN agencies, which often procure health care products in developing countries in the absence of reliable national medicines authorities that could certify those products as meeting required quality, safety and efficacy standards. The WHO prequalification program covers medicines for HIV, TB, malaria, neglected tropical diseases, influenza, reproductive health and diarrhea, in addition to vaccines. This prequalification is an important step toward fostering global access.

We have also focused on addressing developing-country needs by adding features and product improvements to respond to WHO criteria for vaccines that are candidates for programmatic suitability for prequalification. These features include vaccine vial monitors (VVMs), the acceptability of a two-dose regimen for HPV vaccines, and use in controlled-temperature-chain conditions.

As of December 2016, we have secured WHO prequalification for the following products:

##### Family Planning Products

- EXLUTON®(lynestrenol oral contraceptive)

- IMPLANON® (etonogestrel implant)
- MARVELON® 28 (desogestrel-ethinyl estradiol)
- IMPLANON and IMPLANON NXT® (etonogestrel implant)

#### Vaccines

- GARDASIL® [Human Papillomavirus Quadrivalent (Types 6, 11, 16, 18) Vaccine, Recombinant] including a VVM
- Two-dose regimen for GARDASIL to support its programmatic feasibility in developing countries
- GARDASIL compatibility for use in a controlled temperature chain to facilitate its administration in high-temperature, low-cold-chain infrastructure areas of developing countries
- ROTATEQ® (Rotavirus Vaccine, Live, Oral, Pentavalent)
- MMR-II® (Measles, Mumps, Rubella Virus Vaccine Live)
- PedvaxHIB [Haemophilus b Conjugate Vaccine (Meningococcal Protein Conjugate)]

By the end of 2017 we expect to receive WHO prequalification for:

- GARDASIL® 9, including a two-dose-regimen variation
- VARIVAX® (Varicella Virus Vaccine Live), making it the first varicella vaccine to receive WHO prequalification and to be used in Middle Eastern countries

And in 2018, we intend to seek WHO prequalification for GARDASIL® 9 equipped with a VVM and compatible for use in a controlled-temperature-chain setting.

#### HIV/AIDS Treatments

- STOCRIN® (efavirenz)
- CRIXIVAN® (indinavir sulfate)
- ATRIPLA® (efavirenz 600mg/emtricitabine 200mg, tenofovir disoproxil fumarate 300mg)

In addition, we have submitted ISENTRESS® (raltegravir) for WHO prequalification; the product dossier is currently under review. All of our formulations of ISENTRESS, including the 400 mg tablet, the 100 mg and 25 mg chewable tablets, and the granules for suspension, have been approved by the FDA and EMA, making these formulations eligible for purchase by both the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) program and the Global Fund to Fight AIDS, Tuberculosis and Malaria.

In order to make our products available to the people who need them throughout the world, we registered 143 products and devices in 2016. The majority of these products were registered in low- and middle-income countries in the Asia-Pacific, Central and Eastern Europe, Middle East and Africa, and Americas regions.

## REGISTRATION STATUS

To increase transparency regarding the registration status of the company's products, we continue to disclose registration information for ROTATEQ, GARDASIL and our four antiretrovirals:

- [ROTATEQ](#)
- [GARDASIL](#)
- [ATRIPLA](#)
- [CRIXIVAN](#)
- [ISENTRESS](#)
- [STOCRIN](#)

## INTELLECTUAL PROPERTY AND ACCESS TO MEDICINES IN THE DEVELOPING WORLD

While our company files for patents in commercially significant markets to provide the continued incentive to support innovation, given the inability of most of the population in LICs to afford medicines and the very substantial resource constraints facing their governments, we have had a long-standing general policy of not filing for patents for our products in LICs, and currently do not file in any LIC defined as such by the World Bank in its Country and Lending Groups classifications. Moreover, as evidenced by our [announcement together with the Medicines Patent Pool](#) of a licensing agreement for pediatric formulations of raltegravir (a key medicine approved for children under 12 years of age living with HIV) covering 92 low- and lower-middle-income countries, we are committed to expanding access to medicines globally, including through the availability of high-quality generics in developing countries.

Learn more about our commitment to register our:

- [HIV/AIDS medicines](#)
- [Women's health products](#)
- [Vaccines](#)

View our public policy statement, [Intellectual Property and Access to Medicines in the Developing World](#).

## Performance

### PRODUCT REGISTRATION PERFORMANCE DATA

	2012	2013	2014	2015	2016
New product and device registrations <sup>1,2,3</sup>	204	179	176	156	143
Local regulatory agency GCP/PV training requests fulfilled that will help strengthen agencies' capabilities with their GCP/PV compliance oversight role <sup>4</sup>					Online
Products submitted that have achieved WHO prequalification (cumulative)	10	11	11	11	11

1. Data include new products and new indications.

2. For information on new registrations by region, visit our [Clinical Research](#) section.

3. Data for all years have been updated based on a tracking system upgrade that corrected miscounts in prior years.

4. For information on local regulatory agency GCP/PV training requests, visit our [Clinical Research](#) section.



We are working to find new ways to bring our medicines and vaccines to more people around the world than ever before, and to make them as accessible and affordable as possible for the patients who need them.

#### RESOURCES

[Access to Health Statement of Guiding Principles](#)  
[Pricing Action Transparency Report \(2016\)](#)

To that end, we strive to commercialize our products in a way that both develops our business and meets local needs in a responsible and efficient manner.

#### OUR COMMITMENTS

- We will price our products through differential pricing frameworks, taking into consideration the level of economic development, the distribution channel and the public health need
- Across and within countries, we will seek to identify innovative and sustainable strategies for differential pricing or other commercial approaches that allow for greater flexibility to better reach at-need segments, pursuing partnerships with private, government or nonprofit resources and distribution channels
- We will evaluate and address public health needs by working with local health care providers globally to increase knowledge of product need and use; we will invest in activities to improve patient awareness and education

In many countries, public and private health insurance plans are able to negotiate significant rebates and discounts with pharmaceutical manufacturers that enable patients to obtain health care and medicines at competitive prices.

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We have differential pricing for 40 of our products, and 123 countries have implemented inter- or intra-country pricing for at least one of them.

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For people in the United States who do not have prescription drug or health insurance coverage and who, without

assistance, could not afford our company's medicines or vaccines, our [Patient Assistance Programs](#) provide medicines and adult vaccines for free.

We recognize that in developing-world markets, access to and funding for health care can be limited. Therefore, we develop and support various sustainable strategies to improve access, including directing differential pricing to patient sub-segments. Currently, we have differential pricing for 40 of our products, and 123 countries have implemented inter- or intra-country pricing for at least one of our products. More specifically, initiatives expanding innovative concession program offers for our hepatitis C virus and women's health product portfolios in low- and middle-income markets, and the renewal of our Pan American Health Organization (PAHO) agreement supported by additional price concessions covering several of our vaccine products, have contributed significantly to this notable increase of our differentiated prices in both the scope of our products and eligible countries. We remain committed to continued growth in identifying and implementing opportunities to support access through differential pricing.

In developing-world markets, our pricing strategies include directing differential pricing to at-need patient sub-segments, either directly through national or local programs or indirectly through third-party health care funding sources that demonstrate reasonable and secure product distribution to intended patient segments and subject to applicable legal requirements.

For example, we are engaged with stakeholders within the family planning community, including the [United Nations Population Fund \(UNFP\)](#), [Marie Stopes International \(MSI\)](#), [Population Services International \(PSI\)](#) and the [United States Agency for International Development \(USAID\)](#), to support advocacy of the "Total Market Approach (TMA)" in key markets to help governments better target subsidized products, help the public sector focus on the poorest segments of the population, increase the ability of the private sector to serve middle-income tiers of the population, and decrease overall donor funding dependency. TMA leverages market efficiencies, helps expand equitable access and encourages intra-country price tiers based on economic population segments. [Learn more](#) about our access approaches in low-income countries for our implantable contraceptive product IMPLANON® (etonogestrel implant).

We believe that providing support through grants to third-party medical, scientific and patient organizations is an important way to advance mutual objectives to improve health and advance patient care. We have robust standards and policies in place to ensure that our grants support a full range of research and activities important to health care improvement. [Learn more](#).

We will continue to champion innovative programs and partnerships to help increase the availability and accessibility of our medicines and vaccines for those who need them.

## Pricing and Access

We understand that people are concerned about the costs associated with health care in general, and prescription drugs in particular.

After all, we're patients too. That's why we are committed to doing our part to help more patients obtain and afford the medicines and vaccines they need.

In keeping with George W. Merck's timeless wisdom that "medicine is for the people," we keep prices as low as possible for patients today while continuously pursuing the discovery of new medicines—and making the critical investments that will empower our scientists to invent the cures and treatments of tomorrow.

We approach pricing our medicines and vaccines from the perspective of value. And while value can mean different things to different people, to us it means maximizing our ability to provide something priceless—better health—to as many patients as possible. It also means doing as much as we can to prevent the problems, from lengthy hospital stays to long-term care, that are a financial burden to so many families, communities and public institutions.

Many factors go into the pricing of drugs, and every medicine is somewhat different, but in simple terms we consider the **Three Ds** of pricing: the **Demand** in society, all that goes into **Development**, and how well a medicine **Delivers**. The societal

demand means we look at how critical the condition or need is in society and how many treatments, if any, currently exist. Development means we need to price medicines to pay for research, discovery and clinical trials. How well a medicine delivers means we look at the benefits of our drug, including how it can improve the lives of patients and their families, and how it can prevent other issues or the need for hospitalization.

While striving to maintain a consistent global approach to pricing, we also consider the national, competitive and regulatory conditions within each market, including the ability and willingness of various customers—such as national, regional or local institutional payers, physicians, employers and patients—to pay for our products. The prices of our medicines and vaccines also reflect government regulation and currency fluctuation effects, and prices paid by consumers can be affected by duties and tariffs imposed on imported medicines and vaccines, as well as price markups by intermediaries, including wholesalers and pharmacies.

In the private sector, particularly in developed countries like the United States, price competition has been spurred by private health insurance plans. These payers, as well as large government institutions, are able to negotiate significant rebates and discounts with pharmaceutical companies that can enable payers to lower premiums for their members. In January 2017, we began disclosing the average annual list and net price increases across our product portfolio in the United States to increase transparency about our pricing practices, including the amount of rebates and discounts that we provide to payers. These data, which are posted in the [Transparency Disclosures](#) section of this report, show that our average annual net price increases (after rebates and discounts) across our U.S. human health portfolio have been in the low-to-mid single digits since 2010.

As health care systems in many developed markets are moving to a value-based care model, we are working with payers and other stakeholders to find flexible approaches to pricing. These include the use of quality- and performance-based contracts where payment is linked to quality metrics or improved health outcomes.

We recognize that in developing-world markets, access to and funding for health care, particularly pharmaceuticals, can often be limited. In many of these markets, most or all of the cost of treatment is borne by the patient. We actively work to develop and support various sustainable strategies to improve access, particularly for economically at-risk patient segments. In terms of pricing, these strategies can include directing differential pricing to patient sub-segments, either directly through national or local programs or indirectly through third-party health care funding sources that demonstrate reasonable and secure product distribution to intended patient segments.

Our willingness to provide differential pricing strategies is evident for many of our products, including some of the best-in-class innovative brands in our HIV, hepatitis C virus (HCV), women's health, and vaccine-franchise areas. Several recent initiatives illustrate our commitment to expanding access and availability:

- We extended our current Gavi prices for GARDASIL<sup>®</sup> [Human Papillomavirus Quadrivalent (Types 6, 11, 16, and 18) Vaccine, Recombinant] and ROTATEQ<sup>®</sup> [Rotavirus Vaccine, Live, Oral, Pentavalent] for 10 years, through 2025, to Gavi-graduated countries with Gross National Income (GNI) per capita not exceeding \$3,200
- Several of our vaccines [i.e., GARDASIL, PNEUMOVAX23 (Pneumococcal Vaccine Polyvalent), MMR-II<sup>®</sup> (Measles, Mumps, and Rubella Virus Vaccine Live) and VAQTA<sup>®</sup> (Hepatitis A Vaccine, Inactivated)] are provided at a reduced price through our agreement with PAHO, which targets access to low- and middle-income patients in Latin America through NGOs. In January 2017, VARIVAX<sup>®</sup> (Varicella Virus Vaccine Live) was added to the brand scope under this partnership.
- Within the scope of our ongoing partnership arrangement with Gilead, we continue to provide reduced pricing for ATRIPLA<sup>®</sup> [efavirenz 600mg/emtricitabine 200mg/tenofovir disoproxil fumarate 300mg] for 94 countries
- To assist patients in China not covered by the National Free Antiretroviral Program and needing access to our anti-retroviral medicine ISENTRESS<sup>®</sup> (raltegravir), MSD in China partnered with the HIV Medical Association to initiate a series of scientific educational programs to raise disease and treatment knowledge and awareness.

We know there is more that needs to be done, and we want to do our part to help more patients obtain and afford the treatments they need. We are committed to continuing our efforts to develop access solutions, including flexible pricing programs, targeted as appropriate to address the cost burden for patients at need throughout the world.

# Performance

PRICING & COMMERCIALIZATION SUMMARY	2012	2013	2014	2015	2016
Number of products that are supported with differential pricing <sup>1,2</sup>	NA	24	35	35	40
Number of low- and lower-middle-income countries where inter- and/or intra-country pricing has been implemented <sup>3</sup>	NA	70	114	121	123
Investment in patient- and provider-education programs (in millions)	\$71	\$61	\$52	\$80	\$80

NOTE: We have realized a notable increase in both products (+46 percent) and geographic scope (+63 percent) supported with differentiated pricing intended for at-need populations. Year-over-year differential pricing performance metrics can be impacted based on the timing of local-market or third-party contract renewals and/or product life-cycle introductions or deletions. Therefore, increases or decreases in these pricing metrics should not be interpreted as anticipating the level of trend growth in future years.

NA: Not available.

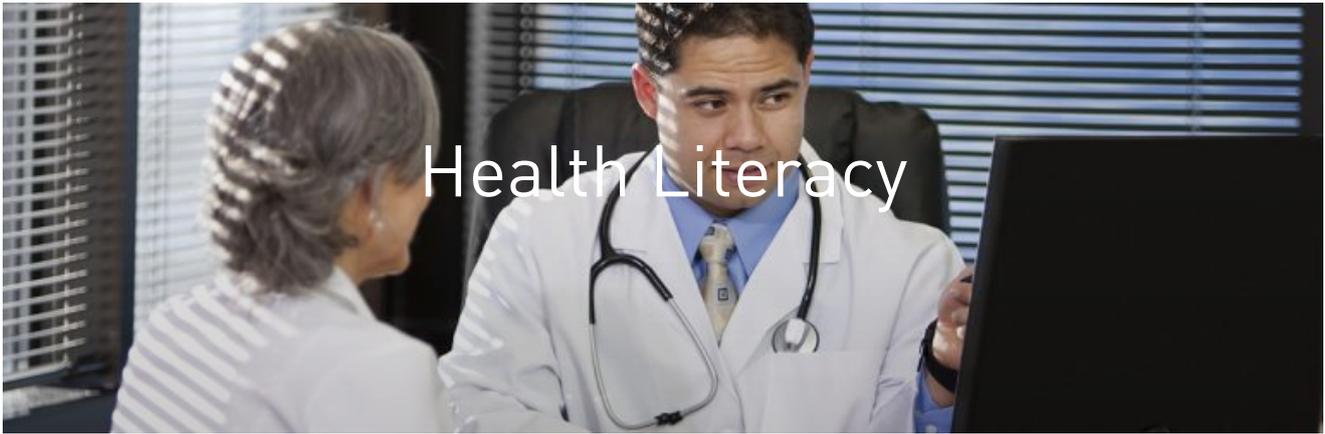
1. Differential pricing intended to facilitate access for the at-need population.

2. Products include HIV treatments, vaccines and other patented products.

3. Countries as defined by World Bank 2013 GNI classification; includes UN-defined least-developed countries.

To learn more about our product pricing, click on one of the links below:

- [Perspective on Pricing](#)
- [HIV Medicines](#)
- [Vaccines](#)
- [Women's Health Products](#)



## We are committed to improving health literacy as part of our mission to improve health.

Health literacy is vital for health, be it living healthy, disease prevention or to achieve the best possible results from medical care. We must partner with patients to promote their understanding of their medical condition or disease, the reasons they are being treated, and the appropriate use of their medications and other treatments.

Since its inception in 1891, our company has pushed the boundaries of science with the hope and expectation that advancing scientific knowledge will lead to major advances in health.<sup>1</sup> We believe one way to improve global health care outcomes is to make medical and health information accessible to health care professionals and patients around the world.<sup>2</sup> Our commitment to improving patient health outcomes extends to our commitment to health literacy.

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## Limited health literacy costs health systems 3–5% of their budget.<sup>3</sup>

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Health literacy can affect a person's ability to access health care services, use services appropriately, adopt health-promoting behaviors, manage chronic conditions, navigate the health care system, and act on health-related news and information.<sup>4,5</sup>

Health literacy challenges can affect people of all ages, races, incomes and educational levels. Some population groups in the U.S. are more vulnerable to low health literacy. They include the elderly, people with less than a high school education, people living in poverty, racial and ethnic minorities, and people with limited English proficiency.<sup>6</sup>

Those with limited health literacy are more likely to have chronic conditions and are less able to manage them effectively.<sup>7</sup> More than 77 million U.S. adults have basic or below basic health literacy skills.<sup>8</sup>

Health literacy is essential in efforts to:

- Encourage use of appropriate preventive measures, e.g., health screenings, mammograms and recommended vaccinations
- Teach patients about health benefits, risk factors and adherence to treatment plans
- Inform and alert the public about important health recommendations<sup>9,10</sup>

## KEY DEFINITION

Although the most commonly used definition in the U.S. focuses on the ability of the individual to obtain, communicate, process and understand health information,<sup>11</sup> our company recognizes that we must strive to communicate information to patients in a way they can understand and use. A commonly used definition in the EU acknowledges the complexity of managing one's health effectively.

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**Health literacy:** Health literacy is linked to literacy and entails people's knowledge, motivation and competence to access, understand, appraise and apply health information in order to make judgments and take decisions in everyday life concerning health care, disease prevention and health promotion, to maintain or improve quality of life during the life course.<sup>10</sup>

### POOR HEALTH LITERACY IS A SERIOUS CHALLENGE

Health literacy challenges exist in all parts of the world. According to the WHO Regional Office for Europe (WHO/Europe), people with strong health literacy skills enjoy better health and well-being; while those with weaker skills tend to engage in riskier behavior and have poorer health.<sup>12</sup> Health literacy also has an impact on the efficient use of health care resources. According to a systematic review, limited health literacy costs health systems three to five percent of their budget.<sup>13</sup>

According to more recent research, low health literacy has been estimated to cost the U.S. economy between \$106 billion and \$236 billion annually.<sup>4</sup>

Our company recognizes the potential we have to help improve millions of lives by improving how we communicate as we shepherd discoveries from the lab to the marketplace. We also know it will take a multifaceted effort focused on public policy, engaging diverse stakeholders and new ways of communicating. Consequently, we are calling for collaboration among government agencies, health care providers, patient advocacy groups and health care companies to do more together to increase patient understanding of health care and treatment plans.

At a time when patients and family members are increasingly involved in their own care, clear communication at every point along the patient journey, from researching symptoms to seeking diagnosis, to managing disease, is a crucial adjunct to the medicines we discover.

## KEY HEALTH LITERACY PRIORITIES

Our company is committed to ensuring diversity in clinical trials, championing health literacy across countries and divisions, and proposing new solutions to improve health care equity around the globe. In the U.S., our goal is to create and model patient-centered innovative programs that foster health literacy.

We publicly share best practices with other pharmaceutical companies and other stakeholders, demonstrating our commitment to improving patient health outcomes. We proudly participate in both the National Academies' Health Literacy Roundtable and the Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities.

Our vision in Europe is to enable citizen- and patient-centered health systems. Health literacy is a key enabler for citizens

and patients to take an active role with regard to their health. In addition, health literacy activities lead to better “readable” health systems, where patients can easily navigate and receive the care needed.<sup>14</sup> Empowered citizens and readable health systems contribute to better health and more efficient health care.

We have been engaging in Europe with various stakeholders such as the European Commission, the European Parliament, and patient, physician, pharmacy and nurse associations toward these health literacy goals. Health literacy has also become an important component of our engagement in cancer care policies.

Policy makers across Europe have shown increased interest in health literacy. The Council of the European Parliament refers to the importance of health literacy in the context of personalized medicines.<sup>15</sup> The “Riga Roadmap”—a joint declaration by industry, civil society and patient organizations launched during the Latvian EU Presidency—calls for a regular EU health literacy survey across all EU member states to collect comparative data, and for investing in health literacy interventions.<sup>16</sup>

Finally, many affiliates of our company have translated health literacy into programs to improve the health of citizens and patients in high-priority areas such as oncology. We highlight some of our U.S. and global health-literacy initiatives below.

## U.S. Initiatives

### SHAPING THE EXTERNAL ENVIRONMENT—HEALTH CARE PROVIDERS

While the skills of individual patients and caregivers are an important part of health literacy, there is also a need to reduce the complexity of the health care system. Poor health literacy and health care disparities may negatively impact quality, adherence and patient safety. Many payers, integrated health systems and large medical groups share our commitment to addressing these issues.

Individuals with limited health literacy have a lower quality of communication with health professionals.<sup>17</sup> By taking a systematic approach to promoting health literacy, medical practices and other health care organizations may help to improve the quality of patient care.

We continue to share and update resources about health literacy for these audiences. This reflects the widespread and growing understanding across the health care system of the need to make it simpler for patients to successfully manage their own health. These resources include many actionable tips to address health literacy. We also shared information about health literacy at a clinical trials conference at a large health system (Advocate) in 2016.

### SHAPING THE EXTERNAL ENVIRONMENT—PATIENTS / HEALTH CARE CONSUMERS

Patients require health literacy skills in order to understand and navigate the health care system, talk to providers, engage in self-management, exercise basic numeracy skills, adopt healthy behaviors, and act on news and information.<sup>18</sup> Our [consumer-engagement platform](#), available in the U.S., provides unbranded health-literate content in support of our pharmaceutical and vaccine brands. This multi-channel health and wellness program is designed to improve engagement and adherence, to help U.S. consumers strive to meet their goals for a healthy lifestyle, and to provide a platform to educate patients on real-time health-related issues.

Since 2014, we have had a leadership role in the Multi-Regional Clinical Trials Center (MRCT) aggregate Return of Results working group. This working group included representatives from patient advocacy, industry and academia, who worked collaboratively to develop a health-literate template and supporting guidance document for returning aggregate results to clinical trial participants.

In 2015, two of our employees participated in a European Medicines Agency (EMA) task force on lay summaries, in advance of an EU requirement to publish a public summary of each clinical trial beginning in 2018. Patient representatives were also part of this task force. The draft EU guidance issued in June 2016 featured health literacy principles, numeracy, readability, and templates for simple language. We completed qualitative research in 2016 and submitted for publication in early 2017.

The research highlighted the need to simplify the titles of the 10 proposed headers.

The research also demonstrated that people across a range of health literacy levels, including both limited and proficient health literacy, found the simple language and clear format acceptable.

A summary of the research was submitted during the open comment period for the draft guidance. In early 2017, the Commission indicated a willingness to consider the alternate simpler headers developed by the task force. The EMA task force and the Multi-Regional Clinical Trials (MRCT) Center of Brigham and Women's Hospital and Harvard are aligned to create global, health-literate guidance and templates.

## SHAPING THE EXTERNAL ENVIRONMENT—BEST PRACTICES FOR INDUSTRY

We continue to partner with academia to develop and test health-literate patient labeling for new molecules. This collaboration is between leaders in the field of health literacy at Northwestern University and Emory University and a cross-divisional team at our company, including labeling, legal and regulatory policy. The work is led by the Worldwide Product Labeling Group in our research laboratories.

The purpose of the collaboration is to demonstrate improved patient understanding and use, by optimizing the development and testing process.

Best practices from the field of health literacy and patient feedback are incorporated throughout the development of patient labeling for new molecules. Patient input is given in focus groups during the initial development, and again later to confirm comprehension of the draft label for FDA submission.

Notably, our past approach included conducting market research across a broad range of education levels; however, few of the respondents who presented had limited health literacy. Such candidates are harder to locate, are less likely to participate and have not been represented adequately in the databases of market research agencies serving the pharmaceutical industry.

Northwestern University and Emory University helped us apply best practices from the field of health literacy to secure these respondents. Notably, in 2016, we worked with a large national recruiter of participants for market research to add health literacy screening questions, enabling us to more easily include respondents with low health literacy in future research. This may also aid other pharmaceutical companies in including respondents across a range of health literacy levels.

This process has consistently achieved strong comprehension in respondents with both limited and adequate health literacy (90 percent or better in both groups in qualitative research). In March 2016, [we published this innovative approach](#) in *Quirks*, a magazine for market researchers. This was the first article ever in *Quirks* about health literacy, and it generated significant interest. Our commitment to health literacy in patient labeling was also highlighted on the National Academies' Health Literacy Roundtable website.

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**We received the 2016 health literacy research award from the Institute for Health Advancement for our patient labeling work.**

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We have had three health-literate patient labels approved by the FDA, a key milestone both for patients and the work that

we believe is a model for others in the industry. This work was presented twice at the FDA in 2016 and we were invited to highlight the inclusion of respondents with low health literacy at the November 2016 meeting of the National Academies' Health Literacy Roundtable.

In 2016, our manufacturing division began to apply a similar process (partnership with Northwestern and Emory; iterative patient input) to the development of an "instructions for use" guide. The sample medicine kit tested was complex, with 60 medicine packets and three different size syringes for caretakers to mix and measure the medicine for their children, based on weight. Eye-tracking technology was used to time how long people read each instruction, and to follow gaze patterns to make sure they read the instructions in the correct order. Two rounds of eye-tracking research in 2016 demonstrated great improvement in the ability of people to follow the directions in order, and to mix and measure the medicine correctly.

## CHANGING OUR CULTURE: COMMITMENT ACROSS THE ENTERPRISE

Health literacy is about the ability to deliver patient communications in an understandable and actionable way. We work to integrate health literacy principles into our patient-education materials. We have an online training program, providing clear instructions to the creators of materials on how to implement health-literacy best practices. These best practices are derived from research in the field of health literacy, as well as from feedback we have received from health care providers and patients themselves.

This training was rolled out to several creative agencies in 2016, with broader dissemination planned in 2017. Employees within several groups attended in-person health literacy training in 2016, including informed consent, clinical trial materials, labeling and patient education materials.

We lead the industry in our commitment of resources to health literacy, with a full-time position dedicated to health literacy since 2012, a health literacy reviewer for patient education and a market researcher. There are many other champions across the company who have embraced health literacy and lead efforts within their own functional areas, including manufacturing, research and compliance.

## DEMONSTRATING SCIENTIFIC EXCELLENCE

A committee within our company's Investigator Studies Program (MISP) is focused on patient engagement, diversity and health literacy. Six studies were funded in 2016, with plans to fund additional studies in 2017.

In 2013, we partnered with Northwestern Medicine, Walgreens and Alliance of Chicago community health centers to collaborate on a study with a simple goal: to provide clear instructions on prescription medicine labels so patients don't make mistakes or overcomplicate taking their daily medications.

In 2014, the electronic health record (EHR) and pharmacy systems were designed to support the study, and pharmacists and prescribers were trained. Patient enrollment began in 2015 and continued into 2016. The primary outcomes include self-management knowledge, prescription adherence, and measures of blood sugar control and blood pressure. The results were analyzed in late 2016, and will be presented at conferences and submitted for publication beginning in 2017.

To advance key discussions in health literacy, our company was part of a small group of National Academies' Health Literacy Roundtable members who authored two perspective papers in early 2016, "[Strategies to Enhance Numeracy Skills](#)" and "[Considerations for a New Definition of Health Literacy](#)". The National Academy of Medicine announced the Top 10 Perspectives of 2016, and the "Considerations" perspective was #5 on the list.

## Global Initiatives

We collaborate with various stakeholders in policy development for health literacy and support programs that improve the health literacy levels of citizens and patients.

In the EU, we do so together with European associations of physicians, patients, universities and policy makers from the European Parliament and other EU institutions. Our vision in Europe is to enable citizen- and patient-centered health systems.

Health literacy is a fundamental requirement for citizens and patients to take an active role with regard to their health.<sup>19</sup> In addition, health literacy activities lead to better “readable” health systems where patients can easily navigate and receive the care needed. Empowered citizens and readable health systems contribute to better health and more efficient health care.<sup>20</sup>

In 2016 we expanded our engagement to also encompass cancer literacy. Patients with higher health literacy levels are better able to navigate and access the health system, understand the importance of cancer prevention, seek earlier diagnosis and adhere better to treatment.<sup>21</sup> To that end, we supported a survey of the European Cancer Patient Coalition (ECPC) that assessed patients’ knowledge about biomarkers<sup>22</sup> and developed infographics showing the importance of health literacy in the context of biomarker testing for cancer therapy. Health literacy was also recognized as an important component to improved cancer care by [All.Can](#), a multi-stakeholder platform to foster sustainable cancer care, of which our company is a member.<sup>23</sup>

We have been engaging in Europe with the European Commission, the European Parliament, patients, physicians, and pharmacy and nurse associations. Together, with the European Patients’ Forum (EPF), the Standing Committee of European Doctors (CPME) and Health Literacy Europe, we participated in the consultation mid-term evaluation of the Third Health Programme (2014-2020), calling for the development of an action plan on health literacy.<sup>24</sup> This action plan recognizes that citizens and patients are at the center of health, health policies and health systems.

Health literacy has gained attention among policy makers across Europe. Both the conclusions of the Council of the European Union and the “Riga Roadmap”—a joint declaration by industry, civil society and patient organizations—refer to the importance of health literacy.<sup>15,16</sup>

### BELGIUM

#### Well Done—MSD Health Literacy Awards 2016

In 2016, MSD in Belgium, together with 14 key stakeholders, organized the fourth edition of the Well Done—MSD Health Literacy Awards, to recognize and reward Belgian and Luxembourgian projects that made a significant contribution to the health literacy of citizens. This project involves close collaboration between MSD and key stakeholders, including patients and HCP associations, Sickness Funds, members of parliament, and the National Institute for Health and Disability Insurance.

The 2016 edition resulted in 54 health literacy projects. Three of these projects were selected for the First Line, Specialty Care and Community Award of €3,000 each. Our engagement gave us many new opportunities to collaborate with important stakeholders and testified to our commitment to health literacy.

Health literacy has also gathered interest at the Belgian health care department of the NIHDI. The ambition for 2017 is to support the national health literacy policy objectives and to increase the mobilization of projects through social media.

## FURTHER ANALYSIS OF THE BELGIAN HEALTH LITERACY SURVEY

In addition, further analysis of the data of the Belgian Health Literacy Survey 2015 was conducted. The survey was originally initiated by MSD in Belgium with the aim to assess the health literacy level of chronic patients with hypertension, diabetes or asthma.

The Université Catholique de Louvain interviewed 450 patients and 360 health care practitioners. Among these patients, 12 percent had insufficient health literacy, 15.8 percent had limited health literacy, and 72.3 percent had a sufficient level of health literacy. Low health literacy was relatively more common among hypertensive patients versus diabetes-type 2 patients. One out of three hypertensive patients versus one out of five diabetes-type 2 patients showed insufficient or limited health literacy levels.

When looking at the health literacy by professional situation, the study showed a trend for lower health literacy levels with chronic patients who are unemployed or do not work outside the home. Patients with a better health literacy level had fewer problems following instructions from their physician.

## HUNGARY

### **“It speaks to me!”**

Health literacy research supported by the Hungarian industry association in 2015 showed that one out of two Hungarians had insufficient health literacy levels. As a consequence, the Association of Innovative Pharmaceutical Manufacturers (AIPM) created a separate working group on health literacy under the leadership of MSD in Hungary with the aim to initiate programs to improve health literacy in Hungary. Two main projects were executed in 2016, a health literacy award and an academy of patient organizations.

In order to highlight the problem of low health literacy in Hungary and partly to improve health literacy in the country, AIPM launched a project called “It speaks to me! Health Literacy Award 2016.”

The program aimed to reward the best programs and practices for improving health literacy and health awareness, but also to gather the attention of the public. Applications were received with projects aimed at increasing people’s medical knowledge in four categories: health care institutions, health care professionals, patient organizations and information to the public. Almost every segment of the Hungarian health care system — patient organizations, institutions, physicians and health care professionals — has participated, with 103 applications submitted in the four categories.

In addition to the award, AIPM has launched the Academy of Patient Organizations with the goal of compiling educational lecture series and online materials to help Hungarian patient organizations improve their health literacy.

The Academy also helped to build a bridge between patients and doctors and develop a network of patient organizations. More than 60 organizations have joined the program so far, which is a clear indicator of the need, interest and educational value of the program.

## IRELAND

### **“My Health Care, My Future”**

With the Irish government focused on a long-term strategy for the health care system, in 2016 MSD in Ireland published research carried out by Ipsos MRBI, a global independent market research company. The first-of-its-kind report involved interviews with almost 1,000 members of the public, as well as key stakeholders, to understand the key values for a future health care system in Ireland.

Clear communication became a key theme throughout the research. The interviews showed the strong correlation between patient understanding of their condition and treatment plan, and their likelihood of medication adherence. Eighty-six percent of respondents said it is very important that their illness or condition be clearly explained in language they understand.

The National Adult Literacy Agency (NALA) was involved at all stages of the research and believes the report emphasizes the need for clear communication from health professionals. It is, they argue, something that benefits everyone and yet requires minimal investment.

The final report from the “My Health Care, My Future” research was launched by the Minister for Health at an event with 100 stakeholders. The findings and themes within the report have contributed to the work of a Parliamentary Committee on the Future of Health Care, which has been tasked with publishing a 10-year strategy for improving Ireland’s health care system. Published in April 2017, this strategy forms the cornerstone of health policy in Ireland for the coming years.

## ITALY

### **Volere Non Basta (“Asking for Something Is Not Enough”)**

Since 2013, the Fondazione MSD, in partnership with Rome Sapienza University and Milan Engineering School, has been promoting the Patient Academy, a program that supports patient empowerment. The 2016 edition of the Patient Academy involved the Italian Observatory of Narrative Medicine (OMNI) and the Center for Digital Health Humanities, under the aegis of National Institute of Health. The 2016 theme was “digital narrative medicine” and aimed at exploiting digital technologies to improve patient-physician communication and to reach better health results.

### **SITA Campaign on antimicrobial resistance (AMR)**

This large awareness campaign on antimicrobial resistance (AMR) reached over 62 million people. It was conducted by the Italian Society of Anti-infective Therapy with the endorsement of the Ministry of Health, and as institutional testimonial, the President of the Social Affairs Commission at Parliament level. The campaign underlined the importance of the alliance among citizens, physicians and institutions and to fight AMR and promote the correct use of antibiotics. The main tools/communication channels included a [website](#), to inform citizens of AMR and the need for appropriate use of antibiotics, and a short movie, “[Vampiri](#),” mainly diffused through the web, to reach the general public.

### **Il Sole per Amico (“The Sun as a Friend”) and Meglio Smettere (“Stop smoking is better”)**

In collaboration with scientific society and patient associations, we supported two awareness campaigns to promote primary prevention against cancer. The Italian Melanoma Intergroup, under the patronage of the Ministries of Health and Education, focused on melanoma’s primary prevention. It involved 50,000 children and their families, 4,500 teachers, 300 schools and more than 100 physicians throughout Italy. It also included a major event at the parliamentary level, two national press conferences and 11 regional press conferences, resulting in significant media coverage.

The second campaign focused on risk awareness of smoking, targeting the younger population. It was conducted in partnership with the Italian Association of Medical Oncology (AIOM) under the aegis of the Ministries of Health. The campaign featured two famous testimonials from the 2015 U.S. Open winner Flavia Pennetta and Italian Juventus football club manager Massimiliano Allegri.

### **Ora Che Mi Ci Fai Pensare (“Now That You’ve Got Me Thinking”)**

“Ora Che Mi Ci Fai Pensare” is a campaign focused on the impact of therapy on patients suffering from inflammatory bowel disease (IBD) and their quality of life. The campaign, which launched in February 2015, was developed by Italian and European patients’ associations, the Italian Scientific Society for Gastroenterology (IG-IBD) and MSD in Italy. The campaign consists of a series of patient-shot videos available on YouTube/Vimeo and Facebook. These include the short movie, “Now That You’ve Got Me Thinking,” which was presented in several short-movie festivals throughout Italy in 2016.

### **“LOVE IT”**

Education through information was the objective of “LOVE IT,” a 360-degree cross-media campaign with the Italian Society

of Gynecology and Obstetrics (SIGO), leveraging Italian “The Pill without a Pill” campaign actions and aimed at creating a cultural movement on contraception.

## ROMANIA

### “Protect Her Wings” — Educating about cervical cancer

Nearly 12 percent of cervical cancers diagnosed in the European Union each year occur in Romania, and close to 15 percent of the women who lose the fight against cervical cancer each year in the European Union are from Romania.

Together with the National Institute of Public Health, MSD in Romania developed a campaign called “Protect Her Wings.” The campaign aims to inform and educate women about cervical cancer and HPV infection, and to increase primary and secondary prevention of cervical cancer.

The campaign rallies scientific and NGO institutions, and will encourage inter-institutional work and host a series of events and roundtables. Clear and comprehensive educational materials and a website were developed to support the campaign’s objectives. These provide information for media and other stakeholders, including a 24-page brochure and a leaflet containing key information about cervical cancer and HPV infection, targeting the general public.

## SWITZERLAND

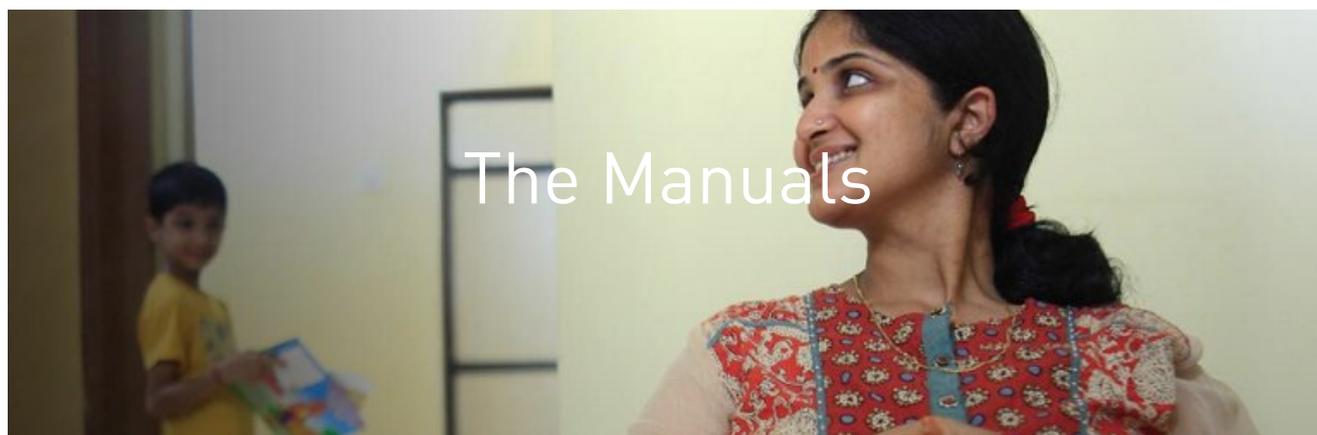
### Swiss Health Literacy Survey

Based on the European Health Literacy Survey, the Federal Office of Public Health (FOPH) in Switzerland conducted a survey about the health literacy of the Swiss population.

The results, published in June 2016, showed that health literacy of 54 percent of the participants was insufficient or problematic. The main deficits were identified in the areas of prevention and choosing the right treatment in case of illness. The Health Literacy Alliance, of which MSD is a cofounder, advocated for creating better data on health literacy in Switzerland.

The survey results demonstrate a clear need to further strengthen health literacy and encourage the Alliance in its efforts in Switzerland. The Alliance will work closely with the FOPH to address the identified health literacy gaps.

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The Manuals, known as the Merck Manuals in the U.S. and Canada and the MSD Manuals in the rest of the world, are one of the most widely used medical information resources.

We believe that health information is a universal right and that every person is entitled to accurate, accessible and usable medical information. And we believe that we have a responsibility to protect, preserve and share the best current medical information to enable more-informed decisions, to enhance relationships between patients and professionals, and to improve health care outcomes around the world.

As a sign of our deepened commitment to worldwide medical information access, we are making the Manuals available for free in digital form in multiple languages to professionals and patients around the world.

First published in 1899 as a small reference book for physicians and pharmacists, the Manuals have grown in size and scope to become one of the world's most widely used comprehensive medical resources. Over the years, the Manuals have been translated into 17 languages, and a consumer version has been published since 1997.

As the Manuals have evolved, they have continually expanded the reach and depth of offerings to reflect the mission of providing the best medical knowledge of the day to a wide cross-section of users, including medical professionals and students, veterinarians and veterinary students, and consumers.

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### MSD Manuals now available in Spanish.

The U.S. is now the second largest Spanish-speaking country in the world, behind only Mexico. Despite this growth, the proportion of Spanish-speaking doctors has declined steadily over the last 30 years, and professionally translated medical information for Spanish speakers remains limited. Poor translation quality of online resources is another barrier to accessing reliable medical information. In February 2016, our company announced that the Manuals are now available in Spanish in the United States.

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“The best medical information worldwide is documented in English as a universal language, but unfortunately the advances in diagnosis and treatments for common medical conditions are out of reach for all the people around the world who don’t speak English,” said Hector Gonzalez Usigli, M.D., based in Guadalajara, Mexico, and MSD Manuals author. “Having a resource translated into their native language is highly important to help increase their medical knowledge, which could make a difference between health and disease for families and entire communities.”

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## GLOBAL MEDICAL KNOWLEDGE 2020



In 2015, we embarked on our most aggressive and far-reaching medical knowledge initiative to date: Global Medical Knowledge 2020. Through this worldwide project, we aim to make the best current medical information accessible for more than 3 billion professionals and patients around the world by 2020. As part of this project, all manuals will be made available for free online and through mobile apps in multiple languages.

We met our 2020 goal by launching this trusted medical educational resource in 10 languages, and in mobile apps in 4 languages. There are additional languages planned for 2017 and beyond. Online access to the Manuals will serve as a valuable tool for patients and caregivers when faced with the need to make health care decisions for themselves and their loved ones.

Through “Global Medical Knowledge 2020,” we are actively partnering with health care and patient organizations, companies and libraries throughout the world to fulfill our mission and make the Manuals readily accessible to all. The initiative is a direct reflection of our company’s broad corporate commitment to addressing unmet medical needs and improving global health.

## Global Medical Knowledge 2020 BY THE NUMBERS

Here's how we're working to fulfill our mission:

### 350 medical experts

continually update The Manuals' content to reflect the most current and accurate medical information.

### 10 languages

will have their own version of The Manuals for enhanced access and ease of use.

### 1 connection point

enables consumers and professionals to access medical information tailored to their needs and knowledge – putting patients and their health care team on the same page.

### 10,000+ resources

enhance our expansive database of medical topics with videos, images, animations, medical calculators and a growing set of other resources.

### 150,000+ relationships

with professionals and patients around the world on social media and other platforms facilitate meaningful dialogues on the most important medical topics.

### 0 ads or registration

improves the user experience of this not-for-profit initiative, as a sign of our commitment to providing free and open access to medical information.





Univadis® is a comprehensive online medical-information resource from Aptus Health—a subsidiary of Healthcare Services and Solutions (HSS)—for health care professionals worldwide.

This web- and mobile-optimized resource provides high-quality, relevant and trusted medical information essential for health care practice. The site features breaking medical news, accredited education courses and tools tailored by medical specialty and clinician need. Additionally, a point-of-care mobile application is available in key markets. Over 3.6 million health care professionals are registered members of Univadis, which is available across 63 specialties, 20 languages and 90 geographic markets.

The medical and scientific content comes from independent third parties, such as scientific leaders, educational institutions and medical societies, as well as through partnerships with a range of world-leading medical publishers. Sponsor organizations provide educational funding to expand and augment the site's core content in adherence with the strict editorial principles of independence, relevance and quality.

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Univadis is available across 63 specialties, in 20 languages and in 90 geographic markets

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With no subscription or registration fees, Univadis provides access to:

- The latest medical news and clinical developments in 60+ specialist areas
- Selected full-text articles from *The Lancet* and *JAMA*
- Weekly research summaries from major peer-reviewed publications
- Conference coverage from medical congresses
- Full online access to trusted medical references
- A library of thousands of medical images to enrich presentations and research
- A wide range of resources to enhance interactions with patients at the point of care, including interactive 3-D anatomy tools and patient handouts

Univadis creates unique opportunities for long-term and meaningful partnerships with scientific and health care organizations, in addition to the world-class publishers that our company already works with. Univadis aims to be a valuable partner in building lasting relationships with our 3.6 million individual health care users globally.

## ANTIMICROBIAL STEWARDSHIP

Antimicrobial Stewardship (AMS) is a rational, systematic approach to the use of antimicrobials in order to optimize patient outcomes and population health, and minimize unintended consequences, such as selection of pathogenic organisms (e.g., *Clostridium difficile*), toxicity and resistance. Our AMS vision is to be known as a leader within the industry and a sought-after partner within the broader health care community in advancing patient-centered AMS through education, implementation, research and advocacy initiatives with an emphasis on patient outcomes, population health and value of care. We made significant progress toward this goal in 2016.

Education is foundational to AMS, and our company has helped support a variety of educational offerings for health care providers through international, national, regional and state organizations, including those with an infectious diseases-based membership as well as other subspecialty and generalist organizations (e.g., Society for Hospital Medicine, American Society of Health System Pharmacists). Additionally, we are supporting the development and implementation of web- and in-clinic-based patient education strategies on AMS and antimicrobial resistance (AMR) for the urgent-care setting in order to improve health literacy regarding AMR/AMS and patient satisfaction when antibiotics are not needed.

Outside the United States, we provide preceptorships and workshops for health care providers to learn firsthand from other providers practicing AMS. We also supported the development and continue to support the maintenance of a comprehensive, high-quality AMS web resource that engages a diverse, international audience and covers topics related to clinical practice, infection control and prevention, policy, clinical research and animal health. [Learn more.](#)

Implementation is required for AMS action and impact. We participated in the expert panel to develop the National Quality Forum (NQF) "[Antibiotic Stewardship in Acute Care: A Practical Playbook](#)," which provides practical guidance on options for hospitals and acute care facilities to take action using their existing resource availability. The Playbook was launched in May 2016 via a webinar with approximately 1,100 attendees—the most well-attended NQF webinar to date. Since launch, the Playbook has been downloaded over 30,000 times. Outside the United States, our company has an ongoing collaboration with an AMS Center of Excellence in Cali, Colombia that has trained over 200 physicians across Latin America and implemented over 70 local hospital protocols.

Research is needed to build and disseminate evidence regarding AMS best practices and their impact on patients and population health. A two-year collaborative project with the CDC and the CDC Foundation to develop standardized metrics and an outcomes assessment tool for AMS programs related to patient safety and quality of care will be completed in 2017.

Our company also supports an investigator-initiated research grant program specific to AMS and has invested over \$1.5M to support 18 studies since 2013. Additionally, we provided support for the development of an annual, two-day research conference implemented by the Society for Healthcare Epidemiology of America, with a goal of improving the quality of AMS research. In 2016, approximately 150 health care providers attended the inaugural conference.

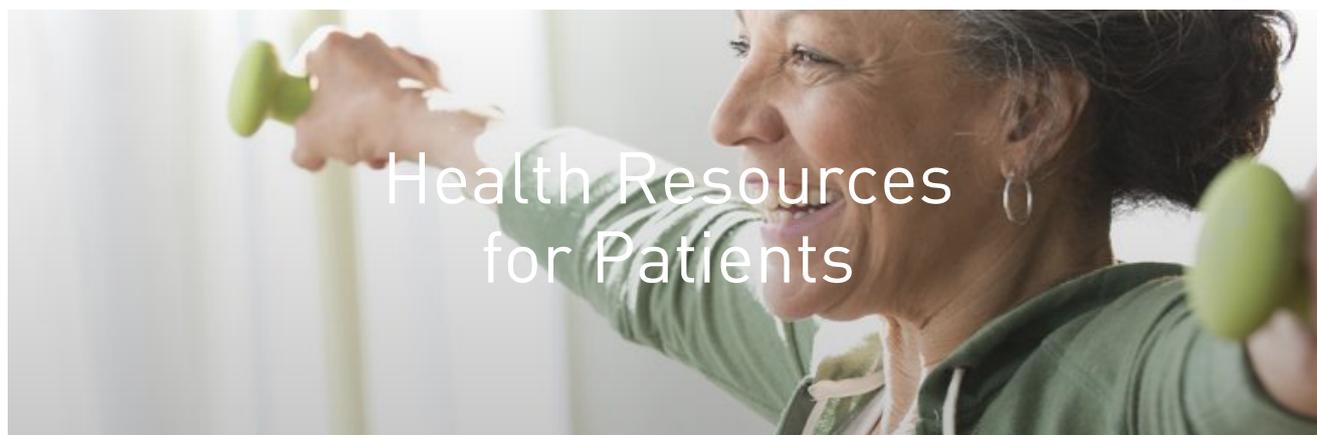
Advocacy for continued antimicrobial innovation, appropriate AMS and sustainable access is vital to the fight against antimicrobial resistance. We are active in a number of policy and legislative discussions and initiatives, and have several representatives on the [European Innovative Medicines Initiative](#) (IMI) Driving reinvestment in research and development and responsible antibiotic use ([DRIVE-AB](#)) work packages.

DRIVE-AB is tasked with defining the responsible use of antibiotics, identifying the antibiotic-related population health priorities, calculating the societal value of having new antibiotics available for these priorities and developing economic models to promote the desired antibiotic innovation and the sustainable use of the resulting, novel antibiotics. The final recommendations from the DRIVE-AB initiative will be released in September 2017.

We also are providing support to the [Global Antibiotic Resistance Partnership](#) (GARP) to assist low- and middle-income countries in developing country-led national action plans for AMR in support of the World Health Organization goals. The GARP will result in:

1. Situation analyses of human and animal antibiotic use and resistance, infectious disease burden, health indicators, pharmaceutical supply chain and pertinent regulations
2. Individualized national action plans
3. Implementation plans for each country involved

Lastly, we developed a [Global AMR Action Plan](#) to demonstrate our commitment to address antimicrobial resistance.



According to a study published by the *New England Journal of Medicine*,<sup>1</sup> an estimated one-third to one-half of all patients in the U.S. reportedly do not take their medications as prescribed.

Twenty to thirty percent of new prescriptions are never filled at the pharmacy, and the majority of patients prescribed medications for chronic diseases have, after six months, taken less medication than prescribed or stopped the medication altogether.

The following resources are designed to help patients stay on course with their treatments and have better conversations with their health care providers about the medicines they have been prescribed.

Our company's [consumer engagement program](#), a free health-support program available in English and Spanish, offers resources that help consumers achieve their health goals by reinforcing healthy lifestyle choices, providing disease-specific education, supporting adherence to therapy and facilitating more productive interactions with health care professionals. The program also includes support and encouragement for caregivers, who are often engaged in the day-to-day care and treatment decisions of family members and friends.

Elements of the consumer engagement program include:

- My Diary (a weight, medicine and blood sugar tracker)
- My Activity Tracker (tracks sleep and activity by syncing with certain wearable devices)
- Caregiver Notebook
- Disease-specific articles and support information
- BMI calculator and "getting started" fitness ideas
- Low-sodium, low-fat, low-sugar, low-calorie cookbooks are available to download
- Connections on social media via Facebook, Twitter and Pinterest
- Program app available on iTunes

## THE ADHERENCE ESTIMATOR®

Patients often fail to reach clinical goals because they do not take medications as directed. We remain committed to the issue of medication adherence and to helping patients and customers with adherence-related programming and solutions that are scientifically based.

The foundation of our adherence program is the [Adherence Estimator](#). The Adherence Estimator is a validated, patient-based resource that gauges the likelihood of a patient adhering to a newly prescribed oral medication for certain chronic conditions. The Adherence Estimator asks questions about three key areas that affect adherence: (1) patients' perceived concerns about prescription medication, (2) patients' perception of the need for or their commitment to a prescription

medication, and (3) patients' perceived financial burden from the cost of a prescription medication.

After respondents answer the questions, the resource provides information to enable the patient and health care provider an opportunity to discuss any concerns that the patient may have. In addition to our outcomes research studies, we continue to explore behavioral and motivational factors that contribute to non-adherence. With this new information, we will build tools and resources that will allow for a deeper conversation between patients and their health care professionals on behavior change to improve medication adherence.

## SPARTA

SPARTA is a proven adherence platform that supports patients on any of our company's therapies to improve adherence to these medications while also providing access to various tools and resources to assist in the management of conditions.

SPARTA was created in Australia in 2009, in partnership with physicians and pharmacists who voiced the need for more robust patient support. In addressing this unmet need, modules were created to support enrolled patients in managing their chronic conditions. The modules consisted of various patient touch points (e.g., telephone support, disease education and text/email reminders) to help patients understand their condition better, realize the importance of diet and exercise in managing their condition and, ultimately, improve medication adherence. SPARTA grew from 60,000 patients in Asia-Pacific in 2013 to more than 200,000 patients across the globe in 2017.

Throughout 2017, the program has expanded into the new therapeutic areas of immunology, oncology and hepatitis.

Based on a recent analysis of 40,000 patients across seven countries, 85 percent of patients taking part in the SPARTA program took their medications for more than 10 months and took them correctly 95 percent of the time.

SPARTA has been launched in Australia, India, the Philippines, Indonesia, Vietnam, Brunei, China, Malaysia, Singapore, Oman, Hong Kong, Mexico, UAE, Chile, Sweden and Ireland.

## SPARSH

[MSD SPARSH Healthline](#) is a telephone-based diabetes-management support program available in India for patients treated for Type 2 Diabetes Mellitus ("T2DM") with JANUVIA® (sitagliptin)/JANUMET® (sitagliptin and metformin HCl)/Janumet XR CF® (sitagliptin and metformin HCl extended-release).

SPARSH aims to improve therapy adherence among T2DM patients and improve their diabetes control by helping them adopt therapeutic lifestyle changes. The key elements of SPARSH include customized counseling on disease and lifestyle management along with text and adherence support.

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**In 2016, approximately 22,500 patients enrolled in SPARSH.**

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Since 2009, SPARSH has enrolled more than 105,000 patients. In 2016, approximately 22,500 patients enrolled in SPARSH. A recent analysis of approximately 5,300 patients who had completed more than six months in the program showed that the majority of patients made positive changes in diet, exercise and blood sugar monitoring.

With the disease management space changing rapidly in the last couple of years, we are working toward enhancing the current program offerings to broaden the program's reach and help improve patient experience and disease outcomes.

1. <http://www.nejm.org/doi/full/10.1056/NEJMra050100> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3068890/>



We recognize that we cannot address complex public health challenges on our own, but must address the barriers to access where we believe we can make the strongest contributions.

#### RESOURCES

[Access to Health Statement of Guiding Principles](#)

## OUR COMMITMENTS

We know that strengthening health systems and building health workforce capacity are important to improve access to quality health care and to help address underlying barriers to health. Through innovative approaches and partnerships, we will invest our expertise, human resources, financial resources, products and market-based solutions to:

- Support capacity-building, including health care professional training, to deliver health care solutions
- Address underlying barriers to health, such as health-system strengthening
- Pursue programs to provide direct access to our medicines and vaccines when market-based solutions are inadequate or unavailable

Despite efforts to develop and implement effective business and philanthropic strategies to help remove barriers to access, challenges remain due to the complex and multifaceted nature of the problem. To address these challenges, the international community must pool its resources and expertise to strengthen health care systems, ensure adequate financing for health and help build local health care capacity. Even in developed countries, challenges remain to reach groups of underserved populations.

Examples of our community investment follow:

**MSD for Mothers** is a 10-year, \$500 million initiative focused on improving the health and well-being of mothers during pregnancy and childbirth. [Learn more.](#)

The **MSD Fellowship for Global Health** is a three-month, field-based corporate pro bono program that is designed to leverage the skills and talents of our employees worldwide. [Learn more.](#)

In 2015, we initiated a three-year partnership with the Australian NGO One Disease to fight scabies among indigenous populations. Funding from our company and another donor is supporting the work of skin-health nurses to identify and manage the severe form of scabies in East and West Arnhem Land. The nurses will assist in training local clinics and educating both clinics and households with recurrent scabies problems. The lessons learned will be used to develop best-

practice guidelines for scabies management across the country. [Learn more.](#)

In March of 2016, our company and the MECTIZAN® (ivermectin) Donation Program donated \$1 million to the END Fund in support of efforts in Africa to eliminate river blindness (onchocerciasis). The donation is enabling participating countries to enhance their in-country technical expertise in support of final verification of elimination by the World Health Organization (WHO). While four countries in Latin America have already received WHO verification of elimination of river blindness, no countries in Africa have yet achieved this goal. [Learn more.](#)

In 2016, we made a private equity “impact investment” in the [Abraaj Growth Markets Health Fund \(AGHF\)](#). AGHF will support hospital and clinic networks in select, targeted cities in high-growth countries in Africa and Asia. The sustainable business model of AGHF will develop commercial solutions to provide needed health services to reach patients who currently lack adequate health care and medical support. In addition to monitoring the financial return on investment, a high-caliber team of public health experts will guide the monitoring and evaluation of the social and health impact.

For additional examples of our support for health care capacity-building and health-system-strengthening activities, please visit the [Key Initiatives](#), [Giving—Health](#), [Women’s Health](#) and [Vaccines](#) pages.

We also recognize that adequate solutions are not always available when patients need them. And while we do not believe that donating medicines alone is a sustainable, long-term solution to the global challenge of access to medicines, we recognize that millions of patients need medicines now. For that reason, we remain committed to donating our medicines and vaccines through organized programs, as appropriate.

The primary programs involving donations of our products are: our [Medical Outreach Program](#), the [MECTIZAN Donation Program](#) and our U.S.-based [Patient Assistance Programs](#).

## Performance

COMMUNITY INVESTMENT PERFORMANCE SUMMARY	2012	2013	2014	2015	2016
Health care workers trained through our major programs and partnerships <sup>1</sup>	38,000	22,000	137,000	18,669	32,218
Investment in partnerships for activities that address underlying barriers to health, such as health-system strengthening and capacity building (in millions) <sup>1</sup>	\$24	\$24	\$32	\$31	\$28
People reached through our major programs and partnerships (in millions)	269	302	267	188	293

1. Includes investments by the Office of Corporate Responsibility, *MSD for Mothers* and our company’s Foundation.



Our global [Animal Health business](#) is dedicated to preserving and improving the health, well-being and performance of animals through science.

MSD Animal Health  
Antimicrobial Resistance Global Action Plan

We offer veterinarians, farmers, pet owners and governments the widest range of veterinary pharmaceuticals, parasiticides, vaccines and health management solutions. Healthier animals mean sustainable food supplies, protection against zoonotic diseases<sup>1</sup>, reduction of the burden of certain food-borne diseases, and longer, richer companionship for pet owners.

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Our Animal Health business employs more than 6,300 people worldwide and is present in more than 50 countries.

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## 2016 PERFORMANCE HIGHLIGHTS

- European and U.S. approval of BRAVECTO™ (fluralaner topical solution) for both cats and dogs, a topical treatment for fleas and ticks effective for up to 12 weeks following a single dose. BRAVECTO Topical is available in a convenient, single-dose spot-on, and is applied topically using the new “Twist’n’Use”™ pipette design for ease of application.
- Acquisition of a controlling interest in Vallée S.A., a leading privately held producer of animal health products in Brazil. Vallée’s extensive portfolio includes products for livestock, horses and companion animals and helps to respond even more quickly and effectively to the region’s needs.
- United States Department of Agriculture (USDA) approval of the innovative Canine Flu Bivalent Vaccine, the first vaccine to combine protection against the canine influenza viruses (CIV) H3N2 (first reported in March 2015) and H3N8 (first diagnosed in 2004). Both have impacted dogs in more than half of the United States.
- The first-of-its-kind USDA license approving the company’s innovative RNA Particle (RP) technology platform, allowing for the manufacturing of herd-specific, custom vaccines prescribed by a licensed veterinarian. The RP technology platform is used to make vaccines for swine, bovine, equine, avian, companion animal and farmed aquaculture diseases.
- Acquisition of the worldwide rights for the Whisper® Veterinary Stethoscope System, a non-invasive bovine respiratory disease (BRD) detection system that is used to determine the severity of an animal’s lung condition so that the

appropriate treatment regimen can be started to protect the health of the animal. BRD is the most common disease affecting cattle in North America.<sup>2</sup>

- U.S. approval and launch of Safe-Guard® AquaSol (fenbendazole oral suspension), a dewormer indicated for the treatment and control of specific worm infections in broiler chickens, replacement chickens and breeding chickens. Safe-Guard AquaSol is produced with an innovative wet-milling technology, which produces a highly stable suspension that can be conveniently administered through drinking water.
- Global launch of new, free mobile apps that assist swine veterinarians and farmers in maintaining healthy herds and productive farms. These innovative tools complement the company’s popular ResPig® and ReproPig® websites, which provide veterinarians and producers with help in identifying areas of improvement while managing the day-to-day demands of their farms.

Our Animal Health business employs more than 6,300 people worldwide and is present in more than 50 countries. We operate a global network of manufacturing sites and dedicated R&D facilities, and offer products for various species, including ruminants (cattle, sheep, goats), poultry, swine, aquatic animals and companion animals (dogs, cats, horses) in 150 countries. Our Animal Health business focuses our corporate responsibility efforts in the following areas:

- [Protecting animal health](#)
- [Contributing to public health](#)
- [Supporting a sustainable, global food supply and managing our global footprint](#)
- [Ensuring ethical business practices](#)

Note: This section includes information about how Merck & Co., Inc., Kenilworth, N.J., U.S.A., contributes to societies through its Animal Health business. Information and data on the performance of our Animal Health business in the environment and in other areas are contained within the main sections of our global corporate responsibility report.

1. Zoonotic diseases are any disease or infection that is naturally transmissible from vertebrate animals to humans or vice versa (World Health Organization). Food-borne diseases in general encompass a wide spectrum of illnesses caused by microbial, parasitic or chemical contamination of food.
2. Griffin D. Economic impact associated with respiratory disease in beef cattle. *Vet Clin North Am Food Anim Pract.* 1997 Nov;13(3):367–77.

## Performance

ANIMAL HEALTH PERFORMANCE	2013	2014	2015	2016
Year-over-year increase in rabies vaccine donations <sup>1</sup>	+70%	+15%	+47%	+34%
Value of equine vaccines donated annually to the Unwanted Horse Veterinary Relief Campaign	\$125,000	\$115,000	\$107,000	\$142,400
Number of new products approved (annually)	5	8	10	9

1. Rabies doses donated to Afya rabies projects (including Mission Rabies and the Serengeti Health Initiative).



Our Animal Health business tackles the world's biggest animal health challenges, and collaborates with our customers to answer their specific needs.

#### RESOURCES

[MSD Animal Health Website](#)

[Antimicrobial Resistance Global Action Plan](#)

These challenges include not only how to treat new and re-emerging diseases, but also how to respond to consumer preferences and how to make optimal use of the available tools to achieve the maximal response in efficacy, while at the same time achieving maximal well-being and safety for the animals and for the people applying the veterinary products.

The ready-to-use single injection of PORCILIS® PCV M Hyo®, Europe's first single-shot vaccine to protect piglets from both porcine circovirus type 2 (PCV2) and *Mycoplasma hyopneumoniae* (M. hyo) infections, was geo-expanded to Latin America and the Asia-Pacific region in 2016. This vaccine reduces the number of vaccinations given to young piglets and provides protection against both diseases without a requirement for additional mixing, and thus reduces the potential for handling error. Additionally, PORCILIS PCV ID was introduced to the market in Europe and Asia in 2016 and is the first porcine circovirus type 2 (PCV2) vaccine for intradermal needle-free use in a single dose, which is administered using the IDAL® device.

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Our company invests in the future of the veterinary profession by supporting research, education and specialized skills training so that veterinarians will have the resources they need to provide the best health care possible for the animals they treat.

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The IDAL 2G vaccination device for pigs, the second generation of our needle-free vaccine delivery system, allows for additional vaccination options in pigs, providing flexibility for the user, particularly when vaccinating large groups of pigs. The IDAL 2G reduces stress in pigs, which can improve animal welfare, while the absence of needles positively impacts biosecurity and worker safety and eliminates the risk of broken needles in carcasses. Additionally, the device can send vaccination data directly to a tablet or smart phone, allowing users to monitor, analyze and manage relevant data contained within the vaccinator. Swine producers will now have access to intradermal needle-free protection against PCV2, (M. hyo) and porcine reproductive and respiratory syndrome virus (PRRSv), the three major swine diseases affecting pig operations

worldwide, and against Aujeszky's disease (pseudorabies).

The Convenience Program Evaluation, an innovative new poultry health field service, is a new addition to our company's Convenience Program, an initiative designed to help poultry producers protect chickens against various diseases while achieving optimal vaccination standards, bird quality and performance goals. The Convenience Program Evaluation is designed to help producers troubleshoot disease outbreaks, optimize vaccination processes, and maintain the health of their poultry through the use of innovative and practical tools available via mobile devices and tool kits.

## KEEPING PETS HEALTHY

Pets play an increasingly significant role in many families, and their health and quality of life are important. In 2016 we launched the multi-city *If This Dog Could Talk* Tour in the U.S., raising awareness of canine influenza (CIV), a highly contagious disease that has affected dogs nationwide. Dog flu H3N8, first discovered in the U.S. in 2004, has been confirmed in 41 states, while the H3N2 strain, first isolated in the U.S. in 2015, has been confirmed in 31 states. In 2016, we also launched an awareness campaign for feline hyperthyroidism. Recent studies have shown that veterinarians believe that hyperthyroidism in cats is underdiagnosed because pet owners may mistake changes in their cats as regular aspects of growing older. Hyperthyroidism may be present in one out of every 10 cats over the age of 9 years old. If left untreated, feline hyperthyroidism leads to high blood pressure, emaciation and heart complications—markedly increased heart rate, heart disease and even heart failure. The campaign features an interactive risk-assessment quiz that asks cat owners simple questions about their cat's body condition and an easy-to-read infographic that explains clinical signs.

## INVESTING IN VETERINARY EDUCATION AND CONTINUED PROFESSIONAL VETERINARY DEVELOPMENT

Our company invests in the future of the veterinary profession by supporting research, education and specialized skills training so that veterinarians will have the resources they need to provide the best health care possible for the animals they treat. Throughout 2016, with funding from our Office of Corporate Responsibility, our Animal Health grant program team provided a total of \$500,000 in grants to veterinary students, allocated as follows:

- A \$75,000 grant to the American Association of Bovine Practitioners (AABP) for 15 scholarships to veterinary students at U.S., Canadian or Caribbean veterinary schools
- A \$185,000 grant to the American Veterinary Medical Foundation (AVMF) for 20 scholarships to veterinary students at U.S., Canadian or Caribbean veterinary schools, equally split between students with companion animal / equine interests and those with food animal / aquaculture / poultry interests, and for 14 international veterinary student scholarships with a focus on Latin and South America and Southeast Asia
- A \$15,000 grant to the Food Systems Fellowship Program of Michigan State University College of Veterinary Medicine (MSU:FSF) to provide scholarships to three veterinary medicine students
- A \$25,000 grant to the American Association of Swine Veterinarians Foundation to provide scholarships to five veterinary medicine students
- A \$25,000 grant to the American Association of Avian Pathologists Foundation to provide scholarships to five veterinary medicine students
- A \$25,000 grant to the American Association of Equine Practitioners Foundation to provide scholarships to five veterinary medicine students
- An \$80,000 grant to the Federation of Veterinarians of Europe to provide scholarships to 16 veterinary medicine students
- A \$55,000 grant to the World Veterinary Association to provide scholarships to 11 veterinary medicine students
- A \$5,000 grant to the Vietnam Small Animal Veterinary Association to provide scholarships to two veterinary medicine students
- A \$10,000 grant to the Veterinary Council of Thailand to provide scholarships to four veterinary medicine students

We also continued our contribution of €10,000 to the Gustav Rosenberger Memorial Fund. This fund provides annual grants

to young and promising veterinarians who come from countries where bovine medicine needs further development and who intend to apply the knowledge obtained in those countries. Additionally, several national initiatives to support the education of veterinary students have been continued, such as in Canada and the U.K.

## PROFESSIONAL DEVELOPMENT

- In 2016, we introduced the High Quality Pork PhD Award in support of research in swine health, production and welfare. Each year, we identify one recent doctoral graduate in veterinary or animal science to be recognized at a future High Quality Pork Congress, sponsored by our Animal Health division.
- With a \$100,000 grant to the University of Georgia, College of Veterinary Medicine, we were able to provide educational support to a student attending the college’s Poultry Diagnostic and Research Center (PDRC).
- With a \$10,000 grant to the Samantha K. Pohl '08 Memorial Scholarship, we were able to provide much-needed support for junior or senior undergraduates in the Department of Poultry Science at Texas A&M University.

In 2014, we launched the Dairy Care365™ initiative, a program to educate U.S. dairy farm workers in best practices for handling and managing dairy cattle. The program empowers producers, calf ranchers, farm employees, veterinarians, and every other stakeholder involved in the care and well-being of dairy animals. It includes animal care commitments, standard operating procedure templates, employee training modules, animal care resources, workshops and a helpline. The impact of Dairy Care365™ has been significant, as it has reached more than 25 percent of the nation’s milk supply. We have conducted more than 50 workshops in 23 states and Canada. More than 1,800 people have registered for DairyCare365.com to participate in the employee training modules. In addition, Dairy Care365™ has generated national support through the National FARM Program (Farmers Assuring Responsible Management™) from multiple dairy cooperatives and processors.

In 2014, we launched the CreatingConnections™ Educational Series, underlining the critical role stockmanship plays in the health and well-being of cattle and, ultimately, in the success of an operation. During 2016, more than 10 modules became available, covering topics like prevention, techniques and required skills, with specific modules for the production systems cow-calf, stocker and feedlot. The series features experts explaining cattle behavior and natural instincts, providing step-by-step guidance on how to build the animal’s trust and reduce its anxiety.

We also sponsor fish-vaccination training to fish producers and veterinarians.

## Performance

PROTECTING ANIMAL HEALTH PERFORMANCE	2013	2014	2015	2016
Scholarships provided to students through our Animal Health Grant Program	NR	38	52	100

NR: Not reported.



We provide a range of vaccines, treatments and educational tools to keep companion animals and livestock healthy to help ensure a stable food supply and help control organisms that can ultimately affect the health of people.

MSD Animal Health Website  
Antimicrobial Resistance Global Action Plan

Global trade, global migration and climate change are increasing the spread of highly infectious diseases, such as foot-and-mouth disease, lumpy skin disease, African swine fever and peste des petits ruminants, and zoonotic diseases—such as avian flu. Animal health and human health are inextricably linked: highly infectious diseases have a direct impact on food production and the livelihood of farming families, leading to malnutrition and poverty, while zoonotic diseases directly impact human lives. Vaccination, alongside education, can help control such diseases in the animal reservoir, reduce the likelihood of spread to humans and minimize the medical, social and economic impact that could occur if left unchecked.

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“Strengthening the knowledge exchange between animal health and human health researchers to identify opportunities to prevent disease transmission is more important now than ever. Improving animal health may help to improve human health.”

Richard R. DeLuca, Jr.  
President, MSD Animal Health

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## SALMONELLA

Food-borne bacteria, such as salmonella, are a continuing concern, particularly for poultry farmers. Human consumption of poultry or eggs infected with bacteria can result in severe illness, pushing governments and industry to implement adequate measures to reduce this risk. We have developed a Food Safety Platform for poultry farmers that includes several salmonella vaccines and services that ensure effective, timely intervention if an outbreak occurs among poultry. Through

the unique Convenience Program Evaluation, our Animal Health business helps poultry producers to identify critical food-safety hazard points in order to be prepared to respond quickly and effectively. This combination of vaccines, biosecurity and other measures has contributed significantly to the reduction in incidence of human salmonellosis.

## LEISHMANIASIS

Our Animal Health canine preventive product protects dogs against sandfly-borne leishmaniasis, helping to control one of the world's deadliest parasitic diseases in the animal reservoir, linked to 60,000 human deaths annually.

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Our products help to minimize the annual human deaths from animal-borne diseases.

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## RABIES

Rabies, a fatal neurological disease, is widespread throughout Asia and Africa, with more than 59,000 people<sup>1</sup>—mostly children—dying from the disease each year after being bitten by dogs, the main carriers of the disease. The burden of rabies has the highest impact on the public health budgets, local communities and livestock economies in the poorest regions of the world. The vast majority of rabies fatalities occur in Asia (59.6 percent) and Africa (36.4 percent). India, the world's second most populated country, accounts for 35 percent of all human rabies deaths, but the per-person death rate is highest in the poorest countries in sub-Saharan Africa.

Our Animal Health business has a history in rabies control. As dogs are the source of the vast majority of human rabies deaths (accounting for up to 99 percent of all rabies transmissions to humans), rabies elimination is feasible by vaccinating dogs.

In 1997, our Animal Health business began supporting the [Afya Serengeti Initiative](#) in the Serengeti region of Tanzania by donating canine rabies vaccines and this support continues. We also provided tools such as all-terrain vehicles and tents to help make sure the project was able to reach the most remote corners of the region. In 2011, the project was extended to the Kenyan villages bordering the Serengeti National Park, resulting in an unbroken vaccination circle around the Serengeti Park. Rabies in humans and domestic animals has now been virtually eliminated from this area, and we have also seen a resurgence in the African wild dog population in the Serengeti. This species is categorized as endangered, and as a direct result of the efforts to manage disease the population of these animals is on the rise.

The success of the Afya Serengeti Project inspired us in 2013 to extend our support to the newly founded [Mission Rabies](#) project. Mission Rabies focuses on addressing the need for vaccination and education in rabies hotspots in Asia and Africa. The first vaccination campaign took place in targeted locations in India, followed by expansion of the initiative to other parts of India, and to areas of Africa, including Malawi. The geography covered by Mission Rabies continues to grow annually, as does the number of doses that we donate to both the Afya Serengeti Initiative and to Mission Rabies. Not only have we provided vaccines, but our employees have also participated in the vaccination campaigns, making a real difference on the ground as well as taking part in a life-changing experience. We are proud of our involvement in these initiatives and in their role toward the global goal of eradicating rabies by 2030.

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1. Hampson K, Coudeville L, Lembo T, Sambo M, Kieffer A, Attlan M, et al. Estimating the global burden of endemic canine rabies. *PLoS Negl Trop Dis*. 2015; 9(4): e0003709. doi:10.1371/journal.pntd.0003709.



By 2050, the United Nations estimates there will be an additional 2 billion people in the world. To feed them, we will need to help animal producers become more efficient and more sustainable.

MSD Animal Health Website  
Antimicrobial Resistance Global Action Plan

Animal diseases cost farmers a significant proportion of their meat, fish and dairy yield every year. In fact, the [World Organisation for Animal Health](#) estimates that animal disease reduces global food production by at least 20 percent.<sup>1</sup> Its impact on food output is greatest in developing countries, where two-thirds of the world's 1.5 billion poor are reliant on livestock as their main source of food and income.<sup>2</sup> Preventing disease-related costs will also be crucial if we are to meet the increasing demand for animal protein created by rising standards of living and population growth. In addition, the land and water available for agriculture is decreasing. Not only will food-producing animals have to stay healthy, but they will also have to be reared more efficiently.

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As economies continue to grow and lifestyles change around the globe, the global appetite for meat, milk and eggs increases. In fact, the Food and Agriculture Organization of the United Nations (FAO) expects the global demand for animal protein to double by 2050.

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Our portfolio of [Animal Health products and services](#) is focused on helping farmers keep their livestock healthy and productive. Targeted intervention with vaccines, antiparasitics, anti-infectives and other veterinary medicines and services helps protect the health and well-being of animals, and helps producers to avoid and/or limit their production losses.

## **PROTECTING POULTRY FLOCKS AND ENSURING THE LIVELIHOOD OF FARMERS**

The introduction of Safe-Guard® AquaSol (fenbendazole oral suspension) for use in U.S. poultry operations will help poultry farmers to manage the gastrointestinal health of their flocks, resulting in better overall performance—uniformity,

productivity and profitability—which is a priority for all of our customers. The innovative wet-milling technology used to produce this product provides a unique uniform treatment for the entire flock and produces a highly stable suspension that can be conveniently administered through drinking water for a short, five-consecutive-day treatment period.

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The World Organisation for Animal Health estimates that animal disease reduces global food production by at least 20 percent.

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Another innovation is our SPHEREON® technology, which freeze-dries poultry vaccines into small, highly soluble particles (spheres) instead of the traditional vaccine cake in a glass bottle. SPHEREON vaccines are packaged in lightweight, 100 percent recyclable aluminum cups in convenient dose sizes. Dissolving the particles is fast and convenient for administration of the vaccine via water, spray or eye drop. To meet the fast-growing demand, in 2016 our company made an investment in expanding our production facilities in Salamanca, Spain.

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According to the National Academy of Sciences, currently, half of all the fish consumed globally is farmed.

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Demand for fish is also rising, and farmed fish are becoming more important as a source of healthy, sustainably sourced protein. In order to meet this demand and protect wild fish, our [SLICE® Sustainability Project](#), developed in partnership with fish farmers, continues to help control parasites and keep fish healthy. SLICE (emamectin benzoate) controls sea lice, the naturally occurring parasites that live in the ocean and threaten the health and welfare of salmon. Our “Strep Control—Your Tilapia Health” program helps fish farmers to identify the strain and biotype of *Streptococcus agalactiae* present on their farm, implement a surveillance and vaccination program and train staff on appropriate control strategies against the most prevalent disease affecting tilapia.

Educational events like these are presented as part of our commitment to bring the science of healthier animals to aquaculture producers globally.

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1. <http://www.oie.int/for-the-media/editorials/detail/article/feeding-the-world-better-by-controlling-animal-diseases/>

2. OIE, B. Vallat. Opening speech, European Veterinary Week, Brussels, Nov. 10, 2008.



We invest millions of dollars each year in the research and development of novel animal health products.

#### RESOURCES

[MSD Animal Health Website](#)  
[Antimicrobial Resistance Global Action Plan](#)

As with our human health pharmaceuticals and vaccines, we test our investigative animal health medicines and vaccines vigorously for safety, quality and efficacy before submitting them for approval, which can be obtained only after thorough review by independent regulatory authorities.

The authorization standards for veterinary medicines are at the same level as those for human medicines. On average, it takes five to twelve years to bring a veterinary product to market. A science-based, predictable regulatory environment is one of the key conditions necessary for innovation and for providing our customers with high-quality products. We support global harmonization of the regulatory process for veterinary medicines through participation in and dialogue with the [International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products \(VICH\)](#) and the [Codex Alimentarius](#).

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On average, it takes five to twelve years to bring a veterinary product to market.

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The approval process for medicines and vaccines used in farm animals also establishes withdrawal periods, from the time the last dose of product is given until the animals or their products enter the food chain. These withdrawal periods ensure the safety of human consumption of meat, milk and eggs from medicine- and vaccine-treated animals.

Our submissions to regulatory agencies also include an environmental assessment that appraises the effects of the use of our products on flora, fauna, soil and water. When necessary, restrictions are placed on the use of our products to protect the environment.

Once a product is on the market, we monitor all aspects that could affect product safety. Findings are assessed and reported, as required by pharmacovigilance rules, to regulatory authorities and addressed through appropriate measures.

## STRUCTURED HERD HEALTH MANAGEMENT

Disease prevention can be significantly aided by vaccination. In a number of countries, we support veterinarians in enhancing the efficacy and impact of prevention programs, like our ResCalf and ResPig programs and the Convenience Program. These provide a structured approach to improving lung health and preventing bovine respiratory disease in calves and respiratory diseases in pigs and poultry. Respiratory disease can seriously affect the health of cattle, pigs and poultry, and can lead to economic losses. Our acquisition of the worldwide rights to the Whisper® Veterinary Stethoscope System, a non-invasive bovine respiratory disease (BRD) detection system, is an example of how we support veterinarians to help manage herd health. The Whisper Stethoscope System is used to assess lung health, so that, if needed, the appropriate treatment regimen can be implemented to protect the health of the animal. BRD is the most common disease affecting cattle in North America.<sup>1</sup>

By the geo-expansion into Latin America and Asia-Pacific of our PORCILIS® PCV M Hyo® vaccine, the first ready-to-use single-injection combination vaccine to protect piglets against porcine circovirus and *Mycoplasma hyopneumoniae* infections during the fattening period, we help these markets to control these disease complexes and reduce the need to use antibiotics to treat sick animals.

## MAKING A DIFFERENCE IN WIDER SOCIETAL NEEDS

Our Animal Health business uses our experience, resources and science to help our partners keep animals healthy, ensure a sustainable food supply, protect public health, and help people and pets enjoy their lives together. We are committed to making a difference in the health and welfare of animals and in wider societal needs.

## ACCESS TO VETERINARY EXPERTISE

Access to veterinary expertise and medicines significantly benefits the livelihoods of small landholders and their families.

**Milk for Malawi:** Through our partnership with Shire Highlands Milk Producers Association (SHMPA), our Animal Health business lends financial and in-kind support to Malawian dairy farmers to improve the quality and quantity of milk supplies. The 2015 shipment of NILZAN® boluses lasted well through 2016. These boluses are used as de-wormers by smallholder farmers on their young stock. They are another piece of appropriate technology for smallholder farmers, as they come in a very convenient form allowing for simple and accurate mixing with a calf's feed. Producing more calves is a high priority for smallholder farmers keeping only one or two cows. At the moment, in Malawi, the sale of a healthy pregnant heifer can pay for a good house. The local dairy companies have expanded their capacity threefold in the last decade. In the last months of 2016, the process was started for a new delivery of veterinary medicines in 2017.

**Relief for unwanted horses:** Many of the unwanted horses in the U.S. are healthy horses that become more of a burden than a blessing to their owners because of financial limitations, time constraints, or otherwise failing to meet expectations. These horses can often be repurposed and re-homed. Others may be sick, injured or old. No one knows for sure how many unwanted horses exist in the United States, but we do know that the number of unwanted horses exceeds the resources currently available to accommodate them. Since 2008, our company's Animal Health business supports the Unwanted Horse Veterinary Relief Campaign together with the American Association of Equine Practitioners. The campaign provides complimentary vaccinations to equine rescue and rehabilitation facilities in an effort to help restore and rehome America's unwanted horses. In 2016, we donated vaccines with a value of more than \$140,000.

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1. D. Griffin: Economic impact associated with respiratory disease in beef cattle. In: The Veterinary clinics of North America. Food animal practice. Band 13, Number 3, November 1997, ISSN 0749-0720, S. 367-377, PMID 9368983.



For more than 80 years, our company has contributed to the discovery and development of novel medicines and vaccines to treat and prevent infectious diseases.

In addition to a combined portfolio of vaccines, antibiotic and antifungal medicines, and medicines for HIV and hepatitis C (HCV), we have multiple programs that span discovery through late-stage development.

Every year, there are more than 6 million deaths worldwide caused by infectious and/or parasitic diseases. We have a long history of both in-house research and engagement with external partners to address infectious diseases, and we continue to seek new ways in which we can contribute expertise and resources to these disease areas.

We apply our research and development resources, expertise and technology to identifying potential products that would address unmet needs in the treatment of infectious diseases, such as HIV, HCV and bacterial infections. We are also involved in a number of product-development partnerships and research collaborations to further develop treatments to address those diseases, as well as neglected tropical diseases (NTDs) and tuberculosis (TB).

We recognize that new methods and a broader scope of collaborating—with both public and private entities—are critical to continuing innovation. This is true for all diseases, and especially true for diseases prevalent in low- and middle-income countries, for which the relevant expertise spans academia, local public health authorities, industry, and international agencies. We plan to continue to expand our interactions with these groups to provide relevant expertise and resources.

We also recognize that our research capabilities and our access strategies play an important role in recruiting outstanding scientists as well as potential external research collaborators seeking to make the products developed from their discoveries available to patients worldwide.

Learn more:

- [Antimicrobials/Antibiotics](#)
- [Hepatitis C](#)
- [HIV](#)
- [Neglected Tropical Diseases](#)
- [Tuberculosis](#)



## Antimicrobials/Antibiotics

### RESOURCES

#### [Antimicrobial Resistance Global Action Plan](#)

Antibiotics have revolutionized medicine and saved millions of lives. Our company has played a major role in antibiotic development extending back to 1938, when the company introduced sulfamerazine, one of the world's first antibiotics. To this day, we remain one of only a few large pharmaceutical companies involved in the research and development of new antibiotics.

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“The rise in infections that are resistant to current antibiotics has become one of the world’s most pressing public health problems. We are proud to reaffirm our long-standing commitment to develop new therapeutics to fight infectious diseases, and to continue to collaborate with others to support antimicrobial stewardship to help slow the rate of emerging resistance.”

Dr. Julie Gerberding,  
Executive Vice President and Chief Patient Officer

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Bacteria resistant to multiple antibiotic medicines are becoming more common—jeopardizing our ability to treat what are historically considered minor infections and increasing the risks associated with secondary infections that can be commonplace with procedures such as surgery, chemotherapy and transplantation. The health and economic consequences of antibiotic resistance are considerable and costly, making it a serious threat to population health that demands a concerted, global response.

Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics, and at least 23,000 people die each year as a direct result of these infections. In the European Union, drug-resistant bacteria are estimated to cause 25,000 deaths and cost more than \$1.5 billion every year in health care expenses and productivity losses.

Annually in the U.S., at least 2 million people become infected with antibiotic-resistant bacteria, and at least 23,000 people die each year as a direct result of these infections.

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While the pace of resistance may be slowed through programs that promote the responsible and appropriate use of antibiotics, research must continue into new antibiotics and additional therapeutic and vaccine strategies that address this critical unmet need.

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In April 2017, during the 27th European Congress of Clinical Microbiology and Infectious Diseases, our company underscored its continued commitment to discovering and developing novel medicines in the global fight against infectious diseases.

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Our company supports policies that promote development of new antibiotics, access to approved medicines and implementation of strategies to sustain antibiotic efficacy for future generations. The response to antimicrobial resistance (AMR) requires a comprehensive, global approach and meaningful collaboration between stakeholders, including governments, industry, health care providers, and patients.

Our company's long-standing commitment to the global fight against infectious disease goes hand-in-hand with a commitment to help slow the rate of emergence of potentially deadly resistant organisms.

Recognizing the need to address this global health threat, we joined more than 80 biopharmaceutical, generic medicine and diagnostic companies, as well as key trade associations, in signing a joint [declaration](#) at the 2016 Annual Meeting of the World Economic Forum. The joint declaration sets out bold commitments and calls on governments and industry to take joint action against AMR. In addition to the Davos Declaration, our company is one of 13 major pharmaceutical companies that presented the [Industry Roadmap for Progress on Combating Antimicrobial Resistance](#), which was released prior to the [United Nations High Level Meeting on AMR](#) in September 2016. In the Roadmap, the companies committed to continue to:

- Reduce the environmental impact from the production of antibiotics
- Help ensure antibiotics are used only by those who need them
- Improve access to antibiotics globally
- Explore new opportunities for collaborations between industry and the public sector

“Our company remains deeply committed to working with governments, health care providers, patients and others to drive antibiotic innovation, promote appropriate use and enhance access for patients.”

Kenneth C. Frazier, Chairman and Chief Executive Officer

In February 2017, we announced the launch of ILÚM Health Solutions, which provides enterprise-wide disease management tools and services to enable improved outcomes for patients with infectious diseases, such as sepsis and pneumonia, while supporting antimicrobial stewardship initiatives. ILÚM operates independently from our company’s pharmaceutical and vaccine products businesses as part of our Healthcare Services & Solutions (HSS) group. Read the full [press release](#).

Our role in the global fight against AMR includes not only ongoing research and development into innovative medicines and vaccines to treat and prevent infections, but also the promotion of appropriate use of these products through antimicrobial stewardship and global education and surveillance initiatives. Our company’s [Global AMR Action Plan](#) describes our policy positions and ongoing commitment to combatting AMR.

### Taking Action to Combat Antimicrobial Resistance

As a global health care leader, we are investing our resources and expertise to drive innovation that promotes human and animal health and wellness by preventing and treating infections.

**Leading in infection prevention** through the development and production of vaccines to prevent infections and reduce antibiotic use

**Driving innovation** to research, develop and commercialize new treatments and antibiotic alternatives to address important unmet medical needs

**Advancing antimicrobial stewardship (AMS)** programs to support the appropriate use of antibiotics and slow the pace of resistance

**Supporting global surveillance and awareness** of AMR through our Study for Monitoring Antimicrobial Resistance Trend (SMART) and AMR/AMS awareness programs

**Advocating for policy solutions** to address the global challenges limiting development of and access to new antibiotics, vaccines and diagnostics needed to combat AMR



For nearly three decades, our company has been at the forefront of the response to the hepatitis C virus (HCV) epidemic. We are dedicated to applying our scientific expertise, resources and global reach to the development and delivery of health care solutions that support people living with HCV worldwide.

The World Health Organization (WHO) estimates that, in 2015, 71 million people globally were chronically infected with HCV, and at risk of developing liver cirrhosis and/or liver cancer, with 1.75 million new infections occurring each year. In 2015, WHO and its 194 Member States committed to eliminating viral hepatitis as a public health threat by 2030.

Our scientists have been engaged in research to address HCV infection since the discovery of the virus in the late 1980s, and we continue to work to advance scientific understanding of this significant global public health epidemic.

- Company researchers developed the first approved therapy for chronic HCV, interferon  $\alpha$ 2b, in 1991.
- In 1998, the first combination therapy developed by our scientists for chronic HCV, interferon  $\alpha$ -2b+ribavirin, was approved. We also launched boceprevir, one of the first direct-acting antiviral medicines against HCV, in 2011.
- In January 2016, ZEPATIER™ (elbasvir and grazoprevir)—a once-daily, fixed-dose combination tablet for the treatment of adult patients with chronic HCV—received regulatory approval from the U.S. Food and Drug Administration (FDA) and Health Canada for specified HCV genotypes. Since that time, ZEPATIER has been approved in the 28 European Union member countries and in more than a dozen additional countries around the world.

We believe it is in the best interests of public health to broaden and accelerate patient access to HCV treatment, including underserved or difficult-to-treat chronic HCV-infected populations.

The clinical development program for ZEPATIER enrolled diverse groups of patients with chronic HCV infection, including patients who had failed certain prior therapies and patients with significant comorbidities and health complications such as severe renal impairment, compensated cirrhosis, and HIV co-infection.

Notably, the clinical development program also included a trial of patients with a history of injection drug use who were receiving opioid agonist therapy.

According to WHO, in addition to unsafe health care practices, injection drug use is one of the most common modes of transmission of HCV. In the United States, 75 percent of new infections with hepatitis C result from injection drug use. Patients who inject drugs are and will be an important population to address in achieving the WHO's goal of eliminating viral hepatitis as a public health threat by 2030.

## PRICING DESIGNED TO ENABLE BROAD PATIENT ACCESS

Innovations in chronic-HCV treatment that have become available over the past several years, now including ZEPATIER, provide the world with an unprecedented opportunity to significantly reduce the burden of HCV by 2030. However, a significant medical need remains: it is estimated that fewer than one in five patients with chronic HCV infection are currently treated, with thousands of new cases occurring each year.

Innovation without access limits meaningful benefit to patients. The majority of patients with chronic HCV have not yet been treated. While restricted access continues to be a barrier to chronic HCV treatment worldwide, our company is taking steps to address these barriers. We have worked closely with key stakeholders in the countries where we have launched ZEPATIER to increase the affordability of treatment, reduce barriers, and expand eligibility criteria to broaden and accelerate access to treatment for more patients.

In the United States, our company established a list price and a comprehensive commercial- and public-segment access strategy that we anticipate will help broaden and accelerate patient access to treatment and move us closer to our shared goal of reducing the burden of chronic HCV in the U.S.

## HEPATITIS C IN EMERGING MARKETS

In many developing countries, the spread of HCV is facilitated by unsafe medical practices, such as the reuse of needles and syringes by medical practitioners. The use and misuse of intravenous drugs is also a major route for HCV transmission.<sup>1</sup> Health systems in many of the countries most impacted by HCV are poorly equipped to widely diagnose HCV and to deliver care and treatment for those with the virus.<sup>2</sup>

Together, these factors are contributing to the heightened HCV disease burden in these regions. We are committed to developing sustainable solutions to improve awareness, diagnosis, and access to care and treatment in areas where the HCV disease burden is greatest.

We recognize that global elimination of HCV will require the combined efforts of all stakeholders—governments, donor organizations, policy makers, advocacy groups, nongovernmental organizations (NGOs) and the private sector—to build a framework for promoting awareness, prevention and treatment of viral hepatitis, especially among the populations most at risk for chronic HCV. We remain committed to strengthening new and existing partnerships to achieve greater access to health care.

Our company has had a particular focus on addressing these issues in two key countries in the developing world: India and Vietnam.

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### Project Echo<sup>®</sup>

To help build health care capacity and expand access to specialty care for complex or chronic conditions among underserved populations in Asia, our company's Foundation launched a new partnership in December 2016 with [Project ECHO](#) (Extension for Community Healthcare Outcomes) through a \$7 million commitment over five years (2017–2021) to expand the replication of Project ECHO in India and Vietnam. [Learn more.](#)

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1. European Association for the Study of the Liver. "Therapy of Hepatitis C: Clinical Application and Drug Development." <http://www.who.int/mediacentre/factsheets/fs164/en/>.
2. Ewen Callaway. "Hepatitis C drugs not reaching poor." Nature 508:295–296.17 April 2014.



For more than 30 years, our company has been committed to addressing the global challenge of the HIV epidemic.

With over 35 million people infected and 2 million new infections each year globally, the challenges of HIV are vast, impacting both developed and developing countries. These challenges include scientific, behavioral and programmatic aspects that continue to change as the epidemic evolves.

Since 1985, we've been engaged in research and development (R&D) efforts in both prevention and treatment of HIV. These efforts continue today. But research is just one part of our comprehensive strategy to address unmet needs in combatting HIV.

Our company has also sought to make a difference in the fight against HIV through efforts to enhance access to our HIV medicines, particularly in the developing world, and through partnerships that seek to strengthen health systems to better deliver prevention and treatment services. Clearly, the need is too great for any one stakeholder to address, requiring coordinated efforts among many organizations.

## A MULTIFACETED APPROACH TO IMPROVING ACCESS

We are committed to working with governments, donors, innovative and generic manufacturers, multilateral organizations, and civil society to address the full range of factors affecting access. After a decade of a wide range of efforts to increase access to HIV treatment in the developing world, it is clear that access to care is about more than just the price of medicines, and that collaboration has been essential to the progress made against HIV.

We have seen that increasing access requires a broad, comprehensive approach. Consequently, we are committed to improving patient access through expanded availability, enhanced access strategies and multi-sectoral partnerships.

To make these possible, we have employed multiple strategies to address the needs of particular regions and countries, including: seeking rapid and broad registration of our antiretroviral medicines (ARVs); providing support for clinical studies in resource-limited settings; implementing differential-pricing strategies; signing voluntary licenses with generic manufacturers; developing pediatric formulations; and establishing strong collaborations with governments, manufacturers and other stakeholders.

## Research

Our company has had an intensive, broad-based HIV clinical research program in

place since 1985 that has sought to address both treatment and prevention.

In addition to our own research efforts, we have entered into collaborations with other researchers and scientific organizations to help accelerate the search for new treatments and possible cures. Our work has been pioneering, and was pivotal in the development of new antiretroviral (ARV) treatments including protease inhibitors (PIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and integrase inhibitors. We have also played an important role in collaboration with others to define the principles for combination ARV treatment that are the standard for today's treatment paradigm.

Since the first HIV products became available nearly two decades ago, our company has worked to expand access to our medicines, build health care infrastructure, and address health and development challenges around the world. [Learn more.](#)

We continue to focus on comprehensive research and development that targets HIV, recognizing the need for new methods to address the epidemic. Our current R&D work in HIV includes programs to develop novel HIV-prevention technologies, new HIV antiretroviral medicines, and approaches to addressing HIV latency and eradication.

We have an active HIV R&D program to develop new HIV antiretroviral medicines that address unmet needs in HIV treatment. Our company has an ongoing commitment to HIV therapeutic R&D. Our clinical development programs include a novel second-generation NNRTI in Phase III and several earlier-stage clinical development programs.

## FOCUSING ON UNMET NEED IN PEDIATRIC TREATMENT

As part of the company's commitment to fighting HIV/AIDS, we have conducted extensive R&D efforts to develop pediatric formulations for our HIV ARVs.

The burden of pediatric HIV falls primarily in sub-Saharan Africa and in lower-income countries. The lack of demand for pediatric HIV medicines in high-income countries provides little commercial incentive for the development of optimized pediatric combinations, such as those seen in adults. Consequently, public-private partnerships are key mechanisms to facilitate availability of new pediatric formulations and to develop optimized formulations and combinations of pediatric ARVs.

Most recently, we have worked to increase access to the pediatric formulations of raltegravir, our integrase inhibitor, in the areas of greatest need. We have developed several pediatric formulations of raltegravir, which, following clinical studies conducted in collaboration with the [IMPAACT Network](#), have been approved by the U.S. Food and Drug Administration (FDA) for children as young as four weeks of age. Studies in infants below four weeks of age are ongoing.

In February 2015, we entered into an agreement with the [Medicines Patent Pool \(MPP\)](#). The agreement is designed to improve access to raltegravir for pediatric populations in 92 low- and middle-income countries where 98 percent of the children infected by HIV live. Through this agreement, our company has licensed our pediatric formulations of raltegravir for use in treating HIV-1 infection in infants and children from 4 weeks to under 12 years of age in developing countries. This is MPP's first agreement to provide access to an HIV integrase inhibitor for use in combination HIV therapy for infants and children in this age range.

The agreement also allows for the development of novel pediatric formulations of raltegravir and novel combinations, in support of the "Global Pediatric Antiretroviral Commitment-to-Action" announced by the [U.S. President's Emergency Plan for AIDS Relief \(PEPFAR\)](#), the [Pediatric HIV Treatment Initiative \(PHTI\)](#), and the [Global Fund to Fight AIDS, Tuberculosis and Malaria](#) to accelerate the development of new, high-priority pediatric ARV co-formulations.

In 2007, we began collaborating with the National Institute of Allergy and Infectious Diseases (NIAID), the National Institute of Child Health and Human Development (NICHD), and the International Maternal Pediatric Adolescent AIDS Clinical Trials

(IMPAACT) Network to conduct a Phase I/II, multicenter, open-label, noncomparative study to evaluate the safety, tolerability, pharmacokinetics, and antiretroviral activity of ISENTRESS® (raltegravir) in children and adolescents: IMPAACT P1066. This study of three formulations—a film-coated tablet, a chewable tablet, and granules for oral suspension—included more than 150 HIV-infected children ranging from 4 weeks to 18 years of age in the U.S., Latin America and Africa.

On the basis of results from this study, these formulations of ISENTRESS have now been approved by the U.S. Food and Drug Administration (FDA) and the European Medicines Agency for use in infants (as young as 4 weeks of age and weighing at least 3 kilograms), toddlers, children or adolescents.

In collaboration with IMPAACT, we are conducting multiple studies in neonates. IMPAACT P1097, which examined raltegravir levels in full-term infants born to mothers who have taken raltegravir in pregnancy (these infants were not given raltegravir directly), has completed enrollment. A new component of this study (P1097A) is ongoing, and is similarly examining raltegravir levels, but this time in low-birth-weight (including preterm) infants whose mothers have taken raltegravir in pregnancy.

Building from the data generated in P1097, another study, IMPAACT P1110, of active raltegravir dosing to neonates at high risk for acquiring HIV infection, was initiated and has provided preliminary data to establish a well-tolerated and appropriate dose of raltegravir (granules for suspension formulation) for neonates from birth to 6 weeks of age.

We are also supporting other ongoing studies, including IMPAACT P1115, a potential contribution to understanding approaches to HIV cure in children through early diagnosis and treatment of newborn infants, and IMPAACT P1101, to define a correct ISENTRESS dose in HIV/TB co-infected children on rifampin-based TB therapy.

Efforts to register these three formulations of raltegravir broadly in the countries with the greatest pediatric HIV burden are ongoing. And, as of February 2017, ISENTRESS chewable tablets (25mg and/or 100mg) have been approved in 69 countries and ISENTRESS granules for suspension (100mg) have been approved in 33 countries for use in pediatric patients.

In addition, in May 2017, the FDA approved ISENTRESS® HD in the U.S., a new 1,200 mg once-daily dose of ISENTRESS, to be given as two 600 mg tablets in combination with other antiretroviral agents, to adults as well as to pediatric patients weighing at least 40 kilograms, who are treatment-naïve or whose virus has been suppressed on an initial regimen containing ISENTRESS 400 mg given twice daily.

## Access/Availability

Multi-stakeholder efforts, including those of governments, civil society, donors and the private sector, are needed to address the challenges of delivering comprehensive HIV prevention, care and treatment.

We constantly strive to discover new ways to apply our expertise, human and financial resources, and market-based solutions to addressing the complex challenge of patient access. Our strategies are designed to enable us to facilitate access while continuing to develop new medicines. They also help us move beyond the limits of what we can achieve if we work alone.

This desire to redraw the boundaries of possibility enabled us to pave the way for two successful public-private partnerships that were created in the last two decades in some of the countries hit hardest by HIV. [Learn more.](#)

## ENHANCING ACCESS IN THE DEVELOPING WORLD

To facilitate access to raltegravir in sub-Saharan Africa and in low-income countries, the areas of greatest need and the least ability to finance health care, we instituted a multi-strategy model that includes developing a low-cost supply chain with manufacturing partners that has enabled us to reduce our Access price in sub-Saharan Africa, low-income countries and least-developed countries (LDCs), and to grant nonexclusive voluntary licenses to multiple generic manufacturers to supply generic raltegravir in these regions.

Public-sector purchasers in the 62 countries that are considered the world's poorest and hardest-hit by the HIV and AIDS pandemic are eligible for our lowest price. According to the WHO, three-fifths of patients in need of therapy live in these countries.

The countries included are all countries currently identified by the United Nations Conference on Trade and Development (UNCTAD) as LDCs, as measured by their low income, weak human assets and high economic vulnerability. We are also extending our Access price to public-sector purchasers in India and the 12 countries in sub-Saharan Africa hit hardest by the HIV and AIDS pandemic but not included on the UNCTAD list. A complete list is available [here](#).

Given the varying levels of economic development and national strategies, in other middle-income countries we have implemented strategies to make meaningful improvements in patient access. We are focusing on working with governments and with other country stakeholders to develop strategies tailored to each country's HIV-access needs. As part of this effort, we have implemented a differential pricing policy based on country income level, disease burden, treatment-guideline position, patient access through national AIDS treatment programs, and market conditions. As conditions evolve, we continue to refine these country-specific models.

To truly enhance access to treatment in low- and middle-income countries, the international community must collaborate to strengthen health care infrastructure, to ensure adequate financing for health, and to help to build local health care capacity through training and support. Pharmaceutical companies alone cannot solve these immense public-health problems. Sustainable solutions will come from comprehensive approaches that draw on the expertise of all stakeholders.

## ADDRESSING ACCESS ISSUES IN THE DEVELOPED WORLD

In developed countries, we continue to work to address patient access needs. In the United States, for example, many state AIDS Drug Assistance Programs (ADAPs) have struggled to meet growing need. Over the last two decades, our company has lowered or frozen the price of our ARVs five times. We also continue to offer support to eligible patients through our comprehensive Patient Assistance Programs and Co-Pay Assistance Program. Since 2010, we have worked with [Welvista](#) and with [HarborPath](#) to offer immediate access to no-cost HIV medicines to patients on ADAP waiting lists and to support a common portal for patients accessing our company-sponsored [Patient Assistance Programs \(PAPs\)](#).

### State AIDS Drug Assistance Program (ADAP)

We have a long history of working closely with leaders from the HIV community to ensure that our approach to pricing our medications is fair and reasonable, balancing our interest in conducting extensive HIV research with efforts to support broad access to our medicines.

We were one of the first companies to provide our HIV medicines to uninsured patients on waiting lists for drugs under the AIDS Drug Assistance Program (ADAP). In addition, we were the first company to provide a price freeze for state ADAPs in the late 1990s, when they began to suffer a funding challenge.

We expanded our price-freeze policy to subsequent products, and also continue to provide expanded financial relief to state ADAPs through increased discounts. Through the agreement, which has been extended through December 31, 2018, we provide continued support for initiatives that give low-income individuals living with HIV access to medicines.

ADAPs reach approximately one-third of the people with HIV estimated to be receiving care nationally.

### U.S. Patient Assistance Program

Our commitment to patients' access to our products is reflected in our U.S. Patient Assistance Program. CRIXIVAN<sup>®</sup> (indinavir sulfate) and ISENTRESS<sup>®</sup> (raltegravir) qualify for this program. This private and confidential program provides product free of charge to eligible individuals, primarily the uninsured who, without our assistance, could not afford this medicine. [Learn more.](#)

#### **Co-Pay Assistance Program in the U.S.**

In addition to our [Patient Assistance Program](#), we have a program in the United States for eligible patients on ISENTRESS or ISENTRESS HD. If patients have private insurance and an out-of-pocket cost for ISENTRESS or ISENTRESS HD, they may be eligible to receive a savings coupon. The coupon provides savings toward their out-of-pocket costs. Restrictions, terms and conditions apply. [Learn more.](#)

#### **Common Patient Assistance Program Application**

We also participate in the national [Common Patient Assistance Program Application \(CPAPA\)](#) for HIV medications. The form was developed by the Department of Health and Human Services (DHHS), participating pharmaceutical companies, the [National Alliance of State and Territorial AIDS Directors \(NASTAD\)](#), and community stakeholders. The form can be used both by people living with HIV and by their providers, and reduces the need to complete several different and individual PAP application forms for HIV medications.

## **Pricing/Registration**

**We continually look for ways to reduce the cost of our ARVs for people living in the world's poorest countries and those hit hardest by the epidemic.**

One way is to work with external manufacturers and suppliers to achieve incremental efficiencies. For ISENTRESS, we have established a low-cost supply chain with external partners for commercialization in all low-income countries and all countries in sub-Saharan Africa.

With the implementation of this supply chain, we have been able to reduce our price of ISENTRESS to \$1.85 per day in these countries. We have also granted multiple nonexclusive licenses to several Indian generic manufacturers for the manufacture and commercialization of the 400mg tablet formulation of raltegravir in 60 low-income and sub-Saharan African countries. In addition, in February 2014, together with Cipla, we announced a strategic partnership to co-market raltegravir (400mg tablet) in the Indian market.

In February 2015, together with the Medicines Patent Pool (MPP), we announced a licensing agreement for pediatric formulations of raltegravir for children less than 12 years of age covering 92 low- and low-middle-income countries.

To date, we have also granted royalty-free licenses for efavirenz to six South African generic manufacturers.

### **HIV PRICING POLICIES**

Our differential-pricing policy is part of our commitment to addressing HIV through a multi-pronged strategy, with the goal of ensuring that our HIV antiretroviral (ARV) medicines reach as many of those in need as possible.

#### **ISENTRESS, STOCRIN<sup>®</sup> (efavirenz), CRIXIVAN<sup>®</sup> (indinavir sulfate)**

The lowest Access price for our HIV medicines is offered to countries with a combination of highest disease burden and lower country income (gross national income [GNI] per capita), as defined by the World Bank. A list of eligible Access countries is provided [here](#).

As of July 1, 2017, the Access prices for our HIV medicines for eligible customers<sup>1</sup> are:

## HIV PRICING

PRODUCT NAME	Daily Dose	Cost Per Year of Treatment (cost \$ per unit)
<b>STOCRIN® (EFAVIRENZ)</b>		
50mg tablet	based on weight	(0.12)
200mg tablet	based on weight	(0.36)
600mg tablet	1	237 (0.65)
30mg/ml suspension (bottle)	based on weight	(0.094 per ml)
<b>CRIXIVAN® (INDINAVIR)</b>		
400mg cap	4	394 (0.27)
<b>ISENTRESS® (RALTEGRAVIR)</b>		
400mg tablet	2	675 (0.925)
100mg chewable tablet	based on weight	(0.6)
25mg chewable tablet	based on weight	(0.3)

Countries classified as lower-middle-income and upper-middle-income<sup>2</sup> by the World Bank are eligible for prices that are discounted from those in high-income countries. These prices are based on, among other things, a combination of country income, disease burden, treatment guideline positioning, patient access through national AIDS treatment programs, and market conditions, and will be negotiated with each government. For high-income countries, we will make ISENTRESS available at competitive prices that take into account the innovation and value that ISENTRESS represents.

### ATRIPLA® (efavirenz/emtricitabine/tenofovir disoproxil fumarate)

We sell ATRIPLA at \$1.68 per day, or \$613 per year, in 98 Access countries, as defined by our agreement with Gilead.

## REGISTRATION

We are committed to pursuing rapid registration of our antiretrovirals (ARVs), including registration in those countries most affected by HIV/AIDS. Currently, our ARVs are registered or available through import waiver in many countries. Since the first approval in 2007, ISENTRESS has received regulatory approval in more than 110 countries.

Details of registration and availability of our four ARVs are available through the links below:

- [ATRIPLA®](#) (efavirenz, emtricitabine, tenofovir disoproxil fumarate)
- [CRIXIVAN®](#) (indinavir sulfate)
- [ISENTRESS®](#) (raltegravir)
- [STOCRIN®](#) (efavirenz)

## PREQUALIFICATION

ATRIPLA, CRIXIVAN, ISENTRESS AND STOCRIN have received World Health Organization (WHO) prequalification. WHO

prequalification verifies that medicines meet the quality, safety and efficacy requirements of UN agencies, including UNICEF and the Pan American Health Organization.

All of our company's formulations of ISENTRESS, including the 400mg tablet, the 100mg and 25mg chewable tablets, and the granules for suspension, have been approved by the U.S. Food and Drug Administration (FDA) and the European Medical Agency, making these formulations eligible for purchase by both the U.S. PEPFAR program and the Global Fund to Fight AIDS, Tuberculosis, and Malaria.

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1. Customers eligible for public-sector Access pricing in eligible Access countries will include: governments and programs fully funded by governments and/or by multi- and bilateral donors (e.g., the Global Fund, PEPFAR, UNITAID); UN System organizations; NGOs and other noncommercial providers of HIV treatment in sub-Saharan Africa; World Bank-defined low-income countries, UN-defined least-developed countries, and India. We offer these products on a Delivered Duty Unpaid (DDU), Carriage and Insurance Paid (CIP), or Carriage Paid To (CPT) airport-of-destination (Incoterm, 2000) basis. Additional costs may include freight, insurance, customs handling, taxes and duties.

2. Customers eligible for public-sector pricing in lower-middle- and upper-middle-income countries will include: governments and programs fully funded by governments and/or by multi- and bilateral donors (e.g., the Global Fund, PEPFAR, UNITAID); UN System organizations; and NGOs. Low- and middle-income countries that are members of the European Union are not eligible for pricing under this Access program.

## Collaborations

Improving access to care requires more than simply making our medicines available and affordable.

The most important factors for long-term sustainability are strengthening health care infrastructure, ensuring adequate financing for health, and helping to build local health care capacity through training and support. Public-private partnerships have a critical role to play in this process, drawing on the complementary expertise of all stakeholders—governments, international agencies, community organizations, donors, the private sector, nongovernmental organizations (NGOs), patients, and others—to identify the most promising and efficient ways to address the impact of HIV in a variety of resource-limited settings. [Learn more.](#)

### **Project / Design**

Our */ Design* campaign, in collaboration with music promoter Maria Davis and fashion designer Mondo Guerra, is a national education campaign in the U.S. aimed at empowering the HIV community to have open conversations with their health care teams about their lifestyle needs, HIV treatment plans, and other chronic conditions and/or medicines they may be taking. [Learn more.](#)



## Neglected Tropical Diseases

Neglected tropical diseases (NTDs) are a set of 17 diseases that disproportionately affect more than 1 billion people living primarily in the developing world.

Public Policy Position Statement: Social Licensing Approach for Research Development Partnerships for NTDs.

As a leading cause of disability, NTDs carry with them significant social and economic burdens. However, as the [World Health Organization \(WHO\)](#) reports, many of these diseases can be effectively controlled, and in many cases, eliminated. Our company has a long-standing commitment to research into NTDs. We initiated research on MECTIZAN® (ivermectin) for use in humans for the NTD onchocerciasis (river blindness) in 1978, leading to the creation of the groundbreaking [MECTIZAN Donation Program](#). Through a range of in-house programs and external partnerships, we continue to conduct research to address the burden of neglected tropical diseases today. [Learn more](#) about the MECTIZAN Donation Program.

### THE LONDON DECLARATION

We are an original signatory to the [London Declaration](#), a collaborative effort launched in 2012 to accelerate progress toward eliminating or controlling 10 NTDs by the end of the decade. Our company joined 12 other global pharmaceutical companies and many other stakeholders, including endemic country governments, the WHO, the [Bill & Melinda Gates Foundation](#), the [U.S. Agency for International Development \(USAID\)](#), the [UK Department for International Development \(DFID\)](#), nongovernmental organizations (NGOs) and other organizations in this effort.

Together with the other pharmaceutical companies, we committed to continuing or increasing donations of medicines to treat or prevent these diseases. Donors committed financial resources, and NGOs agreed to support implementation needs. The partners came together under the banner of “Uniting to Combat NTDs” to track progress and identify gaps that need to be addressed in order to reach the goals of the London Declaration. Through the MECTIZAN Donation Program, we are helping to achieve the disease control and elimination goals for two diseases, onchocerciasis (river blindness) and lymphatic filariasis (LF).

Although existing tools are having a major impact, several NTDs require new or improved drugs and diagnostics to achieve the goals of the London Declaration. We are engaged in various efforts to advance progress toward developing new drugs and diagnostics. For example, together with several other companies, we are providing access to compound libraries with external researchers through the [World Intellectual Property Organization’s Re:Search \(WIPO Re:Search\)](#) Consortium and [Drugs for Neglected Disease Initiative \(DNDi\)](#). [Learn more](#) about our social licensing approach to combatting NTDs.

Taken together, through our drug donations for onchocerciasis and LF and our research and development activities for schistosomiasis, visceral leishmaniasis (VL) and Chagas disease, we are supporting the London Declaration goals for five NTDs.

For more information on progress toward the London Declaration goals, [click here](#).

For more information on our company's drug donations for onchocerciasis and LF, please refer to the [MECTIZAN Donation Program](#).

## RESEARCH & DEVELOPMENT

### WIPO Re:Search

Our company is one of the founding members of [WIPO Re:Search](#), a consortium of public and private organizations that facilitates research on neglected tropical diseases, malaria and tuberculosis. Through this consortium, we entered into an agreement with researchers at the University of California, San Francisco (UCSF), which was later transferred to the University of California, San Diego (UCSD), providing scientists with a series of compounds for screening that have the potential to lead to better and safer treatments for patients suffering from schistosomiasis. This disease is caused by a blood-borne parasite, and affects millions of people living in the developing world.

Also through WIPO Re:Search, in late 2014 [we entered into an agreement](#) with researchers at the Walter and Eliza Hall Institute of Medical Research (WEHI) in Australia that supports collaboration focused on the research and development of antimalarial drugs that could potentially impact the replication and transmission of malaria. In 2015, our joint team was successful in applying for and receiving a Wellcome Trust Pathfinder Award. The joint team leveraged this award to characterize and advance two separate series of hits to the point where an application for the next phase of funding has been submitted. It is anticipated that this program will achieve lead optimization status in 2018.

In furtherance of our commitment to the WIPO Re:Search mission and community, we continue to provide relevant expertise to other WIPO Re:Search members as requested and appropriate. We also continue to consider other collaboration opportunities where our company's contributions can provide unique and significant impact.

### G-FINDER Survey

To contribute to global awareness and advocacy on research and development (R&D) for NTDs, we participate in the annual [G-FINDER survey](#). Since 2008, G-FINDER has reported on global investments in neglected disease R&D from a range of public and private institutions, and is considered a unique source of current information and insights into ongoing trends for stakeholders engaged in NTDs. We are pleased to note that in this year's G-FINDER report, private investment in neglected disease R&D in 2015—in both absolute terms, and as a proportion of global funding—was the highest ever recorded in the history of the G-FINDER survey as a result of the combined contributions of our company and other private sector contributors.

### DNDi Collaboration

In May 2009, our company and the nonprofit organization [DNDi](#) entered into a collaboration to support the discovery and development of improved treatments for a range of NTDs. The initial partnership focused on trypanosome-derived NTDs, including VL and Chagas disease, both of which infect millions of people. We have recently expanded this partnership for 2016 to include the investigation of macrofilaricidal agents (compounds that would kill adult worms that cause onchocerciasis and LF) that would feed into further development activities conducted under the umbrella of the Bill & Melinda Gates Foundation-driven Macrofilaricide Drug Accelerator consortium described below.

Through a nonexclusive, royalty-free license to DNDi, we are contributing small-molecule assets and related intellectual property for DNDi to conduct early-development programs for drug candidates for treatment of NTDs, with the primary goal of manufacturing and distributing drugs at low cost to the public sector in resource-poor countries. In the anti-trypanosome effort, we have identified several series relevant for NTD indications, three of which displayed early promise and moved into in vivo studies. Unfortunately, all three failed to meet predetermined criteria for advancement. At least one additional series is moving into in vivo validation studies that are initiating during 2017 or are being planned.

For the macrofilaricide effort, we identified promising lead series with activity in a whole-worm assay. These leads were included in a compound collection that also included advanced compounds designed to allow rapid progression to in vivo efficacy studies. We continue to offer resources to enable DNDi's macrofilaricide efforts to identify and advance promising

candidates. For all of our efforts with DNDi, we will share joint intellectual property rights on drug candidates generated through early development, and our company will retain the option to undertake late clinical development and registration of these drugs.

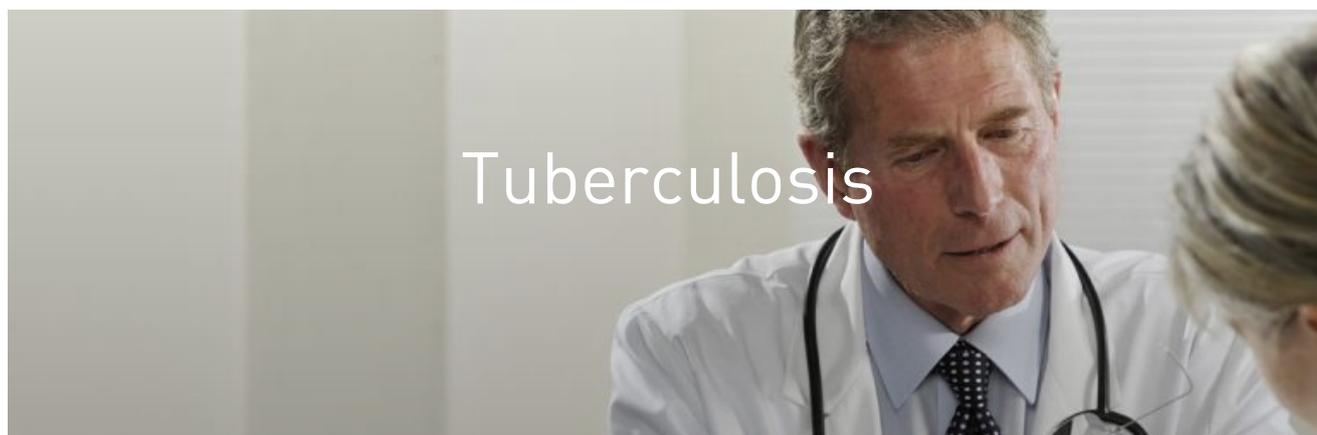
### **Macrofilaricide Drug Accelerator**

In 2015, our company became a founding member of the Macrofilaricide Drug Accelerator Program (MacDA), an effort driven by the Bill & Melinda Gates Foundation to support the members' collective work toward identifying and generating lead drug compounds to augment the global onchocerciasis and LF drug pipelines. We have established collaborations within the MacDA membership in support of the program's goals to accelerate the discovery of such lead drug compounds.

DNDi also is a key player in this effort, assisting us in the evaluation of lead molecules. This work has led to the identification of several promising lead series with activity in a whole-worm assay. These leads were included in a compound collection that also included advanced compounds designed to allow rapid progression to in vivo efficacy studies. In 2016, three different classes of our compounds were moved to in vivo proof-of-concept studies directed by DNDi, but unfortunately all failed to meet predetermined criteria for progression. We continue to offer resources to enable DNDi's macrofilaricide efforts to identify and advance promising candidates.

### **Emerging Pathogens with Potential to Generate Severe Epidemics**

We are currently collaborating with the United States Army Medical Research Institute of Infectious Diseases and other organizations on research to determine the ability of our company's compounds and biologics to inhibit infectious disease organisms, including Ebola, Zika and related viruses that have the potential to generate severe epidemics and pose a threat to civilian and military populations.



## Our company is working to identify and develop new drugs against tuberculosis (TB) that can lead to shorter and better-tolerated regimens.

Tuberculosis is one of the most serious infectious diseases worldwide. In 2015, the World Health Organization (WHO) estimated that there were 10.4 million new TB cases worldwide, and that 1.8 million people died from the disease.<sup>1</sup> Although TB is a treatable and curable disease, current treatments require patients to take multiple antibiotics for six to 24 months or longer, are complicated to administer and have significant adverse events. These factors prevent people from accessing or completing their treatment, which can lead to the development of drug-resistant strains or death. There is an urgent need for new, better regimens with shorter durations.

The TB Drug Accelerator (TBDA) is a groundbreaking collaboration among eight research institutions, eight pharmaceutical companies and a product development partnership to facilitate TB drug discovery. It has been designed and coordinated by the Bill & Melinda Gates Foundation.

Through the TBDA, companies share targeted sections of their compound libraries and data with one another and with academic research institutes in order to develop the best drug prospects, regardless of where they originate. To date, scientists from four continents have tested more than 3 million small molecules from corporate and other compound collections for screening. The immediate goal is to provide clinical proof of concept by 2024 for a new regimen that can cure a patient with TB in only one month.

Our company has completed two large in-house screening campaigns. One was a screen of over 2 million compounds, and the other was a collaborative effort with TBDA partners using our proprietary Automated Ligand Identification System (ALIS) technology. Both screens delivered sets of unique hit molecules that are being followed up by our scientists and TBDA member scientists. In collaboration with the National Institute of Allergy and Infectious Diseases, we continue to champion a lead optimization program within the TBDA.

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1. <http://apps.who.int/iris/bitstream/10665/250441/1/9789241565394-eng.pdf?ua=1>.

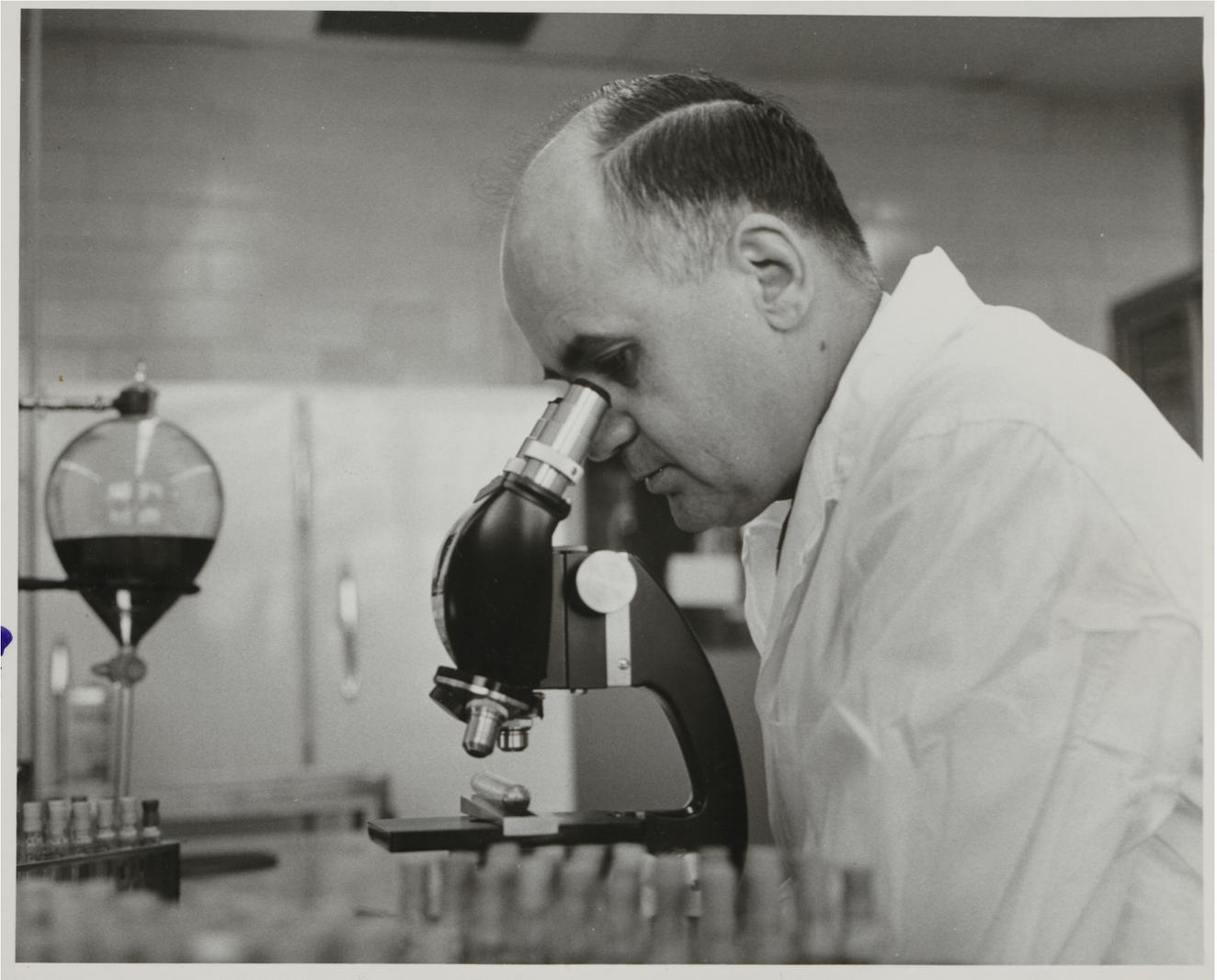


Vaccines are one of the most valuable public health innovations of modern times, according to the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC) and other leading health authorities.<sup>1,2,3,4,5</sup>

#### Public Policy Position Statement: Vaccines

Our company has played a defining role in the history of vaccines. For more than 100 years, our scientists have been discovering and developing vaccines to help protect children, adolescents and adults from a number of serious diseases.<sup>6</sup>

In that time, our company has been home to some of the world's greatest vaccinologists, including the late Dr. Maurice Hilleman, a scientist and visionary who developed more than 40 vaccines for humans and animals over the course of his remarkable career.<sup>7</sup>



Dr. Maurice Hilleman, ca. 1962.

Our long history of success in discovering, developing, manufacturing and distributing vaccines is the foundation on which we will build a healthier future for people of all ages worldwide.

“I think there’s perhaps no better example of how we make our mark on long-term health than our vaccines business. The bottom line is, children are protected and communities are being changed for the better around the world because of our company.”

Kenneth C. Frazier  
Chairman and CEO

Our company’s framework is one that allows the ongoing research, development and distribution of innovative vaccines that address important unmet health needs. In keeping with our overarching [Access to Health Statement of Guiding Principles](#), we have a comprehensive strategy.

## OUR COMMITMENTS

- Support ongoing surveillance and assessments to understand infectious-disease trends and their impact on people
- Engage in innovative research and development (R&D) to provide vaccines that address vital global health needs
- Strive to maintain the highest standards of safety and product quality in all stages of vaccine development and manufacturing
- Invest in manufacturing improvements to help assure reliable product supply and lower production costs
- Use tiered (or differential) pricing—systematically pricing vaccines at differing levels appropriate to the value they create under the economic conditions where they are used—to facilitate broad access
- Work with governments and nongovernmental organizations (NGOs) to build sustainable and effective vaccination programs that reliably reach people

Following the end of a successful 20-year joint venture with Sanofi Pasteur, in January 2017, our company reintegrated our broad vaccines portfolio of pediatric, adolescent and adult vaccines into 19 MSD countries across Europe. We're proud to build on the success of the joint venture and move forward independently managing the MSD vaccines portfolio in the region. The addition of the vaccine portfolio in Europe strengthens our global position as a leader in vaccines and infectious disease prevention.

## Our Approach

Our company invents—i.e., conducts innovative research and development—to create vaccines that address unmet and emerging global health needs.

## RESEARCH AND DEVELOPMENT

We remain one of the few companies dedicated to the complex business of researching and producing vaccines to help address the public health burden of infectious diseases for people around the world.

Our company is working with a number of collaborators, including global and national health organizations, to develop vaccines that target diseases of global significance, such as pneumococcal disease, respiratory syncytial virus (RSV), cytomegalovirus (CMV), herpes zoster and Ebola.

We are also working to develop a vaccine to prevent dengue. It is estimated that each year there are 390 million people infected with dengue viruses throughout the tropics and subtropics, resulting in up to 100 million cases of dengue fever, with at least 500,000 of those cases being classified as severe.<sup>8</sup> Nearly 4 billion people live in the more than 140 countries where dengue transmission occurs.<sup>9</sup> At this time, there is no broadly registered and widely available vaccine or specific therapy to protect these people at risk. In 2014, we in-licensed the NIH live attenuated dengue vaccine candidate. NIH-sponsored Phase II clinical trials are currently ongoing and preparations for company-sponsored trials are in progress.

## IMPROVING VACCINES

In addition to engaging in vaccine R&D, we are focused on exploring ways to improve the characteristics of our vaccines. This includes investing in improved production approaches, formulations, schedules and presentations, as well as investigating opportunities to improve supply security and expand the number of serotypes in our vaccines, and evaluating the appropriateness of our vaccines for additional populations.

## MSD-WELLCOME TRUST HILLEMAN LABORATORIES

We are committed to increasing global vaccination coverage and supporting sustainable vaccination programs that expand access and uptake. Vaccines not only need to be made available in communities, but need to be administered to people so they are immunized—whether in a rural village, an urban clinic, or somewhere in between. Product attributes such as heat-stability, doses (single or multiple doses in a vial), vial size, and vial technology (such as temperature monitoring) can make it easier for public health systems to manage vaccination and for community health care workers to vaccinate people in unique geographies and resource-limited environments.

We are proud to be engaging with the global health community to help address such challenges through the MSD-Wellcome Trust Hilleman Laboratories, a unique and creative partnership founded in 2009 with co-funding from our company and Wellcome Trust. Headquartered in New Delhi, India, Hilleman Laboratories is an innovative research and development center focused on increasing global health impact by developing high-quality, affordable vaccines tailored for lower-income settings (including countries eligible for support from Gavi, the Vaccine Alliance).

Hilleman Laboratories is pursuing exciting and innovative vaccine development to combat two high-burden, life-threatening diseases—diarrhea and bacterial meningitis—for which vaccine use is still limited in lower-income countries, or for which vaccines do not exist. For protection against diarrhea, Hilleman Laboratories is developing an affordable, heat-stable rotavirus vaccine, an affordable cholera vaccine to help increase global supply, and vaccines against diarrheal pathogens for which vaccines are not yet available, enterotoxigenic *Escherichia coli* (ETEC) and *Shigella*.

Additionally, Hilleman Laboratories is developing an affordable, first-of-its-kind polyvalent conjugate vaccine to protect against five types of meningococcal disease (A, C, Y, W, X). Hilleman Laboratories pursues its work in strong collaboration with governmental and nongovernmental organizations spanning global public health, science, technology, and the vaccine industry, including for example, the World Health Organization, Gavi, UNICEF, vaccine manufacturers, and many others.

Inspired by the rich legacy and innovative spirit of Dr. Maurice Hilleman, Hilleman Laboratories is committed to addressing major public health needs and reducing inequity around the world. Toward that end, Hilleman Laboratories is dedicated to delivering high-quality, affordable, user-centered vaccines that can be implemented in effective, sustainable ways to help protect the health of children, families and communities in low-income settings. Learn more about Hilleman Laboratories' exciting endeavors at: [www.hillemanlabs.org](http://www.hillemanlabs.org).

## MANUFACTURING AND SUPPLY

We continue to invest in manufacturing and end-to-end supply improvements in both capability and capacity to help assure the sustainable, reliable supply of quality and affordable vaccines to serve global needs.

We continue to make investments in manufacturing capability and capacity as part of our long-term strategy to reach more people around the world with our vaccines. To ensure a reliable supply of quality products, we have invested more than \$1 billion to modernize and expand our existing facilities and build new vaccine manufacturing sites. We have manufacturing sites in West Point, Pennsylvania, U.S.; Durham, North Carolina, U.S.; Elkton, Virginia, U.S.; and Carlow, Ireland. We seek to develop the capability and capacity to serve a significant portion of the world's population.

The total number of doses distributed of our vaccines has nearly doubled since 2010. And over the past seven years, our global reach has doubled: In 2016, approximately 60 percent of our vaccines were distributed outside the U.S., up from just 30 percent in 2010.

Importantly, we are working hard to ensure that many of these doses reach people in the low-income settings where they are needed most. More than 22 million doses of just two of our vaccines—GARDASIL® [Human Papillomavirus Quadrivalent (Types 6, 11, 16, and 18) Vaccine, Recombinant] and ROTATEQ® (Rotavirus Vaccine, Live, Oral, Pentavalent)—have been distributed in Gavi-eligible countries through 2016. Today, 19 Gavi-eligible countries have launched immunization programs with GARDASIL, and four are using ROTATEQ. More broadly, working with Gavi, UNICEF, and other partners, we have worked to mobilize funding and technical support to enable the successful introduction of underused vaccines in the world's poorest countries.

## RELIABLE & HIGH-QUALITY SUPPLY<sup>10</sup>

Our manufacturing division has undertaken an ambitious program to reduce the cost of production by increasing efficiency, minimizing procurement spending and improving supply performance, including on-time deliveries and reduction of supply shortages.

Maintaining product quality is paramount. To provide high-quality vaccines to people who need them, we manage our supply chain through policies and procedures designed to keep the distribution system secure. Tools such as serialization—a unique identification number on each package that goes to market—add extra security to the vaccine supply chain. A serial number on an individual package enables anyone along the supply chain to scan the code and authenticate it as a genuine product. Additionally, to help offset supply uncertainties, we produce a strategic vaccine reserve to respond quickly to unanticipated market demand.

We also have initiatives in place to help ensure that our packaging reduces unnecessary waste and is environmentally friendly. For instance, evaluating opportunities to reduce packaging elements for providers that have a controlled delivery environment or removing unnecessary packaging for individual units within bulk purchasing can result in substantial efficiencies and reduced waste.

## MANUFACTURING PARTNERSHIPS

We continue to explore potential strategic partnerships with other manufacturers to bring down the cost of vaccines and promote greater access in local markets. We have a long history of progress in this area, dating back to our hepatitis B license of technology to manufacturers in China in the 1990s.

In 2014, we signed an agreement with the Instituto Butantan, a Brazilian biomedical research center and vaccine producer, outlining the terms of a productive development partnership (PDP) for the technology transfer of our company's quadrivalent human papillomavirus (HPV) vaccine. Through this important transfer of vaccine technology, GARDASIL is now being supplied to Brazil's National Immunization Plan (NIP) through a partnership between our company and Instituto Butantan supporting the government of Brazil in its long-term national vaccination efforts against HPV-related diseases. In addition, we are working with Instituto Butantan on the transfer of technology for the production of our hepatitis A vaccine, VAQTA (Hepatitis A Vaccine, Inactivated).

## REGISTRATION & PREQUALIFICATION

We seek to ensure global access to our vaccines by obtaining and maintaining up-to-date product registrations around the

globe. Additionally, we seek to obtain WHO prequalification so that our vaccines may be easily obtained and distributed to underserved areas of the world's poorest countries.

## Ten Years of Licensure

The year 2016 was an important one for our key vaccines, as we celebrated the 10-year anniversaries of initial licensure for ROTATEQ (Rotavirus Vaccine, Live, Oral, Pentavalent), ZOSTAVAX (Zoster Vaccine Live) and GARDASIL [Human Papillomavirus Quadrivalent (Types 6, 11, 16 and 18) Vaccine, Recombinant] and the significant impact these vaccines have had on population health.

The following table summarizes the registration and WHO prequalification status of a select list of our vaccines.

	GARDASIL® [Human Papillomavirus Quadrivalent (Types 6, 11, 16, and 18) Vaccine, Recombinant]	GARDASIL9® (Human Papillomavirus 9-valent Vaccine, Recombinant)	RotaTeq® (Rotavirus Vaccine, Live, Oral, Pentavalent)	M-M-RII (MEASLES, MUMPS and RUBELLA VIRUS VACCINE LIVE)	VARIVAX® (Varicella Virus Vaccine Live) \
Product Is WHO-Prequalified <sup>11</sup>	Yes	No	Yes	Yes	No
Date of Prequalification	May 20, 2009	N/A	October 7, 2008	January 6, 2009	N/A
Approximate Number of Countries Where Product Is Registered (as of Q1 2017)	130	50	120	70	60

## PRICING

Our company works with governments, international health and development organizations, donor groups, nongovernmental organizations (NGOs), and others to support countries' population health aims and help improve sustainable vaccination programs.

We use tiered pricing for vaccines as an equitable way to achieve twin objectives: to expand access to people who need vaccination, and to ensure sufficient return on investment over time to support the complex and costly research and development and other activities necessary to create new vaccines.

We consider a variety of factors in arriving at a price in a given country, including public health needs, the health and economic value of the vaccine, the country's ability to support vaccine delivery and achieve population health coverage, its level of economic development, its fiscal capacity for investments in health and actual health spending, its mechanism and

policies for procuring vaccines, and others.

We also consider inequities in access within a country. Where regulations and infrastructure allow, reduced pricing has been offered to support government- or donor-funded coverage of lower-economic-tier segments.

Our company's commitment to helping protect global health by improving the affordability, availability, accessibility, and use of our vaccines around the world is fundamental to our business and overall mission. We offer ROTATEQ and GARDASIL at an access price that is significantly less than the price of these vaccines in developed markets. The access price is exclusive to the public sectors of the countries eligible for support from [Gavi, the Vaccine Alliance](#).

In 2015, we extended our current Gavi prices for ROTATEQ and GARDASIL through 2025 to Gavi-graduated countries with a per-capita Gross National Income (GNI) not exceeding \$3,200. This action greatly assists in meeting the needs of low- and lower-middle-income countries by facilitating access to these vaccines in those countries while also making sure they remain affordable and sustainable in the long term. We believe that our pricing approach contributes to wider access to our vaccines while taking into account our need to continue investing in vaccine research, development and production. In the short period of time since we made our price commitment to countries transitioning out of Gavi support, five countries have taken advantage of the offer to introduce or continue existing national HPV vaccination programs.

To respond to the Ebola crisis that started in 2014, our company joined with the international health community in efforts to respond to the outbreak and put necessary steps in place to help prevent another one. In late 2014, our company licensed a promising vaccine candidate (originally engineered by the Public Health Agency of Canada) from NewLink Genetics Corporation, aimed at preventing the Ebola Zaire virus. We are collaborating with others to advance this vaccine candidate to licensure as quickly as possible.

Should our investigational vaccine receive licensing, our company has pledged to make the vaccine available to the world's poorest countries (Gavi-eligible) at the lowest possible access price. Our company and Gavi, the Vaccine Alliance, have signed an agreement, announced at the 2016 World Economic Forum in Davos, that will help us take the vaccine through licensure and WHO prequalification.

For additional information regarding pricing, see our [Public Policy Statement: Access to Our Vaccines](#).

## Ebola and Preventing Future Epidemics

To respond to the Ebola crisis that started in 2014, we joined with the international health community in efforts to contain the Ebola outbreak and put necessary steps in place to address emerging threats in the future.

In November of that year, our company [announced](#) that we had licensed a vaccine candidate, originally engineered by the Public Health Agency of Canada, from NewLink Genetics Corporation.

Our decision was based on strong preclinical data in multiple animal models following a single dose of vaccine, and on in-house scientific expertise and know-how regarding the cell line used to manufacture the vaccine. Our rich history in vaccine clinical development and public-private partnerships, and our passion to do what we could to contain a rapidly emerging infectious disease epidemic and public health crisis, spurred a vaccine development effort that was unprecedented in terms of pace and partnerships, resulting in the availability of interim efficacy results within 10 months after the first Phase I clinical trial was started.

On December 23, 2015, we announced that the application for Emergency Use Assessment and Listing (EUAL) for the company's investigational Ebola Zaire vaccine, V920 (rVSV-ΔG-ZEBOV-GP, live attenuated), had been accepted for review by the World Health Organization (WHO).

Phase II/III testing was initiated with studies starting in Liberia in February 2015, in Guinea in March 2015, and in Sierra Leone in April 2015. In December 2016, *The Lancet* published final results of the 2015 Guinea Ebola study.<sup>12</sup>

In 2016, the U.S. FDA granted our Ebola vaccine candidate V920 Breakthrough Therapy Designation, and the EMA granted it PRIME (PRiority MEdicines) status.

We are also committed to providing the vaccine to Gavi-eligible countries at the lowest possible access price if the vaccine meets regulatory standards for safety and effectiveness in clinical trials and is appropriately licensed.

Through all of these efforts, we hope to expedite the development of a vaccine for Ebola and, if it is demonstrated to be efficacious and well-tolerated, to make it available to individuals and communities around the world at risk of Ebola Zaire virus infection.

## PREVENTING FUTURE EPIDEMICS

On January 19, 2017, our company joined with world leaders and NGOs to announce the launch of the Coalition for Epidemic Preparedness Innovations (CEPI), a global coalition to create new vaccines for emerging infectious diseases.

An innovative public-private philanthropic partnership, CEPI was founded by the governments of India and Norway, the Bill & Melinda Gates Foundation, the Wellcome Trust and the World Economic Forum. Other partners include multinational pharmaceutical corporations—including MSD—and nongovernmental organizations (NGOs). CEPI is backed by the World Health Organization and Doctors Without Borders.

CEPI will support needed research and development of vaccines that could be deployed rapidly to contain outbreaks before they become global health emergencies.

Epidemics and pandemics in recent years have highlighted the extent to which infectious diseases threaten human life and health, and economic and social disruption. These outbreaks have exposed the shortcomings in the world's capacity to prepare and respond. Ebola and Zika are the most recent examples; others include SARS, MERS, Chikungunya, Lassa and Nipah.

CEPI is potentially an evolutionary leap forward in how we collectively conduct R&D into infectious diseases that come and go, posing challenges for clinical trials, for manufacturing, and for just-in-time delivery.

## Cervical Cancer

Our company collaborates with organizations and local governments worldwide to help foster community access to HPV education, prevention, detection and early treatment.

By helping to raise awareness of the connection between HPV and cervical cancer, and by increasing access to cervical cancer screenings and other prevention programs, we aim to empower communities worldwide to reduce the burden of certain HPV-related cancers.



The year 2016 marked an important milestone in our ambition to help protect against cervical cancer and certain other HPV-related cancers and diseases. In 2006, the U.S. Food and Drug Administration (FDA) and several other regulatory bodies around the world approved the world's first human papillomavirus (HPV) vaccine, GARDASIL. Ten years and over 200 million doses later, the impact of GARDASIL in real-world settings is becoming apparent following the introduction of government-funded HPV vaccination programs in 70 countries.<sup>13</sup>

In 2016, we were proud to provide support for the launch of India's first government-funded HPV immunization program, in the state of Punjab. During the Phase I launch event, nearly 95 percent of the eligible population of girls were vaccinated with GARDASIL. This program represents important progress toward our goal of expanding global vaccine access.

In the same year, we saw the initiation of two new partnership programs featuring HPV vaccination, one in Haiti and the other in Peru. In Haiti, one of the poorest countries in the world, our company is collaborating with Zanmi Lasante in a two-year HPV vaccination program across three districts. The program is expected to vaccinate a total of 30,000 girls against HPV-related diseases. The first round of vaccinations, in mid-2016, achieved a coverage rate of over 95 percent. Health officials in Haiti plan to leverage the learnings from this program in the development of a national vaccination program.

In Peru, we are working with CerviCusco, Direct Relief, and the Peru Ministry of Health on an HPV vaccination program in Cusco. CerviCusco is a clinic for specialized medical care in the prevention and detection of cervical cancer in women from the underserved mountainous region of Cusco. As of early 2017, CerviCusco had begun vaccinating an expected total of over 32,000 persons with GARDASIL.

In addition to these two new programs, another 30,000 doses of GARDASIL were donated to the Ministry of Health in Zambia in an extension of its multiyear pilot program. Bolstered by the success of the pilot, Zambia is developing plans to expand it into a national HPV vaccination program with support from Gavi, the Vaccine Alliance.

## OUR LEGACY OF INITIATIVES TO INCREASE ACCESS TO HPV VACCINE

### 2015

Our company extends Gavi pricing for GARDASIL for 10 years to select Gavi-graduated countries.

### 2014

We are awarded a significant portion of the UNICEF HPV vaccine tender, providing a sustained supply of GARDASIL to countries eligible to procure vaccines through Gavi.

### 2013

Botswana, with support from the Pink Ribbon Red Ribbon partnership, begins a two-year HPV vaccination demonstration project to gain experience for a national HPV vaccination program.

### 2012

In September 2012, the Republic of Uganda, through the Ministry of Health, with support from our company, announces the launch of a GARDASIL vaccination program. Through this agreement, the vaccination program is implemented with just under a half-million doses of GARDASIL donated to 12 districts in Uganda, enough to vaccinate approximately 140,000 eligible girls 9 to 13 years of age over a two-year period. The program represents the first phase of Uganda's national rollout plan for HPV vaccination.



A young girl is vaccinated during the September 2012 phased launch of a national GARDASIL vaccination program in the Republic of Uganda.

## 2011

Together with the Government of Rwanda and QIAGEN, N.V., we begin the first-ever national cervical cancer prevention program in sub-Saharan Africa. Over the three-year program, our company donates over 1.4 million doses of GARDASIL, and more than 96 percent of eligible girls receive all three doses in the first two years.

Also in 2011, our company announces plans to contribute \$3 million to Pink Ribbon Red Ribbon to address both cervical and breast cancer in sub-Saharan African nations. Through this commitment, we work with Susan G. Komen for the Cure, government ministries of health and local partners to support the initiative in Zambia, Botswana, Tanzania and Peru. Learn more about PRRR [here](#).

Initial activities include a donation of equipment to expand screen-and-treat services for cervical precancer in Tanzania, programs to raise national awareness of available cervical and breast cancer services, the improvement of treatment protocols for breast cancer, mobilization of the community in efforts against cervical cancer, and the provision of advanced surgical training to physicians in Zambia.

## 2010

With support from the Australian Cervical Cancer Foundation (ACCF) and our company, Bhutan becomes the first developing nation in the world to implement a national cervical cancer vaccination program. In the first year of the six-year program, over 130,000 doses of GARDASIL donated by our company are administered, with approximately 90 percent of eligible 12–18-year-old females receiving all three doses. After the first year, ACCF provides financial support to the Royal Government of Bhutan to secure doses of GARDASIL at the access price offered by our company.

## 2007

We announce a commitment to helping improve access to GARDASIL in developing countries by creating the GARDASIL Access Program (GAP) and donating the vaccine. By closeout of the program in 2015, over 1.3 million doses of GARDASIL have been donated to 31 GAP projects in 21 countries across the globe, providing helpful information about the feasibility of HPV vaccine delivery in developing-country settings.

## 2006

Beginning in 2006, the first year of GARDASIL licensure, we partner with the international nonprofit organization PATH to

provide GARDASIL for the conduct of post-licensure HPV-vaccine demonstration projects in Peru, Vietnam and India. GARDASIL is donated to vaccinate approximately 30,000 appropriate girls participating in the demonstration projects. The initiative was designed to strengthen the capacity of developing countries to help prevent cervical cancer by generating and providing necessary evidence for public-sector introductions of HPV vaccines, informing global advocacy efforts and providing analyses to help accelerate access to HPV vaccines.

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  4. Centers for Disease Control and Prevention. "Achievements in Public Health, 1900–1999 Impact of Vaccines Universally Recommended for Children – United States, 1990–1998." *Morb Mortal Wkly Rep*. 1999;48(12):243–248.
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  10. Some content for this section taken from *Economic Outlook*, Spring 2015. Premier.
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  13. "Systematic Review of 58 Publications of Real-World Use of GARDASIL®," presented at EUROGIN Congress. <http://www.mrknewsroom.com/news-release/vaccine-news/systematic-review-58-publications-real-world-use-gardasil-presented-eurogi>. Accessed April 3, 2017.



The private sector has an important role to play in contributing to the achievement of the United Nations' Sustainable Development Goals (SDGs)<sup>1</sup> regarding women's health.

## OUR COMMITMENTS

- Facilitate sustained access for our family planning products and services, and engage in partnerships that address specific reproductive health and development challenges
- SDG 3 sets two targets in support of the overall health of women, families and society:
  - By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births
  - By 2030, ensure universal access to sexual and reproductive health care services, including those for family planning, information and education, and the integration of reproductive health into national strategies and programs

While progress was made toward these targets under the original Millennium Development Goals that sunset in 2015, rates of maternal mortality remain high in many countries, and access to modern contraceptive methods remains limited, especially among the poorest and most vulnerable women and girls. As the global community embraces the Sustainable Development Goals launched in September 2015, we will continue to support efforts to accelerate access to our products and ensure that reproductive health and rights are included in global, regional and country strategies.

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Access to modern contraceptives is an important aspect of family planning.

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Enabling couples to determine whether, when and how often to have children is vital to helping achieve safe motherhood, healthy families and healthy communities. Voluntary family planning and broadening the method mix of family planning options help protect the health of women by reducing high-risk pregnancies, and help protect the health of children, adolescents and mothers by allowing sufficient time between pregnancies. Research has shown that appropriately spacing pregnancies helps improve both mother and child survival rates and reduces the risk of preterm birth.<sup>2</sup> The use of family-planning methods can also reduce the number of unsafe abortions and associated complications.<sup>3</sup>

Access to modern contraceptives is an important aspect of family planning. Our multifaceted approach supports efforts to improve access to family-planning services and contraceptives for the women most in need of them. We are actively engaged in areas where maternal mortality is high and the prevalence of contraceptive use is low.<sup>4</sup>

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1. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

2. [http://www.marchofdimes.com/news/jul19b\\_2011.html](http://www.marchofdimes.com/news/jul19b_2011.html), [www.gutmacher.org/pubs/AddingItUp2009.pdf](http://www.gutmacher.org/pubs/AddingItUp2009.pdf)

3. Singh, S., et al., Guttmacher Institute and United Nations Population Fund; 2009.

4. <http://www.everywomaneverychild.org/networks/life-saving-commodities>

## Partnerships

We participate in a number of coalitions that support women's reproductive health by increasing access to family planning, working to reduce maternal mortality, and promoting collaboration between the public, private and not-for-profit sectors.

Throughout the world, we have partnered with organizations and supported projects that work to increase women's access to health services, reduce maternal mortality, increase awareness of reproductive/sexual health among adolescents and vulnerable populations, prevent mother-to-child transmission of HIV/AIDS, and promote women's empowerment and access to economic opportunities.

### PARTNERING FOR IMPLEMENTATION

The [Reproductive Health Supplies Coalition \(RHSC\)](#): The RHSC is a global partnership of public, private and nongovernmental organizations dedicated to helping all people in low- and middle-income countries gain access to and use affordable, high-quality supplies that ensure better reproductive health.

The coalition brings together diverse agencies and groups with critical roles in providing contraceptives and other reproductive health supplies. These include multilateral and bilateral organizations, private foundations, governments, and civil society and private-sector representatives. We participate in various RHSC working groups, including the Market Development Approaches Working Group, which contributes to the goal of reproductive health supply security, and to ForoLac, which focuses on access in Latin America and the Caribbean. In September 2016, our company participated in a ForoLac-sponsored summit in Colombia to shine a spotlight on inequities in sexual and reproductive health in the region.

#### European Initiative

In Europe, in 2016, we established a partnership with the NGO European Parliamentary Forum on Population and Development (EPF) to support its efforts to raise awareness of inequities in access to contraception and family-planning services among European countries.

Our company provided EPF with support to create a unique new tool called the European Contraception Atlas, an online interactive map that scores 45 European countries on access to modern contraception, focusing on access to information and contraceptive supplies.

With criteria established by a multi-stakeholder group of experts in sexual and reproductive health and rights, the atlas aims to provide a dynamic and robust tool to help improve access to modern contraception.

#### [Centers for Disease Control and Prevention Foundation](#)

In June 2016, together with the CDC Foundation, we announced a collaboration to enable increased access to NEXPLANON® (etonogestrel implant) and NuvaRing® (etonogestrel/ethinyl estradiol vaginal ring) in Puerto Rico through the Zika Contraception Access Network (Z-CAN). Z-CAN was established by the CDC Foundation to address an urgent need to improve contraception access in Puerto Rico during the Zika outbreak. As part of the effort, we are also providing training and education support to health care providers.

#### [Women Deliver](#)

Women Deliver is a leading global advocate for the health, rights and well-being of girls and women that brings together diverse voices to drive progress, with a particular focus on maternal, sexual, and reproductive health and rights. We are proud to participate in Women Deliver-led initiatives and coalitions that seek to bring meaningful change to women around the world.

#### [Family Planning 2020 \(FP2020\)](#)

FP2020 works with governments, civil society, multilateral organizations, donors, the private sector, and the research and development community to enable 120 million more women and girls to use contraceptives by 2020. It is based on the principle that all women, no matter where they live, should have access to lifesaving contraceptives, and supports the UN Secretary-General's global effort for women's and children's health. In May 2013, we committed to reduce the cost of our implants by approximately 50 percent for six years, through 2018. In November 2015, we extended this commitment to FP2020 by five years, through 2023, to offer access pricing for IMPLANON® (etonogestrel implant) and IMPLANON NXT® (etonogestrel implant)—our single-rod, long-acting, reversible contraceptive implants—to eligible countries.

For an update on FP2020 progress since it was created in 2012, [click here](#).

For more information on how we partner with customers and other stakeholders, please visit our [Access to Reproductive Health](#) section.



Our commitment to providing access to reproductive health starts with our research and development, which has resulted in a diverse portfolio of contraceptive products.

Over the years, we have been responsible for the development of a wide range of contraceptive options, including a single-rod contraceptive implant, a once-monthly vaginal contraceptive ring, and progestin-only and combined oral contraceptives.

In 2016, our researchers continued to develop new women's health products to better meet conditions in developing countries.

Beyond our research, we continue to work hard to develop sustainable business models that will help improve access to our products for the people who need them most. Our partnerships with governments, international organizations and nongovernmental organizations (NGOs) help support and implement programs and policies that improve access and promote capacity-building by helping to train health care professionals and address barriers to care.

## SUSTAINABLE BUSINESS MODEL TO PROMOTE ACCESS

We are committed to making our contraceptive products available to women around the world. We take a comprehensive approach to access that includes high-quality manufacturing and supply chain management; extensive registration and World Health Organization (WHO) prequalification for a wide variety of our family-planning products; responsible commercialization that incorporates training and capacity-building; policy advocacy; and community investment.

In developing countries that have high rates of maternal mortality and low rates of contraceptive prevalence, we have created a sustainable business model to promote access to contraceptive health programs. These activities are focused primarily on sub-Saharan Africa and countries in Asia and Latin America with high unmet need. Through this model, we work closely with core global partners and their regional and local affiliates—including [United Nations Population Fund \(UNFPA\)](#), [U.S. Agency for International Development \(USAID\)](#), [Department for International Development \(DFID\)](#), [Marie Stopes International](#), the [International Planned Parenthood Federation](#), [DKT International](#), the [Clinton Health Access Initiative](#), the [Bill & Melinda Gates Foundation](#), and [Population Services International](#)—to help expand access to our products.

We also work to raise awareness and improve equity in access to contraception in other parts of the world. In Europe, we are working to support efforts to launch our "Call to Action for Access to Effective Contraception" at the EU and country levels, and are liaising with stakeholders to elevate awareness and generate potential solutions for improvement.

## HIGH-QUALITY MANUFACTURING & SUPPLY CHAIN MANAGEMENT

We work to ensure that we have sufficient manufacturing capacity to meet short-, medium- and long-term availability of our contraceptive products to meet customer needs globally.

We continuously examine our supply chain, seeking to reduce inefficiencies, optimize yields and lower costs of production, and have passed these savings on to our customers in the form of lower prices, particularly in lower-income markets. We also invest in new technologies to increase the efficiency of our operations and to be able to produce more affordable products at the same high quality to meet increasing demand.

## REGISTRATION & PREQUALIFICATION

We seek to ensure global access to our contraceptive products by obtaining and maintaining up-to-date product registrations around the world. In addition to existing and in-process registrations, numerous registrations are planned for products in countries of various income levels.

## REGISTRATION

The following metrics are for our family planning products intended for underserved segments of the world's poorest countries (defined as [Family Planning 2020 or FP2020 countries](#)) that are supplied through the public sector and social-marketing organizations. In 2016, IMPLANON NXT® (etonogestrel implant) was approved in several FP2020 countries including, but not limited to, Egypt, Sri Lanka and Nepal.

*Note: For World Bank country classifications, please [click here](#).*

	IMPLANON® or IMPLANON NXT®	EXLUTON®	MARVELON 28®
Product is WHO-prequalified	Yes	Yes	Yes
Number of FP2020 countries where product is registered / # pending IMPLANON NXT <sup>1</sup>	44/3	25	24
Number of FP2020 countries in which we supplied product	36	6	7
Women potentially reached in FP2020 countries <sup>2</sup>	3,801,800	417,675	188,427

1. There are additional unregulated markets where our products may be available that are not represented by these numbers.

2. Number represents potential number of women who could be reached based on number of products provided.

## PREQUALIFICATION

In order to facilitate institutional purchases of family-planning products and provide quality assurance, we have secured WHO prequalification for EXLUTON (lynestrenol), IMPLANON (etonogestrel implant), IMPLANON NXT (etonogestrel implant) and MARVELON 28 (desogestrel-ethinyl estradiol).

IMPLANON NXT is also included on the WHO Model List of Essential Medicines. The WHO List, updated every two years,

serves as a guide for the development of national and institutional essential medicine lists. Medicines for inclusion are selected by WHO based on a rigorous review process by an Expert Committee of public health and clinical experts.

Product	International Nonproprietary Name (IN)	Date of Prequalification
MARVELON 28	Ethinylestradiol + Desogestrel	21-Oct-10
IMPLANON	Etonogestrel	18-Jun-10
EXLUTON	Lynestrenol	18-Jun-10
IMPLANON NXT	Etonogestrel	23-May-13

## COMMERCIALIZATION

The success of reproductive health programs in the developing world relies upon the close cooperation and coordination of many partners. Those include pharmaceutical companies like ours that discover, develop and manufacture contraceptive products; national governments that seek to support family planning through policies that increase the use of contraception and through investment in both procurement and capacity-building; international, bilateral and multilateral donors that finance the purchase of reproductive health commodities and invest in service delivery management and implementation; NGOs that support implementation of such programs; and health care professionals and health extension workers who counsel and provide care for women around the world.

As one of many partners, we take the following steps (details below) to support family planning programs and to help increase awareness of and access to a broad choice of contraceptive products:

- Requests for quotation
- Pricing
- Partnering for implementation
- Public advocacy

## REQUESTS FOR QUOTATION

Our company receives and responds to "Requests for Quotation" from developing countries' governments seeking supplies for their own programs (financed by government funds, by multilateral organizations like the [World Bank](#), or through bilateral aid); from donor country aid agencies (e.g., [USAID](#), [DFID](#) and [KfW](#), a German government-owned development bank) seeking to purchase reproductive health commodities that will be donated to programs in one or more countries; from multilateral agencies, such as [UNFPA](#), donating to one or more countries; or from nongovernmental agencies seeking supplies for programs that they manage in one or more countries.

In responding to these requests, we adhere to the specific guidelines of each proposal and act in full compliance with local and international laws and requirements.

## PRICING

For contraceptive product pricing, we consider a nation's level of economic development and other relevant factors, including the types of family planning programs implemented by the local government.

In upper-middle-income and high-income countries, we provide our products at prices that take into account the innovation and value they represent. With a commitment to making our contraceptive products available to the public sector, we also offer discounts to organizations that serve women of all income levels, like Planned Parenthood affiliates, so that the women who rely on their services have routine access to contraceptive options that include non-daily and long-acting reversible methods.

We believe that our pricing approach will help improve product availability while also allowing the company to continue to invest in research, development, production, and the training and education necessary to help ensure appropriate counseling on and use of our products.

## We are extending our access pricing to targeted countries through 2023, an additional five years beyond the expiration of our 2013 agreement.

In May 2013, our company and the Bill & Melinda Gates Foundation announced an agreement to expand contraceptive access and options for millions of women in some of the world's poorest countries. Under the agreement, we reduced the cost of IMPLANON and IMPLANON NXT, by approximately 50 percent through 2018 in the targeted poorest eligible countries of focus for the reproductive health community. Learn more.

Since 2013, we have supplied an estimated 20 million implants, bringing greater choice to millions of women in the world's poorest regions.

In November 2015, we announced our decision to extend our access pricing to these same targeted countries through 2023, an additional five years beyond the expiration of the 2013 agreement.

## PARTNERING FOR IMPLEMENTATION

For family planning programs in the developing world involving our contraceptive implants IMPLANON and IMPLANON NXT, the company requires the recipient governments and partnering NGOs to sign its Cooperation Agreement for the Receipt and Use of IMPLANON (CARUI).

The cooperation agreement includes:

- Our commitment to a comprehensive service approach that provides and/or supports capacity-building in service delivery, including pre- and post-insertion counseling and insertion/removal training
- Distribution requirements that must be met by our company and local partners to ensure that all clinics/providers meet training and quality assurance requirements, provide sustained services over the duration of the product's life (three years), and can access referral centers in case more specialized care related to IMPLANON is required
- Procedures to report product complaints and adverse events
- Provisions regarding compliance with the applicable laws of the U.S. and the recipient country, and with our ethical and business compliance policies

In the countries where our products are included in family-planning programs, we work closely with ministries of health and local implementing partners, who play a pivotal role in supporting training, counseling and other related activities. Our local implementing partners have included [Jhpiego](#), [EngenderHealth](#), the [Clinton Health Access Initiative](#), [Marie Stopes International \(MSI\)](#), the [International Planned Parenthood Federation \(IPPF\)](#), [Population Services International](#), [DKT](#) and [Pathfinder International](#). Such collaboration ensures that countries have the expertise and support they need to achieve their reproductive health objectives.

In February 2015, we announced, as part of our commitment to health care provider training, that we would provide IMPLANON NXT placebo training applicators at no cost in FP2020 countries. During 2016, we provided approximately 78,000 placebos, and supported “training of trainers” by providing other training materials, including audiovisual materials, training kits and artificial arm models. We have also committed to providing placebos at no cost in these countries through 2017.

In 2016, we worked with more than 42 countries in sub-Saharan Africa, Asia and Central America to provide contraceptive products through numerous partnerships with governments, donors and NGOs. Some of the countries we engaged with included Madagascar, Ethiopia, Kenya, Uganda, Tanzania, Nigeria, Honduras, the Democratic Republic of Congo, Chad, Somalia, South Sudan, Cambodia, Laos and Myanmar.

In 2016, we worked with partners in innovative ways to further expand awareness and access and strengthen health systems in low- and middle-income countries.

For example:

- In Côte d'Ivoire, our company's Information Technology employees supported a project with the country's ministry of health to develop an SMS-based system that will allow health center workers to use their mobile phones to order supplies from district warehouses and better manage their local inventory. The system will also help regional and national health workers to better forecast future supply needs and avoid product stock-outs.
- In Nigeria, we provided support to the Human Network International for the development of a free, on-demand information service via mobile phones for the general public. The service provides information on health, agriculture, microfinance, family planning, and land tenure in the local language.
- In the Democratic Republic of Congo, we are working with Tulane University to support a pilot project to train and deploy medical students to serve as community-based distributors of contraceptive methods in the nation's capital, Kinshasa. If successful, the pilot will show that it is possible to increase access to a broad range of contraceptive options by bringing medical students into the community rather than expecting women to travel significant distances to the nearest clinic.
- In the Philippines, our company worked with the Integrated Midwives Association of the Philippines to conduct “Train the Trainer” sessions for implant provision, and supported learning sessions for best-practice sharing in counseling, implant insertion, and referrals for removal. Through these initiatives, newly trained midwives can connect with more experienced midwives for guidance and support through a “Community of Practice” and ultimately decrease the learning curve.
- In Puerto Rico, we are working with the CDC Foundation through the Zika Contraception Access Network to address an urgent need to improve contraception access on the island during the Zika outbreak. Through the initiative, our company is helping to enable access to our contraceptive products NEXPLANON (etonogestrel implant) and NUVARING (etonogestrel/ethinyl estradiol vaginal ring), and is providing training and education support to local health care providers.

## **BRINGING A NEW CONTRACEPTIVE TOOL TO WOMEN IN SOMALIA**

In 2016, women in Somalia began to receive a new family-planning option—IMPLANON NXT. Somalia has one of the highest fertility rates in the world.

Our company worked with UNFPA and the ministries of health from the three autonomous regions in Somalia—Somaliland, Puntland and Mogadishu—to hold a two-and-a-half-day training session for Somali health care workers. Because of civil strife in the country, the health providers from the three autonomous regions traveled to neighboring Djibouti, where they reunited to learn clinical data, insertion and removal techniques, and effective counseling methods. They also discussed cultural barriers, misperceptions and fears that limit the use of family planning in their country, and strategies to overcome these challenges.

## **PUBLIC ADVOCACY**

We support the ambitious—but, we believe, achievable—goal set by the public health community in 2012 of ensuring that voluntary lifesaving family planning information, services and products reach an additional 120 million women and girls in the world's poorest countries by 2020.



# EMPLOYEES

We recognize that our ability to excel depends on the integrity, knowledge, imagination, skill, diversity and teamwork of our employees.

We are working to create a 21st-century workforce that is gender-balanced and inclusive of top, diverse talent. A positive, inclusive and high-performing work environment is essential in order for our employees to feel welcomed and valued, and to be able to fully contribute to the business objectives of their teams.

## GLOBAL DIVERSITY & INCLUSION

As we pursue our goal of becoming the world's premier research-based biopharmaceutical company, we need to continuously develop our diverse and talented people.

**51%**

of new hires in 2016 were female

**39%**

of our management roles in 2016 were held by women

**37%**

of new U.S. hires in 2016 were members of underrepresented ethnic groups

**23%**

of our U.S. executive roles in 2016 were held by members of underrepresented ethnic groups

## THE SDGs & OUR EMPLOYEES

This graphic illustrates which of the UN SDGs most closely aligns with our efforts to foster a culture of true inclusion for all.



**SDG 5**

### Gender Equality

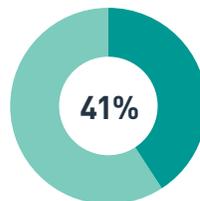
Achieve gender equality and empower all women and girls

## EMPLOYEE SAFETY

We remain committed to providing a safe and healthy workplace for our employees and contractors, and comply with all applicable safety laws and regulations. We believe that through visible management, leadership and employee engagement, we can increase the awareness of hazards and help employees



**99%**  
of our 2016 capital construction projects had zero recordable injuries



**41%**  
decrease in our lost-time injury rate from last year

make the right choices when it comes to safety, health and the environment—both on and off the job.

## AWARDS & RECOGNITION

We have been recognized for our commitment to fostering a workplace where our employees and our business can thrive.





We see ourselves as a company inspired to invent. As we pursue our goal of becoming the world’s premier research-based biopharmaceutical company, we need to continuously develop our diverse and talented people. They are a clear competitive advantage for us, and their active engagement matters.

A positive, inclusive and high-performing work environment is essential in order for employees to feel welcomed and valued, and to be able to fully contribute to the business objectives of their teams. We recognize that harnessing the knowledge and insights of a globally diverse workforce requires leadership, a corporate culture of respect and full engagement, and a thoughtful and strategic approach to workplace inclusion and to employee development and well-being—physical, emotional, social and financial.

In 2016, we advanced this commitment by developing new and improved initiatives to lead us into the future to meet the challenges and opportunities before us. The following pages highlight our accomplishments, progress and commitments that promise success now and in the future.

We provide numerous opportunities for employee development and professional growth, competitive compensation and benefits, and a focus on health and safety. We leverage global diversity and inclusion to create a 21st-century workforce that is gender-balanced and inclusive of top, diverse talent.

We conduct rigorous and transparent annual performance reviews of employees at all levels (except those subject to collective bargaining obligations) to guide company decisions relating to compensation and rewards. Employee performance is measured, in part, by how well employees demonstrate our leadership behaviors. In other words, we seek to emphasize not just what an employee achieves, but also how he or she achieves it. It is critical to our company that the annual incentive bonus of management-level employees is determined, in part, by demonstrated leadership that is consistent with these behaviors.

In addition, we conduct an annual employee-development planning process in which managers discuss with each of their employees his or her strengths and development needs. The manager and employee then jointly create an action plan to strengthen areas in need of development and build new leadership skills.

## Performance

EMPLOYEES	2012	2013	2014	2015	2016
Total number of employees (approximate)	83,000	76,000	70,000	68,000	68,000

PERFORMANCE REVIEWS	2012	2013	2014	2015	2016
Executives <sup>1</sup>	100%	100%	100%	100%	100%
Middle management	100%	100%	100%	100%	100%
Line supervisors	100%	100%	100%	100%	100%
Non-managers <sup>2</sup>	93%	93%	93%	94%	95%

1. "Executives" refers to the first two levels below the chief executive officer.

2. Includes all "non-managers" (previously "individual contributors") who are not subject to a collective bargaining agreement (unions).

TURNOVER	2012	2013	2014	2015	2016
Overall turnover rate <sup>1,2</sup>	11.0%	15.4%	18.8%	14.8%	11.1%
Voluntary turnover rate	6.0%	7.3%	8.0%	7.4%	6.35%
Avoidable voluntary turnover rate	1.0%	5.8%	6.2%	6.0%	4.8%
Involuntary termination rate	5.0%	8.1%	10.8%	7.4%	4.9%

1. Includes all types of turnover, including restructuring.

2. 2013 and 2014 turnover rates are restated incorporating retroactive transactions.

2016 TURNOVER BY REGION	Asia Pacific	Latin America	EEMEA	Japan	Europe & Canada	U.S.
Overall turnover rate <sup>1</sup>	18.89%	18.0%	19.2%	2.74%	8.84%	7.87%
Voluntary turnover rate	13.23%	5.28%	11.13%	1.87%	4.34%	4.54%
Avoidable voluntary turnover rate	12.21%	3.12%	8.65%	1.59%	2.51%	3.29%
Involuntary termination rate	5.66%	12.72%	8.07%	0.87%	4.50%	3.33%

1. Includes all types of turnover, including restructuring.

	2015		2016	
EMPLOYEE HIRES BY REGION	Number of Hires	Hire Rate <sup>1</sup>	Number of Hires	Hire Rate <sup>1</sup>
Emerging Markets—Asia Pacific	2,104	17.70%	<b>1,732</b>	14.79%
Emerging Markets—EEMEA (Eastern Europe, Middle East and Africa)	384	12.84%	<b>382</b>	13.49%
Emerging Markets—Latin America	509	9.80%	<b>380</b>	8.01%
EUCAN (Europe and Canada)	1,427	7.81%	<b>1,636</b>	8.90%
Japan	101	2.66%	<b>196</b>	5.04%
U.S.	1,909	8.28%	<b>1,937</b>	8.33%

1. Percentage of new hires in the total onboard head count; regular employees only.



We strive to foster employee engagement at our company by promoting a positive work environment and by communicating proactively with all employees.

Research shows that engaged employees work more efficiently and effectively, are motivated to perform beyond minimal expectations, and consequently contribute more desirable business outcomes to the organization.

Employee engagement is achieved through trust, mutual commitment and transparent communication. As we do with our external stakeholders, we work to understand our employees' concerns, needs and thoughts pertaining to our company's strengths and weaknesses, while at the same time informing them of our business strategy and progress toward our goals.

Through our global enterprise portal, known internally as "Sync," employees worldwide can gain access to company news and videos, divisional and functional news channels, and organizational communities that allow them to share interests, messages and ideas online. Other employee communications vehicles include quarterly Employee Business Briefings, periodic town hall meetings, email communications from senior management, and employee surveys—in particular, the Voice Survey, which is distributed to all employees on a biannual basis.

## **VOICE SURVEY: OUR GLOBAL EMPLOYEE OPINION SURVEY**

As part of our mission to maintain a satisfying and productive work environment, we routinely survey all employees to learn about their perspectives on the business and on how we are responding to the needs of our global workforce. The Voice Survey, an all-employee opinion survey, is our flagship employee feedback medium.

Offered in 20 languages, the Voice Survey helps our company leaders and managers to understand employees' perspectives on our culture and its effect on the company's ability to meet our business objectives, and to learn what drives employee engagement. We communicate highlights of the survey results through meetings with our employees, in our employee publications, on Sync and through summaries that are distributed via email.

The Voice Survey was conducted in September 2016, and the overall results from previous years are encouraging; suggesting positive momentum for the organization. Employees feel that our strategy is moving us in the right direction.

Since administration of the 2014 survey, we've been working to increase collaboration, share customer insights and drive innovation. Compared to 2014, employees participated more actively in the Voice Survey, with a record-high participation rate of 85 percent, an increase of 7 percentage points. Scores for all 15 categories significantly improved as compared to 2014.

Additionally, the score for the Engagement Index reached over 80 percent for the first time (82 percent in 2016 versus 79 percent in 2014). In response to the 2016 Voice Survey results, our company will focus on enhancing innovation, and will adopt an "Employee Listening Strategy" to better leverage and respond to employee feedback.

## PROFESSIONAL NETWORKING AND COLLABORATION

We ensure that our employees have ample opportunity to engage, network, build important stakeholder relationships, learn new skills and hear the perspectives of senior leaders. Our company fosters an inclusive environment by ensuring that employees quickly forge strong relationships with supervisors, connectivity with coworkers and development in the workplace.

We enable employees to provide feedback through a community platform on Sync and via brief, three- to five-question surveys and open-comment forms attached to key communications. Soliciting employee feedback on the subject of the communication in real time gives us the information we need to close knowledge gaps and address employee concerns. Such direct employee feedback has resulted in “meet and greet” sessions, hosted by our CEO and members of the Executive Committee to provide employees with another opportunity to share information with senior leaders in a more personal setting.

We conduct global employee briefings every quarter. Our CEO and members of the Executive Committee speak to employees about how we are fulfilling our company mission and goals. These sessions cover topics such as the quarterly financial performance update, pipeline progress, customer stories and anticipated product developments.

In addition, we leverage the business insights of our U.S. employees, including those who are members of DRIVEN (Delivering Real Insights Via Employee Networks), to support our company’s business objectives. DRIVEN represents true innovation in the pharmaceutical industry and allows us to adopt the best practices from other industries to get the quick, cost-effective and deep insights we need to drive our business forward, asking our own employees to share their experiences—as parents, caregivers, patients, and consumers—so we can serve patients better.

Through DRIVEN, employees are able to make meaningful contributions to the business in a private, online market research community. Employees have already contributed to helping us innovate in pet tracking and the use of robotic systems (like the Amazon Echo) for taking care of elderly family members’ health. DRIVEN has also been used to make patient and caregiver education resources more relevant by giving feedback on online materials and advertisements. This enables the efficient and compliant engagement of employees to provide business, customer, brand and research development insights via market research methods.

## OTHER RESOURCES FOR EMPLOYEE FEEDBACK

In addition to employee surveys, the “ombudsmen” within our Office of Ethics provide an avenue for employees to raise concerns in confidence, and, where necessary, they recommend appropriate action.

Our anonymous helpline, which operates in accordance with applicable legal standards for employee-based hotlines, is available 24/7 to listen and provide advice to employees worldwide. [Learn more.](#)

## Performance

VOICE SURVEY	2012	2013	2014	2015	2016
Response rate to Voice Survey	77%	77%	78%	NA	85%
Engagement Index <sup>1</sup> (favorable response rate)	78%	78%	79%	NA	82%
Culture Index <sup>2</sup> (favorable response rate)	67%	70%	69%	NA	72%

NA: Not administered.

1. The Engagement Index is a composite that averages scores measured from three aspects: "Engaged," "Enabled," and "Energized."

2. The Culture Index is a composite that averages scores measured from three aspects: "Customer Focus," "Reputation and Trust," and "Innovation."



To support our global employee base, we sponsor curriculum that builds leadership and management skills as well as providing technical and functional training to all employees.

The Global Learning & Development organization, under the leadership of the chief learning officer, deploys a global approach to maximizing the value of learning & development investments by leveraging resources, educational platforms and other synergies across the enterprise to deliver learning solutions designed to optimize business and customer outcomes.

Our commitment and investment in learning & development serve as the foundation for global employee development, aligned with our business strategy, and are foundational to fostering a learning culture within our company.

## KEY TALENT PROGRAMS

In partnership with the Human Resources Talent Management team, the Leadership, Learning & Development department (LL&D) is reaching deeper, wider and earlier into the organization to develop top talent. We are striving to develop a cross-functional general management mind-set, enterprisewide knowledge of the business, and end-to-end thinking for top talent and potential leaders early in their careers.

Investments and programs that support the development of key talent include the Executive Development Program, the Enterprise Leadership Program, the Women's Leadership Program and the Business Leadership Program. Each has a very specific targeted audience and blended learning objectives.

## MANAGEMENT AND LEADERSHIP PROGRAMS

Management Foundations is a comprehensive program that focuses on building core, common and critical knowledge and skills for new managers. Using a variety of learning methods, new managers focus on what they will need to know and do to be effective in their role and to gain the knowledge and skills to manage others.

In addition to foundational management skills, we offer a suite of programs for experienced managers that are driven by key topics integral to the organization, like strategic planning, innovation and influencing others.

## TEAM DEVELOPMENT

For teams, there is a suite of programs that provide skills and tools for team leaders and team members, including Leading High Performing Teams, Virtual Teaming, Assessing Team Performance, Teaming Fundamentals, and Insights Discovery, a program to understand communications styles.

## TOOLS AND RESOURCES

### myCareer

Our talent tracking system, myCareer, serves as our global gateway to professional development, performance management, talent management and learning across the company. It keeps track of employee development plans, performance objectives and ratings, career aspirations (desired next roles and mobility preferences), experience (both outside of and within the company), language proficiency, certifications and education. The primary business purpose of myCareer is to facilitate more effective, consistent and efficient companywide performance management, talent reviews, succession planning, and associated employee performance and development processes through a single, integrated and automated global system of record for critical talent data about our employees. This helps to ensure that our workforce continues to realign itself with company objectives.

### Leadership Development Center

The Leadership Development Center is a website that features videos, articles, program announcements and resources for leaders and managers. Resources are aligned to our leadership behaviors, professional competencies, and functional competencies, and are available in the following formats: “on-demand” Web-based modules, classroom programs, articles, books (including audio books), webcasts and suggestions for “on-the-job” development activities.

# Performance

TRAINING AND EDUCATION	2016
Total course completions for all employees	4.2 million
Hours* of training for all employees	2.1 million
Course completions per employee	60

\* Based on average of 30 minutes per course.

In 2016, the number of leaders who participated in a program was more than double the number of 2015 participants.

LEADERSHIP	2016
Number of leaders who participated in leadership, learning and development programs	9,500
Number of leaders who participated in a Learning Community	10,000
Number of visitors to the Leadership Development Center	6,700



In keeping with our company's business mission to save and improve lives, we are committed to helping our employees be healthy and stay safe.

We know that being healthy goes beyond physical health to also include emotional, social and financial health, as well as employee safety. Only when our employees feel their best, in all aspects of their lives, can they perform at their best.

We provide employees with access to a wide variety of health and preventive services, programs, and tools to support their health and well-being. We are continually striving to provide our employees and contractors with a work environment that helps make the healthy choice the easy choice. We also take preventive actions and closely track workplace accidents, injuries and illnesses so that we can address unsafe behaviors and environmental issues promptly and work toward eliminating occupational injuries and illnesses.

In 2016, we were recognized by the National Business Group on Health with the *Best Employers for Healthy Lifestyles*<sup>®</sup> award and by the American Heart Association in its Workplace Health Achievement Index for our workplace health and well-being programs in the U.S.

We believe there are many benefits to this approach. The health and well-being of our workforce have a direct link to optimal workforce performance. Whether the job is done at a work location or at home, sickness, injury and stress can affect a person's ability to perform and contribute effectively. Because our business is promoting optimal health, we believe we must lead by example. We also believe that a constructive approach to our employees' health and overall well-being, in all aspects of their lives, helps to recruit and retain top talent.

## Total Rewards

We recognize that our employees are critical to our mission to contribute to the health and well-being of people around the world.

One way in which we recognize their importance is to provide a valuable suite of compensation and benefit programs as well as resources to support our employees' professional achievement and personal well-being. Together, we call these "Total Rewards."

Total Rewards include compensation and financial rewards, health and insurance benefits, opportunities for employees to develop their skills and grow their careers, and programs that help meet the demands of managing employees' professional and personal well-being. Our philosophy behind these programs is rooted in maintaining our competitive position in the market while providing a comprehensive and valuable package of rewards to attract and retain a talented and diverse workforce.

*myTotalRewards* is an online personalized resource that provides U.S. employees with a simple, consolidated view of their total compensation and financial rewards at our company. For most active employees (certain groups are excluded, such as those that are subject to collective bargaining), *myTotalRewards* contains the following detailed information:

- **Money:** Annual pay, cash incentives and our company's estimated contribution to pension, 401(k), insurance, and other benefits
- **Health:** The value of the key health benefits in which an employee participates, including medical, dental and vision coverage
- **Retirement & Long-term Incentives:** Retirement benefits and long-term incentives—and how they've grown over time
- **Other Rewards:** Other benefits available, such as educational assistance, K-12 educational guidance and financial planning

As of December 2016—less than two years after the launch—more than 97 percent of eligible managers and 64 percent of eligible employees had accessed their *myTotalRewards* statements.

For employees subject to collective bargaining obligations within and outside of the U.S., we comply with any and all applicable contractual and legal obligations in providing information to employees.

## COMPENSATION

Our compensation programs are designed using a pay-for-performance approach to recognize and reward employees for their accomplishments and the value they bring to the company. The programs target different aspects of individual and company performance and are monitored to ensure that they are competitive with those of other companies—and appropriate for the markets in which we compete for talent.

- **Competitive Base Pay:** Individual base pay based on job, market-aligned pay range, experience, skill level and individual performance
- **Short-Term Incentives:** Cash award programs to reward employees on the basis of company and/or individual performance versus objectives
- **Long-Term Incentives:** A future-oriented program that rewards the demonstration of individual performance, leadership and potential (based on defined skills and sustained performance) through stock-based incentives
- **Recognition Awards:** Programs designed to acknowledge employee service milestones and to reward the outstanding contributions of individuals and teams

## BENEFITS

Our company's health and wellness, retirement and insurance programs draw from best practices to ensure quality, competitive value, protection from significant financial hardship and access to tools and resources to support employees and their family members at all life stages.

In the U.S., we generally offer health, life, disability and business travel insurance as well as retirement income benefits to all employees, including part-time employees. Employees also can opt to contribute to tax-free Flexible Spending Accounts for reimbursement for certain health spending and/or dependent-care costs.

Outside the U.S., while benefits may vary by region and country, we offer health insurance, life and injury insurance, disability insurance, retirement income benefits, and insurance for business travel. In addition, in many countries where legally permitted, including the U.S., we extend health care and various insurance benefits to employees' domestic partners and their partners' eligible dependent children.

Worldwide, our company offers retirement benefits that are competitive with those of our peers and the general industry in

each market we serve. In the U.S., for example, we offer a defined benefit pension plan, as well as a 401(k) plan with company matching contributions. To assist in financial decision making, we offer all U.S. employees comprehensive financial education and guidance through Ernst & Young at no cost. And U.S.-based employees who are at least age 55 and those who have at least 10 years of service as of age 40 (for certain employees, service before age 40 also counts) are eligible for subsidized medical benefits at retirement. Outside the U.S., we have more than 80 pension plans (including defined benefit, cash balance, and defined contribution plans) in over 40 countries. These plans often supplement government-sponsored social security pension benefits to improve employees' financial security through added retirement income.

For employees who are traveling between sites or otherwise traveling on company business, we offer business travel accident insurance, a global medical benefits abroad policy and emergency travel assistance.

## **OTHER BENEFITS AND SERVICES**

Offering on-site services that support an inviting work environment where employees can thrive is another component of our company's Total Rewards proposition.

At the majority of company sites, including the company headquarters in Kenilworth, New Jersey, U.S., employees have the option of making an appointment to see a health care professional on site for such services as immunizations, biometric screenings, and treatment for minor aches and pains. The vast majority of sites globally are tobacco-free, and many encourage healthy behaviors by having on-site fitness centers, walking trails and well-lit stairways.

At many of our sites, we also offer services such as cafeterias, child care, dry cleaning, automobile services, and other amenities. In the U.S., our employees have the option of banking through our company's Employees Federal Credit Union, which offers competitive interest rates on savings accounts and lending.

For those who need flexibility, our company offers a global Flexible Work Arrangement policy that allows employees to work remotely or on a different work schedule that best fits their needs.



Every day our employees are resolutely focused on their quest to contribute to the health and well-being of people around the world.

Living this mission starts with ensuring that our employees are caring about themselves, their families and their communities. Global Employee Health works closely with Global Benefits and Global Population Health to provide a wide range of health and wellness services and work-life programs to our employees, retirees and their covered dependents.

These offerings cover the continuum of care for those who are well, those at risk, those with acute or chronic illnesses, and those requiring complex or catastrophic care. Many of these services and programs are provided at on-site employee health clinics or through programs managed by our vendor partners. These all work in conjunction with our comprehensive coverage through our health benefits offerings.

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Our on-site health clinics offer routine and travel vaccinations and other health care services.

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Our company is building a culture of holistic well-being that starts with physical health. An initiative branded "*LIVE IT*"<sup>1</sup> encourages employees to make healthy choices every day—about how they take care of themselves, the food they eat, the activities they pursue and their attention to overall well-being.

*LIVE IT* officially launched in the U.S. in 2011. Since that time, it has been formally expanded globally to 35 countries covering over 50 thousand employees and their family members. While the *LIVE IT* brand has not been communicated in every country, many of the resources and key messages about the importance of taking care of oneself and being healthy are delivered globally. We continue to evaluate how we can expand the *LIVE IT* initiative around the world.

As part of the *LIVE IT* initiative, our company offers a health and wellness website to all eligible U.S.-based employees (except those covered by collective bargaining agreement) and their dependents. The site features a Personal Health Assessment (PHA), online interactive health tools and information, health-coaching programs and more. Over 80 percent of eligible U.S. employees have registered to access the site, and 57 percent have completed the PHA to date. The website is designed to raise awareness about an individual's health status and to motivate employees to manage and improve their health and well-being. It includes topical health summaries based on scientific evidence and links to reliable health care information. Mobile technology solutions continue to be added to help employees more conveniently manage their health.

The online PHA is promoted during annual enrollment each fall. Once employees, spouses or partners complete the PHA, they receive a customized report that summarizes their health status and offers suggestions for personal goal-setting. Anyone who takes the assessment and wants to work on an identified health risk has access to a telephonic personal

health coach or an online lifestyle coach who provides advice and encouragement and regularly monitors progress. A special tobacco-cessation coaching program, branded “*LIVE IT: Tobacco-Free*,” is also offered to those who wish to quit using tobacco products. Participation in the health assessment and in other programs is voluntary and confidential.

Results from the PHA are used to help develop programs such as our weight management program, which consists of both the [Weight Watchers](#) Reimbursement Program (on-site Weight Watchers at work meetings) and [Healthy Solutions® at Home](#), a clinically proven weight-loss program featuring meal replacements and personal coaching, offered through our subsidiary [HMR Weight Management Services Corp.](#)

We are also committed to providing a safe workplace for all of our employees around the world and to complying fully with all applicable country and local safety laws and regulations. We strive to eliminate work-related injuries, illnesses and unplanned events from our global operations through comprehensive safety programs that are part of our overall Environmental, Health & Safety (EHS) management system. The design of our facilities and processes, our process controls, our protection systems, and our emergency response capabilities are critical components of our overall effort to minimize the frequency and severity of safety and environmental incidents.

Learn more about [Employee Safety](#).

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1. Privacy is important to us. No personal health information related to participation in LIVE IT is shared with the company.

## ON-SITE CLINICS

The majority of our sites offer on-site health clinics that provide an array of services to help our employees stay or get well.

Specific services include:

**Annual Flu Shots and Pandemic Flu Planning**—Most of our sites around the world offer employees annual flu shots. In the U.S., our Global Employee Health group provides annual flu shots at no cost to employees at site-based employee health clinics. In 2016, nearly 6,200 flu shots were provided in the U.S., Canada and Puerto Rico. In addition, with guidance from Global Employee Health, most of our sites have also developed site-specific pandemic flu preparedness plans, employing a variety of countermeasures that focus on heightened awareness and tactical procedures.

**Vaccinations**—Our on-site clinics in the U.S., as well as many around the world, offer employees both occupational vaccinations (including travel-related vaccinations) and non-occupational vaccinations for such diseases as pneumonia and shingles. In the U.S., each year in March, we run a campaign to promote and raise awareness of the shingles vaccine; in May, we run a campaign to promote and raise awareness of the pneumococcal vaccine. This year we also conducted vaccination clinics off-site during our National U.S. Sales Meetings to offer the same level of convenience to our field-based employees that our site-based employees enjoy. Through the Express Scripts Retail Vaccination Program available in our U.S. medical plan, applicable to most U.S.-based employees, participants may also receive certain vaccinations at participating retail pharmacies without member coinsurance/copay.

**Lab, Acute Episodic Health Care and Other Services**—Many of our on-site clinics offer employees the opportunity for lipid, blood glucose and other laboratory services, including blood collection ordered by a personal physician. Each year during the annual enrollment period in the U.S., employees can make an appointment to have their biometric screening done in preparation for their annual PHA. All individual employee medical information is kept confidential and only aggregate health data is shared outside the clinic.

Most Global Employee Health clinics also provide non-work-related acute episodic health care, including the diagnosis and treatment of minor non-occupational illnesses or injuries; health maintenance counseling; and appropriate referral to specialty services. In addition, to support new mothers returning to work, our clinics offer work-site lactation programs. “Lunch and Learn” programs and site-based wellness activities, including walking and weight-reduction programs, are also available at some sites.

## OCCUPATIONAL HEALTH

As a global organization, our company has numerous operating divisions and work assignments—each with its own requirements. Particular work assignments may involve potential exposure to one or more occupational hazards, such as noise, mixtures of chemicals, or hazardous biological compounds. Our company maintains a concerted effort to assess and control workplace hazards (chemical, biological and physical) and to make sure that each employee's work assignment is safe and consistent with his or her evaluated capabilities.

Occupational health programs are developed and implemented in accordance with identified health risks and applicable regulatory requirements. In the event that an employee becomes injured or ill while performing his or her job, we have programs in place for treatment and rehabilitation.

Our company's Global Employee Health professionals are clinically trained and dedicated to supporting efficient and effective quality health care for employees who become injured or ill as a result of their work. They advise on and coordinate health care with providers or agencies to ensure a smooth treatment-and-recovery process, while complying with both company and applicable regulatory record-keeping requirements.

## SMOKING POLICIES

The majority of our sites around the world have a no-smoking policy or a smoke-/tobacco-free policy in place. These policies send a strong message that the company is committed to promoting healthy lifestyles and to protecting its employees and visitors from the harmful effects of tobacco. In addition, the majority of U.S.-based employees have access to *LIVE IT: Tobacco-Free*, a telephonic personal health-coaching program that helps participants quit the tobacco habit. Our corporate headquarters in Kenilworth, N.J., U.S., is a tobacco-free campus.

## FITNESS CENTERS

We offer access to on-site fitness centers at several large U.S. facilities, as well as at other company facilities around the world. In countries where on-site fitness centers are not available, membership fee reimbursement or discounts are provided in accordance with local market practice.

In the U.S., professional fitness managers organize voluntary programs and events to encourage employees to eat well, manage their weight, exercise and participate in various fitness challenges and other special events. We also offer on-site massage therapy services at these centers at a reasonable cost to employees. Often, nonmembers can participate in the fitness centers' special programs for a nominal fee.

## AUTOMATIC EXTERNAL DEFIBRILLATOR PROGRAM AND EMERGENCY RESPONSE

At many of our sites, on-site health clinic staff responds to medical emergencies while also working with volunteers who help as emergency responders. Our Global Employee Health group provides direct oversight for automatic external defibrillators and associated training, provided at many of our sites in the U.S.

## CAFETERIA COLLABORATION

What we eat and drink affects our daily physical and mental well-being and our longer-term health and resilience. To contribute to a healthy work culture, we work with our on-site food vendor at most of our U.S. facilities to increase the availability and visibility of healthy food choices and to raise awareness of proper nutrition. Employees also receive discounts for healthy food purchases. In addition, many of our sites around the globe have cafeterias that offer healthy food options and nutrition education. Our food vendor is an integral partner of our *LIVE IT* team, and we jointly sponsor healthy eating events that correspond with the National Health Calendar.

## HEALTH ADVOCATE (U.S.)

We partner with [Health Advocate](#) in the U.S. to help employees and their families navigate the complicated health care and health insurance system. Health Advocate is designed to make employees' lives easier by saving hours of effort, with activities such as:

- Helping to resolve complicated medical and dental insurance claims
- Finding doctors, providers and facilities
- Scheduling appointments for physicians, treatments and tests
- Securing second opinions
- Assisting with eldercare and Medicare issues
- Getting cost estimates for medical procedures
- Assisting in the transfer of medical records
- Researching and locating the latest treatments
- Locating work-life resources

The program is available to all U.S.-based employees and their dependents (other than those covered by collective bargaining agreement) at no cost, and is also available to employees' parents and parents-in-law for any health care or eldercare issues they may be facing. During 2016, Health Advocate managed more than 3,600 cases from 15,000 interactions with eligible members.

## PERSONALIZED HEALTH CARE MANAGEMENT SERVICES (U.S.)

We have partnered with our health plan providers in the U.S. (Aetna and Horizon BCBS) to enhance the care management our members receive through an innovative single-nurse care model. Through this voluntary and confidential program, employees and their family members have access to a nurse who is dedicated to helping manage any chronic condition, such as diabetes, asthma and heart disease, in addition to providing support for severe and complex episodes of care, including cancer, high-risk pregnancies/NICU, transplants and infusion therapy, as well as inpatient admissions and obtaining appropriate services and treatment plans.

## DISABILITY MANAGEMENT/DISABILITY ACCOMMODATIONS

The Disability Leave team and our Global Employee Health group work with external vendors in the U.S. to develop and implement short- and long-term disability management and return-to-work policies and programs. Optimizing the health and productivity of our employees is a key goal of these efforts. Our centralized [Workplace EnABLEment program](#) in the U.S. ensures that employees with apparent and non-apparent disabilities are able to be accommodated, where feasible, to

enable them to work to their full potential.

## **BUSINESS TRAVEL PROGRAM**

We are committed to ensuring the health and safety of our employees who travel on business, especially to international locations. Our Global Employee Health group maintains up-to-date information about infectious diseases that are prevalent in all countries and their required immunizations. Business travelers are given any required immunizations, information on health conditions in the country of their destination, a traveler's guide, a travel kit containing over-the-counter medications they may need and an international emergency travel-assistance card. Employees may also consult with a Global Employee Health-licensed health care provider for specific travel-related prescription medications that may be needed during travel, possible preventive medical care prior to departure, information regarding the availability of medical care in the country of destination and the possibility of medical care after return, as needed.



Today's professionals are interested not only in intellectually challenging work and the opportunity to contribute to company goals, but also in finding work environments that are amenable to personal life needs and to interests that support and enhance their emotional and social well-being.

With this in mind, we have developed comprehensive, innovative emotional and social support programs that meet the needs of our talent. We offer an environment intended to support employee engagement and team cohesiveness, which leads to reduced absenteeism and increased productivity.

We have instituted a broad array of programs to appeal to employees at all stages of life.

## GLOBAL FLEXIBLE WORK ARRANGEMENTS

We believe flexible work arrangements offer a different way of working, and have the potential to enhance employees' commitment to the company, increase productivity and make employee teams more competitive. The company has had a flexible work arrangement policy globally since 2008.

In developing our global flexible work arrangement policy, we've challenged traditional assumptions about where and how work can and must be done. Flexibility reflects our belief that job effectiveness is determined by employee performance and results, not by the number of hours one is seen in the office. What is produced or accomplished is more important than when or where the work is done.

Employees and managers work together to assess the opportunities and challenges of a proposed arrangement. While the overall process should be collaborative, managers are accountable for making the final decision in light of business requirements, recognizing that some positions may not lend themselves to a flexible work arrangement. All regular full- or part-time employees are eligible to apply for a flexible work arrangement, which includes:

**Part-Time Work:** Employees' workloads and hours are reduced to less than the standard workweek requirements, along with commensurate reduction in benefits and compensation.

**Job Sharing:** Two employees on reduced schedules and workloads share the overlapping responsibilities of one full-time position; benefits and compensation are reduced accordingly.

**Flextime:** Employees with full-time job responsibilities modify the start time and quit time of a standard day while being present for departmentally established "core hours" (hours of mandatory attendance), if any.

**Compressed Workweeks:** Employees compress full-time job responsibilities into fewer than five days per week or 10 days per two weeks.

**Telework:** Employees fulfill full-time job responsibilities up to several days a week at sites other than their primary location—usually their home or a satellite office.

**Remote Work:** Employees fulfill full-time job responsibilities working primarily as home-based or mobile employees, with limited presence in a regular company facility.

**Summer Hours:** The Summer Hours program offers U.S. employees an additional resource in our flexible work schedule portfolio. Specifically, eligible employees are able to work nine-hour days Monday through Thursday, and the final four hours on Friday.

**Other:** Other options, including hybrid arrangements, seasonal work, and project-based approaches, may also make business sense. Employees and managers are encouraged to consider and pilot other alternatives.

## RESOURCES FOR LIVING (EMPLOYEE ASSISTANCE AND WORK-LIFE SERVICES PROGRAM)

We recognize that our employees' lives are busy—filled with priorities, commitments and tasks—and that when our employees are doing so much, *any* challenge—whether big or small, can create stress or disrupt life. Consequently, in early 2016, our company introduced “Resources for Living,” an employee assistance and work-life program that supports our employees and family members in all aspects of their lives. The introduction of this global program expanded support from 18 countries to all 80 countries where we have a presence.

The key services of Resources for Living (provided in local languages) include:

- In-the-moment telephonic support for daily parenting questions, relationship challenges, work issues, and everyday stress
- Professional counseling sessions for personal, family, or emotional issues (up to five telephonic, face-to-face, or video sessions [in the U.S. only] per person per issue)
- Work-life services for everyday help with everyday needs, such as finding assisted living for aging parent(s) or locating a service provider for common household needs
- Crisis support for unanticipated events

Resources for Living is available at no cost to all employees and their family members 24 hours a day, seven days a week, and is confidential except as required by law.

## SOCIAL CONNECTEDNESS

Connecting to others socially—both in and out of the office is an important component of well-being. Our company offers a variety of ways for our globally dispersed employees to connect. Our Sync news portal provides company news at the enterprise level and also offers the flexibility of local content in native languages. In addition, through divisional, functional and organizational communities, employees can join various online forums to collaborate with their colleagues, learn more about topics of interest to them, and gain insights from other employees.

Our 10 Employee Business Resource Groups (EBRGs) are foundational to building a diverse workforce for people of all backgrounds across race, gender, ethnicity, culture, age, disability, religion, gender identity, gender expression, and veteran status. More information about our EBRGs is available [here](#).

Through our company's Global Employee Volunteerism Policy, eligible employees are provided with an opportunity to take up to 40 hours of paid time off each year to engage in a variety of volunteer activities that support eligible nonprofit organizations. In 2016, to commemorate the 125th anniversary of the company, we set a goal to reach 125,000 volunteer employee hours. By the end of the year, we had far exceeded our goal, recording nearly 215,000 hours of volunteer activities worldwide. [Learn more.](#)

### **Thoughtful Communication with Employees and Managers**

To ensure deep and broad-scale awareness of all our programs, our company uses a thoughtful, integrated communications approach to help all employees manage work-life integration. We provide training to managers in helping employees find new ways of working to achieve business goals, while supporting employees' work-life effectiveness. In addition, we use internal communications, employee networking events, mentoring and leadership-development forums to maintain high levels of employee morale, enthusiasm and productivity.

### **Time Off and Leave Policies**

For U.S.-based employees not subject to a collective bargaining agreement, we offer paid time off, leaves of absence and other benefits to help employees manage work-life issues.

They include:

- **Vacation, Holiday and Year-End Shutdown:** We provide employees with fixed holidays, year-end shutdown days and a set number of paid vacation days to use throughout the year based on years of service, or on work experience for new hires.
- **Parental Leave:** Beginning January 2017, our company has extended paid parental time-off from one week to six weeks for the birth, adoption or foster placement of a child. Paid parental time off is available to both birth and non-birth parents.
- **Childcare Leave:** In addition to parental leave, employees receive separate, unpaid, job-protected leave to care for a newborn child, adopted child or child placed in foster care within six months (182 days) following the child's birth, adoption or foster-care placement.

### **Other Programs to Support Employee Emotional and Social Wellbeing**

Our Company offers many programs to help make it easier for employees to balance their various responsibilities.

The following are a non-exhaustive sampling:

**Transportation Services:** Free commuter/shuttle services from specific locations near our headquarters in Kenilworth, New Jersey, U.S., and other locations enable employees to save on transportation costs and commute time while reducing their carbon footprint. Transit and parking reimbursements are also available at various locations.

**Backup Dependent Care:** Temporary backup dependent care services for employees are provided by LifeCare, for children and adults, when employees are scheduled to work and their regular care arrangements are unavailable. Employees are eligible for 10 days' usage per dependent per year for a nominal out-of-pocket fee. Employees can also take advantage of significant online resources.

**Child Care Support:** Our company offers several on-site or near-site child care centers that enable employees to be close to their children during the work day. Recognizing not all employees work at a site with a company-sponsored childcare facility, we have made arrangements with several national childcare providers to offer discounts to employees on their eligible regular tuition.

**K-12 Educational Guidance:** College Coach is an educational counseling service for dependent children ranging from kindergarten to grade 12 that offers a comprehensive menu of education topics and helps employees manage their professional and family responsibilities through live webinars, online support and personalized counseling. The program helps employees and their families reach their academic goals—reducing stress and keeping employees happy and productive, both at home and at work.

**Special Needs:** The Autism Spectrum Disorder (ASD) Program is for employees and their children as they plan for and navigate school and college options for students with diagnosed ASD and related conditions. Once qualified, employees can receive personalized counseling and participation in one live webinar.

**Adoption Assistance:** Effective January 2017, our company has enhanced its adoption assistance program to be an adoption/surrogacy assistance program and increased the eligible reimbursement to \$25,000 per child for eligible adoption/surrogacy expenses.

For U.S.-based employees who are subject to a collective bargaining agreement, work-life benefits may be offered in accordance with the agreement. For employees based outside the U.S., the work-life benefits offered differ by location and may be subject to a collective bargaining agreement or local legal requirements.



We believe it is critical to focus not only on improving our employees' physical, emotional and social well-being, but also on helping them to achieve financial well-being.

Doing so helps to reduce stress and distractions in the workplace and contributes to increased worker productivity and loyalty. According to the Society of Human Resource Management's 2014 study "Financial Wellness in the Workplace," 24 percent of employees say personal financial issues are a distraction at work, and 39 percent say they spend three or more hours each week thinking about or dealing with issues related to their personal finances. Human resources professionals go even further: Seven out of ten indicate that personal financial challenges have an impact—in some cases a large impact—on their employees' performance.

One of the guiding principles of our company's benefits program is that it is designed to protect employees from financial hardship. We do so by providing access to health benefits (with out-of-pocket maximums in the U.S. that vary by pay level) and life, disability and accident insurance to protect employees and their families if the unexpected happens. In addition, we provide various defined-benefit and defined-contribution plans around the world to help employees plan for a secure retirement.

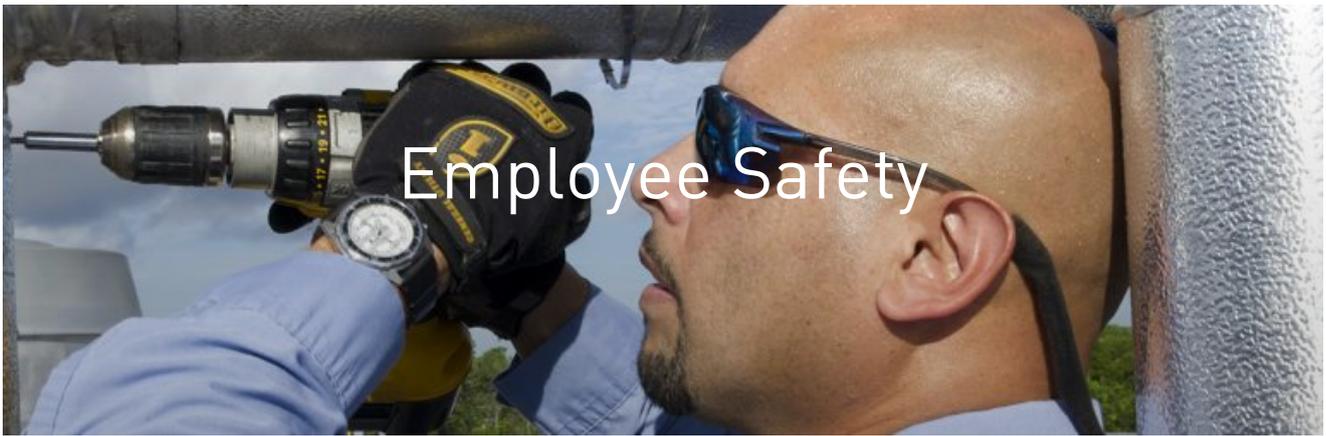
In the U.S., our retirement plans are specifically designed to provide an opportunity for each employee to save at least 15 percent of total pay each year, through a combination of his or her 6 percent contribution to the company's 401k savings plan, the company's 401k savings plan matching contribution, and the U.S. retirement plan. Saving 15 percent of total pay each year is important, as most financial experts agree that that is the required savings rate to achieve a comfortable retirement.

As part of the Resources for Living program, all employees globally have access to a free initial consultation with a financial planner for a variety of issues, such as budgeting, debt, retirement, college funding, buying versus leasing, mortgages and refinancing, financial planning and tax considerations.

In the U.S., we also offer the Ernst & Young (EY) financial planning benefit at no cost to employees. This benefit is available to employees in need of personal financial planning assistance. EY planners are available to help reduce financial stress by assisting with topics ranging from cash flow, credit card and debt management to retirement savings and investing, education funding, and more.

## Performance

EMPLOYEE COMPENSATION	2012	2013	2014	2015	2016
Total compensation paid to employees/payroll, including benefits (in billions)	\$8.30	\$7.70	\$7.40	\$7.50	\$7.77



As a global health care company, we strive to provide a safe and healthy workplace.

We remain committed to providing a safe and healthy workplace for our employees and contractors, and complying with all applicable safety laws and regulations. We seek to eliminate work-related injuries, illnesses and unplanned events from our operations through comprehensive safety programs that are part of our Environmental, Health & Safety (EHS) management system. We also strive to minimize the frequency and severity of safety and environmental incidents by focusing on proper facility design, process controls, operation and maintenance procedures, protection systems and emergency response capabilities.

Our global safety program is designed to drive a “mindset shift” and reinforce the link between our leadership behaviors and our safety and environmental objectives. We believe that through visible management, leadership and employee engagement, we can increase the awareness of hazards and help employees make the right choices when it comes to safety, health and the environment—both on and off the job. We also promote a strong safety culture at our sites through active safety committees that drive program implementation and address safety issues collaboratively between management and employees.

For consistency across the company, and to enable us to compare our injury rates with those of other multinational companies, we use the U.S.-based [Occupational Safety and Health Administration \(OSHA\) record-keeping criteria](#) for recording and tracking work-related injuries and illnesses. We require that all recordable injuries, illnesses and incidents involving our employees be reported and investigated to determine their cause. We also require that actions be taken to prevent recurrence. Our injury and illness data are consolidated into a central system, enabling us to analyze trends, and focus our efforts to continually improve. We also take steps—through internal safety alerts and bulletins—to communicate significant incidents, near-miss events and conditions that could represent risks at our other operations and sites. We share corrective and preventive actions across our operating locations to allow all sites to benefit from proven practices.

[Click here](#) for EHS governance, roles and responsibilities.

## Programs

We are committed to providing a safe and healthy workplace for all of our employees.

## PROCESS SAFETY

Our Process Safety program identifies and controls risks associated with manufacturing our human and animal health products. The program applies not only to operations that are subject to process safety regulations, but also to our pilot plants, manufacturing operations and utility areas where process hazards may exist. In addition, we have implemented a structured chemical-reaction-hazard review program for our research laboratories.

Early in product development, we conduct chemical reaction and thermal testing of our intermediate materials and products to identify potential reactivity, fire and explosion hazards and environmental risks. This testing continues throughout the product life cycle to assure that we are aware of and can appropriately manage process risks. Global process safety professionals work with operational and engineering personnel to conduct process-hazard analyses (PHA) and hazard and operability (HAZOP) studies to thoroughly evaluate our operations. These structured reviews take place during process design, initial start-up and throughout the process life cycle, to ensure that our facility design, equipment, operating controls and maintenance procedures are effective in controlling process-related hazards.

## NON-ROUTINE HAZARDOUS WORK

In recognition of industrial safety trends and our own internal EHS audit observations, we have refined our global approach to managing safety during non-routine maintenance and repair activities. Across the industry, these work activities are a leading cause of serious and fatal injuries. We have developed the following global safety standards: employee training and safety equipment requirements to minimize the potential for serious incidents when our employees are working on or near machinery, piping and electrical systems; working at heights; entering confined spaces; and conducting other high-risk work activities. This global effort is focused on creating a rigorous, error-free and safe approach to performing these work activities.

## CAPITAL PROJECTS CONSTRUCTION SAFETY

We have a strong Construction Safety program with a focus on zero harm to people, property and the environment. We educate and coach our capital project construction contractors on EHS fundamentals and the need to drive continuous improvement in the safety culture of our construction partners. Our global engineering group has adopted Hearts and Minds™, a culture-based program that promotes safety as a personal value. The program has led to a steady increase in leading indicator performance such as safety observations, pre-task planning and hazard assessments, and has resulted in a steady decrease in contractor injuries.

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**99% of our 2016 capital construction projects had zero recordable injuries**

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For construction projects, we use the days away, reassignment or transferred (DART) rate for assessing our construction capital projects, instead of the lost-time incident rate (LTIR). DART is commonly used in the construction industry and is, therefore, an appropriate lagging indicator for our construction safety program.

We logged 3.8 million construction hours in 2016 and had zero recordable injuries in 99 percent of our 2016 construction projects. Our 2016 construction safety recordable injury rate (RIR) of 0.53 reflects a 39 percent decrease from 2015, and our DART rate of 0.26 decreased 32 percent over the prior year.

In 2016, our global engineering construction safety group logged 44,391 safety observations (both corrective and positive), 20,000 more than we completed in 2015. Logging safety observations is an important part of the program, because it reflects worker engagement and interventions, emphasizes being observant, and identifies and prevents issues that could lead to injury events.

Our Construction Safety peer reviews bring in-house engineers, contractors, Environmental, Health & Safety and other partners together for thorough project safety evaluations with lessons learned and sharing of best practices. We completed 123 peer safety reviews in 2016, covering 90 percent of the active projects in 2016 versus our target of 75 percent.

## INDUSTRIAL HYGIENE

Our Industrial Hygiene program protects the health of our employees throughout all stages of research and manufacturing by identifying chemical, physical and biological hazards, assessing exposures, and properly controlling risks.

To protect the health of our employees, we apply a hierarchy of control measures that first seeks to eliminate or find a substitute for a hazardous material or process. When it is not possible to do so, we evaluate the feasibility of engineering controls based on the hazard and risk. Where engineering controls are not feasible, we establish effective work practice controls and use appropriate personal protective equipment. We formally evaluate existing processes and control strategies to determine whether further engineering and work practice controls are feasible. For new processes and facilities, appropriate engineering and operational controls are part of the design and installation. We verify the effectiveness of these controls after installation and ensure that they are properly used and maintained.

In 2016, our engineering control database continued to expand to include more exposure control solutions, as well as performance data on the effectiveness of the installed engineering controls. This database enables our engineering and EHS professionals to efficiently and effectively identify potential exposure control solutions for new and existing processes.

## BIOLOGICAL SAFETY

Our biosafety program utilizes a performance-based management system to effectively mitigate bio-risks associated with the research, development and manufacturing of human and animal vaccines and therapeutic proteins. We use a robust and effective risk assessment process that evaluates and controls potential impacts, including:

- Biosafety (preventing an accidental release)
- Biosecurity (preventing an intentional release)
- Bioethics (promoting responsible use of biological materials and technologies)
- Sustainability (minimizing our environmental footprint), and
- Product stewardship (eliminating or minimizing safety and environmental hazards)

Each risk assessment identifies risk-mitigating controls and a risk management strategy, which includes biosafety training, emergency response procedures and containment level requirements.

## MOTOR VEHICLE SAFETY

The aim of our Motor Vehicle Safety program is to reduce the frequency and the severity of motor vehicle injuries in our global operations. We have implemented a global motor vehicle safety standard across all regions that includes programs to support safe driving skills and behaviors across our sales and marketing groups, which operate the majority of our business-use vehicles. As we make these improvements, we are seeing a corresponding reduction in the injuries

associated with vehicular collisions, both for our own employees and for those with whom we share the road.

In 2016, 24 percent of the recordable injuries companywide were motor vehicle collision-related. We saw a 24 percent decrease in the number of collisions, normalized for miles traveled in 2016, versus the prior year, and a 20 percent reduction in motor vehicle collision-related employee injuries.

## ERGONOMICS

The objective of our ergonomics program is to minimize employee injuries and improve human performance and well-being in relation to job tasks, equipment and the work environment. Our priority business areas are the manufacturing, research and sales environments, where most ergonomic injuries and illnesses are related to manual material handling and repetitive motion.

Ergonomic-related injuries continue to represent about 21 percent of our recordable injury cases globally. To minimize ergonomic risks, engineering design and work practices are reviewed and implemented at our sites. We are focusing our efforts on the sites and operations that have the highest ergonomic risks by conducting risk assessments, implementing engineering and operational controls, providing training, communicating with employees and encouraging their participation in workplace assessments. These efforts help to improve employees' ergonomic awareness both at work and at home.

## EMERGENCY PREPAREDNESS AND RESPONSE

We prioritize the prevention of incidents through equipment and facility design, operational and maintenance procedures, and employee training. Because we recognize that incidents may still occur, our EHS standards require emergency response capabilities at all of our facilities worldwide. Our priorities for emergency response include: ensuring the safety and well-being of our employees, preserving the environment and nearby communities, and protecting our physical assets. Site-specific emergency response procedures include incident reporting and management, personnel evacuation, medical/first-aid response, and incident response and control. We routinely conduct emergency response drills and train employees in both job- and site-specific emergency response duties. We develop and conduct pre-emergency planning for credible emergency scenarios such as process upsets, fires, spills/releases, severe weather and security-related incidents. Many of our manufacturing plants have trained emergency response teams, and mobile fire and rescue apparatus that respond to on-site fires, medical emergencies, technical rescues and spills/releases. Most of our emergency response teams interact directly with their local community-based emergency responders and, in some cases, assist off-site when requested.

## LOSS PREVENTION

Protecting our people, facilities, production processes and product supply chains from threats such as floods, windstorms, earthquakes and fires is critical to ensuring that our products reach our customers when needed without any supply interruptions. We proactively assess and manage these risks at our facilities and at several of our strategic third-party manufacturers and warehouse providers. Our loss-prevention program focuses on providing suitable facility and process designs; implementing inspection, prevention and maintenance procedures; installing fire detection and protection systems; and executing emergency response and business continuity programs to eliminate or reduce the impact of these potential loss events. We also engage the services of globally recognized engineering service providers to routinely inspect facilities and review new designs and facility modifications. This helps us maintain a high standard of loss prevention that is commensurate to operational risks, monetary value and supply-chain importance.

# Performance

We have worked steadily over the last five years to drive down our workplace injury rates, and we have seen continual improvement as a result.

In 2016, our lost-time injury rate decreased to 0.13, which is a reduction of 41 percent from 2015. Our recordable injury rate was 0.35, 27 percent lower than in the prior year.

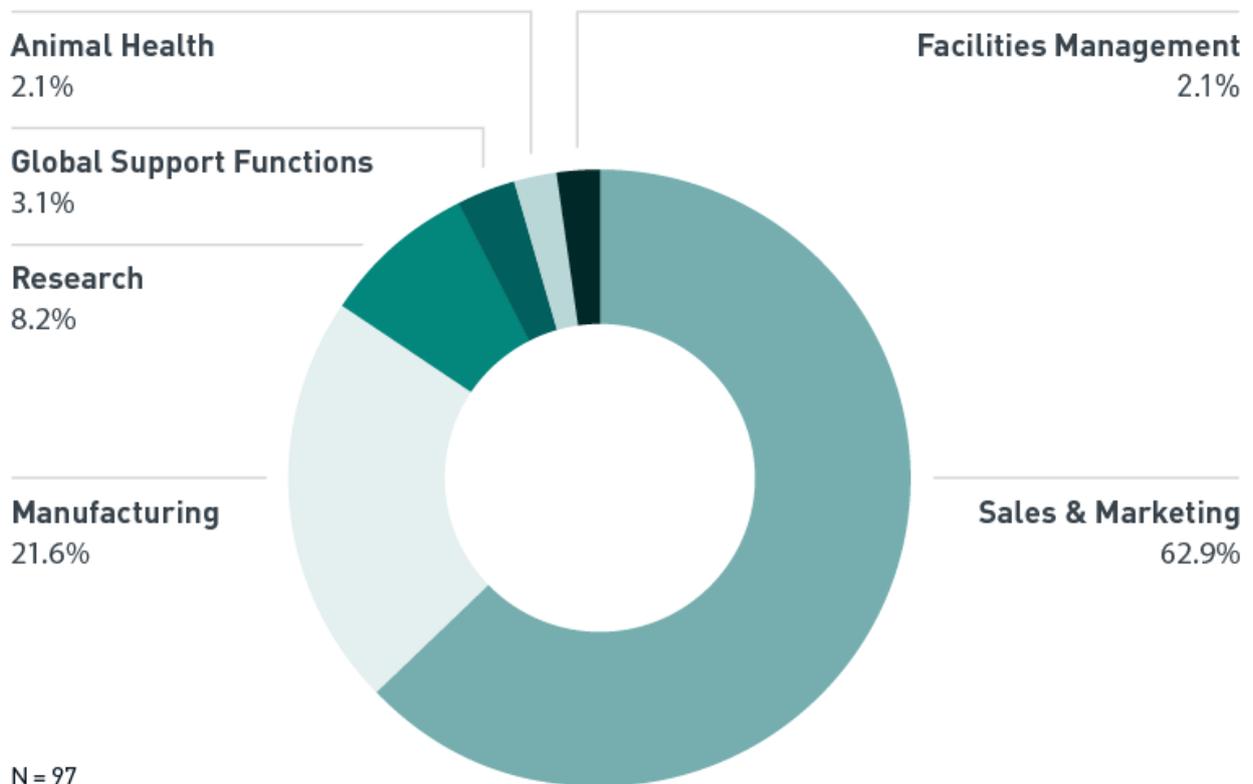
Last year, roughly a quarter of the recordable injuries were motor vehicle-related, with slips, trips and falls and ergonomic-related injuries accounting for 23 and 21 percent of the total number of injuries, respectively.

We saw a 24 percent decrease in the number of motor vehicle collisions, normalized for miles traveled in 2016, versus the prior year, and a 20 percent reduction in motor vehicle collision-related injuries.

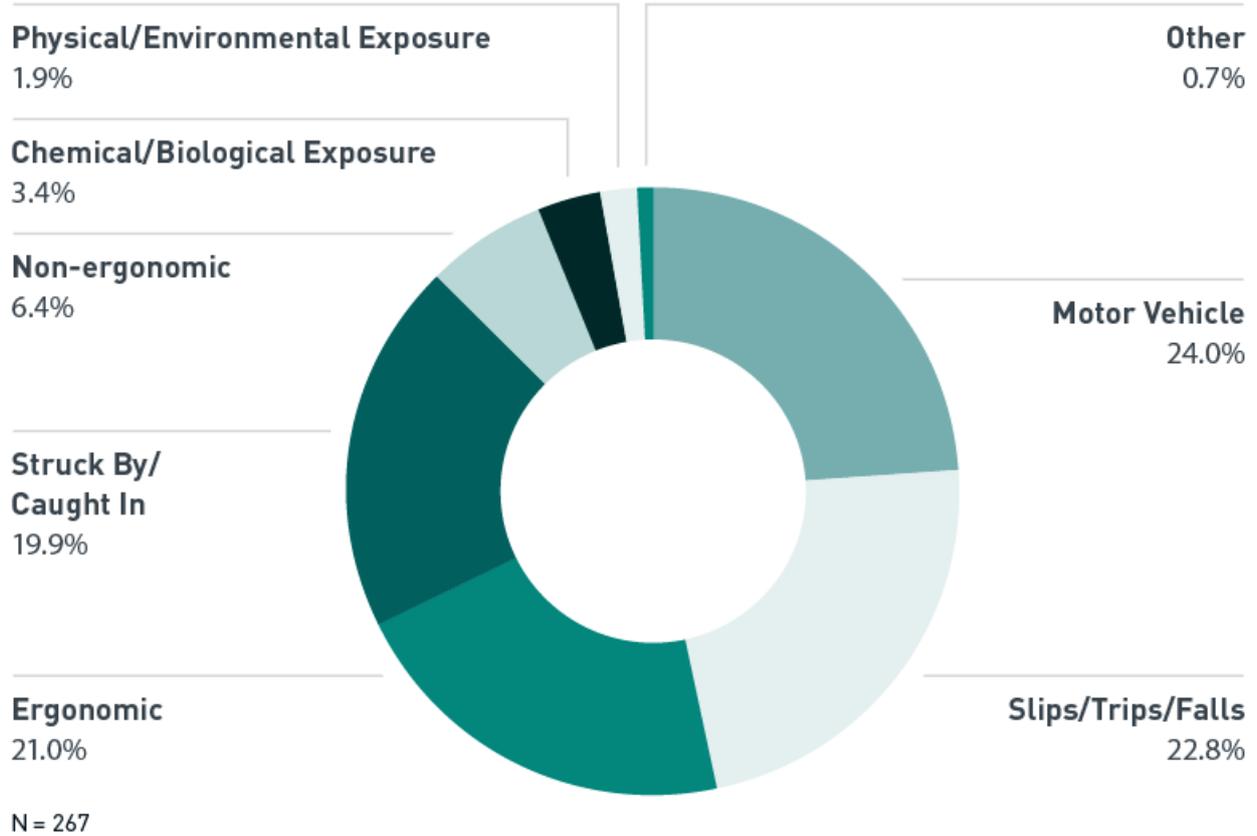
In 2016, we continued to focus our efforts towards reducing the number of slips, trips and falls, and we reduced these types of incidents by 42 percent versus the prior year.

Our focus on ergonomics, including workplace design, continued to show signs of improvement in 2016, by reducing the number of ergonomic-related recordable injury cases by 10 percent from 2015.

## LONG-TERM INJURIES BY BUSINESS AREA IN 2016



RECORDABLE INJURIES BY CAUSAL FACTORS IN 2016



Global Safety Performance

WORKPLACE SAFETY	2012	2013	2014	2015	2016
Recordable injury rate (RIR)	0.62	0.62	0.58	0.48	0.35
RIR percentage decrease over prior year	16%	0%	6%	17%	27%
Lost-time incident rate (LTIR)	0.28	0.28	0.20	0.22	0.13
Fatalities <sup>1</sup>	1	1	1	1	0

Note: Injury rates are subject to change over time, as new cases are added and case classifications change in accordance with our own requirements and applicable regulatory requirements.

1. All fatalities were transportation-related.

MOTOR VEHICLE SAFETY	2012	2013	2014	2015	2016
Collisions per million miles (CPMM) <sup>1</sup>	10.23	12.98	13.40	12.41	9.48

Note: Injury rates are subject to change over time, as new cases are added and case classifications change in accordance with our own requirements and applicable regulatory requirements.

1. CPMM: Reflects both personal and business use of company-owned or -leased vehicles.

CAPITAL PROJECTS CONSTRUCTION SAFETY <sup>1,2</sup>	2012	2013	2014	2015	2016
RIR	0.78	0.36	0.96	0.87	0.53
DART <sup>3</sup>	0.22	0.20	0.44	0.38	0.26
Fatalities	0	0	0	0	0

Note: Injury rates are subject to change over time, as new cases are added and case classifications change in accordance with our own requirements and applicable regulatory requirements.

1. LTIR/RIR: Calculated per OSHA methodology.

2. Primarily reflects capital projects of more than \$100,000 managed by our Global Engineering group.

3. DART: days away, reassignment or transferred, calculated per OSHA 300 methodology.



We uphold global diversity and inclusion as a core value in everything we do.

#### U.S. Employee Demographics (2016)

It is how we foster a culture of true inclusion for all. From respecting and valuing people, to learning by sharing ideas with each other, to supporting the career advancement of our employees, collaborating for success is critical to our mission of saving and improving patients' lives.

Achieving a competitive advantage in the global pharmaceutical industry requires the best minds from a diverse range of talent, with rich, varied experiences, who can help deliver on our mission.

The global demographic landscape of patients and the labor markets is changing—it will become increasingly diverse. This understanding requires a paradigm shift: what we historically have regarded as the mainstream market is, in fact, a very diverse global workforce and patient base.

#### Self-ID Campaign

For the past two years, we have conducted a self-ID campaign designed to comply with U.S. federal regulations and to reinforce a culture of inclusion by inviting employees in the U.S. and Puerto Rico to voluntarily self-identify disability, LGBT and veteran status. The program has received a strong response from employees, and we were invited to participate on the Department of Labor Office of Federal Contract Compliance (OFCCP) Roundtable to share best practices.

Given this perspective, we regard a globally diverse workforce as a fundamental business imperative. Global diversity and inclusion (GD&I) represents a powerful business strategy that unleashes the insights and perspectives of our employees to deliver scientific innovation and achieve transformative business results. From the office of the CEO and our company's Leadership Team to the Global Diversity & Inclusion Center of Excellence, and everything in between, we are fully committed to fostering an inclusive culture where diversity and inclusion permeate our day-to-day operations and business decisions. In doing so, we believe that our business performance is exponentially enhanced.

We employ talented people of varied gender, age, sexual orientation, gender expression, veteran and disability status, and ethnic, cultural and faith backgrounds to help us better understand the unique needs of global patients and to create competitive advantage in the marketplace. This, in turn, delivers intrinsic, long-term value to society and to our shareholders.

“Diversity is an integral part of our business practices that contributes to our company’s success and to our mission. The soul of our company is our people, and all of us put our patients and customers at the center of everything we do.”

Celeste R. Warren

Vice President, Human Resources and Global Diversity & Inclusion Center of Excellence

## LEADERSHIP COMMITMENT

The single most significant advocate of diversity and inclusion at our company resides at the very top—with our CEO, Kenneth C. Frazier.

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“We are deeply committed to fostering an inclusive environment that embraces different perspectives and values the contributions of each individual. Having a globally and locally diverse workforce makes us a more innovative and agile company—and one better attuned to the needs of our customers, health care providers and patients who ultimately use our products.”

Kenneth C. Frazier

Chairman & Chief Executive Officer

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Our CEO reinforces this commitment to diversity throughout all ranks of the global enterprise by:

- Signing off on executive compensation tied to recognition of diversity, in the form of bonuses, raises, stock and options
- Approving diversity metrics and reviewing progress against aspirational talent goals for women and underrepresented ethnic groups
- Driving accountability through meetings with the company’s key line leaders on a quarterly basis to review key strategic initiatives centered on global diversity
- Conferring with the company’s head of GD&I on strategic diversity and inclusion solutions and innovation opportunities

By advancing these initiatives across every facet of the business, we continuously seek to raise the performance bar for diversity and inclusion and uphold accountability among leaders, integrating both as important drivers of our sustainable competitive advantage.

### CEO Action for Diversity & Inclusion

We are joining more than 150 corporations in a commitment to diversity and inclusion.

In June 2017, Ken Frazier, along with other CEOs, signed a pledge that outlines a specific set of actions the signatories

will take to cultivate a trusting environment where all ideas are welcomed, employees feel comfortable, and all are empowered to discuss this very important topic.

By signing this pledge, we are demonstrating our commitment to diversity and inclusion by:

- Continuing to make our workplaces trusting environments where all can have complex conversations about diversity and inclusion
- Expanding unconscious bias education
- Continuing to share best—and unsuccessful—practices

Learn more about the pledge [here](#).

The importance of GD&I and its significance to our patients and customers were reinforced in 2016 when our company launched the first-ever Global Diversity and Inclusion Experience Month. This event brought together colleagues from around the world for a global webcast featuring remarks by Ken Frazier, a leadership panel discussion, and highlights of regional examples of diversity and inclusion. This was a very successful global forum for employees and leaders to come together, discuss the value of diversity and inclusion to their business, and to share experiences.

### Discussion with Japanese Prime Minister Shinzo Abe

Ken Frazier visited with the Prime Minister of Japan in 2016 to discuss “Womenomics”—a plan to boost Japan’s economy by increasing the number of women in the workforce and correcting the country’s long-standing gender imbalance.

Using MSD Japan as an example, opportunities to expand career options for women in terms of both recruiting and retaining them at higher rates, and providing suggestions around work-life integration and flexible work arrangements, were discussed.

We ensure that the candidate selection process is inclusive of diversity goals. Our company provides world-class leadership opportunities for employees.

We partner with organizations in both professional and academic settings to net the company a more diverse mix of capable talent. We also have several recruiting and outreach initiatives to seek and attract a diverse candidate pool.

Once new employees are on board, we utilize a comprehensive approach to ensure that they all have ample opportunities to network, build important stakeholder relationships, learn new skills, and hear the perspectives of the senior-most people in the company to broaden their insights and knowledge. We address workplace barriers to ensure full on-boarding for all employees.

We partner with Hiring Our Heroes, an organization that provides employment opportunities nationwide to veterans with disabilities. Each branch of the military produces scientists, engineers and doctors, all of whom are aligned with our company’s needs.

### Hiring Our Heroes

In 2016, we entered into a new partnership with the U.S. Chamber of Commerce Foundation’s Hiring Our Heroes program. In addition, in 2016, in partnership with Hiring our Heroes, we announced the results of a year-long study, *Veteran Employment Survey: Understanding the Challenges and Creating Long-Term Opportunities for Veteran Employees*. This study is truly significant in that it reinforces many of the key themes that Hiring Our Heroes has been stressing for several years now, including the fact that starting to plan for transition earlier in the process is a strong indicator of the level of success that a veteran will have in the civilian workforce.

Read the full report [here](#).

Our company recruits on higher-education campuses and, as part of its diversity-recruiting mission, visits institutions that have a history of serving African-American and Latino students. We regard these pools of talent as a priority, and have allocated time and employee resources to focus on:

- **Historically Black Colleges and Universities (HBCUs)**: e.g., Hampton University, North Carolina A&T State University
- **Hispanic-Serving Institutions (HSIs)**: e.g., University of Puerto Rico, Rutgers

We utilize a comprehensive communications strategy, marketing outreach, and strategic alliance partnership approach to ensure that top prospective employee-with-disability hires—early-career candidates and key functional skill candidates in STEM (Science, Technology, Engineering, Mathematics) areas, in particular—are supported as they launch and continue their careers. The strategy comprises academic and university relations, participation in targeted job fairs, national advocacy alliance for disability-related issues, community outreach, branded communications strategies, and external recognition.

Historically, our company has partnered with the American Association for the Advancement of Science to source interns with disabilities for science, engineering, mathematics, computer sciences, and business.

We have worked with the National Technology Institute for the Deaf (NTID), the first and largest career-oriented, technological college in the world for students who are deaf or hard of hearing to have a college intern program. Together with NTID, we helped to raise awareness of the deaf culture and empower managers to create a more inclusive environment for students with a hearing disability.

We have strong relationships and partnerships with the following organizations to support talent development:

- American Indian Science and Engineering Society (AISES)
- ASCEND—largest nonprofit organization for pan-Asian business professionals
- Catalyst—the leading women’s research organization
- Healthcare Businesswomen’s Association (HBA)
- Hispanic Alliance for Corporate Responsibility (HACR)
- National Black MBA Association (NBMBAA)
- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE)
- National Organization on Disability (NOD)
- National Society for Hispanic MBAs (NSHMBA)/Prospanica
- National Society of Black Engineers (NSBE)
- National Technology Institute for the Deaf
- National Urban League (NUL)
- Out & Equal Workplace Advocates—for LGBT business professionals
- Society for Hispanic Professional Engineers (SHPE) university chapters
- Society of Women Engineers (SWE)
- United States Business Leadership Network (USBLN)—driving success through disability inclusion

## EMPLOYEE BUSINESS RESOURCE GROUPS (EBRGs)

Our company has 10 EBRGs representing different constituencies and 10,000 members worldwide: women, veterans, Hispanic/Latino, African ancestry, Asia-Pacific, Native American/Indigenous, lesbian, gay, bisexual and transgender, differently able, interfaith and generational.

Each EBRG is supported by company leaders who provide counsel, insight and support for its business plans. In addition,

many EBRGs have developed targeted mentoring for their constituents, recognizing that culture plays a role in how careers are furthered.

At the Executive Committee and the Office of Diversity & Inclusion level, all members are active on boards of nonprofit organizations, and are fully committed to GD&I as a business strategy. One hundred percent of our Executive Committee members are mentors, helping and enabling employees to achieve their full potential.

In addition to EBRGs, we leverage the business insights of employees via D.R.I.V.E.N. (Delivering Real Insights Via Employee Networks) to support our company's business objectives. Employees in the United States and Puerto Rico can contribute to our success by joining this secure, collaborative community of employees designed to allow them to share their perspective anonymously and help drive success for our company.

For example, in June 2017, the Alzheimer's team used the D.R.I.V.E.N. platform to better understand the potential utility of a new treatment currently being investigated and the type of education and support that will be needed to identify and treat patients early in the disease progression.

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**“D.R.I.V.E.N. represents true innovation in the pharmaceutical industry and allows us to take the best practices from other industries to get the quick, cost-effective and deep insights we need to drive our business forward by leveraging the diverse experience and perspective of our own employees.”**

**Alexine Tranquada**  
**Director, Global Customer and Brand Insights**

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## **TRAINING & DEVELOPMENT**

In partnership with the Human Resources Talent Management team, and the Leadership, Learning & Development department, the GD&I Extended Human Resources Leadership Team is reaching deeper, wider and earlier into the organization to develop top talent. We are striving to develop a cross-functional, general-management mind-set, enterprise-wide knowledge of the business, and end-to-end thinking for top talent and potential leaders early in their career—particularly among women and underrepresented ethnic groups (UEGs) in the United States.

Our company invests in leadership development for women and UEGs as a strategy to drive business results and higher levels of performance for the organization.

In 2016, we launched a new “Diversity and Learning Development Catalog.” This new catalog allows for ongoing access to training programs such as “unconscious bias” and “micro-inequities,” executive seminars, peer coaching, external conferences, and more.

### **Women's Leadership Program**

We partner with Simmons College to inspire and empower female executives. We recognize that developing the leadership potential of these executives, and positioning them for success, delivers a tangible competitive advantage for their organizations.

### **Women's Sponsorship Program**

The goal of this program is to accelerate the progress of high-potential women, including women of color, at our company by assuring their readiness and visibility so they can attain positions of greater leadership and responsibility.

### **MMD Leadership Program for African-American Employees**

Our company's Manufacturing Division recently developed and launched a new Leadership Development Program with the United Negro College Fund. The program is designed to identify and recruit top talent for key leadership and management positions within our Manufacturing Division. The program provides a rotational business experience coupled with professional coaching, mentoring, formal instruction, assessment and positioning for potential long-term career assignments. The objective of the program is to increase awareness and preparation among talented students of color, primarily African-American men and women who are current college juniors (rising seniors), to apply for the development program.

### **Unconscious Bias Education**

In 2016 we implemented a program where all company vice presidents and above were introduced to Unconscious Bias Education (UBE) to identify the hidden biases we all possess and to mitigate unconscious bias in processes, practices and behaviors.

### **Micro-Inequities**

Our company offers employees training options to reinforce our commitment to diversity and inclusion. Micro-inequities training helps to create a more fully inclusive work environment by providing employees with an opportunity to learn about and avoid non-inclusive behaviors.

### **Diversity in STEM**

We provide a full-day leadership training session to a diverse range of employees with a focus on the importance of STEM education, driving our mission and the role of personal accountability in managing one's career for growth and business impact.

### **Employees with Disabilities**

Our company understands that people with disabilities (PwDs)—apparent and non-apparent disabilities—may require workplace accommodations to enable them to contribute to their full potential. PwDs account for more than 15 percent of the world's population, are an important patient group and control trillions in discretionary income.

Moreover, as populations in developed countries continue to age and experience a greater likelihood of having disabilities, recruiting and retaining top employees at our company regardless of disability is not just a nice thing to do, it is a competitive necessity. The Global Disability Inclusion Council has embarked on a five-year strategy encompassing our company's leaders from Information Technology, Benefits, Compliance, Staffing, Integrated Health Management, and Facilities.

In addition to the creation of the Global Disability Inclusion Council, we leverage a comprehensive strategic platform to address full disability inclusion, titled "Workplace EnABLEment." This is our first enterprise-wide, customized disability inclusion strategy that addresses the entire spectrum of the employee experience with a strategic road map that includes recruiting, retention and advancement, a just-in-time manager training toolbox, an employee education program, communications support, community outreach, supply-chain engagement, strategic-alliance support and a measurement system to track results.

Externally, our company is the inaugural founding partner of the U.S. Business Leadership Network's (USBLN) Disability Supplier Diversity Mentoring and Development Program, which launched in 2016. This program connects certified disability-owned business enterprises (DOBEs) and service-disabled veteran, disability-owned business enterprises (SDV-DOBEs) with mentors within corporate supply-chain functions. It helps disability-owned businesses to better connect with corporate supply chains and each other, giving them valuable support, networking, and potential business opportunities.

The outcomes and connections from the Disability Supplier Diversity Mentoring and Development Program will empower diverse suppliers and better benefit corporate buying functions. [Learn more](#) about our supplier diversity program.

## GD&I BUSINESS CONSORTIUM

The GD&I Business Consortium represents a small group of individuals who are advancing our GD&I strategy in critical areas of our business. These include collaborating with our top customers, enhancing diversity in our clinical trials, building our global supplier diversity and pursuing Project D.R.I.V.E.N., a platform that harnesses the insights of our global diverse employees in market research.

The GD&I Business Consortium brings a business mind-set to four specific initiatives through which our company believes it can make the greatest impact.

- **Top Customers:** Leveraging GD&I to co-create initiatives with customers that help to advance our shared diversity goals.
- **Clinical Trials:** Adding relevance to our business by enrolling diverse patients in clinical trials as a business imperative.
- **Delivering Real Insights Via Employee Networks (D.R.I.V.E.N.):** Utilizing D.R.I.V.E.N., an innovative market-research initiative and tool, to tap into the diverse insights of our global employees to guide the future of our portfolio.
- **Procurement:** Having a diverse supplier base to provide our company with a competitive advantage throughout the business value chain and help us better understand and anticipate the needs of the people we serve.

## Performance

GENDER & ETHNICITY	2012	2013	2014	2015	2016
Women in the workforce	47%	47%	48%	48%	48%
Women on the Board	17%	17%	17%	21%	23%
Women in executive roles <sup>1</sup>	31%	31%	31%	34%	31%
Women on the senior management team <sup>2</sup>	35%	35%	31%	34%	36%
Women in management roles <sup>3</sup>	38%	37%	37%	38%	39%
Members of underrepresented ethnic groups on the Board	25%	25%	25%	21%	23%
Members of underrepresented ethnic groups in executive roles (U.S.)	17%	20%	20%	20%	23%
Members of underrepresented ethnic groups on the senior management team (U.S.)	23%	23%	15%	18%	18%
Members of underrepresented ethnic groups in the workforce (U.S.)	24%	24%	24%	26%	26%
Members of underrepresented ethnic groups in management roles (U.S.)	18%	18%	20%	23%	23%
New hires that were female	45%	46%	49%	50%	51%
New hires that were members of underrepresented ethnic groups (U.S.)	27%	25%	22%	33%	37%

1. "Executive" is defined as the chief executive officer and two structural levels below.

2. "Senior management team" is defined as the fourth structural level below the CEO.

3. "Management role" is defined as all other managers with direct reports not reflected in notes 1 or 2.

Note: Our company has publicly disclosed EEO-1 information since 1999. Our 2016 data is available at [http://www.msdrresponsibility.com/wp-content/uploads/2016/09/2016\\_EEO-1\\_Diversity\\_Brochure.pdf](http://www.msdrresponsibility.com/wp-content/uploads/2016/09/2016_EEO-1_Diversity_Brochure.pdf)

HIRING BY AGE & REGION	Under 30	30-50	50+
Overall	43%	49%	8%
EM-AP	58%	40%	2%
EM-EEMEA	50%	58%	2%
EM-LA	33%	48%	3%
EUCAN	16%	57%	9%
JAPAN	7%	67%	10%
U.S.	39%	47%	14%

TURNOVER BY GENDER & REGION	Female	Male
Overall	53%	47%
EM-AP	49%	51%
EM-EEMEA	60%	40%
EM-LA	57%	43%
EUCAN	52%	48%
JAPAN	33%	67%
U.S.	57%	43%

# ENVIRONMENTAL SUSTAINABILITY

A healthy planet is essential to human health and the sustainability of our business.

**Our company has a long history of environmental stewardship and compliance, but we realize that our strategy and efforts need to continuously improve in order for us to excel in an increasingly resource-constrained world.**

## SUSTAINABILITY STRATEGY

The world's resources are limited, and over the next few decades the demand for energy, clean water and other natural resources will increase substantially due to population growth and economic development. Additionally, climate change is projected to significantly impact global human health and will present long-term risks to our business.

We believe that companies have a responsibility to use resources wisely and drive innovations that will enable global development while protecting and preserving both the planet and the communities in which we live and work.

Our environmental sustainability strategy includes efforts in three key areas:

### EFFICIENT OPERATIONS



- Implementing energy-conservation and water-use-reduction initiatives
- Finding ways to more efficiently use our raw materials
- Handling our wastes in a compliant and responsible manner

### DESIGN FOR ENVIRONMENT



- Innovating to reduce the environmental impacts of our new products, packaging, buildings and equipment
- Using more renewable energy to power our facilities, thereby further reducing our greenhouse gas emissions

### REDUCE RISKS IN VALUE CHAIN



- Understanding the lifecycle impacts of our products
- Assessing the environmental impacts and risks in our value chain and striving to minimize those impacts
- Collaborating with our suppliers and customers to address our shared needs and interests in environmentally beneficial ways



## THE SDGs & ENVIRONMENTAL SUSTAINABILITY

This graphic illustrates which of the UN SDGs most closely align with our environmental efforts. Reducing our operational footprint is essential for thriving in a resource-constrained world.



### SDG 6

#### Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all

### SDG 7

#### Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable and modern energy for all

### SDG 12

#### Responsible Consumption and Production

Ensure sustainable consumption and production patterns

### SDG 13

#### Climate Action

Take urgent action to combat climate change and its impacts

## NEW ENVIRONMENTAL SUSTAINABILITY GOALS

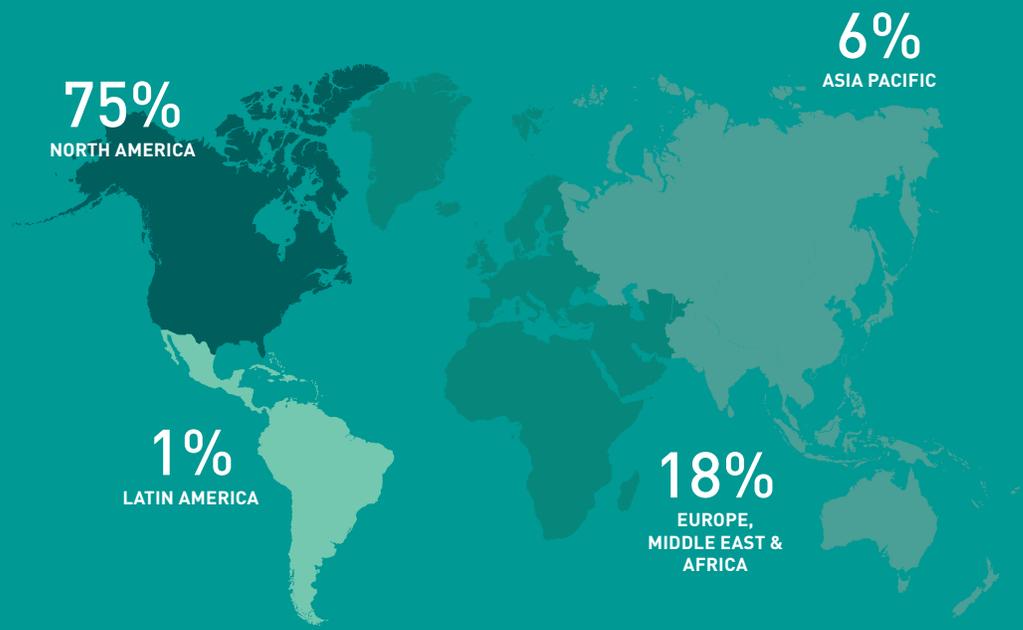
To realize our strategy, we have established a new set of goals for improving the sustainability of our operations.

These goals were developed to address the rising expectations of our stakeholders around the environmental impact of our operations, supply chain, products and packaging.



# GLOBAL WATER USE

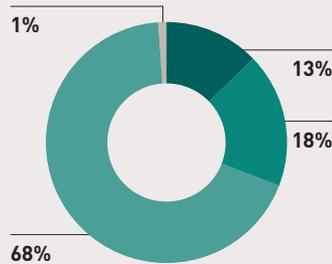
We use the World Resources Institute's water-risk-assessment tool, called "Aquaduct," to measure and map our water risks.



- Extremely High Water Risk
- High Water Risk
- Medium to High Water Risk
- Low to Medium Water Risk
- Low Water Risk
- Not Available

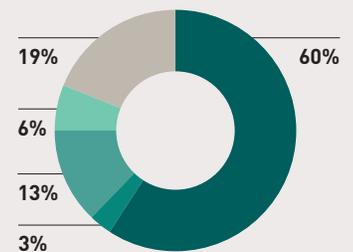
## NORTH AMERICA

**4.15<sup>B</sup>**  
gallons



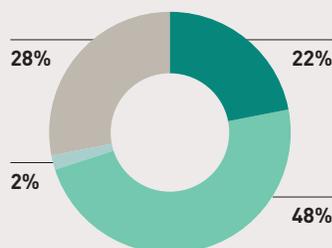
## ASIA PACIFIC

**0.33<sup>B</sup>**  
gallons



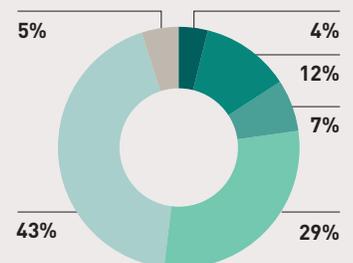
## LATIN AMERICA

**0.06<sup>B</sup>**  
gallons

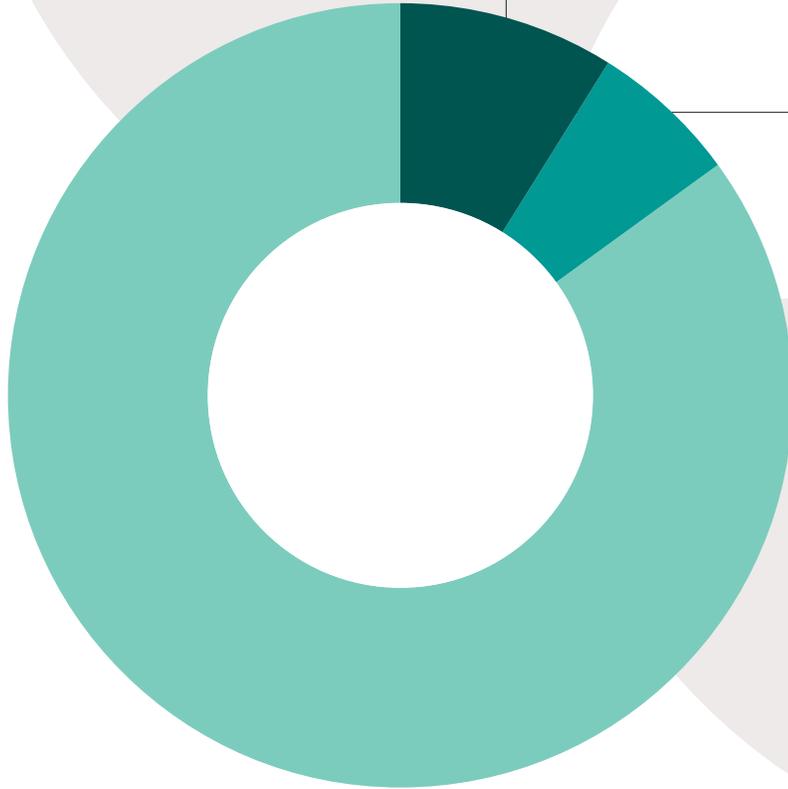


## EUROPE, MIDDLE EAST & AFRICA

**0.96<sup>B</sup>**  
gallons



**Note:** Data have been rounded to the nearest whole percentage point.



**SCOPE 1**

**847,400**

MT CO<sub>2</sub>e

**SCOPE 2**

**562,200**

MT CO<sub>2</sub>e

**SCOPE 3**

**7,975,100**

MT CO<sub>2</sub>e

**Note:** Scope 2 is the market-based value in accordance with the Greenhouse Gas Protocol.

## MEASURING OUR GREENHOUSE GAS FOOTPRINT

Mapping our entire climate footprint has revealed that the emissions from our supply chain (Scope 3) are greater than our Scope 1 and 2 emissions combined. We are working to reduce these impacts through activities such as reducing

waste in our operations, reducing fuel use and looking for opportunities to shift from air shipping to ocean transport wherever practical. We are also starting to work with our strategic suppliers to reduce their environmental impacts.

### AWARDS & RECOGNITION

We have been recognized for our commitment to minimizing our environmental impact.





We have established a new set of environmental sustainability goals that help position our company to succeed in an increasingly resource-constrained world.

We met our previous set of environmental sustainability goals at the end of 2015, five years ahead of schedule. Throughout 2016, we worked to develop a new set of goals by assessing the external influences that could potentially impact our company and in turn, our patients, over the near and long term.

## Design for the Environment

The environmental footprint of our products can be favorably impacted by how we decide to make them. So, we use green and sustainable design principles and other environmental design criteria in the development of our manufacturing processes and packaging right from the start.



### GREEN & SUSTAINABLE SCIENCE

**GOAL:** By 2020, 90 percent of our new human health active pharmaceutical ingredient processes will meet internal sustainability targets at launch.

**2016 progress:** On track



## PACKAGING

**GOAL:** Starting in 2017, 100 percent of our new human health products will have packaging reviewed for environmental impact and improvement.

**2016 progress:** On track

[LEARN MORE](#)

## Water

Water is essential to the well-being of our patients and the planet and is a critical input for our manufacturing processes. As competition for water increases with population growth, we are committed to utilizing this vital resource responsibly. We look for ways to continuously improve our use of this natural resource by promoting the reuse and recycling of water at our facilities around the globe.



### WATER USE & RISK

**GOAL:** By 2020, we will develop water conservation plans for sites in “high water risk” locations.

**2016 progress:** On track

**GOAL:** By 2025, we will maintain global water use at or below 2015 levels.

**2016 progress:** 0.8 billion gallons below 2015 levels

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## Climate

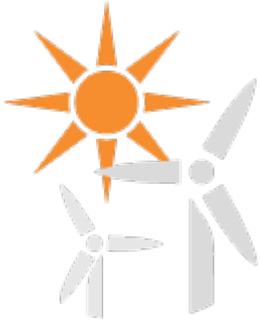
Although the biopharmaceutical industry sector is not a leading emitter of greenhouse gases (GHGs), we believe it is in the best interest of our company and our patients to reduce GHG emissions and other associated air pollutants by driving energy efficiency improvements and purchasing more electricity from renewable sources of energy, such as wind and solar.



## GREENHOUSE GAS (GHG) EMISSIONS

**GOAL:** By 2025, we will reduce global Scope 1 and market-based Scope 2 GHG emissions  $\square$ 40 percent from 2015 levels.

**2016 progress:** 6 percent reduction



## RENEWABLE ENERGY

**GOAL:** By 2025,  $\square$ 50 percent of our purchased electricity will come from renewable sources.<sup>1</sup>

**GOAL:** By 2040, 100 percent of our purchased electricity will come from renewable sources.<sup>1</sup>

**2016 progress:** 1 percent

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## Waste

Reducing waste not only decreases our environmental footprint; it also reduces costs through improved resource efficiency and decreased waste disposal needs.



**GOAL:** By 2025,  $\square$ 20 percent of our global operational waste will be sent to landfills and incinerators.

**2016 progress:** 30 percent

**GOAL:** By 2025,  $\square$ 50 percent of sites will send zero waste to landfill.

**2016 progress:** 38 percent

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## Supply Chain

Our analysis shows that a large portion of our water use and greenhouse gas emissions are generated upstream of our own operations in various tiers of our supply chain. We realize that in order to make a truly meaningful reduction in our

overall environmental impact, we must engage with our suppliers to drive positive change.



**GOAL:** By 2018, we will collect GHG emissions and water use data from 90 percent of our strategic suppliers with the highest environmental impact.

**2016 progress:** On track

**GOAL:** By 2020, we will engage with those suppliers and request them to identify GHG emission and water use reduction opportunities.

**2016 progress:** On track

**GOAL:** By 2025, 90 percent of our strategic suppliers with the highest environmental impacts will set their own GHG emission and water use reduction targets.

**2016 progress:** On track

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We've learned that our customers are concerned about the health impacts of environmental degradation and are working

to reduce their environmental impacts, both in their operations and their supply chains. We also know that the financial investment community is starting to view sustainability performance as an indicator of long-term business value, and that current and potential employees are seeking to work in a company whose values reflect their own concerns for social responsibility and environmental sustainability.

Our new set of goals was developed to address the rising expectations of our customers, investors, external stakeholders and employees regarding the environmental impact of our operations, supply chain, products and packaging.

We believe that a strong environmental sustainability strategy is critical to meeting the needs of our customers and the expectations of our external stakeholders.

Our new environmental goals also support our business strategy by helping us to operate more efficiently, reduce risk and drive down costs. Achieving our goals will help us to reduce our environmental footprint in a world where there is increased demand for energy, clean water and natural resources. We also believe that by focusing on environmental sustainability, we can foster employee engagement and drive innovation by challenging our scientists and engineers to design new products and packaging that lower our environmental impact, while delivering life-saving medicines to our patients.

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1. We have defined "purchased electricity" as electricity sourced from external suppliers as well as renewable electricity that was generated and utilized on-site where we retained the renewable attributes or where we have obtained renewable attributes through contract.



Protecting our people, our communities and the environment is fundamentally important to the way our company operates.

#### RESOURCES

[Public Policy Position Statement: PIE](#)

[Public Policy Position Statement: Nanotechnology](#)

[Public Policy Position Statement: Climate Change](#)

[Public Policy Position Statement: Responsible Disposal of Medicines in the Household](#)

[Public Policy Position Statement: Water](#)

[Business Partner Code of Conduct](#)

[Sharps Management Plan – CalRecycle](#)

[Corporate Policy: Respect for Environmental, Health and Safety](#)

We are committed to providing a safe and healthy workplace for our employees and to reducing the environmental impact of our operations around the world. Our Environmental, Health and Safety (EHS) values and commitments are detailed in our corporate policy, [Respect for Environmental, Health and Safety](#). In addition to complying with all applicable country, regional and local safety and environmental laws, we strive for EHS performance that is among the best in the pharmaceutical industry. We have established expectations for our suppliers in our [Business Partner Code of Conduct](#), which outlines the EHS requirements for the firms with which we do business.

As our EHS Policy states, we adhere to the following key operating principles:

- Maintain a safe and healthy working environment for all employees, contractors and guests
- Foster a culture of EHS excellence that is built on integrity, accountability, collaboration and active employee participation, and seek to continuously improve our systems, processes and standards to further support that culture
- Investigate and implement approaches to reduce the resources we use during the design, development and manufacturing of our products and delivery of commercial services, so as to minimize our impact on the environment
- Understand the potential hazards associated with our products and take action to reduce any potential risks or adverse impacts
- Promote EHS excellence in our supply chain and expect third parties doing work on our behalf to do the same. We enter into business relationships with partners that share our commitment to responsible EHS stewardship

Our EHS Management System is based on the “Plan, Do, Check, Act” model, which allows us to assess and continually improve our practices over time. The model is implemented through a set of interwoven business processes that span the corporation:

- The planning process includes development of goals, objectives and metrics based on a review of company performance, EHS programs, applicable regulations and other external factors [PLAN]
- Activities are informed by Standards, Guidelines and Tools, which are integrated into the EHS Management System, and

include specific expectations for sites and operating organizations [DO]

- Governance committees, from the executive-level EHS Council through site-compliance committees, review performance and progress against objectives. Central audits and self-assessments raise issues, and our monthly and annual performance metrics reflect our progress [CHECK]
- Corrective actions and continuous-improvement initiatives are established to resolve EHS concerns that have surfaced during performance reviews, assessments, audits and routine surveillance of the regulatory landscape [ACT]

## Training

Training is critical to building worldwide employee competencies that will improve compliance, reduce risks and drive continuous improvement.

We have a global standard that defines the Environmental Health & Safety (EHS) training expectations for employees in three categories:

**Managers**—covers specific management responsibilities with regard to safety and environmental compliance and promoting a “safety first” culture

**EHS professionals**—designed to expand technical expertise and improve our EHS capabilities around the world

**Overall employee population**—covers the specific information our employees need to perform their jobs in a safe and environmentally compliant manner, focusing on hazards and control measures employees encounter on the job

These training programs are reviewed periodically to ensure they remain current. Our EHS training program materials are available in both instructor-led as well as e-learning formats. A mandatory course for all senior company leaders highlights the importance of EHS to the business, the critical role senior leaders play in EHS performance, and the specific actions our leaders can take to drive their areas of accountability toward EHS excellence.

## EHS Governance

Our commitment to the environment and employee health and safety begins with the company’s Executive Committee, which has established the corporate Environmental, Health & Safety (EHS) Council.

The EHS council, composed of senior-level executives representing all business units, is responsible for overall EHS governance, as well as leading and driving enterprise-wide excellence in EHS management and performance.

The Council’s responsibilities include:

- Establishing EHS strategy, policy and standards
- Providing company-wide oversight of environmental and employee safety issues, risk mitigation and control strategies
- Monitoring performance, establishing continuous-improvement targets, and recognizing and promoting EHS excellence
- Allocating resources and/or sponsoring projects to address specific EHS concerns

An EHS Standards Committee has been chartered by the Council to provide stewardship over the Standards and enable business engagement in the development of new or revised Standards. Each area of the business is responsible for

executing against the Standards, contributing to the development of programs, supporting internal audits and communicating significant EHS events. Divisional EHS compliance committees have also been established to provide governance on the implementation of the Standards, and to manage, execute and resolve EHS issues as they arise.

The Vice President (VP) of Global Safety and the Environment (GSE) is responsible for communicating to the Board of Directors, the Executive Committee and the EHS Council regarding progress on goals, objectives and metrics, as well as other material issues. The VP of GSE partners with business leaders to establish long- and short-term goals and performance metrics to drive EHS excellence.

Our corporate EHS organization is responsible for:

- Developing corporate policies, procedures, guidelines, standards, tools and programs to set expectations and to support EHS compliance
- Providing technical and regulatory support to site-based safety and environmental staff and operating organizations
- Managing and implementing an internal audit program targeted at understanding the current state of compliance and identifying potential issues
- Tracking and communicating internal and external trends that should be addressed
- Anticipating, tracking and commenting on new regulations affecting our business and, where appropriate, developing plans to address them

Our site-based safety and environmental professionals around the world support the EHS needs of their business areas, which include manufacturing, research operations, sales and administrative activities, by:

- Ensuring that line management fully understands EHS requirements, including applicable regulations, permit requirements and company EHS Standards
- Establishing, assessing and improving programs
- Providing regulatory and technical support to employees and the operating areas
- Routinely assessing performance against our company standards and regulatory requirements
- Acting as the primary liaison with local regulators and inspectors
- Investigating incidents and developing corrective actions to address identified root causes

## Internal Auditing

We have a detailed and rigorous corporate environmental, health and safety audit program.

Our global corporate Environmental Health & Safety (EHS) Audit Program is one way in which we identify and resolve compliance and performance issues.

- Our audit leaders are full-time professional auditors with extensive experience in auditing a broad range of EHS programs applicable to the company. Audit team members consist of EHS professionals with extensive site and subject-matter expertise. In many cases, particularly outside of the United States, our internal auditors work with independent consultants who have regulatory expertise in the laws of the host country.
- All audit findings are addressed through the development of corrective and preventative action plans, which are reviewed, approved by the audit leader and regional EHS leader, and tracked to completion
- Findings from our audit program are communicated to appropriate parts of the organization so that learnings may be shared and actions can be taken
- Audit performance and key program metrics are reviewed as part of our governance process

## EHS audits of our facilities covered 73% of our manufacturing and research locations in 2016.

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The audit frequency for a given facility is primarily risk-based. Manufacturing and research sites are generally audited every one to two years, depending on the type of facility, its size, and other factors. Less complex facilities, such as sales and business offices, and our warehouses, are typically audited every five years. In 2016, we performed 41 corporate EHS audits of our facilities, covering 73 percent of our manufacturing and research locations, and involving 481 auditor days of on-site review activities.

In addition to our corporate EHS audit program, our sites regularly perform self-inspections, and annually complete self-assessments of selected regulatory requirements and company standards, with all programs being evaluated at least once every three years.

## Remediation

### Environmental management practices have evolved significantly over the past 30 years.

With research and manufacturing operations dating back more than 100 years, some of our facilities operated at a time when there were few regulations and little understanding of good environmental practices. Because our company has responsibility for remediation of these sites, we have launched investigations, developed science-based remediation plans and implemented cleanup projects to protect the health and safety of our neighbors, communities, employees and the environment, and comply with all applicable requirements. In addition, over time, we have acquired properties and manufacturing facilities that may not have been subject to the same EHS management standards that we have in place. We are also investigating and remediating those properties where necessary.

We spent \$8 million in 2015 and \$10 million in 2016 for remediation and environmental liabilities, including at formerly owned and operated sites. Our company has an Environmental Liability reserve of approximately \$78 million to fund the continued remediation of these sites into the future. In addition, we are a potentially responsible party at 19 multiparty Superfund sites in the U.S.

## Performance

### Our centralized EHS information system allows us to collect, manage, learn from, and share our safety and environmental performance data more efficiently.

We collect and analyze data in both leading and lagging metrics to look for potential trends and identify opportunities that can help drive performance improvement. We continuously explore new ways to learn from and report on our performance.

**Global Environmental & Safety Compliance Summary<sup>1</sup>**

NOTICES OF VIOLATIONS (NOV)/CITATIONS	2012	2013	2014	2015	2016
Environmental	11	7	17	16	12
Safety	31	9	11	2	2

FINES	2012	2013	2014	2015	2016
Environmental fines paid	\$12,100	\$1,167	\$81,600	\$157,270	\$33,906
Number of environmental fines	1	1	4	7	2
Safety fines paid	\$121,827	\$3,827	\$1,000	\$0	\$0
Number of safety fines	2	2	1	0	0

1. Previously reported data have been restated for consistency with Global Reporting Initiative (GRI) guidelines.

#### NOTICES OF VIOLATIONS, FINES AND SETTLEMENTS

We report all forms of EHS compliance notices using the term Notices of Violation (NOVs), which includes citations, letters of warning and notices of noncompliance from environmental and safety-focused regulatory agencies.

In 2016, we had 180 EHS-related inspections of our facilities around the world. We received 2 safety NOVs in 2016, and for the second consecutive year, received no safety-related fines. We received 12 environmental NOVs and paid \$33,906 in fines associated with two environmental incidents in 2016. Over the last five years, the total number of NOVs and fines received by our company has been trending downward, and in 2016, we saw a significant decrease in the number of environmental-related NOVs from the prior year.

#### SIGNIFICANT ENVIRONMENTAL EVENTS

A "significant environmental event" is defined as an environmental release that results in environmental harm to humans, aquatic organisms or wildlife, or any environmental release that requires reporting to the U.S. Securities and Exchange Commission. We experienced no significant environmental events in 2016.



Scientific data support that climate change is occurring, and we are taking action to reduce the future economic and public health risks associated with a changing climate.

#### RESOURCES

[Public Policy Position Statement: Climate Change](#)  
[CDP – Climate Change 2016](#)  
[Performance Data Spreadsheet \(Excel\)](#)

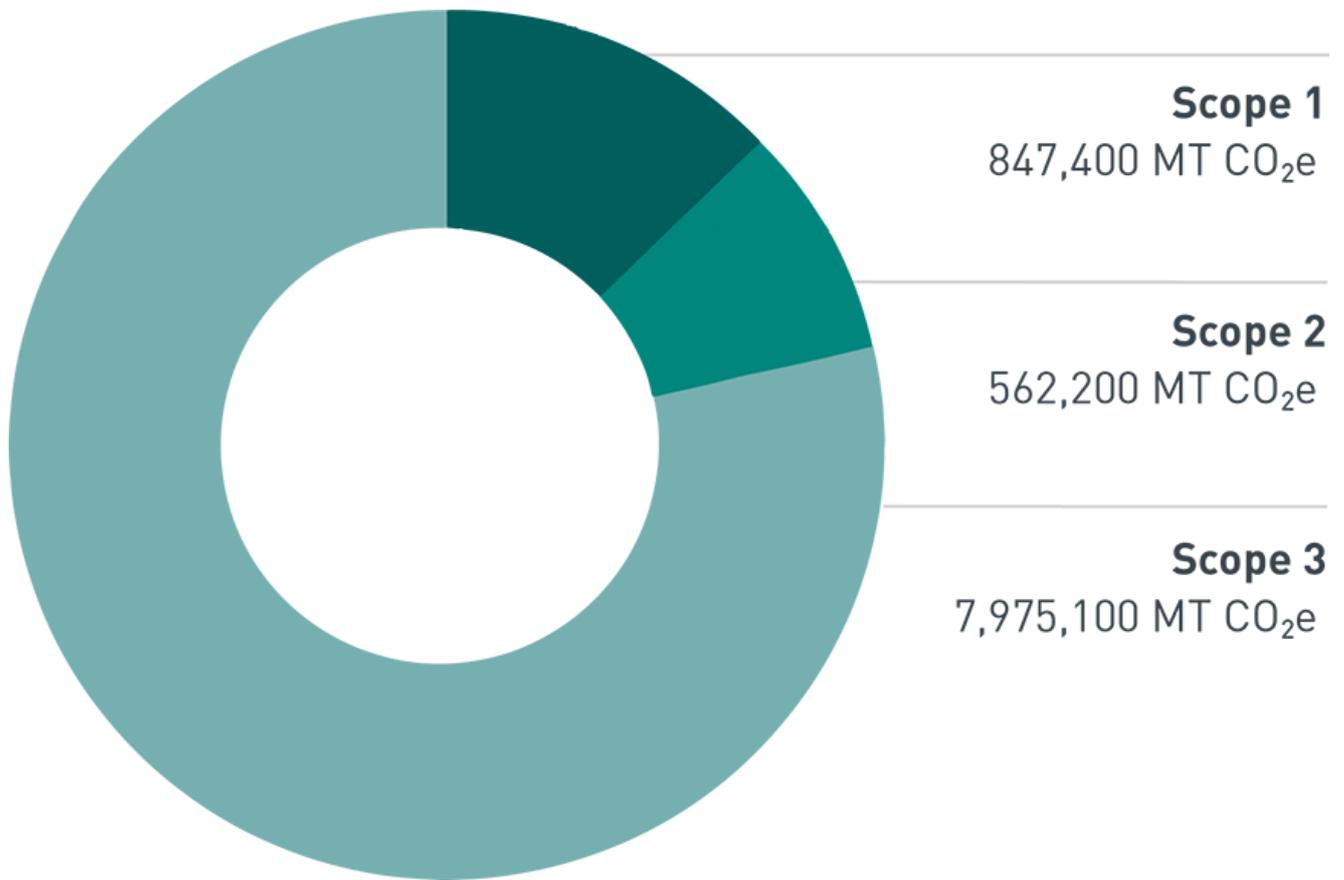
As a healthcare company, we recognize the important role we play in identifying and responding to the public health risks associated with climate change. We believe our longstanding support of stronger health systems and expanded access to medicines and vaccines in underserved areas is even more important given the evidence that certain disease patterns can be associated with changing climate conditions.

We have established and met several GHG-reduction goals over the last decade. In 2015, we exceeded our most recent goal to achieve a 15 percent absolute reduction of Scope 1 and 2 GHG emissions between 2012 and 2020. We are committing to setting a new science-based target to reduce our Scope 1 and market-based Scope 2 absolute GHG emissions by 40 percent between 2015 and 2025.

We realize that in order to make a truly meaningful reduction in our overall environmental impact, we must engage with our suppliers to drive positive change. We have set a goal that includes a three-phase process:

- By 2018, we will collect GHG emissions data from 90 percent of our strategic suppliers with the highest environmental impacts
- By 2020, we will engage with those suppliers and request them to identify GHG emission reduction opportunities
- By 2025, 90 percent of our strategic suppliers with the highest environmental impacts will set their own GHG emission reduction targets

We have made it a priority to reduce our demand for energy, and have established internal policies and practices focused on reducing energy use at all of our sites and greenhouse gas (GHG) generation throughout the company. By taking these steps, we are not only minimizing GHG emissions but also reducing our operating costs and mitigating the business impacts expected to be associated with future climate change requirements.



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NOTE: Scope 2 is the market-based value in accordance with the Greenhouse Gas Protocol.

For more information on our GHG emissions, please see our CDP Climate Change 2016 report.

To see all of our Scope 1, 2 and 3 GHG data, see the Performance section below.

We report our GHG emissions as required by regulations in certain countries and annually through CDP (formerly Carbon Disclosure Project). Our CDP score for carbon reporting has improved each year since 2008, when CDP scoring began. In addition, we were named to the CDP's S&P Climate Disclosure Leadership Index in 2015. In 2016, CDP changed its scoring system to a single letter grade that takes into account governance and strategy, risk and opportunity management, emissions management and verification. Last year, our company received a grade of B, indicating that we are "taking coordinated action on climate change issues."

We track the generation of five GHGs associated with operating our facilities and our fleet:

- Carbon dioxide (CO<sub>2</sub>)
- Methane
- Nitrogen oxide
- Hydrofluorocarbons
- Sulfur hexafluoride

Energy-efficiency and demand-reduction projects will continue to contribute to lowering our energy consumption and reducing our direct GHG emissions. In addition, we will continue to optimize systems, consolidate excess facility space when possible, shift power supplies to combined heat and power systems and utilize renewable energy sources.

## Initiatives

Our company has launched initiatives around the world to improve energy use, reduce greenhouse gas (GHG) emissions from our operations and understand our supply chain-related impacts.

Our Energy Center of Excellence (CoE) identifies, shares and standardizes best practices, and prioritizes the funding of energy projects to reduce energy usage across the company. Our manufacturing facilities, warehouses, laboratories, major offices and vehicle fleet are the primary targets of our energy-demand-reduction programs, as they represent the majority of our energy consumption.

We have established an Energy Capital Fund of up to \$12 million per year in order to transition to more energy-efficient technology and to better position the company to respond to energy demands in the future. The Energy Capital Fund supports the implementation of projects with a simple four-year payback averaged over the entire portfolio. In 2016, we spent \$9.5 million on projects that resulted in \$5 million in annual savings and will result in a reduction of more than 27,900 metric tons of carbon dioxide from our facilities.

## FACILITIES

We continuously strive to make our facilities energy efficient. Our Energy CoE has created an “energy roadmap” to help our facilities reduce energy demand and associated GHG emissions. The energy roadmap’s foundation includes large-scale metering and monitoring to assess and identify opportunities for continuous improvement. As facility energy management programs mature, energy savings are sought by improving the reliability of the equipment, by the efficient operation of utility systems and by building efficiencies into systems design.

All new facilities are required to comply with our Energy Design Guide and Energy Conservation Planner. If we purchase a facility, it is evaluated for energy efficiency and assessed against our best practices as part of its integration into our company.

We build all new laboratories and offices following cost-effective energy-efficient practices.

- Our China Head Office is certified as LEED Gold

Our company requires our facilities to have a plan to manage their energy use.

- Four sites in Ireland, two sites in Germany and one site in the United Kingdom are certified as ISO50001 for energy management, in compliance with the EU Energy Efficiency Directive

Our Energy CoE has provided tools for facility managers to identify opportunities to reduce energy use and eliminate waste. These tools include facility-wide three-day Energy Treasure Hunts, half-day utility-system analysis, or Energy Kaizens, and online Energy Treasure Hunts, which allow for best-practice sharing.

- Since 2010, we have conducted Energy Treasure Hunts at 13 of our facilities around the world. This process has identified over 1,000 energy-efficient project opportunities, many of which have been successfully implemented.
- The Energy Kaizen process was new in 2016. The three facilities that participated identified and fixed costly air and water leaks and reduced heat energy losses from missing and damaged insulation. As important as the immediate energy savings and resultant GHG reductions, the training, assessment skills and knowledge the employees received can now be applied to the rest of their facilities.

- Our online Energy Treasure Hunts have identified high-level recommendations such as renewable energy assessments and lighting systems optimization. As a global company, the online format proves to be a great way to engage our employees, understand their concerns and use their unique expertise and local understanding of their facilities.
- All of our employees have access to a training curriculum that allows them to learn more about energy management and energy systems. Through this program, employees can earn an Energy Manager Certification.

## WORK PRACTICES & RECOGNITION

Our company takes advantage of technology advances in order to save energy, time and money while also reducing emissions.

- Site energy use is tracked monthly by our Energy CoE through a centralized system
- A global energy scorecard is issued monthly and sites receive a letter grade based on an assessment of their energy intensity and performance
- We developed an energy management “pyramid strategy” that looks to achieve energy savings through continuous improvement, reliability, operations and design
- Employees are encouraged to make use of e-meetings whenever possible, as opposed to traveling for business
- A rail-travel option is included in our online business-travel booking tool to make it easier to travel by train when appropriate. Traveling by train has a smaller carbon footprint than traveling by either airplane or personal vehicle.
- The carriers who transport our products use alternatives to air freight whenever practical. In 2016, 18 percent (by weight) of our products were shipped by ocean freight, which reduces the amount of transportation-related GHG emissions by over 90 percent as compared to air shipping.

In 2016, our company began presenting internal Energy Awards to recognize sites, teams or individuals for accomplishments in the following areas

- Energy Savings by Design
- Energy Savings by Operations
- Energy Savings by Reliability
- Energy Savings by Energy Program Management

## RENEWABLE ENERGY

Our company has set bold new renewable energy targets. We are committing to sourcing 50 percent of our purchased electricity from renewable energy sources by 2025 and are setting a long-term goal of sourcing 100 percent of our purchased electricity from renewable sources by 2040.<sup>1</sup> Photovoltaic arrays, wind turbines and other renewable-energy installations avoid emissions, help reduce energy-demand peaks and postpone or avoid adding new power plants.

While renewable energy accounts for a very small percentage of the electricity we currently purchase (1 percent), we have initiated an analysis of our sites to look for new installation and power-purchase contract opportunities and benchmark virtual power-purchase agreement projects.

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1. We have defined “purchased electricity” as electricity sourced from external suppliers as well as renewable electricity that was generated and utilized on-site where we retained the renewable attributes or where we have obtained renewable attributes through contract.

## VEHICLE FLEET

Approximately 10 percent of our total GHG emissions are associated with our vehicle fleet. We calculate our fleet's GHG emissions on the basis of estimated fuel economy and actual total miles driven.

- We have reduced our number of sales fleet vehicles on the road by over 2,000 vehicles since 2012
- In an ongoing effort to improve fuel efficiency, we have converted our U.S. Human Health sales fleet from cars with six-cylinder engines to cars with four-cylinder engines, replaced eight-cylinder-engine trucks with six-cylinder-engine trucks, and introduced an all-wheel-drive (AWD) sedan option to replace AWD sport utility vehicles. This resulted in a fuel economy improvement of 2 percent from 2015 to 2016.
- Our European Union (EU) fleet continues to convert to the use of more- fuel-efficient vehicles. In 2016, our EU average emission rate was 106g CO<sub>2</sub>/km and we are on track to meet the EU target of 95g CO<sub>2</sub>/km by 2020.
- One of our sites in Germany is creating a future-oriented vehicle fleet featuring three cars that are fully powered by electricity. These cars are primarily intended for administrative employees without company car privileges to use for short-distance business trips.

## PARTNERSHIPS

We have a long-standing partnership with the U.S. Environmental Protection Agency's (EPA) ENERGY STAR program. This partnership provides a broad energy-management strategy that serves as a useful framework for measuring our current energy performance, setting goals, tracking savings and rewarding improvements. In March 2017, the U.S. EPA again recognized our company with the Sustained Excellence Award. This is the 12th consecutive year in which we have been recognized by ENERGY STAR for excellence in energy management. We also received several facility-specific awards from EPA in 2017:

- Our Puerto Rico facility was awarded the ENERGY STAR Pharmaceutical Energy Performance Indicator Award by U.S. EPA for superior energy efficiency and environmental performance among U.S. pharmaceutical manufacturing plants
- Three office buildings in New Jersey and one in Pennsylvania earned ENERGY STAR Portfolio Manager Awards from U.S. EPA for being in the top quartile of their sector

For more information on our awards, [click here](#).

## Performance

From 2015 to 2016, we made great strides and reduced our year-over-year Scope 1 and Scope 2 market-based GHG emissions by 6 percent.

We have once again analyzed and reported our Scope 3 impacts using primary operating data, accepted emission factors, and an economic input-output model based on our third-party spend. In 2016, we estimated lower Scope 3 emissions in several categories due to a reduction in on-site fuel use, waste generation and emissions from sold products from 2015 to 2016. We also saw higher Scope 3 emissions from other categories due to improved accuracy of our third-party spend data, a change in methodology for estimating capital spend impacts and increased employee business travel from 2015 to 2016.

Our analysis shows that our Scope 3 GHG emissions impacts are greater than our combined Scope 1 and Scope 2 emissions. We are working to reduce those impacts through activities such as reducing waste in our operations, reducing fuel use and looking for opportunities to shift from air shipping to ocean transport when practical. These actions not only reduce our environmental impact but benefit the business by reducing costs.

**ENERGY USE & GHG SUMMARY<sup>1</sup>**

	2012	2013	2014	2015	2016
Total energy (GJ)	24,777,800	24,184,800	22,234,700	21,394,500	20,880,100
Total Scope 1 and location-based Scope 2 greenhouse gas (GHG) emissions (MT CO <sub>2</sub> e)	1,856,000	1,760,000	1,630,700	1,448,700	1,371,100
Total Scope 1 and market-based Scope 2 greenhouse gas (GHG) emissions (MT CO <sub>2</sub> e)	1,856,000	1,760,000	1,630,700	1,501,000	1,409,600
Total Scope 3 greenhouse gas (GHG) emissions (MT CO <sub>2</sub> e)	N/A	N/A	5,760,000	5,510,700	7,975,100

Note: Tracking of all of our Scope 3 emissions, beyond business travel, began in 2014. 1. In accordance with the Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired or sold. Adjustments also reflect changes in methodology to ensure consistency from year to year.

**SCOPE 1 & LOCATION-BASED SCOPE 2 ENERGY USE (% OF TOTAL)<sup>1</sup>**

	2012	2013	2014	2015	2016
Natural gas (Scope 1)	58%	59%	60%	60%	61%
Purchased electricity (Scope 2) <sup>2,3</sup>	25%	23%	24%	25%	25%
Fleet fuel (Scope 1)	13%	12%	11%	10%	10%
Purchased steam (Scope 2)	3%	4%	3%	3%	2%
Fuel oil (Scope 1)	1%	2%	2%	2%	1%
Spent solvents (Scope 1)	0.3%	0.1%	0.2%	0.1%	0.1%
Coal (Scope 1)	0.0%	0.0%	0.0%	0.0%	0.0%
Renewable energy generated and used on-site <sup>4</sup>	0.0%	0.0%	0.0%	0.01%	0.04%

1. May not add to 100 percent due to rounding. 2. Reported using Scope 2 location-based value in accordance with the Greenhouse Gas Protocol. 3. Includes solar, wind and other renewables generated on-site where renewable energy credits (RECs) have been sold. 4. Includes solar, wind and other renewables generated on-site where REC or guarantees of origin have been retained or retired.

**SCOPE 1 & MARKET-BASED SCOPE 2 ENERGY USE (% OF TOTAL)<sup>1</sup>**

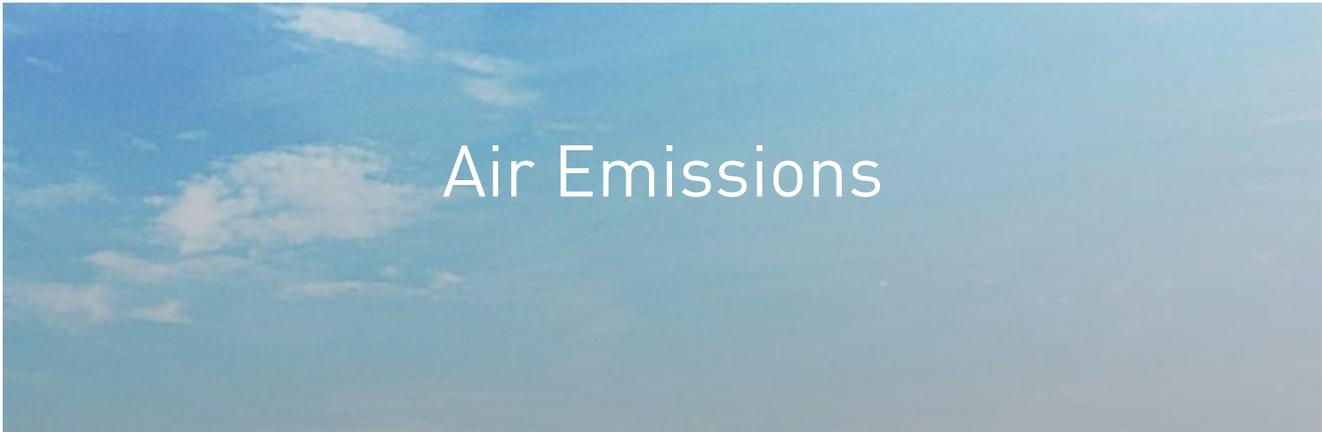
	2012	2013	2014	2015	2016
Natural gas (Scope 1)	58%	59%	60%	60%	61%
Fleet Fuel (Scope 1)	13%	12%	11%	10%	10%
Fuel Oil (Scope 1)	1%	2%	2%	2%	1%
Spent solvents (Scope 1)	0.3%	0.1%	0.2%	0.1%	0.1%
Coal (Scope 1)	0.0%	0.0%	0.0%	0.0%	0.0%
Purchased electricity (Scope 2) <sup>2,3</sup>	25%	23%	24%	25%	24%
Purchased Steam (Scope 2)	3%	4%	3%	3%	2%
Renewable energy generated and used on-site or purchased <sup>4</sup>	0.0%	0.0%	0.0%	0.01%	0.3%

1. May not add to 100 percent due to rounding. 2. Reported using Scope 2 market-based value in accordance with the Greenhouse Gas Protocol. 3. Includes solar, wind and other renewables generated on-site where renewable energy credits (RECs) have been sold. 4. Includes solar, wind and other renewables generated or purchased where REC or guarantees of origin have been retained or retired.

**SCOPE 3 GHG EMISSIONS (MT CO<sub>2</sub>E)**

	2012	2013	2014	2015	2016
Purchased goods and services <sup>1,2</sup>	N/A	N/A	4,437,700	3,408,500	6,204,000
Capital goods <sup>1,3</sup>	N/A	N/A	N/A	474,000	224,000
GHG emissions from fuel and energy-related activities not included in Scope 1 & 2 <sup>2,4,5</sup>	N/A	N/A	309,500	276,200	304,500
Upstream transportation and distribution <sup>1,2</sup>	N/A	N/A	258,000	241,700	255,500
Waste generated in operations (excluding recycled & composted waste) <sup>2,5,6,7</sup>	N/A	N/A	23,500	20,600	16,800
GHG emissions related to employee business travel <sup>8,9</sup>	127,000	123,200	182,600	283,300	265,400
Employee commuting <sup>2</sup>	N/A	N/A	320,700	302,400	301,500
Downstream transportation and distribution <sup>2,10</sup>	N/A	N/A	N/A	211,000	118,000
GHG emissions from use of sold products <sup>11,12</sup>	N/A	186,900	228,000	255,000	248,400
End-of-life treatment of sold products <sup>2,13</sup>	N/A	N/A	N/A	38,000	37,000
<b>Total</b>	<b>127,000</b>	<b>310,100</b>	<b>5,760,000</b>	<b>5,510,700</b>	<b>7,975,100</b>

Note: Limited Data Assurance was granted for emissions calculated from primary travel vendor data and employee reimbursable travel mileage data. The total reported here includes non-primary travel vendor data emissions that were based on our 2016 third-party spend data and an economic input-output model performed by Climate Earth, Inc. N/A: Not available 1. Based on third-party spend data and an economic input-output model performed by Climate Earth, Inc. 2. Data not available before 2014. 3. Data not available before 2015. 4. Emission factors from Argonne National Laboratory's GREET Model were used in conjunction with primary fuel and energy-use data. 5. Data as reported historically, not baseline adjusted. 6. Primary-waste data were used with the U.S. EPA's WARM Model. 7. Including recycled and composted waste in these calculations would result in negative emissions in 2014 (-39,900 MT CO<sub>2</sub>e), 2015 (-40,200 MT CO<sub>2</sub>e) and 2016 (-60,200 MT CO<sub>2</sub>e). 8. Based on primary travel vendor data, employee-reimbursable mileage and UK Defra factors (<https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting#conversion-factors-2015>). 9. Beginning in 2014, emissions are based on primary vendor data where available and economic input-output modeling performed by Climate Earth, Inc., using spend data. 10. Emissions were calculated using our "Upstream transportation and distribution" spend data as a worst case estimate entered into the WRI Quantis tool. We assumed that all "downstream" material would first have been stored, transported and handled "upstream." 11. Assumes that all HFC-containing devices shipped for sale were consumed. The amount and identity of HFC in each product is calculated and multiplied by the appropriate global warming potential (GWP) to determine the CO<sub>2</sub>e released as a result of product use. 12. Data not available before 2013. 13. Calculated assuming that all primary, secondary and tertiary packaging purchased was disposed of by our customers. Packaging material data was used with the U.S. EPA's WARM Model.



# Air Emissions

We are committed to controlling air emissions from our facilities to reduce local, regional and global impacts.

## RESOURCES

[Public Policy Position Statement: Climate Change](#)  
[CDP – Climate Change 2016](#)  
[Performance Data Spreadsheet \(Excel\)](#)

Our Air Management Standard requires our facilities to quantify and control air emissions to comply with applicable regulations and emission standards. Air emissions are generated in our manufacturing and research operations, as well as from combusting fuel in on-site equipment and fleet vehicles.

Our pharmaceutical manufacturing processes, cleaning operations and research laboratories typically require the use of solvents. Evaporation of solvents into the air is the primary source of volatile organic compound (VOC) emissions. In an effort to reduce VOC emissions, reduction in solvent usage has been incorporated as an element of our [Green & Sustainable Science program](#). Key elements of the program include designing efficient processes that use fewer and less-hazardous solvents and using water-based methods for cleaning our process equipment when they are as effective as solvent-based methods. Additionally, to reduce emissions from processes where solvents are used, we use pollution-control technologies such as conservation vents, carbon filters, thermal oxidizers, condensers and scrubbers.

Air emissions are also generated by burning fuel in our boilers and power-generation turbines (for heat and energy), and by other combustion processes, such as thermal oxidizers (for treating air emissions) and incinerators (for destroying waste). Our fleet vehicles and aircraft also burn fuel and generate air emissions. These combustion processes result in emissions of carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and sometimes sulfur oxides (SO<sub>x</sub>), depending on the fuels used. We strive to make our facilities more energy efficient through our energy-management programs. By making these improvements, we also reduce emissions of CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub> from our operations.

For more information on our greenhouse gas (GHG) emissions and energy use, [click here](#).

## Performance

### AIR POLLUTANT EMISSIONS BY TYPE (METRIC TONS)<sup>1</sup>

	2012	2013	2014	2015	2016
Ozone-depleting substances (ODS)	2.6	1.6	1.5	0.1	0.7
Nitrogen oxides (NOx)	580	550	509	476	435
Sulfur oxides (SOx)	65	56	53	47	35
Volatile organic compounds (VOCs)	611	533	523	458	441

Note: Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites. 1. Data are estimated using conservative assumptions and factors, not measured or weighed.

Our air emissions data reflect the facilities we own and operate, our leased facilities and our vehicle- and aircraft fleet-related emissions. The decrease in NOx, SOx and VOC emissions between 2015 and 2016 is primarily attributed to our adoption of more-accurate emission-tracking methods, reductions in the use of solvents in our manufacturing operations and our energy-management programs. Emissions of ozone-depleting substances (ODS) are the result of non-routine releases from temperature-control and fire-suppression systems, and can vary significantly from year to year. We saw a slight increase in our ODS emissions in 2016.



Access to clean water is critical for human health and is a key input to our manufacturing operations.

#### RESOURCES

[Public Policy Position Statement: Water](#)  
[CDP – Water 2016](#)

Our global water strategy aims to achieve sustainable water management within our operations and our supply chain. To achieve these strategic objectives, we are focusing on the following commitments:

- Ensuring our wastewater discharges comply with local and national standards, as well as internal company requirements
- Understanding and controlling our operational water footprint
- Managing water risk at our facilities and in our supply chain
- Reporting publicly on our water use and goals
- Advocating for effective water policy
- Encouraging and empowering our employees to be water stewards at work, at home, and in their local communities

In 2015, we exceeded our previous target to reduce global water use 25 percent by achieving a 29 percent reduction in water use based on a 2009 baseline. We have established new water goals to help us manage water-related risks in our operations and supply chain:

- Maintain global water use at or below 2015 levels through 2025
- Implement water conservation plans for internal sites in high water risk locations by 2020
- Supply Chain:
  - By 2018, we will collect water use data from □ 90% of our strategic suppliers with the highest environmental impact
  - By 2020, we will engage with those suppliers and request them to identify water use reduction opportunities
  - By 2025, □ 90% of our strategic suppliers with the highest environmental impacts will set their own water use reduction targets

Wastewater from our facilities is managed and treated to meet regulatory standards and minimize environmental impacts. We operate wastewater-treatment plants at many of our production and research facilities. Approximately 65 percent of the wastewater from our manufacturing plants is treated on-site before being discharged to rivers or other surface water bodies. The remaining 35 percent is sent to local municipal wastewater-treatment facilities that have the technology and capacity to treat our wastewater.

All of our facilities are required to implement an internal Environmental Quality Criteria (EQC) program for controlling

active pharmaceutical ingredient (API) discharges to the environment. Each facility uses internal EQC standards to: 1) assess the potential risk from their operations using science-based and industry-accepted risk assessment methods; 2) minimize environmental impacts; and 3) establish procedures for managing APIs in wastewater. All of our production facilities have, or are being provided with, API-treatment technology so that our wastewater discharges meet these internal standards.

As we strive to meet the health needs of our patients, we are increasingly operating in regions of the world where access to clean water and proper sanitation are under great pressure. Even in established markets, our business faces water-related risks. Click on the links below for related information about:

- [Pharmaceuticals in the Environment](#)
- [Environmental Goals](#)

## Initiatives

We are committed to the responsible use of water and to managing the water-related risks and impacts in our upstream supply chain.

Our internal Environmental Management Standard for water requires each of our sites to assess the impact of their operations on the local watershed, assure compliance, and drive continuous improvement in how water is used and the quality of water discharged. Our Energy Center of Excellence includes the total cost of water in energy-related project evaluations and drives best practices that conserve both energy and water.

Our water-use-reduction initiatives include:

- Consideration of water use in process design
- Cooling-system optimization
- Prompt repairs and maintenance of steam-distribution systems and traps
- Recovery and reuse of steam condensate and “reject water”
- Process-water purification-system optimization
- Avoiding the use of water in mechanical seals, such as in pumps

Our sites employ a variety of technologies and techniques aimed at reducing our water footprint and improving operational performance:

- Closed-loop cooling systems are employed at more than half our facilities worldwide and reduce our freshwater use by more than 500 million gallons
- Reverse osmosis (RO) “reject water” is reused for non-potable and non-process applications such as cooling-tower feed water and fire water

Over the past several years, we have committed \$106 million of our \$123 million water-infrastructure-improvement fund to install API-treatment technology and reduce water use at eight facilities. The remainder of this water fund is expected to be committed by 2018.

Facility-specific projects:

- Our Danville, Pennsylvania site in the U.S. completed a water-reduction project that won the Pennsylvania Governor’s Award for Environmental Excellence. The project included reducing the use of once-through cooling water, installing an upgraded closed-loop cooling system and fitting cooling water distribution pumps with variable frequency drives. The project has saved approximately 0.7 billion gallons of water over the past two years.

- Our site in Campinas, Brazil, is upgrading its on-site industrial wastewater treatment plant. The project will provide for reuse of at least 15,850 gallons per day of treated effluent as make-up water in the site's cooling towers. This corresponds to a site water savings of approximately 5.8 million gallons per year. This will help ensure sufficient future site water supply in a region that has recently experienced drought conditions.
- Our facility in Singapore uses "NEWater" from the public utility company, which has been reclaimed for non-potable use in industrial and cooling applications

## CEO WATER MANDATE

We have endorsed the [UN CEO Water Mandate](#), a public commitment to adopt and implement a comprehensive approach to water management, and we have aligned our water program with its principles.

The CEO Water Mandate endorsers have a responsibility to make water-resource management a priority and to work with governments, UN agencies, non-governmental organizations, local communities and other interested parties to address global water challenges. We are working to identify partnerships that will help us advance our water stewardship priorities in the areas in which we operate.

Highlights of 2016 activity in our local communities:

- We provided \$100,000 in funding to the Triangle Land Conservancy of North Carolina to enable the completion of the 40-acre Reimer Nature Preserve Expansion Project, which will protect two forested tributaries of the South Fork of the Little River. This project will help protect the local drinking water for the cities of Durham and Raleigh, as well as the water supplied to our manufacturing facility in Durham. This property will also offer habitat for local wildlife and will be used for environmental education.
- In 2016, we formed a partnership with Upper Gwynedd Township to improve water quality in the Wissahickon, Skippack and Little Neshaminy Creek watersheds located near our facility in Upper Gwynedd, Pennsylvania. Our company provided \$45,000 in funding towards a project to build water retention basins at a local school. In addition to tackling storm water management, the partnership will work to restore natural streams by addressing historical damage caused by urban storm water runoff.

## Performance

In 2016, the reduced demand across our manufacturing network resulted in a water-use reduction of 0.8 billion gallons from 2015. In 2016, we used 5.5 billion gallons of water versus 6.3 billion gallons used in 2015, which reflects a 13 percent reduction in water use.

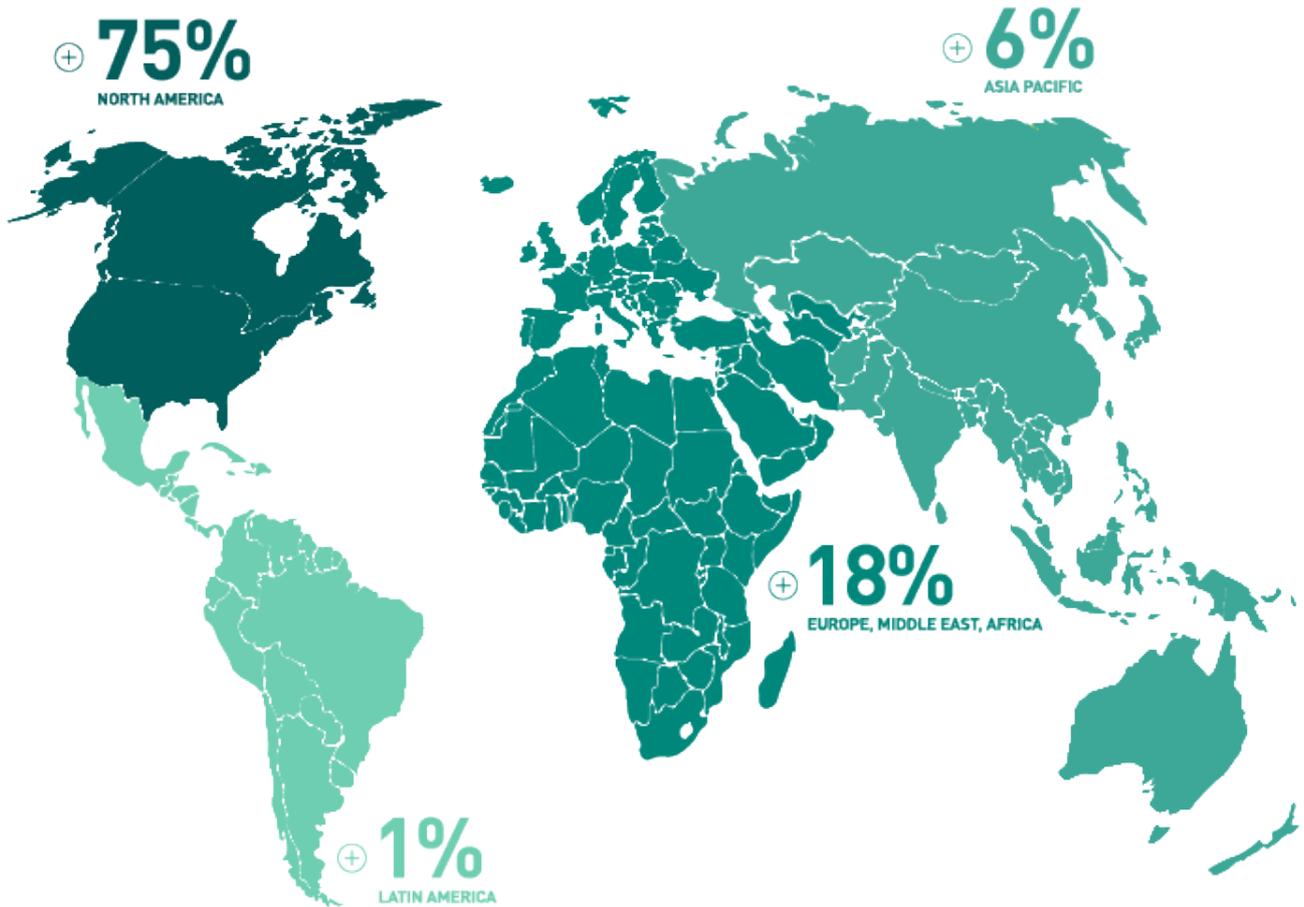
Approximately 65 percent of the total water we used in 2016 was supplied from nearby surface water and groundwater resources, with the balance sourced from municipal water supplies. Many of our facilities employ water reuse and recovery strategies, including recirculation of water in cooling towers and condensate recovery.

We use the World Resources Institute's (WRI's) Aqueduct water-risk-assessment tool to measure and map our water risks. Sites are categorized using the "Baseline Water Stress" indicator, which is the ratio of total annual water withdrawals to total available annual renewable supply, and accounts for upstream consumptive use. Higher stress values indicate more competition among water users.

In 2016, we operated 14 manufacturing and/or research facilities in areas with "Extremely High" Baseline Water Stress according to the WRI Aqueduct tool. Our manufacturing facilities that use the most water are located in areas of "Medium to High" or "High" Baseline Water Stress and are located in the U.S.

We are currently undergoing an assessment of the facilities that are located in areas of High Baseline Water Stress to determine if more extensive water management plans are needed at these sites. We are also working to identify “hot spots” of water use within our supply chain so that we can begin to engage with our suppliers on the issue of water risk.

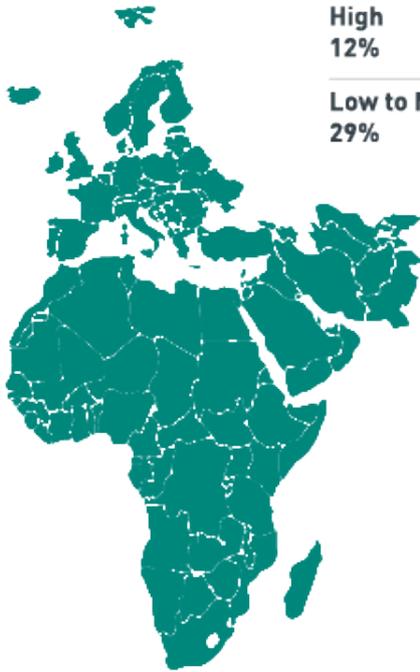
### GLOBAL WATER USE AND RISK—PERCENTAGE BY REGION



## Europe, Middle East, Africa



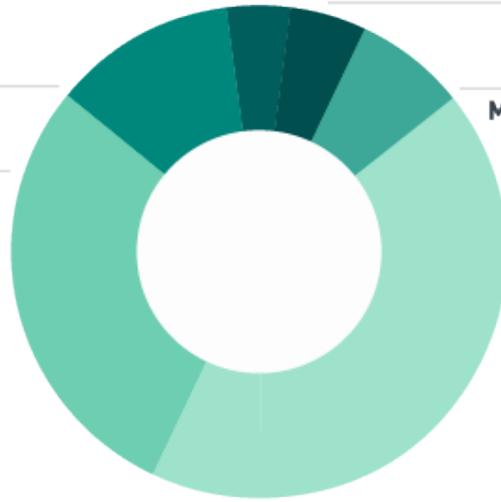
**0.96<sup>B</sup>**  
gallons



**Extremely High**  
4%

**High**  
12%

**Low to Medium**  
29%



**Not Available**  
5%

**Medium to High**  
7%

**Low**  
43%

Note: Data has been rounded to the nearest whole percentage point.

## Asia Pacific



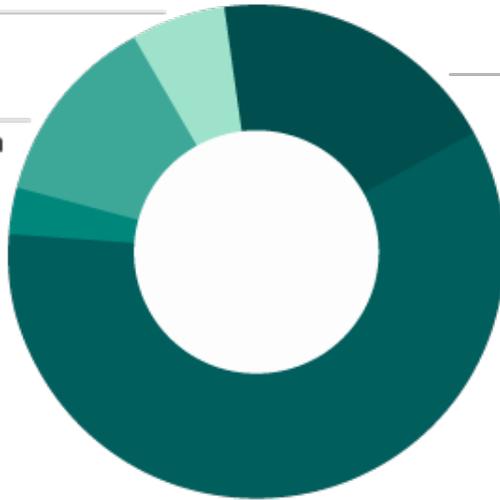
**0.33<sup>B</sup>**  
gallons



**Low**  
6%

**Medium to High**  
13%

**High**  
3%



**Not Available**  
19%

**Extremely High**  
60%

Note: Data has been rounded to the nearest whole percentage point.

## North America

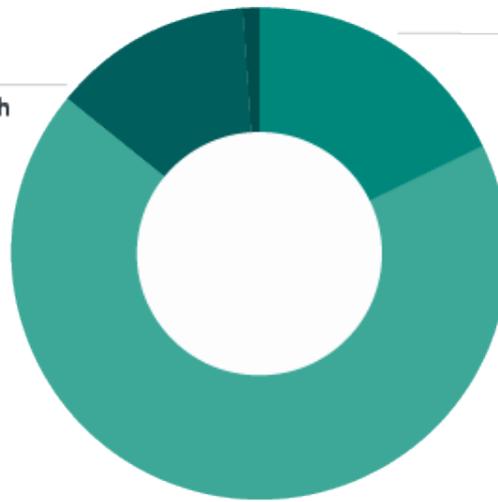


**4.15<sup>B</sup>**  
gallons



**Not Available**  
1%

**Extremely High**  
13%



**High**  
18%

**Medium to High**  
68%

Note: Data has been rounded to the nearest whole percentage point.

Latin America



**0.06<sup>B</sup>**  
gallons



Low  
2%

Low to Medium  
48%



High  
22%

Not Available  
28%

Note: Data has been rounded to the nearest whole percentage point.

**2016 WATER USE AND RISK BY REGION (BILLION GALLONS)**

	Extremely High	High	Medium to High	Low to Medium	Low	N/A	% of Total	Total
North America	0.55	0.75	2.81	0.00	0.01	0.02	75%	4.15
Europe, Middle East and Africa	0.04	0.12	0.06	0.28	0.41	0.04	18%	0.96
Asia Pacific	0.20	0.01	0.04	0.00	0.02	0.06	6%	0.33
Latin America	0.00	0.01	0.00	0.03	0.00	0.02	1%	0.06
Total	0.78	0.90	2.92	0.31	0.45	0.15	100%	5.50

N/A: Categorization was not available.

**2016 WATER USE AND RISK BY REGION (PERCENTAGE)**

	Extremely High	High	Medium to High	Low to Medium	Low	N/A
North America	13%	18%	68%	0%	0%	1%
Europe, Middle East and Africa	4%	12%	7%	29%	43%	5%
Asia Pacific	60%	3%	13%	0%	6%	19%
Latin America	0%	22%	0%	48%	2%	28%
Total	14%	16%	53%	6%	8%	3%

N/A: Categorization was not available.

#### WATER USE BY SOURCE DETAILS (BILLION GALLONS)<sup>1</sup>

	2012	2013	2014	2015	2016
Pumped water (surface water and groundwater)	6.3	5.3	5.0	4.2	3.6
Purchased water	2.3	2.2	2.1	2.0	1.9
Total	8.6	7.5	7.1	6.3	5.5

1. In accordance with the Greenhouse Gas Protocol, prior-year data have been adjusted to add or remove facilities that have been acquired and sold. Adjustments also reflect changes in methodology to ensure consistency from year to year.



The proper management of materials and waste from our facilities is important for the communities where we operate and is the focus of our environmental permits and other regulatory requirements.

#### RESOURCES

Sharps Management Plan – CalRecycle

In 2016, we sent 30 percent of our operational waste to landfills and incinerators (without energy recovery), which is in-line with our prior target of no more than 30 percent. We have established a new goal to send no more than 20 percent of our total operational waste to landfills and incinerators without energy recovery by 2025.

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To minimize our environmental footprint, we look for opportunities to avoid the use of hazardous materials, reuse or recycle materials, and prevent the generation of waste. When prevention, reuse and recycling are not practical, we apply controls and treatment technologies to prevent human health impacts and minimize environmental impacts.

Waste minimization begins with the upfront evaluation of our product designs and manufacturing processes. Through our [Green and Sustainable Science program](#), we design processes that use safer chemicals; consume less energy, less water and other resources; and generate less waste. Our process-development biologists, chemists and engineers have the expertise to create more sustainable ways to make our products.

Additional information on our Waste Prevention and Management, Solvent Use and Chemical Management programs, as well as our performance in these areas, can be found below.

## Programs

We continuously strive to decrease the amount of operational waste we generate,

and maximize the use of environmentally beneficial disposal methods like recycling, composting and waste-to-energy.

The amount of waste we generate reflects the efficiency of our manufacturing processes. Our facilities track and report the amount of operational waste they generate and how it is managed.

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**We have adopted a new goal to have at least 50 percent of our facilities send zero waste to landfills by 2025.**

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Waste types are defined differently in various parts of the world. For this report, we have divided our operational waste into two categories:

**Hazardous waste:** Heavily regulated or high-risk waste streams that need to be neutralized, treated, or destroyed to address a particular hazard such as toxicity, flammability, corrosivity, radioactivity, pharmaceutically-active or infectious

**Nonhazardous waste:** All other operational waste

Our definition of operational waste does not include construction or demolition waste from projects, because the amount of project-related waste can vary significantly from year to year based on the number and size of projects.

The total amount of operational waste we generated increased by 4 percent from 2015 to 2016. This increase was due to slightly higher production rates at several of our manufacturing plants around the world.

In 2016, over 40 percent of our facilities sent zero operational waste to landfills. In addition, one of our largest vaccine manufacturing facilities located in Durham, North Carolina, diverted over 140,000 pounds of its operational waste from landfills to more environmentally-beneficial recycling facilities. We have adopted a new goal to have at least 50 percent of our facilities send zero waste to landfills by 2025.

To make sure that our hazardous and nonhazardous waste is managed in an environmentally responsible manner, we use only approved waste disposal facilities. Approved facilities demonstrate that they have the systems, technologies, and practices to manage our waste streams responsibly and in compliance with all applicable requirements. We routinely verify the systems and practices of these facilities.

## SOLVENT USE

Solvents play a key role in the manufacture of our products, as well as in equipment cleaning. Because of their significance to our business and the life-cycle impact they represent, we focus on designing our processes to minimize or avoid their use where practical. Where we do use solvents, we maximize efficiency, and control them in our emissions, effluents and waste.

We have an active Green & Sustainable Science program to design our new processes using fewer solvents and other hazardous materials, and to reuse and recycle more of the solvents we do use. For cleaning our manufacturing equipment, we use water-based methods when they are equally effective as solvents. At each of our manufacturing sites, we have engineers who are responsible for identifying and driving process-improvement projects. When it is not practical to reuse regenerated solvents in our own production processes, we either work with suppliers who recover the spent solvents for resale to other industries, or safely burn them as a source of energy. For more information on this practice, please visit our

[Air Emissions](#) page.

Emissions from solvent use are the primary component of volatile organic compound (VOC) emissions to the air. To minimize emissions of VOCs into the environment, we employ treatment technologies and other controls such as conservation vents, carbon filters, thermal oxidizers, condensers and scrubbers. Any spent solvents that leave our site as hazardous waste are managed at off-site facilities that are on our list of approved waste management sites.

## CHEMICAL MANAGEMENT

A comprehensive and effective chemical management program is critical to the safety and protection of our employees, the communities in which we operate, and the environment.

We have put procedures, systems and processes in place to manage the approval, procurement, inventory, receipt, transfer, storage, use, and disposal of chemicals at all of our sites. We provide our employees and others with information about the identities and potential hazards of the chemicals in our operations and final products through proper labeling of chemicals and creation of safety data sheets.

[Learn more](#) about how we manage the environmental fate and effects of our own compounds and products.

## Performance

### Global Operational Waste (% to landfill and incineration without energy recovery)

	2012	2013	2014	2015	2016
Landfill	10%	10%	10%	14%	10%
Incineration (without energy recovery)	18%	14%	13%	13%	20%
Total	29%	24%	22%	28%	30%

Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites.

### HAZARDOUS WASTE (METRIC TONS)

	2012	2013	2014	2015	2016
Incinerated (without energy recovery)	14,681	11,836	9,724	7,928	13,186
Landfilled	2,761	1,772	1,628	1,652	1,492
Recycled	14,796	10,127	12,196	5,944	6,135
Energy Recovery	24,267	22,181	15,773	11,089	9,871
Reused	N/A	2,114	2,408	1,428	2,132
Composted	N/A	4	4	5	5
Other	2,307	2,747	2,387	2,299	2,425
Total	58,812	50,781	44,120	30,345	35,246

Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites.

**NON-HAZARDOUS WASTE (METRIC TONS)**

	2012	2013	2014	2015	2016
Incinerated (without energy recovery)	5,398	1,547	788	1,243	1,361
Landfilled	8,462	7,523	6,349	8,459	5,826
Recycled	23,986	20,073	16,952	15,811	14,636
Energy Recovery	9,075	10,776	10,405	9,706	10,342
Reused	232	1,478	782	970	972
Composted	3,339	3,849	4,094	3,018	3,771
Other	166	229	242	304	445
Total	50,658	45,475	39,612	39,511	37,353

Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites.

**HAZARDOUS & NON-HAZARDOUS WASTE (METRIC TONS)**

	2012	2013	2014	2015	2016
Landfill & Incineration	31,302	22,678	18,489	19,282	21,865
Landfill	11,223	9,295	7,977	10,111	7,318
Incineration	20,079	13,383	10,512	9,171	14,547
Recycled, Energy Recovery, Reused or Composted	75,695	70,602	62,614	47,971	47,864
Other	2,473	2,976	2,629	2,603	2,870
Total	109,470	96,256	83,732	69,856	72,599

Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites.

In 2016, we managed approximately 72,600 metric tons of waste from our operations, a 4 percent increase from 2015. Of this, approximately 35,200 metric tons were hazardous waste.

Of the hazardous waste we generated in 2016, 23 percent was beneficially reused in some way. Approximately 17 percent of our hazardous waste was sent off-site for recycling and was either returned to us for reuse or sold to other industries. Another 28 percent was burned to generate power or as a fossil fuel substitute in industrial furnaces, such as cement kilns. Of the hazardous waste that could not be recycled or beneficially reused, 37 percent was incinerated. Approximately 4 percent was sent to hazardous-waste landfills.

We recycled, reused or composted 52 percent of the approximately 37,400 metric tons of nonhazardous waste we generated in 2016. Recycling and composting rates are increasing as more large-scale composting and recycling facilities are becoming available in the regions where we operate. We are evaluating and refining the programs in place at our manufacturing, research and office sites to reduce waste generation and increase recycling.

**SOLVENT USE (METRIC TONS)**

	2012	2013	2014	2015	2016
Total solvents used	46,000	42,000	35,000	22,000	28,000
Fresh solvents used	33,000	31,000	24,000	15,000	20,000
Recovered solvents used	13,000	11,000	11,000	7,000	8,000

Previously reported data have been restated per our methodology, which includes adding facilities that have been acquired and removing facilities that have been sold as operating sites.

In 2016, we used 20,000 metric tons of new solvents and 8,000 metric tons of recovered solvents in our production processes and cleaning activities. The increase in total solvent use from 2015 to 2016 is the result of increased production volumes of active pharmaceutical ingredients at some of our manufacturing facilities around the world. In 2016, we used recovered solvents for 29 percent of our manufacturing and cleaning needs.



We are committed to understanding, managing and reducing the impacts of our products, and the materials associated with discovering and producing them.

#### RESOURCES

- [Public Policy Statement: Pharmaceuticals in the Environment](#)
- [Public Policy Statement: Nanotechnology](#)
- [Public Policy Statement: Responsible Disposal of Medicines in the Household](#)
- [Sharps Management Plan – CalRecycle](#)

We go to great lengths to ensure that our products are designed, made, and used in a safe, efficacious and environmentally sound manner. We deliver on this commitment by maintaining a highly trained and capable scientific staff and by actively pursuing manufacturing process improvements that minimize environmental impacts. We also collaborate with external resources and industry groups, such as the American Chemical Society and the European Federation of Pharmaceutical Industries and Associations, to ensure that our knowledge stays current with that of thought leaders and experts in the industry.

Our product stewardship program focuses on identifying and either preventing, or minimizing, potential safety and environmental hazards throughout the product life cycle. We conduct extensive testing of our products to identify and understand possible safety, health, and environmental hazards. We manage and communicate information about [hazardous materials](#) to keep our employees, contractors, transporters, and other partners safe.

Our chemists and engineers are trained in [green design principles](#) and are provided with tools and resources to help them develop manufacturing processes that use safer chemicals and lower amounts of raw materials. We use innovations like [nanotechnology](#) to make our products more effective, while ensuring that safety always remains of utmost importance.

Complying with chemical substance and product requirements is a top priority for us. We track numerous existing and emerging chemical control regulations that require us to register specific types of chemicals with the proper authorities. To meet these requirements, our scientists complete assessments of the environmental and human health risks of the substances we work with, and submit the required regulatory notifications. Additionally, we provide details on product use and risk-based control measures as necessary and in accordance with applicable regulations.

Our stewardship program extends downstream to our customers and patients through the design of effective, low impact product [packaging](#). Our company also supports the development of science-based, cost-effective, and environmentally sound programs that promote the proper disposal of unused medicines in accordance with regional requirements. For more information, see our position statement on [responsible disposal of medicines](#).

## PRECAUTIONARY PRINCIPLE

We take a precautionary approach when evaluating potential human exposures and environmental impacts resulting from our manufacturing processes. Conservative assumptions are made when data are limited, and safety factors are added to address uncertainty and variability in our assessments.

This type of approach is particularly relevant to our work in toxicology, industrial hygiene, and environmental protection.

- Using the results of our scientific studies, we determine hazard ratings for all of our chemical compounds, and default to more conservative exposure limits when we have limited health hazard information. We use a rigorous and data-driven review process, and we often find that our initially conservative default ratings can be relaxed as additional preclinical and clinical data become available.
- Our Industrial Hygiene Risk Assessments require that the effectiveness of engineering controls be verified, and that exposure monitoring be conducted as necessary to ensure appropriate levels of employee protection. We evaluate exposure-monitoring data on the basis of statistical analysis, not just individual point-by-point comparisons to Occupational Exposure Limits, providing an even greater assurance of employee safety.
- We use conservative safety factors to set low *de minimis* levels for environmental releases until we have sufficient data to fully understand impacts on aquatic organisms. Aquatic testing is typically completed late in the product development timeline, and limits are often revised upward once those data become available.



Optimal packaging design protects our products in a compliant manner and meets or exceeds customer needs with the minimum possible environmental impact.

The packaging we use for our finished products and in-process materials serves a range of important purposes. The foremost purpose is to protect the purity, efficacy, and physical integrity of the product. Packaging also provides the customer with information and convenience, the pharmacist or provider with accurate dispensing information at the point of purchase, and our business with marketing value. For some products, packaging also serves safety functions, such as child-resistance and tampering evidence.

We have adopted "Design for Environment" guidelines that help our engineers design new product packages that are better for the environment by minimizing package sizes and using more environmentally friendly materials, where possible. We recently set a new target to review all of our new packaging designs for human health products to understand and minimize environmental impacts as much as possible, while still providing adequate protection of our products.

To help us evaluate the differences in environmental impact between packaging options, we use a simplified life-cycle assessment (LCA) tool that provides information on the environmental impact generated by the materials used in our packaging. The tool helps us to make informed decisions on which materials are better for the environment.

For more information about waste-reduction efforts at our facilities, [click here](#).

For more information about our new environmental goals, [click here](#).



## Green & Sustainable Science

### Developing innovative, cost-efficient manufacturing processes with low environmental impact aligns with our mission.

By using more efficient and innovative processing methods and technologies, we are reducing the amount of energy, water and raw materials we use to make our products, thereby minimizing the amount of waste we generate and lowering our production costs.

We aim to develop the most efficient and sustainable processes at product launch, with the goal of minimizing material use and waste from our manufacturing processes. We utilize an innovative, 'green-by-design' development strategy, to progress from initial process chemistry to a fully optimized sustainable commercial manufacturing process. We have set a new target to ensure that by 2020, at least 90 percent of our human health active pharmaceutical ingredient (API) processes will meet internal sustainability targets at the time of product launch.

Our integrated strategy involves several stages, and aims to provide revolutionary solutions rather than incremental improvements to historical practices. We see science and innovation as critical enablers to developing sustainable, low-cost manufacturing processes that provide both environmental and economic benefits over the lifecycles of our products.

As part of our Green & Sustainable Science program, we calculate the Process Mass Intensity (PMI) of our human health products. PMI calculates the number of kilograms of raw materials (including water) used to produce one kilogram of an active pharmaceutical ingredient (API) or biologic. PMI indicates how efficiently we convert raw materials into final products. We use this metric internally to compare different manufacturing methods, identify process improvement opportunities and track our progress.

In June 2017, our company was honored by the U.S. Environmental Protection Agency (EPA) as one of five winners of the 2017 Green Chemistry Challenge Awards. Our scientists successfully applied green chemistry design principles to Letemovir, an antiviral drug candidate, that is currently in phase III clinical trials.

They made improvements to the way the drug is made, including the use of a better chemical catalyst, which increased the overall process yield by more than 60%, reduced raw material costs by 93%, and reduced water usage by 90%. Since the establishment of the annual [Green Chemistry Award](#) by the U.S. Environmental Protection Agency in 1996, we have been the only pharmaceutical company to be recognized with four Green Chemistry Awards for innovative process improvements.

We are a founding member of the [American Chemical Society's Green Chemistry Institute® \(ACS GCI\) Pharmaceutical Roundtable](#), a partnership between the ACS GCI and member pharmaceutical companies. The Roundtable assists with developing tools like the solvent selection and reagent guides and the process mass intensity calculator, which drive the integration of sustainability into process design. Roundtable members also work together to support and advance academic research and education on new ways to apply green and sustainable science to pharmaceutical discovery and manufacture, which has resulted in several industry publications on more sustainable processes and technologies. More recently, the ACS GCI member companies have developed tools and guidelines for sustainable production practices relevant to bioprocessing.

For more information about our efforts to increase the use of recovered solvents and to prevent waste, [click here](#).



We support the use of nanotechnology to develop innovative drugs and vaccines that address the unmet medical needs of people and animals.

#### RESOURCES

[Public Policy Position Statement: Nanotechnology](#)

Nanotechnology involves the use of materials that are <100 nanometers in size. It includes common substances that have been reduced in size, as well as unique, minute substances such as carbon nanotubes and other exotic materials. Our [public policy statement](#) above explains our approach to using nanotechnology responsibly.

The testing required for all drugs ensures that nano-based pharmaceuticals are safe and effective for patient use. Our safety and health professionals closely monitor developments in this area. Based on current knowledge of nanoparticles, our existing methods of assessing risks and applying controls are well-suited to minimizing the risks of exposure to employees and the environment. We do not currently use engineered nanoparticles.

Here are two examples of how we use nanotechnology to improve health:

**Human Health:** The manufacturing process for EMEND® (aprepitant) uses a nanoscale milling approach to generate very small granules (with some in the “nano” range) that are more easily absorbed by the digestive tract.

**Animal Health:** Nanoscale milling is used for the active ingredient in PANACUR® (fenbendazole) to produce a formulation that makes the product easier to administer and provides for improved dosing.



We are committed to understanding and managing the environmental impacts of our products throughout their life cycles — from discovery through manufacturing, use and disposal.

#### RESOURCES

Public Policy Position Statement: PIE

Public Policy Position Statement: Nanotechnology

We conduct environmental risk assessments on our products from the development phase through product launch to understand and manage product impacts from manufacturing and patient use. We assess products in a manner consistent with the most stringent applicable global regulations, including the regulatory review processes of the [U.S. Food and Drug Administration](#) and the [European Medicines Agency](#). Product environmental safety profiles are reassessed during periodic renewals of product filings, and risk-mitigation actions are implemented when needed.

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We carefully monitor scientific research on the issue of pharmaceuticals in the environment, including studies that evaluate the potential effects pharmaceutical products may have on the aquatic environment and human health.

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Pharmaceutical compounds have been found to enter the environment primarily through the use of medicines by humans and animals, and the subsequent excretion into wastewater treatment systems, water bodies or soil. Other potential environmental routes include manufacturing wastewater discharges and waste disposal.

We use the information from our risk assessments to establish or update our internal, compound-specific Environmental Quality Criteria (EQC), which are used to assure that wastewaters discharged from our facilities do not contain residual products that present a risk to human health or the environment. Our manufacturing facilities are required to use these EQC, along with industry-accepted risk-assessment methods, to establish procedures for managing and controlling active pharmaceutical ingredients (APIs) in their wastewater. We also provide EQC information to suppliers that manufacture pharmaceutical compounds for us. Our production facilities have, or are currently being provided with, API-treatment technology to ensure that our wastewater meets these EQC. Our facilities are also required to incinerate any product containing solid waste streams, unless restricted by local regulation.

We carefully monitor scientific research on the issue of pharmaceuticals in the environment (PIE), including studies that

evaluate the potential effects pharmaceutical products may have on the aquatic environment and human health. We support the use of science-based environmental risk assessments, and we will continue to collaborate with regulatory, academic, health care and research organizations to identify additional needs for data on the fate and transport of pharmaceuticals in the environment.

For more information about how we reduce the impacts of our products in the process design stage, read about our [Green & Sustainable Science](#) program. For more information on our commitments regarding antimicrobial resistance (AMR), please visit our [Antimicrobials/Antibiotics](#) page.



# ETHICS & TRANSPARENCY

Through our unwavering commitment to ethics and transparency, we earn the trust and confidence of our stakeholders.

The foundation of our strategy is our unwavering commitment to our values of ethics and integrity. It takes more than having the right mechanisms, standards and training in place to ensure an open, ethical business environment. We work hard to make sure we live up to our own high standards every day.

## CODE OF CONDUCT

*Our Values and Standards*, our Code of Conduct, is considered to be the foundation of our company's success. These values and standards apply worldwide, wherever our company does business.

Ethics and compliance training is an important part of creating a strong culture, and our program is reflective of the Code of Conduct and corporate policies tailored to meet the needs of different groups of employees

within the organization. All employees are required to complete the assigned ethics and compliance courses.



**of our employees completed training on our Code of Conduct**

## A COMMITMENT TO TRANSPARENCY

We aspire to be open and transparent about how we operate in order to earn and retain the trust and confidence of our stakeholders.

We have a long history of making our medicines and vaccines accessible and affordable through responsible pricing practices and industry-leading patient access programs. As part

of our ongoing commitment to transparency and to help people better understand our pricing practices, we are disclosing information about our price actions in the United States.



## THE SDGs & ETHICS & TRANSPARENCY

This graphic illustrates which of the UN SDGs most closely aligns with our commitment to ethics and transparency.



### SDG 8

#### Decent Work and Economic Growth

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

## ELEMENTS OF AN EFFECTIVE COMPLIANCE PROGRAM

As part of our long-standing commitment to ethics and good corporate citizenship, we adopt policies and procedures to facilitate compliance with

the laws and regulations that govern the way we market and sell our medicines, vaccines and other products.



## GLOBAL PRIVACY PROGRAM

We strive to be good data stewards in order to balance our data needs with our responsibilities to the people and communities we service.



## AWARDS & RECOGNITION

We have been recognized for our commitment to ethics and transparency.



WE RECEIVED A SCORE OF 100% ON HRC'S 2016 CORPORATE EQUALITY INDEX



RANKED IN THE FIRST TIER ON THE INDEX, WHICH BENCHMARKS THE TOP 300 COMPANIES IN THE S&P 500



How we operate is as important as what we do.

#### RESOURCES

- [Code of Conduct](#)
- [Business Partner Code of Conduct](#)
- [Ethical Operations Handbook](#)

It is critically important to patients, purchasers, health care professionals, employees and investors, and to the sustainability of our business success, that we adhere to all applicable laws and regulations, follow ethical business practices, maintain good corporate governance and treat people with respect.

We have strong management oversight, comprehensive corporate policies and procedures, and a long history of abiding by legal and regulatory requirements and promoting high ethical standards. Every employee worldwide is responsible for adhering to business practices that are in accordance with the letter and spirit of the law and with ethical principles that reflect the highest standards of corporate and individual behavior.

Our company's Office of Ethics was established over 20 years ago to protect and promote the company's values and standards on a worldwide basis by developing and overseeing global initiatives designed to deter illegal, unethical and improper behavior related to the company's business. It is responsible for ensuring that employees are aware of and trained on the [Code of Conduct](#) and corporate policies.

## RESOURCES FOR EMPLOYEES

The Office of Ethics serves as a channel for the receipt and investigation of employee ethical and compliance-related concerns. There are multiple vehicles through which employees can contact the Office of Ethics. Employees can contact the Office of Ethics directly, by a toll-free telephone number or by email, to speak to an ethics officer or ombudsperson. Our company also provides a confidential, toll-free intake service, called AdviceLine, through a third party that offers the option for the reporting person to remain anonymous.

The Office of Ethics is also responsible for managing our Ombuds Program, which offers an additional safe haven for U.S.-based employees to discuss work-related issues without fear of retaliation. This program confidentially addresses employees' concerns mainly relating to manager or coworker relations or fair treatment.

## ADDRESSING MISCONDUCT

It is our policy to maintain a work environment where all employees are expected to report ethical and compliance concerns that are potentially inconsistent with the company's Code of Conduct and policies. Our company is committed to maintaining a process for escalation and investigation of potential- and compliance-related concerns.

Retaliation against employees who report such concerns is a violation of corporate policy and will not be tolerated. The Office of Ethics is responsible for oversight of the global processes for managing investigations into potential ethics and compliance concerns to ensure consistent and timely resolution of potential concerns and implementation of remediation actions. When we substantiate allegations of ethical misconduct, we take appropriate disciplinary actions in order to ensure that those who were responsible are held accountable.

Disciplinary actions can include dismissal from the company, issuance of final written warning letters or financial penalties. We also take appropriate steps to address any needed improvements in organizational and process controls.

We also maintain a policy that will give our company the discretion to recoup incentive payments made to employees in certain instances. This policy will apply when a senior leader engages in misconduct or fails to reasonably supervise an employee who engages in misconduct that results in a material policy violation relating to the research, development, manufacturing, sales or marketing of company products where the policy violation causes significant financial or reputational harm to the company.

## ANNUAL ETHICS & POLICY CERTIFICATION

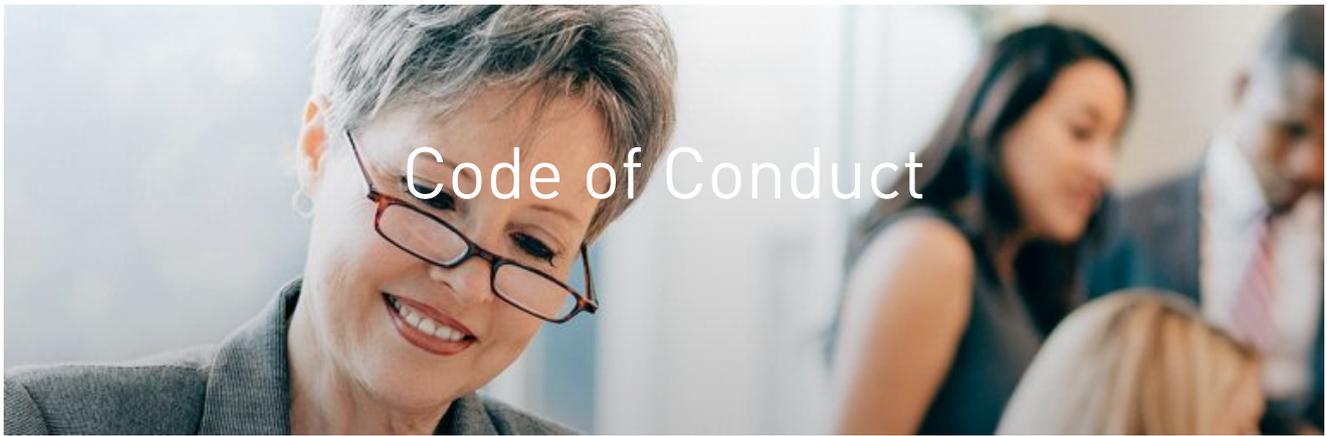
An important component of our corporate compliance program is our annual ethics and policy certification. The annual review process requires selected company employees to certify compliance with corporate policies on ethical business practices, antitrust-law compliance, and conflict-of-interest and insider trading. These employees are also expected to regulate their outside activities to avoid any conflicts of interest and certify, in writing, whether actual or potential conflicts of interest exist. Where potential conflicts are identified, the Office of Ethics will work with management to take actions to mitigate the potential conflict. In addition, all U.S.-based employees must certify compliance with our corporate policy on the effects of exclusions, debarments, suspensions and health care-related criminal convictions, reporting and screening.

## Performance

ETHICAL BUSINESS PRACTICES	2012	2013	2014	2015	2016
Employees who responded to disclosure statement on Conflicts of Interest form	99%	NA	100%	100%	100%
Concerns brought to the company's attention, such as employees seeking ombudsman services (most often relating to manager or coworker relations) and guidance on conflict-of-interest or Code of Conduct issues	713	624	517	484	389
Allegations involving noncompliance with company policy investigated	1,012	968	1,069	638	479
Ratio of substantiated allegations to concerns/issues raised	60%	58%	60%	58%	55%
Employees separated related to substantiated corporate policy violations <sup>1</sup>	166	313	365	156	123
Employees who received written warnings as disciplinary actions resulting from substantiated concern	232	269	323	148	137
Worldwide employees represented by an independent trade union or covered by a collective bargaining agreement	31%	32%	31%	32%	29%

NA: Not available.

1. This data represents investigations conducted on a companywide basis.



Our Code of Conduct, *Our Values and Standards*, is considered to be a foundation of our company's success. These values and standards apply worldwide, wherever our company does business.

#### RESOURCES

[Code of Conduct](#)  
[Business Partner Code of Conduct](#)

Our [Code of Conduct](#), *Our Values and Standards*, available in 23 languages, applies to all employees worldwide. In April 2017, we published the fourth edition of *Our Values and Standards*. While the look and feel of the new edition may have changed, *Our Values and Standards* continues to lead us on the principled path to being a company worthy of trust. It represents the very core of our character as a company and helps us to protect the reputation we have earned as a company.

With the launch of the new *Our Value & Standards* interactive website, employees can search for a relevant policy, ask a question or raise a concern. The website also offers tools and resources to help employees put our values into action with every decision and every action.

## ETHICS TRAINING & DEVELOPMENT

We provide training to all employees worldwide on our Code of Conduct to ensure awareness of *Our Values and Standards*, as well as of a variety of associated topics such as privacy, information management and protection, and corruption and bribery. Ethics and compliance content is also integrated into business and leadership development courses for managers and senior leaders on an ongoing basis. Ethics and integrity are key leadership competencies that are assessed as part of annual performance reviews and play an integral role in our decisions about employee advancement within the company.

## EXTERNAL SUPPLIERS' ETHICAL STANDARDS

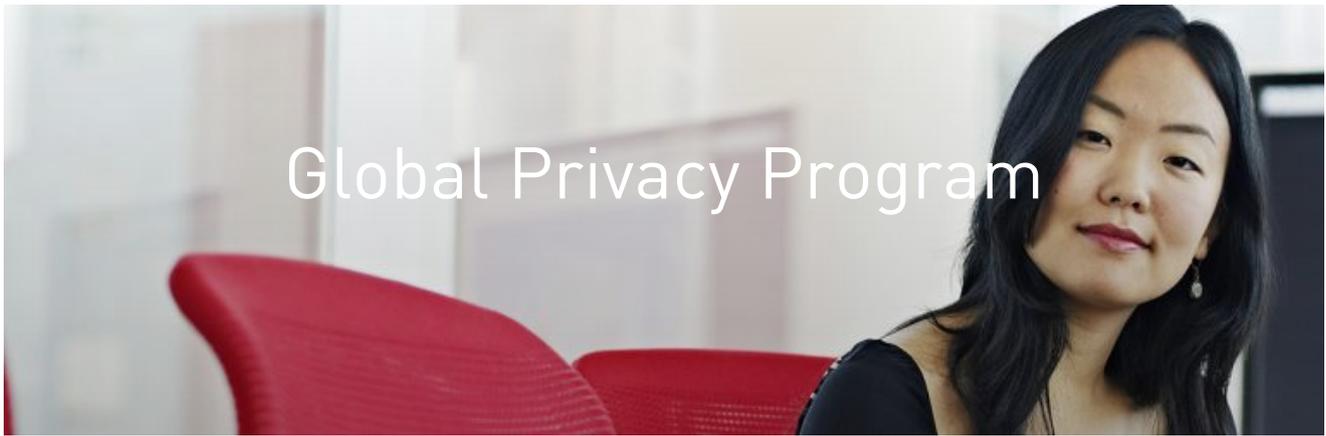
We abide by strict ethical standards in our own operations—and we insist on equivalent standards from our suppliers. Our [Business Partner Code of Conduct](#) is based on our own Code of Conduct, as well as on the [Pharmaceutical Supply Chain Initiative's \(PCSI's\) Pharmaceutical Industry Principles](#) and the [Ten Principles of the UN Global Compact](#).

[Learn more](#) about how we work with our suppliers to uphold ethical standards.

## Performance

CODE OF CONDUCT	2012	2013	2014	2015	2016
Employees trained on the Code of Conduct	92%	99%	99%	99%	100%
Employees who have taken the annual Code of Conduct refresher course	NA	99%	99%	99%	100%

NA: Not available.



In all that we do, we strive to be good data stewards to balance our data needs with our responsibilities to the people and communities we serve.

#### RESOURCES

##### [Business Partner Code of Conduct](#)

Data about people—whether our employees, patients, physicians, veterinarians and other health professionals, customers, business partners, or other stakeholders—is essential to fulfilling our corporate mission and to operating our global research-intensive biopharmaceutical and animal-health businesses.

Over the past 16 years, we have developed and continually improved a comprehensive global privacy program that promotes organizational accountability for privacy, data governance and data protection across our business, and with our collaborative partners and suppliers. On March 1, 2016, we became the first company in the world to obtain regulatory approval in the European Union (EU) for Binding Corporate Rules (BCR) based in part on our existing Asia Pacific Economic Cooperation (APEC) Cross-Border Privacy Rules (CBPR) certified program.

This achievement demonstrates that organizations can rely on common internal standards and processes to govern international data transfers across both the EU and APEC regions to simplify their ability to address the growing regulatory challenges in this area.

In November 2016, we self-certified to the EU-U.S. and Swiss-U.S. Privacy Shield Frameworks. These frameworks were designed by the U.S. Department of Commerce, and the European Commission and Swiss Administration, respectively, following the invalidation of the EU-U.S. and Swiss-U.S. Safe Harbor programs.

Throughout 2017, we further improved organizational accountability and governance by expanding our cross-organizational/functional governance body to guide the overall privacy program and establish a set of privacy standards and specifications tied directly to the company privacy policy and based upon new external requirements.

Our holistic approach to privacy has its origins in biomedical research ethics and the protection of participants in the research studies that we sponsor and conduct. We have adapted human subject research ethics standards for risk-benefit analysis, transparency, anonymization, coding and prior review to other activities and processes involving data about people. We also have established a set of privacy values to guide all of our privacy, data stewardship and data protection decisions. These core tenets serve as the foundational ethical framework for our comprehensive global privacy program and our compliance with the continually evolving legal and regulatory standards for privacy and data protection.

## OUR GLOBAL PRIVACY VALUES

<p><b>RESPECT</b></p> <p>We recognize that privacy concerns often relate to the essence of who we are, how we view the world and how we define ourselves, so we strive to respect the perspectives and interests of individuals and communities and to be fair and transparent in how we use and share information about them.</p>	<p><b>TRUST</b></p> <p>We know that trust is vital to our success, so we strive to build and preserve the trust of our customers, employees, patients and other stakeholders in how we respect privacy and protect information about people.</p>	<p><b>PREVENT HARM</b></p> <p>We understand that misuse of information about people can create both tangible and intangible harm for individuals, so we seek to prevent physical, financial, reputational and other types of privacy harm to individuals.</p>	<p><b>COMPLY</b></p> <p>We have learned that laws and regulations cannot always keep pace with the rapid change in technologies, data flows, and associated shifts in privacy risks and expectations, so we strive to comply with both the spirit and the letter of privacy and data protection laws and regulations in a manner that drives consistency and operating efficiency for our global business operations.</p>
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## Performance

PRIVACY DATA	2012	2013	2014	2015	2016
Number of countries in which we conducted privacy compliance verification and risk assessment	137	137	137	137	137
Number of concerns regarding privacy practices, breaches of privacy and losses of personal data that were substantiated <sup>1</sup>	68	212	151	143	227
Percentage of reported concerns regarding privacy practices, breaches of privacy and losses of personal data that were substantiated <sup>2</sup>	23%	26%	18%	96%	98%
Number of privacy breaches requiring notification by our company to individuals or government authorities	0	0	1	0	1
Number of privacy breaches requiring notification by third parties working for our company to individuals or government authorities	2	1	1	3	0

1. Privacy concerns include all concerns about our privacy practices escalated to our company’s Privacy Office. Substantiated concerns are those that are determined to be inconsistent with our own privacy standards or that involve loss of, theft or unauthorized access to personal data.

2. In 2015, because of the scope of lost or stolen devices known to be encrypted, we ceased inclusion of lost or stolen MSD devices in our incident metrics.



# Human Rights

Human rights are an important element of our company's commitment to conducting our business in a responsible manner.

## RESOURCES

- [Code of Conduct](#)
- [Business Partner Code of Conduct](#)
- [Public Policy Position Statement: Human Rights](#)

Respect for human rights is a fundamental part of our mission to discover, develop and provide innovative products and services that save and improve lives around the world. We believe in the dignity of every human being and recognize the international human rights principles embodied in the United Nations Global Compact and as defined in the United Nations Universal Declaration of Human Rights and its subsequent changes; the International Covenant on Economic, Social and Cultural Rights; the International Covenant of Civil and Political Rights; the Organisation for Economic Co-operation and Development Guidelines for Multinational Enterprises; and the core labor standards set by the International Labor Organization.

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We have translated our Business Partner Code of Conduct into 26 languages.

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## OUR BELIEF & APPROACH

We believe in the dignity of every human being and in respecting individual rights. Our company has a number of global policies that address how we protect human rights, including our global [Public Policy on Human Rights](#), our Human Resources Policy, our Labor and Human Rights Policy (introduced in 2016) and our [Code of Conduct](#), *Our Values and Standards*. Our company's Executive Committee is responsible for ensuring that governance processes are in place to provide oversight of the implementation and execution of these corporate policies.

*Our Values and Standards* outlines our responsibilities to our customers, our fellow employees, our suppliers, the communities where we live and work as well as those around the world that we serve, and our shareholders. These responsibilities represent the foundation of our company and what we stand for, and are the basis for our continued success. We seek to prevent or mitigate adverse human rights practices that are directly linked to our operations, products or services.

## OUR COMMITMENT

Our commitment is formalized and manifested through the various policies highlighted above, including our Code of Conduct and our environmental governance and management systems. With respect to our internal operations, our policies and/or Code of Conduct state the following:

**Labor Standards:** We maintain labor standards, including hours, conditions, wages and overtime pay practices that are in compliance with the laws of the jurisdictions in which we operate.

**Health & Safety:** We provide a safe and healthy work environment in all of our operations, regardless of their size or function.

**Freedom of Association:** We respect the right of employees to associate freely, and to form, join or not join a labor union. All employees can communicate openly with management and each other regarding working conditions.

**Child Labor, Forced Labor & Human Trafficking:** We prohibit the use of child, forced or involuntary labor, including bonded labor, prison labor, slave labor or indentured labor, and any form of human trafficking.

**Commercial Sex Acts:** We recognize that the sex industry, even where lawful, can contribute to human trafficking and exploitation. We do not allow employees to engage in commercial sex acts.

**Wages & Benefits:** We compensate our employees in accordance with market practice in a manner that supports their ability to meet their basic needs. We also offer our employees the opportunity to improve their skills and capabilities.

**Diversity & Equal Opportunities:** We value diversity and strive to provide equal opportunities for all individuals.

**Privacy:** We respect individual privacy expectations and protect personal information that we collect, use and disclose in connection with our business.

**Access to Health Care:** We respect the right to good health for all people, and we are committed to leveraging our expertise to help remove the barriers that stand between patients and the health care they need.

**Communities:** We respect the human rights of our neighbors in those areas where we have operations or facilities.

**Fair Treatment:** We provide a safe and secure workplace that is free of harsh and inhumane treatment, including any sexual harassment, sexual abuse, corporal punishment, mental or physical coercion, or verbal abuse. We do not tolerate discrimination or harassment based on a person's race, color, gender, age, religion, national origin, ancestry, ethnicity, disability, sexual orientation, gender identity, gender expression, genetic information, citizenship status, marital status, military/veteran status or any other characteristic protected by law.

**Compliance:** We adhere to local laws. When local protection is insufficient or nonexistent, we observe the more demanding standards consistent with our policies to the extent that those standards do not violate local laws and regulations.

## ENGAGEMENT WITH SUPPLIERS

We use our [Business Partner Code of Conduct](#) to communicate our expectations to suppliers and external partners. The Code, which has recently been updated, is based on our own Code of Conduct, as well as on the [Pharmaceutical Supply Chain Initiative's](#) (PSCI's) Pharmaceutical Industry Principles for Responsible Supply Chain Management and the [Ten Principles of the United Nations Global Compact](#).

We have translated our Business Partner Code of Conduct into 26 languages to help ensure that the content is widely understood.

[Learn more](#) about environmental, labor and human rights in the supply chain.



# Health as a Human Right

Although government has the primary responsibility for managing a health system that ensures the health of its citizens, pharmaceutical companies have a substantial role to play in realizing this right.

Health as a universal human right is recognized by the [United Nations Universal Declaration of Human Rights](#) and the [International Covenant on Economic Social and Cultural Rights](#).

The role of the pharmaceutical industry in respecting and promoting health as a human right is complex. We believe that our most basic role is our core activity of discovering, developing and delivering medicines and vaccines to address unmet medical needs.

We also recognize our ethical duty to support governments in their efforts to protect the right to health by “doing no harm.” We do this in a number of ways, including:

- Monitoring and reporting on the safety of our products
- Providing health care workers and consumers with important information on the benefits and side effects of our products
- Safeguarding the health, safety and privacy of patients involved in our clinical trials

## SUPPORTING THE RIGHT TO HEALTH

Beyond these efforts, we also have the ability—and, we believe, the responsibility—to support the right to health and to effect positive change. We do this by promoting timely product registration and helping to improve access to new medicines and vaccines, and through partnerships and public policy advocacy that seek to strengthen health care capacity and address deep-rooted and multifaceted barriers to access in ways that are aligned with our business mission and core capabilities.

Others have roles and responsibilities, too. Industrialized countries—where most research in life sciences takes place—must continue to foster innovation by funding basic research and supporting related institutions, and by recognizing the value of innovative medicines and vaccines.

Developing countries also must continue to make health care a budget priority, remove taxes and import duties on medicines that unnecessarily raise the price of medications, and limit product diversion to richer countries by price arbitragers. Emerging or middle-income countries should do the same, and should also recognize that they can and should pay more than the poorest countries for medicines, rather than take actions that remove incentives for innovation.



Our company aspires to being open and transparent about how we operate in order to earn and retain the trust and confidence of our customers, employees, shareholders, and other important stakeholders.

#### RESOURCES

[California Transparency in Supply Chains Act](#)  
[Conflict Minerals](#)  
[Sharps Management Plan – CalRecycle](#)  
[MSD Modern Slavery Act Transparency Statement](#)  
[Pricing Action Transparency Report \(2016\)](#)

We do this by proactively providing nonproprietary information to stakeholders about our business and how we operate, which helps stakeholders make informed decisions about their interactions with the company and our products.

We disclose information through a variety of mechanisms, including our financial disclosures, our annual corporate responsibility report, and participation in voluntary efforts such as the CDP (formerly the Carbon Disclosure Project), as well as through the media and through one-on-one stakeholder discussions. As part of this commitment to increasing transparency, we also disclose information in this corporate responsibility report in the following areas:

- [CDP](#)
- [Clinical Trials](#)
- [Corporate Political Advocacy and Contributions](#)
- [Employee Diversity](#)
- [Grants to Medical, Scientific and Patient Organizations](#)
- [Payments to Health Care Professionals](#)
- [Philanthropic Grants and Contributions](#)
- [Post-Marketing Requirements](#)
- [Pricing Practices in the United States](#)

## CDP

CDP is an independent not-for-profit organization working to drive greenhouse gas (GHG) emissions reduction and sustainable water use by businesses and cities.

CDP works with investors globally to advance the investment opportunities and reduce the risks posed by climate change by asking almost 6,000 of the world's largest companies to report on their climate strategies, GHG emissions and energy use in the standardized Investor CDP format. We have been disclosing climate information via the CDP for a number of years, and more recently have participated in both its Water and Supply Chain disclosures.

- [CDP Water \(2016\)](#)
- [CDP Climate Change \(2016\)](#)

## CLINICAL TRIALS

Our company is committed to the timely registration of clinical trial information and the disclosure of clinical trials — regardless of their outcomes.

Learn more about [clinical trials](#).

### Clinical Trial Disclosures

Since 2007, we have registered at trial initiation all clinical trials in patients in which treatment is assigned that our company sponsors and conducts worldwide on [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov). We also disclose results from registered clinical trials of marketed products—regardless of outcomes.

### Clinical Trial Results

The clinical study results of our company and Schering-Plough, previously posted via the Pharmaceutical Research and Manufacturers of America (PhRMA) Clinical Study Results Database, have been available as of December 2011 on our [corporate headquarters website](#).

## CLINICAL TRIAL DATA SHARING

We are committed to the PhRMA/EFPIA Principles for Responsible Clinical Trial Data Sharing.

Learn more about our policies and perspectives:

- [Procedure on Access to Clinical Trial Data](#)
- [Procedure on CSR Synopsis Posting](#)
- [External Scientific Review Board \(ESRB\) Charter](#)

Scientific and medical researchers who wish to submit a proposal for access to our company's data may send an inquiry by clicking [here](#).

### Clinical Research Protocols

Effective July 1, 2011, when we submit a manuscript on a study of an investigational or an approved medicine or vaccine to a biomedical journal, we will voluntarily include the protocol and statistical analysis plan. We previously supplied this material only upon request. Upon a journal's acceptance of the manuscript for publication, we will provide the journal, at its own discretion, with the opportunity to post on its website the key sections of the protocol, including the objectives and hypotheses, patient inclusion and exclusion criteria, study design and procedures, efficacy and safety measures, and statistical analysis plan, and any amendments relating to those sections.

## CORPORATE POLITICAL ADVOCACY AND CONTRIBUTIONS

Our company is committed to participating constructively and responsibly in the political process. To improve access to information about our advocacy activities, we disclose our costs associated with lobbying in the European Union and the United States.

Where permitted by law in the United States, Canada and Australia, the company provides corporate political contributions, primarily to the electoral campaigns of individual candidates.

To improve access to information about our corporate political and PAC contributions in the United States, our company semiannually posts our contributions, categorized by state, candidate and amount. We post our contributions in Canada and Australia annually.

We also disclose a list of industry and trade groups of which we are members, and our dues (dues that are greater than \$25,000), to U.S. trade associations that are used for political purposes. We encourage all trade associations to which we belong to disclose publicly their political activities as well. [Learn more.](#)

## EMPLOYEE DIVERSITY

We consider diversity and inclusion integral parts of the culture we seek to build. To learn more about our initiatives and performance, [click here.](#)

We were one of the first companies in the United States to begin disclosing our Equal Employment Opportunity data, and we continue to do so annually. To view our EEO-1 data, [click here.](#)

## Grants to Medical, Scientific and Patient Organizations

We believe that providing support through grants or donation to third-party medical, scientific and patient organizations is an important way to advance our mutual objectives to improve health and advance patient care.

We disclose grants of more than \$500 provided by the company's Global Human Health division to U.S. organizations in support of independent, accredited educational programs for health care professionals, as well as grants to patient organizations and other medical education or scientific societies and organizations in the United States, Europe, the Middle East, Africa and Canada.

We have robust standards and policies in place to ensure that our grants are intended for, and provided in support of, improving patient care, and are not promotional or likely to be perceived as being promotional in nature, or provided to induce or reward prescription of our products. Furthermore, any grant or donation must also be permitted by and aligned with local country laws and regulations.

We update grants to medical, scientific and patient organizations quarterly in the United States, and annually in ex-U.S. jurisdictions.

The following three principles guide our approach to providing financial support to medical, scientific and patient organizations:

**Independence:** Our company respects the independence of medical, scientific and patient organizations and refrains from using our financial support to influence the policies of organizations or to promote specific medicines.

**Transparency:** Our company supports transparency of financial support provided to medical, scientific and patient organizations. We believe this is an important step in building public trust both in our company and in those to whom we provide support. Making our support public also enhances the visibility of our commitment to helping advance health and science.

**Compliance with Local Laws:** In providing financial support to medical, scientific and patient organizations, we comply with all relevant local laws and regulations.

As part of our commitment to these principles, we regularly review and update our Code of Conduct to reaffirm our mission and commitment to scientific excellence, ethics and integrity. These principles are also reflected in the company's corporate policies, procedures and guidelines, which all employees are responsible for understanding and applying appropriately.

## UNITED STATES

- [Grants made in the 3rd Quarter 2017 in the U.S.](#)
- [Grants made in the 2nd Quarter 2017 in the U.S.](#)
- [Grants made in the 1st Quarter 2017 in the U.S.](#)

- [Grants made in 2016 in the U.S.](#)
- [Grants made in 2015 in the U.S.](#)
- [Grants made in 2014 in the U.S.](#)
- [Grants made in 2013 in the U.S.](#)
- [Grants made in 2012 in the U.S.](#)
- [Grants made in 2011 in the U.S.](#)
- [Grants made in 2010 in the U.S.](#)
- [Grants made in 2009 in the U.S.](#)
- [Grants made in 2008 in the U.S.](#)

## OUTSIDE THE UNITED STATES

Disclosure of grants to patient organizations has been mandatory in Europe since March 2009. However, in Europe, the Middle East and Africa, we voluntarily began disclosing financial support to patient organizations in 2008, and in Canada in 2009.

In October 2009, in Europe, the Middle East, Africa and Canada, our company also began to disclose grants to other third-party organizations such as medical societies and scientific organizations. The information disclosed includes the organizations, the amounts received, the dates of payment and the projects for which the money was used. Disclosures include all donations and charitable contributions, grants, and membership fees to professional societies or other medical or scientific organizations. We were a member of the working group to develop the European Federation of Pharmaceutical Industries and Associations (EFPIA) [Code of Practice on Relationships between the Pharmaceutical Industry and Patient Organisations](#), which became effective on July 1, 2008.

**2016 Grants Outside the U.S.**

Austria

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Belgium

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Canada

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Croatia

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Cyprus

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Czech Republic

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Denmark

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Finland

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France

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Germany

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Greece

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Hungary

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Ireland

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Israel

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Italy

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Jordan and Lebanon

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Merck for Mothers

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Morocco

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Netherlands

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Norway

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Office of Corporate Responsibility

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Poland

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Portugal

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Romania

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Russia

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Saudi Arabia

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Senegal

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Serbia

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Slovakia

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Slovenia

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South Africa

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Spain

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Sweden

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Switzerland

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Turkey

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United Kingdom

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- [2015 Grants Outside the United States](#)
- [2014 Grants Outside the United States](#)
- [2013 Grants Outside the United States](#)
- [2012 Grants Outside the United States](#)
- [2011 Grants Outside the United States \(2nd half\)](#)
- [2011 Grants Outside the United States \(1st half\)](#)

## Payments to Health Care Professionals

We believe in broad disclosure of financial relationships between physicians and the pharmaceutical industry.

### UNITED STATES

As an early supporter of the Physician Payments Sunshine Act (PPSA), we believe in broad disclosure of financial relationships between physicians and the pharmaceutical industry. In October 2009, our company began voluntarily disclosing all payments to U.S.-based health care professionals who speak on behalf of our company about our products and other health care issues.

[SEARCH OPEN PAYMENTS DATA >](#)

We comply with the PPSA provisions of the U.S. Affordable Care Act, which require pharmaceutical manufacturers to annually disclose information on certain additional payments and other transfers of value furnished to U.S.-licensed physicians and U.S. teaching hospitals to the Department of Health and Human Services (HHS). In addition to submitting such information to HHS's Center for Medicare & Medicaid Services each year, we post the information annually on this website.

We engage with health care professionals around the world to conduct company-sponsored clinical studies on the safety and effectiveness of our products. We conduct these studies, in accordance with strict regulatory requirements, with "real world" physicians and their patients in order to learn more about our products and bring new medicines and vaccines to patients who need them. Once a product is approved for marketing, we continue to conduct studies in order to monitor ongoing safety and effectiveness.

We also engage with health care professionals through our Investigator Studies Program, whose mission is to advance the delivery of quality health care by supporting investigator-initiated original research that will enhance the understanding of disease entities and their treatment. This program is open to all academic and community-based physicians and researchers worldwide who are interested in conducting their own research.

We are committed to the discovery and development of important new drugs and vaccines through collaboration with scientific leaders from academic and scientific organizations around the world. Advice in the form of consulting engagements with external medical and scientific experts results in meaningful scientific exchanges that bring real-world knowledge and perspectives to our company. These critical exchanges contribute to advancing science both at our company and in the broader scientific community, and ultimately help benefit human health.

We also engage physicians as speakers in the U.S. through our company's Medical Forums, which are designed to deliver balanced medical and scientific information to health care professionals so that patients can have access to the medicines and vaccines they need and use these products correctly. These programs are structured to be consistent with the PhRMA Code on Interactions with Healthcare Professionals and are conducted in compliance with FDA regulations to help ensure that our product information is presented in an appropriately balanced manner, with respect to potential benefits and risks.

## EUROPE

In 2016, we began disclosing payments to European-based health care professionals and health care organizations, in alignment with the disclosure code announced by the [European Federation of Pharmaceutical Industries and Associations \(EFPIA\)](#). Our company played a supportive role in the development and adoption of the code by the EFPIA board.

## Philanthropic Grants and Contributions

We report philanthropic grants and charitable contributions, including contributions made through the Office of Corporate Responsibility, our company's Foundation, U.S. Global Human Health, and the MSD for Mothers Program.

All reports are intended for residents of the United States and Canada.

- [Charitable Contributions Report 3Q 2017](#)
- [Charitable Contributions Report 2Q 2017](#)
- [Charitable Contributions Report 1Q 2017](#)
- [Charitable Contributions Report 2016](#)
- [Charitable Contributions Report 2015](#)
- [Charitable Contributions Report 2014](#)
- [Charitable Contributions Report 2013](#)
- [Charitable Contributions Report 2012](#)
- [Charitable Contributions Report 2011](#)

## Post-Marketing Requirements

We recognize the importance of providing transparent information about the status of our marketing and development activities after a product has been approved by regulatory authorities.

This information can help ensure that health care providers and patients remain informed about our products.

To inform the public about post-marketing activities, we will, on a quarterly basis, post information on this website concerning post-marketing requirements (PMRs) for U.S.-marketed products intended for human use. Information will include the nature and status of the PMRs for the life cycle of a marketed product, in accordance with U.S. regulations.

Information will also include reference to clinical, nonclinical or pharmacovigilance studies/trials that have been identified as PMRs. Additional background on post-marketing requirements is available at the FDA website.

## COLUMN HEADINGS & EXPLANATIONS

- **Product Name:** [TRADE NAME (generic name)] Trade name used in the U.S. market (active ingredient[s] in the drug).
- **Due Date:** The date by which our company has agreed to a final submission relating to the post-marketing requirement to the FDA.
- **Status:** The status of the requirement at the last quarterly update (Pending, Ongoing, Delayed, Terminated, Submitted, Fulfilled and Released – see definitions below).
- **Explanation of Status:** An explanation is provided where appropriate.
- **PMR Description:** The description of the post-marketing requirement.

## U.S. POST-MARKETING REQUIREMENTS REPORT (3Q 2017)

Below are definitions of the status used for each requirement. These definitions are consistent with those of the U.S. FDA. There may be differences between the status of the information posted to this website and that on the FDA Post-Marketing Commitments website, due primarily to the differences in timing of the updates.

**Pending:** The study has not been initiated (i.e., no subjects have been enrolled or animals dosed) but does not meet the criterion for “delayed” (i.e., the original projected date for initiation of patient accrual or initiation of animal dosing has not passed).

**Ongoing:** The study is proceeding according to, or is ahead of, the original schedule. The FDA considers a study to be ongoing until a final study report is submitted to the FDA, as long as the activities are proceeding according to the original study schedule. If patient accrual or animal dosing has started but is not complete, and the projected date for completion of that milestone has passed, the study should be categorized as delayed.

**Delayed:** The progression of the study is behind the original study schedule. Delays can occur in any phase of the study, including patient enrollment, analysis of study results, or submission of the final study report to the FDA. While the original study schedule—not a revised schedule—serves as the basis for defining a study as “delayed,” each phase of the study will be considered in its own right. If the applicant has one delayed phase, but gets back on schedule during the next phase, the “delayed” status will no longer apply.

**Terminated:** The applicant ended the study before completion and has not yet submitted a final study report to the FDA.

**Submitted:** The applicant has concluded or terminated the study and has submitted a final study report to the FDA, but the FDA has not yet notified the applicant in writing that the study commitment has been fulfilled or that the commitment has been released.

**Fulfilled:** The applicant has submitted the final study report for the commitment, and upon review of the final study report, the FDA is satisfied that the applicant has met the terms of the commitment.

**Released:** The FDA has informed the applicant that it has been released from its obligation to conduct the post-marketing study because the study is either no longer feasible or would no longer provide useful information.

## Pricing Practices in the United States

As part of our ongoing commitment to transparency about our business operations, and to help people better understand our pricing practices in the United States, we are disclosing information about price increases for our medicines and vaccines.

This information includes the average annual list and net price increases across our product portfolio since 2010 and prospectively. The disclosure also includes the average discount rate for our medicines and vaccines each year.

These disclosures don't tell the complete story about how we are responding to concerns about access and affordability. We have a long history of discovering medicines and vaccines and making them accessible and affordable to people who need them. Additional information about our activities can be found on our [Access and Affordability](#) page. We also recognize that more needs to be done, and we welcome opportunities to work with stakeholders to find long-term solutions.

### REPORT ON PRICING PRACTICES IN THE U.S. (2010–2016)

Our initial report, [Pricing Action Transparency Report 2016](#), was first posted January 2017.



We know that doctors and patients look to us to provide accurate and balanced information about our products.

RESOURCES

- [Public Policy Position Statements: Direct-to-Consumer Advertising in the U.S.](#)
- [PhRMA Code on Interactions with Health Care Professionals](#)
- [Ethical Operating Handbook](#)
- [Sales and Marketing Compliance](#)

We adhere to strict ethical sales and marketing practices in all our businesses, whether pharmaceuticals, vaccines or animal health.

The best way for health care companies to provide product information is to maintain informative and ethical professional relationships with health care providers. Our interactions with providers, other customers and consumers are governed by laws and regulations, and by our long-standing global [Code of Conduct](#), “*Our Values and Standards*.” We enforce these external and internal standards through our Global Compliance Program.

We recognize that both our reputation for integrity and the trust that our stakeholders place in us are dependent on our ethical practices. Consequently, we want to make certain that the ways in which we market and sell our products to our customers—health care professionals, health insurers and governments—include accurate, balanced and useful information so that prescribers can make the best decisions for their patients. Our high ethical, sales and marketing standards require that scientific information is the predominant factor in prescribing decisions, reinforcing our reputation for providing high-quality products and for contributing to improvements in public health.

Our professional sales representatives and other employees inform our customers about our medicines and vaccines and their appropriate use. In some countries, where permitted by law, we may also directly inform patients and other consumers about diseases and available treatments that they may wish to discuss with their doctors.

We also sometimes market our products directly to consumers. We believe direct-to-consumer (DTC) advertising contributes to greater awareness about conditions and diseases, which can benefit public health by increasing the number of patients appropriately diagnosed and treated.

SALES & MARKETING SUMMARY	2012	2013	2014	2015	2016
Number of warning letters or untitled letters from OPDP <sup>1</sup> or APLB <sup>2</sup> in the U.S. <sup>3</sup>	1	0	0	0	0

1. OPDP: Since September 2011, the Division of Drug Marketing, Advertising and Communication (DDMAC) is now the Office of Prescription Drug Promotion (OPDP).

2. APLB: Advertising and Promotional Labeling Branch (APLB) of the FDA Center for Biologics Evaluation and Research.

3. Beginning in 2014, data now incorporates information from our Animal Health business.



## Ethical relationships with health care professionals are critical to our mission of helping patients be well.

An important part of achieving this mission is ensuring that health care professionals have balanced and accurate information about our products. All of our sales and marketing activities are conducted in accordance with our Guiding Principles for Ethical Business Practices Involving the Medical and Scientific Community. These principles are aligned with national regulations and worldwide industry codes, including the [International Federation of Pharmaceutical Manufacturers & Associations Code of Practice](#) and the [World Health Organization's Ethical Criteria for Medicinal Drug Promotion](#).

The principles serve as a bridge between countries' laws and regulations, industry guidelines, and our own [Code of Conduct](#), enabling us to interact with the medical and scientific communities, to meet our ethical and legal obligations, and to contribute to improvements in human health.

We provide promotional information in several ways, including:

- Product discussions between our professional representatives and health care professionals
- Promotional and/or educational meetings sponsored and organized by our company

We also provide non-promotional information through educational and scientific activities, including:

- Scientific presentations at medical conferences
- Support of independent continuing medical education (CME)
- Articles and related scientific studies published in peer-reviewed scientific journals
- Web-based tools such as Univadis®

Our interactions and informational materials must provide truthful, balanced and non-misleading information to health care professionals. All of our interactions with health care professionals are highly regulated by governments through laws such as the U.S. Anti-Kickback Statute; the Food, Drug & Cosmetic Act; the U.S. Foreign Corrupt Practices Act (FCPA); and anti-bribery laws in other countries.

Our company's robust anti-bribery/anticorruption program and corporate policy give our employees the awareness and knowledge to comply with applicable laws and regulations, and to understand that the company will not tolerate any act of impropriety. Our activities must comply not only with company policies but with applicable laws, including the laws of the U.S. and other countries in which we do business.

Our program prohibits the offer, promise or giving of any payment or benefit at any time to an individual or entity for the purpose of improperly influencing decisions or actions with respect to our business. This policy applies to direct engagements (e.g., those driven by our company) as well as to indirect engagements (e.g., those managed through a third-party intermediary or partner).

We conduct anticorruption/anti-bribery training with relevant employees, which is supplemented with additional training for employees who engage with non-U.S. government officials. In many countries, health care professionals are considered government officials because of their employment by a government hospital, or are advisers or decision makers for the government on matters that could affect our business.

## CONTINUING MEDICAL EDUCATION (CME) AND CONTINUING EDUCATION (CE) PROGRAMS

Our CME/CE Grant Program supports independent educational programs whose purpose is to maintain, develop or enhance the knowledge, skills and/or professional performance that health care professionals rely on to provide services for patients, the public or the profession. We are committed to ensuring that our CME/CE programs are educational and not promotional. Through them, we seek to increase physicians' knowledge about the latest scientific data and health care topics, thereby improving patient care.

The environment in which we sponsor or support educational programs worldwide is complex, governed by a multitude of laws, regulations, and medical or industry association guidelines. We are committed to honoring them all in the countries in which we operate.

CME programs that we support or sponsor are governed by an internal policy that is aligned with the appropriate standards and regulations to which the programs are held. Those standards, such as the Accreditation Council for Continuing Medical Education (ACCME) standards for commercial support of CME in the U.S., the [International Federation of Pharmaceutical Manufacturers & Associations \(IFPMA\) Code of Practice](#), and the standards of the [European Federation of Pharmaceutical Industry Associations \(EFPIA\)](#). These standards specify independence, financial disclosure, and other requirements applicable to CME programs sponsored by commercial entities, including pharmaceutical manufacturers. [Click here](#) to view a list of grants of more than \$500 made to U.S. organizations by our company's Global Human Health division in support of independent, accredited educational programs for health care professionals.

## U.S. MEDICAL FORUMS

We deliver balanced medical and scientific information to health care professionals within the U.S. through our company's Medical Forums, which are conducted by external speakers. Speakers are selected on the basis of their expertise in the relevant subject matter. By attending one of our Medical Forums, health care professionals participate in interactive learning on therapeutic and health care industry topics. The goal of these interactions is to help attendees achieve improved medical results for their patients.

With our strict standards for conducting these Medical Forums, we comply with the [PhRMA Code on Interactions with Health Care Professionals](#) as well as with FDA regulations, which assure that any product presentation is appropriately balanced with information regarding both the product's potential benefits and its risks, and is consistent with approved product labeling.

We disclose certain payments made to U.S. medical and scientific professionals who speak on behalf of the company. For a list of these disclosures, [click here](#).

## OBTAINING SERVICES FROM EXTERNAL HEALTH CARE PROFESSIONALS

We engage the services of external health care professionals only when we do not have the specialized talent or expertise internally, or when an external viewpoint is critical. We ensure that compensation provided to external health care

professionals is fair and reasonable, and is aligned with the fair market value of the service in the home country of the health care professional providing the service.

## **PRESCRIPTION PRODUCT SAMPLES**

Where sampling is permitted, our company has established country-specific guidance and policies on providing prescription product samples to health care professionals. This guidance specifies the appropriate distribution and use of samples to safeguard against the potential for misuse or abuse of our products, or the diversion of our products to inappropriate channels. In accordance with the law and with ethical practices, we do not provide product samples to reduce or discount the price paid or reimbursed, or in exchange for prescribing, purchasing or contracting for our products or for recommending our products for formulary status.

## **UNAPPROVED, OR “OFF-LABEL,” USE OF OUR MEDICINES AND VACCINES**

In accordance with laws, regulations, internal policies and ethical practices, our professional representatives and other members of our sales and marketing team are not permitted to promote product uses that are inconsistent with the approved product label, sometimes referred to as “off-label” promotion. We have policies and training in place to address violations, and we ensure that physicians are aware that we do not encourage off-label use.



We believe that direct-to-consumer (DTC) advertising can be an important and helpful way to inform patients about diseases that may be relevant to them and about therapeutic options they may want to discuss with their physicians.

#### RESOURCES

Public Policy Position Statements: Direct-to-Consumer Advertising in the U.S.

We conduct such advertising only in countries where DTC advertising is permitted. We try to help consumers achieve better health outcomes by delivering accurate, relevant and understandable information on disease prevention, identification and potential treatment. To remain true to this goal, we adhere to the letter and spirit of FDA regulations and guidelines governing DTC promotion, meet or exceed all [Pharmaceutical Research and Manufacturers of America \(PhRMA\) guidelines on DTC advertising](#), and follow a comprehensive set of internal policies and practices when engaging in DTC advertising within the U.S.

Our company has a long-standing policy of voluntarily submitting new U.S.-based DTC advertising campaigns to the FDA for its review and comment before running them. Under our DTC policies and practices, the information provided in our DTC advertising must:

- Contain appropriate product benefit and risk information.
- Be appropriately balanced, consistent with FDA regulations, and use appropriate “taste and tone.”
- If on television, run at appropriate times of the day or night and during appropriate programs.
- Be approved by our company’s Promotion Review Team (PRT), a governing body consisting of a team of reviewers (including the job owner, an attorney, a physician, a representative from the Office of Promotion and Advertising Review, and a product scientific specialist) who ensure that promotional material is clinically and scientifically accurate, compliant with applicable laws and regulations, and compliant with company policy. In addition, we include information on our [Patient Assistance Programs](#) in all new U.S.-based DTC print and television advertisements for eligible products.

We inform and educate health care professionals about our products before we advertise them to consumers. We implement comprehensive programs to educate physicians and other prescribers about a new product for an appropriate period of time before starting product-specific DTC broadcast advertising in the U.S. These principles and our practices are reflected in the [PhRMA Guiding Principles on Direct-to-Consumer Advertisements about Prescription Medicines](#).



We believe that our marketing, sales and advertising activities make an important contribution to medicine by informing our customers of treatment options based on the most recent scientific information and findings from rigorous clinical studies.

Our sales and marketing practices are governed by external laws and regulations and industry codes of conduct, and by our own global [Code of Conduct](#), our corporate policies and procedures, and our [Global Compliance Program](#). Our Compliance Program seeks to address and prevent inappropriate practices, and we evaluate our policies and practices as appropriate. Our practices are monitored and compliance is enforced to ensure that our interactions with customers and consumers help inform their decisions accurately and in a balanced manner. We believe that compliance with all policies governing scientific, business and promotion-related activities, in letter and spirit, is a corporate and individual responsibility of the highest order. Through our ethical behavior, we strive to ensure that scientific information predominates in prescribing decisions.

## MECHANISMS FOR FOSTERING ETHICAL SALES & MARKETING PRACTICES

The key principles of our Guiding Principles for Ethical Business Practices Involving the Medical and Scientific Community are as follows:

- We provide current, accurate and balanced information about our products; we share sound scientific and educational information; and we support medical research and education.
- Our employees are prohibited from offering health care professionals items of personal benefit, such as tickets to sporting events, support for office social events, or gift certificates for stores or golf outings. Where permitted, we may occasionally provide health care professionals with approved educational items that are not of substantial monetary value and that are intended primarily for educational purposes. Such materials may include medical textbooks, medical journals and anatomical models.
- Our employees and others speaking on behalf of the company may give presentations specifically designed to provide the type of information that practicing health care professionals have indicated is needed and most useful in the treatment of their patients, in accordance with U.S. FDA regulations and the regulations of other countries in which the presentations or discussions are taking place. In connection with such presentations or discussions, occasional modest meals may be offered to attendees and must occur in a venue and manner conducive to informational communication.
- A company representative may offer occasional modest meals to health care professionals in connection with an informational presentation; however, such meals must be in accordance with local codes and regulations.

Our sales representatives must provide truthful, non-misleading information in their interactions with the medical and

scientific community. Our compliance program is consistent with applicable laws and regulations, and is aligned with the [International Federation of Pharmaceutical Manufacturers & Associations \(IFPMA\) Code of Pharmaceutical Marketing Practices](#), as well as with regional and country industry codes, such as the [Pharmaceutical Research and Manufacturers of America \(PhRMA\) Code](#) and the [Compliance Program Guidance for Pharmaceutical Manufacturers](#), published by the Office of the Inspector General, U.S. Department of Health and Human Services. In addition to our global Code of Conduct and our Guiding Principles for Interactions with Health Care Professionals, we have several mechanisms in place to minimize noncompliance and foster ethical promotional practices:

**Hiring people with the right values, and then reinforcing those values:** We look for people who believe in a value system similar to ours. In our interview process, we try to ascertain how candidates make decisions. We are interested in people who will want to commercialize our medicines and vaccines based on the merits of our products and the applicable science.

**Maintaining strict control over promotional materials:** Every promotional claim we make throughout the world has to be approved by our medical and legal experts for accuracy and balance, in accordance with legal requirements and ethical considerations. In the U.S., we also submit new promotional materials to the FDA for new-product approvals and new indications prior to use.

**Ensuring strong medical, legal and compliance oversight:** Our medical, legal and compliance teams are active partners who foster ethical promotional practices, helping to achieve business goals by reducing risk and increasing compliance with the laws and guidelines in a highly regulated environment. Our medical, legal and compliance teams are also involved in ensuring that the sales force provides balanced information to physicians and health care decision makers.

**Implementing a promotional approach that reflects customer input:** Our sales and marketing teams actively seek input from health care professionals, consumers and payers to understand their needs regarding our common goal of improving patient outcomes. We incorporate their feedback into training efforts and promotional activities in order to build trustworthy partnerships with our customers and to achieve our common goal.

**Enforcing a performance management system that rewards ethical behavior:** Our companywide annual performance management system considers not only what an employee has achieved but also how he or she has done so.

**Working to raise marketing standards industrywide:** We are active on numerous industry association committees that address marketing standards.

**Conducting continuous oversight, monitoring and risk assessment:** We conduct ongoing oversight and monitoring of our key risk areas and of any activities that have been identified through our annual risk assessment process.

## INTERNATIONAL MEDICAL MEDIA STANDARDS

The review and approval of global promotional and educational materials for health care practitioners follow a comprehensive and strict process, as outlined in the International Medical Media Standards (IMMS) guidance document. The IMMS principles are followed by our employees on a worldwide basis, and define the concept of fairness and balance in the communication of scientific/educational information. All such materials are reviewed and approved by medical and legal personnel, captured in a global database, and assigned a unique identifying number and expiration date. All regional and country medical personnel involved in the review and approval of promotional/educational material receive comprehensive training on corporate policies, the IMMS, the medical-reviewer role, and the required database functionalities.

## TRAINING

As a condition of employment, all of our sales and marketing employees are required to be certified periodically on sales and marketing practices.

In the U.S., for example, employees who do not satisfactorily meet these training requirements may not conduct specific activities on their own and must repeat the training until they meet the requirements.

All new employees receive training and testing and must be certified on relevant policies and our company's ethical operating standards. And although many of our employees who market and sell our medicines and vaccines have advanced scientific or medical degrees and backgrounds, all of our sales representatives must complete general sales and product training. Training is specific to the country where an employee is based, and covers the scope of the employee's responsibilities in ensuring compliance with applicable laws and regulations.

Sales representatives in the U.S. are required to understand, among other things, their responsibilities under the Anti-Kickback Statute, the U.S. Prescription Drug Marketing Act, and all applicable FDA promotional regulations. Sales representatives are trained on anti-bribery and anticorruption laws such as the U.S. Foreign Corrupt Practices Act (FCPA) and the U.K. Bribery Act.

After this initial training, we require periodic training aimed at recertifying employees on relevant policies and practices in accordance with local and functional requirements. In addition to mandatory training on our Code of Conduct, employees receive training on other levels of business practice and compliance, according to their roles and responsibilities. We evaluate and update the content for all marketing and sales training periodically to ensure that it remains relevant and current.

## INDUSTRY CODES OF CONDUCT

The pharmaceutical industry as a whole recognized that more needed to be done to address concerns raised by public officials and stakeholders in the health care community. Self-regulating industry codes of conduct such as the IFPMA, EFPIA and PhRMA codes set the standards that govern the industry's sales and marketing practices and ensure that companies have adequate policies and procedures in place to comply with the codes.

## KEY COMPONENTS OF THE PHRMA CODE

Among the PhRMA Code's key components is an annual requirement for company CEOs and chief compliance officers to certify personally that they have processes in place that foster compliance with the Code. The Code also encourages companies to obtain third-party verification of their compliance policies and procedures. We have completed PhRMA Code certification in each of the last four years.

Other requirements of the Code have previously been incorporated into our already strong ethical business practices. For example, the company follows the standards for commercial support of continuing medical education established by the Accreditation Council for Continuing Medical Education (ACCME), and our Compliance Program requires that company representatives be periodically assessed to make sure they comply with relevant company policies and standards of conduct.



We have an extensive network of suppliers around the world.

RESOURCES

- California Transparency in Supply Chains Act
- Conflict Minerals Policy
- Business Partner Code of Conduct
- Supplier Performance Expectations
- MSD Modern Slavery Act Transparency Statement

The Procurement and Supplier Management function is responsible for maintaining the standards by which suppliers are identified, qualified and managed. Supplier selection and management follow a robust sourcing management process, in which supplier diversity principles are integrated throughout each stage.

## PROCUREMENT PRACTICES



## SUPPLIER AND THIRD-PARTY RISK MANAGEMENT

Supplier and third-party risk management is an enterprise-wide effort supported by Procurement, Supplier Management, the Office of General Counsel, Global Compliance, Global Quality, Corporate Audit and Assurance, and Environmental Health & Safety. Representatives from each function meet regularly to discuss, assess and manage issues that are risk-drivers.

Our [Business Partner Code of Conduct](#), along with our company's [Supplier Performance Expectations](#), are communicated to existing and potential third-party suppliers and are included in requests for information, proposals, and quotes, as well as in our purchase-order terms and conditions. We select suppliers that share our commitment to our values and principles, as defined in our Business Partner Code of Conduct and Supplier Expectations Letter. In addition, we participate in the Pharmaceutical Supply Chain Initiative's (PSCI's) [Pharmaceutical Industry Principles](#) and are a signatory to the [10 Principles of the United Nations Global Compact](#).

We have a defined risk-management process, and our supply base is measured against the process criteria. Using a risk-based approach, supplier assessments and audits are conducted based on multiple factors (e.g., risk profile, engagement and activity type, and geography). The assessments and audits evaluate a supplier's ability to meet both industry and our own standards for quality, safety, and ethical business practices. Results are reviewed by senior management across the company.

Our supplier assessments include:

- Labor and human rights
- Anti-bribery and -corruption
- Privacy and data protection
- Environmental, health and safety issues
- Quality
- Responsible sourcing of minerals
- Animal welfare
- Information technology
- Financial solvency

Where assessments and audits identify deficiencies or opportunities for improvement, we monitor suppliers to ensure that our concerns are addressed in a responsible and compliant manner. As part of our oversight and monitoring, we have established mechanisms to report, track and monitor adherence to plans to address nonconformance and help drive continued improvement.

## PROTECTING THE PRIVACY OF PERSONAL INFORMATION

Some of our suppliers and service providers, such as contract research organizations, market research agencies, information technology systems developers, and other service providers, process personal information in connection with their performance of services for our company. We require these suppliers and service providers to provide appropriate privacy protection for personal information that they handle in accordance with our privacy policies and applicable privacy laws, regulations and guidelines.

## SUPPLIER ASSESSMENT FOR LABOR PRACTICES AND HUMAN RIGHTS

In 2016, we continued to build upon our formal program to evaluate the risks for labor and human rights in our supply

chain. Prior to contracting, all new direct suppliers (as well as certain new indirect and research suppliers in certain geographies) are required to complete and return a Supplier Self-Assessment Questionnaire (SAQ) for Ethics & Compliance. In 2016, we also expanded the SAQ to include our pre-existing external manufacturing suppliers and contract manufacturing organizations. Our SAQ requires suppliers to answer a series of labor and human rights questions covering a range of subjects, including freely chosen employment, child labor, employment practices, employee disclosures, fair treatment, wages, benefits and working hours.

Each supplier's responses are used to judge whether or not that supplier has programs and/or procedures in place to address potential risks for labor and human rights.

In 2016, we built upon the formal audit program used to evaluate supplier compliance with our company's standards for labor and human rights. Two third-party audit firms were engaged to perform independent audits at a limited number of direct material and research suppliers' facilities.

These facilities were in countries identified as high risk for potential labor and human rights violations. Generally, audits were conducted over a two-day period, and included interviews and a review of relevant documentation. In total, 32 supplier facilities were audited in 2016. No critical observations were found. Our current plan is to audit 30 suppliers over the course of 2017.

## MANAGING EXTERNAL MANUFACTURERS OF OUR PRODUCTS

The company maintains strict quality standards—no matter where in the world our products are manufactured. Once we have made a decision to engage an external manufacturer, that manufacturer is required to comply with our business requirements, which are set forth in our contract with that supplier, regardless of geography.

Prospective external manufacturers of active pharmaceutical ingredients (APIs) and finished products are screened for environmental, health and safety (EHS) compliance, in addition to quality, and supply and technical competence requirements. The EHS screening includes a survey covering such topics as regulatory compliance, fatalities and major incidents.

Based on the screening results and activities undertaken by the supplier, certain external manufacturers are subject to a more detailed on-site assessment conducted by a multidisciplinary team, which may include our company's Quality, Environmental, Health and Safety, Global Technical Operations, and Procurement representatives. The external manufacturers we contract with are periodically reassessed using a risk-based approach; higher-risk external manufacturers are subject to more frequent on-site assessments. We expect that observations made during the audit process will be remediated by our external manufacturers, and we monitor and track corrective actions through completion.

We continue to support the [Pharmaceutical Industry Principles for Responsible Supply Chain Management \(the Principles\)](#). The Principles outline industry expectations for external manufacturers and licensees with regard to labor, health, safety, environment, ethics and management systems. The external manufacturers with which we contract are expected to understand and align with the Principles.

## GLOBAL ECONOMIC INCLUSION & SUPPLIER DIVERSITY

Our core values are driven by a desire to improve life, achieve scientific excellence, operate with the highest standards of integrity, expand access to our products, and employ a diverse workforce that values collaboration.

Global Economic Inclusion & Supplier Diversity (EI&SD) is a part of our overall Global Diversity & Inclusion (GD&I) strategy and supports our corporate vision. The EI&SD Center of Excellence (CoE) is a member of the GD&I Consortium, where EI&SD is one of four target areas focusing on increasing business performance through diversity and inclusion, creating a competitive business advantage, and driving shareholder value. The executive sponsor of the GD&I Consortium is our

company's Chief Financial Officer.

We have broadened the scope of our company's EI&SD process over the past few years from a national focus to a global one. Responsibility for EI&SD has expanded vertically and horizontally through all levels of the organization. EI&SD is managed under the Global Supplier Management Group (GSMG). As a result of commitment at the senior and executive levels of management, overall visibility and accountability have improved. The program's importance and value have increased significantly as a result.

Our company's Supplier Diversity Leadership Council (SDLC) convenes once a month to share information, identify opportunities, develop solutions, and plan appropriate actions.

In 2016, we achieved a 57 percent increase of spend with diverse suppliers, exceeding our corporate goal to achieve \$1 billion in spend with minority-owned, women-owned, veteran-owned, LGBT-owned and disability-owned business enterprises.

This accomplishment and our sustained efforts have earned us membership in the Billion Dollar Roundtable (BDR), an exclusive industry organization that recognizes and celebrates corporations that achieve spending of at least \$1 billion with minority- and women-owned suppliers headquartered in the U.S. Our membership in the BDR allows us to share and access best practices in supply chain diversity excellence with other organizations that have also achieved this status. Our spend goal with diverse suppliers for 2017 is \$1.2 billion. Our commitment to growing our small-business suppliers continues as we increase our small-business spend year over year.

## Our company is a proud member of the Billion Dollar Roundtable

From a global perspective, we exceeded our regional EI&SD goals in 2016. Europe, Middle East, Africa, Canada and South Africa achieved 118 percent and Asia Pacific, Japan and Latin America achieved 163 percent.

In addition to striving for supply chain excellence through inclusion principles and world-class supply, we focus on supplier development and increasing supplier capacity. In April 2016, our company held its second annual Economic Impact Summit in New Brunswick, New Jersey, and focused on "Being the Catalyst for Change." More than 160 people were in attendance, including representatives from more than 50 diverse-owned businesses, prime suppliers and global representatives from our company. The prime and diverse suppliers left the Summit with new ideas and relationships geared toward making a bigger impact in our communities by forming lasting partnerships.

In addition to being named a member of the Billion Dollar Roundtable in 2017, our company received many awards for distinguished performance related to supplier diversity in 2016. Among them are: National Gay & Lesbian Chamber of Commerce Top 30 US Company for Diversity, Women's Business Enterprise National Council Top Corporation for Women Owned Businesses, Diversity Inc. Top 50 Company for Diversity, and National Minority Supplier Development Council Gazelle Award.

## Performance

EHS ASSESSMENTS	2012	2013	2014	2015	2016
Prospective external manufacturers	42	55	48	50	34
Current external manufacturers	39	45	68	69	85
Total assessments	81	100	116	119	119

SUPPLIER DIVERSITY	2014	2015	2016
Diverse-supplier spend (in millions)	\$805	\$953	\$1,500
Small-business spend (in millions)	\$529	\$568	\$753



We believe good governance is integral to achieving long-term shareholder value. We are committed to governance policies and practices that serve the interests of our company and the company's shareholders.

#### RESOURCES

[Board Governance](#)  
[Governance Committee Charter](#)

In exercising our fiduciary duty to our shareholders, we take a long-term perspective on shareholder value that takes into account both our company's relationship with society as a whole and the interests of our many diverse stakeholders.

## THE BOARD

The primary mission of our Board is to represent and protect the long-term interests of our company's shareholders. The Board meets, at minimum, seven times per year to provide strategic direction and to review our progress on a wide variety of measures. In overseeing the affairs of the company, including our governance, the Board has established four [committees](#) to help fulfill our obligations to our shareholders.

Kenneth C. Frazier, our company's chairman of the Board, president and chief executive officer, is the only company executive serving on the Board. Leslie A. Brun serves as the Board's independent lead director. As lead director, Mr. Brun confers with management on matters involving the Board and serves as a liaison to shareholders on investor matters. Mr. Frazier is not a member of any of the Board's committees; only independent directors serve on those committees.

The Board has a balanced membership, representing a deep and diverse range of experience, expertise and backgrounds. While it is our company's philosophy that the full Board should consider and act on matters of significance, the committees assist it in carrying out its responsibilities and provide greater focus in key areas.

## BOARD INDEPENDENCE & PERFORMANCE

Some shareholders believe that the Board should be completely independent. Our policy is that the Board should consist of a substantial majority of independent directors, in accordance with the standard for independence established in our [Policies of the Board](#). As noted above, Mr. Frazier is the only member of the Board who is not independent.

For additional details on our Board's leadership structure, please see our company's [2017 Proxy Statement](#) (pages 28–34).

## CORPORATE MANAGEMENT

Our company's chairman, president and chief executive officer, Kenneth C. Frazier, is accountable to the Board. Our company's [Executive Committee](#), an internal management committee of company executives who report directly to Mr. Frazier, meets regularly to review our progress and to attend to other matters affecting our company.

## SHAREHOLDER ENGAGEMENT

We regularly communicate with our shareholders to better understand their perspectives, and have established a shareholder engagement program that is proactive and cross-functional. Throughout the year, members of Investor Relations, the Office of the Secretary, and Human Resources, along with other subject-matter experts within the company, engage with our shareholders to remain well-informed regarding their perspective on current issues, as well as to address any questions or concerns. These teams serve as liaisons between shareholders, members of senior management and the Board. This open and constructive dialogue with our shareholders has led us to make certain governance- and compensation-related changes over the past few years, including the adoption of proxy access, lowering of the threshold required for shareholders to call special meetings and various changes in the design of the long-term incentive plan. For additional details on shareholder engagement, please see our company's [2017 Proxy Statement](#).

## COMPLIANCE

Our company's Board of Directors and senior management, including the company's chief ethics and compliance officer and the Corporate Compliance Committee, oversee our company's [Global Compliance Program](#). Our compliance program is designed to maintain a culture that promotes the prevention, detection and resolution of potential violations of law or company policies. The program is dynamic, involving regular assessments to ensure that it is responsive to the company's evolving business and associated compliance risks. The Global Compliance Organization is led by the senior vice president and chief ethics and compliance officer, who reports directly to the chief executive officer and provides regular quarterly updates to the Audit Committee of the Board of Directors on the state of ethics and compliance at our company. This reporting structure supports open communications with senior leadership and the Board regarding important developments that relate to ethics and compliance.

## ENVIRONMENT, HEALTH & SAFETY GOVERNANCE

We are committed to full compliance with all environmental and employee health and safety laws and regulations, to engaging with our stakeholders concerning these issues, and to actively identifying, understanding and addressing potential environmental, health and safety (EHS) risks.

Our Executive Committee has established the EHS Council to provide enterprise-wide leadership and governance of our EHS compliance and performance. In addition to a corporate EHS policy, we are continuing to implement and sustain a robust compliance management program that effectively oversees and manages EHS issues affecting the company, in order to meet our responsibilities and commitments and to improve our performance.

## RISK MANAGEMENT

Our company's Corporate Audit and Assurance Services group is accountable to the Audit Committee of the Board of Directors for assessing the adequacy and effectiveness of the company's control environment in relation to financial reporting and operating processes. This responsibility includes the appropriate management and oversight of key company risks, in accordance with our corporate policy on audit, control and risk management.

## DISCLOSURE

We are committed to a policy of full, accurate and timely disclosure of all material information in order to keep shareholders and the investing public informed about the company's business and operations. Accordingly, we have established a corporate disclosure policy that articulates the standards, processes and governance for the company's disclosure practices. Pursuant to the policy, our Disclosure Committee oversees the company's disclosure practices and disclosure obligations.

## EXECUTIVE COMPENSATION

Our company's compensation programs are designed to align the interests of our executives with the interests of our shareholders. Each year, the Compensation and Benefits Committee of the Board of Directors considers the outcome of shareholder advisory votes on executive compensation when making decisions relating to the compensation of the company's executive officers, including the chief executive officer, and to our executive compensation program and policies.

In 2017, shareholders continued their strong support of our executive compensation programs, with 95 percent of the votes cast for approval of the "say on pay" proposal at the 2017 Annual Meeting of Shareholders. The Compensation and Benefits Committee believes that the voting results conveyed our shareholders' support of the philosophy, strategy and objectives of our executive compensation programs. Furthermore, we continue to engage in direct constructive dialogue with our shareholders regarding our executive compensation programs and policies to ensure that investors understand the manner in which these programs and policies support our long-term strategic objectives.

Additional information on our company's executive compensation programs, policies and practices can be found in our company's [2017 Proxy Statement](#).

## GOVERNANCE OF OUR RESEARCH AGENDA

The Research Leadership Team, headed by the president of our company's research laboratories, develops the divisional strategy, allocates resources, and manages the research and development portfolio. The Research Leadership Team is made up of the heads of functional areas within our research laboratories. Each area provides expert support of our medicine and vaccine candidates during the discovery and development process.

## SAFETY MONITORING

Our Global Clinical Safety and Pharmacovigilance organization collects, medically reviews, and evaluates and reports

adverse experiences to global health authorities in compliance with global regulatory reporting requirements. The global product safety teams within our research laboratories are responsible for monitoring the evolving safety profile of our medicines and vaccines. In parallel, at the country level, local pharmacovigilance teams at our subsidiaries worldwide are responsible for ensuring that adverse experience information is collected and reported to our global product safety staff at headquarters and to local regulatory authorities.

## CORPORATE RESPONSIBILITY GOVERNANCE

Our Office of Corporate Responsibility identifies corporate responsibility issues that are important to our business success and to our stakeholders, and formally manages targets and performance for those issues. In addition, the Public Policy Responsibility Council, comprising senior representatives of each major division and function of the company, provides executive-level oversight and guidance on corporate responsibility matters. To learn more, [click here](#).

## Performance

CORPORATE GOVERNANCE SUMMARY	2012	2013	2014	2015	2016
Independent directors on the Board	11	11	11	13	12
Percentage of Board members who are independent	92%	92%	92%	93%	92%
Separate chairman of the Board and CEO <sup>1</sup>	No	No	No	No	No
Lead independent director	Yes	Yes	Yes	Yes	Yes
Independent Audit Committee	Yes	Yes	Yes	Yes	Yes
Independent Compensation and Benefits Committee	Yes	Yes	Yes	Yes	Yes
Independent Governance Committee	Yes	Yes	Yes	Yes	Yes
Number of Board meetings scheduled or held <sup>1</sup>	7	7	8	8	8
Shareholder support of the advisory vote on executive compensation	97.18%	88.76%	95.81%	95.24%	94.31%

1. Meetings held in person or via telephone.



As part of our long-standing commitment to ethics and good corporate citizenship, we adopt policies and procedures to facilitate compliance with the laws and regulations that govern the way we market and sell our medicines, vaccines and other products.

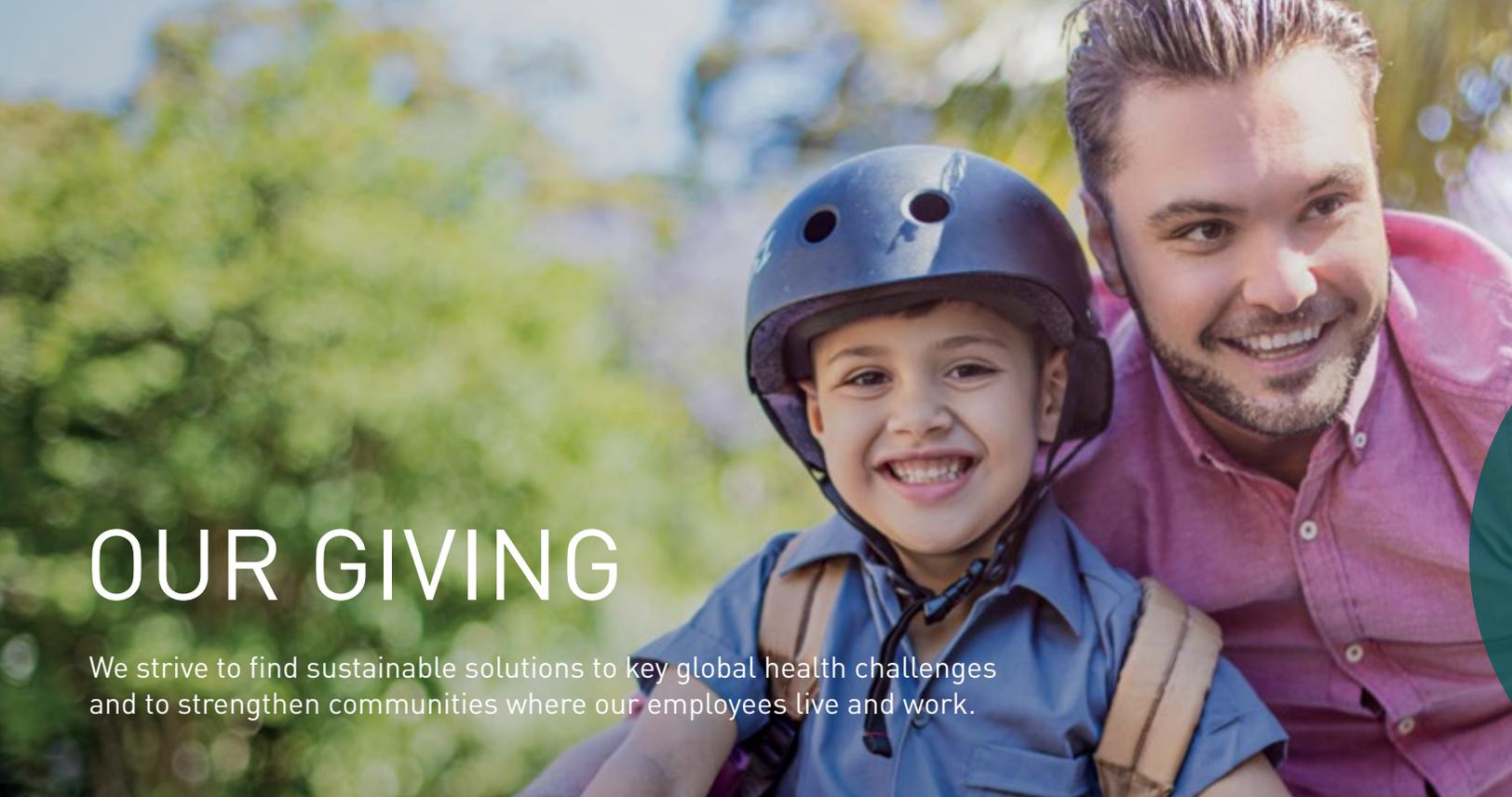
We have a well-established global compliance program that is consistent with the [International Federation of Pharmaceutical Manufacturers & Associations \(IFPMA\) Code of Practice](#) requirements, as well as other applicable regional or country industry codes of conduct, including those issued by the [Pharmaceutical Research and Manufacturers of America \(PhRMA\)](#) and the [European Federation of Pharmaceutical Industry Associations \(EFPIA\)](#).

Our global compliance program is built around the core elements of an effective compliance program.



Our company's Board of Directors and senior management, including the chief ethics and compliance officer and members of the [Corporate Compliance Committee](#), provide the foundational elements of leadership, accountability and structure to oversee the company's global compliance program.

The chief ethics and compliance officer reports directly to our company's CEO and provides regular quarterly updates to the Audit Committee of the Board of Directors on key indicators of ethical culture. This reporting structure supports open communications with senior leadership regarding important developments that relate to ethics and compliance.



# OUR GIVING

We strive to find sustainable solutions to key global health challenges and to strengthen communities where our employees live and work.

**Philanthropy is an important component of our company's commitment to corporate responsibility, and is a visible demonstration of our efforts to improve access to health and to strengthen communities where our employees live and work.**

## PRIORITIES & PERFORMANCE



Our giving priorities strengthen the effectiveness and impact of our company's philanthropy by focusing on

areas of global health need in which we have substantial expertise and capability.

We also provide financial support and share the expertise of our employees through grant and volunteer programs that address critical health needs and selected social issues in communities in which we have a presence.

## PRODUCT DONATIONS

It's not enough to discover and develop new medicines and vaccines. We also need to help get them to the people who need them, whether they live in communities with a fundamental lack of access to health care and services or are affected by acute or protracted humanitarian crises.



# \$2.1B

total market  
value of product  
donations in 2016



## THE SDGs & OUR GIVING

This graphic illustrates which of the UN SDGs most closely aligns with our philanthropic and volunteering efforts.

### SDG 17

#### Partnerships for the Goals

Strengthen the means of implementation and revitalize the global partnership for sustainable development

## EMPLOYEE VOLUNTEERING

During 2016, in celebration of our 125th year, we challenged employees to build on the company's legacy of service by volunteering a combined total of 125,000 hours in

their communities. Our employees far surpassed this goal by volunteering more than 214,000 hours.

Goal: 125,000 hours

Completed: 214,862 hours

## FELLOWSHIP FOR GLOBAL HEALTH

The MSD Fellowship for Global Health is a three-month, field-based corporate pro bono program designed to leverage the skills and talents of our employees worldwide. Between 2012 and 2017, 159 Richard T. Clark (RTC) Fellows from 29 countries have worked for 36 nonprofit organizations.



**36**  
nonprofit organizations

**29**  
countries



The 2017 RTC Fellows gathered for a reintegration workshop and recognition ceremony after completing their three-month assignments working with nonprofit organizations around the world to improve global health.



Philanthropy is an important component of our company's commitment to corporate responsibility, and is a visible demonstration of our efforts to improve access to health and to strengthen communities where our employees live and work.

#### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

Through our philanthropic programs, we have the ability to bring about positive change by addressing complex global health challenges and improving the quality of life in communities where we have a presence.

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### [Grant Application Guidelines](#)

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#### GUIDING PRINCIPLES

Several key principles guide our philanthropic investments and program portfolio.

We seek to:

- Address critical global health needs where we can have a meaningful impact
- Collaborate with key partners to optimize our effectiveness
- Leverage not only cash and product donations but also expertise and capabilities across our company

#### GIVING PRIORITIES

Our giving priorities strengthen the effectiveness and impact of our company's philanthropy by focusing on areas of global health need in which we have substantial expertise and capability.

Our priorities are:

### Health

Improve health care quality and health system capacity while also increasing access to care for underserved populations in areas where there are specific health challenges that have relevance to our company, namely Alzheimer's disease, cancer, diabetes, hepatitis C and HIV/AIDS. Through our program investments, we aim to support interventions that have shown evidence of effectiveness in advancing the quality of health services delivery, reducing health care disparities, fostering innovation in the delivery of health care, and empowering patients as active participants in managing their own health.

### Community

Provide financial support and share the expertise of our employees through grant and volunteer programs that address critical health needs and selected social issues in communities where we have a presence.

## Performance

GRANTS & CONTRIBUTIONS	2012	2013	2014	2015	2016
Grants and contributions (total cash, in-kind and product) (in millions) <sup>1</sup>	\$1,696	\$1,860	\$1,543	\$1,820	\$2,238
Cash grants and contributions (in millions)	\$70	\$107	\$111	\$133	\$117
Product donations through U.S. Patient Assistance Program (in millions)	\$559	\$566	\$433	\$567	\$798
Product donations for ex-U.S. programs and U.S. disaster relief (in millions) <sup>2</sup>	\$1,067	\$1,185	\$997	\$1,117	\$1,320
Valuation of employee volunteer time (in-kind, in millions) <sup>3</sup>	\$0.0	\$2.0	\$2.2	\$2.9	\$2.6

1. Beginning in 2013, total giving includes "in-kind" contributions.

2. Includes our Medical Outreach Program (including U.S. disaster relief), the African Comprehensive HIV/AIDS Partnerships, the MECTIZAN® Donation Program, the GARDASIL® Access Program (2012–2014 only) and MSD division and subsidiary donations.

3. Includes valuation of volunteer time for only those employees who participated in the MSD Fellowship for Global Health program and our company's Pro Bono Legal and other skills-based volunteer programs.



As a global health care company, we have a responsibility to help enable access to medicines, vaccines and quality health care worldwide.

#### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

We are committed to discovering smart, sustainable ways to expand access, especially in parts of the world where there are limited or no health care infrastructure and resources. Given the immensity of this challenge, we believe we can make the strongest contribution by working in partnership with others—governments, donors, patient organizations, health care professionals, nongovernmental organizations, academic institutions, multilateral organizations and the private sector.

We focus on select areas of global health need and relevance to our company, namely the following noncommunicable diseases (NCDs) and chronic conditions: Alzheimer’s disease, cancer, diabetes, hepatitis C and HIV/AIDS. Our program investments in these areas focus on innovative interventions showing evidence of effectiveness in improving health care quality and reducing disparities in access and health outcomes among underserved populations who are particularly burdened by these diseases.

## Key Programs

### ALLIANCE TO ADVANCE PATIENT-CENTERED CANCER CARE

With funding from our company’s Foundation, the Alliance aims to increase timely access to patient-centered care and reduce disparities in cancer care, especially for vulnerable and underserved populations in the United States. [Learn more.](#)

### AMERICAN CANCER SOCIETY—PATIENT NAVIGATION PROGRAM

With a four-year (2015–2018), \$1.58 million grant from our company’s Foundation, the American Cancer Society ([ACS](#)) is enhancing its substantial Patient Navigation Program in the United States to improve care coordination, promote patient activation and increase access to high-quality cancer care in three communities where substantial health care disparities exist. The program sites that the ACS has selected for participation in the community-based program include the Queens

Hospital Center, in Queens, New York; the Multicare Regional Cancer Center, in Auburn, Washington; and the University of New Mexico Cancer Center, in Albuquerque, New Mexico.

This program aims to:

- Support patients in overcoming barriers to timely initiation of treatment
- Enhance coordination of care
- Empower patients with the information and skills to more actively engage in their health care, treatment planning and shared decision-making
- Advance best practices in patient navigation

The program provides training in participating communities for ACS lay patient navigators on concepts of care coordination and patient activation, as well as effective patient-provider communication on such topics as treatment planning, palliative care and survivorship, among others. Through this project, ACS is also developing a navigation toolkit and online training modules to guide ACS navigation programs in implementing process improvements to support consistent high-quality patient navigation.

The ACS is implementing a robust evaluation of the program. Final results are anticipated in 2019.

## **BRIDGING THE GAP: REDUCING DISPARITIES IN DIABETES CARE**

With funding from our company's Foundation, *Bridging the Gap* aims to improve access to high-quality diabetes care and reduce health disparities among vulnerable and underserved populations with type 2 diabetes in the United States. [Learn more.](#)

## **CAMDEN COALITION OF HEALTHCARE PROVIDERS—BUILDING A COMMUNITY-BASED MEDICAID ACO**

Through a two-year grant (2015–2016), our company's Foundation supports the [Camden Coalition Accountable Care Organization \(ACO\)](#), which seeks to provide better care at lower costs for all Medicaid beneficiaries in Camden, New Jersey. The Camden Coalition ACO membership includes four health systems, 12 primary care practices and nearly 40,000 patients. Additionally, the ACO engages specialty and behavioral health providers, social services, community organizations and local residents, all of whom work collectively to improve health care delivery, particularly for the most vulnerable and high cost patients.

The Camden Coalition ACO initiatives coordinate traditional medical care with critical social services aligned with its strategies to improve care delivery and to reduce costs citywide.

- ACO partners are trained in and given access to [the Camden Coalition Health Information Exchange \(Camden Coalition HIE\)](#), a centralized system for population health data-sharing. Local and regional (South Jersey) participating providers have real-time access to shared clinical information to identify opportunities for clinical interventions, coordinate care, and reduce unnecessary medical tests.
- Camden Coalition ACO members participate in the [7-Day Pledge](#), a citywide campaign to ensure that all ACO patients who are hospitalized and have two or more admissions in six months meet with their primary care provider within seven days of discharge from the hospital. In concert with the 7-Day Pledge, practices have monthly and quarterly meetings with the Camden Coalition to engage in quality improvement and capacity-building activities.
- Patients who frequently use local health systems are eligible for enrollment in the Camden Coalition's [Community Care Management Initiative](#), which engages patients with complex health and social needs in an intervention predicated on the patient's goals and the development of [authentic healing relationships](#). Through this initiative, patients have access to a variety of interventions to address their health and social needs, including the Camden Coalition's [Housing](#)

[First](#) initiative.

- Citywide care coordination is improved through tools like [MyCamdenResources.org](#), which provides step-by-step instructions on how to connect patients with local services. The website was developed by the [Camden Coalition](#) and is powered by [Aunt Bertha](#).

These initiatives are informed by public input, officially represented by the [Community Advisory Council](#), as well as analysis of integrated data. The Camden Coalition ACO is currently in its third year of a shared savings contract with two managed care organizations. A comprehensive evaluation by the Rutgers Center for State Health Policy (Rutgers CSHP) is currently underway. Results from the evaluation are anticipated in late 2018.

## NORTH CAROLINA AT&T STATE UNIVERSITY CENTER FOR OUTREACH IN ALZHEIMER'S, AGING AND COMMUNITY HEALTH

Our company's Foundation has expanded its partnership with the North Carolina A&T State University Center for Outreach in Alzheimer's, Aging and Community Health (COAACH) with a \$2 million, four-year (2016–2019) grant to support several Alzheimer's disease programs.

This includes:

- **Caregiver College:** This program will provide support, education and training for caregivers of family members affected by Alzheimer's disease to help improve awareness, care management and coping strategies.
- **Lay Health Advisor (LHA):** This program will promote health and wellness in rural North Carolina communities. Trained LHAs will help raise disease awareness and provide information about community resources to assist patients with Alzheimer's and their families.
- **Family Navigation:** This program will help overcome barriers to timely screening, diagnosis, treatment and supportive care for families affected by Alzheimer's disease.

COAACH is developing a plan to assess the impact of its programs. Results of the assessment are anticipated in 2020.

## PROJECT ECHO® IN INDIA AND VIETNAM

In early 2017, our company's Foundation launched a new partnership with the Extension for Community Healthcare Outcomes (ECHO) Institute™ at the University of New Mexico Health Sciences Center. Through a \$7 million, five-year (2017–2021) grant, the partnership will expand the replication of [Project ECHO®](#) in underserved communities in India and Vietnam. Through this partnership, we aim to improve access to specialty care for complex, chronic conditions such as hepatitis C, HIV, tuberculosis, and noncommunicable diseases, including diabetes and mental health conditions. [Learn more.](#)

## UNIVERSITY OF NORTH CAROLINA (UNC) SCHOOL OF PUBLIC HEALTH—DIABETES PEER SUPPORT PROGRAM IN SHANGHAI, CHINA

Our company's Foundation recently launched a three-year (2016–2018) partnership with the UNC School of Public Health to support the development, implementation and evaluation of a diabetes peer support program, based on the [Peers for Progress](#) model, in 10 Community Health Centers in Shanghai, China. This program will help improve diabetes self-

management, treatment adherence and quality of life among people living with diabetes.

The UNC School of Public Health will be working with in-country partners, including the Shanghai Sixth People's Hospital (S6PH), Shanghai Health Bureau and Shanghai Centers for Disease Control. The peer support program will complement the ongoing Shanghai Integration Model, led by S6PH, which integrates primary and specialty care to help improve the quality and efficiency of health care delivery.

The UNC School of Public Health and its partners plan to develop and implement a robust program evaluation. Anticipated outcomes to be evaluated include:

- Patterns of care, including attendance at regular care, follow-through on referral to specialty care, and perceptions by patients as well as primary and specialty care providers of the continuing need for integration of care.
- Components of care, including medication adherence as well as key aspects of disease self-management, such as healthy diet and physical activity.

Results from the program evaluation are anticipated in late 2019.

## YMCA'S DIABETES PREVENTION PROGRAM

With a three-year (2016–2018), \$2 million grant from our company's Foundation, the YMCA will expand its Diabetes Prevention Program in 60 communities across five U.S. states: Illinois, Kentucky, New Jersey, Pennsylvania and Texas. The YMCA's [Diabetes Prevention Program](#) is an evidence-based chronic-disease prevention program that aims to improve the health of participants with prediabetes through modest weight loss achieved by healthy eating and physical activity. It is also part of the [National Diabetes Prevention Program](#) led by the U.S. Centers for Disease Control and Prevention.



Our goal is to have a positive influence on the communities in which we operate around the world.

RESOURCES

- [Grant Application Website](#)
- [Grant Application Guidelines](#)
- [Neighbor of Choice Application Guidelines](#)
- [Neighbor of Choice Participating Sites](#)

Our community engagement programs reflect the priorities that our company shares with the local community. Our signature [Neighbor of Choice](#) program is designed to help build strong and vibrant communities by promoting a healthier society and preserving the environment in localities where we have a major site presence. The program provides financial support and enables our employees to contribute to the well-being of their communities.

[Learn more](#) about our economic impact on communities.

**CONTRIBUTIONS TO COMMUNITY PROGRAMS**

	2012	2013	2014	2015	2016
Art	\$612,000	\$412,500	\$729,325	\$735,000	\$608,000
Civic	\$1,358,000	\$924,448	\$1,350,950	\$135,375	\$11,500
Education	\$404,000	\$630,644	\$923,465	\$586,277	\$600,263
Environment	\$125,000	\$157,977	\$148,665	\$123,144	\$392,422
Human Health Services	\$867,000	\$1,794,977	\$1,941,185	\$2,690,459	\$2,721,534

## The Children’s Inn at NIH

Our company’s partnership with The Children’s Inn at NIH spans more than 25 years. Our company provided \$3.7 million through a public-private partnership for the initial construction of [The Children’s Inn](#) at the National Institutes of Health (NIH), the world’s premier biomedical research center, in Bethesda, Maryland. The Inn opened in 1990 and, since then, seriously ill children involved in treatment at the NIH have had a place to call home.

Most children who come to the NIH for treatment are facing life-threatening illnesses that resist conventional therapy. Since its opening, The Inn has hosted more than 13,000 children from all over the U.S. and from more than 94 other countries. Our Foundation helps cover The Inn’s operating costs, and also provided a grant of \$3.7 million in 2001 to build a 22-room addition, completed in 2004, increasing The Inn’s capacity to 59 rooms. Our employees also have generously supported The Inn through personal contributions as part of our company’s [Partnership for Giving \(P4G\)](#) program.

Since 2009, our Foundation has committed \$10 million through 2018 to support the establishment and operations of a transitional home adjacent to the NIH campus, called The Woodmont House. This home can accommodate up to five families at a time whose children are no longer in the acute phases of illness, yet still require treatment at the NIH Clinical Center. Families stay free of charge and may participate in all of The Inn’s activities and programs. To date, The Woodmont House has served more than 294 children and their families from 42 U.S. states and Puerto Rico, and 18 other countries.

The Inn and The Woodmont House participate in the ongoing *Isolate Inn* program. This program provides accommodations for families with children who must be isolated from the general pediatric population to avoid potential infections that would severely affect children with compromised immune systems. To date, the *Isolate Inn* program has served more than 40 patients, with 10 long-term isolation patients staying at The Woodmont House.

## Neighbor of Choice

Our signature Neighbor of Choice (NOC) community program supports the work of local nonprofit organizations that strive to improve people’s quality of life and to preserve the environment in communities in which we have a presence.

Established in the 1990s, the NOC program fosters partnerships with local nonprofit organizations whose mission is to promote the well-being of community residents. We provide financial resources, enhanced by employee volunteerism, to support community programs that aim to improve health care quality and increase access to care for underserved populations in the areas of cancer, diabetes, heart disease, hepatitis C, HIV/AIDS and maternal health. We also strive to advance the quality of health services delivery, strengthen local health system capacity, and protect the environmental health of the local community.

### NEIGHBOR OF CHOICE GIVING TOTALS

	2012	2013	2014	2015	2016
Amount contributed (in millions) <sup>1</sup>	\$2.8	\$2.3	\$2.2	\$2.5	\$3.1
Number of grants	170	181	126	129	118

1. Data include funding provided through the Office of Corporate Responsibility and our company’s Foundation. Additional funding is provided through local U.S. sites and our company sites outside the United States that we do not track centrally.

In 2016, our company invited nonprofit organizations in 20 communities in which we have a major presence to apply for funding support. Factors that determine our local sites’ participation in the NOC program include whether we have a manufacturing presence, the number of employees at the site, and community need.

In accordance with NOC program guidelines, a total of \$3.1 million in grants was awarded to 118 nonprofits in support of a wide range of environmental and health services initiatives.

Below are examples of projects supported through the NOC grants program throughout 2016.

## UNITED STATES

### Boys and Girls Clubs of Durham and Orange Counties, North Carolina

With support from the NOC program, the Boys and Girls Clubs of Durham and Orange Counties (BGCDOC) implemented its Healthy Futures program, created to increase learning through high-yield learning activities. Healthy Futures helped young people apply what they learn in the classroom through hands-on learning and education about health, fitness and the environment, and the correlations among all three. The program included long- and short-term projects—building and planting vegetable and flower beds, initiating a “fun field day” as a culmination of fitness learning and staying active, and food demonstrations that show children what is in the food they eat.

The Healthy Futures initiative has so far served approximately 200 children in the program. This number will increase to more than 250 by the end of the academic year. The program has also provided yoga sessions in which the children participate twice weekly (all age groups) to benefit their physical health. A local Durham cooking school, C’est si Bon, partnered with the program to provide a Spring Break cooking camp for 16 of the top students attending BGCDOC.



THREE VOLUNTEER ACTIVITIES ENGAGING OVER 50 OF OUR EMPLOYEES TOOK PLACE IN 2016 AT THE BOYS & GIRLS CLUBS OF DURHAM AND ORANGE COUNTIES (BGCDOC).

#### **Sociedad Americana Contra el Cáncer de Puerto Rico, Puerto Rico**

The Neighbor of Choice Program supported the Puerto Rico Hope Lodge (PRHL) of the American Cancer Society of Puerto Rico. PRHL is the first and only lodge for cancer patients who must travel away from home for treatment. With support from NOC, PRHL was able to provide 5,930 free nights to pediatric and adult cancer patients. Patients and caregivers who had the opportunity to stay at the PRHL received support from other families and caring staff. They also made friends and received access to needed services, support programs and counseling.

#### **Opportunities Industrialization Center of Wilson, Inc., North Carolina**

The Opportunities Industrialization Center of Wilson, Inc. (OIC), is a cornerstone of social support and community leadership in the African-American and Latino communities. The Center's vision is to help those ethnic groups reach and maintain optimal health, become advocates for healthy lifestyles, and encourage their peer groups and family members to make informed choices for their health. The ultimate goals of the OIC are to reduce diabetes-related deaths, prevent complications from diabetes, and help lower the costs related to the treatment of diabetes.

Support through the NOC program helped OIC promote diabetes awareness, prevention and testing for Wilson County residents. Through the various services, OIC tested 184 people for diabetes. Of those 184 tested, 43 percent of the clients had high blood glucose levels. Clients with a high blood glucose level who were unaware of their condition were offered counseling services. During counseling, clients were informed about the risks associated with elevated blood glucose levels and were referred to a local health clinic for follow-up care. In addition, OIC worked on the clients' behalf to communicate with the health clinic and schedule appointments. In addition, our employees at the Wilson, NC, site volunteered over 130 hours at OIC during quarterly food distributions.

## **THE NETHERLANDS**

#### **Alzheimer's Residential Centers in Boxmeer, Haarlem and Oss, Netherlands**

In the Netherlands, more than 270,000 people (out of approximately 17 million inhabitants) suffer from dementia. It is expected that this number will grow to more than 500,000 by 2040. The Dutch health care system aims to provide care for people in their own home environment as long as possible and to admit them to residential care centers only if it is no longer possible to provide responsible care in a person's home environment. In 2016, MSD in the Netherlands partnered with three residential centers to enhance the well-being of their clients by offering sensory stimulation equipment.

## FRANCE

### Conservatoire d'espaces naturels d'Auvergne (CENA), Mirabel, France

Our site in Mirabel, France, worked with the Conservatoire d'espaces naturels (CEN) d'Auvergne to initiate a project designed to protect and restore the dry hills of Mirabel-Bourassol. In order to maintain a functional network of natural spaces, the CEN d'Auvergne protects 13 sites of dry lawns within 20 kilometers around the hills of Mirabel-Bourassol, a site that MSD shares with the local community. CEN d'Auvergne used the grant they received through the NOC to support the purchase of equipment designed to increase its capacity to protect the hills and facilitate the efforts of more than 100 volunteer workers. In 2016, 100 CEN d'Auvergne volunteers and 25 CEN employees worked on projects that included maintaining discovery paths and clearing specific plots to help the natural environment thrive.



An Auvergne Conservatory of Natural Areas (CENA) volunteer uses a vegetation clearing machine, purchased with Neighbor of Choice grant funding, to clear brush.

## Disaster Relief

Our company provides disaster-relief assistance through cash and product donations during major disasters and supports efforts in disaster preparedness and recovery.

Through our disaster relief efforts, we aim to respond in a timely, coordinated manner; to meet the immediate needs of affected communities; to provide ongoing assistance through recovery (as needed); and to support preparedness efforts as appropriate.

It is our practice to base our response on the assessment of need by local authorities and/or humanitarian relief agencies.

Where appropriate, and in consultation with local management, our company may donate pharmaceuticals and vaccines through the disaster and emergency relief component of our [Medical Outreach Program](#). In major disaster situations, donations of our medicines may be made directly by a local subsidiary or manufacturing facility.

**DISASTER & EMERGENCY RELIEF SUMMARY**

	2012	2013	2014	2015	2016
Disaster relief efforts assisted	6	10	10	12	6
Total giving value of disaster relief contributions (cash and products, US\$M)	2.7	3.3	10.0	5.6	13.4

**RESPONSE TO EARTHQUAKES**

In 2016, Ecuador, Italy and Japan were hit with devastating earthquakes, which resulted in massive human casualties and injuries. Together with local MSD subsidiaries and the local branches of the Red Cross Society, our company responded quickly to support immediate relief efforts. In addition our company worked with our subsidiaries to support local product donations, match employee donations, and provide additional support to the Red Cross Society to fund ongoing relief efforts.

**RESPONSE TO RECORD FLOODING IN THE UNITED STATES**

Severe flooding in Louisiana, Texas and West Virginia in 2016 claimed many lives and displaced hundreds of thousands of people in the United States. Our company responded quickly, first ensuring the safety of local employees who were directly impacted by the storm and then donating over \$200,000 in product value to help fill the gaps for local clinics, where medicine supplies were damaged by the storms. In addition, our company's annual support for the American Red Cross (ARC) Disaster Giving Program includes assistance in building a reliable funding base that enables the ARC to respond immediately to the needs of individuals and families impacted by such disasters.

**RESPONSE TO HURRICANE MATTHEW**

On October 4, 2016, Hurricane Matthew, a category 4 hurricane packing sustained winds of 145 mph, made landfall in Haiti. Hurricane Matthew caused severe damage across Haiti, other Caribbean countries and the southeastern United States. Impacting more than 2 million people across the Caribbean, the storm claimed more than 1,000 lives and left more than 1 million people in dire need of shelter and access to medicine, clean water, food, and clothing and other essential items and services.

In response, our company made an immediate donation of \$150,000 to the American Red Cross to support disaster relief efforts, including those of the Haitian Red Cross. Through our [Medical Outreach Program](#), we also donated medicines to Project HOPE, which sent a team of medical professionals to Haiti to support the national health care system.

Two months after the hurricane, recognizing that thousands of Haitians were still in need of basic necessities, our company provided an additional \$100,000 in cash contributions to Americares, Direct Relief International, and World Vision. With additional product donations to Americares and Direct Relief, the company provided a total of \$12.3 million in medicines to relief organizations working with those affected by the hurricane.

## AMERICAN RED CROSS

Our company is a long-standing member of the American Red Cross Annual Disaster Giving Program ([ADGP](#)). In 2014, our company's Foundation pledged \$2.4 million over four years (2014–2018) to support the ADGP and to help ensure that the Red Cross can be on the scene of a disaster as quickly as possible.

Our support helps the Red Cross deliver assistance immediately across affected areas in the U.S. and globally, working in partnership with local agencies. For example, the financial support our company provided through the ADGP was used to help the Red Cross coordinate with Ecuador's Red Cross and its global network to quickly scale up the response following that country's earthquake.



Our company's Foundation (the "Foundation")—established in 1957—is funded entirely by the company and is our chief source of funding support for qualified nonprofit charitable organizations.

#### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

The Foundation supports eligible nonprofit organizations and innovative programs that are aligned with our two focus areas: [Health](#) and [Community](#).

Since its inception, the Foundation has contributed more than \$870 million to support initiatives that address important societal needs in a manner consistent with our company's overall mission to help the world be well.

The following [priorities](#) guide the Foundation's strategic partnerships and program investments:

## HEALTH

We strive to improve healthcare quality and health system capacity and to increase access to care for underserved populations in selected disease areas of global need and relevance to our company. We focus on the following noncommunicable or chronic conditions: Alzheimer's disease, cancer, diabetes, hepatitis C and HIV/AIDS.

Key initiatives include:

- [Alliance to Advance Patient-Centered Cancer Care](#)
- [American Cancer Society—Patient Navigation Program](#)
- [Bridging the Gap: Reducing Disparities in Diabetes Care](#)
- [Camden Coalition of Healthcare Providers—Building a Community-Based Medicaid Accountable Care Organization](#)
- [HIV Care Collaborative](#)
- [North Carolina A&T State University Center for Outreach in Alzheimer's, Aging and Community Health \(COAACH\)](#)
- [Project ECHO® in India and Vietnam](#)
- [University of North Carolina School of Public Health—Peer Support Diabetes Program in Shanghai, China](#)

- [YMCA's Diabetes Prevention Program](#)

## COMMUNITY

We provide financial support and share the expertise of our employees through grant and volunteer programs that address critical health and selected social issues in communities where we have a presence.

Key initiatives include:

- [Neighbor of Choice Program](#)
- [Partnership for Giving](#)
- [The Children's Inn at NIH](#)



It's not enough to discover and develop new medicines and vaccines. We also need to help get them to the people who need them.

#### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

One important way to achieve that goal is through donations of medicines and vaccines that address specific health needs, whether in communities with a fundamental lack of access to health care and services or in acute or protracted humanitarian crises.

Our product donation programs and initiatives include:

#### [MECTIZAN® Donation Program](#)

One of the most significant initiatives undertaken by our company to help enable access to medicines in developing countries. Established 30 years ago, the MECTIZAN Donation Program is the longest-running disease-specific drug donation program and public-private partnership of its kind, and is widely regarded as one of the most successful public-private health collaborations in the world.

#### [Medical Outreach Program](#)

The primary mechanism through which we donate our pharmaceuticals and vaccines for humanitarian assistance in the developing world and in support of disaster relief and emergency response worldwide.

#### [U.S. Patient Assistance Programs](#)

We provide our company's medicines and adult vaccines free of charge to people who do not have prescription drug or health insurance coverage and who, without our assistance, could not otherwise afford them.

## Performance

MECTIZAN® (IVERMECTIN)	2012	2013	2014	2015	2016
Direct investment in the MECTIZAN Donation Program (in millions)	\$5.50	\$5.50	\$5.50	\$5.80	\$3.74
Total treatments approved (in millions) <sup>1</sup>	229	295	257	176	283
Treatments approved for river blindness	85	128	39	55	64
Treatments approved for lymphatic filariasis (LF)	109	127	147	94	141
Treatments approved for joint river blindness and LF programs	35	40	71	27	78
Market value of MECTIZAN donations (in millions)	\$906	\$1,092	\$861	\$1,083	\$1,187

MEDICAL OUTREACH PROGRAM (MMOP)	2012	2013	2014	2015	2016
Value of donations of medicines, vaccines and consumer care products (in millions) <sup>2,3,4</sup>	\$86.30	\$69.40	\$110.20	\$31.10	\$31.12
Disaster relief contributions (product) (in millions) <sup>2</sup>	\$0.78	\$2.40	\$8.50	\$4.70	\$13.41

U.S. PATIENT ASSISTANCE PROGRAMS	2012	2013	2014	2015	2016
30-day prescriptions filled (millions)	2.2	1.2	1.6	1.6	1.7
Total value of our company's medicines dispensed (in millions) <sup>5</sup>	\$559.00	\$566.40	\$432.90	\$566.60	\$798.00

1. Additional detail from previous reports to provide more detailed breakdown of donation by disease.

2. We set the value of our product donations based on the U.S. wholesale acquisition cost.

3. Figure includes the value of product donations through the MMOP program only.

4. The 2014 figure does not include donations of our company's consumer care items. All our Consumer Care donations made in 2014 are captured in the subsidiary and divisional figure (\$2.8M in 2014). Effective October 1, 2014, Bayer AG purchased our company's Consumer Care business.

5. Totals are based on the U.S. wholesale acquisition cost (WAC) and cover all programs.



## Giving Governance

We recognize that our external stakeholders, including customers, communities, neighbors and shareholders, have an interest in how we conduct ourselves and how we support our commitment to society.

### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

Our philanthropy must reflect efficient, responsible and ethical judgment and behavior. Consequently, our charitable contributions are periodically audited to ensure consistency in our giving criteria and grant-making, as well as adherence to compliance and transparency requirements. Additionally, our Foundation's Board of Trustees provides oversight and strategic direction for the Foundation's program investments.

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Our Office of Corporate Responsibility provides cash and product donations, and also coordinates employee volunteerism and disaster-relief assistance. The Foundation serves to fund qualified, eligible nonprofit and philanthropic organizations.

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We use an online [grants management system](#) that allows qualified, eligible nonprofit organizations seeking cash contributions to submit proposals and supporting documents electronically. The system also facilitates the submission of all required compliance documentation and helps ensure consistent review of grant requests.

We manage our philanthropic giving in two ways:

1. The Office of Corporate Responsibility supports charitable programs through cash and product donations and [employee volunteerism](#). It also coordinates the company's [disaster-relief](#) assistance throughout the world.
2. Our company's [Foundation](#), funded entirely by the company, serves as the chief source of funding support to qualified, eligible nonprofit charitable and philanthropic organizations whose initiatives address important societal needs and whose goals are consistent with our giving priorities.

## CHARITABLE GRANTS

We report the company's [charitable contributions and the Foundation's grants](#) on this website and update the information quarterly.



Around the world, our employees take an active role in giving back to their communities through a variety of programs.

#### RESOURCES

[Grant Application Website](#)  
[Grant Application Guidelines](#)

Each year, our employees donate thousands of hours to help to improve the health and well-being of communities around the world through programs such as [MSD for Mothers](#), the [MSD Fellowship for Global Health](#), and a range of volunteer activities, mission trips, and disaster relief efforts.

During 2016, in celebration of our 125th year, we challenged employees to build on the company's legacy of service by volunteering a combined total of 125,000 hours in their communities. Our employees far surpassed this goal by volunteering a total of 214,862 hours. Those who helped achieve these numbers did so, in part, by taking advantage of our innovative global employee volunteerism policy.

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“I am so very proud of our ongoing commitment to address global health through our spirit of invention and the many large and small ways we make our communities better.”

Dr. Julie Gerberding  
Chief Patient Officer

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Our corporate policy on volunteerism provides employees with the opportunity to take up to 40 hours of paid time off annually to engage in volunteer activities that support eligible nonprofit organizations. Additionally, employees in the U.S. and Puerto Rico are encouraged to participate in Partnership for Giving, our dollar-for-dollar matching gift program, and Dollars for Doers, a volunteer rewards program.

# Volunteering

## MSD FELLOWSHIP FOR GLOBAL HEALTH

The [MSD Fellowship for Global Health](#) is a three-month, field-based corporate pro bono program designed to leverage the skills and talents of our employees. It pairs employee skills with the needs of nonprofit partner organizations around the world to provide meaningful and systematic improvements in health service delivery for people in the greatest need. [Learn more.](#)

## SKILLS-BASED VOLUNTEER PROGRAM

Our innovative skills-based volunteer program is available to our employees in the U.S. and Puerto Rico. The program offers employees the opportunity to donate their professional skills through virtual, short-term projects that provide important capacity-building support for nonprofit organizations. Whether volunteering for a one-hour phone consultation or a 30-hour project, employees are given the opportunity to provide meaningful volunteer support for nonprofits in need, while using their professional skills in different and challenging environments.

Our employees find these projects to be enjoyable and gratifying experiences that provide opportunities to enhance their individual skill sets. Since its launch in 2015, more than 650 employees have registered on the site and over 76 projects have been completed or are under way, representing over 2,020 volunteer hours donated.

## MAKING POSITIVE CHOICES

Through the Making Positive Choices initiative, employees from New Jersey and Pennsylvania volunteered to have a positive influence on the lives of underserved and at-risk children and young adults through the three programs offered and administered by Street Law, Inc.:

- **Community Works:** Helping teens to prepare for participating in their communities in a positive way
- **Career Exploration:** Preparing high school students to achieve academic and career goals
- **Youth in Transition:** Providing youth in the foster care system with instruction in basic life skills and guidance to navigate community resources to help them live independently

Throughout 2016, more than 75 employees contributed 723 volunteer hours, reaching more than 500 students in school and community settings.

## PRO BONO LEGAL PROGRAM

Our company's Pro Bono Legal Program has been serving the poor and disadvantaged for over 22 years. Our legal professionals have been nationally recognized for their commitment to providing pro bono assistance in areas such as guardianship, domestic violence, family law, child advocacy, Social Security disability benefits, veterans' affairs, and bankruptcy, as well as legal support for nonprofit organizations.

During 2016, 80 attorneys, paralegals and administrative associates, representing over 22 percent of the company's legal professionals, provided approximately 1,126 hours of pro bono legal services.

Through collaboration among external partners, attorneys from other multinational pro bono programs, and local law firms, our international attorneys provided pro bono assistance in Argentina, Australia, Brazil, China, Colombia, Germany, Hong Kong, Japan and Russia.

The Tenancy Project of the [Legal Services of Northwest Jersey, Inc.](#) (LSNWJ), provides legal assistance to low-income and vulnerable residents in meeting the basic needs essential to self-sufficiency. Our legal professionals, in collaboration with LSNWJ, outside counsel and other corporations, completed 299 cases, providing pro bono legal assistance to low-income residents at risk of losing their housing.

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**Globally, more than 22 percent of our attorneys, paralegals and administrative associates provided pro bono legal services in 2016.**

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The [Pro Bono Partnership](#), a nationally recognized organization, provides free business and transactional legal services to help nonprofits in New York, New Jersey, and Connecticut achieve their goals, avoid risk, and better serve their constituencies. In 2016, 25 attorneys from our company's Pro Bono Legal Program contributed to this organization's ability to provide business legal services for 843 nonprofit organizations.

[Volunteer Lawyers for Justice](#) (VLJ) relies on the talents and resources of volunteers to provide free legal services to low-income individuals and families. Since 2009, our company has partnered with VLJ to provide pro bono legal services to low-income individuals and families seeking debt relief. Throughout 2016, our attorneys and paralegals assisted VLJ in providing services to 234 clients.

## Partnership for Giving

Partnership for Giving (P4G) is our company's year-round matching gift program. P4G supports active employees in the U.S. and Puerto Rico who donate to causes that are important to them. Contributions to eligible organizations are matched dollar-for-dollar by our company's Foundation in support of nonprofits that help to promote a healthier society, advance education, foster the arts, address the welfare of animals and preserve the environment.

As volunteers for nonprofit organizations, active employees in the U.S. and Puerto Rico can have their volunteer hours matched by a cash contribution. Through the Dollars for Doers program, funded by our company's Foundation, employees investing 40 hours or more of service with an eligible organization can apply for a \$500 contribution to that nonprofit, with an annual limit of two donations per eligible employee or volunteer team.

## Performance

## EMPLOYEE GIVING SUMMARY

VOLUNTEER HOURS	2012	2013	2014	2015	2016
Employees who volunteered <sup>1</sup>	NA	NA	NA	9,421	16,446
Percent of total company population <sup>2</sup>	NA	NA	NA	14%	24%
Employees who used paid time off (PTO) <sup>3</sup>	NA	NA	NA	6,123	14,376
Percent of total company population	NA	NA	NA	9%	21%
PTO hours <sup>1</sup>	NA	NA	NA	52,372	187,818
Total recorded volunteer hours (TRVH) <sup>1</sup>	NA	NA	109,932	80,585	214,862
Ratio of PTO/TRVH	NA	NA	NA	65%	87%
SkillShare Volunteer Program <sup>4</sup>	NA	NA	NA	1,500	520
MSD Fellowship for Global Health	NA	NA	12,144	16,120	15,080
Pro Bono Legal	NA	NA	3,200	2,400	1,126
Skilled volunteer hours as percentage of TRVH	NA	NA	8%	25%	8%

1. 2016 figures are based on employee self-recorded volunteer hours and volunteer hours communicated directly to the Office of Corporate Responsibility for certain countries. 2015 marked the first year in which volunteer hour reporting was based solely on employee self-reporting. Prior years included estimates for unrecorded volunteer hours. 2. Company population figures are based on an estimated workforce of approximately 68,000 in 2016. 3. Figures based on estimated data. 4. Our skill-based volunteer program launched in 2015.

PARTNERSHIP FOR GIVING (P4G)	2012	2013	2014	2015	2016
Total contribution (US\$ in Millions) <sup>1</sup>	\$27	\$28	\$26	\$21	\$26
Number of organizations that benefited	10,172	7,649	9,038	7,145	6,200
Number of employee/retiree participants	14,572	11,544	10,365	9,400	8,200

1. Contributions through P4G include Foundation funds for direct giving and payroll deduction matching gifts, employee direct donations and payroll deduction funds, retiree direct donation and Dollars for Doers matching funds.



Our mission to save and improve lives underpins the idea behind the MSD Fellowship for Global Health.

#### RESOURCES

- [MSD Fellowship for Global Health: 2016 Impact Report](#)
- [Case Study: Collaborating to Advance Health Care in Africa](#)
- [2017 RTC Fellows](#)
- [Alumni Fellows](#)
- [Past Partners](#)

The MSD Fellowship for Global Health is a three-month, field-based corporate pro bono program designed to leverage the skills and talents of our employees worldwide. Selected employees are referred to as Richard T. Clark (RTC) Fellows, in recognition of retired Chairman and CEO Dick Clark. The program pairs the best minds from our company with nonprofit partner organizations around the world to provide meaningful and systematic improvements in health service delivery for people in the greatest need.



Between 2012 and 2017, 159 RTC Fellows from 29 countries worked with 36 nonprofit organizations.

## BECOME A FELLOWSHIP PARTNER

To apply for the 2018 Fellowship for Global Health, please carefully review the documents below and submit application(s) by January 3, 2018.

- [2018 NGO Overview Deck](#) [PDF]
- [2018 Proposal Guidelines](#) [PDF]
- [2018 Proposal Template](#) [Word]
- [2018 Project Line Item Budget Template](#) [Excel]
- [Grant Submission Instructions](#) [PDF]



The 2017 RTC Fellows gathered for a reintegration workshop and recognition ceremony after completing their three-month assignments working with nonprofit organizations around the world to improve global health.

The program aims to:

- Strengthen the capacity and reach of nonprofit organizations with technical and human capital support
- Provide rich professional-development experiences for our employees
- Apply key learning across our broader organization

The Fellowship program connects employees with nonprofit organizations to utilize their business acumen in building organizational capacity, helping the institutions to provide increased access to health services, products and education in the communities they serve. The Fellows bring back experience that contributes to our company's ability to deliver innovative health solutions to patients and customers around the world.

## PROGRAM IMPACT

A survey of 2016 Fellows and nonprofit hosts demonstrates the program's significant benefit and improvements for our Fellows and nonprofit partners, and measurable benefits for our company's business and reputation.

- 100 percent of nonprofit hosts reported extraordinary or substantial capacity gains
- 96 percent of Fellows reported learnings that will significantly impact job engagement
- 100 percent of nonprofit hosts have an improved understanding of our mission

Download the 2016 [Impact Report](#) for additional information.



2016 RTC Fellows attend a village meeting in Tambacunda, Senegal, to listen and learn from stakeholders about the current state of healthcare in the village.

Twenty-nine Fellows from 12 countries around the world supported 8 nonprofit organizations working in Africa, Latin America and North America from August through October of 2016. Specific examples of program impact include:

**Africare** (Senegal)

The goal of the RTC Fellows who were based in Senegal was to contribute to child and maternal health care through improving the effectiveness of the Community Healthcare Worker volunteers. The Fellows assessed the strengths and weaknesses of the community health care system, and then made recommendations for bolstering and sustaining local health care. They created volunteer roles, developed tools to help make diagnoses, and implemented plans for improvement. This team made an enduring impact on the 250,000 people living in Tambacunda, the remote region in Senegal where they worked, and also proposed a three-year plan for the Senegal Ministry of Health to replicate this system more broadly.

**CerviCusco** (Peru)

CerviCusco is committed to improving the health and quality of life of Peruvian women through primary and secondary prevention of cervical cancer in Cusco, Peru, one of the most remote areas of the country. This team of RTC Fellows worked to build and strengthen CerviCusco's sustainability by improving its business development model, notably through hiring and training a new corporate relationship manager/fundraiser, developing a business plan and recommending a portfolio of clinical laboratory tests that differs and complements current offerings in Cusco. These recommendations are already being put into place, with the hope that they will help generate funds to sustain clinic activities—one of the major challenges the organization faces.



RTC Fellow Gökhan Batur works with teammates to pilot their business model, helping dispel negative feelings about eyeglasses in Tanzania.

### **Sightsavers (Tanzania)**

These RTC Fellows were tasked with developing an overarching strategy to create demand for services to help with uncorrected refractive error (URE) in rural Singida, Tanzania. They proposed a “Business in a Bag” model that trains individuals on URE services and has them travel to villages where they in turn educate local citizens about eye care, screen their vision, and sell them reading glasses if appropriate. The money they earn funds additional employees and indirect costs, making the model sustainable. During the pilot, 96 percent of government workers and 84 percent of remote villagers changed their perceptions about eye health and wearing glasses, proving the program’s potential to resolve URE issues in Africa. The RTC Fellows also presented their results to other country offices and nonprofit organizations at a major eye-care congress in South Africa so other areas could replicate the system.

“It was an amazing experience due to being able to provide immediate, short- and long-term impact to the NGO.... The leadership, teamwork and project management skills which I enhanced during the course of my assignment will continue over to my career and personal life.”

– Keven Patten, 2016 RTC Fellow

## Current-Year Partners



The vision of the [African Resource Centre \(ARC\)](#) is to build a supply-chain think tank that can provide independent strategic advice to help countries meet their public health goals. ARC West Africa is partnering with Africa Consulting and Trading (ACT), a consulting company, to work with entities across sectors and throughout the value chain, to broker, match and structure partnerships across the private sector, civil society, academia and donors to support ministries of health in Africa.



[Africare](#) works to improve the quality of life of the people in Africa. Africare is a leading nongovernmental organization (NGO) committed to addressing African development and policy issues by working in partnership with African people to build sustainable, healthy and productive communities.



[BIO Ventures for Global Health \(BVGH\)](#) develops programs and initiatives that engage the biopharmaceutical industry in global health. Through this core mandate, BVGH establishes partnerships between pharmaceutical companies and nonprofit researchers, builds biomedical R&D capacity at developing-world research centers, places gently used laboratory equipment at African research centers through the Equipment Donation program, and helps neglected-infectious-disease researchers identify relevant research funding through the FundFinder program.



Peruvian women have one of the highest rates of cervical cancer in the world. This is disproportionately true for impoverished, indigenous women who live in the isolated mountainous regions of the country. [CerviCusco](#)'s mission is to reduce morbidity and mortality among all women in the region of Cusco through medical treatment and outreach with a culturally sensitive high quality of care.



The [International AIDS Vaccine Initiative \(IAVI\)](#) is a global not-for-profit organization whose mission is to ensure the development of safe, effective and accessible preventive HIV vaccines for use throughout the world.

innovating to save lives



an affiliate of Johns Hopkins University

[Jhpiego](#), whose mission is to prevent the needless death of women, children and families worldwide, is an expert in implementing competency-based training for health workers. The organization works to strengthen in-service and pre-service education for frontline health workers, improve infection prevention practices at health facilities, improve the performance of health workers, and implement its Standards-Based Management and Recognition approach to improve the quality of healthcare.



[Mission Rabies](#) strives to preserve and protect human health for the public benefit by participating in the global elimination of rabies; assisting with education projects around the world relating to rabies and its prevention, treatment and elimination; assisting with the implementation and operation of rabies vaccination programs; and providing a global resource and support structure to charities and organizations that are involved with the elimination of rabies.



The [Pacific Northwest Research Institute \(PNRI\)](#) was founded with the vision of creating an independent facility where practicing physicians and surgeons would enjoy "complete freedom to pursue research" in an effort to "correct man's infirmities." PNRI has become a basic research institute with a commitment to applying laboratory discoveries to improve human health. Its current focus on using state-of-the-art genetics and bioinformatics research helps to make meaningful contributions in various biomedical fields and to achieve its mission of improving human health.



The [Program for Accessible Health Communication and Education \(PACE\)](#) implements a range of public health interventions designed to alleviate disease burden and promote healthy living for the people of Uganda. The vision of PACE

is to be an innovative, efficient, results-oriented organization that works toward realizing a community of Ugandans empowered to sustain healthy behavior, and toward contributing significantly to the health ministry's priority health areas, including (but not limited to) HIV/AIDS, malaria, child health and reproductive health.



[Project HOPE](#) delivers essential medicines and supplies, health expertise and medical training to respond to disaster, prevent disease, promote wellness and save lives around the globe.

# FORWARD-LOOKING STATEMENT

This communication of Merck & Co., Inc., Kenilworth, N.J., U.S.A. (the “company”) includes “forward-looking statements” within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are based upon the current beliefs and expectations of the company’s management and are subject to significant risks and uncertainties. There can be no guarantees with respect to pipeline products that the products will receive the necessary regulatory approvals or that they will prove to be commercially successful. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements.

Risks and uncertainties include, but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company’s ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company’s patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the company’s 2016 Annual Report on Form 10-K and the company’s other filings with the Securities and Exchange Commission (SEC) available at the SEC’s Internet site ([www.sec.gov](http://www.sec.gov)).

## **MERCK & CO., INC.**

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