

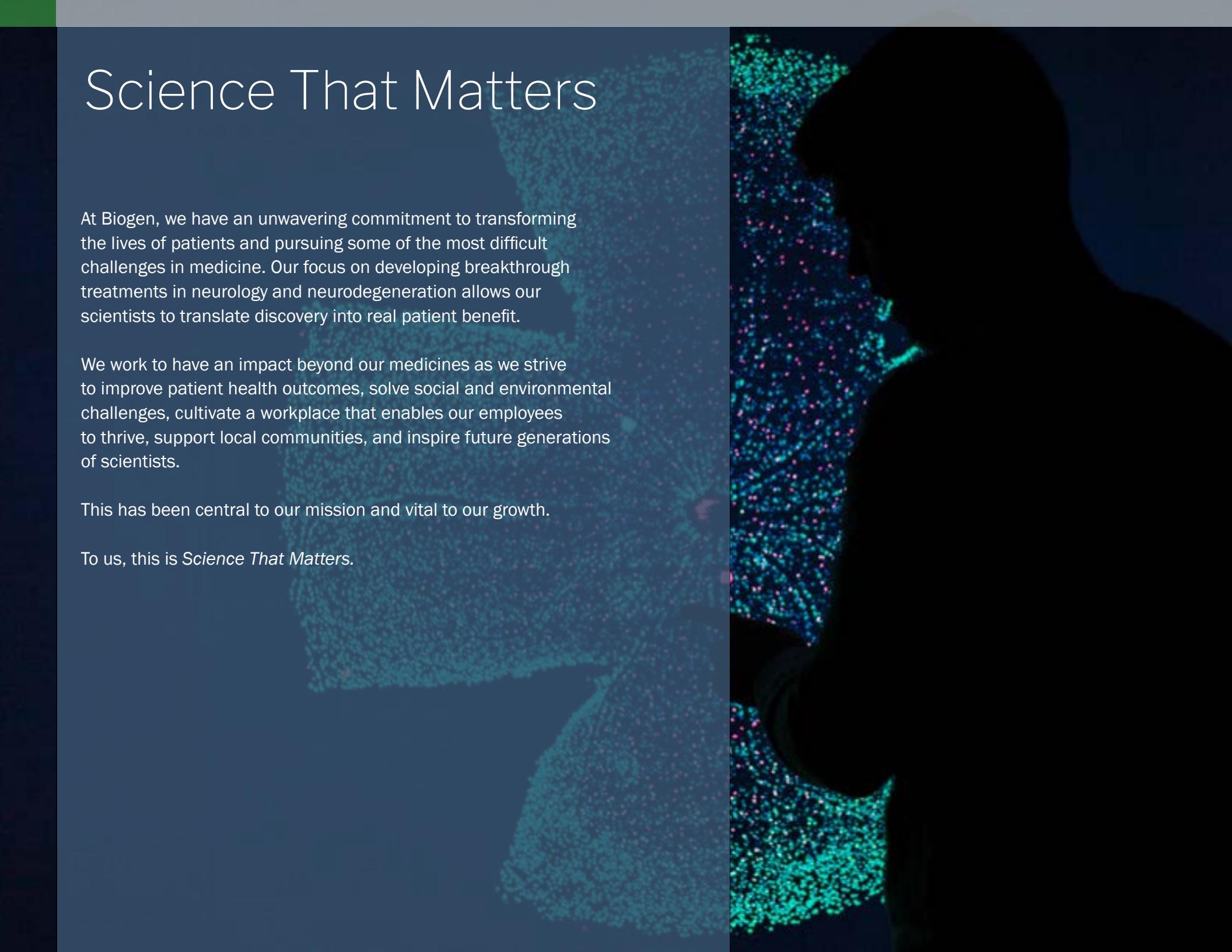
Science That Matters



For Patients • For Society • For Communities

2016 GLOBAL IMPACT REPORT

Science That Matters



At Biogen, we have an unwavering commitment to transforming the lives of patients and pursuing some of the most difficult challenges in medicine. Our focus on developing breakthrough treatments in neurology and neurodegeneration allows our scientists to translate discovery into real patient benefit.

We work to have an impact beyond our medicines as we strive to improve patient health outcomes, solve social and environmental challenges, cultivate a workplace that enables our employees to thrive, support local communities, and inspire future generations of scientists.

This has been central to our mission and vital to our growth.

To us, this is *Science That Matters*.

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This report contains forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, including statements relating to Biogen's business activities. These forward-looking statements may be accompanied by words such as "anticipate," "believe," "could," "estimate," "except," "forecast," "intend," "may," "plan," "potential," "possible," "will" and other words and terms of similar meaning. You should not place undue reliance on these statements. These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including risks relating to the occurrence of adverse safety events, restrictions on use with Biogen's products or product liability claims; uncertainty of success in developing, licensing or acquiring other product candidates or additional indications for existing products; results in early stage clinical trials may not be predictive of results in later stage or large scale clinical trials or trials in other potential indications; problems with Biogen's manufacturing processes or capacity; failure to comply with legal and regulatory requirements; environmental risks; third party collaboration risks and the other risks identified in Biogen's most recent annual or quarterly report and in other reports Biogen has filed with the U.S. Securities and Exchange Commission. These statements are based on Biogen's current beliefs and expectations and speak only as of the date of this report. Biogen does not undertake any obligation to publicly update any forward-looking statements.

Letter from our CEO



Michel Vounatsos
Chief Executive Officer

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It is a remarkable time to lead an organization at the forefront of breakthroughs in neuroscience. Our commitment to understanding the complexities of neurological disorders with few, if any, treatment options, builds upon Biogen's legacy of translating innovative science into medicines that can help transform the lives of patients and those who care for them. To me, there is no greater challenge in medicine than finding treatments for these diseases. At Biogen our mission is clear.

Building upon our heritage as the leader in developing therapies for multiple sclerosis, today we are working to find breakthroughs for some of the toughest challenges in medicine – including potential treatments for the millions of people suffering from debilitating diseases such as Alzheimer's disease, Parkinson's disease, stroke and neuropathic pain. The 2016 U.S. approval of SPINRAZA® – the first and only approved therapy for the treatment of the neurodegenerative disease Spinal Muscular Atrophy – represents one such breakthrough, and our team is working every day to ensure that children afflicted with this deadly disorder have access to this medicine.

To us, this is Science That Matters.

But Science That Matters goes beyond our therapies. It includes the rigor and commitment to improving patient health outcomes, building supportive communities and inspiring future generations of scientists. To that end, I am proud to bring to you our 2016 Global Impact Report, highlighting many of the critical areas in which Biogen has continued to innovate, from our commitment to carbon neutrality and our pioneering science education programs, to our ongoing efforts to promote diversity and gender equality in science and in the workplace.

For patients, our teams work tirelessly to ensure that products are available and accessible, and we continue to provide extensive support services to help ensure that no one has to forgo treatment because of financial limitations or insurance status. We know that engagement among industry, patient communities, regulators, payers, caregivers and policymakers is critical to truly making a difference and that all of these parties share a common commitment to working together on behalf of patients.

At Biogen, we are working with all parties to drive new and innovative initiatives, and in the coming months hope to introduce new approaches to value-based contracting that we believe will further increase patient access.

At Biogen, we continue to strive to have the greatest impact on patients of any company in the history of our industry. I'm proud of the work of our 7,000 employees around the world, and am thankful for their continued dedication to improving the lives of patients, caregivers, families and the communities we serve.

Michel Vounatsos
Chief Executive Officer

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“Science That Matters includes the rigor and commitment to improving patient health outcomes, building supportive communities and inspiring future generations of scientists.”

About Biogen

Through cutting-edge science and medicine, Biogen discovers, develops and delivers innovative therapies worldwide for people living with serious neurological and neurodegenerative diseases. Founded in 1978, Biogen is a pioneer in biotechnology and today has the leading portfolio of medicines to treat multiple sclerosis (MS), has introduced the first and only approved treatment for spinal muscular atrophy (SMA), and is at the forefront of neurology research for conditions including Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis (ALS). Biogen also manufactures and commercializes biosimilars of advanced biologics.

As of the end of 2016, our global organization of approximately 7,400 employees has a single focus: making a meaningful difference in the lives of patients suffering from devastating medical conditions.



Biogen at a Glance – 2016

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7,400
EMPLOYEES WORLDWIDE

ANNUAL REVENUES
~20%
REINVESTED BACK INTO
R&D OVER THE PAST DECADE

14 DRUG
CANDIDATES
IN CLINICAL TRIALS

BIOGEN PRODUCTS TREATING
~38%
OF MULTIPLE SCLEROSIS
PATIENTS WORLDWIDE

1st AND ONLY
APPROVED DRUG TO TREAT
SPINAL MUSCULAR ATROPHY

3,000
EMPLOYEES VOLUNTEERED
GLOBALLY FOR CARE DEEPLY DAY

\$1.1b
IN FINANCIAL ASSISTANCE
TO PATIENTS IN 2016

\$6.2m
IN COMMUNITY GRANTS AND BIOGEN
FOUNDATION MATCHING DONATIONS

#1 RANKING
ON IDEA PHARMA'S 2017
PRODUCT INNOVATION INDEX

COMMITMENT:
35% 
OF ABSOLUTE EMISSIONS BY
2030 ACROSS VALUE CHAIN

SINCE
2014 
CARBON NEUTRAL COMPANY

ZERO 
WASTE TO LANDFILL

WOMEN HOLD NEARLY
48% 
OF DIRECTOR-LEVEL
POSITIONS AND ABOVE

NEARLY
\$202m
SPENT WITH SMALL AND DIVERSE
BUSINESSES OR 10.2% OF TOTAL
U.S. PROCUREMENT SPEND IN 2016

PRODUCT DISTRIBUTION IN
70 
COUNTRIES

TO LEARN MORE ABOUT SCIENCE
4,960 
STUDENTS PARTICIPATED
IN OUR COMMUNITY LABS

With a strong affiliate presence and a network of distribution partners, Biogen has established a global footprint that allows us to capture the greatest value for the products we develop.



Direct Affiliates

Distributor Markets
(Latin America, Middle
East & Africa, Eastern
Europe, Asia Expansion
Markets)

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2016 Financial Highlights

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Revenues \$11.4 billion

Net income \$3.7 billion

Diluted Earnings Per Share \$16.93

Shareholders' equity \$12.1 billion

Taxes paid \$1.237 billion

Charitable investments \$6.2 million



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Marketed therapies

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Multiple Sclerosis

AVONEX®

PLEGRIDY®

TYSABRI®

FAMPYRA™

TECFIDERA®

ZINBRYTA®

Partnered Therapies

GAZYVA®

RITUXAN®

Biosimilars

BENEPALEI®

FLIXABI®

Spinal Muscular Atrophy

SPINRAZA®

ALZHEIMER'S

PARKINSON'S

MS REPAIR

BIOSIMILARS

1996

AVONEX

TYSABRI

2004

RITUXAN

2006

FAMPYRA

2011

TECFIDERA

2013

GAZYVA

2016

SPINRAZA

BENEPALEI

FLIXABI

ZINBRYTA

2017
& beyond

ALPROLIX

ELOCTATE

PLEGRIDY

External Awards and Recognition

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Human Rights Campaign
Corporate Equality
Index – Received a perfect
score of 100 for 2017

100 Best Corporate
Citizens for 2017 –
CR Magazine

#1 on IDEA Pharma's 2017
Product Innovation Index

2017 Rosoff Award – In
recognition of companies
that embrace diversity

Sustainability Industry
Leader, Gold Class Biotech
(2016), Bronze Class
(2017) – RobecoSAM

Dow Jones Sustainable
World Index in 2016

Newsweek 2016 Green
Rankings – #5 in U.S., #11
in world

The 50 Best Companies
to Work for in America –
Business Insider, #7

Best Company to Have
an Impact on the World –
Business Insider, #1 (three-
way tie)

America's Best Midsize
Employers – Forbes, #18

Top Biotech Company –
Calvert Diversity Report
(score of 95 out of 100,
one of 10 companies and
only biotech)

2016 Environmental
Business Council of New
England's Environmental
Energy Award for Corporate
Leadership

Environmental Protection
Agency's Green Power Top
100 list – 100% Green
Power User

Environmental Tracking
Index Research – 2016
Carbon Leader Award

Global Impact Strategy: Science That Matters

In 2016 and early 2017, we used the outcomes of our Global Reporting Initiative (GRI) materiality assessment to inform the priorities of our Global Impact work going forward. Knowing our priorities are patients, society and communities, we made these the pillars of Biogen's overarching strategy, which we refer to as "Science That Matters." The strategy encompasses all aspects of our Global Impact work, and builds on key areas where we are currently leading, while also focusing on areas where we have opportunities to improve.

Science That Matters is also aligned with our company credo:

Caring Deeply.
Working Fearlessly.
Changing LivesTM.

It is through visionary science that we have the greatest opportunity to transform the lives of patients and pursue some of the most difficult challenges in medicine to positively impact lives. We work to have an impact beyond our medicines as we strive to improve patient health outcomes, solve social and environmental challenges, cultivate a workplace that enables our employees to thrive, support local communities, and inspire future generations of scientists. Throughout this report, we discuss Biogen's key initiatives and activities, and provide evidence of the progress we're making to advance our priorities.

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Impacting lives through visionary science

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For Patients

Our focus is to solve some of the most difficult challenges in medicine, as we work to transform the standard of care for neurological and neurodegenerative diseases and support access to treatment.



- Patient Health Outcomes
- Access To Treatments
- Research and Development
- Bioethics

For Society

Advancing solutions to global environmental challenges and achieving operational excellence through innovative collaborations and cutting-edge science.



- Climate and Other Environmental Impacts
- Product Stewardship
- Supply Chain Responsibility
- Green Chemistry

For Communities

Fostering diverse, vibrant and enriched communities that are embracing the promise of science and inspiring the next generation of scientists.



- Talent Acquisition
- Diversity and Inclusion
- Workplace Health and Safety
- Community Engagement

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We are in the business of helping people fight devastating diseases, and our patients are at the center of everything we do. Yet our commitment to improving lives goes beyond scientific research and development; we also engage with patients and caregivers to understand their needs and identify ways to achieve better health outcomes.





One of our key focus areas is expanding access to our medicines, including through participation in clinical trials for Biogen therapies under development. In recent years, we have concentrated on broadening the diversity of people who take part, allowing us to gain insight into how the same treatment may impact different racial and ethnic groups.

We also offer expanded access programs (EAPs), which provide investigational therapies to patients with serious or life-threatening diseases who are not eligible or able to participate in a clinical trial. We believe that our EAP for spinal muscular atrophy (SMA) patients, for example, is one of the largest in rare diseases. (Read more on this EAP [here](#)).

Another approach we take to improve access is by working to secure payer reimbursements to ensure patients have coverage for our therapies through their public and private health insurance programs. For any patients lacking access, we help them secure necessary financial assistance. Put another way: we help ensure that patients are not denied access to life-changing medicines.

Biogen also develops biosimilar versions of biologics for patients in Europe. These similar but not identical biologic therapies will allow us to deliver effective treatments at reduced prices – and further increase access to medicines that can make a meaningful difference for patients.

As a science-driven company, Biogen makes substantial investments in research and development (R&D) – over the past 10 years, nearly 20 percent of company revenues have been invested in R&D. We collaborate with other organizations and academic institutions to ensure we have a robust pipeline of innovative therapies that will change the lives of patients who have few, if any, adequate treatment options.

Through all of our work, we maintain the highest levels of ethics and transparency, which are critical to building and maintaining trust with patients, providers and other stakeholders. We respect and protect the privacy of patients, including those who participate in clinical trials, while putting patient safety above all else.

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Patient Health Outcomes

Through ongoing dialogue, dedicated research and interactions with advocacy groups, we support patients and work to address their key concerns – from the safety and availability of our therapies, to the costs of treatment, to improving the overall patient experience, to better understanding the broader and long-term impact of diseases on patients. We help patients navigate the emotional and logistical considerations that often accompany a chronic disease and provide important therapeutic information with an ultimate aim of enhancing quality of life.

Our programs are designed to help patients get started on and adhere to treatments so they have better overall outcomes. We also offer assistance through nurse educators and supportive peer groups.



“The patient is why we wake up in the morning and why we do what we do. When we have a question, we work to answer it from the perspective of the patients and what is best for them. It’s all about trust and value: to go beyond the product and add value to the lives of patients.”

Michel Vounatsos,
Chief Executive Officer

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An Advocate for Patients



“I can’t imagine being a parent in that position, yet I continue to be amazed and truly inspired by the strength and resiliency of the families we work with.”

On several occasions, Elizabeth Stemporzewski’s position has literally moved her to tears. As a senior manager of patient advocacy, Elizabeth spends much of her time collaborating with patient advocacy organizations and listening to patients and caregivers in an effort to better understand the community’s needs. Her sole focus is spinal muscular atrophy (SMA) – a debilitating and often fatal genetic disease that typically strikes infants and children.

“It’s devastating to hear some of the stories of these individuals,” she says. “I can’t imagine being a parent in that position, yet I continue to be amazed and truly inspired by the strength and resiliency of the families we work with.”

She likens her role in patient advocacy to that of a bridge – one that spans the gulf between Biogen and those living with a neuromuscular disease. Her primary goal is to bring the voice of the patient back to Biogen “so the SMA community is represented in all of Biogen’s critical decisions,” she explains.

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Elizabeth Stemporzewski
Senior Manager, Patient Advocacy

In late December 2016, the SMA community received news that federal regulators approved SPINRAZA®, the first and only approved drug to treat the disease. Throughout the clinical trials leading to approval, Elizabeth's team stayed closely connected with the SMA community to help ensure that, once approved, there would be a treatment for those who so desperately need it.

Elizabeth believes it's critical for all those working on SMA at Biogen, regardless of their role, to hear directly from those who are impacted most by their work. Several times a year, she brings individuals living with SMA and their caregivers to Biogen's U.S. campuses to speak with employees. "None of us will ever truly know what it's like to live with SMA on a daily basis, but hearing directly from families gives us important insights into their daily struggles," says Elizabeth.

Elizabeth, who was herself diagnosed with a rare autoimmune disease when she was 11, was drawn to Biogen because of its dedication to "treating conditions that a lot of other companies don't want to work on."

Hearing the stories of patients often does reduce her to tears, she says. "But at the end of the day, I hope that what we're doing is making a positive impact in the lives of these remarkable individuals and their communities."



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We believe our therapies can be even more effective when backed by services that support patients emotionally, financially and medically. By partnering with patient advocacy organizations, we are able to better understand the needs and challenges patients face and help improve access to treatments and services. These organizations provide a critically important voice in the health care system, representing the interests of patients and families affected by diseases.

Our message is simple: By taking control and understanding the options, we believe MS patients can make more informed, fact-based decisions about their disease and treatment.

Our [Above MS™](#) program, for example, offers tips, tools and inspiration for people living with multiple sclerosis (MS). The dedicated website provides information about the disease, access to nurse educators, financial and insurance support and explanations of the various treatment options that Biogen has available.

Research suggests that a significant number of people with MS don't have a comprehensive annual review with an appropriate health care professional.¹ In early 2017, we launched a new MS campaign, 1MSg®, in the UK to encourage people with MS to work with medical specialists so they can become even better informed. Our message is simple: by taking control and understanding the options, we believe MS patients can make more informed, fact-based decisions about their disease and treatment. The MS landscape has been evolving at a rapid pace – so much so, that some patients may not realize that there are new treatment options available to them.

[Learn more about the 1MSg campaign](#)

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¹ GEMSS Patient Survey Meta-Analysis. MS Trust. July 2012

Thanking the MS Heroes

We also have been working closely with those affected by SMA to create a disease education program called [Together in SMA™](#). The program provides information about SMA and its symptoms, insight into care options and perspectives from experienced caregivers and healthcare professionals on topics ranging from nutrition to adaptive equipment. By offering educational materials and resources, we hope we can help patients and their caregivers deal with the challenges of this disease. We partner with patient advocacy organizations at every step of the way. We make sure we're incorporating the voice of the patient into all critical decisions we're making, whether it's developing a new clinical plan or a new study.

We have continued to study and research potential therapies for Alzheimer's disease so have been actively engaged with Alzheimer's patients and advocacy groups to gain insights about the needs of this community. Hearing firsthand from patients and caregivers offers us much clearer awareness of the challenges of the disease. Patient advocacy gives a voice to the patient, allowing us to improve upon Biogen therapies and make meaningful impacts.

Patients living with MS rely on family, friends and health care teams for various forms of assistance. Biogen's #MySupportHero social media campaign celebrates the dedicated caregivers who provide encouragement and support to the patients they care for. The initiative, which began in 2016 in collaboration with four MS patient organizations, takes place in March, which is MS Awareness Month.



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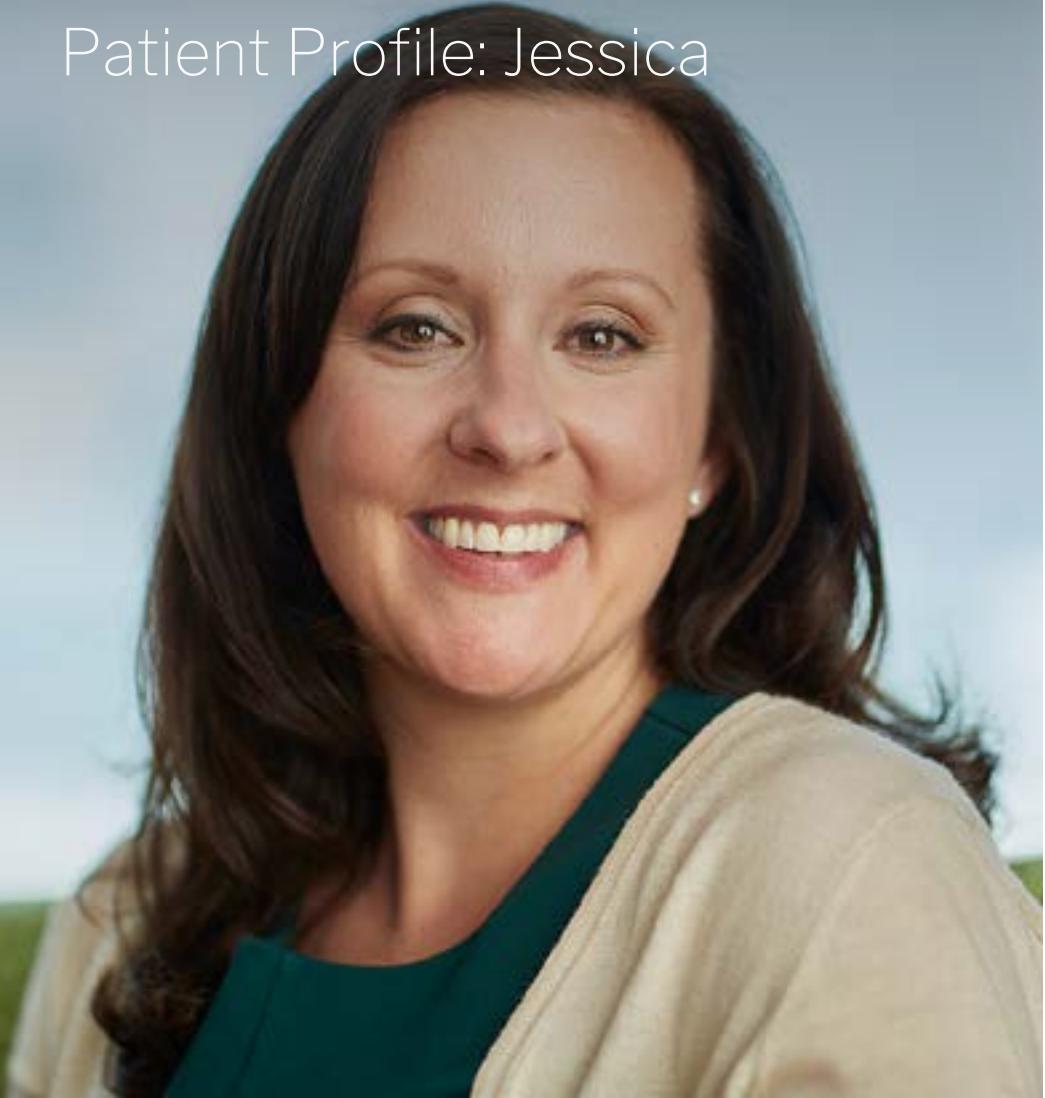
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Patient Profile: Jessica



“When I was diagnosed with MS, I made the decision early on that, no matter what, I would talk about my disease. Talking about my MS is empowering, without defining me.”

In 2006, Jessica was diagnosed with MS at just 26 years old, when she was a recently-married graduate student. “It felt like I had my whole life ahead of me, and then all of a sudden I didn’t know what my life was going to look like,” she says.

Fast forward to today and Jessica’s outlook has changed considerably. With a strong family support network and dedicated medical team, she has learned to cope with her disease and is living life to the fullest. Active in the MS community, she offers guidance and support to other patients and spends considerable time volunteering and raising funds for MS-related events.

MS, including its related fatigue, is part of her daily life, she says, but she tries not to focus on every symptom. “When I was diagnosed with MS, I made the decision early on that, no matter what, I would talk about my disease. Talking about my MS is empowering, without defining me.”

Education has been the key to managing her disease, she says. Biogen’s Above MS™ has provided her access to programs and connections with others living with the disease. “I’m very grateful for the advances in research and development and the therapy options that are now available to me,” she says. “But there is still more work to be done.”

Patient Safety

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Patient safety is our highest priority, and we are committed to disclosing the benefits and risks of our therapies to help patients and health care professionals make informed treatment choices.

Biogen has an ethical and regulatory responsibility to continually assess and communicate the benefits and risks of our products to patients, health care professionals and regulators. On an ongoing basis, we collect information regarding adverse events and other safety information from patients, caregivers and health care professionals, among others. Additionally, in some instances, we conduct post-marketing studies to evaluate our therapies' long-term effects.

Our safety and benefit risk management team reviews product safety information collected from a range of sources (foreign, domestic, clinical trials, published literature, post-marketing) and determines what actions, if any, may be needed to address the evolving safety profile of our products.

When a potential safety issue is identified, we seek more information to better understand the issue and report our findings to applicable regulatory agencies. We also communicate newly-identified product information to health care professionals and patients by updating the product's label and issuing other communications, as needed.



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Access to Treatments

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One of the more complex tasks that we navigate as a company, and as part of the broader biopharmaceutical industry, is helping to ensure that the people who need our therapies have access to them. We take two key approaches to help accomplish this: increasing participation in clinical trials and offering expanded access programs (EAPs) to patients who are unable to participate in clinical trials; and adhering to a pricing philosophy that secures reimbursement in public and private health care programs and offers financial assistance to patients who are otherwise unable to access our medications. But access also involves a host of other complicated and interrelated issues, such as obtaining regulatory approvals in many countries around the world, educating physicians and demonstrating product efficacy and value.

It's important to note that many of our therapies are infused or injected. This requires more time from patients and health care providers, and in some cases, requires specialized health care facilities. Providing access to these medicines is far more complicated than it is for more traditional medications that are taken orally in pill or tablet form.



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Clinical Trials

Clinical trials are an essential part of the drug development process. They are designed to answer specific research questions related to the efficacy and safety of a potential therapy and they follow a defined protocol. A potential therapy must be tested in a lab setting and deemed promising before it can move to the first of three phases of clinical trials. Each phase has a different purpose and involves an increasing number of people.

The process of getting a new therapy to market can take years, and only one out of approximately 10,000 identified potential therapies will ultimately be approved for use in the U.S. For patients, this process can seem slow, but it is designed to determine the safety and effectiveness of new therapies.

We are grateful to the patients, healthy volunteers, hospitals and clinics that participate in testing our potential therapies. Deciding to participate in a clinical trial requires careful consideration. In most cases, the therapies being investigated in clinical trials are not yet approved by regulatory agencies. The benefits and risks of taking a treatment being trialed are also not completely known. Ultimately, trial participants contribute to Biogen's understanding of

a disease, help the medical community determine the safety and efficacy of the treatments and may end up leading to a breakthrough therapy that benefits patients' lives in the future.

For some patients, participation in a clinical trial means access to a potentially life-improving medication when there may not be many other options. These new treatments are not available elsewhere and sometimes can be a last resort for patients who have tried many other therapies. Patients with serious or life-threatening diseases may not be eligible to participate in clinical trials, however. In some of these situations, Biogen may be able to provide access to investigational therapies through what is essentially emergency use, also known as single-patient access.

Historically, minorities have been underrepresented in clinical trials. In recent years, we have focused on expanding the pool of participants in clinical trials to be more inclusive of minorities. Ensuring our clinical trials are representative of all patients gives us a better understanding of how our therapies work in people of diverse gender, race and ethnicity.

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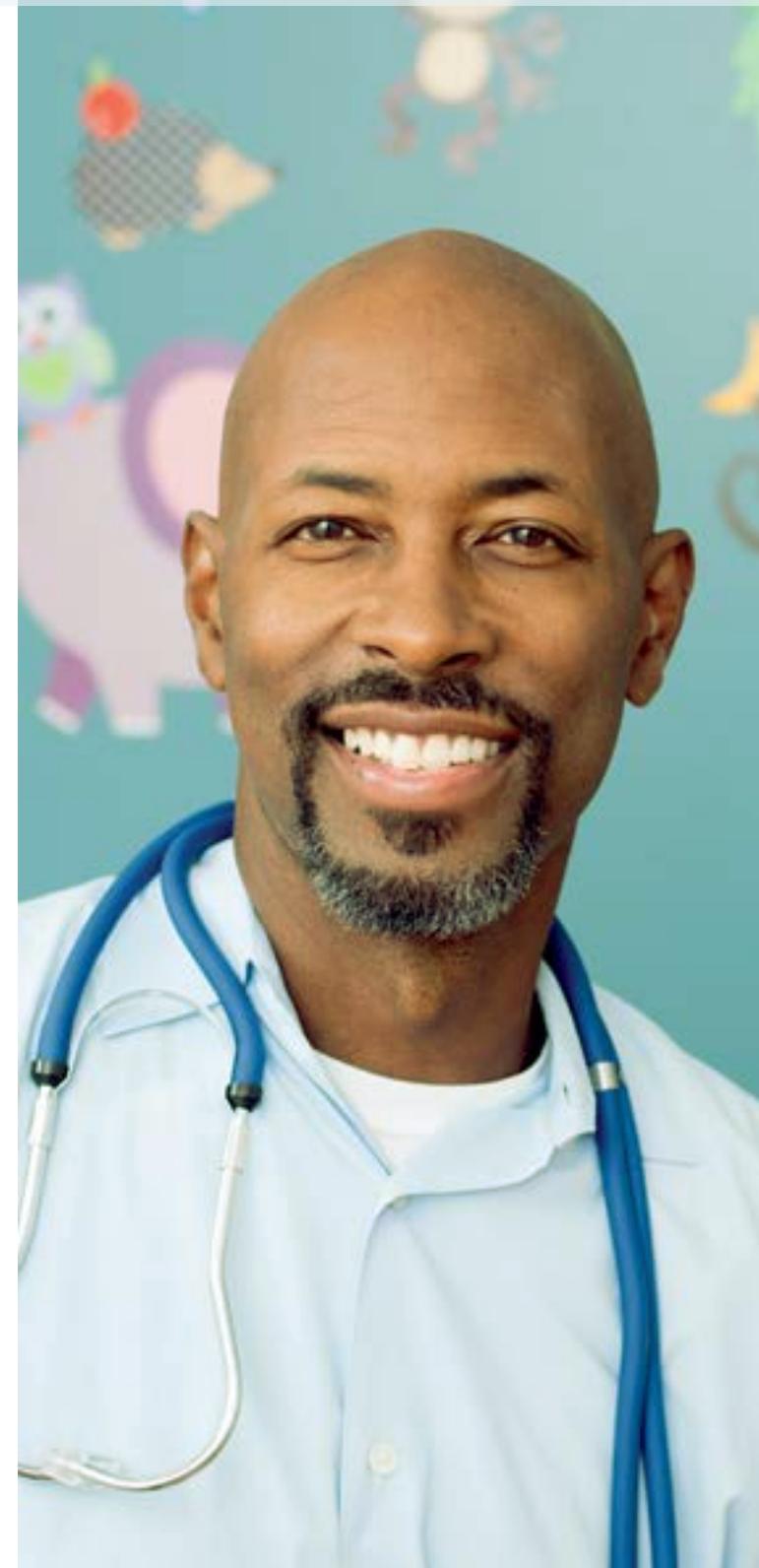
Expanding Access to SMA Patients

Our EAPs bridge the gap for therapies prior to regulatory approval and commercial availability, providing access to treatment for diseases with high mortality rates and unmet medical needs.

Our EAP for SMA, which we believe is one of the largest such programs in rare diseases, offers early access for infantile and childhood SMA patients who would not otherwise be eligible for clinical trials. A patient's doctor must decide whether the potential benefit outweighs the risk of receiving an investigational therapy, based on the individual patient's medical history and program eligibility criteria. Patients who are enrolled receive the therapy free of charge.

As of June 2, 2017, we had a total of 503 patients – 67 in the U.S. and the rest in 23 countries worldwide – enrolled in our SMA EAP for SPINRAZA, the first and only approved treatment for the disease. We plan to expand the EAP to even more countries throughout the remainder of 2017 and into 2018.

Learn more about our EAPs on our [website](#).



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MS-UP: Improving Outcomes in Underserved Populations

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As minority populations increase in the U.S., so too do health inequities. African-Americans and Hispanics are more likely to experience medical errors, endure longer hospital stays and unnecessary hospital admissions, and withstand over- or under-utilization of procedures. Similar challenges exist for minorities with MS, who are more likely to suffer from severe symptoms and disability than Caucasians with the disease.

At the same time, the underrepresentation of minorities in clinical trials has resulted in limited data regarding how they experience MS and respond to treatment, leading to even further disparities in individualized care.

Hoping to improve the situation, a group of Biogen employees came together to launch an initiative known as MS-UP (Underserved Populations). The intent is to raise awareness of minority health disparities in the care and treatment of MS and, ultimately, improve patient health outcomes. Since its formation in 2012, the group has worked with health care providers to identify the barriers around minority access to care, and has produced a variety of [graphics](#) and [literature](#) that shine a spotlight on the prevalence of MS in minority populations.

Thanks to the efforts of the MS-UP team, we are achieving a more representative patient sample in our MS clinical trials in the U.S.

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Living (and Working) with MS



“Knowing that I can have an impact by sharing my story with others has been very empowering. Most powerful of all is to be able to hold the hands of others through the door of MS so they know they are not alone.”

Terrie Livingston
Senior Director of U.S. Medical Affairs
for Real World Outcomes

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Terrie Livingston is a big believer in fate – that everything happens for a reason. Case in point: Within a four-week period, she was diagnosed with MS and was hired to join the Biogen team. Joining Biogen was “a true blessing and a privilege,” she says.

“My diagnosis is the reason I’m at this company,” says Terrie, who is currently Biogen’s senior director of U.S. Medical Affairs for Real World Outcomes, Innovative Partnerships & Insights. “Being diagnosed with MS was a life-changing moment and a diagnosis like that may prompt someone to ask: ‘Why me?’ I always say it was my ‘MS angels’ watching out for me because my diagnosis brought me to Biogen. Although it took me a few years to understand, I now know the answer to that ‘why me’ question.”

Over her 12 years with Biogen, Terrie has learned how important it is to share her story both within and outside the company – to advocate for patients in the MS community. As an Asian-American woman, she can speak firsthand to the challenges of getting properly diagnosed.

MS is still typically viewed as a disease of middle-aged, Caucasian women, and it took two years of misdiagnoses and incorrect treatments before she finally learned what was causing her exhaustion and related neurological symptoms.

Terrie is especially involved with Biogen's efforts to increase minority representation in clinical trials and to tailor informational brochures and posters to members of specific racial and ethnic groups. Biogen is also investigating whether MS is different in minority patients due to the biology of the disease or social determinants of health – or a combination of both. The hope is that research data will help us to better understand and answer the unmet needs in minority communities.

Terrie, who has been able to manage her disease through Biogen therapies, says she got into health care initially because she wanted to help people. "Knowing that I can have an impact by sharing my story with others has been very empowering. Most powerful of all is to be able to hold the hands of others through the door of MS so they know they are not alone," she says. "After I speak at events, I often hear from patients about how thankful they are that somebody living with MS works inside of Biogen – it makes them feel like their voices are being heard." Terrie says she made a promise to those who also have MS that she will always be their voice.



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Pricing

Biogen has the opportunity and responsibility to bring transformative treatments to patients. We recognize that prices for, and access to, treatments are chief concerns for patients, providers, payers and policy makers, and we work with all parties to help ensure that patients are not denied access to life-changing therapies.

The creation of breakthrough medicines requires significant investments in research and large teams of people – often working for decades – to bring them to patients. However, there is no guarantee that even with these investments we will be successful in having a new drug approved.

When we are successful, it is imperative we ensure that patients can access new treatments, a process that involves complex negotiations with governments, regulatory agencies, third-party payers, pharmaceutical benefit managers, pharmacies and hospitals throughout the world. Further, we must demonstrate to physicians and payers the benefits and values of our treatments. In the end, the price of a given product is only one of many factors that impacts patient access – and we recognize our responsibility within this complex health care ecosystem to work collaboratively with all parties for the benefit of patients globally.

A critical part of ensuring access to our medicines is also the work we do years in advance of the introduction of a new therapy. We engage with our stakeholders, including governments, regulatory agencies and private payers, so they are prepared for the introduction of new breakthrough medicines. This work is essential to creating and supporting sustainable health systems for the long term. More background on this is available in our [2016 Annual Report](#).

As we consider the prices of our products, we strive for an appropriate balance among the following three key principles:

- **Clinical Value:** We must understand the intrinsic clinical value of the product and what it is able to provide to patients in terms of altering the course of disease, generating positive health outcomes and improving quality of life.
- **System Impact:** We must evaluate the impact a therapy has on the entirety of the health care system, including the financial implications on payers and patients.
- **Stakeholder Returns:** We must recognize the need to fund Biogen's entire research enterprise at all levels, from basic research that advances scientific understanding to clinical development of new treatments, while at the same time providing sufficient returns to those shareholders who have invested in us and recognize the importance of ground breaking research even if it never results in a treatment.

Learn more about our Pricing Principles [here](#).



Nidhi says many patients don't realize that Biogen offers a financial assistance program, and that we will work with all patients to ensure they get access to the medications they need.

Nidhi Bedi
Patient Coordinator

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Helping Patients Access Their Medicines

When someone receives a new prescription for one of Biogen's therapies, chances are he or she may speak with one of our patient service coordinators. They are the Biogen employees who help patients and families navigate the complex world of medical claims, insurance policies and payments.

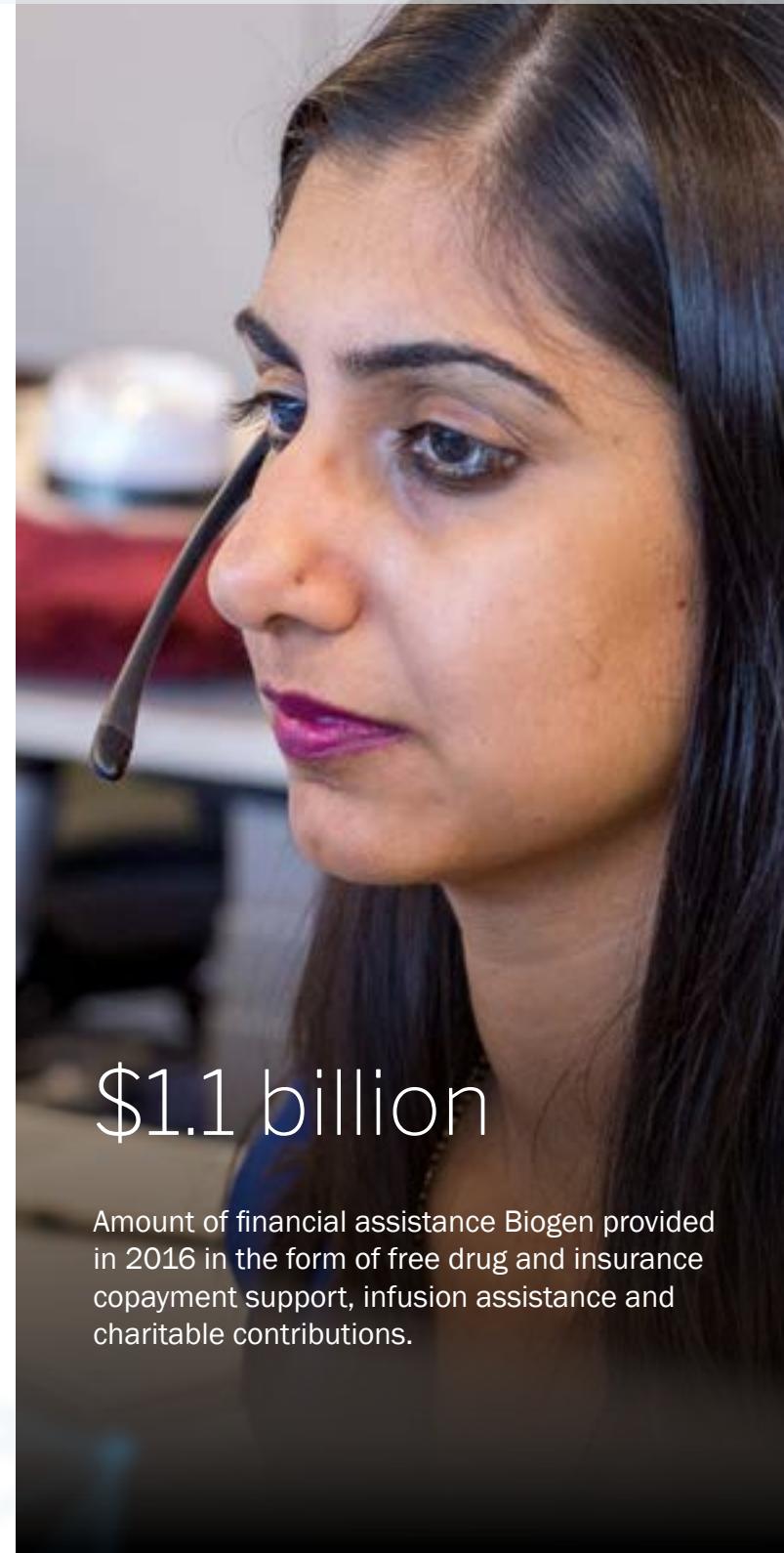
"When people ask me what I do for work, I explain that I help patients get started on their therapies," says Nidhi Bedi, a coordinator who works primarily with MS patients. "We help patients work through any non-clinical barriers that they may encounter – from the first day they get the prescription until they have taken their first dose. This can include financial and insurance barriers."

Nidhi says many patients don't realize that Biogen offers a financial assistance program, and that we will work with all patients to ensure they get access to the medications they need. If the patient receives two denials from an insurance company refusing to pay for the medication, "We step in and help the patient afford the therapy," she says.

Our financial assistance programs can take a variety of forms. Sometimes a patient will qualify for free product that Biogen can provide, while in other cases Biogen will help cover a high insurance deductible that would otherwise make the therapy unaffordable for the patient.

"Patients often assume that because the insurance company has said 'no,' that's the final answer," she says. "They are surprised and very happy to learn that we can provide them with other options."

Every day, she says, "I go home and I feel like I made a difference in somebody's life."



\$1.1 billion

Amount of financial assistance Biogen provided in 2016 in the form of free drug and insurance copayment support, infusion assistance and charitable contributions.

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Biosimilars

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We are pursuing the development of biosimilars with the aim of reducing treatment costs while increasing patient access. Once biologic therapies are no longer covered by patents, regulatory frameworks provide the foundation for generic, or biosimilar, versions to enter the market at reduced costs for the benefit of future generations.

Biogen continues to make progress in biosimilar development through Samsung Bioepis, our joint venture with Samsung Biologics, with a focus on providing alternatives for payers and health care systems that can reduce treatment costs after innovator intellectual property (IP) protections expire. Ultimately, the benefits to patients are increased access and lowered costs of much needed therapies.

Learn more about our [biosimilars](#) work.



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R&D at Biogen

We stand at the cusp of a transformative era of neuroscience drug discovery and development. As a pioneer in biotechnology, we have one overarching focus: developing novel medicines that can improve the lives of people living with devastating neurological and neurodegenerative conditions. We measure our success by the impact we have on patients, families and caregivers. Every day, we ask ourselves one essential question: Are we truly making a difference in people's lives?

We are building upon our 30-plus years of experience in MS to expand into new areas of treatment for conditions such as SMA, Alzheimer's disease, Parkinson's disease, ALS and progressive supranuclear palsy (PSP). We have numerous studies underway with the potential to positively impact millions of patients – from therapies that may slow the progression of Alzheimer's disease to medicines that may repair damage caused by MS, among others.

As we help lead this transformative period in neuroscience, Biogen is driving a deeper understanding of disease biology and genomics in our pursuit of *Science That Matters*. We are harnessing cutting-edge technologies to treat neurological and neurodegenerative disorders and exploring entirely new ways to manage disease through the advancement of gene therapy.

IDEA Ranking

Biogen ranked first on IDEA Pharma's 2017 Product Innovation Index, up from sixth place in 2016. The ranking measures biopharmaceutical companies according to their ability to successfully bring innovations to market.

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Our Pipeline

Our drug discovery pipeline signifies a broader commitment to treating neurodegenerative diseases and an increased focus on Alzheimer's disease, which affects millions of patients and their families. Biogen's approach combines more traditional drug research with advanced computer technology to accelerate the pace of innovation. We're not only looking for more sources of information, we're better connecting the dots across datasets to help accelerate drug discovery, design better clinical trials and, ultimately, improve patient outcomes.

The impact of this approach is already paying dividends. We have been mining vast amounts of public data to improve the quality of our clinical research and trials. Our database strategy and analytics team works closely with our safety and epidemiology groups to build advanced tools that visualize and manage all this information. Our aim is to advance decision-making with the goal of helping more patients and families faster.

In another data-mining example, through collaborations on two separate studies, we have amassed information sets to help determine why MS progresses differently from one patient to the next. Why do some patients experience worsening paralysis while others live comfortably with few symptoms? These are just a few of the questions we seek to answer.

Learn more about the diseases we're focused on and the therapies in our [pipeline](#).



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Biogen R&D Focus Areas

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Neurodegeneration

- R&D organization is working on novel approaches for previously intractable neurological conditions
- Partnering with industry and academia to help accelerate the pace of discovery
- Alzheimer's disease is a key focus; Biogen has one of the broadest and most advanced pipeline portfolios in Alzheimer's
- Rapidly advancing a treatment for SMA
- Driving toward new treatments for Parkinson's disease, ALS and PSP

Gene Therapy

- Exploring entirely new ways to treat a range of diseases through gene therapy
- Collaborating with the University of Pennsylvania to advance gene therapy and gene editing technologies, targeting the eye, skeletal muscle and central nervous system
- Aiming to validate next-generation technology and explore the expanded use of genome editing technology as a potential therapeutic platform
- Goal: to build a robust gene transfer and gene editing platform for the future treatment of inherited conditions or broader, more complex acquired diseases

MS

- More than two decades of clinical experience in MS
- Most robust portfolio of MS therapies in the industry
- Research focused on potential repair of the damage caused by MS



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Working Collaboratively Toward a Treatment for Alzheimer's Disease



John Beaver
Vice President, Biomarkers

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According to the Alzheimer's Association, Alzheimer's disease is the most common cause of dementia, affecting an estimated 5.5 million individuals in the U.S. and 35.6 million worldwide. In the U.S. alone in 2016, an estimated 15.9 million families and caregivers provided 18.2 billion hours of unpaid assistance to those with Alzheimer's and other forms of dementia.

John Beaver, vice president of Biomarkers at Biogen, is one of many dedicated scientists at our company exploring new treatments for this devastating and progressive disease. He's leading a team focused on developing biomarkers and other tools that will enable earlier and more accurate diagnoses, ultimately, we believe, leading to the discovery of more appropriate treatments. Biomarkers allow scientists to map the evolution of Alzheimer's disease, which begins to develop in patients 10 to 20 years before clinical symptoms are observed.

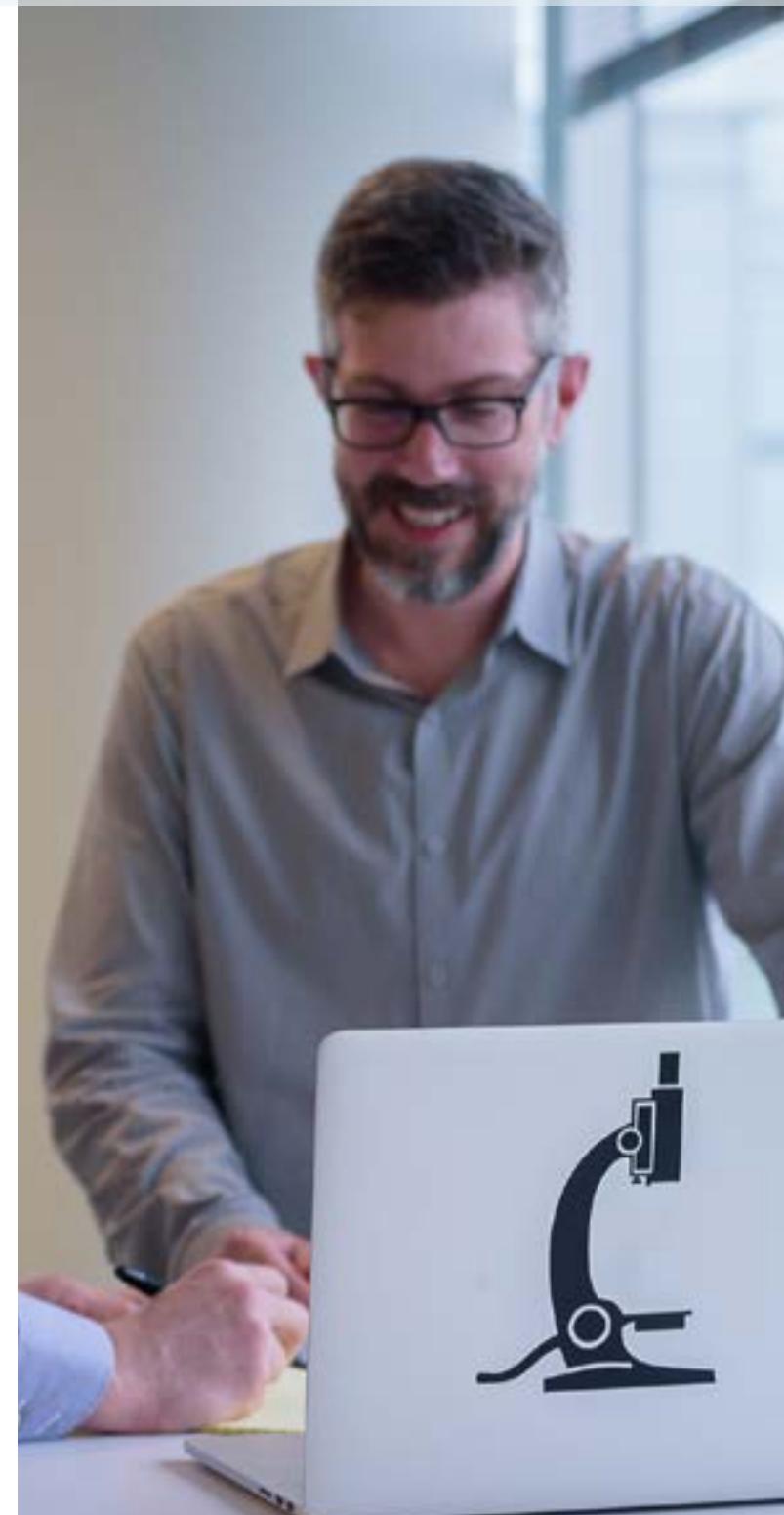
"My aspiration is to bring the best medicines to the patients who will benefit from them as rapidly and efficiently as possible."

Patients are often hesitant to give consent for the invasive lumbar puncture procedure that could be an alternative to PET imaging for early identification in those who may not yet display clinical signs of Alzheimer's disease but may already be developing the misfolded brain proteins thought to cause the disease. We're collaborating with academic, industry and diagnostic partners, through consortia such as the Coalition Against Major Diseases and the Critical Path Institute, with a shared goal of standardizing the technical requirements for collecting, storing and transporting the fluid samples required for biomarker development.

Our hope is to one day create a simple and more routine diagnostic technique, such as a blood draw from a patient's arm. This would be a far less invasive and more cost-effective method of detection that would not require such highly specialized training.

"My aspiration is to bring the best medicines to the patients who will benefit from them as rapidly and efficiently as possible," Beaver says.

Read more about Biogen's biomarker work [here](#).



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In the Pipeline: Potential New Therapies Targeting Alzheimer's Disease

Biogen's investigational drug candidate for early Alzheimer's disease, aducanumab, is in development for patients who suffer from this debilitating condition, and is now in Phase 3 trials.

Results from pre-clinical research and PRIME, the Phase 1b study in prodromal and mild AD patients (n=165) of aducanumab, were published in August 2016 in the journal, Nature. Those results showed that aducanumab reduced amyloid-beta in the brain and the reduction was dose-dependent. Amyloid-beta plaque is associated with the development of Alzheimer's disease and it is hypothesized that removing it may slow the clinical decline of people who have Alzheimer's disease.

The much larger Phase 3 clinical trials, currently in enrollment, are expected to include 2,700 patients worldwide with early stage Alzheimer's disease.

We're continuing to push forward with other potential novel drug therapies. For example, in June 2017, we exclusively licensed from Bristol-Myers Squibb an experimental medicine with potential in both Alzheimer's disease and progressive supranuclear palsy (PSP), a rare and devastating condition that affects movement, speech, vision and cognitive function. The experimental medicine targets tau, the protein that forms the deposits or "tangles" in the brain associated with Alzheimer's disease and other neurodegenerative diseases, including PSP. With the addition of this asset, we are continuing to build a pipeline with multiple approaches to addressing the complex, devastating process of neurodegeneration.



Treating an Often-Fatal Disease

Spinal Muscular Atrophy (SMA) is the number one genetic cause of infant death. An estimated one out of every 10,000 babies is affected by the disease, which attacks the motor nerve cells in the spinal cord, resulting in severe and progressive muscular atrophy and weakness. Those with the most severe type of SMA can become paralyzed and have difficulty performing the basic functions of life, such as breathing and swallowing. Tragically, many pediatric patients die before their second birthday.

In late 2016, the U.S. Food and Drug Administration approved SPINRAZA®, the first drug to treat SMA patients. The approval of SPINRAZA was based on positive results from multiple clinical studies in more than 170 patients. In one clinical study of 121 patients with infantile-onset SMA, patients received either an injection of SPINRAZA into fluid surrounding the spinal cord or had a mock procedure without drug injection. Forty percent of patients treated with SPINRAZA achieved improvement in motor milestones. A Phase 3 clinical trial evaluating children with Type 2 SMA also showed improvements in some patients. Biogen has licensed the global rights to develop, manufacture and commercialize SPINRAZA from Ionis Pharmaceuticals. In June 2017, SPINRAZA received marketing authorization in the EU.

The treatment has been lauded by the SMA community not only because it is helping patients, but also because it is addressing the underlying genetic cause of the disease and giving new hope to both patients and their caregivers. We will not be satisfied until all patients and families who seek this treatment are able to receive therapy. We want to do everything we can to improve quality of life for children and families affected by the disease – today and in the future.

For us, SPINRAZA is another example of *Science That Matters* – developing breakthrough medicines that are truly able to transform lives.



Collaborations

Biogen is committed to bringing novel therapies to market, focusing on hard-to-treat disease areas with significant unmet medical needs. But this challenge is often bigger than any individual company. That's why we collaborate with partners in both the public and private sectors to harness the latest advances in science and technology.

We provide funding to leading research institutions, partnering with them to further understand the underlying causes and potential treatments for complex diseases. Doing so ensures a diversity of ideas, perspectives and data that we might not otherwise access on our own. We highly value the insights and expertise of other companies and academic laboratories, which complement Biogen's own knowledge and skills. Together, we can advance medicine more rapidly and effectively by joining forces with many different disciplines to tackle complex problems.

Successful collaborations are built on a foundation of mutual respect, aligned interests and, at their crux, a shared patient-centric goal of improving the lives of people with serious diseases. We structure collaborations so they benefit all parties, working with organizations at every stage in the drug development process.

Learn more about our [collaborations](#) with other companies and with academic institutions.

Hemophilia Donations

In 2014, Biogen and Swedish Orphan Biovitrum AB (publ) (Sobi™) made a commitment to close the gap for hemophilia clotting factor treatments in the developing world. The commitment spans 10 years and includes up to one billion international units (IUs) of clotting factor therapy, with the World Federation of Hemophilia (WFH) receiving 500 million units over five years. The donation, the largest of its kind, is ensuring people with hemophilia have access to this essential treatment regardless of where they live. Outcomes in 2016 include:

- Treating over 12,300 reported patients in 41 countries
- Treating nearly 16,000 acute bleeds
- Enabling 790 surgeries, many of which were life- and limb-saving
- Doubling the percentage of children receiving treatment from 14 to 28 percent

In early 2017, we spun off our hemophilia business to an independent company named Bioverativ. Bioverativ intends to maintain this humanitarian commitment.

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We are committed to improving the quality of patients' lives and believe that strong ethics and transparency are critical to building trust with patients, providers and other stakeholders. We recognize that Biogen, along with other biotechnology companies, must approach these constantly evolving technologies with a balance of vigilance, diligence and humanity. Our approach is guided by the principles of the Biotechnology Industry Organization (BIO), including a respect for the potentially significant benefits of biotechnology and a commitment to use it only for the benefit of humankind. We are sensitive to the perspectives of various stakeholders and welcome dialogue and appropriate industry safeguards for appropriate use of biotechnology.

Human health, safety and environmental protection are our top priorities in the discovery, development and use of our products. We comply with all applicable laws regarding biotechnology research and development, and support and implement strong ethical practices in our clinical research. This includes strict:

- Informed consent procedures
- Protection of the confidentiality of medical and genetic information
- Protocols for clinical study execution

Our clinical research and other ethical standards for our employees and business partners are included in our [Code of Business Conduct: Values in Action](#).

Payments to Investigators

To ensure the integrity of our research, we employ stringent guidelines for identifying and contracting with investigators (physicians and other personnel) who implement our clinical trials. We also conduct extensive capability assessments to determine whether investigators are able to comply with the requirements of clinical trial protocols. We require both investigators and the institutions that employ them to review the services they will perform in conjunction with a trial. They must also agree to an associated budget and payment structure. Biogen conducts fair market value assessments to make sure that investigators are paid fairly for their work. We also have policies that require investigators to disclose any financial interests in our company, thereby reducing any potential conflict of interest.

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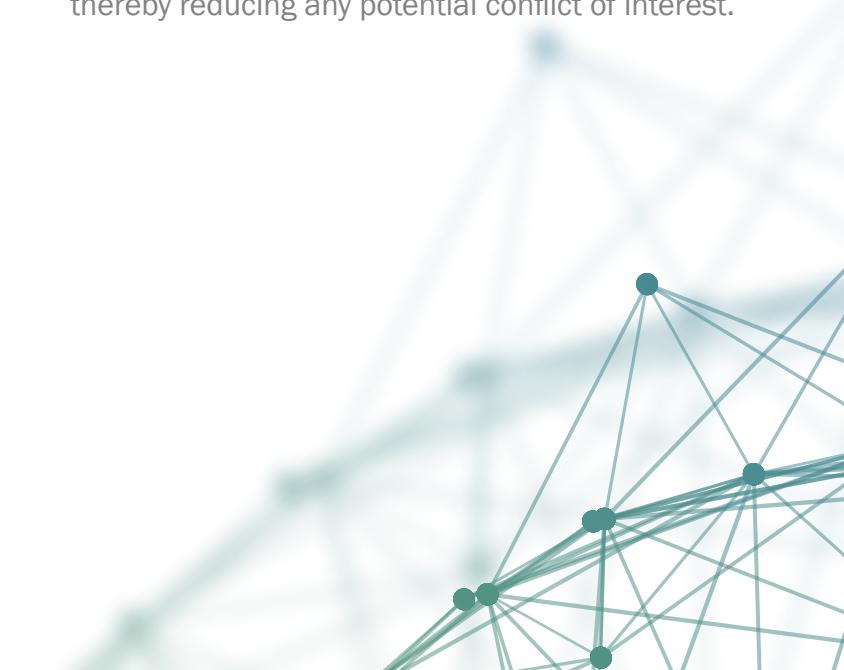
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Transparency in Clinical Trials

At Biogen, we believe it is essential to be transparent about our clinical trials, whether the results are positive or negative. Patients and medical professionals want – and deserve – to know whether the treatments we have in development are having their intended effect and whether there are any related risks. Biogen is committed to supporting clinical trial disclosure and responsible data sharing in compliance with global legal and regulatory requirements and in alignment with the biopharmaceutical industry's principles. [Learn more](#) about Biogen's Clinical Trial Transparency policy, access study-level clinical trial summary results or request access to study-level and patient-level clinical trial information.

Stem Cell Research

We are sensitive to the important social and ethical issues regarding stem cell research. We believe the science indicates the potential for significant human health benefits from the use of stem cells, justifying responsible research. Thus, we, at times, make use of stem cells in our research. In doing so, we adhere to related laws and regulations and, where possible, incorporate the guidelines of the International Society for Stem Cell Research. We oppose the use of stem cells for human reproductive cloning, and we also oppose the use of any form of biotechnology for the purposes of harming humans, crops or livestock.



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Responsible Marketing

We are committed to providing information that is accurate, supported by scientific evidence and presented honestly and fairly in every context. Our interactions with patients and health care providers are governed by all applicable laws and regulations, as well as by our Code of Business Conduct: Values in Action, and our comprehensive compliance program. Employees receive regular training and education, as applicable, regarding our marketing policies and practices. And we work to ensure that all marketing materials are created and communicated in an ethical and responsible manner.

Our product review committees are responsible for reviewing and approving marketing materials before they are distributed publicly. We have a global policy that identifies general principles to be incorporated when global promotional materials are created, as well as standard operating procedures that are implemented by all Biogen offices throughout the world.

Patient Privacy

In recent years, individuals, companies and governments have grown increasingly concerned about the security of personal data. As a result, laws protecting personal data and how it may be collected, accessed, shared and used are becoming more common. Biogen has access to personal data related to patients, health care professionals, employees and others. Protecting this data is not only a legal requirement, it's a matter of trust.

We respect the privacy and safeguard the security of the personal information we collect. Doing so is fundamental to our commitment to patients, health care professionals, business partners, employees and the communities we serve. Learn more in our [Privacy Policy](#).

Animal Welfare

At times, Biogen is required by standards of scientific best practice, or by government agencies charged with the protection of public health, to conduct or sponsor research that uses animals. When we do so, we adhere to applicable national and international laws, policies and guidelines on the humane treatment of animals used in research. These include, but are not limited to, the Animal Welfare Act, the U.S. Public Health Service Policy, the National Institutes of Health and the Association for Assessment and Accreditation of Laboratory Animal Care.

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Science That Matters for Society

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The dedication and passion we bring to our mission of improving patient lives is similar to the mindset we apply to improving Biogen's operational impact and contributing to a more regenerative environment for tomorrow.



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We strive to be a catalyst for positive change by addressing environmental impacts and by increasing the performance and diversity of our supply chain, including collaborations to develop better packaging solutions and address the carbon impacts resulting from our business.

We are working to embrace green chemistry and are finding new and better ways to minimize waste and maintain zero waste-to-landfill.

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Climate and Other Environmental Impacts

Biogen's commitment to improving lives goes beyond the therapies we provide; it also extends to doing our part to solve critical environmental challenges. Through the lens of science, we carefully manage the way we use resources, striving to mitigate, restore and – in the case of carbon emissions – neutralize our footprint wherever possible.

Biogen has committed to taking a science-based approach when it comes to managing and restoring its environmental resources, which includes establishing a science-based greenhouse gas (GHG) reduction goal through the [Science-Based Targets Initiative](#). Our practice of setting science-based targets, when possible, is part of our broader commitment to Context-Based Sustainability, a rapidly evolving, cutting-edge approach to managing sustainability performance that takes resource needs and limits in the world explicitly into account.

Rather than simply set targets in incremental terms, we are setting goals that are tied to tangible social, economic and environmental thresholds in the world, such as how much water is available in the places where we do business and the percentage of GHG emissions that must be reduced in order to counteract climate change. Through this process, we strive to have a more resilient, regenerative environment.

Carbon Strategy

Changes in climate may pose a risk to human health and to our business, with direct and indirect impacts already being felt worldwide through extreme weather, the spread of infectious diseases and air quality degradation. These impacts often cause the heaviest burdens for the most vulnerable and underserved populations, especially those living in poverty. A changing climate could also threaten global stability, which may affect Biogen's ability to make and deliver our advanced therapies to people around the world.

Read our position on [climate change](#), and learn more about the potential long-term impacts on our industry, in the [2030 Outlook on Sustainability in the Biopharma Industry](#), a white paper jointly authored by Biogen.

We believe businesses must take responsibility for the GHG emissions from their own operations and across their value chains. For Biogen, this means implementing voluntary reductions in GHG emissions by improving the energy efficiency of our operations and products, transitioning to low-carbon energy and advocating for reductions across our supply chain.

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Science-Based Targets

We have been a carbon neutral company since 2014, by investing in environmental projects that offset and neutralize the carbon emissions associated with our business. This includes our owned operations, supply chain, business travel and even employee commuting.

Our three-pronged approach to carbon reductions in our owned operations includes the following:

- Manufacturing innovation and process changes
- Generating our own cleaner energy
- Investing in more efficient, green and healthier buildings

This three-pronged approach has led to a 70 percent reduction in our Scope 1 and 2 carbon intensity, compared to 2006. In general, our approach has been to reduce energy use and emissions through efficiency and innovation measures, and then find ways to offset the remaining emissions that have not yet been eliminated or are out of our direct control.

As we move forward, our plan will be to continue searching for innovative ways to further reduce our own emissions and those of our suppliers, while decreasing our need for carbon offsets. For instance, we will continue exploring opportunities to generate our own power through co-generation and renewable energy; drive innovations and energy efficiency improvements in our operations and processes; and support employees in reducing their impacts, such as encouraging cleaner commuting (e.g., via electric cars and bicycling).

As mentioned above, Biogen has committed to establishing a science-based GHG emissions reduction target through the Science-Based Targets Initiative, an organization encouraging companies to set carbon reduction targets that use science as their guide. We want to make certain that our efforts align with broader global efforts to ensure that the earth's average temperature does not rise more than 2 degrees Celsius, the consensus threshold that scientists and world leaders who are signatories to the 2015 COP21 Paris Agreement have all agreed.

In early 2017, we committed to a 35 percent reduction of absolute emissions across our entire value chain (Scopes 1, 2 and 3) to be achieved by 2030, using 2013 as our baseline year. This science-based target supports our ongoing commitment to be a carbon neutral company, which we first achieved in 2014 through a combination of emissions reductions and renewable energy purchases. Performance against this target will be reported annually in our Global Impact report and CDP Climate Change response.

In the past, we have tracked carbon emissions against an intensity-based reduction target. With the move to a science-based reduction target, we will now use the intensity metric as a reference point and benchmarking metric.

Learn more about this initiative at sciencebasedtargets.org

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Transitioning to a Low Carbon Economy

As an early member of RE100, a collaborative initiative of businesses committed to achieving 100 percent renewable energy, Biogen's operations around the world have been powered by only renewable electricity since 2014. This past year, we purchased and retired renewable energy certificates equivalent to the amount of electricity consumed at each of our locations, including:

- Green-e certified renewable energy certificates from U.S. wind farms
- Guarantees of Origin from on- and offshore wind farms in Denmark
- Green Power Certificates from a biomethane plant in Japan
- International RECs from wind farms in Brazil
- Renewable energy certificates from an Australian solar farm

To advance our journey to a low carbon economy, Biogen has purchased and retired certificates to cover 100 percent of the estimated electricity used within our supply chain. We have been doing this since 2014.

The decoupling effect between revenue and carbon due to this transition has been profound. Since 2013, our carbon emissions have dropped even while our CAGR (compound annual growth rate) has increased by 18 percent.



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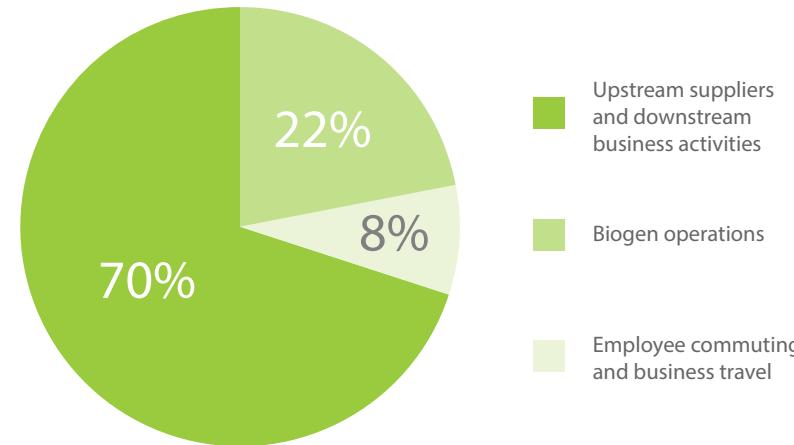
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Engaging Suppliers in our Climate Strategy

As shown below, and as many other companies find, more than 70 percent of our carbon impacts are driven by our upstream suppliers and downstream business partners. In order to meet our full value-chain emissions reduction goal, we have been working closely with our suppliers to better understand their contributions to our carbon footprint and their climate strategies.

Expanding on our 2015 efforts, we have engaged approximately 50 suppliers, which collectively represented about 75 percent of our 2016 supply chain carbon emissions. This initiative, which consists of sharing data to better understand the carbon impact of the goods and services we purchase, has resulted in more accurate accounting of our footprint and a 15 percent decrease in our overall carbon footprint. We will continue to expand this work with suppliers, supporting their emissions reductions through the sharing of best practices and identifying opportunities for improvement.



70%

Reduction in Scope 1
and 2 carbon intensity
compared to 2006



[Watch this video to learn more about our carbon commitments.](#)

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Environmental Performance

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As Biogen grows, we remain committed to reducing our environmental footprint by maintaining our carbon neutral status and minimizing and eventually restoring resources needed to manufacture our therapies.

While our long-term commitment is to reduce absolute emissions and carbon intensity, in the short term, our rapid operational growth may result in fluctuations in our performance. As an example, in late 2015 we expanded our operations into a newly acquired manufacturing facility in Research Triangle Park (RTP), North Carolina. In large part because

of this move, our total energy use and total potable water use rose in 2016 by 9 percent and 18 percent, respectively. When excluding this facility, our performance continued to demonstrate a downward trend in absolute and intensity impacts.

A major component of Biogen's waste generation is process wastewater from production, of which the majority is composted. Due to significant increases in 2016 production volumes, we measured a 56 percent increase in total waste volume.

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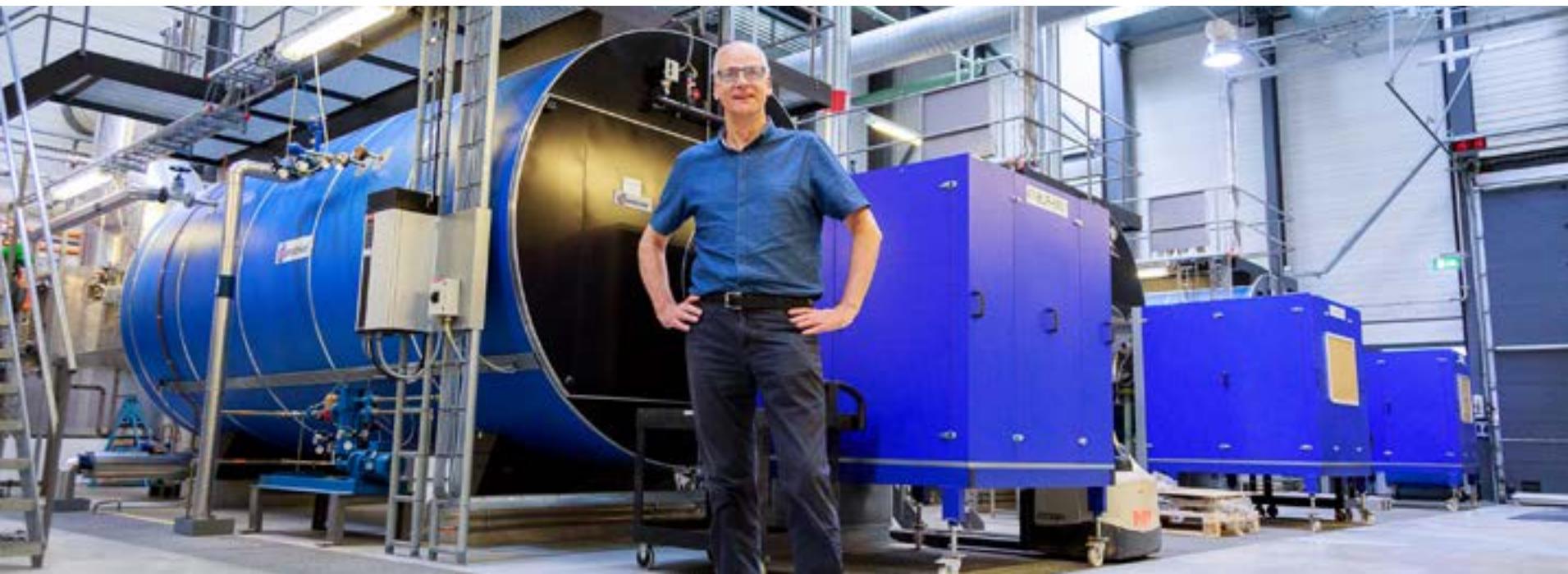
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15%

Absolute reduction in value chain carbon emissions*

* Based on 2013 baseline



Target: 35%

absolute reduction by
2030



70.2%

Reduction in carbon
intensity*



*Based on 2006 baseline, MTCO₂e / million \$ revenue

64.9%

Reduction in potable
water intensity*



*Based on 2006 baseline,
cubic meters / million \$ revenue

80%

of goal met to reduce potable
water intensity by
2020



60.4%

Recovery and recycling rate
(reuse, recycle, compost,
non-combustion energy
recovery)



Number of suppliers engaged
in carbon reduction, which
represents

75%

of our supply chain
total GHG emissions

0 Zero Waste
to Landfill

80%

of goal met to reduce carbon
intensity by 2020



100%

Renewable electricity

Through retiring renewable energy
certificates applicable to each location
where we operate manufacturing
and/or office facilities

\$300,000

Total avoided energy and water costs
from efficiency improvement projects
implemented in 2016, such as LED
lighting upgrades and a continuous
building commissioning program

*Please note Biogen is using science and context-based goals but will continue to leverage intensity-based metrics for internal operational excellence and benchmarking.

Audits and Assessments

Over the last two years, we conducted third-party energy and water audits at each of our four manufacturing locations, looking for potential projects to support our environmental and financial goals. In early 2017, we began a process of prioritizing the 100+ projects recommended by the auditors. From that list, more than 30 projects were identified with an average payback of less than two years and projected annual cost avoidance in excess of \$1.5 million. These selected projects will now enter a phase of more detailed analysis and/or direct implementation over the next few years. We believe this process will generate another five-percent reduction in operational carbon emissions. Read more on our water efficiency efforts on page 55.

A State-of-the-Art Facility

Increased productivity with a decreased environmental footprint – that's the holy grail in facilities management for any manufacturer, and it will soon be Biogen's gold standard at our building currently under construction near Solothurn, Switzerland.

When it opens in 2019, the Solothurn facility will be a state-of-the-art building that combines the latest in cell culture technology with high-performance purification, allowing manufacturing of biopharmaceuticals at a large scale. We hope to produce 10 metric tons of antibodies per year, making it three times more productive than our other facilities.

Modular in design, the facility will offer the flexibility needed for future expansion. In addition to production, the plant will house laboratories, office space, utility buildings and a storage warehouse.

[View video here](#)



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Waste

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In 2016, we continued to maintain our zero-manufacturing waste-to-landfill status at our Cambridge and Hillerød manufacturing facilities. Our newly acquired manufacturing facility in RTP has nearly completed its transition, achieving 96 percent landfill diversion, and is anticipated to achieve zero waste-to-landfill in 2017. Our other facility in RTP experienced a one-time event that required landfilling 17 metric tons of waste, resulting in a landfill diversion rate of 99 percent for the year.

Our goal is to continue our zero waste-to-landfill status for non-hazardous waste at all the major locations we control. To do so, we will leverage a suite of projects that help avoid, recycle and compost waste, and then divert the rest to create or recover energy.

In 2016, our rate of beneficial recovery and recycling of waste (e.g., donated, recycled, composted or recovered for energy by anaerobic digestion) increased to 60 percent, with the rest primarily going to waste-to-energy (WTE) or incineration without WTE. Total generation of non-hazardous waste increased again in 2016 due to its strong correlation with production volume. With our new manufacturing processes, such as those being built in Solothurn, we hope to reverse this trend. Our focus will also be on increasing recovery and recycling rates and reducing our reliance on WTE to achieve this goal.

Our sites, and especially our employees, are key to ensuring our success. For example, at our new RTP facility, a small team of employees implemented a recycling program for disposable personal protective equipment (PPE) garments to reduce the amount of waste going to a WTE facility. The recycled garments can now be fabricated into new plastic products, a measure that will help reduce our carbon footprint as well as offset the costs associated with disposing PPE garments. This recycling measure illustrates the small steps our employees are taking to help reduce waste wherever they can.



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More Efficient Packaging and Shipping

We are continually working with our suppliers to improve the sustainability of our packaging and shipping our products. Two recent examples include:

In 2016, we undertook an initiative to optimize the insulated packaging used to deliver products that require refrigeration. This packaging typically includes multiple layers of insulation and often requires air shipment. We evaluated various options and identified an improved solution that results in fewer packaging components and insulation materials, is easier to pack and unpack, and delivers equal or better performance. This improved packaging is projected to reduce the cumulative weight of our refrigerated packaging used globally by 28.5 metric tons per year, which will drive sizable sustainability benefits, such as:

- Reducing demand for materials by 28.5 metric tons per year
- Lowering shipping costs by 30%
- Decreasing GHG emissions associated with producing packaging materials by roughly 23 MTCO₂e per year
- Reducing GHG emissions associated with air transport by approximately 144 MTCO₂e per year

The cumulative savings of 167 MTCO₂e of GHG emissions from these improvements is equivalent to taking an estimated 35 cars off the road for one year.

In another project, we worked with a key supplier, Merck KGaA, Darmstadt, Germany, to improve efficiencies in the packaging and shipping of filter products we use in our manufacturing processes. Previously, our process had been to receive individually-packaged filters, remove and recycle the distribution packaging (corrugated shipping cartons, etc.), and then consolidate the filters, still in their internal plastic wrap packaging, for the final delivery to the manufacturing location.

To improve this process, we collaborated and developed a corrugated bulk shipper that fits on a standard pallet containing multiple units of the filters. Early results indicate the new shipper will lead to the following:

- 21% reduction in corrugate packaging waste to recycle or dispose of
- 19% reduction in GHG impacts due to reduced packaging material production
- 12% decrease in deliveries which will further reduce energy use and emissions impacts
- 70% reduction in operator time to open and manage the product and packaging

At project usage levels, the bulk packaging will, each year:

- Avoid the need to recycle or dispose of an amount of packaging material equivalent to the capacity of a standard U.S. garbage truck
- Reduce GHG impacts by an amount equivalent to the carbon removed annually by approximately 12 acres of forest

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Water

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We use water to make our products, to sterilize and clean equipment, for irrigation and elsewhere throughout our offices and manufacturing operations. We consistently focus on ways to reduce water use, increase water recycling and make sure the wastewater adheres to the highest quality and safety standards before returning to the water stream.

In recent years, we completed several key projects across our operations, including installing flexible volume manufacturing processes, HVAC water reclamation systems, a rainwater harvesting cistern, clean-in-place process improvements and upgrades to our cooling towers to reduce our demand on locally available water supplies.

Our process engineers, facilities and environmental, health, safety and sustainability

(EHS+S) staff also work continually to maintain and improve upon the high-quality water used in our processes. For example, our Hillerød facility completed a project funded through our Strategic Innovation office to address the reuse of process water. This project is being evaluated for implementation at other sites, including the new facility in Solothurn, Switzerland.

In 2016, absolute potable water use increased by 18 percent, with potable water intensity up 10 percent, primarily due to onboarding the new manufacturing facility in RTP. Excluding this new facility, absolute water use increased just six percent while intensity slightly decreased. This uptick in absolute water use was primarily due to increased production at the Hillerød facility.

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Context-Based Targets

We recently completed studies of our water use at both of our plants in RTP using a context-based water metric. This water metric was developed by the Center for Sustainable Organizations, which makes it possible to assess water withdrawal relative to locally available renewable supplies. In both facilities, we determined that our water use falls well below “fair, just and proportionate allocations”² of locally available supplies, meaning that our water use in the RTP region is sustainable within this context. We have committed to utilizing this standard to assess our water use at all of major operational facilities.

Our use of the context-based water metric also signals our intent to move away from discretionary targets, such as our previous water intensity goal, and towards targets that measure results in terms of real social, economic and environmental limits and thresholds in the world. This context-based approach is about living within our ecological means in all years, while also taking steps to ensure that our social and economic impacts are sustainable as well.

²Fair, just and proportionate share is defined as a score of less than 1.0 using the Center for Sustainable Organization's Corporate Water Gauge Tool.

Using this approach, our new water goals are to:

- Assess water use at all our major facilities by 2019 using a context-based water metric
- Maintain or bring water withdrawals at each of our major facilities below fair, just and proportionate shares of locally available renewable supplies by 2030

Similar to our carbon intensity goal, our previous water intensity metric will continue to be used internally as a business metric to drive and communicate operational efficiency.



Product Stewardship

Our commitment to improving lives extends to the integrity with which our products are produced and delivered to the patients who need them.

We comply with all applicable regulations and seek to minimize adverse health, safety, environmental and social impacts of our products, while maximizing their benefits and value through their full life cycle.

We view this approach as both a responsibility and an opportunity for innovation and ongoing improvement. We assess and engage at every stage of the product life cycle to enhance product benefits and reduce potential adverse impacts.

Quality and safety are always top priorities at Biogen. Quality is ingrained in our culture and integrated into every critical business and decision-making process at Biogen. All individuals involved in the development and manufacture of our medicines share accountability for product quality. We conduct environmental risk assessments on products, from the development phase through launch, to understand and manage any impacts. Managing the chemical substances used in drug development and manufacturing is an important part of how we mitigate any risks to the environment. We follow chemical management rules and governing regulations of the regions in which we operate, and continue to assess the impact of new and emerging global chemical management regulations on substances we manufacture and on the raw materials we use. (See the Health & Safety section on page 83 for information on how we protect employees).

Reducing Counterfeit Risks

Counterfeit medicines – a [multi-billion dollar](#) annual illegal industry, estimated by the World Customs Organization – put patients at risk and pose an ever-growing concern for the biopharmaceutical industry. Biogen takes the issue of counterfeit, adulterated and compromised drugs very seriously.

Worldwide markets for biopharmaceutical products like ours are generally well-regulated for the secure delivery of medicines. Government agencies around the globe are implementing progressively stricter requirements to improve medication security. Complying with these requirements as well as including our commercial distribution partners is a key part of maintaining the security and integrity of our products.

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As part of Biogen's comprehensive supply chain security strategy, we aim to disrupt diversions, counterfeiting, theft and other nefarious activities through the following:

- Implementing sophisticated technology into our product packaging
- Auditing current supply chain partners to ensure industry best practice requirements are met regarding product security
- Monitoring program across value stream to identify potential threats to supply chain resiliency and robustness

In addition, Biogen has a Global Serialization Program to meet the increasing global regulatory requirements for managing supply chain operations in a secure and traceable way.

These regulations are built on the concepts of serialization and “track and trace.”

Serialization is the use of globally unique codes that are printed on individual medicine packs and communicated to supply chain partners for the purpose of authentication, and in some cases, improved product management, such as preventing dispensation of expired product or managing processes for returns and recalls. We are also investing in packaging operations, distribution sites and information technology infrastructure across the supply chain to support serialization and assure compliance to serialization requirements in an increasing number of markets, including the U.S. and the European Union (EU).

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Protecting Our Products from Counterfeit and Falsified Medicines

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Bjoern Rosner
Global Serialization Program Owner

Counterfeit drugs are endangering patients globally, a threat that is constantly on the mind of Bjoern Rosner, who leads Biogen's Global Serialization Program to protect our products. Our company has worked to meet emerging regulatory requirements in the U.S., Europe and other regions that are calling for increased controls in global supply chains, including tracking numbers on every single dose we make.

It's a complex process designed to ensure that patients receive medications that have not been subject to tampering, theft or outright copying. Every country's requirements are different, yielding different value for customers and patients.

Bjoern likens serialization to the license plate on one's car. "If you were driving and you saw another vehicle with the same license plate as yours, you would know something was wrong. There should only be one car carrying the number that uniquely identifies your vehicle," he says. "It's the same with a serial number on our medications. We're uniquely labeling every unit."

Once labeled, EU pharmacists will be able to check a medication against a unique list of numbers to be certain that the products they are dispensing were manufactured by Biogen and not swapped out by someone else between the time they left the manufacturing facility and arrived at a pharmacy or hospital. The serial numbers are highly randomized, rendering them extremely difficult for counterfeiters to figure out. In the U.S., the focus is on providing more data for investigations and verifications, with additional requirements to follow in phases.

Counterfeiting is a concern in the U.S. and the EU, although less than one percent of medications are expected to be fraudulent. Shockingly, some developing countries have areas where more than 30 percent of medicines on sale can be counterfeit. Another concern is illegal internet sites, where more than 50 percent of medicines were found to be counterfeit in a World Health Organization investigation.

The serial numbers also will help to track down products in the event of a potential recall. In the future, Bjoern says, the serial numbers could also be used to further improve and expand upon our patient engagement options.

Bjoern, who earned degrees in physics and electrical engineering, came to Biogen after developing anti-counterfeiting technology at another company. It's an area that he says keeps him constantly on his toes. "I'll never get bored," he says. "It's an extremely dynamic field with legislation and business drivers that are always evolving."



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Addressing Pharmaceuticals in the Environment

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We support the joint Association of the European Self-Medication Industry (AESGP), the European Federation of Pharmaceutical Industries (EFPIA) and the European Generic and Biosimilar Medicines Association's (EGA) position paper on Pharmaceuticals in the Environment (PiE), which recognizes and understands the concerns raised by stakeholders regarding the presence of PiE.

Biogen also works to reduce PiE that result from improper disposal of unused medications. We participate in government- and industry-managed end-of-use medicine collection and disposal programs in U.S. and other countries where local programs exist. In the U.S., we actively participate in the Pharmaceutical Product Stewardship Work Group (PPSWG), a U.S. membership association of major manufacturers of prescription and over-the-counter medicines, which was formed to address household disposal regulations of unused medications and sharps (e.g. needles) used to inject them. The PPSWG seeks to improve understanding of appropriate pharmaceutical product disposal options for consumers and coordinate industry compliance with disposal regulations.

In addition, the Sharps Working Group, of which we are a member, focuses on establishing sound sharps safety and collection and disposal policy, educating patients about their options and coordinating pharmaceutical industry compliance in the U.S.

Other actions we take to reduce PiE include:

- Supporting additional research on the impacts of PiE
- Performing environmental risk assessments on our products to reduce the risk of release of active pharmaceutical ingredients (API) to the environment
- Requiring our owned and contracted manufacturing facilities to take steps to minimize the risk of releases of substances to the environment

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Green Chemistry

Our approach to green chemistry focuses on ways to make our drug discovery and development processes safer, more efficient and more sustainable, while saving costs at the same time. Our teams make use of green chemistry concepts focused on increasing chemical process efficiency, reducing waste and optimizing materials used. We are currently working to establish a more formal green chemistry program, and recently joined the American Chemical Society (ACS) Green Chemistry Roundtable.

An example of green chemistry in action at Biogen is the approach we are taking in the production of antisense oligonucleotides (ASOs), which are modified RNA molecules that are used in research of neurological disorders.

Ionis Pharmaceuticals initially developed the ASO molecules before partnering with Biogen. The method of production of those original molecules, however, were solvent-intensive, generating hazardous, toxic waste by-products that would need to be properly treated and disposed.

In looking for ways to reduce the environmental impacts associated with the ASO manufacturing process while increasing efficiency, our team developed a way to create these molecules through a water-based process, thus removing the use of methanol, ethanol and other organic solvents.

This new method took nearly 18 months to develop – about three times longer than similar projects. But the investment was well worth it, says project lead Ratnesh Joshi. For one, the new process can also be done in six days versus 12, which saves both time and energy. And instead of 80 chemical reactions to generate one molecule, we now can do it in 60. Finally, the improved process reduces the use of organic solvents by 20 percent in the synthesis step and by 1,000 liters per kg of output in the purification step.

In short, these improvements reduce the amount of material needed and the potential waste, as well as water and energy demands and the associated GHG emissions.

For Ratnesh, the ability to work on potential therapies for neurodegeneration is intensely personal. When he was in high school, Ratnesh's then 43-year-old father suddenly lost the ability to speak due to a neurological condition. His father never recovered his speech.

"My father's struggle was deeply disturbing to me and yet, it became my motivation for getting into scientific research. I really wanted to find out why we didn't have any therapies for such problems," he says. "Very few people get to work in jobs that they really want to do, and I feel very lucky about that."



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Improving Processes

In another initiative to improve the chemistry and efficiency of our processes, we focused on the manufacturing of a molecule that is the foundation of a medicine we are developing to treat a rare but debilitating neurological disease. We collaborated with our contracted manufacturing partner to eliminate two process steps, then we identified an alternative acid and solvent system to be used and found an alternative material needed for another part of the process.

In addition to improving product performance, such as the purity of the active pharmaceutical ingredient (API), the process innovations also delivered several environmental benefits, including:

- **57%** improvement in materials efficiency, as measured by Process Mass Intensity (PMI)
- **49%** reduction in water usage
- **44%** reduction in global warming potential (GWP) impact associated with the materials reductions

In recognition of their innovative work on this process improvement, the project team earned Biogen's 2017 BeSustainable Award.



Supply Chain Responsibility

Maintaining an active role in our supply chain is a critical part of delivering on our mission to improve patient outcomes, meet our citizenship commitments and uphold our company values. We have dedicated internal policies, procedures and checks and balances to help manage our supply chain.

Biogen's [Code of Business Conduct: Values in Action](#) and [Human Rights Position Statement](#) establish the principles and practices of ethical business to which we expect all of our suppliers, business partners and employees to adhere.

The United Kingdom recently enacted the Modern Slavery Act of 2015, the first law in Europe aimed at preventing modern slavery and human trafficking within companies and their supply chains. Biogen published our first [Anti-Slavery and Human Trafficking Statement](#), as required by the Act. This statement describes Biogen's global commitment, approach and measures taken to combat modern slavery and human trafficking.

Biogen monitors the environmental, social and governance risks of our supply chain, including human trafficking risks, based upon our industry and the geographic locations in which we conduct business and/or obtain materials and services. We do this through a process of reviewing country risk profiles for corruption and human trafficking risks published by independent third-party expert organizations, and based on this assessment, by providing added diligence to specific areas or suppliers as needed. Our risk assessment process indicated very low risk of human rights issues or violations in our supply chain. More detailed results from the analysis are available in the [GRI Index](#).

For critical vendors that supply products and services relating directly to the safety and integrity of our products and the continuity of our manufacturing process, we continued our proactive supply chain assessment process. A total number of 518 suppliers were assessed in 2016, specifically those that fall into Biogen's base of "Good Manufacturing Practices" (GMP) vendors. This annual process evaluates the risks associated with our critical supplier base from environmental, social and governance perspectives across multiple factors, including water risks. Through this rigorous process, we have not identified any at-risk suppliers, but will continue to monitor the risks annually.

In addition to our own due diligence process, Biogen is an active member of the Pharmaceutical Supply Chain Initiative (PSCI), an organization made up of 24 leading global pharmaceutical companies that focuses on increasing the capabilities and responsibility of our supply chains.

The PSCI has developed and shared with industry suppliers the Pharmaceutical Industry Principles for Responsible Supply Chain Management, which address five areas of responsible business practices related to ethics, labor, health and safety, environmental protection and management systems.

PSCI's initiatives also include a shared audit program for suppliers common to numerous PSCI members, as well as a robust online resource library of information that can help suppliers improve their performance in the PSCI areas of focus listed above. More details on the PSCI and these Principles can be found [here](#).

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Supplier Diversity

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Our supplier diversity program represents our commitment to inclusive sourcing and procurement practices for the development and delivery of our transformative medicines. We focus on integrating into our supply chain minority- and women-owned businesses and those owned by persons with disabilities, veterans with and without disabilities, and lesbian, gay, bisexual and transgender (LGBT) persons. This umbrella also includes small businesses as defined by the U.S. Small Business Administration.

In 2016, Biogen spent nearly \$202 million with small and diverse business enterprises, representing nearly 10 percent of our total U.S. procurement spend – an increase of \$6 million over the previous year. We accomplished this by raising employee awareness of supplier diversity and by improving our process for capturing supplier certifications and classifications.

Getting Small and Diverse Businesses Registered

In 2016, we launched a supplier registration portal and database that supports the engagement of diverse suppliers, as we strive to include at least one small or diverse business in competitive bids valued at \$100,000 or more. All of Biogen's suppliers are loaded into the portal.

As we develop and expand relationships with small and diverse businesses, we aim to equip suppliers with the tools they need to fully compete within their vendor category. For example, we recently launched a business mentor program in the U.S. The formal, eight-month program pairs a select team of Biogen "mentors" with the owner of a qualified supplier diversity business to help grow his or her company. The program creates synergy between workforce and supplier diversity, serves as a professional development opportunity for the mentors and advances Biogen's commitment to improve outcomes for small and diverse businesses.

Looking ahead, we also hope to expand our supplier diversity efforts in Europe and have already signed on as a member of WEConnect International, a global network that connects women-owned businesses around the world.

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Promoting Supplier Diversity Through Small Business Challenge



In 2016, Biogen hosted our inaugural Business Inclusion Challenge, a high-energy small business pitch event to raise employee awareness of supplier diversity and showcase the benefits of cultivating a diverse supplier base. In the weeks leading up to the event, four selected small and diverse businesses participated in a pitch clinic where they received personalized feedback on how to better craft their presentations for Biogen and others.

At the Challenge, the participating businesses made presentations to a room full of Biogen employees, special guests and a panel of judges, increasing the visibility of their businesses among key decision makers at Biogen. The winner is now participating in our new business mentor-protégé program. The success of the event extended beyond the challenge. In the months that followed, participants were asked for additional information about their businesses.

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Science That Matters For Communities

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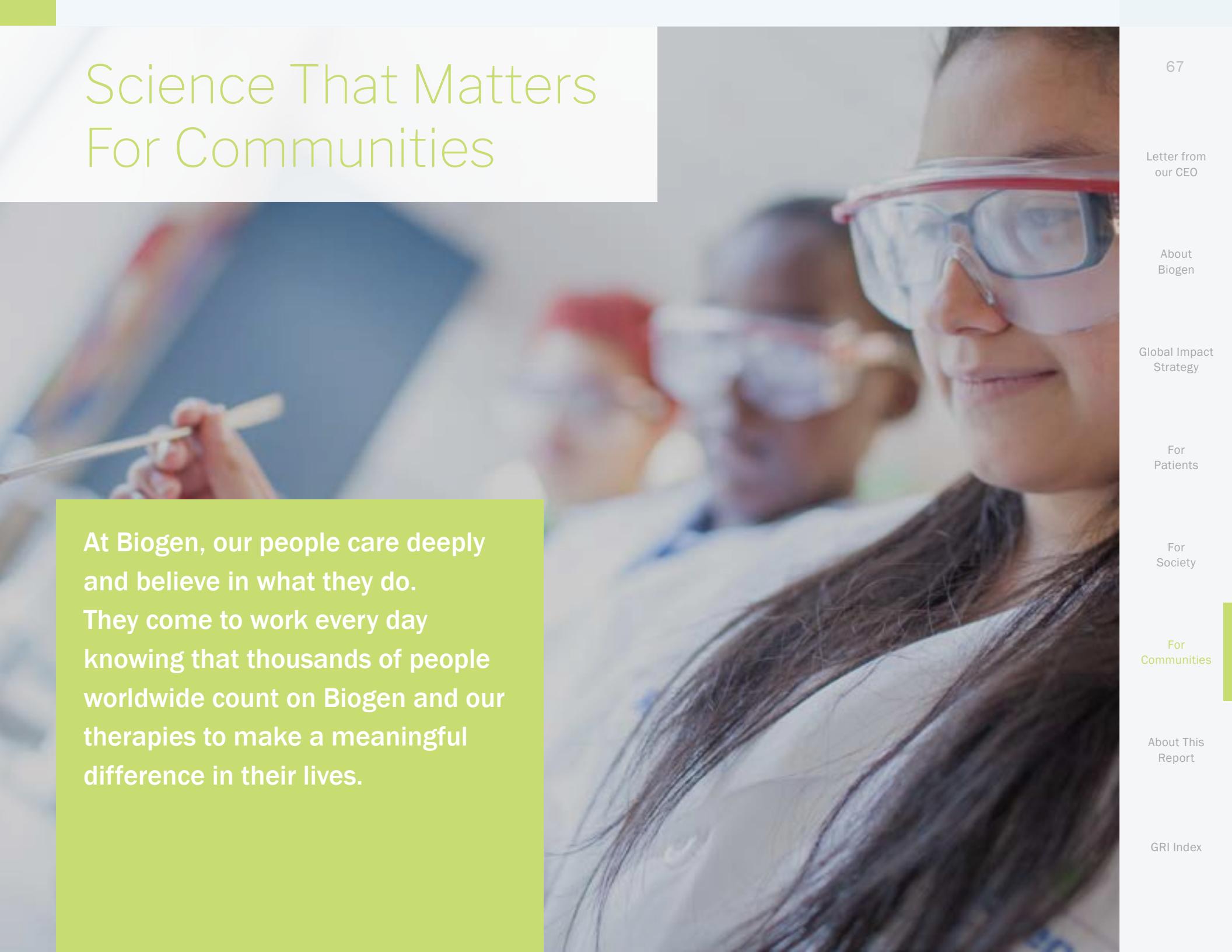
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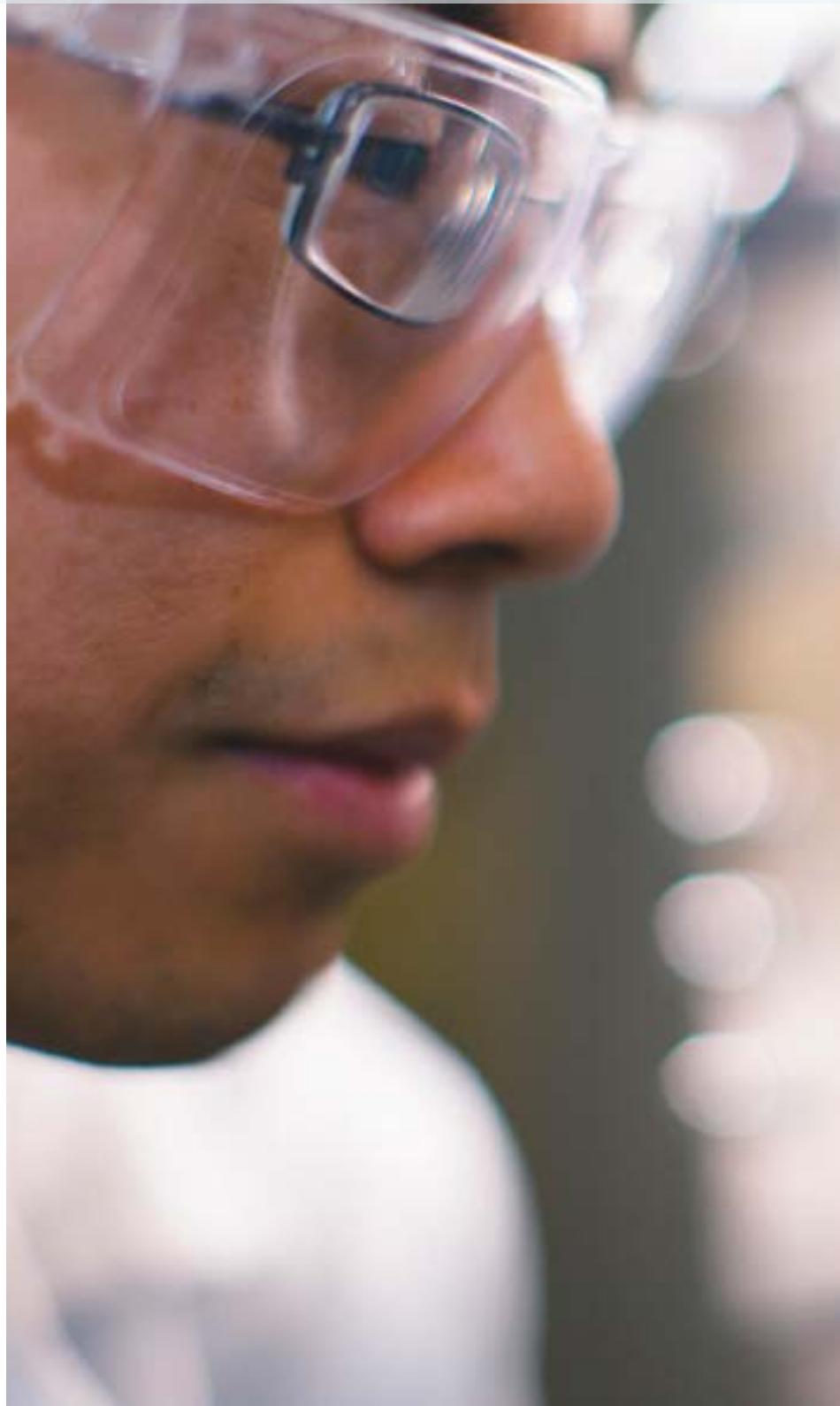
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A photograph of a woman with long dark hair, wearing a white lab coat and clear safety goggles. She is holding a clear test tube with a red liquid in her right hand. In the background, another person in a lab coat is visible. The image is set against a light blue background.

At Biogen, our people care deeply and believe in what they do. They come to work every day knowing that thousands of people worldwide count on Biogen and our therapies to make a meaningful difference in their lives.

We empower our people to build rewarding careers and foster a culture of learning that pushes them to take initiative and seek out growth opportunities. We value and support our people managers so they can effectively lead their teams. We're especially proud of our efforts to promote a diverse and inclusive workplace and to advance women in leadership roles.

As a science-based organization, we recognize the importance of inspiring the next generation of scientists and also communicating the value and promise of science. We aspire to be a positive presence in the communities we touch, whether demonstrated through our employee volunteerism efforts, grants made through the Biogen Foundation or our unique, hands-on Community Lab, which has introduced tens of thousands of students to the wonders of science.



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Workplace Community

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Patient-centric.

Above all else, this is what defines Biogen's culture.

Our employees tell us they take inspiration from patients who live with what can often be debilitating diseases. It's a powerful motivator knowing that one's job at Biogen – from scientific research to procurement, from manufacturing to distribution – may bring relief to someone who is suffering.

We emphasize collaboration, creativity, innovation, diversity and work-life balance. And we recognize and reward success. We look for individuals who are unwilling to give up, even in the face of the most daunting challenges. Our core values – care, courage, integrity, excellence and inclusion – drive our actions.



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Our People: Where Caring Comes to Life

Caring deeply, working fearlessly and changing lives isn't just a corporate mantra. It's something our people live every day. Here are just a few Biogen team members who are contributing to our mission.



Cherie Butts

Associate Director of Program Leadership

"What makes Biogen a great place is the intellectual electricity and diversity of perspectives brought to the decision-making table. The experience here has changed me as an individual and as a scientist, especially my approach. I want to always ask a relevant question – not just an interesting question – and strive for the right answer so we can really make a real difference in patients' lives."



Pinky Petaipimol

Asset Manager,
Pharmaceutical Operations & Technology

"I've been here for 12 years. The people at Biogen are amazing. Everyone lives the company's values and shows a deep commitment to the work we are doing. My colleagues know they are working on life-changing medicines that are truly needed. The energy here is infectious and I, like my colleagues, want to be a part of it. That's what keeps us here."



Hiro Aono

Asset Leader,
Pharmaceutical
Operations & Technology,
Asset Development &
Portfolio Management

"Innovation is in the DNA of everyone who works here. Whether in the lab or in the Board room, we are always striving to make things more efficient and effective so that we can deliver the best products for our patients. The company pushes us to do things differently and to really think outside of the box. We don't just sit around. We get up to make a difference. Regardless of the outcome, we are relentless and our tenacity goes along with our innovation. The best part of Biogen is that it's filled with people who live these values; that's what makes us Biogen. I'm proud to be part of the Biogen community and excited to continue contributing to the mission of this company."

Talent Acquisition and Retention

Our success depends on our ability to attract, develop and retain inspired and exceptional talent – people who embrace our mission of positively impact the lives of patients. To produce cutting-edge therapies, we must encourage innovative thinking, promote diversity and inclusion and foster a culture that protects the health and safety of our people.

Biogen's talent acquisition efforts focus on expanding our professional networks and building meaningful and lasting relationships with the external community, ensuring we attract and hire a rich mix of talent at all levels and that our people represent the diversity, culture and values of the patients and customers we serve. With full support from our Executive Committee and senior leaders across the company, Biogen has established a comprehensive diversity and inclusion strategy and goals with a primary objective of removing bias from our selection and hiring processes, and a commitment to ensuring our recruitment practices support all dimensions of difference.

The biopharmaceutical industry is focused on meeting unmet medical needs, which is becoming increasingly complex. The dynamics of how we do business are also changing. In this period of change, human capital will differentiate Biogen in an industry where expectations to perform keep rising.

We hire highly motivated people and provide them with growth and development opportunities. Such opportunities are available on our training portal, within Biogen University and via internal and external professional networks. When an employee takes initiative or demonstrates new skills, our leaders take notice. Our career development and leadership programs are designed to keep employees engaged in advancing their careers – in the hope they will enjoy working, and continue to stay, at Biogen.

Each employee works with his or her manager to create a development plan designed around professional growth. These plans help employees prioritize experiences that build knowledge, skills and abilities. We provide tools and resources to support this dynamic process. We also conduct annual assessments of each employee's potential to ensure that we have a strong pipeline of talent to match our future growth.

We believe in growing our organization organically from within, and thus encourage employees to apply their capabilities and skills to new roles and different areas of the business. Whether a lateral or vertical move, a role change can help employees stretch and grow. We also offer a variety of management and leadership development programs to strengthen employees' performance in current roles and prepare them for new roles within the company.

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Because people are Biogen's greatest asset, their managers play a critical role at work. Only when led by managers who are capable, well-informed and well-equipped can Biogen employees help fulfill our mission. Biogen data demonstrate that capable managers have engaged employees and lead teams that are more strongly aligned to the company strategy. Their direct reports exhibit more factors associated with innovation, and demonstrate lower intent to leave and decreased actual turnover.

Biogen University now offers a formal management training curriculum, which comprises a series of live courses available around the globe and a suite of supporting tools for all people managers at every level. This is just one way that Biogen demonstrates our passion for good people management.

According to our annual People Survey (see more in employee engagement section), we have seen Manager Effectiveness scores increase year over year across the board, and we are above average compared to industry benchmarks. We will continue to move forward in our management effectiveness training with the goal of training 100 percent of our managers by 2018.



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We regularly survey our employees to gauge what is and what isn't working in our workplace environment. We believe it is important for our employees to know we are listening to their feedback and addressing areas for improvement. Our employee listening strategy is centered around our annual People Survey and quarterly BioScan pulse surveys. Feedback is also solicited through periodic roundtables, employee meetings and our "Ask Michel" email box that enables employees to submit questions directly to our CEO. As our employee listening strategy has matured, so has employee participation in the People Survey, which increased from 76 percent in 2016 to 88 percent in March 2017.

Results from the 2017 People Survey demonstrate that Biogen continues to capture the hearts and minds of our employees, with results in the employee engagement category surpassing industry benchmarks by an average of 16 percentage points. For example, just shy of 90 percent of our employees indicated they were proud to work for Biogen, exceeding the industry benchmark by 20 percentage points.

In addition, the survey underscored our commitment to our customers and quality, as more than 90 percent of employees said our customers should feel confident about the quality of our products and services – besting the industry benchmark by 14 percentage points.

Surveys are also helpful tools for pinpointing opportunity areas. Previous surveys identified the need for more effective communication from management – so we took this to heart, made some changes and are now seeing an impact. Our most recent BioScan pulse survey indicated employees are more satisfied with the communication they receive from management, and in fact, this satisfaction score is at its highest level since early 2015.

Optimism among employees is also a strong indicator of engagement, as measured by how excited employees are about the future of Biogen. Our most recent survey in 2017 found that 85 percent of employees are optimistic about the company's future.

In addition to listening to the voices of our employees, Biogen continues to stress the importance of communication both to and from our executives. As important strategic decisions are made, executives share information and results through town hall meetings, employee webcasts and roundtable discussions.

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Our employees are not only passionate about their work in improving lives, they are also quite engaged across a broad range of topics. In 2017, we launched a pilot group aimed at employee engagement around key issues such as health and wellness, environment, and product and process improvements called ourIMPACT team. From tackling issues like reducing energy use in laboratories to green chemistry and improving healthier and climate-friendly meals in the cafeteria, these employees are helping to make a positive impact. Please visit our section on employee resource networks and employee volunteerism around our annual Care Deeply Day to learn more.



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Employee Rewards

Our robust and comprehensive benefits and employee rewards programs help keep employees motivated and engaged while maintaining a healthy work-life balance. For example, after six years of employment at Biogen, employees are eligible for a four-week, paid sabbatical leave. The ability to disconnect from work for an extended period energizes employees so they return ready to re-immerse themselves in their roles. We also offer a broad-based incentive program to help foster an ownership mindset that enables employees to share in the success of individual and collective company achievements over the long-term. At our Cambridge headquarters, we offer onsite child care while backup child care is provided at our other U.S. locations.



Recognizing Employees

Internal recognition is another important part of Biogen's culture. Two programs are particularly relevant to our Global Impact commitments. The Biogen BIG Champions of Inclusion, for example, recognizes and celebrates employees who embrace differences and support inclusion in the workplace.

Our annual Environmental, Health, Safety, Sustainability + Human Performance (EHS+S/Hu) Awards are another program aimed at recognizing non-EHS+S employees who go beyond their regular duties to embrace and strengthen our commitment to sustainability, wellness, safety and resiliency. In 2016, we received 75 nominations submitted by employees around the world. Award winners were both individuals and teams across our global operations, and they were recognized in four categories: BeWell, BeSafe, BeSustainable and our newest category, BeResilient.

Our BIG Awards platform allows any Biogen employee to recognize another individual or group of employees for their contributions. This democratic approach to recognition gives us a formal way to appreciate each other beyond the traditional manager-employee relationship while building community and camaraderie at the same time.

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Diversity and Inclusion: From Our Employees to Our Patients

We believe that diversity is a key to success. Different perspectives make us stronger as a business, build a healthier society and bring groundbreaking solutions to patients. Our goal is to attract and retain top talent with diverse backgrounds and perspectives, and foster a work environment where employees feel empowered to do their best work.

Our diversity and inclusion (D&I) strategy touches every facet of our business, focusing on three key components: expanding workforce diversity; improving health outcomes for diverse and underserved global patient populations; and developing a sustainable, diverse supplier base. Our D&I strategy is led by a strategic council, co-chaired by two executive leaders and composed of 10 members representing different geographies, levels, functions and perspectives within Biogen.

Diversity is essential in our business and is one of the keys to understanding the complex and diverse needs of our patient populations. For example, 70 out of every 100 patients in two of our disease focus areas – MS and Alzheimer’s disease – are female. And the majority of caregivers for patients with these diseases are also women. As a company, we must understand how to meet the needs of a patient population that is largely female, which is one reason why we focus on women in leadership roles.

48% WOMEN
= director level and above

Women comprise half of our employee population, and hold nearly 48 percent of Biogen’s director-level and above positions – putting us ahead of the health care and pharmaceutical industry average, according to a recent [McKinsey study](#). Nearly 27 percent of Biogen’s management are minorities, we strive to have a rich mix of talent at all levels of the organization.

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Women's Leadership Program

Our Women's Leadership Program, in partnership with Babson College Center for Women's Entrepreneurial Leadership and Executive Education, is an immersive residential program that seeks to enhance the careers of emerging women leaders at Biogen. The objectives of the program include developing the pipeline of high-potential women for roles at the vice president level and above; addressing the unique challenges faced by women leaders; enhancing gender acumen through courses taught by faculty experts in gender and leadership; heightening professional and personal effectiveness; and bringing inclusive leadership practices and insights back to the business and to interactions with colleagues. With more than 50 graduates in leadership roles around the company and across the globe, the program's influence has continued to spread since its inception in 2014.

A new program we recently added, called Activate, Reflect and Co-CREATE (ARC), encourages participants to explore the challenges they face as leaders while pushing them to elevate their performance.



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Preparing Women for Board Leadership

It's one thing to talk about gender equity in management; it's another thing to do something about it. At Biogen, we've worked hard to "walk our talk" when it comes to increasing female representation on corporate boards. Three of the 11 members of our own Board of Directors are women, putting us ahead of many of our peers. Nationally, women hold just about 20 percent of board roles in Fortune 500 companies and less than 11 percent of board positions in biotech firms.

We also believe we can and should do more to nurture women at Biogen to take on board leadership roles at other companies, both in the life sciences and in other industries. In 2015, we launched "Raising the Bar: Advancing Women on Boards" to prepare our high-potential women executives for possible board roles. In 2016, we sent four accomplished senior women leaders to attend a leadership program at George Washington University to train them to join corporate boards. To date, of the 13 women we sent to Washington D.C., for the training, seven have been placed on boards of companies outside Biogen; two were placed on the boards of two different companies.

Raising the Bar is an important element of our overall commitment to develop a more inclusive group of leaders across our organization. In 2016, Women in Bio, a leading industry organization, adopted "Raising the Bar" with our blessing, launching it as an industry-wide initiative under the name "Boardroom Ready." The goal is to make the program a standard for biopharmaceutical companies.



The New BioDiversity: Advancing Underrepresented Professionals in Life Sciences

The BioDiversity Fellows Program is focused on helping black and Latino professionals develop their leadership capabilities for career advancement in the life sciences. Participants, who work directly with their own executive coach, have called the experience “transformative.” Since the inaugural program launch in 2015, we have increased participation by more than 50 percent.

Supporting Transgender Employees

Biogen is a supporter of transgender employees, patients and customers. This support is demonstrated in our transgender rights policy and plans for coworkers who are transitioning to a different gender. We want to be a company that welcomes all talent – and that includes transgender employees.

We were highly critical of North Carolina’s 2016 House Bill 2 that excluded gay, lesbian and transgender people from non-discrimination protections in that state. And in Massachusetts, we were one of more than 250 businesses that supported Freedom for All Massachusetts, a bipartisan coalition that lobbied for the full protections of transgender people from discrimination under the law. A new anti-discrimination law went into effect in Massachusetts in October 2016.

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Continuing to Stand for Inclusion

In early February 2017, CEO Michel Vounatsos joined biotech chief executives, investors and others in the life sciences industry in publishing a [letter](#) on Nature Biotechnology's website to strongly oppose the White House's proposed immigration ban. The success of the biotech industry, the letter said, depends on the "creativity and dedication of our most precious resource - our people." Those people include "researchers, clinicians, entrepreneurs and business executives all over the world" who discover and develop drugs, start companies and drive the growth and employment opportunities in biotech.

In 2014, 52 percent of the 69,000 researchers in the U.S. were foreign-born, the letter says, citing a study in Nature. The U.S. has a leadership position in biopharma because it gives people "opportunity regardless of borders, gender, race, sexual orientation or political cast," it reads.

Recognized as an Inclusive Workplace

We want Biogen to be a place where people are proud to work. Everything we do is grounded in our core values. And we're gratified to be recognized as an inclusive employer of choice by notable third-party organizations, including the Human Rights Campaign (HRC). For the fourth consecutive year, we scored 100 percent on the HRC's 2017 Corporate Equality Index, a national benchmarking survey and report on corporate policies and practices related to LGBT workplace equality.



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Employee Resource Networks

Our Employee Resource Networks (ERNs) are internal affinity networks for employees with shared characteristics, life experiences and interests. These networks provide opportunities to share knowledge, find mentors and receive support, which can be invaluable resources for career development. Allies, supporters and all those interested in helping to advance inclusion are welcome to join any ERN.

In 2016, both our Cambridge and RTP locations hosted ERN conferences for their members, highlighting a vast array of development and networking opportunities, including:

- Leveraging unique differences for career success
- Gender Smart Leadership
- Building Leadership Acumen through the Art of Storytelling and Effectively Leveraging Data
- Exploring race and social justice issues in the workplace



Our current networks include:

- **Access Ability**, which highlights our commitments to employees with disabilities and employees who are caretakers of individuals with disabilities. In 2016, we launched two new chapters of Access Ability: for employees with MS and those whose lives have been impacted by Alzheimer's disease or dementia.
- **Biogen Veterans Network**, which provides opportunities for veterans and supporters of veterans to connect. Outreach to veterans, engagement and empowerment are the focus of this ERN. Heightened visibility and increased knowledge help colleagues understand the unique attributes and leadership capabilities that veterans offer.
- **Women's Innovation Network**, which creates networking, mentoring and learning opportunities for its 1,200 members in chapters at all of our major locations worldwide. We are committed to ensuring that women are fully included, engaged and valued at all levels of our company.
- **ReachOUT**, which embraces lesbian, gay, bisexual, transgender and questioning (LGBTQ) employees and their straight allies. This program supports a best-in-class working environment for LGBTQ employees and exemplifies our commitment to social responsibility and innovation.
- **Mosaic**, which focuses on multiculturalism and fostering awareness of and appreciation for different cultural backgrounds while promoting networking and development opportunities for its members. Mosaic also sponsors monthly cultural social hours in Cambridge and quarterly cultural social hours in RTP to celebrate many cultural heritages and identities. These social hours, which are open to all employees, build awareness through educational materials, music, food, dance, speakers and other creative means.

[Learn more](#) about our ERNs and their initiatives

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Workplace Health & Safety

We believe that everybody at Biogen has a role to play in creating and maintaining a safe and healthy workplace and we work hard to reduce risk and prevent injuries and other types of incidents. Our employees are accountable for working safely, whether they spend most of their days in a lab, in a manufacturing plant, at a desk or in a car. We expect them to consider not just their own well-being but that of their colleagues around them while working to adhere to policies and procedures aimed at protecting surrounding communities.

When people come to work at Biogen, we want them to feel that they work at one of the safest companies in the world, where everyone in the organization is passionate about creating and maintaining a safe and healthy work environment and where nothing is more important than keeping people safe. The commitment to this safety ethos serves to attract talent as well as optimize productivity.

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“Our mission at Biogen is to care deeply about patients. To be able to live that mission, we need to take care of our employees, our partners and the people who work with us, day in and day out. Safety must be the Number One priority for everyone at Biogen as it’s tied to our ability to deliver quality products reliably.”

Paul McKenzie,
Executive Vice President,
Pharmaceutical Operations & Technology

In recent years, we have been focused on proactively assessing significant risk in our operations and identifying meaningful measures to reduce these risks. The risk inherent to the bio-pharmaceutical industry ranges from exposure to hazardous chemicals in laboratories and process hazards in manufacturing facilities, to vehicle accidents among sales representatives who spend the majority of their time on the road. Our goal is to manage risk by designing resiliency into our systems, learning from incidents and observing work as it happens. To do this, we rely on a close partnership with employees who perform the work. We also require our locations to report not just accidents that result in injury, but near-misses, too.

As we have grown as a company, we have developed a “culture of reporting” as part of a systematic incident management program that is consistent across our locations, with some flexibility based on local needs.

In 2016, we made the decision to enhance our incident investigation process by integrating human and organizational performance concepts and more robust analytical methods into the overall EHS+S program. This philosophy shifts the focus away from blaming employees for mistakes and toward identifying system weaknesses so we can make our operations more resilient. This has also enabled us to focus resources on mitigating the most serious risks, learning from our incidents and implementing corrective and preventive actions across our global operations network.

A new EHS+S information management tool was developed and implemented in 2016 to allow us to better track and manage our health, safety and environmental data. The system also helps us document and track internal inspection and audit results, special safety-related projects and initiatives, and various types of sustainability data.

In 2016, our Days Away Case Rate (DACR) increased slightly to 0.19, up from 0.16 in 2015; our Total Injury and Illness Rate fell from 0.43 to 0.39, a decrease of nine percent. The majority of Biogen lost-time injuries are not associated with our production processes. While our goal has been to perform on par within the top five percent among our global biopharma industry peers, which we consistently have done, our three-year target is to achieve a best-in-industry DACR.

Among our U.S. fleet, collisions per million miles fell from 5.5 to 4.6. Biogen provides company vehicles to field-based employees who have an ongoing business need for ground transportation in order to perform their jobs effectively. We require employees to attend instructor-led online behind-the-wheel training.

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Taking Performance to the Next Level

Our Human Performance approach says a lot about our culture and workplace philosophy. Formally launched in 2015, Biogen Human Performance aims to promote proactive risk management. One goal is to ensure employees are engaged in how their work and workplaces are designed so that their jobs can be performed in ways that are simultaneously safer and better. Ultimately, we want Biogen employees to be nimble and resilient, and able to better adapt to unexpected challenges they may face when doing their jobs.



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Kyle Anderson
Senior Manufacturing Scientist

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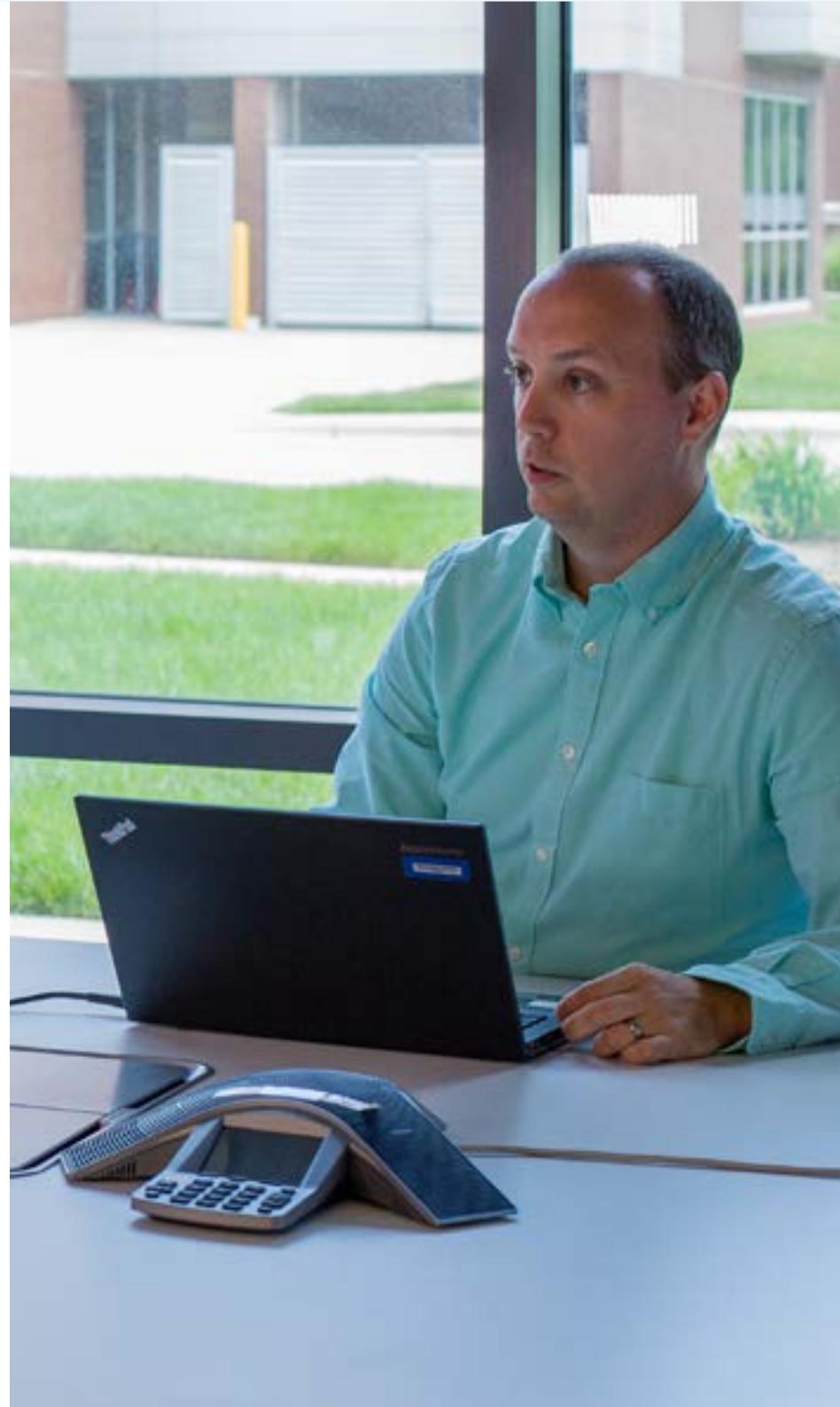
Kyle Anderson, a senior manufacturing scientist who recently transferred from our Cambridge location to RTP, has embraced the Human Performance model. Part of Kyle's job is to ensure that our manufacturing processes run smoothly. But Kyle is, in his words, a "desk jockey" – and safety isn't a daily concern for him in the same way it is in our production facilities where decisions and actions have a more immediate impact on people and product.

"We wanted to make things safer and more reliable for the facility operators to do their jobs – and to be able to do them more confidently."

Kyle realized that manufacturing safety could improve if production employees understood not just the “what” of their jobs, but also the “why.” He spearheaded a documentation project that revamped how manufacturing employees performed their operations, with an emphasis on why certain procedures are called for at specific times.

“We wanted to make things safer and more reliable for the facility operators to do their jobs – and to be able to do them more confidently,” Kyle says. “It’s not enough to give the operators a list of things to do. We have to think about helping them understand how and why they are doing those things.”

Kyle understood early on the importance of technical knowledge in risk-based thinking, as well as the fact that improving a system leads to success in both safety and reliability. “The more the operators know about the process of drug development – from the first calculations on a laboratory chalkboard to the final output on the manufacturing floor – the better their performance will be,” he says.



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Health and Wellness

We're not only committed to protecting the safety of employees; we're also passionate about helping employees embrace a healthy, fulfilled and secure life through promotion programs focused on nutritious eating, physical fitness and stress management. These programs are offered at many Biogen facilities to help employees improve their health outcomes and achieve their best at work and at home. In 2017, we plan to develop a long-term health and wellness strategy that will be implemented globally over the next several years.

2016 Statistics

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1,501

Health risk assessments

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1,164

Biometrics screenings

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Nutrition counseling

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1,225

Fitness memberships

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1,999

Flu vaccinations

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A ‘Stretch’ Goal in Germany



Kirsi Taipale
Manager, Drug Safety

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Back in 2011, a physical therapist visited Biogen to share exercises, safety tips and ergonomic strategies aimed at preventing back and neck strains among colleagues who spend their days at their desks and on their computers.

Kirsi Taipale, a manager in the drug safety department, had herself struggled on and off with sore, stiff muscles, and she could immediately see that the suggested exercises would help to alleviate them. Trouble was, the physical therapy visit was a one-time event.

“I keep each training session to only 15 minutes to attract as many colleagues as possible.”

Kirsi knew she wasn't disciplined enough to continue doing the exercises on her own, so she decided to make it an office project, inviting her colleagues to join her for 15-minute "stretch sessions" twice a week. The sessions are always scheduled in advance, making it easy for coworkers to take a short break from their daily routines. With Kirsi as the de-facto leader, participants cycle through a series of 13 exercises for the neck, spine, legs and arms – all potential pain points if neglected. The exercises aim to activate the affected body parts to increase mobility.

"I keep each training session to only 15 minutes to attract as many colleagues as possible," Kirsi says. "It may not sound like a lot, but 15 minutes twice a week can really make a huge difference in how a person feels."

While Kirsi's initiative is very localized, it highlights the type of grassroots activities that we encourage at Biogen. We hope to inspire our people to think not only about their own safety and well-being, but also about the safety of their colleagues. Kirsi's efforts were recently recognized by her co-workers, who nominated her for a companywide EHS&S award.



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Community Engagement

Our commitment to making a positive impact in the world includes locations that are close to home: the communities in which we operate. As a company founded and focused on science, we aim to inspire the next generation of innovators through our grant-making programs and through our own hands-on, experiential community science labs.



The Biogen Foundation

The Biogen Foundation supports access to science education and to essential human services for children and their families in the communities in which Biogen facilities are located. The Foundation is committed to sparking a passion for science and discovery, supporting effective science education initiatives and strengthening efforts to make science education and science careers accessible to diverse populations.

Most of all, we want young people to know that through science, they have the ability to change the world.

We recently restructured the Foundation's grant-making programs to focus on access in two areas: science education and strengthening our communities. Today, the Biogen Foundation is committed to supporting nonprofit organizations that focus on providing access to:

- Hands-on science education
- Teacher development opportunities in science
- College readiness and support
- Basic social needs (child hunger, poverty and social mobility)

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The Foundation also matches Biogen employee gifts to nonprofit organizations, up to \$25,000 per employee, per year. In 2016, the matching grant program contributed \$1.3 million to worthy organizations ranging from disease organizations and camps for children with serious illnesses, to disaster relief efforts around the world.

Investing in Science Education

Exposing students to science starts with inspired and well-equipped teachers. This was the impetus behind a \$100,000 grant the Biogen Foundation made in 2016 to the [Kenan Fellows](#) Program for Teacher Leadership. This nonprofit organization addresses the critical need for high-quality professional development for educators and is the largest science, technology, engineering and math (STEM)-focused teacher leadership program in North Carolina.

The funds are being used to create the Biogen Foundation Teacher Leader Cluster in Greene County, and specifically to develop and empower high-quality STEM educators. Four Greene County mathematics teachers were selected to participate in the cluster during the 2016-2017 school year. The teachers have been working with each other and district leaders on developing instructional resources that better align classroom content with workforce skills aimed at strengthening the school system's STEM pipeline.

Employee-matched gifts in the U.S. totaled

\$1.3m

in 2016

Helping Students Pursue College Education

Boston-based [uAspire](#) works with high schools, community organizations and other entities to ensure college-bound students have access to the financial information and resources necessary for them to find an affordable path to pursue a postsecondary education.

The Biogen Foundation provided uAspire a \$75,000 grant that is supporting a uAspire advisor at two public high schools in the vicinity of Biogen's Cambridge headquarters. This investment serves approximately 1,300 students between the two schools.

Learn more about the [partnerships and programs](#) we fund.

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Red Sox Scholars

The Biogen Foundation is a proud sponsor of the Red Sox Scholars, an award-winning program run by the baseball team's official charity. Red Sox Scholars are selected in the spring of their 7th grade year to participate in a program that provides mentoring, enrichment activities and college scholarships. The students come from diverse backgrounds and have demonstrated perseverance in the face of many challenges. In addition to financial support, Biogen hosts the scholars in our Community Lab to give the students hands-on science training.



Employee Volunteerism

Every year, thousands of Biogen employees are given the day off to participate in our company's Care Deeply Volunteer Day, our global service event for a wide range of projects in our areas of operation. Programs are chosen based on their measurable impact in our communities and include activities such as:

- Refurbishing schools
- Serving meals to the homeless
- Hosting STEM fairs at local schools
- Cleaning parks and tending community gardens
- Fixing up youth centers
- Supporting senior centers

Learn more about Care Deeply Day in this [video](#).

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2016 Care Deeply Volunteer Day



3,000 Employees



62 Projects



25 Countries

Having one day dedicated to community service is an important part of Biogen's culture, but we also support our employees throughout the year. In fact, in 2016, the Biogen Foundation launched its Community Currency program.

The Community Currency program encourages U.S. employees to financially support their favorite charities and nonprofit organizations without having to spend their own money by investing a more valuable resource: their time. For every hour our employees spend volunteering, the Foundation provides \$10 to each employee to donate to an eligible nonprofit organization of their choosing.

The Foundation's volunteer matching grants also extend to Biogen's Community Lab program, which is of special interest to many of our employees who want to teach youth about science.

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Community Labs: Alazar Ayele Introduces Students to the World of Science



"I come in every day with an enthusiastic mindset that I'm going to make a new scientist out of a child today."

Alazar Ayele
Head Instructor, Cambridge Community Lab

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What's one of the best ways to get kids excited about science? Have kids actually do science, hands-on. That's what we've discovered over 15 years at our Community Labs, our dedicated laboratory classrooms that host middle and high school students for daylong sessions, free of charge.

We opened our first Community Lab in our Cambridge facility in 2002 – the longest-running corporate science lab in the country – and added our second at our RTP, North Carolina, location in 2014. Between the two labs, more than 40,000 students have conducted experiments using the same equipment that is used in Biogen labs to discover new and innovative medicines.

About 10,000 Massachusetts students have worked with Alazar Ayele, the dynamic head instructor of our Cambridge lab, who revels in the opportunity to introduce young people to scientific discovery.

"The most satisfying thing is hearing a child turn to you and say, 'I can see myself as a scientist one day and you helped me put that into perspective,'" Alazar says. "It's amazing to me how spending just a few hours in an afternoon with a student, I have the potential to spark an interest in science that inspires a career."

Wearing white lab coats and protective eye gear and using pipettes, students get exposure to real-world science experiments in DNA, gene mutation, drug testing and more while interacting with Alazar and other Biogen employees. We work with local schools to focus on concepts that they are already learning in their classrooms, allowing students to make connections between their studies and the work we do every day at Biogen. In addition to the one-day programs for students during the academic year, Biogen also hosts week-long, intensive lab programs over the summer months.

"I come in every day with an enthusiastic mindset that I'm going to make a new scientist out of a child today," says Alazar, who caught the science bug when he was in a high school program that exposed teens to science and cancer research.

We hope that we're able to generate excitement in science – and see some of these students go on to become professionals in the field. And maybe, even, come to work at Biogen one day.



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Our 2016 Global Impact Report contains data from calendar year 2016. In some instances, we include information on initiatives or activities that may have begun in 2016 but have continued into 2017.

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Data in this report covers our worldwide operations, including consolidated subsidiaries but excluding joint ventures. Our operations in 2016 encompassed our four manufacturing sites in North Carolina, Denmark, and our facility in Massachusetts, which closed at the end of 2016. The boundaries also include our corporate headquarters in Cambridge, Mass., our global offices and our commercial fleet operations. With regard to environmental data presented in this report, the scope includes operations in which we have operational control.

This report was prepared in accordance with the Global Reporting Initiative (GRI) G4 Guidelines at the “core” option. Please refer to the [GRI Index](#) to see which material aspects and relevant indicators are reported, as well as how we track our efforts in alignment with the U.N. Sustainable Development Goals.

Biogen is responsible for the preparation and integrity of the content in this report. Through a system of internal controls, including a comprehensive verification process by internal subject matter experts, we believe this report accurately represents our corporate citizenship and sustainability initiatives in 2016.

ERM Certification and Verification Services, Inc. (ERM CVS) assured the 2016 data for a number of indicators including Scope 1, Scope 2 and Scope 3 GHG emissions; Biogen’s carbon neutrality methodology; and select environmental



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and social indicators. See the ERM CVS Assurance Statement on page 126-127 for full details of the assurance scope, assurance standards used, work undertaken and conclusions.

All references to currency are in U.S. dollars.

For more information on this report, please send questions or comments to impact@biogen.com.

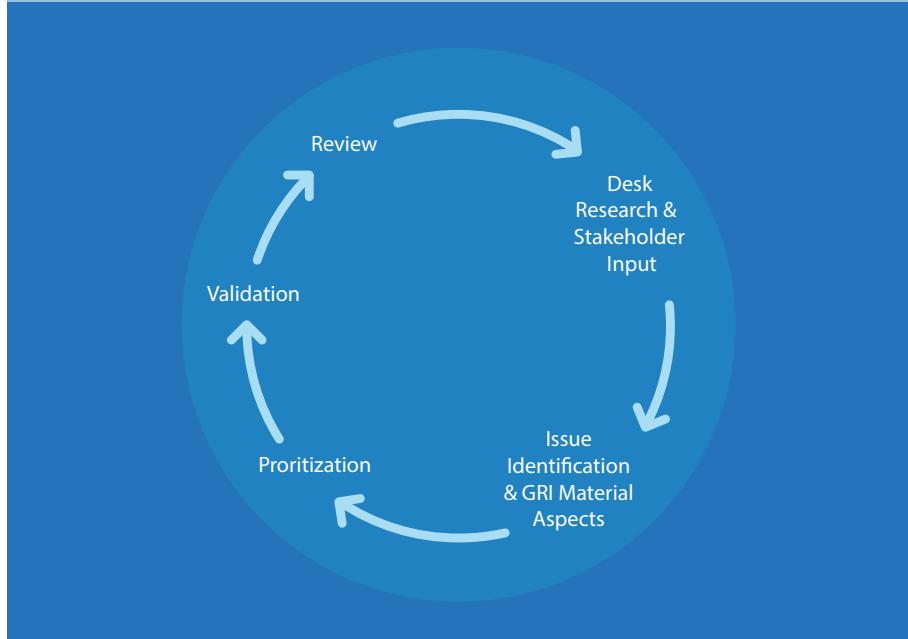
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Changes In Operations

Since our last report, we completed a spin-off of our global hemophilia business, creating a standalone company, that allows us to increase our focus on neuroscience and neurodegeneration. The new company, known as Bioverativ, is an independent, publicly traded global biotechnology company focused on hemophilia and other rare blood disorders. The separation was completed on February 1, 2017. Biogen did not retain any ownership interest.

GRI Materiality Assessment Process

Since 2009, Biogen has conducted GRI materiality assessments to identify and prioritize the topics and issues most important to the company and its stakeholders. As in the past, our 2016 GRI materiality assessment was informed by the GRI Principles for Defining Report Content. The process in 2016 involved external stakeholder interviews; desk research to establish the broader sustainability context; an internal visioning workshop to prioritize and validate the issues; and external stakeholder meetings to review the findings and gather their feedback.



Desk Research and Stakeholder Interviews

We reviewed a wide range of internal and external materials, including company financial reports; external corporate communications; internal business and strategic plans; media reports; stockholder inquiries and resolutions; industry positions; influencer white papers and communications; investor and reputational indices, such as the Dow Jones Sustainability Index; industry and corporate peer sustainability reports; reporting guidelines, including the GRI and the Sustainability Accounting Standards Board (SASB); and the U.N. Sustainable Development Goals; as well as a variety of other sources. Interviews were conducted with internal subject matter experts and 10 external stakeholders.

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Issue Identification and GRI Material Aspects

The insights and input gathered from the stakeholder interviews and desk research revealed a range of potential material topics. To determine which of these topics are actually material from a corporate responsibility perspective in accordance with GRI principles, we analyzed each one against a set of clarifying questions, such as:

- Is this topic an existing priority for Biogen, or was it considered material from a corporate responsibility perspective in accordance with the GRI principles in the past?
- Does this issue have a significant impact on people, society or the environment?
- Does the topic present a business risk or impact that could affect performance or harm the company's reputation?
- Does the issue present an opportunity, such as a new product or service, increased revenues, cost savings, reputational benefits or enhanced relationships with stakeholders?

- Is there existing or pending regulation related to the topic?
- Does the company have control or influence over this topic?
- Is this topic frequently raised by stakeholders through various feedback and media channels?
- Is the topic considered material by rating, ranking and/or reporting agencies?
- Is the topic material to industry peers and do they report these topics in their corporate responsibility reports?

Our analysis resulted in the identification of 18 specific issues that fell into six groups: patients, products, environment, workplace, community, and governance and ethics. The issues were then mapped to their corresponding GRI material aspects and for each aspect, the specific stakeholder groups impacted by or involved with each issue were also identified. This information is presented in our [GRI Index](#).

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Prioritization and Validation

After all corporate responsibility material issues were identified in accordance with the GRI principles, an internal visioning workshop was held at Biogen. More than 100 employees from our global operations participated in the workshop. The session was facilitated by an external sustainability expert who utilized survey technology to capture instantaneous feedback from participants on the relevance and importance of each issue – and to also determine how much of an opportunity and/or a risk each issue poses to Biogen and our stakeholders.

Because the feedback was instantaneous, the participants could see how the issues were being prioritized. This enabled them to adjust, as needed, and essentially validate that the issues were appropriately prioritized by the time the workshop ended.



Review

In 2017, Biogen established a Stakeholder Advisory Council and held the first meeting with this group in May. The members represent a spectrum of interests and backgrounds – from academia to trade associations to nonprofit organizations to our own suppliers and customers. The results of the GRI materiality assessment were shared with the Council to ensure our findings were aligned with their expectations and reflective of their concerns.

Stakeholder Feedback

The feedback we heard from both internal and external stakeholders affirmed our perspective that patients are at the center of everything we do. This includes ensuring patient access to the life-changing therapies developed by Biogen, as well as engaging with patients and partnering with their caregivers. Stakeholders also validated Biogen's commitment to serve all patients, including diverse and underserved populations. Biogen takes an inclusive approach to patients through a multitude of initiatives aimed at increasing engagement, providing assistance and investing in the type of research and development efforts that lead to breakthrough therapies. Our ultimate goal is to continually improve outcomes for patients, enabling them to live longer, healthier lives.

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Transparency was another theme – from disclosure about how medications are priced, to Biogen's political and lobbying activities. Biogen believes transparency is critically important for any responsible business. Our [principles on pricing](#) are publicly available, as is our policy on [political contributions](#).

Our leadership on climate was also acknowledged by several stakeholders. Biogen has been a strong advocate for climate action and continues to maintain carbon neutrality. We had previously been encouraged to establish a science-based carbon reduction goal, which we completed in the first half of 2017.

Impact on Stakeholders

- Workplace Recruitment & Retention
- Bioethics
- Transparency & Disclosure

- Access to Treatments
- R&D and Pipeline
- Patient Health Outcomes

- Climate Change
- Responsible & Sustainable Supply Chain
- Corporate Governance
- Compliance
- Information Security

- Product Stewardship
- Waste
- Workplace Diversity & Inclusion

- Water and Wastewater
- Green Chemistry

- Workplace Health & Safety
- Community Engagement

Material Issues

The 18 issues that were identified in the most recent materiality assessment are presented in the matrix below. Access to treatments, investments in R&D to ensure a robust pipeline and improving patient outcomes are Biogen's highest priorities. But we consider everything in this matrix to be material and important. Throughout this report, we explain how Biogen is addressing these issues and measuring performance.

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Patients

- Patient Health Outcomes
- Access to treatments
- R&D and Pipeline
- Information Securitiy

Products

- Product Stewardship
- Responsible & Sustainable Supply Chain
- Green Chemistry

Environment

- Climate Change
- Water & wastewater (Operations)
- Waste

Workplace

- Recruitment and Retention
- Workplace Diversity & Inclusion
- Workplace Health & Safety

Governance & Ethics

- Transparency & Disclosure
- Bioethics
- Corporate Governance
- Compliance

Community

- Community Engagement

Significance to Business

Global Impact: Governance and Management

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The vision, commitment and oversight for our Global Impact strategy starts at the very top of our organization. The Risk Committee of the Board of Directors oversees Biogen's risk governance framework and infrastructure. In 2016, this committee met five times and discussed topics such as information technology, cybersecurity, workplace safety, sustainability and other material risks.

At the executive management level, our strategy is overseen by the Global Impact Executive Council, which is led by our executive vice president for Pharmaceutical Operations and Technology, and includes members of Biogen's senior leadership team. The duties of this group are governed by the Global Impact Executive Council Charter, which was revised in early 2017 and now includes, among other functions, setting strategy, approving goals, reviewing progress and aligning resources. The council meets at least once yearly.

In 2017, Biogen also added its first Stakeholder Advisory Council, made up of external stakeholders who help to review trends, benchmark our peers and recommend improvements to goals and initiatives.

Our Environmental, Health, Safety & Sustainability and Human Performance organization manages day-to-day execution of Biogen's Global Impact strategy, although the breadth of our strategy extends beyond environmental matters to include patients, community investments and other key issues.

Governing Policies

Our Global Impact strategy and commitments are grounded in our Code of Business Conduct: Values in Action, the Biogen Sustainability Policy, our Human Rights Position and other related policies and position statements. Values in Action sets forth our belief in ethical business conduct, compliance, accountability and transparency, among other topics.

The [Sustainability Policy](#) lays out Biogen's commitment to operating in a manner that reduces our environmental impact, improves social conditions and promotes economic prosperity. The Policy also requires us to develop and maintain a long-term strategy, including goals, objectives and targets, and an annual report on our progress. It sets forth expectations for our suppliers, who are bound to the same business principles as Biogen.

Our Human Rights Position

Biogen respects fundamental human rights and believes that every individual deserves to be treated fairly and with dignity.

We respect all employees as equals and listen to individual opinion, without discrimination or harassment based on an individual's sex, gender identity or expression, sexual orientation, marital status, race, color, national origin, ancestry, ethnicity, religion, age, veteran status, disability, genetic information or any other basis protected by law.

We are committed to supporting internationally recognized fundamental human rights activities and initiatives. In every country in which we operate, Biogen follows all laws, regulations and international conventions related to human rights. Learn more on our [Human Rights Position](#).

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Sustainable Development Goals

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We recognize the powerful role that business can play in making the United Nations' [Sustainable Development Goals](#) (SDGs) a reality. The SDGs comprise 17 goals and 169 associated targets that incorporate the economic, social and environmental dimensions of sustainable development. At Biogen, we support all 17 goals and encourage all businesses to consider how they may also contribute. We have been refining our own Global Impact Strategy to align with the SDGs that are most relevant to our business and to further support *Science That Matters*.

Biogen is actively working toward many of these goals, particularly the ones highlighted below, by virtue of the programs and practices we already have in place. As we build out our strategy, we will look to the underlying targets of the SDGs to inform our approach.

3 GOOD HEALTH AND WELL-BEING



Purpose

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

Biogen

In addition to our daily focus on improving lives and health outcomes, we also strive to make our therapies accessible to more people and safeguard the health, safety and well-being of our employees. In 2016, we introduced a new therapy to address spinal muscular atrophy (SMA), a devastating genetic disease that affects 1 in 10,000 live births.

4 QUALITY EDUCATION



Purpose

Ensure inclusive and quality education for all and promote lifelong learning.

Biogen

As a science-based company, we continue to support science education. In 2016, we hosted thousands of students in our Community Lab, which encourages hands-on science education for children of all backgrounds.

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6 CLEAN WATER AND SANITATION



Purpose

Ensure access to water and sanitation for all

Biogen

Projects such as HVAC water reclamation systems and clean-in-place process improvements are helping to reduce the amount of water needed for our operations.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Purpose

Ensure sustainable consumption and production patterns

Biogen

We have maintained our virtually zero waste-to-landfill status for our manufacturing nonhazardous waste from our owned locations.

7 AFFORDABLE AND CLEAN ENERGY



Purpose

Ensure access to affordable, reliable, sustainable and modern energy for all

Biogen

We have committed to and achieved the RE100 goal of obtaining 100 percent of our electricity needs from renewable sources through the use of third-party verified renewable energy credits.

13 CLIMATE ACTION



Purpose

Take urgent action to combat climate change and its impacts

Biogen

We have neutralized the greenhouse gas emissions from our operations and our supply chain through reduction measures and investments in emission-reducing initiatives that offset what we have not yet been able to eliminate.

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Data Table

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The 2016 data indicated in **bold** form part of ERM CVS' assurance engagement.
Their Assurance Statement can be found on the last page of this Report.

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	UNITS	2013	2014	2015	2016
ABOUT BIOGEN					
Revenue	Million USD	6,932	9,703	10,764	11,449
R&D Spend	Million USD	1,444	1,893	2,013	1,973
No. of Employees	#	6,850	7,550	7,350	7,400
Corporate Equality Index ¹	%	85	100	100	100
CDP Climate Change ¹	Score	92 B	81 B	96 C	B
CDP Water ¹	Score	N/A	N/A	N/A	B
Newsweek Green Rankings ¹	World Rank	N/A	8th	1st	11th
Dow Jones Sustainability Index ¹	Score	78	80	79	80
Global 100 Index ¹	Rank	8th	2nd	1st	30th
ENVIRONMENTAL IMPACT					
Climate					
Scope 1 (fossil fuels and refrigerants)	Metric tons (MT) CO ₂ e	54,126	56,021	60,182	61,937
Scope 2 Location-based method (electricity and steam)	MTCO ₂ e	39,132	39,200	44,476	55,137
Scope 2 Market-based method (electricity and steam)	MTCO ₂ e	45,321	276	277	156
Scope 3 ²	MTCO ₂ e	234,694	235,284	262,103	259,805
Purchased goods and services (category 1) ³	MTCO ₂ e	191,600	156,100	152,900	197,830
Capital goods (category 2) ³	MTCO ₂ e	26,700	19,700	47,700	15,338
Upstream/downstream energy and water-related activities (category 3)	MTCO ₂ e	19,339	8,392	8,840	8,971
Waste generated in operations (category 5) ⁴	MTCO ₂ e	358	374	462	615
Business travel (category 6)	MTCO ₂ e	18,077	20,990	21,506	18,023
Employee commuting (category 7)	MTCO ₂ e	15,571	17,188	15,947	8,549
Upstream leased assets (category 8)	MTCO ₂ e	3,743	5,641	3,612	0

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End of life treatment, sold products (category 12)	MTCO ₂ e	6,900	6,900	11,136	10,479	
Total Value Chain (Scopes 1, 2 Market and 3)	MTCO ₂ e	379,288	291,582	322,563	321,898	
Absolute Value Chain Reduction from 2013 (Target: 35% by 2030)	%	0	23.1	15.0	15.1	Letter from our CEO
Carbon Neutrality						
Renewable Electricity Certificates Retired ⁵ (for Biogen operations)	MWh	0	102,171	114,772	143,026	About Biogen
Renewable Electricity Certificates Retired ^{3,5} (for Suppliers operations)	MWh	0	189,112	215,858	230,516	
Carbon Offsets ⁶	MTCO ₂ e	40,000	291,582	322,563	321,898	
Net Value Chain Emissions	MTCO ₂ e	339,28	0	0	0	
Energy						
Total Energy	MWh	381,094	392,324	427,793	465,044	Global Impact Strategy
Total Energy (non-renewable)	MWh	381,094	290,068	312,935	321,826	
Fossil Fuels (gas, oil, diesel, gasoline)	MWh	279,521	289,545	312,407	321,374	
District Steam	MWh	839	200	205	452	For Patients
Electricity (non-renewable)	MWh	100,376	323	323	0	
Electricity (renewable) ⁵	MWh	0	102,171	114,772	143,026	
Renewable Energy (% of Total Electricity)	%	0	100	100	100	
Renewable Energy (% of Total Energy)	%	0	26	27	31	For Society
Fleet Efficiency	g CO ₂ e / mile	335	325	317	311	
Water						
Water Withdrawal	Million Cubic meters (m ³)	0.674	0.727	0.860	1.026	
Recycled Water	Million m ³	0.093	0.098	0.083	0.081	For Communities
Reused/Recycled Water ⁷	%	12	12	9	8	
Wastewater Discharge	Million m ³	0.380	0.397	0.476	0.600	
Biological Oxygen Demand in Wastewater Discharge	mg/L	392	398	522	482	About This Report
Assessment of Water Withdrawal ⁸ (Target: 100% by 2019)	% of Major Facilities	33	33	25	50	
Waste⁴						
Non-hazardous Waste ⁹	Metric Tons	3,747	3,750	4,975	7,903	
Waste Reused	Metric Tons	N/A	N/A	N/A	48	
Waste Recycled	Metric Tons	1,484	884	949	1,123	GRI Index

Waste Composted	Metric Tons	1,435	1,372	1,802	3,543	Letter from our CEO	
Energy Recovery via Anaerobic Digestion	Metric Tons	0	33	43	57		
Waste to Energy	Metric Tons	793	989	1,138	1,195		
Incineration	Metric Tons	19	464	988	1,870		
Waste to Landfill ¹⁰	Metric Tons	16	8	55	66		
Waste to Landfill Offset ¹⁰	Metric Tons	0	38	0	0		
Waste to Landfill Diversion (Target: 100 percent each year)	%	100	100	99	99		
Recovery & Recycling Rate (Reuse, Compost, Recycle)	%	78	61	56	60	About Biogen	
Hazardous and Biohazardous Waste	Metric Tons	141	172	222	227		
SOCIAL IMPACT							
Community Engagement							
Total Grants ¹¹	Million USD	4.4	6.2	5.2	4.9	Global Impact Strategy	
Matching Gifts Program	Million USD	0.6	0.8	1.5	1.3		
Care Deeply Day Volunteer Hours	Hours	6,650	10,500	14,000	12,000		
Diversity & Inclusion							
Total Diversity Spend ¹²	Million USD	80	143	196	202		
Total Diversity Spend of US Spend ¹²	%	6	8	9	10		
Women in Workforce	%	51.5	51.5	50.1	49.2		
Women in Management ¹³	%	N/A	47.2	47.3	47.7	For Society	
Minorities in Management (US Only) ¹³	%	N/A	24.9	26.4	26.5		
Women on Executive Team	%	10	17	18	22		
Women on Board of Directors	%	25	27	27	27		
Employee Development							
Employee Satisfaction ¹⁴	%	97	N/A	89	89	For Communities	
Health & Safety							
Total Injury and Illness Rate (TIIR) ¹⁵	Cases / 200,000 working hours	0.49	0.69	0.43	0.39		
Days Away Case Rate (DSCR) ¹⁵	Cases / 200,000 working hours	0.11	0.28	0.16	0.19		
Contractor DSCR ¹⁶	Cases / 200,000 working hours	0.50	0.49	0.41	0.42		
Number of Fatalities	#	0	0	0	0		
Collisions per Million Miles (US Fleet) ¹⁷	Collisions / million miles	3.6	6.2	5.5	4.6	GRI Index	

N/A = Data was not collected in reporting year.

All prior environmental data was reassessed and adjusted, as warranted, to account for methodology changes, specifically modification of the organization boundary from financial to operational control and inclusion of fugitive refrigerant emissions.

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our CEO

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| <p>1 Year of the result is based on the ranking publication year, which may use data from other time periods per the publication's methodology.</p> <p>2 Scope 3 categories 4, 9, 10, 11, 13, 14 and 15 were determined to not be relevant to our value chain or are aggregated into other categories.</p> <p>3 Carbon emission generated for the goods and services and capital goods we purchase are based on a proprietary EIO model and actual supplier data. The portion of emissions generated from electricity use is excluded as renewable electricity certificates were retired to cover 100% of our share of suppliers' electricity use.</p> <p>4 Waste generation at affiliate offices, excluding Weston, is considered de minimis and excluded. However, waste generation is estimated for the purposes of calculating Scope 3 carbon emissions from Waste Generated in Operations – Category 5.</p> <p>5 Renewable electricity certificates purchased and retired include Green-e certified renewable Energy Certifications, Guarantees of Origin, Green Power Certificates, Australian RECs, Brazilian I-RECs for electricity consumption in the US/Canada, Europe, Japan, Australia, and South America, respectively.</p> <p>6 Carbon offsets purchased and retired in 2016 originate from the following projects: New Bedford Landfill Gas in Massachusetts, Seneca Meadows Landfill Gas in New York, and Johnson County Landfill Gas in North Carolina.</p> <p>7 Data reflects percentage of recycled water, harvested rainwater, and municipal grey water compared to total water use.</p> | <p>8 Percent of major sites assessed for water withdrawal using a context-based methodology. Fair, just and proportionate share of locally available renewable supplies is defined as a score of less than 1.0 using the Center for Sustainable Organization's Corporate Water Gauge tool, a content-based water metric.</p> <p>9 Data includes non-hazardous solid waste and trucked off wastewater from our routine operations only. Waste derived from construction and demolition debris, incinerator ash and other contractor activities is not included.</p> <p>10 In 2014, Biogen offset the potential landfilling of 37.8 Metric Tons of waste from a neighboring pharmaceutic company in Boston. A majority of the landfilled waste in 2015 and 2016 were from the newly purchased RTP manufacturing facility.</p> <p>11 Includes all grants awarded by the Biogen Foundation exclusive of the Matching Gifts Program</p> <p>12 2015 and 2016 diverse supplier spend and related percentage includes Tier I and II direct spend.</p> <p>13 Management was redefined to better align with external definitions. 2014 and 2015 values are restated.</p> <p>14 In 2014 we were in the middle of revamping our People Survey and did not perform a company-wide survey that year.</p> <p>15 Includes permanent and contracted employees, excludes contractors (e.g. construction, janitorial, food services). TIIR values prior to 2016 exclude affiliate office employees.</p> <p>16 Contractor DACR: Includes construction-related contractors only.</p> <p>17 Collisions per Million Miles replaced the previous reported Accidents per Million Mile metric to better align with industry.</p> |
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General Standard Disclosures

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our CEO

Strategy and Analysis		
G4-1	CEO statement	CEO Letter, page 4
G4-2	Description of key impacts, risks, and opportunities.	A description of our key risks can be found in our 2016 10-K , Item 1-A, pages 29-41
Organizational Profile		
G4-3	Name of reporting organization	Biogen Inc.
G4-4	Products	Biogen's products include TECEFIDERA, AVONEX, PLEGRIDY, TYSABRI, ZINBRYTA and FAMPYRA for multiple sclerosis (MS), FUMADERM for the treatment of severe plaque psoriasis and SPINRAZA for the treatment of spinal muscular atrophy (SMA). We also have certain business and financial rights with respect to RITUXAN for the treatment of non-Hodgkin's lymphoma, chronic lymphocytic leukemia (CLL) and other conditions, GAZYVA indicated for the treatment of CLL and follicular lymphoma and other potential anti-CD20 therapies under a collaboration agreement with Genentech, Inc. (Genentech), a wholly-owned member of the Roche Group (Roche Group).
G4-5	HQ location	Biogen's world headquarters: Cambridge, Mass., United States. International headquarters: Zug, Switzerland
G4-6	Countries of operation	Biogen operates in The Americas, Europe, Asia and Australia. A more detailed breakdown is available on our website.
G4-7	Nature of ownership and legal form	Biogen (BIIB) is publicly traded on the NASDAQ Stock Exchange
G4-8	Markets served	A breakdown of our products and markets served is detailed in our 2016 10-K , Item 1, pages 6-7

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G4-9	<p>Report the scale of the organization, including:</p> <ul style="list-style-type: none"> • Total number of employees • Total number of operations • Net sales (for private sector organizations) or net revenues (for public sector organizations) • Total capitalization broken down in terms of debt and equity (for private sector organization) • Quantity of products or services provided 	<p>At the end of 2016, Biogen had approximately 7,400 employees.</p> <p>Number of operations can be found in our 2016 10-K, Item 2, page 42.</p> <p>Selected financial information can be found in our 2016 10-K, Item 6, page 46.</p> <p>Quantities of products provided, by revenues, can be found in the 2016 10-K, Item 1, page 5</p>	Letter from our CEO About Biogen
G4-10	<ul style="list-style-type: none"> • Report the total number of employees by employment contract and gender. • Report the total number of permanent employees by employment type and gender. • Report the total workforce by region and gender. • Report any significant variations in employment numbers. 	<p>At the end of 2016, Biogen employed approximately 7,400 full-time permanent employees, most of whom are highly skilled. The vast majority of work is performed by company employees, not contract workers.</p> <p>There were not significant variations in employment numbers compared to 2015. Nearly half of our employees are women.</p>	Global Impact Strategy
G4-11	Report the percentage of employees covered by collective bargaining agreements.	Approximately 5.5 percent of our employees are under a collective bargaining agreement. All of these employees work in our Hillerød, Denmark, manufacturing facility.	For Patients
G4-12	Describe the organization's supply chain.	A description of our supply chain can be found in our 2016 10-K , Item 1, page 24.	For Society
G4-13	Report any significant changes during the reporting period regarding the organization's size, structure, ownership or its supply chain.	In December 2016, we ceased manufacturing at our Cambridge, MA manufacturing facility. Other significant changes took place in 2017, such as the spin-off of our hemophilia business. More details are available in Part 1, page 2 of our 2016 10-K .	For Communities
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization.	Biogen applies the precautionary approach by achieving carbon neutrality, ensuring the safety of patients, and performing detailed risk analyses related to our operations.	About This Report
G4-15	List externally developed economic, environmental and social charters, principles or other initiatives to which the organization subscribes or which it endorses.	Biogen has aligned its strategy with six of the Sustainable Development Goals, pages 104-105.	GRI Index

G4-16	<p>List memberships of associations (such as industry associations) and national or international advocacy organizations in which the organization:</p> <ul style="list-style-type: none"> • Holds a position on the governance body • Participates in projects or committees • Provides substantive funding beyond routine membership dues • Views membership as strategic <p>This refers primarily to memberships maintained at the organizational level.</p>	See pages 61, 62 and 64	Letter from our CEO
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Identified Material Aspects and Boundaries			Global Impact Strategy
G4-17	<p>List all entities included in the organization's consolidated financial statements or equivalent documents.</p> <p>Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.</p>	<p>All major entities are included in the boundaries of this report. See the 2016 10-K</p>	For Patients
G4-18	<p>Explain the process for defining the report content and the Aspect Boundaries.</p> <p>Explain how the organization has implemented the Reporting Principles for Defining Report Content.</p>	GRI Materiality Assessment, pages 99-102	For Society
G4-19	List all the material Aspects identified in the process for defining report content.	GRI Index	For Communities
G4-20	For each material Aspect, report the Aspect Boundary within the organization	GRI Index	
G4-21	For each material Aspect, report the Aspect Boundary outside the organization.	GRI Index	
G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements.	No restatements were made.	About This Report
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	No significant changes from the previous reporting period.	GRI Index

Stakeholder Engagement		
G4-24	Provide a list of stakeholder groups engaged by the organization.	GRI Materiality Assessment, pages 99-102
G4-25	Report the basis for identification and selection of stakeholders with whom to engage.	GRI Materiality Assessment, pages 99-102 GRI Index
G4-26	Report the organization's approach to stakeholder engagement	GRI Materiality Assessment, pages 99-102 Governance and Management, page 103
G4-27	Report key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	GRI Materiality Assessment, pages 99-102
Report Profile		
G4-28	Reporting period (such as fiscal or calendar year) for information provided.	Data covers fiscal year 2016; ending December 31, 2016. Some activities from 2017 are also included.
G4-29	Date of most recent previous report (if any)	Fiscal year 2015
G4-30	Reporting cycle (such as annual, biennial)	Annual
G4-31	Provide the contact point for questions regarding the report or its contents	impact@biogen.com
G4-32	Report the "in accordance" option the organization has chosen. Report the GRI Content Index for the chosen option. Report the reference to the External Assurance Report, if the report has been externally assured.	GRI G4 in accordance at the Core level External assurance statement can be found at the end of the GRI Index.
G4-33	Report the organization's policy and current practice with regard to seeking external assurance for the report.	Biogen seeks external assurance for some of its environmental data, as well as its workplace safety and diversity data.
		Letter from our CEO
		About Biogen
		Global Impact Strategy
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Governance

G4-34

Report the governance structure of the organization, including committees of the highest governance body.

Governance and Management, page 103

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Ethics and Integrity

G4-56

Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.

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General Standard Disclosures

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Material Issues	G4 Categories and Material Aspects	Specific Standard Disclosures	Stakeholders Impacted or Involved	Relevance and Approach	Page number or link	
Patient Health Outcomes • Patient engagement	Economic Indirect Economic Impact	G4-EC8 Significant indirect economic impacts, including the extent of impacts.	<ul style="list-style-type: none"> Patients Caregivers Healthcare providers & systems Patient advocacy groups Governments Insurers & payers 	Our therapies are intended to treat specific neurological and neurodegenerative diseases that can be debilitating to patients, especially if their conditions go untreated. A lack of treatment can also have a significant economic impact on the healthcare system. Engaging and educating patients and caregivers about treatment options, as well as opening doors to patient support resources, are critically important measures in improving health outcomes.	Page 16	Letter from our CEO About Biogen Global Impact Strategy
Access to Treatments • Pricing • Patient assistance • Clinical trials • Biosimilars	Economic Indirect Economic Impact	G4-EC8 Significant indirect economic impacts, including the extent of impacts.	<ul style="list-style-type: none"> Patients Caregivers Healthcare providers & systems Patient advocacy groups Governments Insurers & payers 	An enormous investment of time and money is required to discover and develop new therapies intended to treat complex neurological and neurodegenerative conditions. The high costs of these medications are reflective of the investment made and the value these therapies provide to patients and the healthcare system. But drug pricing should not be a barrier to access. We have established pricing principles and assistance programs to help patients access our treatments, including outreach to underserved patients. Clinical trials provide another avenue for patients to access potential options for treatment. And investing in the development of biosimilar therapies is yet another opportunity to deliver viable therapies at more affordable costs.	Page 23	For Patients For Society For Communities About This Report GRI Index

R&D and Pipeline	Economic	G4-EC8	<ul style="list-style-type: none"> • Patients • Healthcare providers & systems • Patient advocacy groups • Governments • Insurers & payers • Investors • Business partners 	While tremendous advances have been made in the treatment of neurological and neurodegenerative diseases, unmet medical needs remain. Continual investment is needed to research, develop and maintain a robust pipeline of promising new therapies that have the potential to improve patient outcomes. Our R&D efforts are often done in collaboration with other biopharmaceutical entities, enabling us to combine strengths and competencies to achieve mutual goals.	Page 33	Letter from our CEO
Information Security	Product Responsibility	G4-PR8	<ul style="list-style-type: none"> • Patients • Healthcare providers & systems • Employees 	We collect information on patients who participate in our clinical trials and those whom we engage through various patient programs. We uphold the law to protect their privacy and safeguard their personal health information by preventing unauthorized access to – or sharing of their data. The same is true of our employees. Having a privacy policy and adhering to it is essential. And given today's risks of information breaches, it's critically important to have sound cybersecurity measures in place.	Page 43	Global Impact Strategy
	Customer Privacy	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.				For Patients
						For Society
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Product Stewardship	Product Responsibility	G4-PR1	<ul style="list-style-type: none"> • Patients • Healthcare providers & systems • Governments • NGOs • Industry groups 	We consider product stewardship to be fundamental to everything we do. It encompasses the quality and safety of our products, and extends to the prevention of counterfeits, and the impact of chemistry on the environment and in the manufacturing of our products. We comply with all applicable regulations in the disposal of our products and supplies, and use state-of-the-art technology to safeguard the authenticity and security of our products.	Page 57
	Customer Health & Safety	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.			Letter from our CEO
Pharmaceuticals in the Environment (PiE)	Product and Service Labeling	G4-PR3			About Biogen
	Environmental Products and Services	Type of product and service information required by the organization's procedures for products and service information and labeling, and percentage of significant product and service categories subject to such information requirements.			Global Impact Strategy
Green Chemistry	Environmental Products and Services	G4-EN28			For Patients
		Percentage of products sold and their packaging materials that are reclaimed by category.			For Society
	Environmental Products and Services	G4-EN27	<ul style="list-style-type: none"> • Patients • Healthcare providers & systems • Governments • NGOs • Industry groups 	There are continual innovations being made in the design, development and production of biologics. This includes the growing emergence of green chemistry, an approach aimed at reducing or eliminating the use of toxic chemicals and generation of hazardous materials. There are other environmental benefits that can result from green chemistry - such as more efficient processes, and/or reduced energy and/or water use.	Page 62
		Extent of impact mitigation of environmental impacts of products and services.			About This Report
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Responsible & Sustainable Supply Chain • Environmental, Social & Governance (ESG) risk assessments	Environmental	G4-EN32	<ul style="list-style-type: none"> • Suppliers • Customers • Governments • NGOs • Local communities 	Our stakeholders expect that we understand the ESG-related risks and impacts across our supply chain, and that we take steps to manage these risks and impacts.	Page 64
	Human Rights	Supplier Human Rights Assessment	<p>G4-EN33</p> <p>Significant actual and potential negative environmental impacts in the supply chain and actions taken.</p> <p>G4-HR10</p> <p>Percentage of new suppliers that were screened using human rights criteria.</p> <p>G4-HR11</p> <p>Significant actual and potential negative impacts on human rights in the supply chain and actions taken.</p>	<p>In 2016, we assessed 518 key suppliers, which we define as Good Manufacturing Practices (GMP) vendors that supply products and services directly related to the safety and integrity of our products. The objectives are to identify any potential at-risk suppliers that could warrant further evaluation.</p> <p>Our process includes:</p> <ul style="list-style-type: none"> • Evaluating ESG and water risks of key suppliers • Performing focused social risk analysis (e.g. risk related to human rights) • Monitoring compliance with new requirements around the world (e.g. human trafficking legislation) <p>Risk is assessed and weighted on five factors – the critical nature of what is being supplied (30%); the level of financial spend (35%); the social risk profile (11%); the environmental risk profile, including water risk (12%); and the governance risk profile, including potential for corruption (12%).</p> <p>Zero GMP suppliers were identified as high risk in 2016.</p>	<p>Letter from our CEO</p> <p>About Biogen</p> <p>Global Impact Strategy</p> <p>For Patients</p> <p>For Society</p> <p>For Communities</p> <p>About This Report</p>

Non-GMP suppliers were also evaluated in 2016, based on the risk profiles on their countries of operation, as defined by the U.S. State Department's 2016 Trafficking in Persons Report. This evaluation involved 58,596 suppliers, of which the vast majority operate in Tier 1 countries*.

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our CEO

Of the remaining supplier base, approximately 1,000 vendors operate in Tier 2 countries*; 21 suppliers operate in Tier 2 Watch countries*; and 5 suppliers operate in Tier 3 countries*. Collectively, these suppliers represent less than .14% of Biogen's total annual spend.

The suppliers in Tier 2 Watch and Tier 3 countries were further evaluated using the process and criteria described above, including ESG and water risk criteria.

Zero high-risk suppliers were identified through this assessment in 2016.

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***Tier 1:** The governments of countries that fully meet the Trafficking Victims Protection Act's (TVPA) minimum standards for the elimination of trafficking.

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Tier 2: The governments of countries that do not fully meet the TVPA's minimum standards, but are making significant efforts to meet those standards.

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Tier 2 Watch: The governments of countries that do not fully meet the TVPA's minimum standards, but are making significant efforts to meet those standards AND: a) The absolute number of victims of severe forms of trafficking is very significant or is significantly increasing; b) There is a failure to provide evidence of increasing efforts to combat severe forms of trafficking in persons from the previous year, including increased investigations, prosecutions, and convictions of trafficking crimes, increased assistance to victims, and decreasing evidence of complicity in severe forms of trafficking by government officials; or c) The determination that a country is making significant efforts to meet the minimum standards was based on commitments by the country to take additional future steps over the next year.

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Tier 3: The governments of countries that do not fully meet the TVPA's minimum standards and are not making significant efforts to do so.

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Responsible & Sustainable Supply Chain • Supplier diversity	Economic	G4-EC9	<ul style="list-style-type: none"> • Suppliers • Customers • Governments • NGOs • Local communities 	Our supplier diversity initiatives are intended to create a diverse and inclusive supplier base so that suppliers, regardless of size and scale of their enterprises, have opportunities to compete for our business. We consider our supplier diversity program a fundamental component of fostering a responsible and sustainable supply chain.	Page 65
	Procurement Practices	Proportion of spending on local suppliers at significant locations of operation.			Letter from our CEO
Climate Change • Energy use and renewables • GHG emissions • Supplier engagement	Environmental	G4-EN3	<ul style="list-style-type: none"> • Governments • NGOs • Suppliers • Communities • Patients 	Climate change is a global concern that has potential implications on human health and the long-term sustainability of our environment. Recognizing that every entity has a carbon footprint, we have been working to reduce our impact through energy efficiency measures and investments in renewables aimed at maintaining our carbon neutrality. We have also engaged our key suppliers and encouraged them to measure and report their carbon emissions.	Page 46
		Energy Emissions	Energy consumption within the organization.		Global Impact Strategy
		Supplier Environmental Assessment	G4-EN4		
			Energy consumption outside of the organization.		
		G4-EN3			For Patients
			Energy intensity.		
		G4-EN15			
			Direct GHG emissions (Scope 1).	Our goal is to engage our top 75 suppliers by 2020.	
		G4-EN16			For Society
			Energy indirect GHG emissions (Scope 2).		
		G4-EN17			For Communities
			Other indirect GHG emissions (Scope 3).		
		G4-EN19			About This Report
			Reduction of greenhouse gas (GHG) emissions.		
		G4-EN32			GRI Index
			Percentage of new suppliers that were screened using environmental criteria.		

Water & Wastewater (Operations) • Water use • Wastewater	Environmental	G4-EN8 Total water withdrawal by source.	• Governments • NGOs • Suppliers • Communities	In certain parts of the world, water resources are constrained and/or lacking. The concerns about water pollution are also of great concern. Yet water is a critical resource – used in our products and for our manufacturing processes. We are taking great measures to reduce our water use, reuse/recycle the water we use within our manufacturing processes, and ensure the water that is returned to the environment is clean and as free of pharmaceutical ingredients as possible.	Page 55	Letter from our CEO
		G4-EN8 Percentage and total volume of water recycled and reused.				About Biogen
		G4-EN22 Total water discharge by quality and destination.				
Waste	Environmental	G4-EN23 Effluents and Waste	• Governments • NGOs • Suppliers • Communities	Waste is a byproduct resulting from the manufacturing process. But much can be – and should be – done to reduce waste streams and minimize the amount of waste to landfill. Biogen has a zero-to-landfill goal, which we have met and maintained.	Page 53	Global Impact Strategy
		G4-EN23 Total weight of waste by type and disposal method.		Hazardous waste, another byproduct of our manufacturing operations, needs to be properly handled and managed. This is one of our priorities.		For Patients
		G4-EN23 Weight of transported, imported, exported, or treated waste deemed hazardous, and percentage of transported waste shipped internationally.				For Society
Recruitment & Retention • Employee engagement and retention	Labor Practices	G4-LA1 Employment	• Employees • Prospective employees • Communities • Investors	The biotech industry relies on a talent pool of highly trained and specialized individuals. To attract and retain the best employees, it's essential to have a rewarding and engaging workplace environment that enables employees to grow their careers and thrive while making a meaningful difference in improving patient lives. This is our focus at Biogen – for all of the 7,400 people we employed as of the end of 2016.	Page 71	For Communities
		Total number of employees.				About This Report
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Workplace Health & Safety	Labor Practices: Occupational Health & Safety	G4-LA6 Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	<ul style="list-style-type: none"> • Employees • Governments 	<p>In any manufacturing environment, worker safety issues are not uncommon. But injuries to workers can happen in any type of workplace – from an office environment to distribution operations. Safety practices must be continually taught and reinforced, and emerging risks must be identified early on and proactively managed. The priority at Biogen is to keep our people safe and dramatically reduce or eliminate the risk of injury.</p> <p>Page 83</p> <p>Letter from our CEO</p> <p>About Biogen</p>
Workplace Diversity & Inclusion	Labor Practices: Diversity & Equal Opportunity	G4-LA12 Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	<ul style="list-style-type: none"> • Employees • Patients • Local communities • Governments 	<p>Patients come from all walks of life. To truly understand our patients' perspectives and unique differences, we must have a workforce that is representative of the patients we serve. The same is true for the communities in which we operate – we must mirror our neighbors, suppliers and partners. In years past, the biotech industry has tended to be male-dominated, but in more recent years, a growing number of women have pursued careers in science. Biogen has made a point to be a place where women have opportunities to advance and assume leadership roles. As a result, we have succeeded at having nearly equal representation of women at Biogen.</p> <p>Page 76</p> <p>Global Impact Strategy</p> <p>For Patients</p> <p>For Society</p> <p>For Communities</p>
Transparency & Disclosure <ul style="list-style-type: none"> • Clinical trials • Political activities & public policy 	Society: Public Policy	G4-SO6 Total value of political contributions by country and recipient/beneficiary.	<ul style="list-style-type: none"> • Governments • Investors • Patients • Healthcare providers & systems 	<p>There are several critical areas where the pharma & biotech industries have been pushed to be more transparent: on the outcomes of their clinical trials; pricing policies; and their political activities and contributions. We believe transparency is the mark of a responsible company, and have taken steps to increase our transparency in these areas in particular.</p> <p>Pages 42 & 102</p> <p>About This Report</p> <p>GRI Index</p>

Bioethics	Product Responsibility: Marketing Communications	G4-PR7 Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.	<ul style="list-style-type: none"> • Patients • Healthcare providers & systems • Insurers & payers • Governments • NGOs 	<p>As the field of biotechnology advances, there are social and ethical implications that must be considered and reconciled. This includes issues such as stem cell research, animal welfare, and the marketing and communications about biotech therapies and medicines. Biogen has strong practices in place regarding these various issues and is continually monitoring for new and emerging issues that could potentially be in the spotlight in the future.</p>	Page 41	Letter from our CEO
Compliance	Society: Compliance	G4-S08 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	<ul style="list-style-type: none"> • Governments • Patients • Healthcare providers & systems 	<p>Regulatory compliance is a significant focus within the biotech industry, and one of the more complex aspects to operating our business. Biogen must be innovative to remain competitive, and at the same time, compliant with the laws, rules and guidance enforced by multiple agencies that may have differing regulatory goals.</p> <p>There were no significant instances of noncompliance in 2016.</p>	Global Impact Strategy	For Patients
						For Society
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Community Engagement

Economic:

Economic Performance

G4-EC1

Direct economic value generated and distributed.

- Local communities
- Employees
- Patients

Positive engagement with and support Page 91

of local communities is critically important for any major business to maintain its license to operate and build good will with residents and municipalities. Employees are also eager to see their companies play a positive role in the communities in which they work and live. And just as important to employees, they want to take part in “giving back” to local organizations that serve to improve their communities. Biogen believes in being a good neighbor, serving its communities and providing opportunities for employees to participate as well. The Biogen Foundation is the giving arm of Biogen, making grants on behalf of the company to support science education in many forms. Our employees are often involved in raising awareness and funds for the nonprofit organizations serving the patient populations affected by the neurological and neurodegenerative diseases that Biogen treats through its therapies.

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Independent Assurance Statement to Biogen Inc.

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ERM Certification and Verification Services, Inc. (ERM CVS) was engaged by Biogen Inc. (Biogen) to provide assurance in relation to selected 2016 data in Biogen's 2016 Global Impact Report: Science That Matters (the Report).

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our CEO

Engagement Summary

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Scope	Whether the 2016 data for the following indicators as identified in bold on pages 106 to 109 of the Report are fairly presented, in all material respects, in accordance with the reporting criteria.	Global Impact Strategy
Reporting criteria used	Biogen's reporting criteria as described on page 98 of the Report, including the WBCSD/WRI GHG Protocol including the 2015 Scope 2 Guidance and Biogen's Sustainability Data Collection and Reporting Procedure for Scope 3 categories.	For Patients
Assurance standards used	ISAE 3000 International Standard for Assurance engagements and, for the GHG data ISO 14064-3:2006: Specification with guidance for the validation and verification of greenhouse gas assertions.	For Society
Assurance level	Limited assurance.	For Communities
Respective responsibilities	<p>Biogen is responsible for preparing the 2016 data for the selected indicators and for presentation of the information in the Report in accordance with their reporting criteria and definitions.</p> <p>ERM CVS's responsibility is to provide conclusions on the agreed scope based on the assurance activities performed and exercising our professional judgement.</p>	About This Report

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Our Conclusions

Based on our activities, nothing has come to our attention to indicate that the 2016 data for the selected indicators as identified in **bold** on pages 106 to 109 of the Report are not fairly presented, in all material respects, in accordance with the reporting criteria.

Our Assurance Activities

We planned and performed our work to obtain all the information and explanations that we believe were necessary to provide a basis for our assurance conclusions.

A team of sustainability, GHG and assurance specialists performed the following key activities:

- Interviews with relevant staff to understand Biogen's reporting criteria and internal reporting processes for the selected indicators, including the use of its GHG and Carbon Neutral methodologies and the various data management and reporting systems used for collecting, consolidating and reporting the data.
- A review of the calculations including conversion factors and emission factors used.
- Validating a risk-based selection of primary source data from corporate safety and employee databases as well as site level underlying data for the environmental indicators.
- A visit to the Biogen headquarters in Cambridge, Massachusetts to interview Biogen personnel and review program documentation.
- Cross checking that the purchased Carbon Offsets, Renewable Energy Certificates (REC), Guarantees of Origin, International-RECs and Green Power Certificates were retired/managed according to Biogen's Sustainability Data Collection and Reporting Procedure, which includes the Carbon Neutral Methodology.
- An analytical review of the consolidated year end data.

The Limitations of Our Engagement

The reliability of the assured data is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. We have not tested in detail the Trucost EEIO model used to perform the calculations for Categories 1, 2 and 12. Category 7 is based on Biogen's primary data calculated by Trucost.

Commentary

We have provided Biogen with a separate, confidential report detailing our findings and making recommendations regarding its overall reporting processes and systems for its sustainability reporting.



23 June 2017

Jennifer Lansen-Rogers,
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ERM CVS is a member of the ERM Group. The work that ERM CVS conducts for clients is solely related to independent assurance activities and auditor training. Our processes are designed and implemented to ensure that the work we undertake with clients is free from bias and conflict of interest. ERM CVS and the staff that have undertaken work on this assurance exercise provide no consultancy related services to Biogen in any respect.



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