



2021 YEAR IN REVIEW

Our commitment to corporate responsibility

Kai, who is living with multiple sclerosis.

where
science meets **humanity**™

 **Biogen.**



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OUR PURPOSE



Serving humanity through science so that people can live healthier, fuller lives.

Anabella Villalobos, Head of Biotherapeutic and Medicinal Sciences.



2021 HIGHLIGHTS



5-YEAR

anniversary of SPINRAZA®, with more than 11,000 people treated

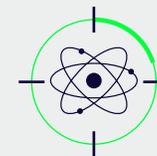


14.7%

employee participation in Healthy Climate, Healthy Lives™

18%

of Biogen's top 80% of suppliers, by spend, have set or pledged to set SBTi-approved targets¹



~30

clinical programs across a broad set of disease areas



\$230 MILLION

spent with diverse suppliers



40

countries served by our Expanded Access Programs



26%

of Biogen's top 50% of suppliers, by spend, have committed to 100% RE by 2040



47.6%

women globally and 26% racial and ethnic minorities (U.S.) in director-level roles and above

14,493

Biogen employee volunteer hours, tripling 2020's engagement



“At Biogen, our purpose is clear: to serve humanity through science.”

> 2 MILLION

patients treated 1996–2021

Landon, who has spinal muscular atrophy (SMA), with his mother.

61,295

students in 19 countries engaged in Biogen's Community Lab since 2002



100%

of studies² initiated included a plan to recruit underrepresented patients



100%

renewable electricity commitment since 2014

\$80 MILLION

in grants, sponsorships and in-kind contributions from Biogen and the Biogen Foundation



1. Biogen previously disclosed data for our top 30 suppliers, by spend, using the supplier's definition of a science-based target. The updated metric reflects an analysis of Biogen's top 200 suppliers, by spend, against public lists of companies engaged with the Science Based Targets initiative.
2. U.S. clinical trials in Phases 1–4 led by Biogen's Global Clinical Operations.

KEY AWARDS & RECOGNITIONS



Appeared on the Dow Jones Sustainability World Index for the **9TH YEAR** in a row

GOLD CLASS Distinction in S&P Global Sustainability Yearbook in 2022

N°2 on Fierce Pharma's Top 10 list of ESG leaders in the pharmaceutical industry

100% on the Disability Equality Index for the 4th consecutive year

100% on Human Rights Campaign's Corporate Equality Index for Best Places to Work for LGBTQ+ Equality for the 8th consecutive year

#36 on JUST Capital's JUST 100 list, a ranking of the most "just" companies

#5 in Fortune and Refinitiv's Measure Up ranking of leaders in diversity and inclusion data transparency

Corporate Knights Global 100 Index of World's **MOST SUSTAINABLE CORPORATIONS**

Fast Company's 2021 **WORLD CHANGING IDEAS** honorable mention in the Corporate Social Responsibility category for Biogen's Healthy Climate, Healthy Lives™

#17 on 3BL Media's annual ranking of its 100 Best Corporate Citizens

Named to the **2022 BLOOMBERG GENDER-EQUALITY INDEX**

2022 Global Pharma Patient **CHAMPION AWARD** from Reuters Events' Pharma Awards

2021 **LGBT CORPORATE ALLY AWARD**, Business of Pride, Boston Business Journal

BEST WORKPLACES for Women by Great Place to Work

Our Switzerland Affiliate has also received **NATIONAL ACCLAIM** for the strength of our women in leadership

BEST WORKPLACES™ for Women in Italy
 2021 50 Best Workplaces in Canada
 2021 Great Place to Work certificates Poland
 2021 Great Place to Work certificates U.K.
 Top Employer Spain 2021 certification



*Pictured (from left):
 Scientists Wenli Liang
 and Aireal Jenkins.*

CEO LETTER



“Neuroscience, Biogen’s principal area of focus, is an attractive field with great potential for innovation and scientific breakthroughs that address significant unmet needs of patients living with devastating diseases.”

Michel Vounatsos
Chief Executive Officer

My fellow stockholders,

The year 2021 was an eventful one for Biogen and our portfolio, and one of continued execution across our base business.

Neuroscience, Biogen’s principal area of focus, is an attractive field with great potential for innovation and scientific breakthroughs that address significant unmet needs of patients living with devastating diseases. Our emphasis on scientific advancements in service of humanity has driven our leadership in multiple sclerosis (MS), our innovation in spinal muscular atrophy (SMA), and our success in biosimilars. We also achieved important milestones, including:

- FDA approval of ADUHELM (aducanumab-awwa), the first novel therapy approved for Alzheimer’s disease since 2003.
- Important data readouts for potential treatments in depression, stroke, amyotrophic lateral sclerosis (ALS).
- The formation of Biogen Digital Health, a global unit dedicated to pioneering personalized and digital medicine in neuroscience.

To fully realize the significant opportunity we see ahead, we are pursuing a strategic plan that leverages our core competencies in neurology and in related growth areas.

Alzheimer’s Disease Update

In June 2021, the FDA granted accelerated approval to ADUHELM, the first treatment directed at an underlying pathophysiology of Alzheimer’s disease, the presence of amyloid beta plaques in the brain.

ADUHELM’s introduction to the market proceeded more slowly than we would have hoped amid questions around the product’s mechanism of action and clinical data. In April 2022, we were disappointed that the U.S. Centers for Medicare & Medicaid Services (CMS) issued an unprecedented final coverage determination that effectively denies all Medicare beneficiaries access to ADUHELM. This ruling may also limit coverage for any future FDA-approved treatment in the class.



CEO LETTER

This is not the first time a new class of therapy on the cutting edge of scientific discovery has faced headwinds. We continue to believe that ADUHELM represents the first major innovation in decades and the beginning of what we hope will be a wave of new developments in this area. To this end, we continue to advance lecanemab, another amyloid-beta targeting investigational therapy under development in our collaboration with Eisai Co., Ltd. (Eisai). In June 2021, the FDA granted Breakthrough Therapy designation for lecanemab, and in December 2021 lecanemab also received Fast Track designation. The readout of the Phase 3 confirmatory Clarity AD clinical trial is expected in the fall of 2022, and it is currently under rolling submission for a Biologics License Application (BLA) under the accelerated approval pathway, with filing expected to be completed in the second quarter of 2022.

When additional data from this new class of treatments become available, we will request that CMS reconsider its coverage decision for all FDA-approved amyloid-beta targeting therapies. Biogen continues to advocate for patients to have rapid and equitable access to all FDA-approved therapies to treat Alzheimer's disease and for the continuity of care for Medicare beneficiaries already being treated with ADUHELM.

Beyond our programs targeting amyloid, we are pursuing a multi-modality approach focused on other targets in Alzheimer's disease. In a Phase 1b study, BIIB080, a tau-directed ASO, met the primary objective of safety and tolerability. Furthermore, data demonstrated a durable time and dose-dependent reduction of tau protein in cerebrospinal fluid and, based upon these results, we expect to initiate a Phase 2 study. Growing evidence suggests tau may be a key driver of neurodegeneration in Alzheimer's disease. In addition, in February 2022 we initiated a Phase 1 study for BIIB113, a small molecule with a mechanism of action that targets tau protein aggregation.

2021 Pipeline Highlights

We achieved significant data readouts during the year in a number of promising areas.

We see high potential for zuranolone (BIIB125), an investigational two-week, once-daily drug in development for the potential treatment of major depressive disorder (MDD) and postpartum depression (PPD), to

help transform the treatment of these diseases. Zuranolone now has positive data from five randomized clinical studies in MDD and PPD. Given the strength of this clinical data and the potentially differentiated profile of zuranolone, we are preparing to start, together with Sage Therapeutics, Inc. (Sage), a rolling submission with the FDA for a New Drug Application for the potential treatment of MDD. We expect to complete the filing in the U.S. in the second half of this year.

In stroke, we received positive results from the Phase 2 study of BIIB131 (TMS-007), in acute ischemic stroke. Acute ischemic stroke accounts for about 87%¹ of all strokes worldwide. Unfortunately, approved thrombolytic agents, the current standard of care, are limited in their use due to their benefit-risk profile in later time windows where they are administered within 3 to 4.5 hours¹ of symptom onset. During the Phase 2a study, patients were dosed 4.5 to 12 hours after the onset of stroke symptoms, with treatment times averaging approximately 9.5 hours. Patients who received BIIB131 experienced no symptomatic intracranial hemorrhage. In addition, the study demonstrated significant impacts on blood vessel reopening and patient functional recovery.

As we advance BIIB131, we also have BIIB093 (glibenclamide IV), currently in Phase 3, being studied for the treatment and prevention of severe cerebral edema in large hemispheric infarction, one of the most severe types of ischemic stroke² where cerebral edema often leads to high morbidity and mortality.

In lupus, we announced the first patient dosed in the Phase 3 study of BIIB059 in systemic lupus erythematosus (SLE). SLE is a chronic autoimmune disease that affects multiple organ systems. The Phase 3 study will evaluate the clinical efficacy and assess the safety of BIIB059 as compared to placebo. We have set enrollment targets for the study that reflect the high prevalence of SLE in Black or African American and Hispanic and Latino communities, which are disproportionately impacted by the disease.

ALS also remains an area of focus for Biogen, where we continue to engage with regulators to evaluate the next step for tofersen in SOD1 ALS. In the Phase 3 study, the primary endpoint as measured by the Revised Amyotrophic Lateral Sclerosis Functional Rating



CEO LETTER

Scale (ALSFRS-R) did not reach statistical significance; however, signs of reduced disease progression across multiple secondary and exploratory endpoints were observed. Furthermore, the totality of evidence from the Phase 3 and its ongoing open-label extension showed that participants who started tofersen earlier experienced better outcomes, further suggesting a positive clinical effect.

Advancing Digital Health

Recent advances in the understanding of disease biology, along with an exponential acceleration in technologies, are paving the way for a shift in how diseases of the central nervous system (CNS) are diagnosed, measured and treated. This is why in 2021 we formed Biogen Digital Health, a global unit dedicated to pioneering personalized and digital medicine in neuroscience.

We believe that now, more than ever, biology and technology should go hand in hand to better meet patient needs while enabling a shift toward more prevention-focused, affordable and equitable care. Building complementary digital solutions that predict, measure and prevent disease is of particular importance in neuroscience due to the heterogeneity and complexity of measuring neurological disease progression.

For example, developing validated digital biomarkers may enable us to accelerate clinical development and increase the probability of success of our pipeline assets, and also create opportunities for clinicians to better monitor disease progression with more sensitive and predictive measures than those currently available. As pioneers in neuroscience, we will explore synergistic opportunities for digital therapeutics to further address the unmet needs of patients.

2021 Financial Performance

Our financial results for full-year 2021 underscored Biogen's ability to execute in the face of challenges. The company generated GAAP diluted earnings per share of \$10.40 and Non-GAAP diluted earnings per share of \$19.13 on \$11.0 billion in revenue. Notwithstanding generic competition to TECFIDERA (dimethyl fumarate) in the U.S., which materially impacted our revenue base in 2021, we maintained global leadership in MS, including the significant progress of

“We believe that now, more than ever, biology and technology should go hand in hand to better meet patient needs while enabling a shift toward more prevention-focused, affordable and equitable care.”

VUMERITY (diroximel fumarate) to treat relapsing MS. In SMA, the global expansion of SPINRAZA contributed to incremental revenue growth year over year outside the U.S. Our work in biosimilars has accelerated over the past few years as we strive to bring greater value to healthcare systems and access to patients while enhancing our own cash flow generation opportunities.

During the year, we generated approximately \$3.6 billion in net cash flow from operations. We spent approximately \$250 million on capital expenditures, resulting in free cash flow of approximately \$3.4 billion⁹. We ended 2021 with \$4.7 billion in cash, cash equivalents and marketable securities, and a healthy balance sheet. We expect that we will continue to generate significant cash flow in 2022, providing us with multiple options for capital allocation.

Late in 2021, we announced a series of cost reduction measures to lower the company's expenses and bring them in line with our revised revenue expectations. The plan, which we began implementing in early 2022, is expected to yield approximately \$500 million in annualized savings, a significant portion of which will be realized this year. Some of these savings will be offset by investments in Biogen's pipeline and strategic initiatives.

Contributing to a Better World

Our Environmental, Social and Governance (ESG) efforts prioritize climate, health and equity, with a focus on vulnerable populations, as well as ongoing leadership in governance, transparency and disclosure. Reflecting our broader commitment to these priorities, we continued to tie a portion of our employees' and executive officers' compensation to advancing our ESG efforts. ESG oversight is formally embedded into our Board's Governance Principles.

One hallmark of our ESG efforts is Healthy Climate, Healthy Lives™, a \$250 million initiative to eliminate fossil fuel emissions across our operations by 2040 to contribute to improved public health. In 2021, we grew our electric vehicle program to 12 countries and expanded our environmental impact assessment for key facilities and products. We joined with nine other industry leaders to launch Energize, a bold effort to decarbonize the pharmaceutical value chain.

CEO LETTER

And we did not stop there. We collaborated with global scientific leaders on a meta-analysis of air pollution and dementia and a groundbreaking survey of 450-plus health clinic staff from 47 U.S. states to garner real-world insights into the health impacts of the climate crisis. Additionally, we accelerated our ongoing work with MIT to create a state-of-the-art integrated model of how various climate actions impact public health.

We also have advanced our Diversity, Equity and Inclusion (DE&I) strategy, with an ongoing focus on hiring and engaging a diverse workforce, promoting health equity, and making notable gains in supplier diversity. We shared the results of a global pay equity analysis with employees and publicly disclosed our EEO-1 data (Equal Employment Opportunity), which provides a demographic breakdown of our U.S. workforce by gender and race, and released our first stand-alone DE&I Report in October 2021.

We strive to build on our priorities for health equity and access across our operations. For example, we continue to expand efforts globally in order to reach more patients, with a growing focus on low- and middle-income countries. Globally, we are taking further action to ensure that our research and clinical trials are inclusive and representative.

We aim to remove barriers for treatment and overcome the stigma of dementia. Black or African American and Hispanic and Latino populations are respectively two and one-and-a-half times more likely than older White Americans to have Alzheimer's disease, yet they are also more likely to be diagnosed later in the course of their disease⁴. To change this, we are working with advocates and organizations such as The Balm in Gilead, Inc., the National Association of Free and Charitable Clinics, Black Health Matters, the Global Alzheimer's Platform, the National Minority Quality Forum and USAgainstAlzheimer's to improve early detection and care.

We also continue to invest significantly in building a diverse talent pipeline through STEM equity education. In 2021, we entered into a collaboration with Morehouse School of Medicine to launch a Health Equity Fellowship program, through which M.D. and/or Ph.D. students will advance projects at Biogen that support more equitable healthcare experiences for patients in underrepresented and underserved communities.

“Our Environmental, Social and Governance (ESG) efforts prioritize climate, health and equity, with a focus on vulnerable populations, as well as ongoing leadership in governance, transparency and disclosure.”

As a result of our ESG commitments and progress, we were listed as the top biotech leader on the Dow Jones Sustainability World Index for a seventh time and won the 2021 U.S. Chamber of Commerce Foundation's best sustainability program award.

Potential for Growth and Value Creation

We have entered 2022 with a robust and diversified pipeline, which includes approximately 30 clinical programs across a broad set of disease areas and multiple modalities, 10 of which are in Phase 3 or filed. We attribute this success to our own innovative research and to the more than 30 business development deals we have reached over the past five years, spanning a range of disease areas including MS, depression, stroke, and Parkinson's disease.

Our work going forward is based on four strategic pillars to drive growth and value creation over the medium to long term.

The first of these pillars is Biogen's continued leadership in neuroscience, which as of April 29, 2022, comprises over 20 of our approximately 30 programs in clinical development.

We continue to believe in significant potential opportunities in Alzheimer's disease and depression, two large therapeutic areas with great unmet need. For 2022, we expect two remaining data readouts in these areas, including additional Phase 3 data for zuranolone and pivotal data for lecanamab, with the potential to complete two new regulatory filings.

In the long term, we have the opportunity to build upon our planned entry into neuropsychiatry with BIIB104 (AMPA PAM), an investigational drug which is currently being evaluated in a Phase 2 study for cognitive impairment associated with schizophrenia.

A second pillar of potential growth is our specialized immunology portfolio with two promising Phase 3 programs in lupus, a disease that affects an estimated 1.5 million Americans and at least five million people worldwide⁵. We believe we have potential first-in-class molecules for both systemic lupus erythematosus (SLE), with dapirolizumab pegol (anti-CD40L) being developed in collaboration with UCB and BIIB059 (anti-BDCA2), and cutaneous lupus



CEO LETTER

erythematosus (CLE), with BIIB059. Lupus is a therapeutic area with a different risk profile, and we are continuing to evaluate additional opportunities across specialized immunology.

The third pillar is biosimilars, which contributed revenue of \$831.1 million in 2021. Our goal is to bring more biosimilar products to more patients across geographies, supporting the sustainability of healthcare systems and accessibility for all.

To that end, we announced in January 2022 an agreement with Samsung Biologics Co., Ltd. (Samsung Biologics) to sell our equity stake in the Samsung Bioepis Co., Ltd. (Samsung Bioepis) joint venture to Samsung Biologics. This positions us to pursue further biosimilars opportunities in order to provide patient access to biologic medicines and to contribute to healthcare sustainability. With the closing of this transaction, we will retain our current role as the commercialization partner for the Samsung Bioepis anti-TNF portfolio and ophthalmology programs.

Lastly, our fourth pillar is directed at accelerating our efforts in digital health. We aim to leverage our significant database and utilize machine learning and artificial intelligence to develop digital health solutions that may improve patient care, accelerate drug development, and further the understanding of underlying pathologies.

In summary, we expect executing on our four strategic pillars will create the opportunity for future growth and value creation.

“We continue to believe in significant potential opportunities in Alzheimer’s disease and depression, two large therapeutic areas with great unmet need.”

Focused on Execution in 2022

Our focus in 2022 will remain on execution and agility as we expect a number of important milestones. This includes maintaining leadership in our core business, the launch of VUMERITY in the EU, and our expected entry into the U.S. biosimilars market with BYOOVIZ, a biosimilar referencing LUCENTIS®.

In the light of the recent decision of CMS to limit coverage for ADUHELM in the U.S., we will be reevaluating certain elements of our infrastructure and reprioritizing our capital allocation in the interest of creating long-term value for our shareholders.

As a research-driven biotechnology company, we continue to be centered on delivering therapies at the cutting edge of innovation. We believe we have unique capabilities and experience to leverage progress in neuroscience, technology and biology. In scientific discovery and development, we know the road is not always linear, but I believe we have the best people across Biogen to advance science and access in the pursuit of helping patients and society.

I want to thank all my colleagues who work tirelessly to make Biogen such a special company and uphold the highest standards of ethics and integrity. I also want to extend thanks to our collaborators for their essential contributions, and to our investors who entrust us with their capital, which makes everything we do possible.

Sincerely,

Michel Vounatsos
Chief Executive Officer of Biogen

1. American Stroke Association.
2. 2018 AHA guidelines on management of ischemic stroke.
3. Free cash flow defined as net cash flow from operations less capital expenditures.
4. [aaic.alz.org/downloads2020/2020_Race_and_Ethnicity_Fact_Sheet.pdf](https://www.aaic.alz.org/downloads2020/2020_Race_and_Ethnicity_Fact_Sheet.pdf).
5. Lupus Foundation of America www.lupus.org/resources/lupus-facts-and-statistics.

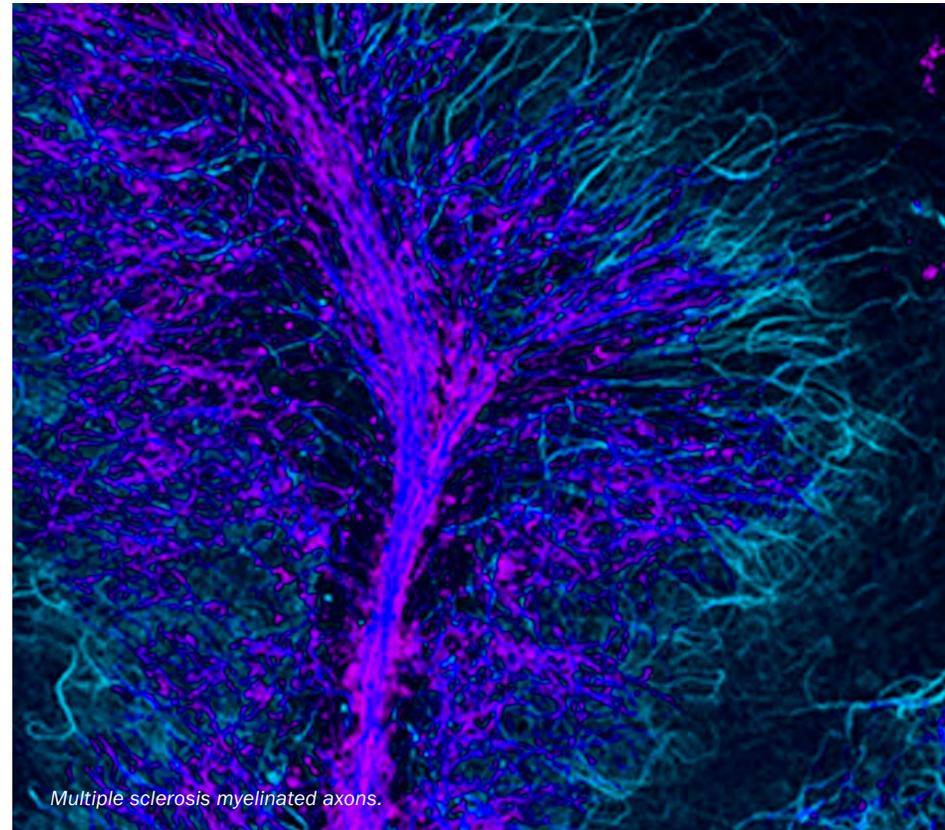


Our purpose and business performance

Biogen's purpose is to serve humanity through science so that people can live healthier, fuller lives. Our cutting-edge approach aims to fundamentally change how we attack neurological disease since we believe that true leadership in neuroscience requires a pioneering spirit and a fearless commitment. Since our founding in 1978, Biogen has embraced this mindset to deliver breakthrough innovations in some of the world's most intractable neurological diseases, including multiple sclerosis, spinal muscular atrophy, Alzheimer's disease and more.

Today, our growing global footprint serves millions of people around the world, and we are innovating to transform patient care.

As we look to the future, we see an opportunity to go beyond treating a disease to preventing it. We believe that to do this successfully we must wield our deep knowledge of disease mechanisms and therapeutic strategies, while growing our multi-target, multi-modality approach and leveraging big data and technology. We are progressing a diverse neuroscience pipeline, leveraging the interconnectivity between diseases in our existing portfolio like with new areas such as Parkinson's disease, ALS and depression.



Multiple sclerosis myelinated axons.

WE CONTINUE TO EXPAND OUR GLOBAL FOOTPRINT¹

40
direct Affiliates
and growing

+40
additional countries
addressed through
distribution
partners

17
geographies
added in the
last three years



1. As of December 31, 2021.

Our people are the backbone of our organization. Together, we're collaborating at the frontiers of science, healthcare and digital medicine to forge a future that redefines what's possible for Biogen and the millions of patients we serve.

At Biogen, we go where others won't. True to our purpose and mission, we are continuing to advance breakthrough science that addresses significant unmet needs. As we advance our multi-franchise portfolio, we are excited by the possibility of bringing new treatment options to people in need.



ESG governance and strategy

Guided by our purpose, Biogen is committed to leadership across all material aspects of environmental, social and governance (ESG) issues. Following Biogen's Corporate Governance Principles, the Board of Directors has oversight related to ESG matters. Management provides updates to our Board of Directors on relevant ESG efforts, and understanding the importance of ESG performance and disclosure, the Board and/or Board members meet with Biogen stakeholders on relevant issues.

Our Board regularly reviews its composition to ensure it includes directors with the experience, skills and diversity necessary for effective, independent Board oversight. The skills matrix for Directors includes diversity of personal background and ESG experience and competence. In 2022, as part of our commitment, Biogen once again tied a portion of our employees' and executive officers' compensation to advancing our ESG strategy.

Our commitment is grounded in our mission to transform patients' lives by pioneering and leading in neuroscience. Working strategically and ethically, we seek to unlock promising scientific breakthroughs that have the potential to impact the lives of patients around the world, through a variety of initiatives designed to promote health access and equity and to reduce our operational impact on the environment. We believe our governance structures and processes, including our ESG materiality assessment, can strengthen stakeholder relations and help ensure accountability.

We believe that the organizations that deliver the greatest long-term success consider a broad array of stakeholder needs as part of their corporate strategy and operations. We are responding to stakeholder interests through increasing transparency across our ESG efforts, including aligning this report with evolving reporting frameworks such as Sustainability Accounting Standards Board (SASB) and the Stakeholder Capitalism Metrics, originally unveiled at the World Economic Forum. We acknowledge the call from investors to better understand climate-related financial risks and with this document are publishing our second disclosure aligned with the Task Force on Climate-related Financial Disclosures (TCFD). Not only is Biogen a signatory of the United Nations Global Compact, this year we are pleased to be an early adopter of its new reporting standards.

With this Year in Review, we are pleased to report on our purpose-driven performance on material ESG issues and 2021 highlights across our key priorities.



Advancing DE&I

We believe diversity is a strength and prejudice is unacceptable. Our steadfast commitment to Diversity, Equity & Inclusion (DE&I) starts at the top, and extends throughout our company and to our patients, industry and communities.

DE&I goals, progress and reporting

Since our last report, we have advanced our DE&I strategy, and were encouraged that through our 2021 ESG materiality assessment, both internal and external stakeholders said they see Biogen's commitment to DE&I is a core strength. In the past year, we have sustained our focus on hiring and engaging a diverse workforce, promoting health equity and achieving notable gains in supplier diversity. We furthered our commitment to transparency in reporting, sharing the results of a global pay equity analysis with employees, publicly disclosing EEO-1 data that provide a demographic breakdown of our workforce by gender and race, and releasing our first standalone DE&I report in October.

Reflecting our broader commitment to these critical issues, we also tied a portion of our employees' and executive officers' 2021 compensation to advancing our ESG priorities, which include DE&I goals.

SPOTLIGHT

Advancing transparency: Biogen's first public DE&I Report

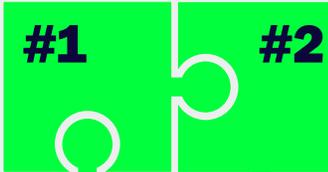
While DE&I goals and progress are regularly reported in our Year in Review reports, to dive deeper, in 2021, we issued our first-ever, standalone public DE&I Report. **During report development, we were awestruck by how many employees volunteered their time and energy, adding to their already**

full workload to help advance our DE&I strategy and transparency. The report is filled with personal employee stories, bringing to life our people's passion and drive, and underscoring that DE&I is an ongoing journey – one that requires humility, openness and determination.

OUR FOUR-PART DE&I STRATEGY

Build company-wide awareness, capability and urgency to foster and sustain a diverse and inclusive environment.

[LEARN MORE](#)



Build an intentional, high-performing, engaged, diverse and inclusive talent pipeline.

[LEARN MORE](#)

Improve health outcomes for African American, Black, Hispanic, Latino and other underserved communities in the disease areas we treat.

[LEARN MORE](#)



Promote economic empowerment and expand sourcing with minority-owned businesses.

[LEARN MORE](#)

Strategy and key progress

Advancing our DE&I strategy relies on Biogen leadership and a cross-functional governing body of employees known as the DE&I Strategic Council. In 2021, we scaled our DE&I team by adding a dedicated U.S. Partner, a Learning Partner and a hybrid People Relations/DE&I Partner. We also expanded our global focus with the formation of a DE&I Council in the Biogen Intercontinental Region. Both councils work to assure that our talent processes disrupt bias, that everyone across the company owns DE&I, and that our strategy also focuses on serving the needs of underserved and underrepresented patients in the disease areas we treat.



Recognition for DE&I

“Through ReachOUT, Biogen’s LGBTQ+ and Allies employee network, we’ve been able to not only create safe spaces for meaningful conversation at work, but advocate for equity in the community – something that means a lot to me and is part of what makes working at Biogen so fulfilling.”

Kim Wolfram

Senior Director, Head of Global Reg CMC Biologics & Gene Therapy



SPOTLIGHT

Biogen France sets new goals

In support of our global ESG strategy, Biogen France set the following social goals:

- 100% of employees trained in an inclusive talent recruitment and development policy encouraging an increase in diversity (from a 2021 base year)
- **100/100 score on Gender Equity Index in 2022**
- 3x increase in disabled workers by 2022 and be a disabled-friendly company
- 100% of employees with disabilities, disabling illnesses or in a caregiver situation supported in a support program, from 2022
- 100% of suppliers will respect the ESG criteria in our purchasing policy, from 2022

In 2021, the France team’s work toward meeting disability goals included a communications campaign on disabling diseases and a dedicated disabled employee week. It featured workshops; manager training on the recruitment, integration and support of disabled workers; vacation day donations; caregivers coffee; funding for paramedical activities; and psychological support.





PIONEERING SCIENCE



~ 30

clinical programs across a broad set of disease areas



ADUHELM® APPROVED

FDA approval of ADUHELM®, the 1st novel therapy approved for Alzheimer's disease since 2003



Celebrated **5-YEAR**

anniversary of SPINRAZA®, with more than 11,000 people treated



Associate Scientist Alvin Meda.



PIONEERING SCIENCE

Driving innovation to defeat the most complex and devastating diseases

EXECUTIVE SUMMARY WORKING AT THE FRONTIERS OF NEUROSCIENCE

Leadership in neuroscience requires a pioneering spirit and a fearless commitment. Since our founding in 1978, Biogen has embraced this mindset to deliver breakthroughs in some of the world's most intractable neurological diseases, including multiple sclerosis (MS), spinal muscular atrophy (SMA), Alzheimer's disease and more.

Diseases of the brain and central nervous system are complex and devastating – not only to the people directly impacted by them, but also to their loved ones, communities and the health systems that support us. Through investment in research and development, Biogen has brought new treatments forward while continuing to focus on areas of significant unmet need.

Neuroscience is at an inflection point. For decades, we focused on understanding and treating disease. We now know that by the time patients with neurodegenerative disease become symptomatic, the underlying disease biology has been progressing for many years, even decades. This is why Biogen is advancing novel therapeutic

approaches that seek to identify and address risk factors before symptoms appear.

With a robust clinical pipeline and expanding portfolio, we remain dedicated to advancing pioneering treatments across neurology, biosimilars, specialized immunology and digital health. In 2021, we positioned Biogen to attain the most diversified pipeline in the company's history by 2022, including more than 30 clinical programs across a broad set of disease areas and modalities, 10 of which are in Phase 3 or filed. This achievement reflects our innovative research and more than 30 business development agreements in the past five years, spanning a range of disease areas including MS, depression, stroke and ALS. In 2022, we expect a total of four data readouts, two of which are in Phase 3.

Our scientific progress is guided by Biogen's focus on patients and unwavering commitment to scientific integrity. As pioneers in neuroscience, we will continue to propel the industry forward, guided by our purpose to serve humanity through science.

Enhancing our strategic portfolio

True to our purpose and mission, we are continuing to advance breakthrough science that addresses significant unmet needs. We're committed to investments, collaboration and research in pursuit of treatments for some of humanity's most complex and devastating diseases. Progressing our diverse early- and late-stage neuroscience pipeline, in 2021 we had approximately 30 active clinical programs and are excited by the possibility of bringing new treatment options to people in need.

We are pursuing a strategic plan that leverages our core competencies in neurology and in related growth areas. Our work is based on four strategic pillars to drive growth and value creation over the medium to long term: neurology, specialized immunology, biosimilars and digital health.



Neurology

Every day we work fearlessly to improve patients' lives by offering therapies that may slow or halt the progression of neurological diseases. Our resolute dedication to addressing these devastating diseases has positioned us as a leader in the industry for developing therapies for MS and SMA. It has also paved the way for the U.S. Food and Drug Administration's approval of ADUHELM®



ENHANCING OUR STRATEGIC PORTFOLIO

Building a multi-franchise business



(aducanumab-avwa), the first approved treatment under accelerated pathway that is directed at an underlying pathophysiology of Alzheimer's disease and the first novel therapy approved for Alzheimer's disease since 2003.

Alzheimer's disease

Despite 30 years of investment by the pharmaceutical industry, Alzheimer's disease – which affects an estimated 32 million people worldwide along with their families, friends, caregivers and health systems – has seen very little progress in treatment. In June 2021, the U.S. Food and Drug Administration (FDA) granted accelerated approval of Biogen's and Eisai Co., Ltd.'s (Eisai) aducanumab-avwa, marketed as ADUHELM® for the treatment of Alzheimer's disease.

ADUHELM is the first and only Alzheimer's disease treatment to address a defining pathology of the disease by reducing amyloid beta plaques in the brain. Accelerated approval was granted based on data from clinical trials demonstrating the effect of ADUHELM on reducing amyloid beta plaques, a biomarker that is reasonably likely to predict clinical benefit, in this case a reduction in clinical decline.

[➔ READ MORE ABOUT ADUHELM'S ACCELERATED APPROVAL](#)

In April 2022, we were disappointed to receive the final coverage determination by the Centers for Medicare & Medicaid Services (CMS) that would exclude Medicare reimbursement for the majority of Alzheimer's disease patients. To avoid any treatment interruptions following the CMS decision, Biogen initiated a program for all U.S.



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patients who began treatment on or before April 7, 2022, making them eligible to receive ADUHELM at no cost for the duration of their treatment or for the duration of the program.

Data readouts

At the International Conference on Alzheimer's and Parkinson's Diseases in March 2022, we shared long-term Phase 3 data, showing ADUHELM continues to reduce underlying pathologies of Alzheimer's disease (amyloid beta plaques and plasma p-tau181) in patients treated for more than two years. These data further inform the scientific evidence for amyloid as a surrogate biomarker and provide insights on duration of treatment to reduce amyloid beta plaque.

Data from the Phase 3b redosing study EMBARK, examining the impact of an extended off-treatment period on the change in amyloid beta plaque and clinical decline, showed that the disease progressed as expected during the treatment gap period; however, numerical differences on clinical endpoints between high-dose aducanumab and placebo observed at the end of EMERGE and ENGAGE were maintained during the off-treatment period. Patients in the high-dose group of EMERGE and ENGAGE had lower scores on measures of clinical decline at the EMBARK baseline, compared to placebo.

Also in March 2022, The Journal of Prevention of Alzheimer's Disease, a peer-reviewed scientific journal, published a paper detailing ADUHELM Phase 3 EMERGE and ENGAGE trial data from more than 3,000 patients with early Alzheimer's disease. This publication underscores our commitment to data transparency. We believe that sharing our Phase 3 results with the scientific community can help HCPs make more informed treatment decisions on ADUHELM.

At the annual 2021 Clinical Trials on Alzheimer's Disease conference (CTAD), Biogen presented a variety of new data from our Alzheimer's disease product portfolio and clinical development pipeline. A late breaking presentation highlighted important new data from over 7,000 plasma samples from the ADUHELM Phase 3 trials that, for the first time, examines the effect of ADUHELM on p-tau181 and its correlation to amyloid beta plaques and disease progression, as measured by clinical decline endpoints, in patients with early Alzheimer's disease. The clinical insights derived from the data

can help inform clinician, patient and caregiver choice and future treatment decisions, as well as advance the field's understanding of this devastating disease.

Looking forward

With our collaborator Eisai, we have two of the four potential anti-amyloid antibody investigational drugs that are either approved or in late-stage development: ADUHELM and lecanemab. We believe these drugs have the potential to accelerate innovation in Alzheimer's disease treatment.

In 2021, lecanemab received Breakthrough Therapy designation, which is an FDA program intended to expedite the development and review of medicines for serious or life-threatening conditions, and in December 2021 lecanemab also received Fast Track designation. A rolling submission has started for a Biologics License Application (BLA) under accelerated approval, which is expected to be completed in the second quarter of 2022. In a Phase 2 study, results demonstrated rapid and robust reduction of amyloid plaques, and exhibited an encouraging safety profile.

Bringing therapies to Alzheimer's patients will require a versatile approach, sustained investment and an even more steadfast focus. We've invested in 10 preclinical and clinical Alzheimer's disease programs using multiple targets, including both amyloid and tau proteins, and multiple modalities, such as monoclonal antibodies, antisense oligonucleotides (ASO), small molecules and gene therapy.

Growing evidence suggests tau proteins – predominantly found in brain cells and responsible for stabilizing internal microtubules, which help transport nutrients from one part of the nerve cell to another – may be a key driver of neurodegeneration in Alzheimer's disease. In a Phase 1b study, BIIB080 (IONIS-MAPTRx), a tau-directed ASO, met the primary objective of safety and tolerability, and demonstrated a durable time and dose dependent reduction of tau protein in cerebrospinal fluid. We expect to initiate a Phase 2 study in 2022. In addition, we are planning for the initiation of a Phase 1 study for BIIB113, a small molecule with a mechanism of action that targets tau protein aggregation.

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Delivering progress on therapies at the cutting edge of innovation will continue to be at the center of our work, guided by our distinctive capabilities and experience, and driven by our passion to improve lives.

Depression

Mental health has serious, far-ranging impacts: across the globe, an estimated 280 million people live with depression and more than 700,000 people die from suicide annually. While the COVID-19 pandemic increased demand for treatment, it also started to soften barriers to openly discussing mental health issues, a step in the right direction.

Biogen is applying our expertise in neuroscience with the aim of addressing tremendous unmet patient needs around depression. Major depressive disorder (MDD) is a common comorbidity of many diseases represented in our neuroscience portfolio. Monoamine-based antidepressants, which have been the standard of care for chronic treatment of MDD for the past 60 years, can take weeks to offer relief.

With the goal of providing new treatment options for MDD and postpartum depression (PPD), we collaborated with Sage Therapeutics, Inc. to jointly develop zuranolone (BIIB125/SAGE-217), an investigational drug dosed once daily for two weeks. Zuranolone has positive data from five randomized clinical studies in MDD. Based on the clinical data and the differentiated profile of zuranolone, we are preparing to start a rolling submission for a New Drug Application in MDD, filing in the U.S. in the first half of 2022.

We're proud to be working to bring a potential new option for patients with MDD and PPD who are seeking timely and meaningful reductions in depressive symptoms.

[➤ READ MORE ABOUT ZURANOLONE TRIAL RESULTS](#)

Also in neuropsychiatry, we expect the Phase 2 readout for BIIB104 in cognitive impairment associated with schizophrenia in mid-2022.

Multiple sclerosis (MS)

With an estimated 2.8 million people living with MS worldwide², treating this chronic disease has long been at the core of our multi-franchise portfolio. For more than 25 years, we have led in the research and development of new therapies to treat MS, and more than 1.8 million people have been treated with a Biogen disease-modifying therapy.

Today, we continue to advance our MS therapies, conduct active clinical trials and offer six marketed therapies for relapsing MS and/or RRMS, including FAMPYRA, which helps to address difficulties with walking. As we look forward to introducing therapies in the future, we are focusing our attention on addressing the multifaceted challenges of MS management and advancing the care of those living with this disease through novel tools, biomarkers and advanced digital capabilities that better assess clinical outcomes, provide prognostic information and improve clinical decision making.

- **VUMERITY®** (diroximel fumarate), which was the number one new relapsing MS oral prescription in the U.S. by the end of 2020, was recommended in 2021 for marketing authorization by the Committee for Medicinal Products for Human Use (CHMP), part of the European Medicines Agency (EMA). We have launched VUMERITY in the U.S. and recently in Europe and are looking forward to launching in additional markets. VUMERITY is our latest fumarate that offers the convenience of an oral medication with the established efficacy TECFIDERA® (dimethyl fumarate). In 2021, VUMERITY also became available and is reimbursed in Israel and was approved in Switzerland for marketing authorization by Swissmedic.

[➤ READ MORE ABOUT THE EU LAUNCH OF VUMERITY](#)

- **TYSABRI®** (natalizumab): In 2021, we marked 15 years of TYSABRI. In 2021, we also announced EU approval for a subcutaneous formulation of TYSABRI (natalizumab). Now, two routes of administration have the potential to offer flexibility to meet patients' individual preferences and needs. The subcutaneous option provides a shorter administration time and expands access to treatment for patients and physicians beyond the infusion setting. For the EU healthcare system, the subcutaneous administration is cheaper to administer and requires fewer resources compared to an IV infusion, improving efficiency.

[➤ READ MORE ABOUT THE NEW ADMINISTRATION PROFILE OF TYSABRI](#)

1. Kaiser Family Foundation (KFF), (2021, February 10). [How the COVID-19 pandemic is affecting people's mental health and substance abuse.](#)
2. [www.nationalmssociety.org, Updated Atlas of MS Shows Over 2.8 Million People Worldwide Have Multiple Sclerosis - with Nearly 1 Million in the US.](#)

ENHANCING OUR STRATEGIC PORTFOLIO

Also in 2021, Biogen Switzerland received Swissmedic approval for TYSABRI subcutaneous and for TYSABRI first line indication for JCV-negative patients, making Switzerland the first country in Europe where neurologists can support JCV-negative newly diagnosed patients with this highly efficacious treatment.

Results from the Phase 3b NOVA study show that every six-week natalizumab intravenous (IV) administration provides a high level of efficacy in controlling MS disease activity in patients with relapsing-remitting MS (RRMS) who switched from the approved every four-week dosing regimen.

[➤ READ MORE ABOUT THE PHASE 3B NOVA STUDY](#)

- **TECFIDERA®** (dimethyl fumarate): As of Dec. 31, 2021, TECFIDERA, a treatment for relapsing MS, is approved in 69 countries. More than 560,000 patients have been treated with it, representing more than 1.1 million patient-years of exposure across clinical trial use and patients prescribed TECFIDERA. It was approved in 2021 by China's National Medical Products Administration (NMPA). This brings a new treatment option to people in China living with relapsing MS, continuing to expand Biogen's presence in the country.

[➤ READ MORE ABOUT NMPA'S APPROVAL OF TECFIDERA](#)

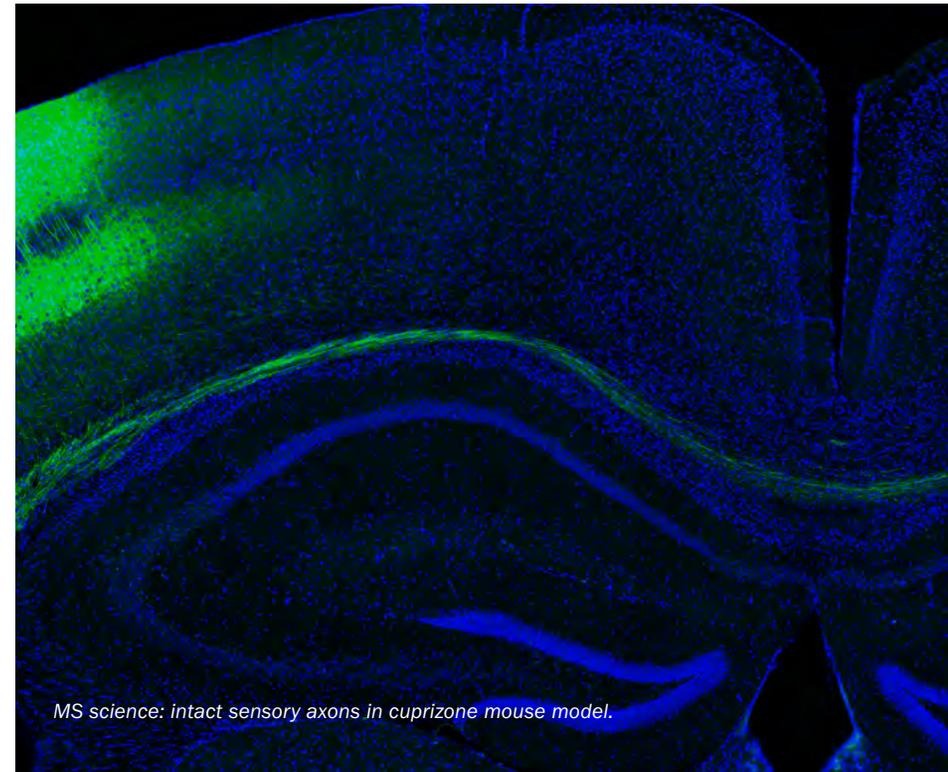
- **PLEGRIDY®** (peginterferon beta-1a): We continued to expand our industry-leading portfolio of MS treatments with the February 2021 introduction and FDA approval of a new intramuscular (IM) injection route of administration for PLEGRIDY for the treatment of relapsing forms of MS. The new IM administration offers people living with relapsing MS the efficacy and safety of PLEGRIDY with the potential for significantly reduced injection site reactions. The approval followed the European Commission's marketing authorization for IM administration in December 2020.

[➤ READ MORE ABOUT THE IM INJECTION FOR PLEGRIDY](#)

- **AVONEX®** (interferon beta-1a): In 2021, we celebrated the 25th anniversary of AVONEX, a once-a-week injectable treatment for relapsing MS, being approved in the U.S. AVONEX is one of the most prescribed treatments for relapsing forms of MS, having treated nearly 600,000 people worldwide via approval in more than 90 countries.

Looking forward, Biogen purchased licensing rights for orelabrutinib, an experimental MS drug being developed by Chinese biotech InnoCare Pharma. The therapy works by blocking an enzyme called Bruton's tyrosine kinase (BTK), which signals relevant immune cells.

[➤ READ MORE ABOUT OUR ORELABRUTINIB AGREEMENT](#)



MS science: intact sensory axons in cuprizone mouse model.



ENHANCING OUR STRATEGIC PORTFOLIO

Spinal muscular atrophy (SMA)

SMA, an inherited disease that can have a devastating effect on voluntary muscle movement, affects approximately 1 in every 10,000 babies born in the U.S. Before the introduction of treatments, SMA was a leading cause of mortality in infants. Tragically, if left untreated, the majority of infants with the most severe form of SMA die within two years. With other forms of SMA, some sit but never walk and some walk but may lose that ability over time.

Biogen introduced the first FDA-approved therapy to treat SMA, SPINRAZA® (nusinersen), in 2016. SPINRAZA® has demonstrated significant benefit in individuals with SMA, from pre-symptomatic infants to adults with later-onset SMA. In 2021, we celebrated five years of SPINRAZA being marketed, with more than 11,000 patients treated commercially and through our clinical studies and early access program as of Dec. 31, 2021.

NURTURE, the industry's longest-running study of pre-symptomatic patients with SMA, shows the potential and long-term benefit of early treatment before SMA symptom onset. During the 2022 Muscular Dystrophy Association (MDA) Clinical & Scientific Conference, we shared the latest results from NURTURE participants treated with SPINRAZA for up to 5.7 years (median 4.9 years). After 11 months of additional follow up since our 2020 interim analysis, all children who were able to walk alone maintained this ability and one child gained the ability to walk alone, increasing the total percentage to 92% (23/25). Importantly, most children achieved motor milestones within age-appropriate timelines and no motor milestones have been lost.

[➤ READ MORE ABOUT THE NURTURE STUDY](#)

We are working to address remaining unmet needs and answer critical questions for the SMA community through our new and ongoing research, as well as digital solutions to advance clinical care and patient empowerment.

- **DEVOTE:** Building on the proven efficacy and well-established safety of SPINRAZA in a broad range of patients with SMA, the Phase 2/3 DEVOTE study is evaluating the safety, tolerability and potential for even greater efficacy of nusinersen when administered at a higher, earlier dose than currently approved. Initial findings from DEVOTE show no new safety concerns in study participants who were followed for up to 10 months, and support the continued development of investigational higher dose nusinersen.

[➤ READ MORE ABOUT OUR RESEARCH PRESENTED AT THE 2021 VIRTUAL CURE SMA RESEARCH & CLINICAL CARE MEETING](#)

- **RESPOND:** In 2021, the first patient was treated in the global Phase 4 clinical study RESPOND to examine the clinical benefit and assess the safety of SPINRAZA in infants and children with SMA who still have unmet clinical needs following treatment with gene therapy Zolgensma® (onasemnogene abeparvovec). RESPOND will be conducted at approximately 20 sites worldwide and aims to enroll up to 60 children with SMA.

[➤ READ MORE ABOUT THE RESPOND STUDY](#)

- **ASCEND:** Our ASCEND study enrolled the first patient in early 2022. The study will evaluate the potential benefit of an investigational higher dose of nusinersen in children, teens and adults who were previously treated with Evrysdi® (risdiplam). ASCEND is projected to enroll up to 135 later-onset, non-ambulatory individuals with SMA (aged 5 to 39).

[➤ READ MORE ABOUT THE ASCEND STUDY](#)

Biogen is also advancing research to evaluate biomarkers and digital tools that expand on traditional clinical assessments and incorporate more sensitive measures to help better predict and monitor the course of SMA.

[➤ READ MORE ABOUT OUR DATA PRESENTED AT THE AMERICAN ACADEMY OF NEUROLOGY \(AAN\) 2021 VIRTUAL ANNUAL MEETING](#)



ENHANCING OUR STRATEGIC PORTFOLIO



SPINRAZA

Celebrating 5 years of possibility for the SMA community

2012

2014

2015

2016

2012 Biogen licensed the global rights from Ionis to develop nusinersen as the first potential treatment for spinal muscular atrophy (SMA).

Biogen embarked on the largest clinical development program of its kind in SMA, comprised of no photal clinical trials in both infantile-onset (ENDEAR) and later-onset SMA (CHERISH).

2014 The first SMA patients were treated in the Phase 3 studies.

2015 Biogen initiated the first clinical trial to assess SMA treatment in presymptomatic infants, called NURTURE.

SHINE, the largest, long-term extension study of people with SMA receiving a disease-modifying therapy, began.

2016 Positive interim analyses from the pivotal studies prompted Biogen to file marketing applications for SPINRAZA in the U.S. and Europe.

SPINRAZA was approved by the U.S. Food and Drug Administration (FDA) just three months later.



2017

The European Commission granted marketing authorization for SPINRAZA.

Phase 3 data from ENDEAR were published in the New England Journal of Medicine.



2018

Biogen was awarded the Best Biotechnology Product from the Prix Galien Foundation.

Phase 3 CHERISH results were published in the New England Journal of Medicine.

Biogen accepted over 800 participants with infantile-onset SMA to its expanded access program across 10 countries, making it one of the largest in rare disease history.

SPINRAZA reported \$1.7 billion in revenues, with 5,000+ people treated worldwide.

2019

10,000+ people treated with SPINRAZA worldwide.



2020

The first person was treated in the Phase 2/3 DEVOTE study evaluating the potential for even greater efficacy with an investigational higher dose of nusinersen.

Results from an investigational, observational study supporting the safety and efficacy of SPINRAZA in adults with SMA were published in Lancet Neurology.

Results presented from NURTURE show that after up to 4.8 years of continuous treatment with SPINRAZA, 100% of children treated pre-symptomatically were alive and none required permanent ventilation.



Pictured (from left): Marci, Andrea, Alexa and Matilda, all living with SMA.

2021

The first person was treated in the Phase 4 RESPOND study evaluating the potential benefit of SPINRAZA in infants and children with a suboptimal clinical response to Zolgensma* (onasemnogene abeparvovec).

Biogen announced plans to initiate the Phase 3b ASCEND study to evaluate an investigational higher dose of nusinersen in children, teens and adults with later-onset SMA previously treated with Evrysdi® (risdiplam).

SPINRAZA is approved in 58 countries with 11,000+ patients treated worldwide.

ENHANCING OUR STRATEGIC PORTFOLIO

Amyotrophic Lateral Sclerosis (ALS)

ALS is a fatal, progressive neurodegenerative disease that affects nerve cells, weakens muscles and severely compromises physical function. There are no genetically targeted treatment options for ALS. We are committed to advancing ALS research and have a broad pipeline of investigational drugs being evaluated.

- We have been studying tofersen (BIIB067), an investigational antisense drug for superoxide dismutase 1 (SOD1), and along with Ionis Pharmaceuticals, we released topline results from our Phase 3 VALOR study in 2021. SOD1-ALS is a rare, genetic form of ALS that accounts for approximately 2% of the estimated 168,000 people who have the disease globally.

While tofersen did not meet the primary endpoint in the VALOR study, trends favoring tofersen were seen across biologic activity and clinical function. In addition, a pre-specified integration of data from VALOR and its ongoing open-label extension study (OLE) reinforced these findings and showed that early tofersen initiation led to less decline across multiple measures of motor function, respiratory function, muscle strength and quality of life in people with SOD1-ALS. Based on the totality of these results, Biogen successfully opened an early access program (EAP) for tofersen. We are engaging with regulators, the medical community, patient advocacy groups and other key stakeholders around the world to determine potential next steps. Read more results from the Phase 3 VALOR study.

- In early 2022, we discontinued our clinical program of BIIB078, an investigational antisense oligonucleotide for C9orf72-associated ALS, which we were pursuing with Ionis Pharmaceuticals, Inc. The therapy did not meet any secondary efficacy endpoints, and it did not demonstrate clinical benefit. With Ionis, we remain committed to our decade-long pursuit of advancing ALS research and developing therapies.

[➤ READ MORE ABOUT OUR DECISION RELATED TO BIIB078](#)

- [➤ READ ABOUT HOW BIOGEN IS SUPPORTING HEALTH ACCESS FOR PEOPLE WITH A DIAGNOSIS OR FAMILY HISTORY OF ALS](#)

SPOTLIGHT

ALS Identified™ offers free access to genetic testing

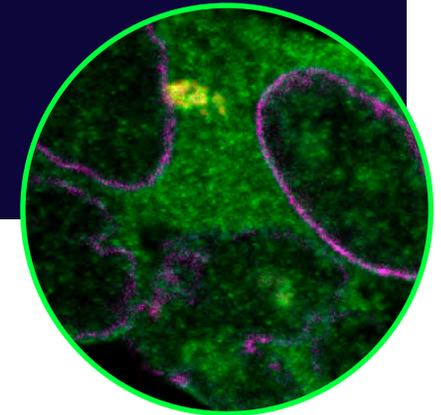
Early genetic testing, diagnosis and interventions are critical to the health of ALS patients. With this in focus, Biogen is sponsoring ALS Identified, a program that facilitates access to genetic testing at no charge to patients. Offered through Invitae, the program is open to anyone 18 years or older within the U.S. and Puerto Rico with a diagnosis or a family history of ALS. **Since ALS Identified launched in June 2021, more than 400 physicians and 3,000 people have participated.**

ALS Identified offers testing with the Invitae Amyotrophic Lateral Sclerosis Panel, which includes more than 20 ALS-associated genes. An optional add-on preliminary-evidence gene panel includes additional genes that do not currently have a definitive clinical association with ALS, but may prove to be clinically significant in the future.

ALS Identified can help patients and their families understand their disease or risk and consider opportunities to participate in genetic ALS research. It also equips doctors with information and resources and aims to advance research into genetic ALS. De-identified data will be shared with patient advocacy groups and key medical experts to foster research and improve knowledge of the disease. In the future, we plan to expand the program to additional countries with high barriers to genetic testing.

[➤ LEARN MORE ABOUT ALS IDENTIFIED](#)

Cells expressing a protein found in ALS.



ENHANCING OUR STRATEGIC PORTFOLIO

Parkinson's disease and movement disorders

Parkinson's disease, the second-most common neurodegenerative illness, is a progressive disorder of the central nervous system that causes nerve cell damage associated with tremors, stiffness and difficulty with balance and coordination. Biogen remains committed to advancing treatments for movement disorders. Although we had to discontinue BIIB054 (cinpanemab) following unsuccessful Phase 2 results, we are continuing to pursue promising science.

- We are working with Denali Therapeutics, Inc. (Denali) to co-develop and co-commercialize BIIB122 (DNL151), a small molecule inhibitor of leucine-rich repeat kinase (LRRK2) for Parkinson's disease. In 2021, positive results presented in Phase 1 and Phase 1b studies of the small molecule LRRK2 inhibitor, with safety and biomarker goals met in both studies. We're now working to advance BIIB122 into late-stage clinical development.
- Essential tremor (ET), one of the most common movement disorders, affects an estimated 6.4 million people in the U.S. alone. For people with ET, uncontrollable shaking of the hands, head, voice or legs can create difficulty eating, dressing, writing and pursuing other day-to-day activities. The Phase 2 KINETIC Study of SAGE-324 for the treatment of ET, conducted by our collaboration partner Sage Therapeutics, Inc., met its primary endpoint in 2021. At day 29, SAGE-324 demonstrated a 36% reduction in upper limb tremor amplitude from baseline in the total studied population. In a more severe population, SAGE-324 demonstrated a 41% reduction in upper limb tremor amplitude compared to baseline.

[➤ READ MORE ABOUT PHASE 2 KINETIC STUDY RESULTS](#)

Stroke

Stroke is the fifth-leading cause of death in the U.S. and for those who survive, can involve a high risk of potentially severe disability¹. Biogen is working to meet the significant need for improved treatments.

- **Acute Ischemic Stroke (AIS)**²: 85% of strokes are AIS, which affects one in six people in their lifetime. In 2021, we acquired BIIB131 (TMS-007), an investigational drug for AIS, based on positive data from a Phase 2a study. AIS is caused by a blockage of blood supply to the brain, and current thrombolytics are limited in use due in part to increased risks of bleeding. The BIIB131 study met its primary

safety objective with no incidence of bleeding and demonstrated positive impacts on both blood vessel reopening in the brain and patient functional recovery.

It has been almost 25 years since the last thrombolytic agent was approved for AIS, and we believe this novel investigational drug may expand the number of eligible patients who could potentially receive thrombolytic therapy and thus have a higher chance of functional independence after stroke. We are evaluating the next steps for the clinical development of TMS-007, including plans for global studies.

- **Large hemispheric infarction (LHI)**: Representing 15% of stroke cases, LHI has a 40–80% mortality rate with high risk of severe disability. Currently, there are no approved therapies specific to LHI or that can prevent the edema and ensuing disability associated with LHI. Following our first-ever import of a clinical investigational drug into China in 2020, we reached another major milestone in 2021: enrolling the first patient in a pivotal Phase 3 study (CHARM) in China. CHARM is designed to evaluate BIIB093 (intravenous glibenclamide) for the prevention and treatment of severe cerebral edema resulting from LHI. The study plans to enroll 54 patients at 24 study sites in China, plus an additional 768 patients outside of China. BIIB093 also is being investigated in a Phase 2 study in patients with brain contusion following traumatic brain injury.

Chronic Painful Neuropathy³

One study with promising results in 2021 was the Phase 2 CONVEY study of vixotrigine (BIIB074), a non-opioid investigational oral pain drug being evaluated for the treatment of small fiber neuropathy (SFN), a condition often characterized by severe pain. Increasing the vixotrigine trial dose met statistical significance in the Patient Global Impression of Change (PGIC) at week 12, an important self-reported measure of a patient's overall improvement since the start of the study. The totality of data from the program will inform potential doses for study in future Phase 3 clinical trials.

[➤ READ MORE ABOUT VIXOTRIGINE STUDY RESULTS](#)

1. The World Health Organization. (2020, December 9). [The top 10 causes of death.](#)
2. Merkle, A., Parikh, N., & Mir, S. (2020, July 2). [Risk of ischemic stroke in patients with coronavirus disease 2019 \(COVID-19\) vs patients with influenza.](#)
3. Kamerman, P., Wadley, A., Davis, K., Hietaharju, A., Jain, P., Kopf, A., Meyer, A., Raja, S., Rice, A., Smith, B., Treede, R., & Wiffen, P. (2015, May). [World Health Organization \(WHO\) essential medicines lists: where are the drugs to treat neuropathic pain?](#)



ENHANCING OUR STRATEGIC PORTFOLIO

FEATURE

A Biogen employee, unexpected clinical trial participant and stroke survivor

Almost 17 years ago, Kim Richard-O'Brien's dad had a massive stroke. It was the middle of winter; he was 52 and living alone at the time. It was hours before he was found, well beyond the three-hour limit to receive thrombolytic Activase® (TPA), the only available treatment at the time. Though he made great strides in recovery, he had to move to a long-term care facility.

With chilling similarity, that is how Kim's story also starts. It was January, her husband was away for the week, and Kim's morning started normally. She took her daughters out of their cribs, waiting for their nanny to arrive. She remembers squeezing the toothpaste tube when something quickly felt different. Then it went black.

When the nanny arrived, she found Kim on the bathroom floor. Kim realized she couldn't move anything on her left side. She was heavily slurring and couldn't read her watch. Kim was rushed to Lahey Hospital & Medical Center, a stroke center outside of Boston, and fewer than 15 minutes away. Neurologists quickly diagnosed an acute ischemic stroke. They recommended a clinical trial for moderate and severe strokes. Kim was randomized to the experimental arm, which means that not only did she get the standard of care but was also given TPA intra-arterially delivered directly to the clot, and then received endovascular thrombectomy (EVT), which used a medical device to try to remove the clot.

By the time Kim's husband arrived, she could speak and move again. She underwent extensive testing and monitoring for cerebral edema in the intensive care unit, where countless clinicians stopped by to see with their own eyes the amazing result of "the 33-year-old who had the huge stroke."

Professionally, Kim feels fortunate to have spent the last three years playing a key role on Biogen's stroke programs. She has attended several international stroke congresses and says it is both strange and emotional to see the data from the study she was in being presented by world-renowned stroke researchers. Coincidentally, it is through this work that she met the lead investigators who were instrumental in the clinical trial that saved her life.

Less than 10 years separated Kim's stroke from her dad's, but their care – and clinical outcomes – are vastly different. She urges everyone to consider stroke symptom awareness and support for medical research to help future stroke patients.



Kim Richard-O'Brien is a stroke survivor and currently serves as Global Head of Scientific Partnerships.



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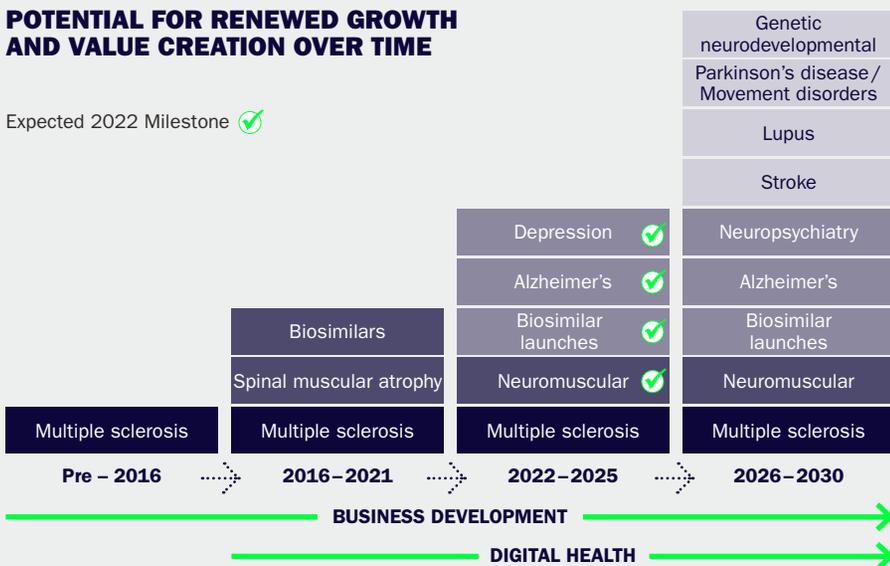
Specialized immunology

Decades of study by Biogen at the intersection of neurological and immunological pathways provide the company with expertise in immunology. Leveraging this expertise, we're continuing to build our specialized immunology portfolio, with two potentially compelling Phase 3 programs in lupus – a chronic long-term disease that can cause inflammation and pain in any part of the body. It is estimated that 1.5 million U.S. residents and at least 5 million people worldwide have a form of lupus.

In 2021, the first patient was dosed in TOPAZ-1, a global Phase 3 study evaluating the clinical efficacy and assessing the safety of BIIB059, which was discovered and developed exclusively by Biogen. It is a first-in-class, humanized IgG1 monoclonal antibody (mAb)

POTENTIAL FOR RENEWED GROWTH AND VALUE CREATION OVER TIME

Expected 2022 Milestone



SPOTLIGHT

Building a multi-franchise portfolio in areas of high unmet need

During Biogen's 2021 virtual Investor R&D Day, we provided a comprehensive review of the company's robust and diversified neuroscience pipeline. We highlighted key advancements among our clinical programs, including programs in Phase 3 or filed, and highlights of our work on Alzheimer's disease, neuropsychiatry, ALS, stroke, lupus and Parkinson's disease. Our management and scientific leaders were joined by executives from Eisai, Sage Therapeutics and Denali Therapeutics.

In advance of the live webcast, nine video presentations were made available on movement disorders; MS portfolio; Alzheimer's disease research portfolio; building the pipeline of the future; human genetics; biotherapeutics and medicinal sciences; gene therapy; biomarkers; and our new global unit, Biogen Digital Health.

[VIEW PRE-EVENT PRESENTATIONS](#)

[ACCESS THE INVESTOR R&D DAY PRESENTATION](#)

targeting blood dendritic cell antigen 2 (BDCA2), as compared to placebo, in participants with active systemic lupus erythematosus (SLE). TOPAZ-1 is a 52-week study that is expected to be conducted at approximately 135 sites worldwide and aims to enroll 540 adults with active SLE.

[READ MORE ABOUT THE TOPAZ-1 STUDY](#)

With the TOPAZ-1 study, we are reinforcing Biogen's commitment to the inclusion of underrepresented groups in our clinical trials. We have set enrollment targets that reflect the prevalence of SLE in Black or African American and Hispanic and Latino communities with the aim to achieve appropriate representation.

[READ MORE ABOUT BIOGEN EFFORTS TO INCREASE REPRESENTATION IN CLINICAL TRIALS](#)

We plan to initiate a pivotal study for BIIB059 in cutaneous lupus erythematosus in 2022.

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Biosimilars

Biopharmaceutical drugs, or biologics, may offer effective therapies for patients living with serious conditions, yet can place a significant financial strain on health systems and access can be limited, resulting in poorer health outcomes. A biosimilar is a biological product that is highly similar to and has no clinically meaningful differences from an existing approved reference product. Biosimilars offer a solution, expanding access for patients and reducing healthcare costs by providing physicians and patients with more affordable treatments¹. Biogen biosimilars generated €2.6 billion in healthcare savings for European healthcare systems in 2021 and €7.6 billion since they were first introduced.

Having successfully developed and delivered complex originator biologics for 44 years, Biogen is one of a handful of companies with the manufacturing capabilities and scientific expertise required to produce biosimilars of advanced biologics.

Biosimilars are a strategic imperative for Biogen and proof of our pioneering spirit. Building on six years of continued growth, Biogen is a biosimilars market leader in Europe with our portfolio of three anti-TNF therapies. We aim to broaden our pipeline to bring more biosimilar solutions to patients and health systems worldwide and currently have four additional biosimilar product candidates in various stages of development.

- **Anti-TNF** (tumor necrosis factor) biosimilars: Anti-TNFs are highly effective in the treatment of immune-mediated inflammatory diseases (IMiD) such as rheumatoid arthritis, psoriatic arthritis, juvenile idiopathic arthritis, inflammatory bowel disease (Crohn's and ulcerative colitis), ankylosing spondylitis and psoriasis. Use of anti-TNF medicines in Europe increased by 45% since the introduction of biosimilars. Biogen's European anti-TNF portfolio of Benepali®, Flixabi™ and Imraldi™ covers 15 indications and serves over 247,000 patients. Recognized as a leader with product supply continuity and reliability, since launch, Biogen has supplied nearly 30 million doses in over 26 countries without missing a patient despite the challenges of COVID-19.

- **Anti-VEGF** (vascular endothelial growth factor) biosimilars: Our portfolio is expanding to include anti-VEGF therapies that have revolutionized the treatment of retinal vascular disorders, which are a leading cause of blindness. We aim to market these biosimilars in the EU, the U.S., Canada, Australia and Japan, as well as other major markets. In 2021, BYOOVIZ™ (ranibizumab/ranibizumab-nuna) received approval from 27 EU member countries, the U.K. and the U.S. and Canada in 2022, making it the first anti-VEGF ophthalmology biosimilar approved in all these countries. BYOOVIZ™ references LUCENTIS® (ranibizumab) for the treatment of neovascular (wet) age-related macular degeneration (AMD), macular edema following retinal vein occlusion (RVO) and myopic choroidal neovascularization (mCNV). Ranibizumab prevents vision loss in patients with retinal vascular disorders, which can lead to irreversible blindness or visual impairments in adults. Approximately 11 million U.S. adults are affected with AMD, and the prevalence of advanced AMD is growing due to the aging population.

➔ [READ MORE ABOUT BYOOVIZ](#)

- **BIIB800**: In 2021, Biogen entered into a commercialization and license agreement with Bio-Thera Solutions, Ltd. to develop, manufacture and commercialize BIIB800 (BAT1806), a Phase 3 clinical stage biosimilar candidate referencing tocilizumab (ACTEMRA/ROACTEMRA), an anti-interleukin-6 receptor (IL-6R) monoclonal antibody. Tocilizumab is indicated for the treatment of moderate to severe rheumatoid arthritis (RA) in adults, as well as juvenile idiopathic polyarthritis, systemic juvenile idiopathic arthritis, giant cell arteritis, chimeric antigen receptor (CAR) T cell-induced cytokine release syndrome and coronavirus disease 2019 (COVID-19). BIIB800 demonstrated equivalent efficacy at weeks 12 and 24 and similar pharmacokinetics, safety and immunogenicity to reference tocilizumab up to week 24 in patients with moderate to severe RA inadequately controlled by methotrexate therapy. If approved, BIIB800 will enable us to expand our global biosimilars footprint worldwide except China.

➔ [READ MORE ABOUT PHASE 3 STUDY RESULTS](#)

1. American Journal of Managed Care (AJMC) Center for Biosimilars. (2019, June 27). [Biosimilars market is ripe for cost savings.](#)



ENHANCING OUR STRATEGIC PORTFOLIO

- **BIIB801:** Biogen and Xbrane Biopharma AB entered into a commercialization and license agreement to develop, manufacture and commercialize BIIB801 (Xcimzane™), a preclinical monoclonal antibody that is a proposed biosimilar referencing CIMZIA® (certolizumab pegol). CIMZIA's primary indication is for RA in adults as well as axial spondylarthritis, psoriasis and Crohn's disease.

[➔ READ MORE ABOUT THE AGREEMENT](#)

We continue to generate new scientific insights, engaging 160,000 patients and producing 193 publications of Biogen-supported research since 2015. Our Biosimilars Medical Academy has attracted more than 410,000 individual site visitors since its launch in 2020.

We also are working to further reduce any environmental impacts related to the full lifecycle of key Biogen biosimilars.

[➔ READ MORE IN THE ENVIRONMENT SECTION OF THIS REPORT](#)

Spotlighting biosimilars with IQVIA Institute

In 2021, Biogen's Ian Henshaw, Global Head of Biosimilars, co-hosted a webinar with IQVIA Institute for Human Data Science, inviting diverse stakeholders to discuss perspectives on the role of biosimilars in healthcare sustainability. The event built on IQVIA Institute's report "Spotlight on Biosimilars: Optimizing the Sustainability of Healthcare Systems," focusing on benefits of biosimilars that both expand earlier patient access to biologics and generate budget savings to balance the rising economic burdens on various healthcare systems.

In 2020, the biologics market was valued at \$320 billion, accounting for one-third of the value of the global pharmaceuticals market globally and 40% of the total market value in Europe. New launches are expected to increase from 13 new molecules per year (2014-2018) to 27 per year (2021-2025), presenting new opportunities and challenges.

We believe the uptake of biosimilars is a key pillar of ensuring the sustainability of healthcare systems. Biosimilars stimulate competition within an established therapy area, reducing costs, broadening patient access and generating billions in healthcare savings for potential reinvestment in innovative therapies and diagnostic infrastructure.



Digital Health

At Biogen Digital Health, we aspire to transform patients' lives and Biogen by making personalized and digital medicine in neuroscience a reality. Powered by data science and digital technologies, we drive solutions to advance research, clinical care and patient empowerment. We believe that now, more than ever, biology and technology should go hand in hand to better meet patient needs, while enabling a shift toward more prevention-focused, affordable and equitable care.

In 2021, we continued to accelerate efforts to build complementary digital solutions and technologies to potentially predict, measure and prevent disease. With five digital solutions in the market and more in concept and development stages, we are actively exploring digital capabilities and solutions that are leverageable across our growing portfolio in areas such as digital biomarkers, personalized medicine, patient pathway improvement and digital therapeutics.

Looking forward, we see the exciting opportunities to change lives by unlocking the impact of data and digital health across areas of strategic relevance to Biogen.

[➔ READ MORE IN THE PATIENTS SECTION OF THIS REPORT](#)

Collaborating for the greater good

In 2021, a collaboration between Biogen, AbbVie and Pfizer launched access to the world's largest browsable resource linking rare protein-coding genetic variants to human health and disease. Managed by the Broad Institute of MIT and Harvard, the browser gives

access to results from analyses of whole exome sequencing data from 300,000 U.K. Biobank research participants. These genetic data have been paired with detailed health information, enabling scientists worldwide to use data for multiple areas of interest.

ENHANCING OUR STRATEGIC PORTFOLIO

FEATURE

Biogen experts work to unlock the mysteries of the brain

Of the body's many organs, none holds more secrets than the brain. Weighing just 1.3 kilograms (three pounds), it is the command center for the entire body and a mystery that has captivated and confounded generations of scientists.

"There's been an exponential gain in our understanding of the brain itself, and we have also been learning about diseases like ALS, which has always been recognized as a huge clinical challenge, a dreadful disease and a tough one to take on in developing treatments," said Chris Henderson, Ph.D., Head of Research at Biogen.

Scientists have been working on ALS for decades, but it is only in recent years that we have been able to understand some of the triggers and complexities within the brain.



Kate Dawson, M.D., Head of Biogen's Therapeutics Development Unit, and Chris Henderson, Ph.D., Head of Research.

“When I was training in neurology, we did not have any therapies for ALS and we focused on improving quality of life. Now there are treatments to help maintain function and improve quality of life for people with ALS, yet significant unmet needs remain. Our goal at Biogen is to meaningfully affect the disease itself.”

Kate Dawson

M.D., Head of Biogen's Therapeutics Development Unit

We are committed to discovering effective treatments across neuroscience as scientists begin to overcome some of the obstacles that previously blocked progress in drug discovery. One such obstacle is literally a barrier: the blood-brain barrier, a physical boundary surrounding the brain's blood vessels that only lets certain tiny molecules into the brain and keeps out most others. With the ability to administer therapies into the spinal fluid, allowing the drug to go directly to the brain, antisense oligonucleotides (ASOs) have made a tremendous impact in the field.

Sequencing of the human genome has also helped researchers uncover specific mutations that trigger a disease. This is how Biogen developed the first

approved treatment for SMA. Another big step forward has been the use of advanced imaging technologies to identify biomarkers, which allow researchers and clinicians to see whether a drug is reaching its target and to get early indications if the drug is modifying disease progression.

Over time, seemingly insurmountable challenges in brain research may become attainable. Biogen remains focused, investing in research that seeks to prevent or treat brain diseases once considered too difficult, too unpredictable or too risky to tackle.

[➔ READ THE FULL ARTICLE, UNLOCKING THE MYSTERIES OF THE BRAIN](#)

ENHANCING OUR STRATEGIC PORTFOLIO

Gene therapy

Decades of research have unveiled the genetic causes of many conditions, unlocking the potential of gene therapy: a drug administered once that can modify the disease-associated genetic information in a patient's cells. Gene therapies have the potential to one day dramatically change healthcare, moving from disease management to potentially preventing, halting or curing a disease with one injection.

Gene therapy is a significant part of Biogen's focus in neurological and ophthalmological diseases, and we are investing in infrastructure, developing new partnerships and advancing RNA splicing technology.

Gene therapy and ophthalmology

- **XLRP:** A rare, inherited eye disease, X-linked retinitis pigmentosa (XLRP) typically begins with difficulty seeing at night, followed by restriction of the field of vision and eventually blindness, in most people by the age of 40. Patients living with XLRP currently have no approved treatments. Biogen is investigating one-time therapy for patients with XLRP: cotoretigene toliparvovec (BIIB112). Topline results from the Phase 2/3 XIRIUS study show that it did not meet its primary endpoint of demonstrating a statistically significant improvement. Positive trends were observed across several clinically relevant prespecified secondary endpoints, such as a measure of visual acuity under low light conditions.

[➔ READ MORE ABOUT THE XIRUS STUDY](#)

- **Choroideremia:** In ophthalmology, we're also evaluating the safety and efficacy of timrepigene emparvovec (BIIB111/AAV2-REP1), a gene therapy being investigated for the one-time treatment of choroideremia, another rare inherited retinal disease¹. While our Phase 3 STAR study did not meet its primary endpoint or key secondary endpoints, the clinical insights from this study may prove valuable in the future.
- **Other inherited diseases:** In 2021, we entered an agreement with German-based ViGeneron GmbH to develop and commercialize gene therapy products based on adeno-associated virus (AAV) vectors to treat inherited eye diseases. We also formed a collaboration with Ginkgo Bioworks to develop a next-generation AAV production

1. Hanany, M., Rivolta, C., & Sharon, D. (2020, January 21). [Worldwide carrier frequency and genetic prevalence of autosomal recessive inherited retinal diseases.](#)

SPOTLIGHT

Championing our local biotech community

Biogen's commitment to championing innovation extends beyond our walls. We support our local biotech community in a variety of ways, including as a sponsor of LabCentral, a first-of-its-kind shared laboratory space designed as a launchpad for high-potential life sciences and biotech startups.

Each year, Biogen awards two "Golden Tickets" to innovative startup companies, which includes mentoring and one year of lab space for one scientist at LabCentral.

Pictured, from left: Johnny Page, Co-founder & CEO of Bolden Therapeutics, and Jessica Sang, CEO & Co-founder of Accure.



This year's selection process included a virtual competition where four finalists presented their proposed research to the R&D organization and an internal Biogen judging panel, which selected these winners:

- **Bolden Therapeutics**, which is developing therapeutics that target a novel signaling pathway to promote adult hippocampal neurogenesis to treat CNS diseases.
- **Accure Health**, which focuses on developing integrated solutions that rapidly digitize liquid biomarkers into quantitative, actionable information to improve early detection and precision treatment of cancer, neurodegeneration, and other complex diseases.

platform. Recombinant AAV-based vectors are widely used to develop innovative gene therapies with the potential to treat certain neurological and neuromuscular diseases, yet manufacturing them is time-consuming and expensive. We see the potential to accelerate gene therapy development by applying Ginkgo Bioworks' mammalian cell programming platform to improve the efficiency of AAV-producing plasmid vectors and cell lines.

[➔ READ MORE ABOUT OUR COLLABORATION WITH GINKGO BIOWORKS](#)

ENHANCING OUR STRATEGIC PORTFOLIO

FEATURE

From curiosity to discovery to purpose

When she was a Johns Hopkins University student, Junghae Suh spotted a poster describing a biophysical technique that can help measure the forces at play in cells. She knew instantly that this technique could be applied to gene therapy, setting her on a course to discover a new approach to track and measure the way gene therapies move within live cells.

For years, researchers worked to understand what stopped gene therapies from reaching the nucleus of a cell and delivering their therapeutic package. Using Junghae's approach, researchers could see a real-time "movie" of the gene therapy in cells, instead of just snapshots. By seeing particles travel through cells, Junghae determined where the gene therapy was stuck.

With this knowledge and after more than 12 years in academia, Junghae was ready for a new challenge: translating scientific discoveries into therapies with the potential to change the lives of those living with debilitating neurological diseases. This brought her to Biogen, where she leads Biogen's Gene Therapy Accelerator Unit (GTxAU).



Junghae Suh uses knowledge from her years in academia to now drive scientific innovation as the head of Biogen's Gene Therapy Accelerator.

"Today, my purpose is the clearest it has ever been: to deliver potentially life-transforming gene therapy medicines to patients," said Junghae. "It is a monumental challenge, but the time has come to make the promise of gene therapy a reality."

[➔ READ JUNGHAE'S FULL STORY](#)

Advancing RNA splicing research

Genetic information encoded in the human chromosome is converted into ribonucleic acid (RNA) molecules to make proteins. Traditionally, the process of detecting, cataloging and interpreting RNA splicing errors has been laborious and costly. To advance RNA splicing research and potentially develop new drug targets for central nervous system (CNS) diseases, in 2021, we entered a collaboration with Envisagenics.

We will leverage Envisagenics' proprietary artificial intelligence (AI)-driven RNA splicing platform, SpliceCore®, to define and understand the regulation of different RNA isoforms in CNS cell types. This will enable us to identify, test and validate splicing errors at scale. SpliceCore's database has approximately 7 million potential RNA splicing errors, the largest such database in the world, giving us a broader lens for evaluating potential focus areas with the goal of increasing the probability of CNS drug discovery.

[➔ READ MORE ABOUT OUR COLLABORATION WITH ENVISAGENICS](#)

Biogen joins Bespoke Gene Therapy Consortium

In an effort to accelerate development of gene therapies, Biogen joined the National Institutes of Health, the FDA and others to create the Bespoke Gene Therapy Consortium. The group aims to optimize and streamline the gene therapy development process to address the greatest challenges in gene therapy and help fill the unmet medical needs of people with rare diseases.

A cross-functional Biogen team participates in the consortium, including representatives from pharmaceutical operations and technology, regulatory and clinical. Junghae Suh, Ph.D., Head of Biogen's Gene Therapy Accelerator Unit, noted, "By working together to address the genetic cause of disease, we hope this collaboration can help develop transformative medicines that may potentially prevent, halt or cure disease in the future."

SPOTLIGHT**Breaking ground on our new gene therapy manufacturing facility**

In 2021, our Research Triangle Park (RTP) manufacturing campus in North Carolina and Biogen executives hosted Machel Baker Sanders, a former Biogen employee and North Carolina Secretary of Commerce, for the groundbreaking of our new gene therapy manufacturing facility. The \$200 million investment will expand existing operations across Biogen's RTP campuses.

This investment reflects our commitment to advancing our gene therapy portfolio across multiple therapeutic areas, complemented by differentiated, sustainable and advanced manufacturing capabilities to deliver a reliable supply of high-quality medicines to the

patients we serve. The site will be 175,000 square feet and designed in compliance with the most advanced sustainability standards regarding energy use, waste management and water consumption. The facility is expected to be operational by 2023.

"Building what will now be in RTP our seventh manufacturing plant across four different therapeutic modalities on a more than 250-acre campus, is not only a strategic investment in manufacturing and technology, but importantly an investment in future patients, their families and loved ones,"

said Nicole Murphy, Head of Pharmaceutical Operations and Technology.

**Advancing responsible product development**

Biogen is advancing responsible product development and addressing the interest of our stakeholders in material environmental, social and governance (ESG) issues. This begins in the earliest stages of R&D, with clear guidelines around issues such as bioethics and the use of animals in research. In forging and refining our approach to these and other issues, we review industry standards and best practices and consult with stakeholder groups.

We also transparently disclose our policies, principles and positions on these and other issues, available [here](#):

- Animal Welfare
- Clinical Research and Bioethics
- Clinical Trial Transparency and Data Sharing
- Product Stewardship
- Research Collaborations
- Stem Cells

Responsible and sustainable pharmaceutical operations and technology

We take seriously our responsibility to create, safeguard and supply quality medicine, which guides every aspect of our manufacturing operations. We successfully manufacture large molecule therapies and small molecule therapies, and we have an oral solid dose facility and 263,000 liters of bioreactor capacity – one of the largest among biotech companies worldwide – enabling us to manufacture and supply medicines to patients in more than 90 countries.

ADVANCING RESPONSIBLE PRODUCT DEVELOPMENT

We continually strive to advance our understanding of biology and the process technologies that can help improve our capabilities and output, and to equip our manufacturing plants with technologies to meet demand for our existing therapies, clinical trials and opportunities in biosimilars. Thorough business continuity planning provides appropriate redundancy in an effort to maintain product availability while minimizing environmental impact.

To support our future growth and drug development pipeline, we are expanding our large molecule production capacity by building a large-scale biologics manufacturing facility in Solothurn, Switzerland, which we anticipate will have the capacity to produce up to 10 metric tons of antibodies per year. In the second quarter of 2021 a portion of the facility received a GMP multi-product license from SWISSMEDIC. At our North Carolina facilities, we use an innovative process for early-stage clinical products that increases the flexibility and speed of supplying drugs for clinical studies, and reduces the environmental impacts of the manufacturing process.

[➤ LEARN MORE ABOUT OUR COMMITMENT TO SUSTAINABLE DRUG DEVELOPMENT](#)

Responsible Supplier Program

Our emphasis on corporate responsibility extends through our value chain. Biogen suppliers have long been expected to adhere to the principles and practices of ethical business, including our Code of Business Conduct, Human Rights Position Statement and Anti-Slavery and Human Trafficking Statement.

[➤ RESPONSIBLE SUPPLY CHAIN UPDATE](#)

Now, we are taking further steps to formalize and expand our expectations of our suppliers by developing a Responsible Supplier Program, which encompasses a range of ESG issues, notably diversity, equity and inclusion; human rights and fair labor practices; climate commitments; environmental impacts, monitoring and remediation; and transparency and disclosure. This effort is informed by our engagement with the [Pharmaceutical Supply Chain Initiative](#) and includes:

- **Creating a supplier code of conduct:** Though our suppliers are expected to do business according to the guiding principles outlined in our Code of Business Conduct, we recognize the need to create

a specific set of principles for our suppliers to ensure we are transparent and clear about our business requirements. We are currently in the process of creating a Supplier Code of Conduct that will outline comprehensive criteria for our suppliers across the categories of Ethics, Human Rights and Labor, Health and Safety, and Environment and Management Systems.

- **Expanding our supplier risk assessment:** As part of building our Responsible Supplier Program, we are in the process of expanding our ESG risk screen. We have procured a software that will enable us to simultaneously broaden and deepen our knowledge of our supplier impacts and operations across 21 criteria grouped into four themes: Environment, Labor and Human Rights, Ethics and Sustainable Procurement. The criteria are based on international sustainability standards such as the Global Compact Principles, the International Labour Organization (ILO) conventions, the Global Reporting Initiative (GRI) standards, the ISO 26000 standard and the CERES principles. Our expanded supplier evaluation will enable us to make decisions based on the clearest and more comprehensive information.
- **Increasing supplier engagement:** We are engaging with key suppliers more than ever to identify potential risks, increase transparency and reduce our suppliers' impacts on climate change. We typically prioritize engaging with partner companies that we do the most business with, but in our effort to decarbonize our value chain, we are instead identifying suppliers with the highest emissions and helping them transition to renewable energy. One way we're doing this is through Energize program, which we launched this year with nine other pharmaceutical companies to increase access to renewable energy across our supply chains.

[➤ READ MORE ABOUT OUR PRINCIPLES OF SUSTAINABLE DRUG DEVELOPMENT](#)



ADVANCING RESPONSIBLE PRODUCT DEVELOPMENT



DE&I STRATEGY #4

Promote economic empowerment and expand sourcing with minority-owned businesses

Supplier diversity can help strengthen our competitiveness and contribute to a more equitable economy in communities where we operate.

GOALS

50–100% Increase spending with minority-owned businesses in the U.S.

Explore expanding the use of minority-owned banks for a portion of Biogen's cash balances.

PROGRESS

We surpassed our minority-owned business spend goal by \$5 million. In total, we spent \$230 million with diverse suppliers.

We sustained our \$10 million deposit with a minority-owned bank.

[➤ READ MORE ABOUT OUR DE&I STRATEGY](#)

Supplier diversity

Working with small and diverse suppliers can support economic growth, foster innovation and enable us to achieve a competitive advantage. Recognizing that Biogen can have a positive impact through our suppliers, supplier diversity is integrated into our procurement procedures. While potential suppliers who meet our diversity criteria are subject to the same application process as all other vendors, our supplier diversity program ensures that small and diverse business enterprises have an equitable opportunity to compete for Biogen's business. This includes businesses owned by minorities; women; veterans and service-disabled veterans; lesbian, gay, bisexual and transgender individuals; and persons with disabilities. Biogen is affiliated with organizations that provide access to small and diverse suppliers, including:

- Center for Women & Enterprise
- Diversity Alliance for Science
- U.S. Small Business Association

We launched our Small Business Program in 2019.



PATIENTS



100%

of U.S. studies¹ initiated in 2021 included a plan to recruit underrepresented patients



1. U.S. clinical trials in Phases 1–4 led by Biogen's Global Clinical Operations.

Recipient of the Reuters Global Pharma Patient

CHAMPION AWARD



65 COUNTRIES

where SPINRAZA[®] is reimbursed



Matilda was diagnosed with SMA Type 1 at the age of 11 months.

PATIENTS

Advancing health access and equity so patients can live healthier lives

EXECUTIVE SUMMARY WORKING FEARLESSLY TO CHANGE LIVES

The past two years have shined a bright light on the importance of health and the need for innovation and equity in healthcare. Biogen's approach involves seeing each patient not as a profile, but as a person, and putting the diverse individuals we serve at the center of everything we do. Our commitment starts within, and in 2021 we offered a wide range of learning opportunities to share patient voices and emerging data with employees company wide.

In 2021, Biogen's international Patient Advocacy teams engaged with dozens of patient advocacy groups (PAGs) and with healthcare providers (HCPs) to listen, learn and provide relevant support, education and resources. We hosted six Alzheimer's Disease Readiness Briefings with over 70 Alzheimer's leaders from 60 PAGs; launched two new MS campaigns and a feature-length movie; and engaged the SMA community from virtual events to the creation of a new book for elementary school children. We also help connect HCPs with experts and information, such as through our 2021 biosimilars summit.

We worked to expand access to medicine, with Early Access Programs (EAPs) in 40 countries. One example is our 2021 early access to tofersen to eligible SOD1-ALS patients (see below). Recognizing that stakeholders see pricing as a material ESG issue for Biogen, we took action on pricing for ADUHELM®, expanded access to MS and SMA therapies in China, and entered into SMA Risk Sharing Agreements in additional markets, with SPINRAZA® now having

either a formal reimbursement, individual reimbursement or a Named Patient Program in 65 countries.

There is an increasing focus on the social determinants of health, as well as health equity and access. In the past year, we have made tangible strides in our commitment to addressing inequities across the healthcare system. Key strategies include underserved and underrepresented patient engagement and education; increasing representation in clinical trials; expanding medical publications with data pertaining to underserved and underrepresented patients; engagement of key medical experts; and expanding access to our therapies.

Believing that biology and technology should go hand in hand to better meet patient needs, while enabling more prevention-focused, affordable and equitable care, in 2021 we formed Biogen Digital Health, a global unit that aspires to transform patients' lives and Biogen by making personalized and digital medicine in neuroscience a reality. Our digital health focus areas include digital biomarkers, personalized neurology, care pathway digital solutions for patients and HCPs, and digital therapeutics.

Through our focus on patients and the people who support them, we're driving solutions to advance equitable research, clinical care and patient empowerment, resolute in ensuring that all patients are better positioned to realize optimal health.

Advocating for patients, engaging with healthcare professionals

When facing neurological disease, patients and their families often have questions and need support that can go beyond medical therapies alone. Biogen's Patient Advocacy team engages with PAGs to listen, learn and provide relevant support and resources for those living with disease. We also work closely with HCPs to advance disease education, providing timely information on Biogen therapeutic areas so they can best care for patients.

Patient advocacy

Through our long-term relationships with PAGs and other stakeholders, Biogen's Patient Advocacy team ensures patients are at the center of everything we do.

For example, our Patient Voice Series connects Biogen employees with patients to better understand critical issues such as affordability and access, and what matters most to those we're striving to help. In 2021, we held several events, one of which inspired U.S. employee Jenn Gardella to bike across the U.S. to raise money for MS. Read Jenn's story in the Our [People](#) section. We also work to explore ways to help patients and promote continuity of care in extraordinary circumstances, such as helping people impacted by the war in Ukraine.

[➔ READ MORE](#)

This not only motivates us to work fearlessly in patient-focused therapy development, it also inspires our ongoing engagement with more than 50 PAGs, healthcare professionals and other stakeholders in the disease areas we treat.

ADVOCATING FOR PATIENTS, ENGAGING WITH HEALTHCARE PROFESSIONALS

Alzheimer's disease

According to the World Health Organization, there are currently 55 million people living with Alzheimer's disease and other types of dementia¹. How we define Alzheimer's disease has meaning on many levels – from the individual patient and doctors to the research community. In 2020 we hosted seven Alzheimer's Disease Readiness Briefings with over 70 Alzheimer's leaders from 60 PAGs as well as two Global PAG Steering Committees with nine leaders from the global advocacy community. The goal was to raise awareness and educate about strategic Alzheimer's topics, better understand unmet needs and identify opportunities for collaboration.

[LEARN MORE ABOUT THE BRIEFINGS](#)

In 2021 in the U.S., Biogen worked with the Alzheimer's Foundation to launch the "More Time" campaign focused on families impacted by Alzheimer's disease and wanting more time with their loved ones. The "More Time" campaign kicked off with full-page print ads in The Wall Street Journal and USA Today featuring open letters from Alzheimer's Association CEO Harry Johns and including three personal stories from patients and loved ones. "More Time" generated considerable engagement, including more than 92 million impressions.

Building on Biogen and Eisai's global "It's Time" campaign, we launched a campaign that includes a multilingual [awareness video](#) and [patient stories](#) from around the world, beginning with Brazil. The effort emphasizes the need for understanding for Alzheimer's disease patients and the importance of early diagnosis.

In Germany, we supported the development of the "White Book," which provides facts on many aspects of Alzheimer's disease, including epidemiology, diagnosis and current options and costs for treatment and care. It was authored by Alzheimer's disease experts with input from payers, health economists, doctors' association representatives and researchers. We also hosted four online dialogues about Alzheimer's disease, with the participation of experts from politics, medicine and society addressing the patient perspective, medical implications, digital solutions and political challenges.

1. The World Health Organization. (2021, September 2). [Dementia](#).

MS

Biogen has collaborated with PAGs including We Are III, Can Do MS, the MS Foundation, MS International Federation, European Multiple Sclerosis Platform, Shift.ms and MS News and Views to address issues facing MS patients. In 2021, we hosted a webinar with academic partners to share the latest research and MS guidelines related to COVID-19 vaccines. Multiple key U.S. PAGs participated, including the National MS Society, MS Association of America, MS Focus, Can Do MS, Accelerated Cure Project and the United Spinal Association – along with the European Multiple Sclerosis Platform.

SPOTLIGHT

Creatively raising SMA awareness

Research and patient feedback show that the SMA community seeks additional education on the disease and treatment options, and that social media are key sources of SMA community information and driver of treatment decisions. We worked to ensure an accurate, compliant, appropriate and informative social media presence for SPINRAZA, tapping existing online patient communities and SMA patients who are social influencers. This includes a presence on Instagram, Facebook and various websites including The Mighty, a digital health community for people facing health challenges.

These efforts can help raise awareness of SMA,

Lucy has SMA Type 2. Pictured here with her brother, Lucas.

engage with and offer relevant content for the SMA community, and [bring the SPINRAZA experience to life through storytelling](#). One story featured Alyssa Jones and her 11-year-old daughter Lucy, diagnosed with SMA Type 2 as a toddler, and their journey marked by small wins. Another story comes from Juan Morales, a published author, who discusses his work as a life coach to help those who are struggling to keep a positive outlook.

We continue to raise awareness of SMA across the world among various channels and audiences, including through forums and campaigns such as "Growing Towards the Sun" in China, a video series in Colombia, an original cartoon series demonstrating adult SMA in Brazil, and a second phase storytelling series in Argentina.





ADVANCING HEALTH ACCESS AND EQUITY

We partnered with PAGs around our #MSisPersonal campaign, launched in 2021 to raise awareness of health equity issues facing the MS community. The campaign featured a four-episode podcast series, “My Extraordinary Life with MS”, and encouraged users to share their personal stories on their social media channels using #MSisPersonal. Another 2021 social media series, #MSBeyondWords, shared the culturally diverse stories of three MS patients in Europe, narrated in Spanish, Italian and Punjabi. Via art and animation, MS Beyond Words visualizes experiences of living with MS, and the series has garnered nearly 1.2 million impressions.

In Germany we organized an interactive online dialogue for MS patients, including MS patients, an influencer and neurologist who is the managing director of the biggest German MS PAG, Deutsche Multiple Sklerose Gesellschaft.

Through collaboration with PAG MS Cabin, Biogen Japan created a feature-length movie, “[From Whence the Light Comes](#),” highlighting the challenges of MS, from social stigma to access to medicine, and the establishment of a pioneering PAG. The movie won the Best Pioneer Award from the Japan Film Festival Los Angeles.

SMA

Biogen works with a number of SMA Patient Advocacy Groups, including Cure SMA, the Muscular Dystrophy Association and the SMA Foundation to further SMA awareness and support. In 2021, we held the second virtual Patient Advocacy Groups Forum, focused on adult SMA patients, facilitating best practice sharing among eight high-profile speakers in PAGs and research organizations, with more than 60 attendees from 17 countries. Key themes included deficits in personal assistance for adult SMA patients and treatment access challenges across Europe. Germany also held an interactive SMA Awareness Month livestream event, which included five patient speakers across three panels focused on family planning and pregnancy, growing up with SMA, privacy and assistance.

In Taiwan, several efforts are underway to raise SMA awareness, including a documentary series; work with the bureau of education to develop an elementary school-level book, Zac’s Playbook, with 1,500 books already distributed to schools in major cities; and engaging local celebrities to create and promote an original song and video for teen and adult SMA patients – which has already been viewed more than 300,000 times on YouTube.

Biogen also supports SMA patients through our family access managers (FAMs), go-to resources when a SMA patient or their guardian has a question related to the nonclinical factors of SMA, including logistics of managing the disease and coordinating with their care team.

SPOTLIGHT

From caregiver to patient

Having lost a number of family members, including both of his parents, to Alzheimer’s Disease, Greg had to come to terms with his own diagnosis. Stunned yet not surprised when hearing the news, his first concern was his children. “Alzheimer’s has dramatically changed my life. Having lost a maternal grandfather, my mother, my paternal uncle, my father, to this disease, and being there at both

my parents’ deathbeds and watching them go through this, I knew what was in store,” shared Greg.

[➔ HEAR GREG’S STORY](#)

[➔ LEARN MORE ABOUT THE ALZHEIMER’S PUZZLE, WHERE YOU ALSO CAN SUBSCRIBE TO RECEIVE REGULAR UPDATES FROM BIOGEN](#)





FEATURE

Diagnosed with SMA at 51

Before Marci was diagnosed with spinal muscular atrophy (SMA) at age 51, she had assumed her physical challenges were due to clumsiness, age or a prior injury.

“I’d seen signs of weakness, but I ignored them or blamed them on something else,” she said. “A friend noticed I had difficulty getting out of chairs and walking up steps was very labored for me. I thought it was due to when I broke my leg in my 30s.”

Her friend’s concern led Marci to an orthopedic surgeon who referred her to a neurologist, which led to her SMA diagnosis. SMA is a rare genetic, neuromuscular disorder characterized by a loss of motor neurons in the spinal cord and lower brain stem. While some people with the disease may show significant symptoms, a story like Marci’s illustrates the broad spectrum of the disease

“The doctor explained that my father and my mother were carriers of this gene, and that’s how it manifested,” she says. “It was shocking to me because my siblings don’t exhibit any of the weaknesses that I have.” Marci’s diagnosis explained much about her medical history. Over the years, she’d broken her femur and humerus bones. “Having all these bones break was very unusual,” she says. “When I fall, it’s like I don’t have any shocks in my legs. I can’t catch myself.”

Thirty-six states in the U.S. now screen newborn babies for SMA, comprising 71% of all infants, and newborn screening programs are being introduced in countries around the world. Better understanding and awareness of SMA are also leading to treatment for older patients to help preserve and potentially improve motor function. Importantly, SMA therapies introduced in recent years are giving the SMA community new hope.

For Marci, it’s about clarity and a path forward. “I’m the type of person that wants answers, and I felt that the journey and all of the different doctors I visited to get this answer meant that now I could press on with my life.”

Marci was diagnosed with SMA as an adult.



Advancing health access and equity

Better and equal access to healthcare equals better health outcomes. That’s why we strive to increase access and why we’re determined to examine and address the barriers to and inequities associated with access to care.

Health outcomes often depend on factors beyond the control of patients and their doctors, such as disparities across age, gender, race, ethnicity and socioeconomic level. These disparities are compounded by factors ranging from inadequate representation in clinical trials to barriers to accessing care. We are committed to addressing health inequities for the disease areas we treat. By increasing participation of underrepresented populations in clinical trials, promoting patient advocacy and advancing policies designed to promote health access, we believe we can better serve a diverse range of patients.

We are continuously evolving our thinking and approaches to ensure broad access to our therapies through both public and private healthcare systems, and both before and after a therapy’s potential regulatory approval. People who meet specific criteria may have access to investigational therapies through clinical trials, Early Access Programs or compassionate use based on humanitarian grounds.

Access to clinical trials

Before being made commercially available, investigational therapies must go through clinical trials, which are an essential part of the drug development process, carefully designed to answer specific research questions related to safety and efficacy. In most cases, the therapies being investigated in clinical trials are not yet approved by regulatory agencies, and the only way eligible patients can access investigational therapies is to participate in a clinical trial, following the guidance of their HCPs. To connect patients to clinical trials that may be relevant to them, we launched Biogen Trial Link, which was designed with input and direction of the Community Advisory Board.

ADVANCING HEALTH ACCESS AND EQUITY

Biogen regularly seeks guidance from PAGs, regulators, clinical researchers, ethicists, physicians and communities, among others, to determine how best to address requests for access to investigational therapies in a way that is consistent with our patient-focused values and compliant with regulatory standards and protocols. We are grateful to everyone who participates in testing our investigational therapies. All participants are encouraged to carefully consider the risks prior to enrollment.

[➤ LEARN ABOUT CLINICAL RESEARCH](#)

[➤ LEARN ABOUT PATIENT SAFETY](#)

[➤ LEARN ABOUT OUR APPROACH TO CLINICAL TRIALS](#)

Working to expand access to medicine

Therapies with positive results from clinical trials must be approved by a regulatory authority such as the FDA or EMA. We comply with government regulations and engage with regulatory agencies and others to ensure that new and innovative therapies are commercially available to the patients who need them. To provide patients with access to drugs that have not yet become commercially available, we have occasionally been able to offer EAPs.

We strive to meet the needs of all patients globally, including those from underserved and underrepresented groups and in low- and middle-income countries. For example, we have worked hard to ensure that SPINRAZA is available in 30 provinces, cities and autonomous regions across China so patients in remote areas like Gansu, Ningxia, Qinghai, Xinjiang and Inner Mongolia are able to access treatment through local hospitals. We maintain Access Programs to treat patients in more than 40 countries.

[➤ READ MORE ABOUT OUR ACCESS PROGRAMS](#)

FEATURE

Granting access to tofersen outside of clinical trial

We listened to the voices of many patients and their families seeking to gain access to our investigational SOD1-ALS therapy, tofersen, through compassionate use before the study is completed and before tofersen is proven safe and effective.

Biogen teams engaged extensively with clinical investigators, ethicists, patient advocates and regulators to explore all potential ethical avenues to provide access to tofersen, outside of the ongoing Phase 3 study. As a result of this wide-ranging engagement, we established a two-part tofersen access program.

Beginning in mid-July 2021, after patients in the Phase 3 study who were on placebo transitioned

to active therapy and before the safety and efficacy of tofersen was established, compassionate use access was provided for a subset of the SOD1-ALS population with the most rapidly progressive disease. Based on results from the Phase 3 study indicating tofersen safe and effective, we broadened early access to tofersen to all eligible SOD1-ALS patients through our already established EAP.

Answering questions about access outside of clinical trials is neither simple nor fast. This is a first for Biogen and reflects the evolution of our thinking about access in rare diseases while standing strong on our principles for ethical and equitable access.

ADVANCING HEALTH ACCESS AND EQUITY

ACCESS TO MEDICINE

Governance of Access

STAKEHOLDER PRIORITIES

- 1 Governance, strategy and responsible business practices
- 2 Staff incentivization toward fostering access to medicine
- 3 Ethical marketing and disclosure policies
- 4 Prevention of corrupt or non-compliant activity in operations

HIGHLIGHTS

of Biogen's commitments in Governance & Access

1 Biogen is committed to responsible business practices, as outlined in our Code of Business Conduct and other policies. Biogen's Board of Directors governs Biogen's processes for maintaining the integrity of the company, including Environmental, Social and Governance (ESG) issues, following the company's [Corporate Governance Principles](#). Biogen's corporate strategy

includes building on our priorities for health equity and access. Our Early Access Principles + Program Overview is [available here](#). Visit our [Access page](#) for a description of Biogen's approach to off-label use.

2 Biogen staff are incented to advance the company strategy, which includes health equity and access as priorities.

3 Biogen is committed to Ethical Marketing and to disclosure following the GRI, SASB and Stakeholder Capitalism metrics.

4 Biogen's ethics and compliance policies and programs and Code of Business Conduct are designed, in part, to prevent corrupt or non-compliant activity in operations. The company also has a Responsible Supplier

Program, including an evaluation process to identify any potential at-risk suppliers that could warrant further evaluation.

HIGHLIGHTS

of Biogen's commitments in Research & Development

1 In 2020, Biogen launched three Health Equity Advisory Boards – access, clinical trials and policies – to better understand patient needs to improve access to our therapies; ensure clinical trials reflect the target population; and consider policies that support access and equity. We comply with government regulations and engage with regulatory agencies and others to ensure that new and innovative therapies are commercially available to the patients who need them.

2 SPINRAZA is approved in 65 countries, including low- and middle-income countries. In markets with low GDP per capita, we have engaged with innovative agreements to meet each market's individual needs. It is our strong belief that the decision to treat should be between the physician and the family, without budget concerns. Our policy to promote access to SPINRAZA will help inform our approach to our broader portfolio of therapies.

3 Biogen has a range of active initiatives to help foster local R&D capacity in diverse local populations. For example, we collaborate with Morehouse School of Medicine on a fellowship program which engages M.D. and Ph.D. students, aiming to advance health equity and improve patient experiences. In 2016, Biogen helped create The Partnership, Inc.'s BioDiversity Fellows Program, which nurtures the potential leadership of mid-career professionals who are underrepresented in the

life sciences industry. We also sponsor the Golden Ticket Award, a competitive process seeking to identify rising startup companies in the field of neuroscience. Each Biogen-LabCentral Golden Ticket includes up to one year of bench space for one scientist and the benefits of LabCentral's shared infrastructure and services at no cost to the contest winner.

Research & Development

STAKEHOLDER PRIORITIES

- 1 Product Development, Access Planning and R&D Capacity Building
- 2 Underlines any clear benefit to lower- and middle-income countries: accessibility and availability are crucial
- 3 Contributions to local R&D capacity are important re: empowering local researchers to address population needs

ADVANCING HEALTH ACCESS AND EQUITY

Access to Medicine

Product Delivery

STAKEHOLDER
PRIORITIES

- 1 Equitable access to products is primary focus
- 2 Highlights overcoming any local barriers in accessing hard-to-reach markets and patient populations
- 3 Includes sharing of intellectual property; strengthening of local or regional health systems; enabling of generic medication manufacturing and supply, product donations, product registration in high-burden countries, manufacturing/supply chain capacity-building, and inclusive business model

HIGHLIGHTS

of Biogen's commitments in Product Delivery

1 We strive to ensure broad access to our therapies through both public and private healthcare systems, and both before and after a therapy's potential regulatory approval. We run a wide range of Access Programs, as outlined in this report. Biogen also may offer financial assistance or help to secure reimbursement in public and private healthcare programs for patients who are otherwise unable to access our medications.

In 2020, we initiated a pilot program in India to help expand access to SPINRAZA, including providing SPINRAZA free of charge to program participants, who were selected by an independent committee of medical experts. To date, 200 patients in India have received SPINRAZA. We are exploring the potential for future expansion within India and other countries.

2 Biogen works to overcome barriers to access for underserved patient populations through our [Access Programs](#), [Pricing Principles](#), and efforts to expand areas such as biosimilars, which can benefit patients and reduce costs, and access efforts such as a transportation support program for SPINRAZA patients who live hours from their site of care. For example, we have worked hard to ensure that SPINRAZA is available

in 30 provinces, cities and autonomous regions across China so patients in remote areas like Gansu, Ningxia, Qinghai, Xinjiang and Inner Mongolia are able to access treatment through local hospitals.

We work with regulators, clinical researchers, ethicists, physicians and Change to Patient Advocacy Groups and communities, among others, to determine how best to address requests for access to our investigational therapies in a manner that is consistent with our patient-focused values and compliant with regulatory standards and protocols.

3 Health Systems Strengthening: In 2020 we began new programs to help strengthen healthcare systems. Collaborating with Harvard University's T.H. Chan School of Public Health's C-CHANGE (Harvard Chan C-CHANGE) program and Américas, we instituted a [first-of-its-kind program](#) to help under-resourced healthcare clinics become more climate-resilient to help ensure continuity of access and care and to improve measurable health outcomes. The Biogen Foundation supported CareMessage, the largest patient engagement platform in the U.S., which equips at-risk communities with access to accurate healthcare

information using basic text and voice messages – key to reaching people who don't have broadband.

Manufacturing/Supply Chain Capacity Building: Biogen became one of the first contributors to Massachusetts Institute of Technology's (MIT) collaboration, The AltHost Consortium, in 2020. AltHost works to advance the speed and productivity of alternative host cell research and manufacturing, with the aim to meet escalating needs for biologic drugs through improved product quality and increased volumetric productivity with a goal of improved access and lower costs.

Product Donations: Biogen runs relevant programs in a number of countries, as outlined in this report.

Inclusive Business Model: We are committed to advancing DE&I via a four-part strategy. As of Dec. 31, 2021, 47.6% of director-level-and-above positions were held by women, and 26% of Biogen's U.S. director-level-and-above positions were held by ethnic or racial minorities. In 2021, Biogen exceeded its targets for spend with minority-owned businesses.

ADVANCING HEALTH ACCESS AND EQUITY

Product availability, health coverage and pricing

We recognize that stakeholders see pricing as a material ESG issue for Biogen, and it remains an area of considerable focus for us. We strive to remove barriers to care by offering financial assistance and/or help to secure reimbursement in public and private healthcare programs for patients who are otherwise unable to access our medications.

Biogen engages payers throughout the world to gain access for our therapies. In many markets, including those with low GDP per capita, we have developed innovative agreements to meet local needs. It is our strong belief that the decision to treat should be between the physician and the family, without budget concerns.

We continue to listen to stakeholders and take their perspectives into account as part of our pricing decisions. We regularly review our pricing strategy and prioritize patient access to our therapies. Value-based contracts, which we have engaged in, are designed to align the price of our therapies to the value they deliver to patients, providers and society. We are transparent about our [Pricing Principles](#).

In 2021, we continued to make progress on product availability and coverage for patients in need.

Alzheimer's disease

We have taken actions to improve patient access to ADUHELM®. To avoid any treatment interruptions following the Centers for Medicare & Medicaid Services (CMS) decision, Biogen initiated a program for all U.S. patients who began treatment on or before April 7, 2022, making them eligible to receive ADUHELM at no cost for the duration of their treatment or for the duration of the program.

MS

With MS treatments, we introduced improved product formulations that offer benefits to patients, HCPs and healthcare systems, without increasing our product pricing. In 2021, China's National Medical Products Administration approved two treatments for MS patients, TECFIDERA® and FAMPYRA®. In China, MS is considered a rare disease. While MS is the second most common cause of non-traumatic neurological disability in young adults, only 10% of the population diagnosed with MS is being treated according to the

standard of care with disease-modifying therapy. These approvals bring new treatment options to people in China living with relapsing MS and facing walking challenges due to MS, and continue to expand Biogen's presence in the country.

For MS treatment TYSABRI, we achieved national reimbursement in 22 countries within nine months after approval, including for subcutaneous administration, so more patients can benefit from this improved treatment.

Also in 2021 SPINRAZA entered China's national reimbursement drug list (NRDL), the first high-value rare disease drug included in NRDL. As of early 2022, China had become the premier market for SPINRAZA, serving over 2,000 patients across 30 of the country's provinces, cities and autonomous regions.

SMA

SMA patients have access to SPINRAZA in 65 countries – either via formal reimbursement, individual reimbursement or named-patient sales programs – including low- and middle-income countries.

- In Brazil in 2021, CONITEC, the country's health technology assessment (HTA) agency, expanded their initial reimbursement decision for SPINRAZA in order to cover Type 2 patients as well. The process started two years ago and CONITEC'S HTA process for SPINRAZA involved a record-setting input, with 1,500% more public responses than the closest comparison. The Ministry of Health held a publicly broadcasted four-hour hearing where health managers, researchers, health professionals, patient and caregiver representatives, and the pharmaceutical industry voiced support. Negotiation of a risk-sharing agreement may enable patients to receive access to SPINRAZA through a government program.
- In India, we were able to advance our SPINRAZA Individual Patient Humanitarian Aid Access Program (SIPHAP). Developed in collaboration with Direct Relief, SIPHAP provides SPINRAZA free of charge to patients selected by an independent committee of medical experts. SIPHAP initially launched with 24 patients across four public hospitals, and expanded to a total of 211 patients across 14 public hospitals in 2021.



ADVANCING HEALTH ACCESS AND EQUITY

- In Saudi Arabia, our SMA Risk Sharing Agreement went into effect in early 2021. The comprehensive program in partnership with the local authorities ensures patients are identified, diagnosed, treated and followed up with in a timely manner and that care is delivered from fully approved centers of excellence and strong multi-disciplinary teams.
- Through the renewal process, we were able to expand and maintain access to SPINRAZA for SMA patients in a number of countries.

BIOGEN PRICING PRINCIPLES



Value to patients



Present and Future Benefit to Society



Fulfilling our Commitment to Innovation



Evolution Toward Value-Based Care



Affordability and Sustainability

➔ [PLEASE SEE OUR PRICING PRINCIPLES](#)

Promoting health equity

Biogen is committed to addressing inequities across the healthcare ecosystem, from research and clinical trials to equitable access and culturally competent care. This commitment starts from how we work.

Engaging employees

We routinely foster employee collaboration in an effort to achieve health equity, with a focus on impact. In 2021, we introduced a Health Equity Ideas Cafe Series to deepen organization-wide understanding and action on Biogen's commitment, including representation in our clinical trials and equitable access. The three-part series engaged internal and external guest speakers on themes of lupus awareness, patient voices and community partnerships, and equitable access. In addition, we hosted a lunch and learn with John Sawyer, Ph.D., ABPP-CN and a board-certified clinical neuropsychologist of the Ochsner Neuroscience Institute; and Donnie Batie, M.D., both members of the Alzheimer's disease underrepresented population working group, on successful approaches to caring for underrepresented patients.

We continued the underserved and underrepresented (UP) Champions program with participation from different functions to build and execute initiatives both internally and externally that will ensure representation in Biogen clinical trials.

A multi-pronged approach

We strive to take a holistic approach to patient health and better understand patient needs or emerging issues. To do so, we engaged external stakeholders in three distinct Health Equity Advisory Boards focused on the following areas:

- **Access:** to understand and overcome barriers to accessing therapies.
- **Clinical trials:** to ensure clinical trials are reflective of the target population.
- **Policies:** to consider policies that support equity with access to participation in clinical trials and Biogen therapies.

ADVANCING HEALTH ACCESS AND EQUITY

Through ongoing partnership with underrepresented and other special population communities and key stakeholders, we are continuously exploring ways to address barriers to clinical trial participation, diagnosis and quality care. For example, we provide lay language clinical trial results to all patients who participate, we aim to translate product information into different languages, and we apply an understanding of how culture affects healthcare decisions. We shared findings from our efforts seeking to better understand the patient journey for those living with Alzheimer's disease and lupus with the broader ecosystem through presentations at congresses.

Learning from and with underserved, underrepresented and other special patient population groups

By understanding the impact of socio-demographic and other contributing factors to clinical outcomes, Biogen, collaborators and key stakeholders can better advance disease awareness and create a clear path to quality care.

Collaboration highlights

In 2021, we began engaging with the National Association of Free and Charitable Clinics (NAFC), a nationwide network of over 1,400 clinics that focuses on ensuring the medically underserved have access to affordable quality healthcare. NAFC clinics provide millions of patient visits each year, mainly to those who do not have health insurance. With the NAFC, we are working to better understand the needs of this population, particularly when it comes to brain health, and to help provide culturally competent disease education for patients and healthcare providers within the NAFC member clinic network. So far, Biogen has shared educational materials and presented to their national network, and we are currently identifying additional opportunities to advance health access and equity together.

Last year, Biogen also provided a caregiver presentation at the Black Health Matters Winter Health Summit and participated in two sessions at the Balm in Gilead's Healthy Churches 2030 Conference, highlighting the disproportionate prevalence of Alzheimer's disease in the African American community and underscoring the importance of early detection.

To help promote health equity, the Biogen Foundation supports CareMessage, the largest patient engagement platform in the U.S., which equips at-risk communities with access to accurate healthcare information using basic text and voice messages. In North Carolina, to date, our support has helped Robson Healthcare and NeighborHealth Center, with plans to extend assistance to a total of 10 safety-net clinics.

[➔ READ MORE ABOUT THE BIOGEN FOUNDATION](#)

Examples of our engagement appear below, reflecting just some of the ways that Biogen engages to better understand and prepare to meet patient needs.

SPOTLIGHT

Partnering with CVS Health to advance health equity

As part of Biogen's commitment to reduce care disparities in Alzheimer's disease, we joined forces with CVS Health to add cognitive screenings as an option among the free services offered through CVS Project Health.

Project Health events provide free biometric screenings and educational resources to help people identify possible concerns - like high blood pressure and diabetes - before they become serious illnesses.

Thanks to Biogen's support, starting in the fall of 2021, participants at over 700 events across the

U.S. had the option to undergo a Mini-Cog® screening - a tool that may increase detection of cognitive impairment in older adults. The tool is a well-established three-minute screening that is widely used in community settings and available in several languages.

Mini-Cog tests do not substitute for a complete diagnostic workup, and patients can discuss their results with a healthcare provider for possible follow-up. Project Health participants will also be offered educational resources about mild cognitive impairment from It's Time, Biogen's and Eisai's disease state awareness campaign.



ADVANCING HEALTH ACCESS AND EQUITY

FEATURE

Striving to achieve health equity

Wanda Castro-Borrero grew up in Puerto Rico in a family of modest means, went to medical school to become a neurologist, and practiced for seven years in Texas and Connecticut. As a practicing physician, she saw the challenges in receiving care faced by people from racial and ethnic minority groups, especially those with limited English proficiency.

“I understood very quickly that the patient experience was not the same for everybody, and we have to do better,” said Wanda. She joined Biogen in 2019 to do just that. Her first job at Biogen was to improve MS outcomes for patient groups that have historically faced barriers to accessing quality care. Biogen’s Corporate Health Equity Initiative was an outgrowth of this work.

Now Global Head of Biogen’s MS Franchise, Wanda has an opportunity to drive health equity on an even larger scale. In a recent [journal article](#) she co-wrote in *Neurology Reviews*, Wanda reviewed the disparate impact of MS on different populations.

“Women are three times more likely to be diagnosed with MS than men,” she wrote. “[N]ew statistics regarding the prevalence, progression and treatment response of MS in minority groups are more concerning than once thought. African Americans appear to suffer a quicker progression of the disease with a blunted response to disease-modifying therapies, while Hispanic Americans of Caribbean descent are often diagnosed at a younger age and have greater mobility impairment [...]. African Americans who served

in the Gulf War [...] have an increased incidence compared to residents of their ancestral countries, indicating that environment plays a nondiscriminatory role in MS onset.”

Wanda takes an expansive view of the term underserved and underrepresented population, viewing health equity through a broad lens. For example, she once treated a patient with aggressive MS. He was a 21-year-old male with private insurance, which most people would not consider part of an underrepresented population.

But Wanda saw it differently. “In MS, men are an underrepresented population,” she noted. “To be able to have a high-efficacy therapy, which is what he needed, I had to send a 40-page report every three months to his insurance company. It was not easy doing the report because our clinic at the state hospital lacked resources. But it needed to be done to ensure that this patient did not become disabled at a young age and could instead have a better quality of life.”

To Wanda, inclusive care is not just about expanding access to care for ethnic minorities, it’s about making sure therapies work on the broadest patient populations. She has worked to challenge how the healthcare system views health equity in disease-specific areas and is working toward more inclusive clinical trial enrollment.

Wanda noted, “I’m so passionate about health equity because I know what it’s like to not be heard. I want to give a voice to those who are in that same place.”



“I’m so passionate about health equity because I know what it’s like to not be heard. I want to give a voice to those who are in that same place.”

Wanda Castro-Borrero
M.D., Director, U.S. Medical MS Franchise at Biogen



ADVANCING HEALTH ACCESS AND EQUITY

Alzheimer's disease

- Consulted USAgainstAlzheimer's National Alzheimer's Disease Index, which aggregates Medicare claims data by age, gender, race and ethnicity. This is just one part of our extensive research into the patient journey for underrepresented populations facing Alzheimer's disease.
- Launched the RoAD Show, a series of videos by experts to advance critical conversations around key Alzheimer's disease topics for all healthcare providers. The first chapter consists of five TED Talks-like videos that cover a variety of health equity topics, including The Underrepresented and Underserved Alzheimer's Disease Patient Journey by Dr. Dylan Wint from the Cleveland Clinic's Lou Ruvo Center for Brain Health. Other key topics include cultural competence and cultural humility, the role of the caregiver, the impact of comorbidities on the diagnosis and prognosis of Alzheimer's disease, and successful engagement of patients and caregivers for research.
- Collaborating with Alzheimer's Foundation of America on a pilot program, Una Mejor Calidad De Vida, to bring culturally competent, Spanish-language testing to Latino communities.

Lupus

- Conducted extensive research on the patient journey for underrepresented patients living with lupus to better understand drivers and barriers to clinical trial participation and access to treatments (findings were presented to the American College of Rheumatology and Lupus 21st Century).
- Spoke at the Lupus Foundation of America's ambassador training for minority populations.
- Held community events for those living with lupus and partnered with local community organizations to reach representative populations.

MS

- Partnered with We are Ill, a MS PAG focused on underrepresented populations, to develop a video related to medical mistrust.
- Contributed to more than 30 MS publications with expanded definition of health equity, including children, elderly populations, racial and ethnic groups, socioeconomic status and other factors.
- Promoted our Spanish-language disease state education programming, Understanding Your MS en Español, across the U.S.

SPOTLIGHT

Discussing impacts of disease on LGBTQ+ communities

Two external experts from Boston's Fenway Health Institute engaged with Biogen employees to discuss the impact of MS and Alzheimer's disease on LGBTQ+ communities. The event examined the intersection

of MS and Alzheimer's disease, sexual orientation, and gender identification and expression.

Content highlighted ways we can continue to educate ourselves about the health barriers LGBTQ+ individuals face, which can include correct pronoun usage. Biogen plans to help address these issues through efforts such as elevating the importance of these topics in our daily work.



ADVANCING HEALTH ACCESS AND EQUITY



DE&I STRATEGY #3

Improve health outcomes for Black, African American, Hispanic, Latino and other underserved communities in the disease areas we treat

Inadequate representation in clinical trials contributes to health disparities which negatively impact health outcomes.

GOAL

MEET INDUSTRY DIVERSITY BENCHMARKS

in clinical trials and medical publications on underserved and underrepresented communities.

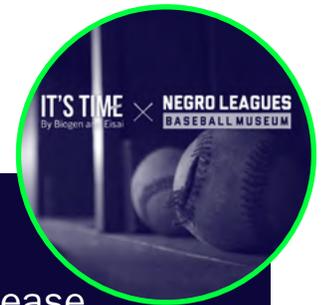
PROGRESS

In 2021, 100% of our Phase 1–4 studies in the U.S., led by Global Clinical Operations, included a plan to recruit participants from underrepresented communities to ensure the study population is representative of the intended treatment population. Our progress also included expanding our Community Advisory Board (CAB), which received the Reuters Global Pharma Patient Champion Award, to include representation from Asian American, Pacific Islander and Native American communities. We sustained community outreach and education programs, including with community-based programs. Our progress included developing educational assets for clinical trials sites, introducing a demographic distribution dashboard, benchmarking diversity and disparities among clinical trials as members of the Investigative Site Diversity Initiative for Tufts Center for the Study of Drug Development sites and more. We also expanded understanding with our employees with events like our Healthy Equity Cafe Series and launched DE&I training.

[➔ READ MORE ABOUT OUR DE&I STRATEGY](#)

Increasing representation in clinical trials

To ensure therapies work on people of all backgrounds, we are focused on more inclusive clinical trial enrollment. To help achieve these goals, we have made investment to work to address the systemic barriers to clinical study participation, bringing our trials into communities where clinical trials have historically not been offered to help ensure our trials are available to underrepresented patients and their families, as well as to work with trusted organizations and leaders at the national and local levels to make an impact to drive health equity.



SPOTLIGHT

#MyBaseballMemory raises awareness of Alzheimer's disease

"It's Time" by Biogen, Eisai and the Negro Leagues Baseball Museum (NLBM) launched a new campaign: #MyBaseballMemory. It was designed to carry the excitement of baseball beyond hometown teams while spotlighting an important health education message. **The campaign encouraged celebrities and fans to share their favorite baseball memory on social media using #MyBaseballMemory while raising awareness of Alzheimer's disease.**

Since the Negro Leagues no longer exist, NLBM keeps their legacy alive by sharing memories. These

memories also help highlight the importance of cognitive brain health and advance Biogen's disease-state education goals, reinforcing the importance of knowing the early signs of mild cognitive impairment (MCI) due to Alzheimer's disease.

With Black, African American, Hispanic and Latino communities disproportionately impacted by Alzheimer's disease, the #MyBaseballMemory campaign is another way we are working to advance our commitment to health equity.



ADVANCING HEALTH ACCESS AND EQUITY

In 2021, 100% of our Phase 1–4 studies in the U.S. included a plan to recruit participants from underrepresented communities to ensure the study population is representative of the intended treatment population. To help achieve these goals, we have a multi-channeled health equity strategy, including:

- Incorporating diverse community perspectives and insights into our drug development through our standing Community Advisory Board.
- Engaging with the community by partnering with trusted local and national organizations to educate, build awareness and establish trust within the communities to drive health equity. Events conducted in 2021 included community and faith-based disease and clinical trial education programs for lupus and Alzheimer’s disease.
- Leveraging real-world and epidemiological data to inform and identify clinical trial sites in order to make our trials accessible in communities where clinical trials have historically not been offered.
- Expand and address health equity and healthcare disparities globally, including programs initiated in Australia and the U.K.

We have partnered with the National Minority Quality Forum (NMQF) to launch a Clinical Trial Index comprised of U.S. heat maps of Medicare/Medicaid beneficiary data by patient demographics mapped against clinical trial site locations to identify the right sites in the right locations. As our clinical trials continue recruitment, teams track and report their progress toward the study targets that represent the epidemiology of the disease. We are also identifying new sites where patients are located and investing in bringing them on as clinical trial sites. Since we have near real-time data, we can identify gaps in access and focus on different sites and locations.

We also built sustained community outreach and education programs for disease awareness in Alzheimer’s disease and lupus, and general clinical trial education with the Center for Information and Study on Clinical Research Participation (CISCRP) AWARE, Proximity Health Solutions and HEAL Collaborative. Other examples include:

- **Alzheimer’s disease:** For two years, we have sponsored the BrightFocus Foundation’s Virtual Community Outreach Series, bringing sustained Alzheimer’s disease and clinical trial education and access to communities with an underrepresented focus. We also co-developed

a paper with the NMQF titled “A Roadmap for Real-World Evidence Generation in Alzheimer’s Disease.” It highlights how real-world evidence can include larger patient populations that are historically underrepresented in randomized controlled trials.

In the Phase 4 confirmatory ADUHELM study, ENVISION, we will aim to recruit at least 18% of U.S. participants from Black/African American and Latino/Hispanic populations.

[➔ READ ABOUT OUR FINAL PROTOCOL SUBMISSION FOR THE ADUHELM PHASE 4 ENVISION TRIAL](#)

- **Lupus:** We collaborated with Saira Z. Sheikh, M.D., Director of University of North Carolina (UNC) Rheumatology Lupus Clinic and Director of the Clinical Trials Program at UNC’s Thurston Arthritis Research Center, to gather insights on barriers to clinical trial enrollment among underrepresented groups. Some patient barriers are concerns for safety and efficacy, and burdens of participation, such as cost. Provider barriers include low awareness of open lupus clinical trials, lack of information on enrolling patients and biases related to patient referrals. These insights are being used to inform Biogen’s clinical development programs in lupus and address equity in study participation. For our Phase 3 study of BIIB059 in systemic lupus erythematosus we set enrollment targets that reflect the prevalence of SLE in Black or African American and Hispanic and/or Latino communities to achieve appropriate representation. Through partnerships with community-based Proximity Health Solutions and faith-based HEAL Collaborative, along with expert panels of community leaders, HCPs and patient advocates, we participated in seven events across the U.S. in 2021 to educate communities about lupus and clinical trial research.
- **MS:** We sponsored the MS PATHS (Partners Advancing Technology and Health Solutions) network to foster collaboration between leading MS centers in the U.S. and Europe to help transform patient care by generating standardized data from a diverse, real-world patient population. MS PATHS is uniquely able to collect clinical, MRI and biologic data from all patients in real time, at the point of care, to better understand the disease and ultimately improve the lives of those with MS.



ADVANCING HEALTH ACCESS AND EQUITY

FEATURE

Lending our voices to promote diversity in clinical trials

As part of our health equity strategy, Biogen is working to increase representation and diversity in clinical trials, as well as to raise broad awareness. In 2021, we participated in:

- The National Minority Quality Forum Summit on Health Disparities and Health Braintrust where Biogen's Neuromuscular Clinical Operations Lead Racquel Bruton contributed to a panel on Clinical Trials from the Ground Up. Racquel noted that "for all Biogen clinical trials we are being intentional in ensuring the ethno-racial prevalence of our studies aligns with the epidemiology of the studied disease."
- The Asian Pacific American Institute for Congressional Studies (APAICS) Legislative Leadership Summit where Ellen Huang, Biogen's Director of Clinical Operations Program Leadership, joined a panel on Diversity in Clinical Trials and Health Outcomes. Ellen discussed how a lack of representation can impact health outcomes for underserved and underrepresented communities, especially the Asian American community. "To ensure we are recruiting from more diverse populations, we continue to build trust and relationships in the community where we engage in clinical trials," Ellen noted.

- The Center for Information and Study on Clinical Research Participation (CISCRP) virtual AWARE event, and as a member of CISCRP's AWARE Industry Consortium, Patrick Ezeh, Biogen's Director of Clinical Operations Program Leadership and UP Champion, participated on a panel with other sponsors, patient advocates and clinical trial site staff to educate the community about the importance of clinical trials and adequate representation in clinical trials. Patrick shared how Biogen incorporates patient insights into our clinical trial designs and ensures diverse patient voices are heard to address challenges and barriers, such as access to a trial site, burden of study visits and procedures.

By taking the steps to have meaningful and productive conversations early on and actively engage with communities, we can begin to make clinical trials – and therapies as a whole – more equitable.

ZURANOLONE CLINICAL DEVELOPMENT PROGRAM

ROBIN study in postpartum depression (PPD)	~40% non-white
201b study in major depressive disorder (MDD)	~75% non-white
WATERFALL in MDD (Clayton poster)	~30% non-white
MOUNTAIN in MDD (Mittal poster)	~40% non-white
SHORELINE in MDD	~20–25% non-white (identifying as Hispanic/Latino)
CORAL (not yet published)	~50% non-white



ADVANCING HEALTH ACCESS AND EQUITY

In 2021, we joined the Association of Clinical Research Professionals (ACRP) as part of ACRP Partners in Workforce Advancement™, a multi-stakeholder initiative to expand the diversity of the clinical research workforce, and to set and support standards for workforce competence. We also joined the Society of Clinical Research Professionals to contribute to DE&I initiatives and best practices at the site level.

New questions and new tracking

To engage more underserved and underrepresented populations in clinical trials, stakeholders must address legacies of mistrust, language barriers and unconscious bias in the medical community. Biogen's Medical Research Review Committee is working to enhance diversity through sponsored research agreements and investigator-initiated trials. In 2021 we added new questions to research proposal questionnaires to better gauge investigators' plans regarding clinical trial diversification.

We also launched an Internal Participant Demographic Distribution Dashboard to be transparent and consistent in tracking and measuring the demographic distribution of our participants across programs and studies and to compare directly to targets. We're also members of Tufts Center for Study of Drug Development's Investigative Site Diversity Initiative to benchmark diversity and disparities among clinical trial sites.

Community Advisory Board

Formed in 2020, our Community Advisory Board (CAB) consists of patient advocates from underserved and underrepresented communities who co-develop honest and transparent educational assets for patients, HCPs and clinical trial sites. In 2021, the CAB expanded to include representation from Asian American, Pacific Islander and Native American communities in addition to Black, African American, Hispanic and Latino members. With the input and insights of the CAB, we created a suite of educational assets for patients, HCPs and clinical trial sites to discuss the importance of diversity in clinical trials. The CAB has also advised on the Alzheimer's disease program and study designs, as well as the development of Biogen Trial Link, our website to learn more about and find a clinical trial. Our CAB received the 2021 Global Pharma Patient Champion Award.

Bringing clinical trials to underrepresented and underserved populations

In partnership with NMQF, we launched the Clinical Trial Index and Clinical Trial Learning Community (CTLIC), which uses U.S. heat maps of Medicare/Medicaid beneficiary data by patient demographics mapped against clinical trial site locations, to identify appropriate sites in key locations. CTLIC launched as a virtual space for local stakeholders and subject matter experts to integrate routines in local care networks to increase underrepresented and underserved population participation in clinical trials.

In addition, Boston Medical Center was selected for our TOPAZ-1 study, which is focused on treatments to help patients with active systemic lupus erythematosus (SLE). For TOPAZ-1, enrollment targets have been set that reflect the prevalence of SLE in Black, African American, Hispanic or Latino communities.

Globally, our Australia HORIZONS project is bringing clinical trials to remote and rural areas with lack of access. In the U.K., we are conducting research into the landscape of underserved and underrepresented patient populations and presented a socioeconomic data poster at the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS).

Expanding medical publications with data pertaining to underserved and underrepresented patients

Medical publications and academic journals also represent an important part of our strategy. In 2021, we provided more than 30 publications with information on MS and SLE data gaps including real-world evidence data.

In [Neurology Reviews](#), Wanda Castro-Borrero, Global Head of MS Franchise, raised awareness of data gaps for LGBTQ+ MS patients.

➔ [READ WANDA'S PERSONAL STORY](#)



ADVANCING HEALTH ACCESS AND EQUITY

In 2021, we also launched a Data Generation DE&I in Medical Research Review Initiative. All 22 studies evaluated met the minimum score, and 20/22 exceeded the minimum score for that criterion.

Engagement of key medical experts

Our key medical experts (KMEs) provide internal and external guidance, knowledge and support on a variety of health equity topics. They are critical voices with the experience and strategic thinking to help drive solutions that address health inequities.

At the 2021 Alzheimer's Association International Conference (AAIC), our KMEs shared multiple oral and poster presentations from our Alzheimer's disease clinical development portfolio.

[➤ READ MORE ABOUT OUR AAIC CONTRIBUTIONS](#)

Our UP Working Group is composed of employees with expertise in health equity and/or experience in serving underrepresented and underserved communities, and helped shape and advise on Biogen's Health Equity policy and initiatives in Alzheimer's disease. In 2021, UP held four meetings with outputs including the development of the RoAD Show series, a patient perspective video on real-world evidence studies, development of a health equity module as part of ADvance, and the development of a patient/caregiver motivation and expectation survey.

We held more than 10 MS Forums with Hispanic MS and medical expert speakers focused on MS cultural competence and shared decision making.

Access to our therapies

Biogen is dedicated to helping patients obtain access to our therapies. Our skilled patient support representatives have access to a comprehensive suite of financial assistance tools to help patients, their caregivers and healthcare professionals understand, compare and select insurance options and programs that are available to them. We have programs to assist individuals who are uninsured; privately insured; and insured through public programs, such as Medicare.

[➤ LEARN MORE ABOUT OUR FINANCIAL AND INSURANCE SERVICES](#)



Nicole, a rheumatoid arthritis patient in Germany.



Working at the intersection of technology and well-being

Neurological diseases are highly complex and devastating, and there are still significant challenges in how we understand and treat them. Today's technological advances open a new era of opportunities for digital health in neuroscience. Powered by data science and digital technologies, we're driving solutions to advance research, clinical care and patient empowerment. Our Digital Health Team is made up of diverse talent investigating how technology can improve drug development through personalized medicine evidence, and developing digital health, digital medicine and digital therapeutics solutions that transform patients' lives. Below are some examples of our digital health work.

Launched pioneering cognitive health study, using Apple Watch and iPhone

In 2021, we launched a new virtual research study, Intuition, in collaboration with Apple, that is investigating the role Apple Watch and the iPhone could play in developing digital biomarkers to monitor cognitive performance and screening for decline in cognitive health. This includes potentially detecting mild cognitive impairment (MCI), an early indicator of certain forms of dementia such as Alzheimer's disease. The multi-year, observational study includes 23,000 participants of different ages (21-86), genders, races, ethnicities and education levels, with a range of cognitive performance.

The successful development of digital biomarkers in brain health would help address the significant need to accelerate patient diagnoses and empower physicians and individuals to take timely action. For healthcare systems, such advancements in cognitive biomarkers from large-scale studies could contribute significantly to prevention, better population-based health outcomes, and lower costs to health systems.

BrainGuide™ addresses need for brain health information

Created by UsAgainstAlzheimer's based on input from medical experts, with in-kind and financial support from Biogen, BrainGuide provides a way for individuals who are concerned about their own or a loved one's

brain health to receive tailored information based on responses to a confidential memory questionnaire. As BrainGuide marked its first birthday in March 2022, it celebrated that over 160,000 people had used the free memory questionnaire for tailored resources.

BrainGuide's platform runs on Amazon Web Services (AWS), using state-of-the-art technologies to power the free memory questionnaire capability and to make it available to anyone with telephone or internet access. This platform aims to increase brain health awareness and empower people with next best actions by providing educational resources in both English and Spanish.

Patient Advocacy Groups were also instrumental in driving awareness about Biogen's Intuition Study. Many of the PAGs announced the study to their members and in November, we held a symposium at Healthy Churches 2030 titled "Brain Health & Wellness: The Role of Technology," an interactive and informative session about harnessing the power of technology to support the cognitive health of African Americans.

Sharing advice with promising digital health start-ups

In 2021, Biogen organized an Alzheimer's Disease Challenge workshop at the world's leading startup conference, Slush, in Helsinki, Finland. We aim to support digital health startups with commercialization and implementation plans for prevention and early detection of Alzheimer's disease, patient and caregiver support, and healthcare system support in Alzheimer's disease management.

More than 50 startups across Europe applied, and nine were invited to attend and work with the Biogen team, leading external experts representing healthcare and research organizations, and the Alzheimer's disease patient community. The three-hour event provided the startups with concrete advice on questions related to market-entry model, evidence creation and addressable gaps in the Alzheimer's disease ecosystem. Biogen is committed to lending our expertise and working with others to help patients and caregivers impacted by Alzheimer's disease.

WORKING AT THE INTERSECTION OF TECHNOLOGY AND WELL-BEING

Immunology: Care+ launches in Europe

Biogen launched Care+, a new mobile health app designed to help patients proactively manage their conditions and improve treatment outcomes in consultation with their healthcare professionals. It contains detailed disease information, a practical self-assessment tool, lifestyle content and product information (in select countries). It also offers a range of practical patient-centric tools such as appointment and dose reminders, injection site history, medication travel card, MedInfo support contact and more.

Care+ is the only mobile app that supports patients across a broad range of immunological diseases, covering eight separate disease states which together impact an estimated 30 million people in Europe alone. The app is designed specifically for patients suffering from rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, non-radiographic spondyloarthritis, Crohn's disease, ulcerative colitis, psoriasis and hidradenitis suppurativa (or acne inversa).

Today, Care+ is available in iOS and Android in Germany and Italy and will launch in additional countries in 2022 to better support the community of 244,000 patients on Biogen biosimilars therapy – with the potential to extend to other therapy areas and geographies.

insideALS offers the latest insights

We launched insideALS, a website for both patients and physicians that is designed to provide a deeper understanding of genetic ALS. The result of a collaboration between Biogen, outside medical experts and the patient community, the site will be continually updated with the emerging science to provide insights and information to the ALS community.

Supporting a patient-driven SMA community and navigation tools

Biogen sponsors Together in SMA, a site with information about SMA symptoms, clinical guidelines and care options and insights from experienced members of the SMA community, with localized sites for nearly 30 countries or regions. In 2021, our Australia and New Zealand team introduced a new element to Together in SMA: Be Inspired, an SMA hub for adults with SMA, created by adults with SMA. On Be Inspired, SMA patients share their inspirational stories,



SPOTLIGHT

Aligning policy to unlock digital innovation in the healthcare space

As part of World MS Day 2021, Biogen's Shibi Belachew, Head of Science, Biogen Digital Health, Analytics and Solutions, participated in a virtual policy discussion convened by The Economist, alongside Eva Kaili, member of the European Parliament and Chair of the Committee for the Future of Science and Technology.

During the "Brain and Machine: Improving MS in a Digital Age" fireside chat, the discussion focused on how we can align policy to unlock digital innovation in the

healthcare space. Shibi underscored the importance of data, noting that **an increase in the availability of different data in the healthcare environment has the potential to create a more holistic body of knowledge for regulatory decision making**. He also emphasized how critical it will be to harmonize rules for digital technologies and devices across EU countries to support competitiveness in digital innovation, and stressed that accelerating the pace of scientific innovation requires effective policies and sufficient investment for research.

useful information and life hacks. The regional team also developed a Together in SMA Facebook page to connect people to Be Inspired, striving to deliver content that matters to the SMA community.

Our Swiss affiliate launched the SMA Aurora app, which delivers "beyond-the-pill" services and bridges the gap from a first-in-class innovative therapy to an equally innovative patient experience. Some app benefits include the ability for patients and caregivers to document and assess motor function skills and increased service quality and qualitative remote motor function assessment through patient/caregiver collaboration with a provider.

We're also helping young adults navigate SMA by inspiring them to be more proactive about their care and aspirational about their futures, through Life with SMA virtual experiences – a simulation series we

WORKING AT THE INTERSECTION OF TECHNOLOGY AND WELL-BEING

developed in partnership with patients and patient groups. Elements of the experience include three simulation topics: independent living (social life), employment and education, which will be shared on social channels popular with Gen Z and millennials. Participants can explore these topics in a virtual world, while receiving tips to help patients navigate the various environments.

Biogen Digital Health

In April 2021, we formed Biogen Digital Health, a global unit dedicated to pioneering personalized and digital medicine in neuroscience. We believe that now, more than ever, biology and technology should go hand in hand to better meet patient needs, while enabling a shift toward more prevention-focused, affordable and equitable care.

Advancing our digital health capabilities helps to enable optimization of clinical development and to improve patient outcomes – detecting diseases earlier, better measuring their progression and optimizing the patient pathway. For example, developing validated digital biomarkers may enable us to accelerate clinical development and augment the probability of success of our pipeline assets, while also creating opportunities for clinicians to better monitor disease progression through more sensitive and predictive measures than those currently available. Symptoms associated with neurological diseases and neuroplasticity also offer the hope that digital therapeutics might enable us to meet patients' needs in new ways in the future.

Advancing digital health for personalized medicine in neuroscience with TheraPanacea

In December 2021, we announced a new collaboration with TheraPanacea to advance personalized digital medicine using machine learning (ML) and artificial intelligence (AI). Together, we aim to accelerate clinical development and further the understanding of the underlying pathology of neurological diseases. Our focus will be on multiple therapeutic areas in neuroscience, further building on our existing relationship.

FEATURE

Transforming healthcare with digital health

Martin Dubuc, head of Biogen Digital Health, is among a growing number of people who believe the life sciences industry is on the cusp of a revolution – a digital shift that promises to transform patient empowerment and care.

Biogen Digital Health is comprised of over 150 experts focusing on four domains: digital biomarkers, personalized healthcare, care pathway solutions and digital therapeutics. They use digital health technologies – everything from sensors and digital devices to artificial intelligence (AI) – combined with big health data to change the way neurological diseases are screened, detected, monitored and managed, ultimately enabling patients to become more active participants in their health journeys.

“The way a neurological disease affects individual patients varies significantly, and this variability also applies to the way they respond to different drugs and interventions,” said Martin. “Understanding and supporting decisions based on these differences is key to improving health outcomes.”

“I’ve especially grown interested in transformations in our industry related to digital and customer centricity and the promise of technology to find solutions for patients with difficult diseases.”

Martin Dubuc
Head of Biogen Digital Health



Martin noted that personalized medicine, particularly in neurology, will also depend on our ability to research and develop digital biomarkers. His team aims to do this by leveraging popular digital technologies like smartphones, sensors and wearable devices, which can provide a wide range of physiological and behavioral data signals. The team is also seeking to advance the field of digital therapeutics, where technologies are used as evidence-based medical interventions to generate biological reactions.

➔ [READ THE FULL ARTICLE, DIGITAL VISION: A CONVERSATION WITH MARTIN DUBUC](#)



WORKING AT THE INTERSECTION OF TECHNOLOGY AND WELL-BEING

Biogen launches neurotechprize, a global challenge for aging societies

In partnership with EIT Health, Biogen Germany launched neurotechprize, a call for applicants with the most promising solutions and technologies to help address the challenge of Alzheimer's disease in Germany and beyond. The submission process, closed in December 2021, received a total of 79 applicants from 23 countries. The winners will be announced in 2022.

Transforming the way we assess neurological diseases with Konectom™

Traditional clinical outcome measurements are limited in their ability to assess and monitor the true evolution of neurological diseases. Most rely on subjective, insensitive and infrequent assessments. High-field MRI suggests that disease evolution is not well captured. For example, in MS, in 70-90% of people where we see brain lesion evolution, we see no change in clinical assessments.

Emerging digital measurement solutions, such as Biogen's proprietary digital measurement platform Konectom™, leverage wearable sensors, digital biomarkers and patient empowerment to improve how we assess and monitor neurological diseases. Konectom can assess key neurological functions such as cognition, fine and gross motor control, walking and mobility in clinical studies, in-clinic or remotely.

In 2021, Konectom was officially CE-marked as a Class 1 Medical Device, meaning it passed all regulatory and quality steps of development and affirmed conformity with EU Medical Devices Regulations. Konectom can now be distributed in Biogen's clinical studies in the EU to support clinical development and real-world evidence generation in MS.

SPOTLIGHT

Biogen Spain honored for innovative products and services

For the second year in a row, Biogen Spain has been named a winner of Actualidad Economica's 100 Best Ideas Awards, highlighting innovative products and services. Biogen's Cleo app, which is used by 3,300 MS patients in Spain, was recognized in the

Mobile Technology category. This award, along with last year's recognition of CogEval, reinforces Biogen's position as an innovative company, not only in our therapies, but also in the services we offer to the patient community and HCPs.



Cleo/Aby voted #1 MS app and available in 17 countries

Cleo (Aby in North America), our digital disease companion app to help people who live with MS, is available in 17 countries worldwide, reaching over 600,000 users. According to a Pascaleo Survey in November 2021, Cleo was ranked the #1 MS app by over 650 neurologists in 10 countries. In France, Cleo joined the digital healthcare space (Mon espace santé), a dedicated platform for French healthcare system users with access to a Digital Health Store that provides a catalog of mobile applications and websites.

Neurodiem voted preferred neurology website

Neurodiem, our independent information platform for healthcare professionals in neurology, has been voted the #1 preferred online platform dedicated to the specialty. This was according to a Pascaleo survey of 650+ neurologists in 10 countries performed in November 2021. With more than 20,000 neurologists registered worldwide and over 1 million visits, the platform is now available in 27 countries and on five continents.



WORKING AT THE INTERSECTION OF TECHNOLOGY AND WELL-BEING

2021 DE&I Clinical Research Goals and Areas of Focus

GOALS



Build trust and relationships in UP communities through trusted partners and sustained commitments with local and national leaders

Demonstrate an increase in the diversity and representation of our clinical participants that reflects the epidemiology of the disease

Meet patients where they are: Bring clinical trials to UP communities

Champion internal and external change to drive DE&I in clinical trials

Strengthen existing and form new partnerships with trusted local and national leaders driving DE&I in clinical trials

2021 HIGHLIGHTS



- Advised on UP engagement and educational assets, Biogen Trial Link, Alzheimer's disease program and study designs for BIIB080 and ADUHELM, and lupus community outreach event topics, as Community Advisory Board (CAB).
- Expanded CAB to include representation from Asian American, Pacific Islander and Native American communities.

- Initiated UP strategy and set recruitment targets for 14 studies (100% completed).
- Launched internal participant demographic distribution dashboard.

- Launched NMQF Clinical Trial Index and Clinical Trial Learning Community.
- Selected Boston Medical Center for TOPAZ study and community events.
- Launched suite of DE&I in clinical trials educational assets.

- Supported and led various DE&I initiatives and projects as UP champions.
- Participated in R&D Process Owner Network DE&I conference.
- Launched study management team UP goal setting and baseline guidance.

- Benchmarked diversity and disparities among clinical trials as members of Investigative Site Diversity Initiative for Tufts Center for the Study of Drug Development sites.
- Participated as research group members in CISCPR Perceptions and Insights Study.
- Supplemented sponsorships for CISCPR Diversity Campaign and Clinical Trial Awareness.

- Received Reuters Global Pharma Patient Champion Award for CAB.
- Built sustained community outreach and education programs including CISCPR AWARE, Proximity Health Solutions, HEAL Collaborative and Bright Focus Foundation Virtual Community Outreach Series.

- Introduced bespoke strategy for ongoing acute stroke study.

- Launched DE&I training for clinical trial sites.
- Initiated global efforts to research and identify UP needs and areas of focus at country level.
- Supported market research in lupus and Alzheimer's disease.

- Presented to U.K.'s DE&I Committee for awareness raising.
- Participated in Health Equity Ideas Café three-part series.
- Represented DE&I efforts on various conference panels and summits
- Presented on diversity in clinical trials for the U.K. NIHR and Dementia Industry Group Webinar Series.
- Submitted ACTRIMS abstract for MS Demographic Distribution of Biogen's clinical trials.

- Participated in CISCPR Diversity in Clinical Trials Working Group
- Initiated CVS Health partnership to build UP community outreach, data utilization, study specific recruitment efforts, study sites and decentralized models.
- Joined Association of Clinical Research Professionals.



OUR PEOPLE



53.1%

management-level positions and above held by females



9

Employee Resource Networks with ~2,300 employees



100%

on the Disability Equality Index for the 4th consecutive year



100%

Equality Index's Best Places to Work for LGBTQ+ Equality for 8th consecutive year



Mona Kotecha, Executive Medical Director of Clinical Development.

OUR PEOPLE

Advancing a Diverse and Inclusive Workplace Where Leading Scientific Minds Thrive

EXECUTIVE SUMMARY OUR CULTURE AND EXTERNAL CONTEXT

In our 2021 ESG materiality assessment, two workplace issues ranked within the top 10: employee health and safety; and talent recruitment, retention and engagement. As macro trends such as the “Great Resignation” impact an already competitive market for talent across the life sciences industry, Biogen also saw an uptick in voluntary turnover. We are responding with a program called Thrive@Biogen, designed to foster open employee relationships with managers and individualized employee engagement plans. This also incorporates feedback from employee surveys showing that our people are willing to take on increased responsibilities but would like a clearer sense of future career possibilities and to understand how their work makes a difference and fits into the bigger picture.

We strive to inspire employee connection to Biogen’s purpose, even as our credo, the Biogen Elements, the Code of Business Conduct and our Ethical Principles remain the foundation of our ethical culture. These touchstones come to life in everything from our Compliance Week to annual performance reviews. Our 2021 Corporate Scorecard reflected our commitment to leadership

in neuroscience, driving our biosimilars business, maximizing our robust pipeline and financial performance, as well as two new scorecard priorities: Digital Health and Environment, Social and Governance (ESG) metrics.

To deliver on these goals, we foster employee engagement, with robust opportunities for growth. In 2021, we exceeded our scorecard goal for learning and development and engaged around 2,300 people across our nine [Employee Resource Networks](#), including our new Parenting Network Group. We also sustained our employee sabbatical program, achieved record involvement in our time off to volunteer and launched a Ways of Working program to re-imagine how and where work is done. We continued to enhance our total rewards and benefits, including parental and caregiver leave and support programs, with an enhanced focus on mental health.

As our world continues to wrestle with COVID-19, we have maintained safe and productive operations, prioritizing the health and well-being of our employees while ensuring delivery of our vital medicines to patients. In 2021, our Days

Away Case Rate (DACR), which monitors work-related illnesses and injuries, and our Total Recordable Injury Rate (TRIR) both were largely on par with 2020. After evaluating 400 work tasks and identifying 57 critical areas that could expose employees to serious injury or fatality, we completed 82 of 92 action items by the end of 2021.

We continue to advance our four-part diversity, equity and inclusion (DE&I) strategy across our workforce, for our patients and among our suppliers. In 2021, our DE&I team grew, in number and across functions; we formed an international DE&I Strategic Council and trained nearly 90% of managers on inclusive talent management practices, and 70% of employees participated in at least one DE&I workshop, training or event. We also introduced a fellowship with a historically Black college and university (HBCU) to grow our diverse talent pipeline and attract, retain and grow the world’s brightest minds.

[➔ LEARN MORE ABOUT OUR DE&I PROGRAMS AND PROGRESS](#)

“As Biogen prepares for potential product launches, new initiatives and global geographic expansion, all of us are ambassadors for our Ethical Element. Our shared commitment to patients, healthcare professionals and the community means that we move forward with our pioneering work the right way.”

Soph Sophocles
Chief Compliance Officer





Fostering an ethical culture

The Elements of our culture

Just as the periodic table of elements reflects the building blocks of our universe, the Biogen Elements are the foundation of our company's culture. We celebrate the Biogen Elements – pioneering spirit, strong ethics, personal accountability, inclusivity, agility and unwavering customer focus – with our annual CEO Elements Awards.

Nominations in 2021 reflected every function and geography, and we celebrated 55 winning teams and individuals for a total of 747 awards for exceeding expectations while embodying the Biogen Elements. We were pleased with the strong cross-functional project alignment, with 70% of projects involving team members from more than one function.

Ethically grounded

Every action we take – from investigating therapies to promoting health equity to engaging with Patient Advocacy Groups and our communities – is guided by our credo of Caring Deeply, Working Fearlessly and Changing Lives™, and is supported by our eight Ethical Principles. Our Ethical Principles are detailed and made public in our [Code of Business Conduct](#), which encompasses individual and collective responsibilities and our unwavering commitment to never compromise on integrity. We sustain an environment of trust, honesty and transparency while ensuring appropriate confidentiality. We believe these commitments are key enablers of Biogen's growth and essential for upholding our reputation.

[➤ READ MORE ABOUT OUR ETHICAL PRINCIPLES IN OUR CODE OF BUSINESS CONDUCT](#)

Compliance with our Code of Business Conduct, Ethical Principles and the law is mandatory for all employees and a priority of our leaders, without exception. Every employee is expected to report actual or suspected violations of the law or the Code of Business Conduct either to their manager or through an anonymous 24/7 helpline. Regardless of the type of misconduct reported, we do not tolerate retaliation against anyone who cooperates with an investigation or who makes a good faith report of an alleged violation of laws, regulations, the Code of Business Conduct or our policies. All claims of misconduct, and any claims of retaliation against reporters of misconduct, are thoroughly investigated and resolved.

“In our employee survey, 83% agreed that “people at Biogen behave ethically,” ranking above industry benchmark. We are pleased that ethics is one of our areas of greatest strength, year on year, on our employee survey.

At the enterprise level, we monitor and address compliance issues very closely. Globally, we have 20 full-time compliance officers to support our operations. These officers use advanced artificial intelligence and other technology tools to identify issues and address them fully and expeditiously.

BIOGEN'S ETHICAL PRINCIPLES

1

We respect patients

2

We respect healthcare professionals

3

We work together as a team

4

We are responsible to our communities

5

We are fair and honest

6

We are transparent and ethical

7

We protect information and assets

8

We never compromise our integrity

Any success we achieve, if not achieved ethically, is no success at all.



SPOTLIGHT

Bringing Elements to life in the United Arab Emirates

Setting up high-functioning, ethically grounded affiliate offices is a key part of Biogen's business strategy. In 2021, we opened an office in Dubai, United Arab Emirates (UAE) to provide patients in the Gulf Cooperation Council with access to key therapies. Currently, this office has 87 employees from 20 different nationalities – the majority of them new to Biogen. With so many new employees with diverse experiences and perspectives, we increased regional onboarding activities with a focus on Biogen's Elements and ethics. We aimed to explain the critical connection between ethics and Biogen's culture, processes, performance management, goal setting, and development programs and activities. We also outlined ways to bring the Elements and our Code of Business Conduct to life in day-to-day operations to achieve strategic objectives and build an inclusive and rewarding workplace.

To sustain the momentum and forge a strong and positive culture, UAE employees created BIONeers, which operates similarly to an Employee Resource Network, to organize cultural and social events. The group has introduced meeting-free afternoons, wellness challenges, family-involved holiday celebrations and Caring Deeply engagement, including volunteering to support kids with Down syndrome.



100%

of our UAE employees rated ethics as the most critical factor in our business and a source of pride

We work hard to impress upon all employees the importance of upholding our Ethical Principles. In 2021, we held the first global Compliance Week as a reminder to hold ourselves to the highest standards of business conduct. It was met with engagement and enthusiasm. As part of Compliance Week, we distributed a People Manager Toolkit so employee questions and concerns could be uniformly and supportively addressed. Employees then participated in small group events to consider and discuss multiple scenarios designed to illustrate the Ethical Principles.

Enabling employees to thrive

In our 2021 ESG materiality assessment, both internal and external stakeholders told us that among their top 10 issues overall are employee health and safety, as well as talent recruitment, retention and engagement. Many factors influence employee success and well-being. We encourage a work environment that fosters what's important to our employees and mitigates their challenges. From career development to wellness to workplace environment, there are many opportunities to meet employee needs, and to build a workplace where people are empowered to learn, grow and build rewarding careers. When it comes to understanding and addressing the diversity of individual needs, we see each employee much the way we see each patient – not as a profile, but as a person.

Launching Thrive@Biogen

As macro trends such as the so-called "Great Resignation" impact an already competitive job market for skilled workers, the life sciences industry overall is facing a challenging environment for attracting and retaining talent. Like many companies, Biogen saw an uptick in voluntary turnover. In response, we began working on a retention and engagement approach called Thrive@Biogen.

Thrive@Biogen provides resources to help managers understand and respond to employees' personal engagement drivers, all toward ensuring talent remains and grows at Biogen. It starts with an open 1:1 conversation between managers and their direct reports, with both receiving preparation tasks and tips in advance. The conversations are intended to focus on learning about what is most important to each employee, the challenges team members may be facing and what might entice them to leave – or stay.

After the conversation, managers summarize potential actions and match employee needs with Biogen solutions and offerings, creating an individualized Thrive@Biogen plan. These plans may center on areas such as career development, workload and alignment with Biogen's purpose, work environment and/or overall wellness. Managers discuss



ENABLING EMPLOYEES TO THRIVE

proposed solutions with employees and meet to discuss progress and barriers. Through Thrive@Biogen, we hope employees will benefit from collaborative and productive relationships and visibility – critical support all people need to succeed in rewarding careers.

Through previous feedback mechanisms, we've gleaned critical insights that have strengthened our approach to talent management. We have acted on feedback that employees would like a clearer sense of future career possibilities and to understand how their work makes a difference and fits into the bigger picture. Biogen people have said they're willing to take on increased responsibilities, but would like acknowledgement of their higher contribution and guidance in managing and prioritizing the work. Thrive@Biogen is one important part of our response.

We hope the Thrive@Biogen program will bring current employee interests to light, and we will keep listening and responding to what we hear.

Total rewards and benefits

Building from a foundational focus on employee health and safety, our flexible benefits are designed to meet the varied needs of our global workforce so that they are inspired and equipped to perform their best on behalf of patients each day. Our industry-leading benefits help employees and their loved ones access quality care and support across many aspects of their lives: physical, financial, social and emotional.

Ways of Working, evolving how and where work is done

Grounded in a culture of trust and empowerment, our Ways of Working (WoW) program is designed to support flexibility as employees manage professional and personal responsibilities. Biogen began offering these options before the pandemic, and as some employees have safely returned to the office, we continue to offer telecommuting, flextime and job-sharing options. In 2021, we launched WoW with full-time employee profiles, including:

- **Hybrid** – Split time on and off campus.
- **Off-Campus** – Job tasks can be performed off campus and no consistent campus presence is needed.
- **Field** – Tasks are completed in the field.
- **On-Campus** – All or most job responsibilities are performed on campus.

Employee sabbaticals

People who have been employed with Biogen for at least six years can take advantage of our paid sabbatical program, designed to help employees thrive in and out of work. Since its launch in 2014, nearly 3,200 employees have taken a sabbatical, using this respite to contribute to their communities, travel, spend time with loved ones and accelerate their lifelong learning.

Time off to volunteer

Biogen employees also receive eight hours of paid time off to volunteer each year.

[➔ READ ABOUT OUR COLLECTIVE IMPACT AND CULTURE OF GIVING](#)

ENABLING EMPLOYEES TO THRIVE

FEATURE

A cycling sabbatical for ALS

Avid cyclist and Biogen employee Jenn Gardella embarked on a 3,826-mile cycling journey across the U.S. to raise awareness and money for ALS advocacy groups. While she had long dreamed of the trip, Jenn didn't commit to the training and preparation that something like this requires until she met Steve Kowalsky.

In October 2019, Jenn attended a Biogen Lunch and Learn series and heard Steve speak about his experience living with ALS. She was struck by his courage and strength, and in that moment, everything clicked. Jenn decided to take a sabbatical to embrace the challenge of riding cross country, dedicating her ride to Steve.

The endeavor required endurance training, logistical planning, and nutritional and hydration coaching. Each day, Jenn had to consume 300–500 calories before starting out, and take in 200 calories every hour while riding and another 3,000 to 5,000 calories at dinner. She also had to stay properly hydrated to replace sodium loss. She learned about every part of her bike, practicing taking it apart and then putting it back together.

When Jenn told Steve that she intended for her ride to reflect the strength of people fighting ALS, he was surprised by the impact his words had. He returned to Biogen to sign her bike, which she rode an average of 100 to 120 miles a day for 34 days – through summer heat, through wildfire smoke, up 135,100 vertical feet and through remote towns from Washington state to New Hampshire.

Jenn reached her destination having accomplished a personal goal and raised awareness and nearly \$20,000 for The ALS Association of Massachusetts Chapter.

“Crossing the finish line was an amazing feeling. I couldn't believe I finished and rode every inch, from the Pacific to the Atlantic! I also couldn't believe my whole family was there at the finish line, waiting for me, cheering for me! I was relieved to be done, a little delirious and deeply fatigued,” said Jenn. “Incredibly motivating were the messages of support and encouragement from friends and Biogen colleagues on social media and from Steve Kowalsky himself. I felt like you were there with me every day, checking in, wishing me luck, waiting to hear how it went.”

Jenn Gardella is Senior Director, Medical Operations, Grants and Technologies.



Employee and Family Solutions

Employee and Family Solutions, a global employee assistance program, offers legal services, financial consultations, behavioral healthcare, and child and elder care referral services for all employees and their family members globally, 24 hours a day, seven days a week. In 2021, nearly 25% of employees tapped into online workshops and information on topics such as managing resilience, money and finances, family care and education.

Parental leave and benefits

Beginning in 2021, our U.S. maternity leave provides 100% of base pay for up to 16 weeks. Non-birth parents of a newborn or adopted child, including those using a surrogate, receive eight weeks of parental bonding leave.

Employees completing an adoption or surrogacy may receive up to \$10,000 (lifetime maximum of \$20,000) in reimbursement for related expenses such as adoption and surrogacy fees, court and attorney fees, travel and lodging expenses, agency and placement fees, medical expenses of the birth mother and child prior to adoption or surrogacy, immigration fees, and immunization and translation fees.

All U.S. benefits-eligible employees also may receive up to \$1,000 in reimbursement for expenses associated with birth doula services, including physical and emotional support to employees and their partners during pregnancy, childbirth and the postpartum period.

Outside of the U.S., benefits vary by country, but in every market where we operate, Biogen benefits meet or exceed the legal requirements, and are informed by market trends and employee feedback. We are working to determine if uniform or core global standards are feasible and desirable.

ENABLING EMPLOYEES TO THRIVE

Paid caregiver leave

Caregivers play a key role in helping people live fuller, healthier lives, and Biogen cares for caregivers – whether that means for patients, communities or employees. With research showing that about 1 in 6 working Americans serve as primary caregivers, we go beyond U.S. regulations to ensure enhanced leave is available to all U.S. employees. Under the U.S. Family and Medical Leave Act, caregivers of seriously ill, elderly or disabled family members have generally been eligible for up to 12 weeks of unpaid job-protected leave per year. Biogen offers all employees in the U.S. up to eight weeks of paid caregiver leave, with additional unpaid leave available. Paid leave regulations and standards vary by country, so we are actively reviewing leave practices relative to employee needs, market practices and business priorities.

Additional caregiver support

To meet the needs of new parents, Biogen provides a range of additional support, from breastfeeding support and on-site lactation facilities to childcare. For example, Biogen works with [Bright Horizons](#) to offer early childhood education for infants through kindergarten prep, as well as summer programs.

[➔ READ ABOUT OUR SUPPORT FOR CAREGIVERS DURING THE PANDEMIC](#)

Competitive compensation

Biogen's total rewards are designed to meet the needs of employees in local markets, and typically include retirement or savings plans, financial advising, Long-Term Incentive (LTI) plans and incentive grants, no-cost life insurance and disability coverage, tuition reimbursement and college-planning services, as well as our annual bonus plan. Employees develop individual goals annually that align with and help execute on Biogen's overall strategic goals, and are evaluated on individual performance against those goals through the lens of the Biogen Elements.

In 2021, we increased our annual LTI grant guidelines for each level to enhance our competitive positioning and to support our long-term business strategy, and we introduced a promotional LTI grant to recognize and reward employees for additional responsibility and

SPOTLIGHT

Taiwan spotlights the sensitive topic of infertility

In Taiwan, infertility is often considered too sensitive to discuss, and concerns about maternity discrimination in the workplace remain high. To address these issues, on International Women's Day in 2022, Biogen Taiwan put the spotlight on assisted fertility. The team hosted a forum "Empower Equity – Reproductive Rights" to discuss infertility journeys with invited guests Shuan Chang, CEO and Co-Founder of Womany, a highly popular social media influencer on women's rights, and Jennifer Lu, CEO of Taiwan Equity Campaign, a fertility doctor and a surrogacy advocate.

The forum also highlighted Biogen Taiwan's new employee benefit: **four days of assisted fertility leave per year for employees in need of an assisted fertility procedure, irrespective of gender, marital status or sexual orientation.** The length of leave allotted is based on the average number of days employees have taken off for fertility treatments in the past. While employees can use sick leave for the treatments, the local team wanted to underscore that fertility is not a disability, and people who require these treatments aren't sick.

accountability of promotion. We also updated bonus targets at four levels for competitive advantage and to provide additional promotional recognition by differentiating bonus target percentages by level.

As a company, Biogen is evaluated on performance through our Corporate Scorecard. The amount of bonus payout under the Annual Bonus Plan is based on individual performance as well as the company's performance. Our 2021 Corporate Scorecard reflected our commitment to leadership in neuroscience, driving our biosimilars business, maximizing our robust pipeline and financial performance. In addition, we introduced two new scorecard focus areas: Digital Health and Environmental, Social and Governance (ESG) metrics.



ENABLING EMPLOYEES TO THRIVE

OVERVIEW

Key Biogen employee benefits that support and care for caregivers

Employee benefit	100% of employees	90% or more employees	Over two-thirds of employees	Under consideration
Financial support				
16 weeks of paid birth-parent leave with 100% base pay		✓		Global standard of 12–16 weeks
8 weeks paid caregiver leave for non-birth parents			✓	Global standard of 8 weeks
8 weeks paid caregiver leave for any employee caring for a seriously ill family member			✓	Global standard of 8 weeks
Up to 5 days paid bereavement leave for death of family member, including pregnancy loss		✓		Global standard of 5 days
Up to \$10,000 (lifetime maximum of \$20,000) for adoption/surrogacy expenses			✓	
\$1,000 for expenses associated with a birth doula			✓	
\$100/day in childcare reimbursement for up to 80 days			✓	
Remote/hybrid employees eligible for a \$1,500 stipend to purchase home office equipment		✓		
Practical support				
On-site childcare			✓	
Subsidized backup child and elder care with Bright Horizons			✓	Evaluating capability to expand globally
Child and elder care resource and referral service	✓			
No-cost access to mental health support (app, virtual counselor)	✓			
Employee Resource Network	✓			
Concierge services			✓	
Time and flexibility				
Flexible work arrangements	✓			
8 hours paid time off to volunteer	✓			
1 month paid sabbatical every 6 years	✓			

ENABLING EMPLOYEES TO THRIVE

FEATURE

Delivering on pay equity

Our promise to our workforce and society is that employees will receive equal pay for equal work. To deliver, we conducted a global pay equity analysis, sharing the results with our employees in 2021. We found that 99.7% of employees were paid consistent with our compensation philosophy. For the remaining 0.3% of employees, we assessed their skill, level, experience and other factors, and made adjustments, as appropriate. Our approach validated that fairness and equity are embedded in our compensation practices.

An external consultant helped us analyze comparable roles to evaluate whether gender impacted compensation. In the U.S., where the law permits the collection of racial and ethnic data, we also included race and ethnicity in the analysis, consistent with our commitment to racial and ethnic equity. We will continue to hold ourselves accountable, regularly reviewing our compensation practices and analyzing the equity of compensation decisions, for individual employees and our workforce as a whole. If we identify employees with pay disparities, we review and take appropriate action to ensure fidelity between our stated philosophy and actions.

We chose to examine pay equity rather than only looking at pay gap.

Gender pay gap is the difference between the average pay of all males in an organization and average pay of all females in an organization; whereas pay equity is the difference in pay between a male and a female performing an equivalent role within an organization. In the countries where we are required legally to conduct a pay gap analysis, we do so.

“Our promise to our workforce and society is that employees will receive equal pay for equal work.”

Conducting a global pay equity analysis is just one part of our overall commitment to equity. We strive to pay employees equitably within a reasonable range, taking into consideration factors such as role; function; market data; internal equity; job location; relevant experience; and individual, business unit and company performance. We will continue to regularly review our compensation philosophy; ensure employees understand the total compensation practices; and provide training for managers and leaders to prevent bias during hiring, compensation decisions and performance management.

Inspiring employee engagement

Every day we passionately advance our purpose of serving humanity through science, embracing the responsibility that hundreds of thousands of people in more than 100 countries depend on Biogen's therapies to make a meaningful difference in their lives. We strive to create a workplace where employees are motivated and supported, empowered to own their careers, and connected to resources that help them thrive.

Around 2,300 employees globally are members of our nine Employee Resource Networks (ERNs), groups for those who share characteristics, life experiences and interests, along with their allies. These groups offer opportunities to support and advance business objectives, exchange knowledge, find mentors, volunteer and receive support – all invaluable for career development. In 2021, the ERNs and DE&I hosted more than 60 events, including holding our first global Week of Understanding.

Biogen employees also launched a new ERN called the Parenting Network Group (PNG). PNG provides support, networking and development opportunities to working parents and caregivers. More than half of Biogen's employees are working parents, and with family and work lives more blended than ever, PNG helps employees navigate the challenges of work-life balance. Together, we hope to help employees be more engaged and effective at work and happier at home.

For years we've held an internal event called Science Day, which began primarily as an R&D-focused convening, with presentations that celebrated scientific advances across the company. Over time, we've made it more inclusive, both geographically and among functions across the company, including Medical, Pharmaceutical Operations & Technology and Manufacturing. In 2021, all of Biogen was invited to Science Day, which welcomed 2,100 employees and received extremely positive ratings.



ENABLING EMPLOYEES TO THRIVE

Acting on insights from employee surveys

Employee sentiment and feedback guides our strategies and programs. In 2021, we continued our employee-listening program and expanded leaders' direct access to their employees' feedback. Nearly 71% of employees participated in our annual engagement survey, providing fresh insights into what is working well, what could be improved and the issues of greatest importance.

For example, survey results underscored the importance of a sense of appreciation and belonging – perennial priorities that may have been heightened in the past two years. We are enhancing our focus on those dimensions of the employee experience via programs like our CEO Elements Awards and EHS (environment, health and safety) Awards, our new Thrive@Biogen initiative and a deepening focus on mental health, as well as on Biogen's core purpose. We also heard that employees want more communication, and we are factoring that into our approach to events like our quarterly global town halls, our ERNs and content on our intranet and Yammer.

Investing in employee growth

Opportunities for ongoing learning can contribute to employee engagement and success. At Biogen, development occurs through on-the-job learning, a challenging new assignment, formal training, online learning, mentoring and more. With many employees continuing to work from home, virtual learning plays a key role. In 2021, the total number of instructor-based courses available through Biogen University was more than 1,200, with almost 400 available virtually. In addition, over 500 new eLearning (on-demand) courses were added. The average number of hours spent learning per full-time employee was 30.1 hours. Through LinkedIn Learning, one of our e-learning resources, we provided employees with access to more than 17,000 eLearning modules in seven languages: Brazilian Portuguese, English, French, German, Japanese, Mandarin and Spanish. Employees completed more than 11,000 courses, with the most viewed courses centered on diversity and inclusion as well as allyship.

We strive to offer engaging resources and high-impact learning and development opportunities, including:

- **ARC (Activate, Reflect and Co-Create):** Preparing top talent for the rigors of executive roles.
- **WLP (Women's Leadership Program):** Addressing the unique challenges faced by female leaders to increase influence and impact.
- **ELR (Executive Leadership Retreat):** Immersing leaders in topics designed to help them shape culture and build resilience.

Mentoring and coaching programs

We offer year-long personalized learning experiences, matching participants with a dedicated mentor to identify and work toward short-term professional goals. We offer all employees access to BetterUp, a leading coaching provider. BetterUp also held a Coaching Circle on Building Resilience. Coaching Circles are live group sessions that integrate evidence-based learning, peer coaching and group discussions to build skills and to help employees find ways to adapt to these challenging times with support from colleagues. All employees also have access to Torch, a comprehensive mentoring program that connects employees with the people, resources and feedback needed to be more productive and successful at every stage of their career.

In addition, we launched a new mentoring program, Ment2Sor, developed for our U.S. Organization. The program provides mentorship and sponsorship opportunities for diverse talent to build a stronger Alzheimer's disease leadership pipeline. The inaugural cohort meets monthly to review themes and mentor needs, and to provide support for growth. Ment2Sor complements PROPEL, a U.S. Organization mentorship program in its third year designed and developed to promote leadership advancement for diverse employees. The PROPEL program has yielded a 22% increase in the promotion of diverse talent.



ENABLING EMPLOYEES TO THRIVE

Orbit rotational program

Through the Orbit program, employees can take short-term growth assignments in new areas, enabling them to experience new roles, expand their internal networks and provide short-term “surge capacity.” Nearly 240 employees have participated in an Orbit since the program launched in March 2021.

“I was very fortunate to participate in an Orbit focused on health equity, as both host manager and participant. As host, I worked with a team who would each apply their expertise with a health equity lens that enhanced our business; as participant, I was able to leverage opportunities to unify all the great work happening across the organization.”

Cherié Butts

Medical Director, Therapeutics Development Unit



“Through my Orbit in Corporate Brand & Reputation, I was able to explore another area of the business, build new professional relationships and enhance my overall career development. I love that Biogen gave me the opportunity to try something new and offered the flexibility for me to do that on a part-time basis.”

Dennis Mercier

Lead, TA Recruitment Marketing

Exploring career paths through internship

Beverly Hughes knew she wanted a summer internship at a leading biotech firm, but was unsure which companies would recruit at her school, North Carolina Agricultural & Technical State University, one of the nation’s largest HBCUs.

“My specific program is relatively small, so many of the big firms don’t show up to the recruiting events,” said Beverly, a biomedical engineering student. “When I saw Biogen at the virtual internship fair, I was really excited.”

HBCUs are a crucial talent pipeline. According to the Ivy Research Council, while only 10% of Black college students today attend HBCUs, 24% of science, technology, engineering and mathematics (STEM) degrees awarded to Black students come from HBCUs.

“Our ability to innovate and meet evolving patient needs is dependent on attracting and retaining diverse and high-performing talent,” said Tom Kleber, who formerly led University Programs. “Summer internship recruitment from HBCUs is one way to contribute to Biogen’s diversity and innovation efforts, particularly when looking for diverse STEM talent.”

“As students at an HBCU, we are surrounded by Black people doing amazing work all the time,” Beverly said. “But it can feel like a bubble, because when you go out into the work world, you may be the only Black engineer at your company, which can feel lonely and impact your work. It’s so important to have a company culture that’s diverse and inclusive so that we all can do our best work.”

Beverly landed an internship in health equity with Biogen’s Diversity, Equity & Inclusion (DE&I) team. “I initially considered taking an engineering role, but I was also curious about working on the corporate side and how companies advance their health equity goals. I’m more of an introvert, and this internship really pushed me out of my comfort zone – I’ve learned and grown so much.”



ENABLING EMPLOYEES TO THRIVE

Emphasizing workplace health, safety and well-being

We want every Biogen employee to feel healthy, safe and productive at work. We believe every employee has a role in advancing health and safety, whether work happens in the lab, in an office or in a manufacturing plant. Cultivating a safe workplace helps advance our purpose of enabling everyone to live healthier, fuller lives.

Navigating the pandemic

The second year of the pandemic presented both ongoing and new challenges, and Biogen continued to focus on ways to keep employees healthy and promote well-being. As the COVID-19 pandemic continued to evolve, Biogen took a multilayered approach to protect the health and safety of our employees, partners and communities. This included requiring health screenings, providing face masks and sanitizer, modifying HVAC and introducing a COVID-19 Vaccine Policy for U.S. personnel.

We have a deep sense of gratitude to our workers in the labs and manufacturing facilities who have continued their work with strict safety measures in place.

Many of our employees continued to work from home as we rolled out our [WoW program](#) to deliver both employee safety and productivity. To support Off-Campus and Field employees hired after Sept. 1, 2021, we provide a \$1,500 stipend to purchase home office equipment. Off-Campus and Field employees hired prior to this date and hybrid workers may expense home office equipment according to company guidelines.

Our state-of-the-art Bright Horizons Child Care Centers on our campuses in Cambridge, Massachusetts, and RTP, North Carolina, offer reliable childcare and early education programs to support up to 175 children, with enhanced health and safety protocols that keep children, staff and families safe. Whether employees are working on campus, off campus or hybrid, the centers offer full- and part-time schedules to meet employee needs. Through our partnership with Bright Horizons, employees also have access to a nationwide backup care network for loved ones of all ages (children and elders), including center-based care (for children) and in-home care (for children and elders). New for 2022, virtual camps, powered by Steve and Kate's

Camp, are available through the Bright Horizons backup care benefit. This program offers kids (ages 3-12) a wide variety of fun and educational activities including arts and crafts, coding, competitions, fitness, game design and more.

To support families who have experienced disruptions in caregiving support, we sustained an increased level of funding for backup "crisis care" services, offering \$100/day in childcare reimbursement for up to 80 days through 2021. Employees were able to use crisis care to reimburse members of their own personal networks to provide childcare if other care options were unavailable. Employees also can access free membership at Sittercity, discounted tutoring, test prep, enrichment programs and discounts on a personalized nanny placement service. For added support, we continue to facilitate home errands through our Circles Concierge service.

Mental health and well-being

With mental health a rising concern, Biogen assessed our healthcare coverage offerings and determined that 100% of our U.S. employees have access to quality counseling services within our network. For increased coverage, we virtualized Biogen's on-site counselors so employees working from home can more easily access support. Our mental and well-being offerings include:

Global

- Headspace: Meditation and mindfulness program via self-administered digital tool.
- Employee and Family Solutions: Virtual or in-person short-term counseling, psychological support and managing ongoing issues with a coach and/or therapist.

U.S.

- Learn to Live: Self-paced, online cognitive behavioral therapy program with coaching.
- Talkspace: Counseling support through text, video and/or phone.
- Blue Cross Blue Shield: Full behavior health support that provides in and outpatient facility-based support, in-person and virtual counseling and specialist support.

ENABLING EMPLOYEES TO THRIVE

Europe, Canada and Partner Markets

- **Balanced You:** Personalized analysis with a series of online webinars to support and empower employees to cope with mental strains and develop resilience.

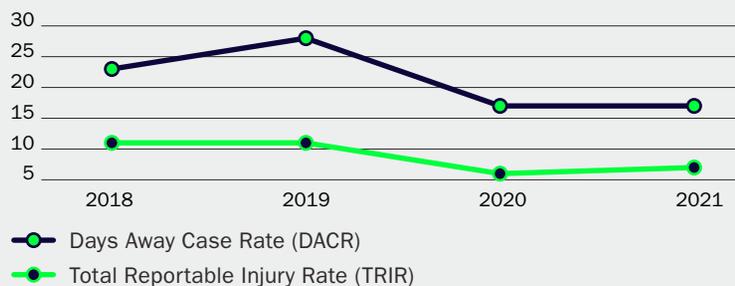
Biogen also offers Peace of Mind, an eight-week series of 30-minute sessions designed to build leadership, emotional intelligence and resilience through practices designed to manage mind, brain and nervous system. The sessions are led by Jonathan Levene, Biogen's Head of Leadership Development and a certified mindfulness meditation teacher who has served as an executive coach and facilitator for many leading companies and other organizations.

In May 2021, for Mental Health Awareness Month, we promoted these benefits, as well as held sessions with external experts, like Morra Aarons-Mele, host of LinkedIn's "The Anxious Achiever" podcast.

Reducing risk and promoting well-being

Human Performance (Hu) is integrated into Biogen's Environment, Health and Safety (EHS) programs. Hu encourages proactive and collaborative problem solving through practices such as Open Reporting and Work Observation and Risk Conversations. In 2021, our Days Away Case Rate (DACR), which monitors the frequency of work-related illnesses and injuries that lead to a work absence, and our Total Recordable Injury Rate (TRIR) were both below the industry average. Compared to a peer group of 15 pharmaceutical/biotechnology leaders using a three-year rolling average of DACR, we achieved second place.

Workplace-Related Injuries



FEATURE

Destigmatizing and supporting mental health

According to the National Institutes of Health, up to 80% of people will experience a diagnosable mental health condition during their lifetime, whether diagnosed or not. Despite this prevalence, a Mental Health at Work report found that almost 60% of employees have never spoken to anyone at work about their mental health – and while employees were more likely to be comfortable supporting a colleague, they were less comfortable talking to HR and senior leaders about this topic.

Our Australia and New Zealand affiliate made destigmatizing mental health a priority. The ability to talk openly about mental health is key. In 2021, the office worked with the Black Dog Institute – a leading Australian medical and mental health research institute – to audit and train all local Biogen managers on mental health understanding, impacts and workplace support. The training was then rolled out to all employees.

“Our Australia and New Zealand affiliate made destigmatizing mental health a priority. The ability to talk openly about mental health is key.

To continue the focus on mental health, the affiliate formally launched Mental Health First Aiders. These employee volunteers are trained and accredited to engage appropriately and compassionately to support colleagues who may be struggling. They function similarly to volunteers who render physical first aid in the workplace.

To help drive cultural change, remove stigma around mental health and inspire others, the office encourages employees to come forward to share their stories about struggles with mental health, which is critical to supporting overall employee well-being.

ENABLING EMPLOYEES TO THRIVE

To continuously improve on EHS, our cross-functional teams evaluated 400 work tasks across Pharmaceutical Operations & Technology and Research & Development, and identified 57 critical tasks that could expose employees to serious injury or fatality (SIF) if controls are absent or not used. To reduce the risks associated with these essential activities, we pinpointed 92 action items and by end of 2021, we had completed 82 of them.

Workplace Health and Safety efforts are guided by our [EHS Policy](#), which calls on all of us at Biogen to maintain a healthful and safe work environment and to minimize the impact of our operations on the environment.

Celebrating health and safety

Our annual EHS Awards recognize exemplary employee efforts in four areas: Be Safe, Be Well, Be Sustainable and Be Resilient. In 2021, we received more than 100 nominations, with four projects and 20 employees recognized with a Global EHS award.

One of the winning projects focused on My Green Lab Certification, engaging more than 150 employees in a pilot to determine if the certification program could successfully guide laboratory employees to implement best practices to reduce waste and the use of energy and water.

[➔ READ MORE IN THE ENVIRONMENT SECTION OF THIS REPORT](#)

The EHS Awards also recognized a leadership-focused initiative launched at Biogen's RTP site to raise awareness and understanding of a psychologically safe culture – one where employees feel welcome to share ideas, questions and concerns. Throughout 2021, multiple interactive sessions were held with all leadership teams to discuss how aspects of psychological safety can impact direct reports and others and promote an environment where taking interpersonal risks within a team is supported.

SPOTLIGHT

EHS Award winner Camir Ayuso sets a leading Hu example

A champion of Human Performance (Hu), Camir Ayuso (pictured) led an initiative to reinvigorate Hu practices and tools with manufacturing staff at our North Carolina site. She created a detailed project plan that included a weekly newsletter, an award drawing to encourage open reporting, post-job reviews

and more. To enhance employee education on critical topics, Ayuso developed content for interactive "Hu Hours," when staff could learn how to submit an open report or how to perform a pre-job brief. **Her efforts made a significant impact on the level of Hu maturity on site, increasing our capacity to be proactive and recover from challenges.**





Promoting diversity, equity and inclusion

As a company that pioneers science for the betterment of humanity, Biogen believes that any form of prejudice, racism or intolerance is unacceptable and has no place at our company. To advance our mission, we seek to engage the world's brightest minds, and have long prioritized diversity, equity and inclusion (DE&I) not only as a moral imperative, but as a competitive strength.

In 2020, after the murder of George Floyd, it became clear that we needed to do more to promote our values both within our company and globally. We held dozens of listening sessions across all levels of the organization, engaged with outside experts and consulted community organizations. What we heard helped shape our enhanced four-part DE&I strategy.

Our Board of Directors

In accordance with our Corporate Governance Principles, we endeavor to have a Board of Directors that collectively represents diversity of thought and experience at strategic and policy-making levels. Our Corporate Governance Committee considers the diversity of skills and experiences that a potential nominee possesses and the extent to which such diversity would enhance the perspective, background, knowledge and experience of our Board of Directors as a whole. Personal diversity, including gender, national origin, and ethnic and racial diversity, is considered an asset to and by our Board of Directors.

Employee engagement remains a critical component of the implementation and execution of our DE&I strategy. We rely on a cross-functional governing body of employees known as the Diversity, Equity and Inclusion Strategic Council (DEISC), which serves as the voice of employees and helps inform the organization's DE&I strategic focus.

In 2021, most of our employees interacted with DE&I initiatives, including more than 60 internal DE&I events. These events included the #IWillAccelerate webinar series, which had 150 global participants per session and focused on career advancement strategies and topics such as "Playing to Your Strengths" and "Overcoming Imposter Syndrome."



DE&I STRATEGY #1

Build company-wide awareness, capability and urgency to foster and sustain a diverse and inclusive environment

GOALS

95% of People Managers trained on inclusive recruiting, hiring, promotion and retention

60% of all employees participate in DE&I training

PROGRESS

89.9% trained by December 2021

70% of employees interacted with DE&I workshops and training modules. We supplemented learning sessions with 11 debrief sessions for training attendees, with 2,600 e-learning participants and 485 follow-up session participants. Three allyship training sessions were held for leadership teams and HR business partners.

[➔ READ MORE ABOUT OUR DE&I STRATEGY](#)



PROMOTING DIVERSITY, EQUITY AND INCLUSION

Externally, we sponsored 20 events, providing financial support to community groups spanning multiple dimensions of diversity.

We convened multiple listening sessions in response to events such as the U.S. Capitol insurrection and hate crimes against Asian Americans and Pacific Islanders. In 2020, we began recognizing Juneteenth as a U.S. holiday, a year before it became a federal holiday.

In Spain, our affiliate developed an Inclusive Language Guide as part of a broader equality plan. The guide offers resources, tools and practical examples of how to incorporate more inclusive language into communications internally and externally. It is designed to help us better take into account the perspectives of our patients and other stakeholders in marketing campaigns and other external channels.

LGBTQ+, disability and veteran status

We collect self-reported employee data for identities such as LGBTQ+, people with a disability and veteran status. We only collect these data in the U.S., although some affiliates have obligations to collect disability data.

We know there are a variety of reasons employees may not want to provide this voluntary information. We are determined to understand the barriers for employee participation so we can increase rates of self-reporting. Our hope is when employees understand the importance of reporting this information confidentially, and as we become an even more inclusive workplace, participation will rise.

Promoting disability inclusion

On International Day of Persons with Disabilities, we announced that Biogen CEO Michel Vounatsos had signed the [Disability:IN](#)'s CEO Letter on Disability Inclusion, underscoring the importance we place on an equitable and inclusive workplace for all.

Our ERN AccessAbility reinforces and supports disability inclusion by fostering awareness, advocacy and inclusion, and by empowering employees with disabilities and their caregivers. In 2021, AccessAbility launched a #SayTheWord campaign to break the stigma of disability and ensure employees feel safe to acknowledge their disability identity in the workplace. We reinforced these efforts

during Disability Pride Month, promoting the pride felt by people with disabilities. We also worked with community groups to host internal and external educational sessions on various disability-related topics including "Introduction to Neurodiversity in the Workplace" and "Ableism 101."

We continue to collaborate with Getting Hired, a disability-focused consultancy that is helping to elevate Biogen as a disability employer of choice. Our Talent Acquisition team is helping to launch a disability recruiting pilot program in 2022. We also partnered with colleges and universities to host informational webinars for students with disabilities about Biogen's internship program.

Our Facilities team aims to incorporate the Americans with Disabilities Act as a standard of care for all spaces. In recent years, we made accessibility improvements across our sites, including adding ramps, automatic doors, lifts, accommodative restrooms and designated parking spots. We also have begun conversations about digital accessibility and, as one of our initial efforts, initiated an RFP requiring vendors to include digital accessibility in their proposals.

As a result of these and other efforts, we're proud to have scored 100% on the Disability Equality Index for the fourth consecutive year. At the same time, we seek to better understand what inclusion means for our disabled employees and caregiver community. So, we launched an AccessAbility survey, which will be followed by fireside chats around survey responses as we work to expand our AccessAbility network globally to further support people with disabilities both within and outside of Biogen.

A Week of Understanding

Alongside the [CEO Action for Diversity & Inclusion](#), the largest CEO-driven business commitment to advance DE&I in the workplace, Biogen held a Week of Understanding, including virtual conversations and opportunities to learn about DE&I within the company, the broader healthcare system and the wider world.

Employees hosted 22 internal events covering topics such as inclusive leadership, coping skills for the stress and trauma of racism, and building the next generation of allies. The events, which were hosted in

PROMOTING DIVERSITY, EQUITY AND INCLUSION

multiple languages and geographies, drew nearly 2,500 employees to explore some of the most critical issues of our time.

As an example, Rosalyn Chan, Kaiser Enterprise Account Manager for Northern California, produced and moderated an Asian American and Pacific Islander (AAPI) program. The program featured employee panelists and recognized the long history of exclusionary practices in the U.S. and the steep rise in hate crimes targeting the AAPI community.

“Dismantling systemic racism is not an overnight task. Work to support DE&I must be an ongoing commitment and journey,” said Rosalyn. “I’m thankful for the space Biogen and MOSAIC [a Biogen ERN] have created to support understanding – and understanding begins with conversation.”

Listening sessions following external events

After a jury found former police officer Derek Chauvin guilty on three counts of murder, our MOSAIC ERN hosted a listening session. The group recognized that while the verdict might bring a sense of closure for some, the discussion about racial justice must continue if we are to reckon with the long history of racial injustice to forge a different future together.

The global participants at this listening session – and sessions held after other external events, like the Atlanta spa shootings – shared that it is hard to compartmentalize profound feelings about this kind of highly visible event, and that Biogen’s recognition of their lived experiences makes a difference in how seen, valued and engaged they feel at work.

As our CEO Michel Vounatsos has stated many times, “Prejudice, racism and intolerance are unacceptable and continue to have no place at Biogen.” By engaging in an open and inclusive dialogue, and by supporting and learning from those whose experiences are different from our own, we can help advance meaningful change.

FEATURE

Valencia Foster: A champion for the LGBTQ+ community



Valencia with her son Miles.

When Valencia Foster, Senior Manager in Marketing and a Biogen employee of 18 years, first learned her teenage son Miles was bisexual, the family told him they loved and supported him and that they would face any challenges as a family. But on the inside, Valencia was scared for him.

“I feared now he had two areas where he could be discriminated against: as a young Black man and as part of the LGBTQ+ community. I was also dealing with my own expectations as a mom and our expectations for his future

and what this would mean,” Valencia explained.

Wanting support and perspective, Valencia joined a private Facebook group of mothers who have a similar experience, many of whom are reconciling their faith with their children’s identity. Joining the growing group was transformational for Valencia. She learned about and eventually became the State Chapter Lead of Free Mom Hugs for Southern California, an advocacy group with volunteers who offer hugs during LGBTQ+ Pride events.

“At Pride events, we hug people and it is rewarding and overwhelming at the same time. Some people are happy, but some are crying about the relationship they don’t have with their own parents,” explained Valencia. “Love your children, support, accept and affirm them. That’s our job as parents – to be our children’s champions.”

[➔ READ MORE ABOUT VALENCIA’S STORY](#)



PROMOTING DIVERSITY, EQUITY AND INCLUSION

SPOTLIGHT

Taiwan Hosts LGBTQ+ Forum

When Taiwan's annual Pride Parade was canceled due to COVID-19 safety concerns, the Biogen Taiwan affiliate collaborated with the Taiwan Equality Campaign, a unified community of the five major LGBTQ+ associations, to host a forum on unconscious bias. The

forum welcomed more than 70 participants who learned how to become more conscious about how their words and actions impact others and how they can help make our workplaces more inclusive.



DE&I STRATEGY #2

Build an intentional, high-performing, engaged, diverse and inclusive talent pipeline

Diversity unlocks innovation and locks in competitive advantage.

GOALS

+30% Increase women in director-level and above roles globally, until gender parity reached

+30% Increase diversity in U.S. manager positions and above

+30% Increase representation of people who identify as veterans, people with disabilities and LGBTQ+ in the U.S.

PROGRESS

47.6% positions at director-level and above were held by women

28.5% of Biogen's manager-level and above positions were held by ethnic or racial minorities in the U.S.

3.69% (people with disabilities)

1.28% (LGBTQ+)

3.3% (veteran and/or protected veteran)

[➔ READ MORE ABOUT OUR DE&I STRATEGY](#)

We have made steady progress in diversifying our workforce over the past three years and seek to ensure our workforce represents the world in which we live. Today, 53.9% of our workforce is comprised of females, and we have achieved close to gender parity globally for director-level roles and above.

We increased the proportion of Asian American and Indigenous or Native American employees relative to 2020. However, growth in racial and ethnic diversity has plateaued at 26% of U.S. director-level positions and above. We are working to understand this trend as we pursue our diversity goals across different levels of the company.

Demonstrating the importance we place on advancing diversity at Biogen are our:

- [Philosophy on pay equity.](#)
- 2020 CEO commitment to [MassBio's CEO Pledge for a More Equitable and Inclusive Life Sciences Industry](#), recognizing racial inequity and pledging broad, specific and measurable results-oriented action.
- Ongoing affirmation of the [CEO Action for Diversity & Inclusion™](#), the largest CEO-driven business commitment to advance DE&I within the workplace.

Equal Opportunity Employer

As an Equal Opportunity Employer, Biogen is committed to DE&I of all kinds – including race, ethnicity, national origin, religion, age, gender, gender identity, sexual orientation, disability, veteran status and diversity of thought – reflecting the communities where we operate and the patients whom we serve. We measure, track and report on our progress in advancing diversity, including disclosure of our U.S. EEO-1 (Equal Employment Opportunity) data, global pay equity data and workforce data analysis.

Reflecting our commitment to transparency and to better understanding global gender workforce trends, for the first time, we disclosed data for the Bloomberg Gender-Equality Index, which rates companies across five priorities, scoring highly on “Inclusive Culture” (86%).

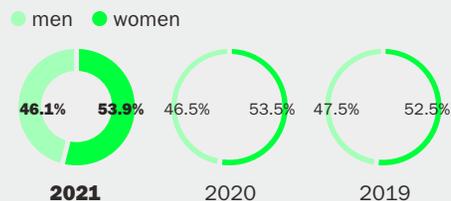
We continue to use external ratings of this kind to inform our longstanding gender equity strategies and disclosures.



PROMOTING DIVERSITY, EQUITY AND INCLUSION

Biogen's workforce demographics

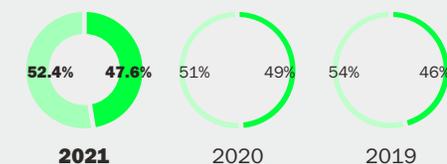
WORKFORCE



AT MANAGEMENT LEVEL¹



AT DIRECTOR LEVEL



RACE AND ETHNICITY (U.S. ONLY) IN WORKFORCE



AT MANAGEMENT LEVEL²



● Asian American ● Black or African American ● Hispanic or Latino ● Indigenous or Native American ● Native Hawaiian or Other Pacific Islander ● Two or More Races ● White

1. Women in management percentage is inclusive of all management levels, consisting of manager+ level employees.

2. Demographics are inclusive of all management levels, consisting of manager+ level employees.

AT DIRECTOR LEVEL AND ABOVE POSITIONS HELD BY RACIAL AND ETHNIC MINORITIES (U.S.)



PROMOTING DIVERSITY, EQUITY AND INCLUSION

Building a diverse talent pipeline

Biogen supports a variety of programs – internally and externally – for people underrepresented in the life sciences industry.

Fostering diverse talent

Biogen has a range of active initiatives to nurture and retain diverse talent, increasing the cadre of promotion-ready internal candidates. For example, in 2016, Biogen helped create The Partnership, Inc.'s BioDiversity Fellows Program, which nurtures the potential leadership of mid-career professionals who are underrepresented in the life sciences industry. The curriculum builds leadership competence in areas such as relationship and organizational skills. Participants attend monthly classes, are assigned executive coaches and meet in small groups for peer feedback and support. This is just one program that helps strengthen the leadership capacity of our Black, African American, Hispanic, Latino and Asian American employees. The majority of graduates have been promoted during or after program completion, and we are pleased to have had 133 employees participate in the program.

In 2021, building on the success of the Massachusetts-based BioDiversity Fellows Program, we helped launch the North Carolina Mid-Career Leadership Accelerator Program with an initial group of 40 participants from various industries. The Accelerator Program helps professionals strengthen their leadership capacity, and is designed to advance Black, African American, Hispanic, Latino and Asian American leaders in the industries driving the economy of the Research Triangle and Charlotte region in North Carolina. In February 2022, we launched a second cohort of participants.

The Partnership, Inc.'s BioDiversity Fellows Program and North Carolina Leadership Mid-Career Accelerator Program, as well as the Associates and Next Generation Executive programs, support Biogen's diverse talent pools and focus on career growth, building leadership capabilities and providing participants with tools to advance their career paths.

Inspiring the next generation

We aim to plant the seed of interest in neuroscience, helping educate underrepresented future leaders of the industry and expand our talent pool. For example, through a collaboration with Morehouse School of Medicine, we welcomed our first intern cohort from HBCUs to our Summer Health Equity Fellowship Program in 2020. The fellowship program, which engages M.D. and Ph.D. students, aims to advance health equity and improve patient experiences. In 2021, we increased overall participation from 5 to 18 interns, falling just shy of our goal to increase participation by 300% from our 2020 number.

In Latin America, the Biogen Intercontinental Region (BIR) developed FemSTEM, a campaign to empower girls and women to pursue a path in STEM. The campaign includes a podcast series and opportunities for participants to engage via Women in Bio, U.N. Women and NS Innovation in South America.

➔ [LEARN ABOUT OUR LONGSTANDING STEM EDUCATION PROGRAMS, INCLUDING THE YOUTH NEUROLOGY EDUCATION AND RESEARCH PROGRAM, CO-DEVELOPED WITH MASSACHUSETTS GENERAL HOSPITAL](#)

SPOTLIGHT

Mentoring LGBTQ+ refugees

The Tent Partnership for Refugees is a nonprofit organization that mobilizes the global business community to include refugees. Tent members, from 200 large multi-national companies, span industries from consumer goods and technology, to financial and professional services. In 2021,

Biogen joined Tent and asked 50 employees to consider giving their time to mentoring refugees. In a show of concern typical of Biogen, **in less than a week we had double the number of mentors needed**, providing each mentee with access to two employees committed to supporting their transition to a new life.



ENVIRONMENT



100%

Renewable electricity commitment sustained



14.7%

Employee engagement in Healthy Climate, Healthy Lives™



1ST

Biosimilars life cycle assessment with 3 key products



Facilities Senior Engineer Tom Choyce commutes regularly by bicycle. He's also a captain of the Rolling Clones, Biogen's bike club.



ENVIRONMENT

Biogen is taking bold action on the deeply interrelated issues that define our time: Climate, health and equity

EXECUTIVE SUMMARY 2021 HIGHLIGHTS

The climate crisis is a health crisis: in addition to the well-documented climate impacts associated with greenhouse gases, research shows that fossil fuel emissions are a leading cause of death globally, claiming 9 million lives each year and potentially harming brain health. As a pioneer in neuroscience, Biogen aims to be a catalyst for positive change through Healthy Climate, Healthy Lives™, a 20-year, \$250 million commitment to advance climate, health and equity.

In 2021, Biogen advanced efforts to go beyond net zero and eliminate all fossil fuels from operations, beginning with zero emissions by 2040 – the first Fortune 500 company to set that ambitious Science Based Targets initiative (SBTi)-approved goal. To further our commitment to 1.5°C climate science in 2022, Biogen has set a net zero target of 2045 across the entire value chain, guided by SBTi's net zero corporate standard, and is currently seeking SBTi approval for this goal.

With oversight from the Executive Team, corporate Board of Directors and functional leadership, as well as employee engagement at all levels, Biogen made good progress on Healthy Climate, Healthy Lives™ activities in 2021 including:

- Transitioning to an all-electric vehicle (EV) fleet, with an EV program in 12 countries.
- Performing comprehensive energy audits of our U.S. operations sites with a focus on phasing out scope 1 emissions by 2030.
- Sustaining our 100% renewable electricity commitment.
- Creating Sustainable Drug Development principles and integrating them into several critical stages of the development process.

- Completing a My Green Lab pilot program in 14 R&D and Product Technology Development labs to make our science even more sustainable.
- Continuing work to phase out plastic in secondary packaging, as well as completing a life cycle assessment of several products.
- Collaborating with key suppliers and industry peers to amplify the impacts of Healthy Climate, Healthy Lives and work to decarbonize the pharmaceutical sector.
- Engaging 14.7% of employees in climate-related benefits and programs at work, at home and in our communities.
- Collaborating with global leaders, advancing the science of climate and health and working to influence climate policy to improve health outcomes, particularly for vulnerable populations. Key efforts are underway with the Harvard T.H. Chan School of Public Health, MIT, the World Economic Forum and the World Business Council for Sustainable Development, among others.

Biogen also is sustaining our focus on water, waste and other environmental priorities, and is honored to be recognized for environmental leadership including:

- Climate Leadership Conference's Climate Leadership Award for Biogen CEO Michel Vounatsos.
- 2021 winner of U.S. Chamber of Commerce Foundation's Best Sustainability Program.
- Top Sustainability Advocate Award in Asia for Biogen Japan.

“The Lancet Countdown called climate change “the biggest global health threat of the 21st century.””

CLIMATE GROUP
EV100

RE 100

BUSINESS AMBITION FOR 1.5°C  

Advancing Healthy Climate, Healthy Lives™

Striving for fossil fuel free operations

According to a [Lancet report](#), long-term exposure to air pollution – even in concentrations below U.S. national standards – is associated with an increased risk of Alzheimer’s disease. This is a risk factor that society can change by reducing our reliance on fossil fuels, which also contribute to the climate crisis.

In line with our participation in the U.N. Business Ambition for 1.5°C, Biogen is working to transform our operations to enhance efficiency, speed electrification and eliminate fossil fuel emissions by 2040.

Decarbonizing our facilities and processes

The [2022 climate report](#) from the Intergovernmental Panel on Climate Change (IPCC) shows that the climate crisis is accelerating, with deaths from floods, droughts and storms already 15 times higher in vulnerable regions. The authors state that to avoid mounting loss of life, biodiversity and infrastructure, ambitious, accelerated action is required, along with rapid, deep cuts in greenhouse gas (GHG) emissions. Biogen is taking action to eliminate our use of fossil fuels, beginning with zero emissions by 2040.

From 2019 to 2021, we achieved a 6% decrease in our direct GHG emissions from sources that are controlled and/or owned by Biogen. In that same timeframe, we decreased our emissions of carbon monoxide (CO) by 45% and nitrogen oxides (NO_x) by 22%, while ensuring there were no significant increases in emissions of sulfur dioxide (SO₂), volatile organic compounds (VOCs) or PM_{2.5} air pollution, which can have harmful health impacts.

Our renewable electricity strategy includes onsite generation, reducing demand through efficiencies, direct purchase of green power and virtual power purchasing agreements (VPPAs). This marks a shift toward more impactful purchasing, actively exploring direct purchasing and options for VPPAs that can help expand the market for renewable energy. Where necessary, Biogen also purchases unbundled renewable energy credits (RECs).



Renewable electricity initiatives like direct purchase of green power, virtual power purchasing agreements, and unbundled renewable energy credits will help Biogen reach its goal of eliminating fossil fuel emissions by 2040.

In 2021, Biogen sustained our 100% renewable electricity commitment. Our 2021 progress includes:

- Sourcing directly from a hydropower plant for our site in Solothurn, Switzerland, which we began last year.
- Continuing to source hydropower directly from the Harriman Hydro Plant in Readsboro, Vermont to power our corporate headquarters in Cambridge, Massachusetts.
- Beginning the VPPA process in 2021, with the intention to execute in 2022.

ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

Developing sustainable products and packaging

Last year, we made progress in developing Principles for Sustainable Drug Development, addressing Biogen's multi-franchise portfolio with circular economy principles. Currently, we are working to build on a successful 2021 pilot of My Green Lab in which the 14 labs were awarded Green Lab Certification: four received Green (highest level), four Platinum and six Gold. This year, we expect approximately 65 lab groups to participate in total.

We also are reviewing packaging solutions for our full product portfolio and conducting life cycle assessments (LCAs) to develop a roadmap toward more sustainable alternative materials for our legacy products. To advance these goals, we are developing collaborations with suppliers to increase the proportion of sustainable material in our packaging systems and the percentage of renewable energy to produce our packaging, from glass vials to cardboard.

When it comes to our product packaging, we have many considerations, with the most important being focused on patients. We must ensure the packaging of our life-saving therapies maintains the safety and quality of the product while providing convenient access. We also are working to make our packaging more sustainable by reducing its life cycle impact.

In balancing product quality, protection and access with environmental concerns around plastics, we have a hierarchy in considering plastic packaging adjustments:

- Avoid plastic use, including replacing plastic where possible.
- Reduce plastic use.
- Reuse plastics, where we can do so safely.

At the end of 2020, we developed a new concept of packaging design and material. The design was accepted in 2021 to support our Interferon packaging platform for autoinjector (Plegridy IM and Avonex Next Generation). The packaging system is based on the replacement of plastic material and bleached cardboard by a more sustainable molded fibers tray combined with a cardboard based on grass fibers and paper (variable percentage of recycled fibers), which provide better end-of-life options.



Biogen is shifting to an electric vehicle fleet by 2025 as part of its target to become free of fossil fuels.

The patient response to the packaging innovation implemented during the Human Factor study was overwhelmingly positive. We plan to apply that new concept of 100% recyclable and biodegradable material to the packaging of the interferon platform by 2021, reducing an estimated 80% of CO₂-associated emissions.

In 2022, we initiated the development of a new secondary packaging design based on the same platform approach. The plan is to propose this new design for ADUHELM®, TYSABRI® and our biosimilar products.

Expanding our electric vehicle fleet

We are transitioning our entire vehicle fleet to electric by 2025, with a goal of 100% battery electric vehicles (BEVs). We began with a pilot across the U.S. and European affiliates with adequate BEV availability and charging infrastructure. The program includes home charger installation with each vehicle, significant expansion of office charging

ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

“ Fossil fuel related air pollution is responsible for one out of every five deaths globally. Nearly 80% of these deaths could be avoided by reducing pollution levels to the WHO’s new air quality guidelines.”

and accounts with leading public charging networks. To advance our fossil fuel free ambition, the program will match 100% of electricity consumed with renewable electricity.

Currently, we are exploring a pilot program in Japan, and expect to expand in other markets as charging infrastructure and vehicle availability allow. We recognize that a broader policy framework is required to affect change at scale and are proud to be part of EV100, which seeks to make electric transport the new normal by 2030.

Engaging employees

We are inspired by our colleagues who are innovating to address climate, health and equity, and proud to offer a range of opportunities for our employees to engage at work, at home and in our communities.

Last year saw strong participation in new benefits designed to help Biogen employees reduce their use of fossil fuels at home, as well as the rapid growth of ourIMPACT, an Employee Resource Network focused on climate, health and equity (See “[program progress](#)” chart). ourIMPACT hosted more than 20 events on topics including EVs, zero waste, environmental justice, sustainable food, coping with the climate crisis and more.

In 2021, Biogen hosted our first Healthy Climate, Healthy Lives Employee Innovation Challenge, which encouraged employees to share promising ideas around climate and health equity goals. We hosted events attended by more than 1,000 employees and received 180+ ideas from 14 sites worldwide.



Dan Blake was one of the first Healthy Climate, Healthy Lives Employee Innovation Challenge winners.

We are working to implement many of the ideas, including the four challenge winners:

- **Fossil fuel reduction by gene therapy suppliers:** Expand expiration dates to reduce waste and decrease emissions from manufacturing (Dan Blake, Manufacturing Sciences).
- **Global Packaging Development:** Eliminate 80% of insulated solutions by 2025 (Laurent Dionet, Packaging).
- **Plastic Drum Recycling Partnership:** Recycle plastic drums for shipping and storage of media powders (Bill Scott, Manufacturing Sciences).
- **Rechargeable Injector Pen:** Develop a durable and reusable pen that allows for the insertion of a new cartridge and a new needle for every dose (Anders Niklason, BBU Commercial Account Manager).



ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

SPOTLIGHT

Carbon-Free Challenge: Japan reduces CO₂ emissions by 3.2 tons

In 2021, Biogen's Japanese affiliate launched a Carbon-Free Challenge to see how much carbon emissions they could reduce in April, which is Earth Month.

They began with a virtual discussion on how making small changes to their habits and behaviors could make a big impact for the environment. More than 150 employees got involved, deciding to walk instead of taking a bus, eliminating single-use plastics and eating a lower-carbon diet, as examples.

By the end of the Carbon-Free Challenge, employees reduced their combined carbon emissions by 3.2 tons, the same amount of carbon captured by 50 trees over 10 years. If participating employees maintain their new habits, it could reduce 38 tons of carbon in one year – equivalent to providing energy for about 15 houses annually. For this work, Biogen Japan won the Top Sustainability Advocate in Asia Award from the Asian Corporate Excellence and Sustainability Awards.

Collaborating with suppliers

Responsible supply chain and procurement

We are building on our near-term supplier engagement goals with ongoing efforts to develop a robust responsible sourcing program, and we established a Steering Committee to advise on sustainable sourcing. We are developing a process for evaluating supplier ESG risk against our maturity model and plan to begin direct engagement with key suppliers to accelerate their transition to renewable energy, transparent ESG reporting and science-based targets.

[➔ READ MORE ABOUT OUR RESPONSIBLE SUPPLIER PROGRAM](#)

We recognize that there are significant opportunities yet to be realized and are committed to progress.

Advancing net zero supply chain goals

Our supply chain accounts for more than 85% of Biogen's greenhouse gas (GHG) emissions, and we have set net zero supplier targets, which are pending approval by the Science Based Targets initiative ([See "program progress" chart](#)).

At COP26, Biogen was one of 10 global pharmaceutical and biotech companies to launch Energize, a new program to increase access to renewable energy for the sector's supply chain. A program initiated by Schneider Electric and Carnstone, Energize includes AstraZeneca, GSK, Johnson & Johnson, Merck, Novartis, Novo Nordisk, Pfizer, Sanofi and Takeda, alongside Biogen. Together, we aim to work toward value chain decarbonization.

Through Energize, pharmaceutical suppliers have the opportunity to learn more about the renewable energy market, receive guidance on power purchase agreements (PPAs) and access and contract for renewable energy.

In January 2022, Biogen became one of the inaugural customers for [United Airlines Eco-Skies Alliance](#) program and for [JetBlue's Sustainable Travel Partners Program](#). These partnerships enable Biogen to reduce business travel emissions and provide a customized analysis for more accurate emissions reporting and tools for planning and target setting to support more sustainable travel decisions.



Grew our electric vehicle program to
12 COUNTRIES



ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

PROGRAM PROGRESS

Program Element	Focus	2040 Goal	Interim Target	Progress Highlights
100% FOSSIL FUEL FREE OPERATIONS 	FACILITIES	100% renewable electricity (RE)	<ul style="list-style-type: none"> 100% RE. 	<ul style="list-style-type: none"> Sustained our 100% RE commitment from 2014. Member of the RE100. From 2019 to 2021, achieved a 6% decrease in scope 1 GHG emissions. From 2019 to 2021, decreased scope 3 emissions 7%.
		Reduce absolute scope 1 and 2 GHG emissions 100% from a 2019 base year	<ul style="list-style-type: none"> Reduce absolute scope 1 and 2 GHG emissions 55% by 2032 from a 2019 base year. 	<ul style="list-style-type: none"> Launched technical assessments to identify pathways to fully decarbonize three major Biogen facilities.
	PRODUCTS & PACKAGING	All products achieve and sustain more than 90% of green chemistry targets	<ul style="list-style-type: none"> Integrate green chemistry principles into all stages of therapy development by 2023. 100% Biogen lab participation in My Green Lab with 50% receiving Green certification or higher by 2025. 	<ul style="list-style-type: none"> Established new green chemistry targets. 14 Biogen labs participated in a My Green Lab pilot in 2021. VUMERITY® analysis achieved a 43% reduction in greenhouse gas emissions and a 33% reduction in waste.
		Eliminate, minimize or closed-loop recycle all fossil fuel derived plastics across all business functions	<ul style="list-style-type: none"> Complete initial product assessments by 2022. 	<ul style="list-style-type: none"> Engaged MIT on initial plastics assessment. Conducted complete lifecycle assessments on three products. Eliminated 2,600 pounds of fossil fuel derived plastics from waste processes in North Carolina alone. Signed the Business Call for a U.N. Treaty on Plastic Pollution.
		Eliminate plastics in secondary and tertiary packaging	<ul style="list-style-type: none"> PVC-free and phase out plastic packing trays by 2025. Prototype a reusable autoinjector by 2028. 60% of packaging is sustainable by 2030. 	<ul style="list-style-type: none"> Working to pilot bio-sourced packaging in place of plastic.
	VEHICLES	Zero emissions	<ul style="list-style-type: none"> Transition 100% of Biogen's vehicle fleet to electric by 2025. Deploy infrastructure for workplace charging at 30+ Biogen locations. 	<ul style="list-style-type: none"> Grew our electric vehicle program to 12 countries. Installed infrastructure including 49 workplace chargers as well as at-home charging for employees. Member of the EV100.
FINANCE	Actively support other institutions in their efforts to combat climate change by increasing investments in high-performing ESG companies and investment funds	<ul style="list-style-type: none"> Consider relevant and appropriate investment options annually. 	<ul style="list-style-type: none"> Engaged with Biogen financial advisors to evaluate ESG-focused companies and funds and other investment options with an eye toward enhancing long-term risk-adjusted returns. 	



ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

Program progress

Program Element	Focus	2040 Goal	Interim Target	Progress Highlights
ENGAGING EMPLOYEES 	INNOVATION AND ACCELERATED ACTION	Assist employees to go fossil fuel free in their homes	<ul style="list-style-type: none"> Offer an employee benefit that covers the cost differential for 100% Renewable Energy at Home. Fossil Fuel Free employee incentive program 	<ul style="list-style-type: none"> 991 employees enrolled as of Dec. 31, 2021. Inspired 180 employee idea submissions to Biogen's inaugural Innovation Challenge on climate, health and equity. Launched new program to offset the costs of switching to electric appliances and other goods, with 839 employees having participated as of Dec. 31, 2021.
		Engage employees at work	<ul style="list-style-type: none"> Create a climate-related Employee Resource Network. 	<ul style="list-style-type: none"> Launched ourIMPACT in 2020, with 1,069 employees having participated as of Dec. 31, 2021.
		Enable employees to invest in ESG options in eligible retirement plans	<ul style="list-style-type: none"> Consider relevant and appropriate investment options. 	<ul style="list-style-type: none"> Engaged with Biogen financial advisors to evaluate ESG-focused companies and funds and other investment options with an eye toward enhancing long-term risk-adjusted returns.
NET ZERO SUPPLY CHAIN 	ENGAGING SUPPLIERS	Reduce scope 3 emissions 90% by 2045 from a 2019 base year	<ul style="list-style-type: none"> 80% of suppliers by spend to set science-based targets on climate by 2025. 	<ul style="list-style-type: none"> 18% of Biogen's top 80% of suppliers, by spend, have set or pledged set SBTi-approved targets.
		90% of suppliers by spend to use 100% renewable electricity	<ul style="list-style-type: none"> 50% of suppliers by spend to use 100% renewable electricity by 2030. 	<ul style="list-style-type: none"> 26% of Biogen's top 50% of suppliers, by spend, have committed to 100% RE by 2040.

Collaborating with global leaders

Driving impact at scale requires collaborative, cross-sector efforts. Biogen is working with global leaders to drive innovation, mitigate environmental and health impacts, and influence policy.

Advancing the science on climate, health and equity

As a science-based company, Biogen is committed to the Healthy Climate, Healthy Lives™ initiative, which includes a number of efforts to advance the science on climate, health and equity.

Scientific Advisory Council

Biogen is convening a new Healthy Climate, Healthy Lives™ Scientific Advisory Council composed of seven recognized experts in issues surrounding climate, health and equity. Representing four continents, the members bring expertise ranging from neurology and epidemiology to atmospheric science and physiology. Biogen looks forward to learning from and collaborating with this collective as we work to advance science, with an initial emphasis on the impacts of climate on brain health.

ADVANCING HEALTHY CLIMATE, HEALTHY LIVES™

Understanding of potential link between air pollution and dementia

It is well-established that air pollution is detrimental to human health. What has been less clear is the potential connection between air pollution and dementia, although studies on the subject have proliferated in recent years. In 2021, Biogen worked with the Harvard T.H. Chan School of Public Health NIEHS Center for Environmental Health to conduct the most comprehensive systematic meta-analysis to date on air pollution and dementia.

Presented at the 2022 American Academy of Neurology conference, the analysis found that the data highly suggest small air pollution particles (PM_{2.5}) are a risk factor for dementia. The Harvard meta-analysis includes studies across nine countries on three continents and, for the first time, includes prospective cohort studies which follow participants over time. The results have been submitted for peer review and will be shared at the American Academy of Neuroscience (AAN) 2022 annual meeting.

“The data are clearly pointing toward PM_{2.5} playing a role in risk of dementia,” said senior author Professor Marc Weisskopf, Harvard T.H. Chan School of Public Health. “More data would clearly still be helpful, in particular, studies with methods that actively assess all study participants. Some key questions persist. For example, exactly when these exposures are most relevant is still unclear; and identifying biological mechanisms underlying these relations would be very useful.”

Building an advanced new climate-health model

We also are working to use existing data in new ways to spur insights and action. Notably, in 2021, we announced an enhanced collaboration with the MIT Joint Program on the Science and Policy of Global Change and the Technology and Policy Program to develop a state-of-the-art integrated model of how various climate actions impact public health. A new model has been constructed to enable scenario development, and new metrics and approaches for model evaluation are being tested.

This new tool is designed to give policymakers and other stakeholders a game-changing tool to make data-driven decisions on which climate actions can deliver the greatest public health benefits, particularly for vulnerable communities. By incorporating the economic benefits of



“The data are clearly pointing toward PM_{2.5} playing a role in risk of dementia.”

Marc Weisskopf

Professor, Harvard T.H. Chan School of Public Health

positive health, the model can enable policymakers, companies and other stakeholders to set new climate-health targets. The model was previewed at the Forum of the MIT Joint Program on the Science and Policy of Global Change in March 2022.

To help translate targets into action, in 2021, Biogen became the first biotech company to join the MIT Climate and Sustainability Consortium, a leading group of 13 global businesses, including Accenture, Apple, Verizon and IBM, collaborating to advance climate innovations.

We also are continuing our work with the Harvard T.H. Chan School of Public Health Center for Climate, Health, and the Global Environment (C-CHANGE) and Americares to help under-resourced healthcare clinics better address climate risks.

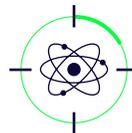
[➔ LEARN MORE HERE](#)

Advocating for action

In a [joint statement](#), 230 medical journals globally reported that “the greatest threat to global public health is the continued failure of world leaders to keep the global temperature rise below 1.5°C.”

Biogen is engaging with global leaders and advocating for action. For example, Biogen CEO Michel Vounatsos serves on the World Economic Forum (WEF) Alliance of CEO Climate Leaders and, in 2021, we expanded our involvement, becoming a founding member of the WEF Alliance for Clean Air.

The World Business Council for Sustainable Development’s (WBCSD) [Healthy People, Healthy Business project](#) – a cross-sectoral coalition of 23 leading companies, co-chaired by Biogen and Solvay – has been working closely with the scientific community to better understand the



18%

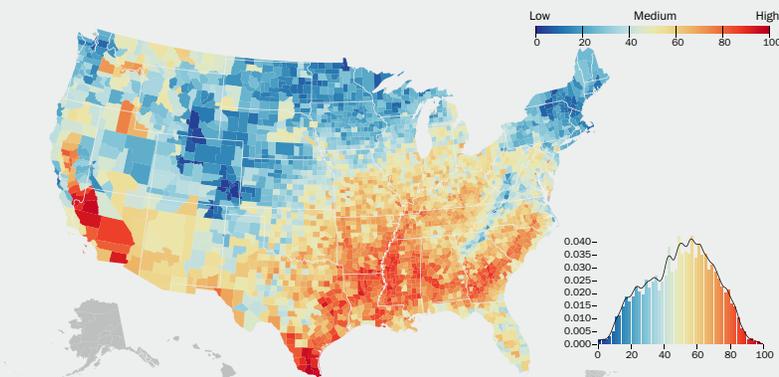
of Biogen’s top 80% of suppliers, by spend, have set or pledged to set SBTi-approved targets

PROMOTING ENVIRONMENTAL SUSTAINABILITY

relationship between the environment and human health, as well as the urgent actions needed to secure a livable future. The work of the coalition explores how business can:

- Embed a culture of health and well-being at the workplace.
- Support healthy consumer lifestyles.
- Build resilient and accessible health systems.
- Accelerate action on climate, nature and equity informed by planetary health science.

A NEW MODEL OF CLIMATE AND HEALTH RISKS



One application of the tool being developed with MIT (pictured) is a combined metric of health risk from poor air quality (exposure to particulate matter) and temperature stress, weighted by the fraction of the population below the poverty level in each county. This is helping to rapidly identify “hotspots” where climate and health-related risks are combining in areas in which people have fewer resources to adapt to the resultant harm.

A small increase in exposure to [air pollution] leads to a large increase in COVID-19 death rate. In the U.S., Black Americans are subjected to higher levels of air pollution than white Americans regardless of their wealth, according to the EPA.

[Harvard T.H. Chan School of Public Health](#)

This work has involved dialogue during [Climate Week 2021](#), a dozen workshops and other collaborative efforts to identify practical paths that businesses from all sectors can take in leading efforts that raise awareness of this issue, build new partnerships and integrate health more prominently into decision-making to drive co-benefits for people and planet. We expect this work to result in a report that can guide businesses and serve as a platform for advocacy and accelerated, ambitious action on climate, nature and equity with a view to COP27 in November of this year.

Biogen also publicly supported multiple open letters and position statements calling for accelerated action in line with a 1.5°C temperature target. Most recently, we engaged with advocacy groups, government and energy suppliers to voice our strong support for a more rapid expansion of EV infrastructure in North Carolina.

SPOTLIGHT

Collaborating for change at COP26

Biogen had a visible presence at COP26, the 26th United Nations Climate Conference in 2021, which brought over 30,000 leaders together to collaborate on climate action. Biogen worked with the United Nations to host a panel entitled “[Promoting Climate, Health & Equity is Everyone’s Business](#),” which explored the latest science on climate change and the way it impacts human health, particularly for vulnerable populations.

The U.K. National Health Service (NHS) made a historic commitment to become the first national health system to set a net zero goal for 2040. [We are proud that Biogen’s CEO Michel Vounatsos is part of the NHS International Leadership Committee to advise on this ambitious vision.](#) This endeavor involves commitments to net zero carbon emissions from key NHS suppliers, including Biogen, as well as leaders such as the CEOs of Apple, GSK, Novo Nordisk and Unilever, among others.



Promoting environmental sustainability

While climate is an urgent priority, Biogen also continues to advance our commitments to a range of other environmental concerns, including water and waste.

Biogen actively participates in industry groups to collaborate on environmental issues of shared concern. Examples include the [Pharmaceutical Product Stewardship Working Group \(PPSWG\)](#) in the U.S., the EHS Expert Group that advises the European Federation of Pharmaceutical Industries and Associations (EFPIA) in Europe, the Pharmaceutical Supply Chain Initiative (PSCI), the Climate Group and Ceres, among others. In addition, we work to monitor and respond to emerging legislation and stakeholder input on environmental issues.

Advancing Sustainable Drug Development

In 2021, Biogen developed new Principles of Sustainable Drug Development to promote sustainability, process safety and efficiency in the ways Biogen discovers, develops and manufactures potentially life-changing therapies.

This effort brings both longstanding and new initiatives together under a common framework that involves:

- Designing processes that protect workers, patients, and the environment.
- Minimizing the use of potentially toxic, hazardous, biological, and environmentally harmful substances.
- Minimizing the use of energy and other resources in critical processes in the early stages of development.
- Purchasing renewable energy as part of Biogen’s long-term commitment to go beyond net zero to fossil fuel free.
- Avoiding waste, including reducing, refining, replacing, renewing and recycling any commodity that cannot be eliminated.
- Working toward continuous improvement.

Last year, Biogen also created a Sustainability Team, which is working to incorporate the Principles into company-wide ways of working. Specifically, Biogen plans to:

- Establish a baseline and assess the current state of processes around sustainability, as well as any limiting factors.
- Set goals and metrics to measure progress on sustainable product development.
- Review progress and goals periodically.

For example, we now are using flow chemistry to increase energy efficiency with some of our large reactors. With this approach, instead of cooling an entire reactor to -78°C , which is required for some investigational medicines, we only have to cool down part of a flow chemistry process where the relevant reaction is happening.

To limit our use of elements that are in limited supply, we are applying enzymes to initiate some chemical reactions or switching to earth abundant metal catalysts. We not only avoid the cost of a rare element but also ensure our processes are sustainable for future generations.

As part of our Sustainable Product Development efforts, Biogen also has committed to champion best practices in sustainability with a range of stakeholders, including our global workforce, suppliers, vendors, contractors and the external community.

Biogen participates in a number of collaborations, including with the American Chemical Society’s Green Chemistry Institute (ACS GCI) Pharmaceutical Roundtable and the IQ Consortium’s Green Chemistry Working Group. They allow us to collaborate in the pre-competitive space with leaders in the field from both academia and industry and take advantage of online tools to develop greener processes.



PROMOTING ENVIRONMENTAL SUSTAINABILITY

“My Green Lab aims to eliminate emissions through a unique intersection of action and engagement in laboratories. This program works to empower lab employees to address sustainability in their spaces, allowing for both footprint reduction in traditionally resource-intensive lab spaces and the growth of a culture of sustainability.”

Tooba Gilani (pictured right)

Senior Associate I, EHS and My Green Lab champion



Analyzing our product lifecycle

To equip us with new insights into product impacts across materials, manufacturing, distribution and end-of-life issues, Biogen recently completed a life cycle assessment (LCA) of three biosimilars products – Benepali™, Flixabi™ and Imraldi™ – across a total of 30 configurations in four countries, providing actionable new insights on climate, air pollution, water and land use. We focused on Germany, Sweden, France and the U.K. because these countries cover a range of relevant variables including the number of SKUs used, multipackage presentations and interest in ESG criteria.

SPOTLIGHT

Green chemistry

According to the U.S. Department of Energy, scientific labs use anywhere from three to 10 times more energy and water than typical office buildings and generate 5.5 metric tons of plastic a year worldwide.

As part of our commitment to sustainable drug development, in 2021, approximately 470 employees in 14 Biogen labs piloted Green Lab Certification through the nonprofit My Green Lab. This program is recognized by the United Nations' Race to Zero campaign as a key measure of progress toward a zero-carbon future and sets the standard for best practices for laboratory sustainability.

Biogen's effort assessed the labs' operations and materials, including fossil fuel-derived plastics, which are widespread in the pharmaceutical space. To minimize plastic consumption, the labs made several changes, including working with key suppliers to procure reusable

containers and adjusting processes to reuse plastic items such as vials, pipettes and petri dishes, as well as consolidating orders to minimize plastic packaging use. The pilot sparked other lab-specific and company-wide sustainability changes, including reduction of energy use, initiation of multi-site recycling and waste audits, and an infrastructure lighting review.

After implementing these sustainable practices, four labs were awarded Green Lab Certification (highest level), four Platinum and six Gold.

By 2023, Biogen aims to have more than 40 labs complete the baseline assessment of the Green Lab Certification. By 2025, the target is for 50% of Biogen labs to achieve a Gold certification or higher. Reducing energy use and plastic waste is helping accelerate action to meet our climate goals and is an important part of our broader commitment to implementing the principles of sustainable drug development.



PROMOTING ENVIRONMENTAL SUSTAINABILITY

ANALYSIS

Our product lifecycle

Understanding the lifecycle of biosimilars

We are mapping the lifecycle of a growing range of products to identify opportunities for reduced environmental impact from “cradle to grave.” This can provide actionable new insights into product impacts across materials, manufacturing, distribution and end-of-life issues.

1. Package design for therapy

2. Device materials

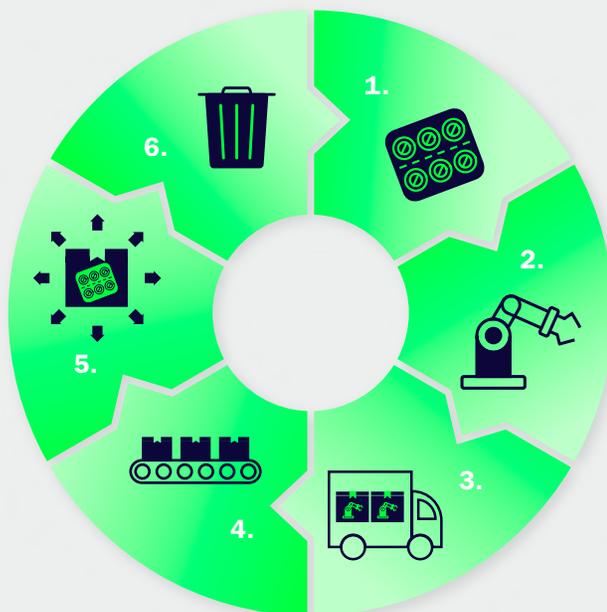
3. Upstream transport

(device materials, packaging materials, packaging suppliers)

4. Packing energy (at Sharp & Grunenthal)

5. Distribution of finished products via refrigerated trucks

6. End-of-life of packaging & devices (recycling, disposal)



Our approach

Biosimilars can offer a range of benefits to patients and health systems, improving patient access to leading biologic therapies while also generating significant cost savings.



[➔ READ MORE IN PIONEERING SCIENCE](#)

As we work to expand our biosimilars portfolio, another way we can promote public health is by reducing environmental impact.

Elements included in our lifecycle analysis

3 PRODUCTS

- Benepali
- Flixabi
- Imraldi

6 PACKAGING OPTIONS

- 1-pack
- 2-pack
- 4-pack
- 5-pack
- 6-pack
- 12-pack

3 DELIVERY MECHANISMS

- Pen
- Prefilled syringe
- Vial

4 COUNTRIES

- France
- Germany
- Sweden
- U.K.



PROMOTING ENVIRONMENTAL SUSTAINABILITY

Analysis – Our product lifecycle

Taking a science-based approach

As part of the process, we engaged with Pure Strategies, an independent outside organization, to conduct an objective, science-based analysis. The team considered several key impact categories and used a standard methodology to assess impact across each product, delivery mechanism, packaging option and country. We assessed the impact per finished product and per dose.

Impact Category	Description	Methodology
GLOBAL WARMING POTENTIAL	Potential to cause climate change by the release of greenhouse gases.	IPCC 2013 100-year
LAND USE	The amount of land transformed or occupied for a certain time.	ReCiPe 2016 Midpoint (H) V1.04/ World 2010
WATER CONSUMPTION	Amount of fresh water consumed.	ReCiPe 2016 Midpoint (H) V1.04/ World 2010
NITROGEN OXIDES (NO _x)	A measure of air pollution, these gasses contribute to the formation of smog, acid rain and ground level ozone. NO _x typically result from combustion of fuels.	Inventory data
SULFUR DIOXIDE (SO ₂)	A measure of air pollution, SO ₂ causes acid rain and affects the respiratory system. It typically results from burning fossil fuels by power plants.	Inventory data
CUMULATIVE ENERGY DEMAND (TOTAL)	Direct and indirect use of energy.	Cumulative Energy Demand V1.11
CUMULATIVE ENERGY DEMAND, NON-RENEWABLE FOSSIL ENERGY	Direct and indirect use of non-renewable fossil-based energy.	Cumulative Energy Demand V1.11

Key findings: Energy and packaging are key

While some data analysis is ongoing, preliminary findings suggest we have two key opportunities for positive impact: reducing energy used in product production and reducing packaging.

Climate impacts

We found that just a few processes are the major contributors to both the carbon footprint of the products analyzed and air pollution. These include:

- Energy to make solid bleached board for packaging, which includes the wood needed to make the board and the electricity to transform it.
- Glass vial carbon footprint due to natural gas for energy production.
- Materials for the devices, due to the energy needed to manufacture them and fossil fuels required for plastic parts.

Air pollution

The LCA also provided important insights into the key drivers of air pollution, which can impact human health:

- All sulfur dioxide (SO₂) impact is from fuel burned to create energy.
- The majority of NO_x comes from a combination of solid bleached board for packaging, product parts and supplier energy use.



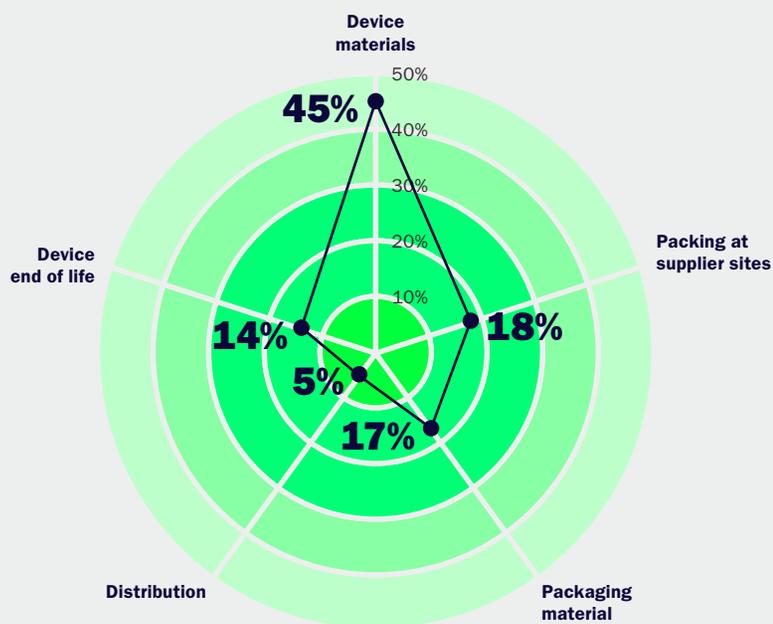
PROMOTING ENVIRONMENTAL SUSTAINABILITY

Analysis – Our product lifecycle

Land and water use

More than 90% of the impact to land use comes from the solid bleached board for cartons and trays and paper for patient inserts.

More than 98% of the water consumption associated with these products relates to hydropower, which some Biogen sites use as a source of renewable electricity.



Acting on new insights

The team is carefully analyzing the data and developing an action plan, starting with areas with the greatest potential for positive impact. We have identified several potential areas to explore, including:

- **Accelerating goals for fossil fuel free energy** – the greatest impact across the product lifecycle comes from energy use, which we are addressing via Healthy Climate, Healthy Lives™. This assessment can help us pinpoint areas of greatest concern and prioritize our investments to deliver the greatest climate and health benefits.
- **Reducing product materials** – we are considering options for less environmentally impactful materials, where patient health and safety and regulations allow. For example, polypropylene has a 55% lower carbon footprint than acrylonitrile butadiene styrene (ABS) and 75% lower than polycarbonate. Where possible, we also could consider recycled plastic. We hope to design and secure approval for reusable therapy delivery mechanisms, such as the pen. This could have a meaningful impact, since using a device twice could effectively cut the carbon impact roughly in half.
- **Packaging to meet customer preferences and patient needs** – importantly, we found that product multipacks don't necessarily have lower impact than smaller packs. This information could help us engage with customers to elevate packaging options that meet their needs with a lower environmental impact. We also are exploring alternatives to bleached paper, lighter packaging materials and ways to use less packaging overall, which could improve the customer experience while advancing environmental goals. Approaches may include removing inner cartons from multipacks; considering recycled content; and reducing tray and carton weight to lower material, upstream transport, distribution and end-of-life impacts.

PROMOTING ENVIRONMENTAL SUSTAINABILITY

Analysis – Our product lifecycle

- **Engaging with regulators around packaging requirements** – we found that the end customer location impacts each product’s environmental footprint. This not only reflects the distance to transport products, but also varying country requirements such as patient information cards that consume more paper. Patient inserts also require greater land use, energy for manufacturing and greater shipping weight. Over time, we may be able to engage with regulators and others to explore options to meet patient safety and health education goals while lessening environmental impacts.
- **Working across the value chain** – biologics are temperature sensitive and require a secure cold chain management process from manufacturing to delivery. We identified significant energy use differences across Biogen suppliers and, as part of our net zero supply chain goals, we will engage suppliers in our Responsible Supplier Program. This can help suppliers address their energy usage and processes such as injection molding, which have high energy demands.

Looking forward, we see opportunities to explore embedded assumptions around end-of-life product disposal practices and to conduct additional product LCAs to advance our goals for the environment, the patient experience and human health.



As a result of its life cycle analysis, Biogen is exploring changes like reductions in product materials and packaging that meets customer preferences and patient needs.

Focusing on water and waste

Managing water responsibly

Water plays a critical role in many aspects of Biogen’s business, including in our production processes to sterilize and clean equipment and our HVAC system, specifically cooling towers. We are working to reduce our dependence on water, recycle more of it and make sure it adheres to the highest quality and safety standards before being returned to the environment.

For example, we use grey water from the Town of Cary, North Carolina, for irrigation which, while not a significant volume, reflects our efforts in this area. As a result of efforts like this, from 2019 to 2021, we decreased our water use across Biogen operations by 15%.

We use the World Wildlife Fund’s Water Risk Filter tool to complete site water risk assessments, understand water risks among critical suppliers and learn how both may change under various climate scenarios. Based on the water risk assessment, water scarcity is identified as a low risk at all our major facilities. We transparently report our water policies, programs and progress to CDP.

Limiting pharmaceuticals in the environment

Stakeholders have expressed concern about pharmaceuticals in the environment, and notably, watersheds and oceans around the world. Biogen follows the [EU’s Strategic Approach to Pharmaceuticals in the Environment](#) via our Green Chemistry program, incentives for green design, waste reduction and wastewater treatment, among other efforts.

Since the pharmaceutical supply chain can play a role, Biogen is incorporating considerations around this issue into our [Responsible Supplier Program](#).



Reducing waste

Manufacturing medicines typically generates a large amount of waste relative to the amount of product produced. Minimizing waste reduces environmental impacts and disposal costs, and also results in more cost-effective production of medicines through a lower cost of goods.

In 2021, the MIT Sloan School of Management's Health Lab (MIT H-Lab) presented findings from a targeted assessment of ways Biogen can reduce the use of plastics (see targets above) and created a strategic environmental sustainability framework to assess the impact of key product lines. This exercise is only one part of Biogen's larger sustainability commitment.

Biogen has applied metrics with targets to all our manufacturing processes to track how much waste our processes generate. We continue to advance our waste-reduction targets and to sustain our zero waste to landfill goal, established in 2014.

From 2019 to 2021, we cut in half the total waste generated from our operations. In 2021, we also sustained 100% diversion of waste from landfill. This includes vials, boxes, pens, auto-injectables and leaflets, 43% of which are associated with product packaging and can be recycled. In the U.S., we also collect all unused products and used sharps.

“ Every stage a product passes through – from development to patient use to disposal – presents opportunities for and challenges to sustainability.”

Laurent Dionet

Senior Engineer on Biogen's packaging team



From 2019 to 2021,
WE CUT IN HALF
the total waste
generated from
our operations

In 2021,
we achieved a
99.9%
diversion of waste
from landfill

Environmental health and safety (EHS) systems

Our EHS management system is implemented in line with recognized international standards, including ISO 14001, 18001 and 50001. Every three years, we have our management system externally audited to ensure our system remains in line with evolving expectations. Our North Carolina sites continue to maintain their Carolina Star certification, and we may move forward with externally certifying our Solothurn biologics manufacturing facility to ISO 14001 and/or 50001 in the future.

Our goal is to foster a culture of sustainable collaboration internally and externally, facilitating the sharing of ideas, strategies, tools and improvements toward our vision of a more healthy, equitable and sustainable world.

COMMUNITY



\$80 MILLION

In grants, sponsorships and in-kind contributions in 2021 from Biogen and the Biogen Foundation



> 50

countries supported by the Biogen Foundation and the Community Lab since 2002



14,493

Employee volunteer hours, more than tripling 2020 hours



61,295

Students in 19 countries engaged via STEM Community Labs since 2002



3 MILLION

People supported through the Biogen Foundation and the Community Lab since 2002



\$1.9 MILLION

To support refugees from Ukraine¹



1. Reflects donations, in-kind and other forms of support from Biogen employees, Biogen and the Biogen Foundation.

One of the Caring Deeply projects was spearheaded by volunteer captain Ombeline d'Hollander. She rallied a group of employees to do gardening and help clean up ZuKi-Abenteuerland, which provides child-friendly spaces in Cham, Switzerland.



COMMUNITY

Biogen is dedicated to advancing public health and education in the places where we live and work. In 2021, we cared deeply, worked fearlessly and changed lives around the world.

EXECUTIVE SUMMARY 2021 SNAPSHOT

At Biogen, we strive to have an impact beyond our medicines by building and supporting communities through our three focus areas - caring deeply for neighbors in need, working fearlessly for health equity, and changing lives through science. This year, we celebrate a series of milestones and accomplishments reflecting these guiding principles.

We have actively supported communities and livelihoods through our corporate giving. In 2021, we provided \$14 million in medical grants and \$57 million in sponsorships to organizations around the world. We also distributed \$6 million in grants to worthy nonprofits via the Biogen Foundation. Through it all, we continue to cultivate meaningful relationships with stakeholders that share our vision of serving humanity through science and caring deeply.

Employee engagement is essential to our mission, and Biogen employees personally contributed their time and talents to our communities this year. Celebrating the 10th anniversary of Care Deeply Day, the Biogen annual day of service, we hosted a Care Deeply Challenge, calling on employees to contribute 10,000 volunteer hours in 2021. Employees

smashed the goal, serving 14,493 hours – more than triple the hours from the year prior.

Finally, we begin our celebration of the 20th anniversary of the Biogen Foundation and the Community Lab. Founded on a commitment to increasing access to science education, the Biogen Foundation remains dedicated to this aim, as well as to serving those most vulnerable in the communities in which we live and work. Since 2002, the Foundation has provided more than \$70 million to organizations making an impact in our communities worldwide.

The Community Lab, the longest-running hands-on corporate community science lab in the U.S., has continued to bolster and nourish student interest in science and biotechnology-related careers. Although for COVID safety, we have not been able to host students in person at our Community Labs in Massachusetts and North Carolina, we have shifted to provide dynamic online Community Lab experiences, to our school partners not only in the U.S., but worldwide. Through virtual science experiences and interactions with scientists and biotech professionals, we served more than 3,600 students in 19 countries in 2021.

Engaging diverse stakeholders

In recent years, we've listened to and engaged in the dialogue about stakeholder capitalism, in which companies seek long-term value creation by taking into account the needs of all their stakeholders and society at large. As a purpose-driven company, Biogen has long worked to balance and address the interests of a variety of stakeholders through our core business and community engagement initiatives.

Diverse perspectives are critical to informing our community engagement strategies and advancing our goal of a healthier, more sustainable and equitable world. We are an active member in a variety of associations and regularly engage with and listen to a wide variety of external audiences, including:

- **Biotech and pharmaceutical industry associations** such as the Biopharma Sustainability Roundtable, MassBioEd, the Pharmaceutical Research and Manufacturers of America (PhRMA) and Biotechnology Innovation Organization (BIO), where Biogen executives spoke in 2021 to encourage collaborations that address climate, health and equity.
- **Environmental groups** such as Ceres and the Environmental League of Massachusetts.
- **Government bodies and regulators** such as the U.S. government through our Small Business Program and with the FDA or the European Medicines Agency (EMA) to ensure that new and innovative therapies are commercially available to the patients who need them.



ENGAGING DIVERSE STAKEHOLDERS

- **Healthcare organizations and professionals** such as our work with the National Association of Free and Charitable Clinics, supporting efforts to promote disease awareness and education.
- **Investors, analysts and ratings agencies** through quarterly conference calls; analyst meetings; stockholder annual meetings; 10-K and other SEC-required filings; Biogen-hosted events such as our 2021 [virtual Investor R&D Day](#); and our transparent response to inquiries from organizations like S&P Global, JUST Capital, and others.
- **Local, regional and global business and community associations** such as our involvement in We Mean Business, our role chairing the Kendall Square Association Community Impact Working Group and co-chairing the World Business Council for Sustainable Development (WBCSD) working group on climate and health, and our membership in two World Economic Forum initiatives.
- **Nonprofit nongovernmental organizations** through our participation in and sponsorship of events such as the 2021 U.N. Caring for Climate conference as a UN Global Compact signatory; our grant contributions; and volunteer service with groups like Women In Bio, which is pairing 40 girls with mentors from Biogen’s Latin American affiliates to build scientific knowledge and life skills in STEM.
- **PAGs** through our work and event participation with groups such as the ones found in the [Patients section](#) of this report.
- **Universities, research institutions and centers of higher learning** such as our work with the Harvard T.H. Chan School of Public Health, Center for Climate, Health, and the Global Environment as well as the Department of Environmental Health; and with Massachusetts Institute of Technology Joint Program on the Science and Policy of Global Change, the Technology and Policy Program, Lemelson-MIT, and the Climate and Sustainability Consortium. This also encompasses our engagement with experts on issues such as health access and the links between climate, health and equity, detailed throughout this report.

Our approach to stakeholder engagement reflects our understanding of the deep interconnections between people, the planet, and prosperity. We believe it enables us to better meet the challenges of today while planning for an uncertain future.

FEATURE

Supporting the United Nations Sustainable Development Goals

Biogen’s community engagement and the Biogen Foundation’s strategy are based on three primary focus areas: caring deeply for neighbors in need, working fearlessly for health equity, and changing lives through science. These focus

areas were developed based on the nature of our business, the needs of our home communities, and the blueprint provided by the United Nations Sustainable Development Goals (SDGs). Below, we outline how our activities align with the SDGs.

Sustainable Development Goal	Biogen Group-Wide Community Efforts	Business KPI	Social KPI
	Working Fearlessly for Health Equity <ul style="list-style-type: none"> • Health system strengthening • Climate resilient healthcare • Outreach and education for vulnerable groups 	<ul style="list-style-type: none"> • Employee recruitment and engagement • Stakeholder engagement and understanding • Innovation • Reputation 	<ul style="list-style-type: none"> • Vulnerable patients benefited
	Changing Lives through Science <ul style="list-style-type: none"> • Equitable education and teacher training • Inclusive science career paths 	<ul style="list-style-type: none"> • Diverse workforce development • Employee engagement • Local community strengthening • Reputation 	<ul style="list-style-type: none"> • Students benefited • Historically underrepresented students benefited • Teachers benefited
	Caring Deeply for Neighbors in Need <ul style="list-style-type: none"> • Nutrition and food security • Clothing security • Disaster relief 	<ul style="list-style-type: none"> • License to operate • Local community strengthening • Employee recruitment and engagement • Reputation 	<ul style="list-style-type: none"> • Vulnerable people benefited • Goods and services provided

Our philanthropic contributions are accomplished through a combination of charitable donations, community investments and commercial initiatives. Work aligned with each of these SDGs is discussed in more detail in this section and throughout the report.

The community engagement commitments and programs outlined below have all benefited from the perspectives and insights of a variety of Biogen stakeholders, and for that, we are profoundly grateful.

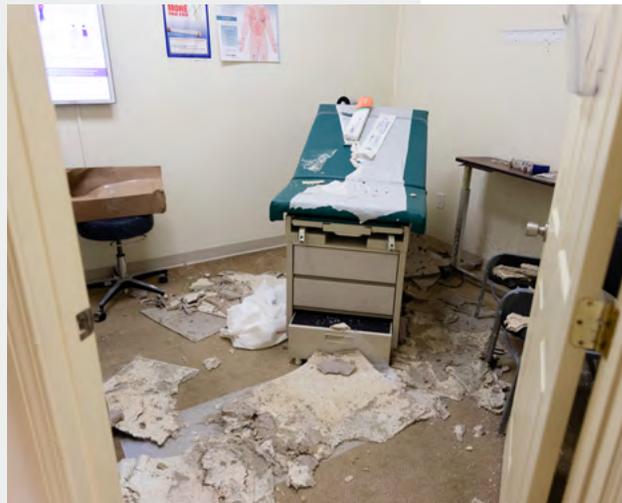
FEATURE

Building patient-centered resilience at community health clinics

The 2,800 community health clinics across the U.S. responsible for caring for the nation's most vulnerable patients are unprepared to deal with the increasing number of extreme weather events climate change is creating. To address current climate-related risks to their operations and patient health, Biogen; AmeriCares; and the Center for Climate, Health, and the Global Environment at Harvard T.H. Chan School of Public Health (Harvard Chan C-CHANGE) [teamed up to tackle the issue.](#)

Together, the organizations are creating a first-of-its-kind Climate Resilient Health Clinics Toolkit that will help clinics use available resources to better manage patient care when facing increasingly common climate health effects. A toolkit module on extreme heat has already been rolled out to pilot clinics. Modules on wildfires and hurricanes will follow later this year. Over the next five years, the project aims to reach 150 clinics that provide free or low-cost healthcare – such as primary, behavioral, emergency, maternity and specialty care – to uninsured or underinsured patients in the U.S.

“This work is foundationally about health equity,” says Dr. Aaron Bernstein, Interim Director of Harvard Chan C-CHANGE. “If we can find the means to safeguard the most vulnerable in our country, then we can surely do so for those who are better off.”



Avicenna Free Clinic in Panama City, Florida, suffered major damage from Hurricane Michael in 2018. Photo used with permission from Avicenna Free Clinic.

Advancing purpose and serving humanity through corporate giving

Reflecting our purpose and values, Biogen serves humanity by supporting communities around the world. We care deeply about creating a healthier, more equitable world by assisting our neighbors in need and engaging the next generation in science, a commitment that spans the globe.

Each year, Biogen commits significant financial support through a variety of corporate giving initiatives that positively impact the communities where we live and work. Through our corporate giving efforts in 2021, we contributed \$71 million to help serve humanity worldwide.

Grants

Our grants are financial commitments to time-limited projects or programs with identified objectives without tangible benefit to Biogen in return. In 2021, we contributed \$14 million in grants to support independent medical educational activities for healthcare providers and researchers, educational activities for patients or caregivers, fellowships, infrastructure upgrades for healthcare organizations or institutions, and other endeavors.

Sponsorships

In 2021, we provided \$57 million in contributions to eligible organizations in connection with specific events or initiatives. Our sponsorship commitments included organizations such as the International Society for Environmental Epidemiology, American Academy of Neurology Institute, and the National Minority Quality Forum, among many others.



ADVANCING PURPOSE AND SERVING HUMANITY THROUGH CORPORATE GIVING

In-kind contributions

Our in-kind donations have aided numerous organizations in helping others live and thrive. This year, we provided personal protective equipment for healthcare workers through AmeriCares; donated repurposed office furniture through Healthy Climate, Healthy Lives; and offered kitchen space at Biogen's headquarters for Food For Free's Heat-n-Eats program.

Healthy Climate, Healthy Lives™

Through Biogen's [Healthy Climate, Healthy Lives™](#), Biogen supports efforts that directly address climate, equity and health in our communities. For example, in 2021, we provided scholarship funding for low-income students to participate in the inaugural Harvard Chan C-CHANGE Youth Summit, a week-long program that trained students to be climate and public health leaders in their communities. Of the student attendees, 76% of scholarship recipients self-identified as a racial or ethnic minority or as first-generation college students. At the outset of the program, 60% of students said they had a limited understanding of climate, public health and equity. By the program's close, 100% said they had an intermediate or advanced understanding and had built relationships that would help drive their continued engagement on these critical subjects.

SPOTLIGHT

Clinic patient-centered resilience survey

To make sure the toolkit addressed the most important climate-related patient care challenges, the collaborators surveyed more than 450 clinic staff across 47 U.S. states and territories on their climate health knowledge, risks and needs. The survey produced a wealth of insights including the following:

81%

of clinic staff say their clinic has experienced some kind of disruption due to extreme weather within the past three years.

< 20%

Fewer than 1 in 5 clinic staff feel their clinic is very resilient in the face of extreme weather.

77%

of clinic staff say they do not have the knowledge or tools to implement climate change preparedness at their clinic, and more than 95% say they are motivated to use new resources to make change.

SPECIAL ANNIVERSARY

20 YEARS OF SERVING HUMANITY

Since the inception of the Biogen Foundation and Community Lab in 2002, we have been committed to serving humanity by building communities that grow and thrive and by fostering a passion for STEM in future scientists. This year, we celebrate 20 years of delivering on these pledges.

Over the course of our journey, we have striven to improve health outcomes; solve social and environmental challenges; and foster a workplace that enables our employees to thrive, support local communities, and inspire future generations of scientists. Our successes include over \$70 million in cumulative giving through the Biogen Foundation and touching the lives of more than 60,000 students through Community Lab.

Here, we reflect on our accomplishments and resolve to do even more in our next 20 years of serving humanity.

CLOCKWISE FROM TOP LEFT: 1. Pipetting has always been a core lab technique taught to students at the Community Lab. Here, a student displays her pipetting skills, late 2000s. 2. Employees packing school supplies and writing encouraging notes to students for Cradles to Crayons as a part of our 2021 Caring Deeply Day. 3. Employee volunteers are an integral part of our Community Lab programs. Here, an employee came to our 2019 Adventures in Biotech program to help demonstrate lab techniques to students. 4. A volunteer provides tutoring and education during the Kids Café afterschool program of the Food Bank of Central and Eastern North Carolina, 2015.





SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY

Biogen Foundation: serving humanity for 20 Years

As the philanthropic extension of Biogen, for 20 years, the Biogen Foundation has exemplified Biogen's Caring Deeply ethos, applying Biogen's pioneering spirit to serving vulnerable communities, working to inspire the next generation of diverse scientists and to increase health equity.

In 2003, the Biogen Foundation distributed its first grants related to disaster relief, social services, and the employee giving campaign. Committed to STEM programming from the beginning, the Biogen Foundation also supported organizations like the Museum of Science in Boston; Teach for America; and the Museum of Life and Science in Durham, North Carolina, to nurture a passion for science in young people.

Since then, our work has evolved to directly address the social determinants of health and engage Biogen employees. More recently, the Biogen Foundation has developed major commitments to youth education with underrepresented populations in neurology and neuroscience with [Massachusetts General Hospital and Duke University](#) and through the [STAR Initiative](#). To inspire our employees to give back, we created our Care Deeply Volunteering program in 2011, leading to more than 100,000 employee volunteer hours to improve our world and help others in need.

“The work of the Biogen Foundation illustrates the culture of caring deeply at Biogen. We have a longstanding history of championing and fostering equitable science education for students and teachers and are committed to supporting the most vulnerable in the communities where we live and work.”

Kate Dawson

Head of Therapeutics Development Unit and Chair of the Biogen Foundation



SPOTLIGHT

Technorama and the Biogen Foundation: Organizational bonds that strengthen science education

In 2014, [Technorama](#), a science center based in Zürich, Switzerland, was having trouble finding corporate supporters for its mission. With an introduction to the STEM-education focused Biogen Foundation, a multi-year collaboration was born. With the Biogen Foundation's support, over the past eight years, Technorama has installed two biology labs, permitting thousands of children to see and experience science up close.

In addition, the center has extended its hours of operation and has consequently increased its number of visitors.

The COVID-19 pandemic has been a challenge for Technorama as it lost some of its funding from external sources. The Biogen Foundation's support, however, did not waver and allowed the center to continue sharing science with the community.

“We found a reliable partner in the Biogen Foundation, especially during the COVID-19 pandemic,” says Thorsten D. Künnemann, the director at Technorama. “While other companies ended their support, the Biogen Foundation stayed with us.”

One of the two biology labs at Technorama that Biogen Foundation funding helped to support. Photo used with permission from Technorama.



SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY

Along the way, the Biogen Foundation has also contributed funds for emergency relief to victims of Hurricane Katrina and the Southeast Asia tsunami and committed approximately \$12 million to support COVID-19 relief efforts around the world. Over the past 20 years, we have given more than \$70 million, building inclusive science education opportunities and career paths, strengthening health systems and working to ensure everyone in our communities has access to healthy food.

Today, the Biogen Foundation supports organizations that focus on three areas: caring deeply for neighbors in need, working fearlessly for health equity, and changing lives through science.

➔ [TO LEARN MORE ABOUT THE BIOGEN FOUNDATION, VISIT WWW.BIOGEN.COM/FOUNDATION](http://WWW.BIOGEN.COM/FOUNDATION)

“As the Foundation and Community Lab each celebrate 20 years of impact, our support of our 325 Red Sox Scholars would not be possible without our longstanding partnership. Our Red Sox Scholars always look forward to visiting the Community Lab, whether in person or virtually, and we could not be more grateful for all of the dreams that Biogen has helped to inspire in our students’ lives.”

Bekah Salwasser

Executive Director of the Red Sox Foundation & Executive Vice President, Social Impact for the Boston Red Sox

FEATURE

The Biogen Foundation brings science to 3 million people through the North Carolina Science Festival

In 2010, the Biogen Foundation stepped up to support the North Carolina Science Festival, then a two-week series of programs. The founders, however, quickly realized that two weeks wasn't enough to share the wonders of science with students and others. With the Biogen Foundation's support, the Festival has blossomed into a month-long celebration of science that has now reached almost 3 million people statewide through interactive programs and school-based science activities every April.

The Festival has always focused on serving historically marginalized and underserved communities, and the collaboration with Biogen has allowed the Festival to deliver

scientific content that embodies accessibility and inclusion. For example, Biogen's support enabled the creation of Hidden No More, an event that traveled to the state's public universities celebrating women – particularly Black women – in science, who have been historically excluded. Future generations of scientists have also been inspired through programs like SciMatch, which in 2021 paired Biogen scientists with 100 middle school teachers for virtual discussions with students about science as a career path.

Thanks to the Biogen Foundation, the Festival has been able to engage all 100 counties in North Carolina in its activities.



“We have connections with thousands of scientists, and we serve hundreds of public schools each year,” said Dr. Crystal Harden, Director of Program and Inclusion Initiatives at Morehead Planetarium and Science Center, which organizes the Festival. “It’s because of Biogen’s support that we’re able to do that.”

Children experience firsthand the wonders of science at the North Carolina Science Festival with Biogen intern Steve Mow. Photo used with permission from the North Carolina Science Festival.

SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY

The Biogen Foundation through the years

1. Partnered with the Italian National Trust, Biogen volunteers refurbish the historic Monastero di Torba in Gornate Olona, Italy, for Care Deeply Day (2013).
2. **Food For Free** volunteers prepare meals for food insecure families using kitchen space at Biogen's headquarters through the Heat-n-Eats program (2022). Photo used with permission from Food For Free.
3. Biogen volunteers process donated children's items at a Cradles to Crayons Giving Factory (2019). Photo used with permission from Cradles to Crayons.
4. Visitors experience the Exploration Hub at the Museum of Science in Boston. The Hub was the result of a \$2.5 million grant from the Biogen Foundation to support the museum's Hall of Human Life exhibition in 2014. Photo used with permission from the Museum of Science.
5. In 2014, the Biogen Foundation made a three-year pledge to support the North Carolina Science Festival as part of the Biogen Foundation's continuing commitment to STEM education. Photo used with permission from the North Carolina Science Festival.



SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY

Testimonials

“ I am so happy that the Community Lab has given me the opportunity to combine my passion for teaching with the work I perform developing life-saving medicines.”

Yik Lam

Senior Engineer at Biogen and Community Lab volunteer



“ The Lemelson-MIT Program has had the good fortune of working with the Biogen Community Lab since 2020 when we launched the Biotech in Action program. Since that time, more than 1,400 high school students, many of whom are underrepresented in STEM, have benefited from our unique approach to introduce them to biotechnology, invention and the college and career paths available to them. It has been incredibly rewarding to see so many students fully engaged in powerful online learning while seeking a greater understanding of an industry and considering how they will improve the lives of others through discovery and invention!”

Stephanie Couch

Executive Director, Lemelson-MIT Program

“ The Community Lab is the embodiment of Biogen’s commitment to STEM education. By providing hands-on exposure to science and science careers, we foster scientific curiosity in young people and lay the groundwork for a diverse next generation of STEM leaders our world so profoundly needs.”

Susan Alexander

Chief Legal Officer and Corporate Secretary of Biogen



“ The Biogen Community Lab is an amazing space that I was introduced to in 2018 and loved it so much that I kept coming back throughout the years. In 2018, I took part in the Adventures in Biotechnology summer program, and that summer program made me fall in love with STEM and sparked my interest in biotechnology as a career. I am so thankful for the connections I made and the vast amount of knowledge that I have gained while taking part in activities at Community Lab!”

Esteban Tarazona

Former Community Lab student participant

SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY**FEATURE**

Meaningful impact, lasting memories

Some things are just worth coming back to.

Jorge Sanchez-Salazar, a scientist with Biogen in Cambridge, Massachusetts, has worked with Biogen during different periods of his career since he got his start with the company in 1999. Recently, he's returned to the company not only because of his fondness for the people here, but also because of his memorable past experiences – in particular with the Community Lab.



Jorge Sanchez-Salazar, seen here volunteering at Community Lab in the late 2000s, raves about his past involvement with the program.

He had heard about the Community Lab in 2002 through fellow employees who were involved in the program. Spurred by his desire to bring science education to kids, Jorge began volunteering as a mentor for Somerville high school students, assisting them with their science fair projects.

Jorge distinctly remembers his first mentoring experience with a student who wanted to determine if the cornmeal in her muffin mix was genetically

modified. He helped her outline the project; create an experiment timeline; obtain a genetically modified organism test kit; perform the experiment on the mix and other forms of corn; and analyze the data. Delighted with the experience and the student's enthusiasm, Jorge went on to help many others develop their projects and realize the wonders of science.

As an advocate for STEM education, Jorge was thankful for Biogen's support of the Community Lab. "Having a solid science background allows students to make informed decisions, which makes them better citizens. That's why I liked being involved in the Community Lab."

MAKEUP OF the 2021 Student Population of the Community Lab and Lemelson-MIT's Biotech in Action Program

12%

International

50%

Low-Income

34%Historically
Underrepresented in
STEM**59%**

Female or Non-Binary

Biogen Community Lab: Celebrating 20 years of innovation & impact

Biogen's Community Lab, now the longest-running hands-on corporate science community lab in the U.S., started 20 years ago with a simple mission: to ignite and foster a love of science in students all over the world.

Since we opened the doors to the first Community Lab in Cambridge, Massachusetts, in 2002, hosting two one-week sessions with 50 students, extracting DNA from living cells, the Community Lab has reached more than 61,295 students in 19 countries, opening their eyes to the excitement and possibilities of careers in science.

The Community Lab is composed of several state-of-the-art hybrid facilities that engage students in biotechnology experiments and interactions with scientists and other biotech professionals. We focus on recruiting students from backgrounds that are historically underrepresented in science and introducing them to the wide array of career options in the biotechnology industry.

Our intention from the start was to broaden our reach and expose even more students to the fun of learning science. In 2014, we made good on that intention and expanded Community Lab from Cambridge to our facilities in Research Triangle Park, North Carolina, to bring in-person science education to students in the state. And more recently, we brought the Community Lab to new international locations and launched a Virtual Summer Lab with MIT to widen our impact.

In 2021, we built renewed momentum and drove global expansion for the Community Lab as we developed and implemented three "Biogen-MIT Biotech in Action" programs with MIT, focusing on Alzheimer's Disease and enrolling students from across the globe. We also continued collaborations with Lemelson-MIT, Kenan Fellows and the National Institute of Environmental Health Sciences to offer professional development opportunities to teachers around the world.



SPECIAL ANNIVERSARY 20 YEARS OF SERVING HUMANITY

 **The Biogen Community Lab through the years**

1. Red Sox Scholars use the same lab equipment at Community Lab that's used by Biogen employees in their work (2016). Photo by the Boston Red Sox, used with permission from the Red Sox Foundation.
2. A Biogen employee provides guidance to Community Lab students at Citizen Schools (late 2000s).
3. Sixth grade students from Wake Forest Middle School in Wake Forest, North Carolina, learn about biotechnology career pathways with Biogen employees through the Kenan Fellows Program (2014). Photo used with permission from the Kenan Fellows Program.
4. Students from Warren New Tech High School in Warrenton, North Carolina, conduct an experiment in Biogen's Community Lab (2019).
5. Biogen employee Alazar Ayele assists students with an experiment at the Biogen Community Lab in Cambridge, Massachusetts (2018).
6. A Biogen employee talks through science problems with a student at Citizen Schools (late 2000s).





10 years of Caring Deeply

At the very heart of Biogen's caring deeply ethos are our people. In 2021, employees gave of their time and financial resources to support their communities and to serve humanity. Through our matching gifts program, employees donated more than \$2.2 million to organizations around the world, giving generously to address crisis situations, including the situation in Afghanistan and the COVID-19 spike in India.

This past year also marked the 10th anniversary of Biogen Care Deeply Day, our annual day of service. In celebration, we hosted a Care Deeply Challenge, inviting employees to jointly contribute 10,000 volunteer hours to their communities. Employees enthusiastically answered the call around the world, serving not just 10,000 but more than 14,000 hours, smashing our global goal and tripling the number of volunteer hours from the prior year.

The Challenge also intersected with our Healthy Climate, Healthy Lives commitment. In Seoul, South Korea, for example, employees "plogged" for one of their Care Deeply Challenge activities, which is a local term used to describe exercising while picking up trash to beautify communities. Halfway around the world, employees in Bogota, Colombia, also took part in tree planting and reforestation efforts in their region to support the climate through their volunteering.



SPOTLIGHT

Biogen Colombia receives Care Deeply Challenge Award

During Biogen's Care Deeply Challenge, employees from office sites around the world not only came together with the goal of cumulatively contributing 10,000 volunteer hours, but they also competed to attain the title of the office contributing the most volunteer hours.

In 2021, the honor of highest volunteering office went to Biogen Colombia. To achieve this feat, employees were involved in one of four team activities: planting an ecological garden of vegetables and aromatic plants that will be used for sale and obtain an economic benefit for the Marquez Sidewalk community; painting and playing games with 50 3- to 8-year-old children through Fundación Mariana Novoa, which supports child well-being, nutrition and artistic training; reforesting a protected area with 20 new trees;

and upgrading the Mariana Novoa Foundation facilities with newly painted, colorful walls for the children to enjoy.

"We are a company committed to changing lives, creating solutions that will give well-being and teamwork," says Nathalie Michelou Pulido, Corporate Affairs & Patient Advocacy Manager at Biogen Colombia. "Colombia is a very unequal country. The Biogen team is sensitive to these realities, and therefore we are committed to helping and providing well-being."

Upon winning the Care Deeply Challenge, Biogen Colombia selected as the recipient of a \$10,000 donation from Biogen the Fundación Tiempo de Juego, a nonprofit that builds life skills among children and youth through sports, arts and technology, inspiring them to become agents of change.

Image above: Reforestation and tree planting by employees Juan David Ramirez and Juan José Esmeral Pavajeau in Bogota, Colombia.

EMPLOYEE VOLUNTEER HOURS



2020¹

4,370 HOURS



2021

14,493 HOURS

1. Volunteer hours were lower than average in 2020 due to the COVID-19 pandemic.

10 YEARS OF CARING DEEPLY



Care Deeply in pictures

1. Inge Havermans of Biogen Switzerland fills bags of food at her local food bank.
2. Biogen volunteers pack food for the nonprofit Oak City Cares in Raleigh, North Carolina.
3. Biogen employee Derly Ducuara helps plant a garden to benefit the Marquez Sidewalk community in Bogota, Colombia.
4. U.S. Biogen employees Diego Cortina De La Fuente, Laura Putnam and Sal Piazza virtually create Hope Bags for hospitalized or homeless children with the **Happy Hope Foundation**.
5. Biogen Korea employee Se Eun Hwang “plogs” during the Care Deeply Challenge.





10 YEARS OF CARING DEEPLY

What it means to be a Care Deeply Challenge Captain

Overseeing the coordination of the Care Deeply Challenge required special volunteers with the skills and desire to execute this substantial event. To lead the way, Care Deeply Captains at each Biogen affiliate location organized local activities.

As a Care Deeply Captain at Biogen Italy, Marta Satgia was the main point of contact for all of the Italian employees that participated in the Care Deeply Challenge. Her tasks were varied and included liaising with the 10 nonprofit organizations that participated, defining the volunteering activity with each of them, drafting internal communications for employees about the event, and tracking and entering volunteer hours.

Marta’s inspirations for serving as a Captain were both internal and external. Not only was she interested in improving her management and organizational skills, but Marta, who joined Biogen during COVID-19, also wanted to learn more about the company she works for and meet more of her colleagues.

Although the role of Captain can be challenging, Marta feels that it’s equally rewarding.

“When you develop a great program and when you see your colleagues enthusiastic about giving their time to other people, it’s very satisfying. I definitely recommend being a Captain of the Care Deeply program.”



Marta Satgia rallied Biogen Italy’s employee volunteers as a Care Deeply Captain.

FEATURE

Caring More Deeply, three employees record more than 500 hours of volunteer time



Monika Dreik empowers girls through her volunteering with the Polish Scouting and Guiding Association.



Tamar Kalina packs boxes to assist food insecure families at Tomchei Shabbos of Bergen County in New Jersey.



Walter Roehrer literally takes volunteering to another level – leading mountaineering groups for the German Alpine Club.

In 2021, three employees took the credo of Caring Deeply to another level: Monika Dreik, Tamar Kalina and Walter Roehrer logged over 500 volunteer hours each.

Monika, Tamar and Walter achieved this success in very different ways. Monika was an International Commissioner for the Polish Scouting and Guiding Association, where she served in a management and administrative capacity to build life skills and empower girls all over Poland. Tamar dedicated her time to several organizations but highlighted her service at Tomchei Shabbos of Bergen County, at which she packed boxes of food for families in need on a weekly basis. As a certified

instructor for mountaineering in the German Alpine Club, Walter volunteered his time to guide glacier hikes.

The volunteers expressed thanks for Biogen’s programs like Community Currency and donation matching that enhances the financial contributions that they’re able to make through their volunteering.

Participating in Care Deeply volunteering is something that they all intend to continue, emphasizing the societal and personal benefits. “Volunteering truly fulfills me as a person,” says Tamar. “I cannot think of anything more rewarding.”



Biogen Foundation: 2021 highlights

THE BIOGEN FOUNDATION'S THREE FOCUS AREAS

1

Caring Deeply for
Neighbors in Need

2

Working Fearlessly
for Health Equity

3

Changing Lives
Through Science

The Biogen Foundation succeeded once again in our commitment to care deeply for neighbors in need, work fearlessly for health equity, and change lives through science. We provided over \$8 million to a range of organizations aligned with our vision and that are moving the needle to serve humanity.

1. Caring Deeply for neighbors in need Supporting broad humanitarian needs, including disaster relief and recovery, that are necessary for human health.

Recognizing that the COVID-19 pandemic has continued to increase the number of food insecure families, the Biogen Foundation augmented its commitment to vulnerable populations this past year.

Our support of the Food Bank of Central & Eastern North Carolina helped 850+ children and teens receive 109,500 healthy meals in Wake, Durham and Orange counties across 22 child nutrition sites in 2021. We were honored to support programs like the Kids Café, which makes free hot meals, and provides homework help and character-building activities to low-income children and teens; the Weekend Power Pack Program, which gives students nutritious food for the family during out-of-school times; and School Pantries that provide groceries to low-income students when they are dropped off or picked up from school.

In Massachusetts, we have helped fund the Greater Boston Food Bank (GBFB) since 1993. When GBFB began serving twice as many families in need last year, we doubled down on our assistance to help our neighbors struggling with food insecurity. Thanks in part to our commitment, GBFB distributed more than 117 million pounds of healthy food – the equivalent of over 96 million meals – in 2021.

2. Working fearlessly for health equity Supporting leading organizations in addressing social determinants of health and strengthening health systems so everyone can access the care they need.

The COVID-19 pandemic has also brought to light many of the disparities in health outcomes related to social determinants of health, such as economic stability and healthcare access and quality. In 2021, the Biogen Foundation bolstered its support of programs that address these divides.

To that end, the Biogen Foundation collaborated with the relief and development nonprofit Americares in a gift matching program to help Americares raise up to \$500,000. These funds supplied health workers and patients with infection-control supplies, oxygen and other urgently needed equipment in 100 clinics across India with a focus on vulnerable communities in the 10 hardest-hit states.

The Biogen Foundation also supported CareMessage, the largest patient engagement platform in the U.S., which equips at-risk communities without broadband internet with access to accurate healthcare information using basic text and voice messaging. Support from the Biogen Foundation allowed the program to expand in North Carolina, supplying greater numbers of vulnerable people with accurate vaccine information as well as details regarding food, shelter and health insurance.



BIOGEN FOUNDATION: 2021 HIGHLIGHTS

FEATURE

Aspiring diverse future scientists: the Biogen Foundation's STAR Initiative

The Biogen Foundation's [STAR Initiative](#) is a four-year, \$10 million investment that boosts STEM education equity in Cambridge and Somerville, Massachusetts. Launched in 2018, STAR (Science, Teacher support, Access & Readiness) coordinates a multi-stakeholder network that includes six high-performing nonprofits to serve students historically underrepresented in STEM college and career pathways – notably, students of color.

STAR tackles issues like helping students pass Algebra 1 by the end of freshman year, which is essential for future work in Calculus, a strong predictor of STEM career preparedness and interest. In Cambridge, since STAR began in 2018, 97.3% of participating ninth grade students from low-income families have passed Algebra 1, compared to 83.5% of all Cambridge ninth-graders from low-income families. Similarly, Somerville has seen a five percentage-point increase in STAR students taking the more advanced Math Concepts 1 and a surge from 8% to 20% participation in Geometry, differences that can be life-changing for the students involved.

In 2021, STAR grantees served 897 students, 226 public school teachers, and more than 85 out-of-school-time educators in Cambridge

and Somerville. Within the student population, 77% were students of color, 58% were from low-income families, and 26% were English language learners.

Among last year's highlights, the Biogen Foundation's support of nonprofit Citizen Schools allowed for students in Somerville to partner with local mentors from Biogen to create [WOW! Projects](#), which reflected the STEM class curriculum and represented the unique interests and personalities of each student. The STAR program was also [highlighted](#) in the Boston Business Journal's Partners with Purpose feature that showcases companies and nonprofits working together in novel ways.



The STAR Initiative helps students from [Breakthrough Greater Boston](#) (seen here) and participating schools to excel in math and other STEM subjects. Photo used with permission from [Root Cause](#).

3. Changing lives through science

Supporting a holistic approach to learning, including equitable access to education and teacher development and inclusive science career paths.

Minorities have been [historically underrepresented](#) in the sciences, with Blacks today accounting for 6% of STEM jobs while the Latino population comprises only 8% of the STEM workforce. The Biogen Foundation continued to make gains in changing this trend in 2021, inspiring students from underserved communities to pursue careers in STEM.

The Biogen Foundation collaborated with the Massachusetts Biotechnology Education Foundation to bring science to classrooms in underserved and underrepresented communities by connecting students and educators with Biogen employees to foster science literacy and excite students to enter careers in the life sciences. Similarly, the Biogen Foundation's support of the North Carolina Museum of Natural Sciences offered teacher professional development with Biogen scientists and student science lab experiences at the museum.

IN THE FIRST THREE YEARS, THE STAR INITIATIVE HAS SERVED:



3,000 students



500 teachers



130 out-of-school-time educators

“These mentors were so important for my diverse set of kids. They were able to connect on so many levels – where they came from, what language they spoke. They made a major impact on how these students saw themselves and what they can do in the future.”

Tara Beardsley

science teacher, Winter Hill Innovation School, Somerville, Massachusetts

BIOGEN FOUNDATION: 2021 HIGHLIGHTS

FEATURE

Biogen's commitment to diversifying the neurology field with Massachusetts General Hospital and Duke University School of Medicine

As part of its DE&I strategy, Biogen aims to foster a diverse pathway of STEM talent, and the Biogen Foundation has collaborated with Massachusetts General Hospital (MGH) and Duke University School of Medicine to advance that vision in the neurology field.

With MGH, the Biogen Foundation jointly developed the first-of-its-kind [MGH Youth Neurology Education and Research Program](#) in 2020, which has employed 60 Boston-area students to date and engaged nearly 500 students worldwide in didactic sessions with leading neurologists and neuroscientists at MGH. The 2021 student group came from varied backgrounds and were paired with neurology mentors from an assortment of research disciplines. Throughout the summer, students collected, analyzed, and interpreted scientific data and participated in online fora on career development, innovation, and leadership skills. As a result, student interest in pursuing neurology or neuroscience careers increased from 54% to 100% over the 7-week program.

In summer 2021, Biogen expanded on this model with Duke University School of Medicine. Twenty students in the [Summer Training in Academic Research \(STAR\) program](#), which emphasizes training underrepresented high school and college students from historically Black colleges and universities, participated in a neuroscience curriculum on topics including the dopaminergic system and motivation and the biology of sex and gender identity. Following the program, a subset of the students was selected to receive ongoing mentoring in neuroscience research.



According to the organizers of both neurology programs, the Biogen Foundation has been instrumental in furthering programmatic innovation. "The thing that I love most about the Biogen Foundation is that not only are they passionate about engaging with the community, they're passionate about advancing equity," says Nicté Mejía, MGH Youth Neurology Education and Research Program Director. Adds Nancy Zucker, one of the organizers of the Duke STAR program, "It was clear from our interactions that Biogen is committed to helping to build a sustainable workforce of practitioners that are cared for while they are caring for others."

[➔ LEARN MORE ABOUT WAYS BIOGEN IS HELPING BUILD A DIVERSE TALENT PATHWAY](#)

The Duke Summer Training in Academic Research class of 2021 received innovative neuroscience education and mentoring to further their career aspirations. Photo used with permission from the Duke University School of Medicine.

“ The MGH Youth Neurology Education and Research Program supported me by providing opportunities to dive deeper and experience the field of research. I am grateful to be part of this community.”

Hridhi Islam

2021 MGH Youth Neurology Education and Research Program Intern, University of Massachusetts at Dartmouth Class of 2022, incoming student in the Biomedical Engineering Ph.D. Program at the University of Rochester



Dr. Kate Dawson, Head of Therapeutics Development Unit and Chair of the Biogen Foundation, leads a virtual discussion with the students of the MGH Youth Neurology Education and Research Program. Photo used with permission from the MGH Youth Neurology Education and Research Program.



BIOGEN FOUNDATION: 2021 HIGHLIGHTS

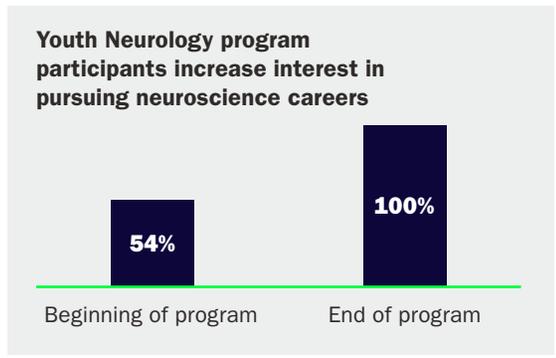
Food For Free’s Just Eats Program collaborates with the Biogen Foundation to reduce food insecurity

In February 2021, the sources of food that nonprofit Food For Free relied on disappeared, and families in need were at risk of going hungry in the midst of the COVID-19 pandemic. That’s when the Biogen Foundation stepped in as an inaugural sponsor of Food For Free’s Just Eats Grocery Box program, a new initiative to reduce food insecurity in the Greater Boston area.

The Biogen Foundation committed \$100,000 – matching \$50,000 from Life Science Cares and funding an additional \$50,000 – to help Just Eats distribute 3,000 boxes of food each week through their network of community partners, such as food pantries, low-income housing sites and schools. Filled with produce, grains, and proteins, these packages have been dispersed widely to diverse populations.

“The financial contribution from Biogen has supported the equivalent of getting about 120,000 meals out into the community,” said Food For Free CEO Sasha Purpura.

In addition to supporting Just Eats, Biogen also donates kitchen space at Biogen’s headquarters for Food For Free’s Heat-n-Eats program, which re-purposes prepared foods into single-serving meals for people with limited access to kitchens.



MAKEUP OF MGH YOUTH NEUROLOGY 2021 PROGRAM PARTICIPANTS



Black, Hispanic or Native American



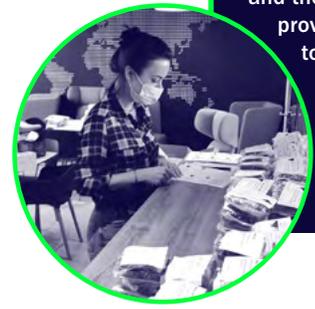
Female or non-binary



First-generation students



From immigrant families



SPOTLIGHT

Providing humanitarian assistance for the people of Ukraine

Biogen is heartbroken by the war in Ukraine and stands firmly with the global community in providing humanitarian aid. Consistent with our values, the Biogen Foundation launched an employee giving campaign that is doubling employee donations. Together we have already raised a total of more than \$550,000 and counting, to provide medical supplies, food, water and other essential support through five charitable organizations: the International Medical Corps, Polish Humanitarian Action, the Swiss Red Cross, UNICEF and UNHCR. In addition, the Biogen Foundation is supporting the Swiss Red Cross and Poland Humanitarian with grants totaling \$250,000.

We are also working closely with patients, the medical community and governments to ensure people living with spinal muscular atrophy (SMA) displaced by the war in Ukraine have access to treatment across Europe. To that end, Biogen and the Biogen Foundation have provided a €25,000 grant to SMA Europe and are in communication with our

partners to guarantee continued patient care.

This assistance is part of an overall commitment of \$1.9 million that also includes Biogen in-kind contributions of essential supplies, employee relief bonuses and volunteering.

“We are inspired by Biogen employees worldwide who are stepping up to meet the moment, and we are particularly humbled by our colleagues in Poland, who are opening their hearts and homes to Ukrainian refugees and finding many other ways to serve,” says Biogen Poland employee Adrian Laorden, who, among his other volunteering efforts, recently prepared 1,100 sandwiches for Ukrainian refugees with fellow Biogen employees. “It’s very touching that people are working together across the globe to help refugees from Ukraine in need of assistance.”

We are closely monitoring this evolving situation and exploring additional ways to support our neighbors in need.

Patrycja Cogiel of Biogen Poland labels some of the 1,100 sandwiches to be delivered to Ukrainian refugees.



REPORTING



5,000+

Stakeholders reached via ESG materiality assessment



EARLY ADOPTER

Of UNGC new reporting framework



CONTINUED ADVANCEMENT

of WEF Stakeholder Capitalism metrics



1ST

Diversity, Equity & Inclusion (DE&I) report



Pictured (from left): University Programs Recruiting Partner Jess Stewart and Talent Acquisition Lead Dennis Mercier.



REPORTING

Advancing transparency on material ESG issues

EXECUTIVE SUMMARY 2021 SNAPSHOT

As a science-based company, we believe in the power of data to help identify opportunities, shape strategy and track progress. Data disclosure can build trust, and Biogen has long been responsive to evolving stakeholder expectations around transparent reporting on material ESG issues.

In 2021, we conducted a new materiality assessment, reaching out to over 5,000 stakeholders, spanning employees, healthcare professionals, patient advocates, government officials, and community groups. More than 94% of respondents see Biogen as a pioneer in neuroscience, with broad strengths in R&D pipeline and innovation; disease awareness and treatment; patient advocacy; environmental issues, notably climate change and water; DE&I and racial justice; community engagement and philanthropy; and economic performance. We also heard that stakeholders want us to do even more to address health access and equity and health systems strengthening, as well as talent recruitment and retention, priorities we share.

Those perspectives have helped inform our ESG priorities and our approach to reporting. Biogen's 2021 Year in Review was prepared in accordance with the Global Reporting Initiative (GRI) Standards, informed by the Task Force on Climate-related Financial Disclosures (TCFD) and the United Nations Sustainable Development Goals (SDGs). As we continue to seek new ways to address stakeholder interests through the highest standards of reporting, this year we have more fully aligned data disclosures with the core Stakeholder Capitalism Metrics, published by the International Business Council of the World Economic Forum in 2020. In 2022, Biogen was proud to join the United Nations Global Compact Communication on Progress as an early adopter, as part of our commitment to transparently disclosing our contribution to the United Nations Sustainable Development Goals.

- WWW.GLOBALREPORTING.ORG
- WWW.SASB.ORG/STANDARDS
- SDGS.UN.ORG/GOALS
- WWW.WEFORUM.ORG
- WWW.FSB-TCFD.ORG

Evolving stakeholder expectations for data disclosure

We understand that a range of stakeholders want to know about corporate ESG performance. According to [Marsh & McLennan](#), companies most attractive to students and young professionals have ESG scores 25% higher than the global average. [Gartner](#) found 85% of investors consider ESG factors in their investments, yet only one in 10 find the ESG information they want in corporate disclosures.

Biogen continually strives to enhance the ways we track and report material ESG data, in line with stakeholder interests and global standards. In 2021, we released our first Diversity, Equity and Inclusion (DE&I) report, including EEO-1 data, global pay equity data, and workforce data breakdowns. Reflecting our efforts to be a catalyst for positive change on climate and health, we also disclosed air pollution data, notably NOx, SOx, and VOCs.

As we continue to seek new ways to address stakeholder interests through the highest standards of reporting, this year we have more fully aligned data disclosures with the core Stakeholder Capitalism Metrics, published by the International Business Council of the World Economic Forum in 2020. We have continued reporting in accordance with the Global Reporting Initiative (GRI), as we have since 2013, as well as guidelines from the Sustainability Accounting Standards



Board (SASB), the Task Force on Climate-related Financial Disclosures (TCFD) and the United Nations Sustainable Development Goals (SDGs). Biogen is a signatory of the United Nations Global Compact and in 2022 is an early adopter of the organization’s evolved reporting program. This report also is informed by the Biopharma Investor ESG Communications Guidance, which identifies ESG issues that are a high priority for the biopharmaceutical sector and recommends an approach to disclosure useful for investors.

Biogen recognizes that ESG reporting expectations and standards are shifting, with anticipated updates to GRI Standards, the International Financial Reporting Standards Foundation’s announcement at COP26 of the International Sustainability Standards Board (ISSB), the work of the Value Reporting Foundation, and potential action by the U.S. Securities and Exchange Commission (SEC), among other developments.

We are watching those developments with interest, and we remain deeply committed to continuous improvement. We will continue to listen to and learn from our stakeholders, deepening our understanding of the issues they care about as we bolster our ESG efforts and the ways we communicate about our progress and challenges.

2021 ESG materiality assessment

Our methodology for assessing material ESG issues

Biogen has regularly conducted ESG materiality assessments since 2009, and in 2021 we asked a broad range of stakeholders to share their priorities, their expectations of us and their views on our performance on 27 ESG issues.

As part of the process, we invited input on an expanded range of issues, from our core business to the broader health system, seeking to understand where stakeholders see us exceeding expectations and where they see opportunities for us to strengthen our performance.



IN 2021, BIOGEN CONSULTED WITH THE FOLLOWING STAKEHOLDERS

- Suppliers
- Employees
- Investors
- NGOs
- Industry associations
- Rating organizations
- Researchers
- Patient Advocacy Groups
- Healthcare professionals
- Competitors



2021 ESG MATERIALITY ASSESSMENT

Our top ESG materiality issues

MATERIALITY MATRIX

Access & Pricing Expanding the availability of affordable medicines for patients, including the world's poor, by improving the obtainability of medicines and developing appropriate pricing models. This encompasses working with PAGs.

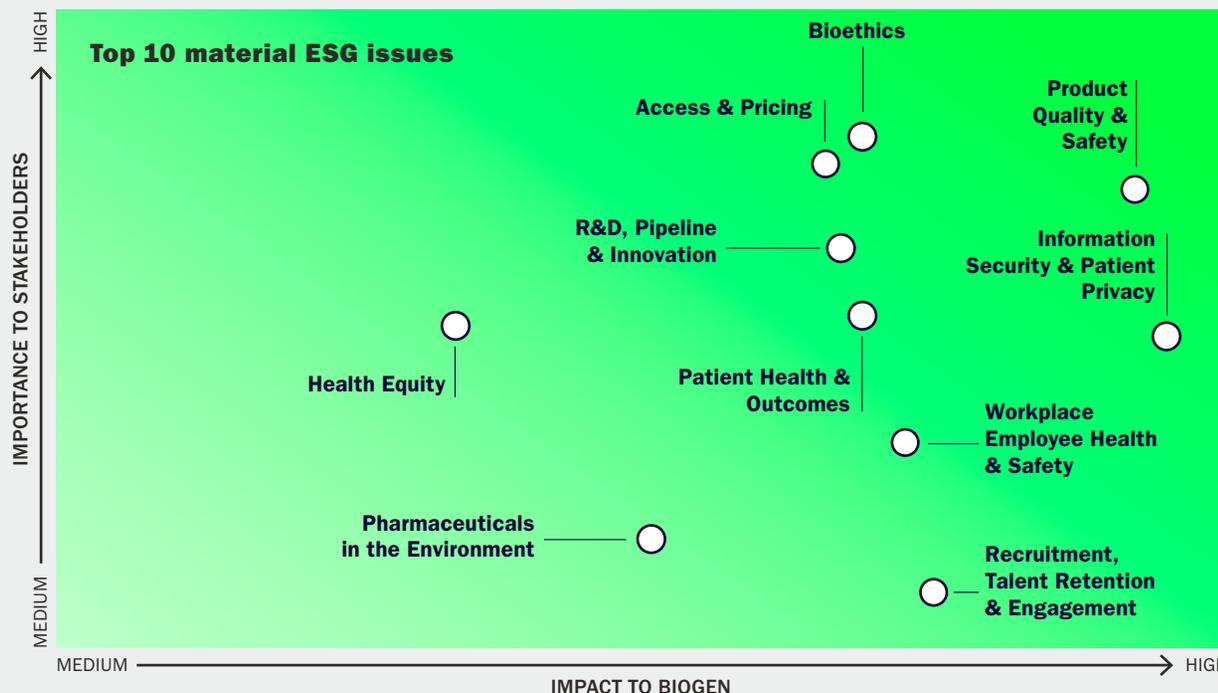
Bioethics Addressing ethical issues emerging from advances in biology, medicine and technology, linked to public health, public policy, law, environment and well-being.

Health Equity Allowing people to attain their full health potential so that no one is marginalized based on their social position or other circumstances.

Information Security & Patient Privacy Adopting and implementing policies and practices that safeguard the privacy of patient information and protect data from unintended intruders.

Patient Health & Outcomes Ensuring that patients are properly and effectively informed regarding medicine usage and the continuous improvement in health outcomes occurring as a result of usage. Outcomes may be measured clinically (e.g., physical examination, laboratory testing and imaging), self-reported or observed.

Pharmaceuticals in the Environment Addressing types of environmental pollution from discarded pharmaceuticals, including in rivers, lakes and other bodies of water, and assessing and mitigating possible impacts and health risks.



Product Quality & Safety Pursuing high standards in product quality and safety, including management systems and auditing, that meet or exceed regulatory requirements.

R&D, Pipeline & Innovation Developing innovative products that treat systemic, challenging and complex medical issues and address the unmet medical needs of patients around the globe.

Recruitment, Talent Retention and Employee Engagement Attracting and retaining top talent while also finding ways to keep employees motivated and committed to the company.

Workplace Employee Health & Safety Undertaking efforts to assess and mitigate potential risks that could impact the health, safety or welfare of workers and implementing activities or programs to provide employees with a safe and healthy workplace.



2021 ESG MATERIALITY ASSESSMENT

Analyzing the data

Our multi-phase analysis included a rank ordering of issues and a review of open-text responses. We combined responses with similar meanings but different wording (e.g., “talent” and “employees”) to uncover patterns in the data.

Since combining all stakeholder responses could be misleading, we calculated the average for each stakeholder group and also combined group averages to create a variety of actionable data views. Among other things, we evaluated:

- **Internal versus external perspectives:** We considered whether external stakeholders and employees see Biogen differently, and which audiences hold the highest expectations of us – and on which issues.
- **Themes by stakeholder group:** We looked for significant similarities and differences in how each category of stakeholders sees priority issues. For example, we considered whether investors and suppliers expect different things from Biogen than NGOs or researchers do.
- **Issue importance vs. performance:** By comparing issue importance to stakeholder views of both Biogen’s current and expected performance, we were able to determine whether any gaps were the result of high expectations, low perceptions of performance, or both.

Sharing key findings

Our analysis found that the relative priority order of issues was largely similar across stakeholders, with internal and external stakeholders agreeing on eight of their top 10 issues.

This exercise also uncovered some important shifts. Compared to our last ESG materiality assessment, five of the top 10 issues remained constant, and five new issues entered the top 10. Among the issues that grew in importance are bioethics; workplace/employee health & safety; talent recruitment, retention and engagement; pharmaceuticals in the environment; and health equity.

Stakeholder input leads us to see these changes as driven by the ongoing COVID-19 pandemic and the “Great Resignation,” heightened environmental concerns, and the renewed social justice movement.

Acting on material ESG issues

BUILDING ON BIOGEN’S MANY STRENGTHS



Stakeholders perceive key material issues and Biogen strengths as including

Our progress

Community Engagement & Foundation Giving

Biogen and the Biogen Foundation contributed more than \$80 million in grants, sponsorships and in-kind contributions in 2021, and this year will celebrate the Foundation’s 20th anniversary. [LEARN MORE](#)

Economic Performance

With 2021 revenues of \$10,982 million, Biogen was #1 in our industry on the JUST 100 for capital management. [LEARN MORE](#)

Climate

Climate is an area where Biogen significantly exceeds expectations. In 2020, Biogen became the first Fortune 500 company to commit to going beyond net zero to achieve 100% fossil fuel free operations by 2040. [LEARN MORE](#)

Diversity, Equity & Inclusion/ Racial Justice

With 47.6% of director and above positions held by women globally and 26% held by minorities in the U.S. in 2021, we are advancing our 4-part DE&I strategy both internally and externally. [LEARN MORE](#)

R&D, Pipeline & Innovation

94% of stakeholders surveyed see Biogen as a pioneer in neuroscience. Biogen is working to strengthen our culture of innovation, enhance our strategic portfolio and advance our pipeline of therapies. [LEARN MORE](#)

ADDRESSING KEY OPPORTUNITIES FOR CONTINUOUS IMPROVEMENT



Stakeholders perceive key material issues and opportunities for continuous improvement as including

Our progress

Access & Pricing

Biogen is committed to patient access and transparency in our programs and pricing. [LEARN MORE](#)

Recruitment, Talent Retention & Engagement

In a tight labor market, we are actively advancing programs that spark even deeper engagement and enable all employees to thrive at Biogen. [LEARN MORE](#)

Health Equity

Biogen is committed to health equity and access, including clear goals that are part of our 4-part DE&I strategy. [LEARN MORE](#)

Health System Strengthening

From our work with Harvard University to help under-resourced health clinics address climate risks to donations of medical supplies to issue advocacy, Biogen is actively engaged in a wide range of programs to help strengthen health systems around the world. [LEARN MORE IN THE PATIENTS AND COMMUNITY SECTIONS OF THIS REPORT](#)

Bioethics

Biogen is advancing responsible product development, which begins in the earliest stages of R&D, with clear guidelines on issues such as bioethics. [READ ABOUT OUR PRINCIPLES, POLICIES AND POSITIONS](#)



ABOUT THIS REPORT

About this report

The 2021 Year in Review is based on data from calendar year 2021. In some instances, we include information on initiatives or activities that began in 2021 and continued into 2022. Unless otherwise indicated, content in the data tables below covers the period Jan. 1, 2021-Dec. 31, 2021.

This report is based on the GRI Principles for Defining Report Content. Please refer to the ESG Data Table and SASB & GRI Content Indices to see which material questions and relevant indicators are reported. This also provides a view of the ways our efforts align with our support of the 17 United Nations SDGs (Global Goals), with an emphasis on those most relevant to our business, including:



Data in this report cover our worldwide operations and consolidated subsidiaries but exclude joint ventures. Our operations in 2021 encompassed our major facilities in Massachusetts and North Carolina in the U.S., and in Switzerland. Our global offices and commercial fleet operations are also covered in this report. The scope of environmental data presented in this report only includes operations over which we have direct control.

ERM Certification and Verification Services, Inc. (ERM CVS) assured the 2021 data for several indicators, including GHG emissions and select environmental and social indicators. See the Independent Assurance Statement for full details of the assurance scope, assurance standards used, work undertaken and conclusions, and reference the ESG Data Table for assured data (bolded 2021 data points have been assured).

ADDITIONAL RESOURCES

2021 PRINCIPLES, POLICIES AND POSITIONS

Everything we do is grounded in our Code of Business Conduct, which applies to all employees, agents and consultants acting on behalf of Biogen and its affiliates worldwide. We also are guided by a range of principles, policies and positions, including our Global Sustainability Policy and other statements on ethical business conduct, compliance, accountability and transparency, among other topics.

To review the full list of our commitments, visit our [Principles, Policies & Positions](#) content on [www.biogen.com](#), which includes the following topics:

PURPOSE AND GOVERNANCE

- [Code of Business Conduct](#)
- [Comprehensive Compliance Program](#)
- [Corporate Governance Principles](#)
- [Political Contributions Policy](#)
- [Transparency Reporting](#)
- [U.K. Tax Strategy](#)
- [Global Tax Policy](#)

PIONEERING SCIENCE

- [Animal Welfare](#)
- [Clinical Research and Bioethics](#)
- [Clinical Trial Transparency and Data Sharing](#)
- [Product Stewardship](#)
- [Research Collaborations](#)
- [Stem Cells](#)
- [Supply Chain Responsibility](#)
- [Supplier Diversity](#)

PATIENTS

- [Access Programs](#)
- [Global Privacy Program](#)
- [Patient Safety](#)
- [Payments to Healthcare Professionals](#)
- [Pricing Principles](#)

OUR PEOPLE

- [Anti-Slavery and Human Trafficking Statement](#)
- [Elements of Our Culture](#)
- [Environmental Health and Safety Policy](#)
- [Human Rights Position Statement](#)
- [Pay Equity](#)

ENVIRONMENT

- [Biodiversity](#)
- [Climate Change Position Statement](#)
- [Climate Strategy](#)
- [Global Sustainability Policy](#)

Additional 2021 Disclosures

- [2021 ESG Data Table](#)
- [2021 CDP Climate Change Disclosure](#)
- [2021 Annual Report](#)
- [2021 U.S. Securities and Exchange Commission Form 10-K](#)
- [2021 Independent Assurance Statement to Biogen Inc](#)

Prior disclosures

- [2021 DE&I Report](#)
- [2020 Year in Review](#)
- [2019 Year in Review](#)
- [2018 Corporate Social Responsibility Report](#)
- [2017 Global Impact Report](#)
- [2016 Global Impact Report](#)
- [2015 Corporate Citizenship Report](#)
- [2014 Corporate Citizenship Report](#)
- [2013 Corporate Citizenship Report](#)

ESG Data Table

Unless otherwise indicated, content in the data tables below covers the period Jan. 1, 2021 – Dec. 31, 2021.

Code	Units	2018	2019	2020	2021
GOVERNANCE					
About Biogen					
Revenue	Million USD	13,453	14,378	13,445	10,982
R&D Spend	Million USD	2,597	2,281	3,991	2,501
No. of Employees	#	7,800	7,400	9,340	9,832
No. of Permanent Employees	#	–	–	9,103	9,616
No. of FTE	#	–	–	9,192	9,586
No. of R&D Employees	#	–	–	2,284	2,366
No. of Part-time Employees	#	–	–	–	137
Workforce Located in U.S.	%	–	–	–	57
Board of Directors					
Total Number of Directors	#	N/A	N/A	13	13
• Executive	#	N/A	N/A	1	1
• Independent	#	N/A	N/A	12	12
ESG Ratings, Rankings and Assessments¹					
S&P Global CSA (DJSI)	Score	83 (Industry Leader)	83 (Industry Leader)	85 (Industry Leader)	84 (Industry Leader)
MSCI	Rating	A	A	A	A
ISS ESG	Rating	C+ (Prime)	C+ (Prime)	C+ (Prime)	C+ (Prime)
Sustainalytics	Risk Score	N/A	22	23.5	21.3
Human Rights Campaign's Corporate Equality Index	%	100	100	100	100
Disability:IN's Disability Equality Index	%	100	100	100	100
CDP Climate Change	Rating	A–	A–	B+	B
CDP Water	Rating	B	B	B	B
Corporate Knights Global 100	Rank	–	–	–	97
100 Best Corporate Citizens	Rank	37	46	62	17
America's Most JUST Companies	Rank	19	30	150	36
Bloomberg Gender-Equality Index (GEI)	Signatory or Participant				✓

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
United Nations Global Compact	Signatory or Participant			✓	✓
Workforce Disclosure Initiative (WDI)	Signatory or Participant				✓
Pharmaceutical Supply Chain Initiative Member	Signatory or Participant			✓	✓
Compliance and Ethics					
Employees trained on Biogen's Anti-Bribery and Corruption Policy	%	100%	100%	100%	100%
Employees trained on Biogen's Code of Conduct	%	100%	100%	100%	100%
ENVIRONMENTAL^{2,3}					
Climate					
Scope 1 (fossil fuels and refrigerants) ⁴	MT CO ₂ e	68,448	67,031	57,553	63,182
Scope 2 – Market based (electricity and steam) ⁴	MT CO ₂ e	61	131	280	268
Total Scope 1 & 2 (Market based) ⁴	MT CO ₂ e	68,509	67,162	57,833	63,450
Scope 1 & 2 Intensity	MTCO ₂ e / MM USD revenue	5.1	4.7	4.3	5.8
Total Purchased Carbon Offsets ⁵	MT CO ₂ e	76,642	76,667	29,637	0
Carbon Neutrality (Scope 1 & 2 – Offsets)	MT CO ₂ e	68,448	67,031	29,637	0
Scope 2 – Location based (electricity and steam)	MT CO ₂ e	37,347	37,712	36,953	34,262
Scope 3 ⁶	MT CO ₂ e	436,353	424,592	348,911	406,459
• Category 1 – Purchased goods and service	MT CO ₂ e	325,928	334,954	254,670	321,610
• Category 2 – Capital goods	MT CO ₂ e	51,635	32,759	41,356	34,506
• Category 3 – Fuel- and energy-related activities	MT CO ₂ e	11,048	10,570	8,755	11,791
• Category 4 – Upstream transportation and distribution	MT CO ₂ e	N/A	N/A	17,701	17,148
• Category 5 – Waste generated in operations ⁷	MT CO ₂ e	758	645	487	290
• Category 6 – Business travel ⁸	MT CO ₂ e	27,277	24,083	4,038	2,232
• Category 7 – Employee commuting ⁸	MT CO ₂ e	8,133	9,516	2,661	2,227
• Category 7 – Employee work from home ⁸	MT CO ₂ e	N/A	N/A	9,531	9,652
• Category 8 – Upstream leased assets	MT CO ₂ e	0	0	0	0
• Category 12 – End-of-life treatment of sold products	MT CO ₂ e	11,574	12,065	9,141	7,003
Scope 3 Intensity ⁹	MT CO ₂ e / MM USD revenue	32	30	26	37
Scope 3 (percent of Scope 1, 2 & 3)	%	86	86	86	86
Total Value Chain (Scope 1, 2 & 3) ⁴	MT CO ₂ e	504,862	491,545	406,139	469,909

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
Targets and Performance					
Scope 1 & 2 absolute reduction since 2019 (Target: 55% by 2032) ⁴	%	N/A	N/A	-14	-6
Suppliers that set or pledged to set a climate goal via the Science Based Targets initiative (Target: 80% of suppliers by spend by 2025)	%	N/A	N/A	N/A	18
Suppliers that have committed to 100% renewable energy by 2040 (Target: 50% of suppliers by spend by 2030; 90% of suppliers by 2040)	%	N/A	N/A	N/A	26
Air Quality					
CO emissions	MT	7.7	8.2	6.9	4.5
NO _x emissions	MT	21.9	17	19.8	13.3
SO _x emissions	MT	3.5	1	2.9	1.9
VOC emissions	MT	0.8	0.5	0.9	1.0
EV100 – Battery Electric Vehicle Program					
Total Leased Vehicles	#	1,447	1,469	1,929	1,978
• Plug-in hybrid electric vehicles (PHEV)	#	17	12	41	26
• Battery electric vehicles (BEV)	#	9	9	12	81
Office EV charging points	#	22	33	49	49
Sites with EV charging points	#	4	6	10	10
Fleet carbon efficiency ¹⁰	g CO ₂ e / mile	295	292	228	282
Energy					
Total Energy Use	MWh	491,194	499,827	444,147	471,895
Renewable Electricity	MWh	132,751	144,972	139,958	143,470
• PPA / Direct Contract	MWh	3,181	3,240	4,498	44,627
• Renewable Energy Certificates ¹¹	MWh	129,570	141,732	135,460	98,843
• On-site Generation	MWh	0	0	0	0
Non-Renewable Energy	MWh	358,443	354,855	304,189	328,425
• Fossil Fuels (gas, oil, diesel, gasoline)	MWh	358,198	354,454	303,576	327,337
• Municipal Steam	MWh	236	316	490	980
• Electricity	MWh	10	85	124	108
Data Coverage	%	100%	100%	100%	100%
Energy Intensity	MWh / MM USD revenue	37	35	33	43

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
RE100 Target – Global Renewable Electricity ¹²	%	100	100	100	100
Fossil Fuel Free – Renewable Energy Allocation	% Total energy	27	29	32	30
Water					
Major Facilities with Fair Share of Water Withdrawal (Target: Maintain 100%) ¹³	%	40	100	100	100
Water Use (ex. non-contact cooling water)	Million Cubic Meters (m ³)	1.31	1.272	1.035	1.076
Water Use Intensity	m ³ / MM USD revenue	97	88	77	83
Water Reused/Recycled ¹⁴	%	6	5	7	4
Water Withdrawal					
• Municipal Supply (potable & grey water)	Million m ³	0.895	0.758	0.590	0.581
• Fresh Surface Water (non-contact cooling)	Million m ³	0.411	0.303	0.303	0.333
• Groundwater	Million m ³	0.322	0.447	0.370	0.453
• Rainwater	Million m ³	0.001	0.001	0.001	0.001
Water Discharges					
• Fresh Surface Water	Million m ³	0.4	0.303	0.303	0.333
• Wastewater	Million m ³	0.815	0.687	0.503	0.492
Waste¹⁵					
Non-hazardous Waste¹⁶					
Reused	MT	11	6	39	76
Recycled	MT	932.4	1,732	527	497.8
Composted	MT	3,334	2,997	909	200
Energy Recovery via Anaerobic Digestion	MT	70	43	0	0
Waste to Energy ¹⁷	MT	1,309	1,206	879	1,361
Incineration ¹⁸	MT	2,472	1,544	455	1,367
Landfill	MT	33	32	32	6
Non-hazardous Waste Intensity	MT / MM USD Revenue	0.61	0.53	0.21	0.32
Waste to Landfill Diversion (Target: Maintain 100%)	%	100	100	99	100
Recovery & Recycling Rate (Non-hazardous Waste)	%	53	63	52	22

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
Hazardous and Biohazardous Waste	MT	233	219	208	269
Recycled	MT	16	16	14	<1
Waste to Energy	MT	145	138	117	211
Incineration ¹⁹	MT	72	65	77	56
Landfill	MT	1	0	0	2
SOCIAL²⁰					
Community Engagement and Giving					
Total Foundation Grants ^{21,22}	Million USD	4.9	4.7	16.4	6.1
Employee Matching Gifts Program ²³	Million USD	1.4	1.7	2.5	2.1
Corporate Grants and Sponsorships ²⁴	Million USD	N/A	N/A	72.4	71.0
Volunteer Hours ²⁵	Hours	12,200	16,560	4,369	14,493
Biogen Foundation STAR Initiative Investment (Target: Cumulative \$10M by 2022) ²⁶	Million USD	2.0	2.7	2.8	2.7
Responsible Supply Chain					
Supplier Diversity Spend	Million USD	160	161	173	230
Supplier Diversity Spend of Total U.S. Spend ²⁷	%	7.4	7.8	8.1	11.8
Workforce Diversity, Equity and Inclusion					
Women in					
• Workforce	%	50.6	52.5	53.5	53.9
• Management ²⁸	%	48.4	49.8	51.7	53.1
• Director Level and Above	%	N/A	46	49	47.6
• Management in Revenue-generating Functions ²⁹	%	51.1	50.5	52.3	53.4
• STEM-related Positions	%	N/A	N/A	44.6	48.8
• Junior Management	%	N/A	51.6	53.7	55.3
• Top Management (VP+)	%	N/A	39.2	42.9	44.6
• Executive Team	%	30	25	29	25
• Board of Directors	%	27	23	17	23

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
Demographics in Workforce (U.S. Only)					
• Asian American	%	N/A	N/A	16.9	17.4
• Black or African American	%	N/A	N/A	12.2	11.6
• Hispanic or Latino	%	N/A	N/A	5.1	4.8
• White	%	N/A	N/A	63.4	63.6
• Indigenous or Native American	%	N/A	N/A	0.3	0.4
• Native Hawaiian or Other Pacific Islander	%	N/A	N/A	0.1	0.1
• Two or More Races	%	N/A	N/A	1.1	1.5
• No Response	%	N/A	N/A	0.5	0.6
Demographics in Management (U.S. Only)³⁰					
• Asian American	%	N/A	N/A	18.5	19.5
• Black or African American	%	N/A	N/A	5.3	6.6
• Hispanic or Latino	%	N/A	N/A	4.9	4.7
• White	%	N/A	N/A	69.4	67.1
• Indigenous or Native American	%	N/A	N/A	0.1	0.2
Other Underrepresented Groups					
• People with Disability in Workforce	%	N/A	N/A	3.3	3.7
• LGBTQ+ in Workforce	%	N/A	N/A	1.6	1.3
• Workforce Age 29 or Younger	%	N/A	N/A	9.8	8.5
• Workforce Age 30 to 50	%	N/A	N/A	67.8	67.8
• Workforce Age 51 or Older	%	N/A	N/A	22.5	23.7
Demographics in Board of Directors³¹					
• Black or African American	#	N/A	N/A	N/A	1
• Hispanic or Latino	#	N/A	N/A	N/A	2
• White	#	N/A	N/A	N/A	9
• Did Not Disclose Demographic Background	#	N/A	N/A	N/A	1
Director-level and Above Positions Held by Racial Minorities (U.S. Only)	%	N/A	26	28	26

ESG DATA TABLE

Code	Units	2018	2019	2020	2021
Talent Attraction, Retention & Turnover					
Employee Satisfaction ³²	%	77	76	86	73
Engagement Survey Response Rate	%	N/A	74	74	71
No. of New Employees	#	1,661	1,696	2,679	1,990
Open Positions Filled by Internal Candidates	%	N/A	26.4	19.5	23.4
Training and Development	Avg Hours / Employee	N/A	N/A	38	32
Training and Development	\$ / FTE	N/A	N/A	1339	999
Total Turnover Rate³³	%	13.7	13	9	14
Voluntary Turnover	%	9.5	10.3	7.2	11
Involuntary Turnover	%	N/A	N/A	1.8	3
Gender Pay Assessment³⁴					
• Executives	%	N/A	N/A	N/A	1.02
• Management	%	N/A	N/A	N/A	0.95
• All Other Professionals	%	N/A	N/A	N/A	0.99
Occupational Health and Safety					
Total Recordable Injury Rate (TRIR) ³⁵	Cases / 200,000 working hours	0.23	0.28	0.17	0.12
Days Away Case Rate (DACR) ³⁵	Cases / 200,000 working hours	0.11	0.11	0.06	0.07
Lost-Time Injuries Frequency Rate (LTIFR) ³⁵	#	N/A	N/A	N/A	0.34
3-Year Average DACR Industry Rank (Target: Top 3) ³⁶	Rank	4	2	2	2
Contractor DACR ³⁷	Cases / 200,000 working hours	0.2	0.87	0	0
Number of Fatalities for Employees	#	0	0	0	0
Number of Fatalities for Contractors	#	0	0	0	0
Collisions per Million Miles (U.S. Fleet) ³⁸	Collisions / million miles	5	3.7	6.9	4.5

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

All prior environmental data were adjusted with the most recent emission factors available, as applicable.

ESG DATA TABLE

Footnotes for 2021 ESG Data Table

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.
2. The direct and indirect effects of the COVID-19 pandemic had a material impact on our environmental data in 2020, and, therefore, direct comparison to 2021 may not be applicable. Additional context related to the impact is provided in the Environmental Section of the Year in Review.
3. Environmental indicators include impacts from 100% of Biogen operations including owned and leased facilities.
4. Scope 1 values have been restated for calendar year 2019, while market based Scope 2 values have been restated for calendar year 2019 and 2020 in this 2021 publication based on methodology updates.
5. VCS-certified carbon offsets from New Bedford Landfill Gas to Energy project in Massachusetts. These offsets are considered abatement with avoided emissions, thus applicable to Carbon Neutral approach but not Net Zero. 2020 was the last year Biogen purchased carbon offsets as part of our abatement strategy.
6. Scope 3 categories 9, 10, 11, 13, 14 and 15 were determined to be not applicable or negligible.
7. Waste generation at affiliate offices, excluding Weston, Massachusetts, is considered de minimis and excluded. However, waste generation is estimated for the purposes of calculating Scope 3, Category 5 emissions. During 2021, waste generated in operations continued to decline because of operational impacts due to the COVID-19 pandemic.
8. Due to a decline in business travel and employee commute due to the COVID-19 pandemic, emissions from Scope 3, Categories 6 and 7 are minimal compared to normal operating conditions. In 2020, we added impacts from employees working from home to more accurately estimate these impacts.
9. The Scope 3 intensity increased from 2020 to 2021 because overall revenue declined.
10. Fleet carbon efficiency for 2020 is reduced compared to normal operating conditions due to a decline in business travel during the COVID-19 pandemic; the carbon impact associated with the fleet from 2019 to 2021 decreased by 4%.
11. Renewable energy certificates retired include bundled and unbundled Green-e certified Renewable Energy Certifications, Guarantees of Origin, J-Credits, Australian RECs I-RECs to match Biogen's electricity usage in the U.S./Canada, Europe, Japan, Australia and South America/China/Mexico/United Arab Emirates, respectively.
12. RE100 member Biogen achieved 100% renewable electricity (as defined by RE100) across 30 of the markets in which it operates.
13. 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 ratio of less than 1.0 using the Center for Sustainable Organization's Corporate Water Gauge tool, a context-based water metric.
14. Data reflect percentage of reclaimed water on-site, harvested rainwater and municipal grey water compared to total water use.
15. All applicable waste disposal methods are included; no waste is disposed of by other or unknown methods.
16. Data include non-hazardous waste generated by Biogen operations (e.g., non-hazardous solid waste and trucked off wastewater). Waste derived from construction and demolition debris, incinerator ash and other contractor activities is not included.
17. All non-hazardous waste with energy recovery is generated by incineration.
18. For 2021, 1,361 metric tons of waste are incinerated for energy recovery, and 6 metric tons are incinerated without energy recovery.
19. During 2021, no hazardous waste was destroyed via incineration.
20. Social indicators cover 100% of permanent employees unless otherwise noted.
21. Includes all grants awarded by the Biogen Foundation exclusive of the Biogen Foundation's Employee Matching Gifts Program. In 2021, Biogen continued funding grants related to the committed \$10 million to support global response efforts and communities around the world impacted by the COVID-19 pandemic.
22. Total in foundation grants is inclusive of STAR initiative investment.
23. Through our matching gifts program, employees donated more than \$2 million to organizations around the world, giving particularly generously to address crisis situations, including the situation in Afghanistan and the COVID-19 spike in India.
24. Corporate Grants and Sponsorships includes Global Medical Grants and Patient Education Grants, General Grants, Infrastructure Grants, Fellowships and Sponsorships.
25. 10,312 hours were performed during paid working hours, assuming 8 hours per employee for each of the 1,289 employee respondents. Total monetary value of contributions associated with Biogen Grants, Sponsorships, in-kind and Community Labs, as well as the Biogen Foundation: \$80 million cash contributions.
26. The STAR Initiative is a coordinated funding strategy designed to help catalyze the development of local science, technology, engineering and mathematics (STEM) ecosystems in Cambridge, Massachusetts, and Somerville, Massachusetts. STAR stands for Science, Teacher support, Access and Readiness and is intended to strengthen and support the educational landscapes in these cities by helping increase access to STEM resources and opportunities for students most underrepresented in STEM college or career pathways.
27. In 2021, minority-owned suppliers accounted for 19% of the diversity spend (2% of all Biogen supplier spending).
28. Women in management percentage is inclusive of all management levels, consisting of manager+ level employees.
29. Revenue generating functions include Pharmaceutical Operations & Technology, Commercial and Research & Development.
30. Demographics are inclusive of all management levels, consisting of manager+ level employees.
31. Racial and ethnic demographics that do not apply are excluded.
32. For 2017, our employee satisfaction metric was based on the question "Are you proud to work for Biogen" in our annual people survey. For 2018-2019, the employee satisfaction question was changed to "How happy are you working at Biogen?" Using total engagement score from June 2020 survey: "I would recommend Biogen as a great place to work" and "How happy are you working at Biogen?" The 'strongly agree' and 'agree' responses are included in the reported activity engaged percentile.
33. In August 2019 Biogen completed the sale of all outstanding shares of its subsidiary that owned its biologics manufacturing operations in Hillerød, Denmark, to FUJIFILM Corporation. The 2019 total turnover data do not include the 800 employees who continued employment under Fujifilm ownership.
34. The gender pay assessment includes data covering all permanent global employees adjusted for the number of females and males at each level within the organization for base compensation only. The ratio is calculated by averaging the mean base pay for women in the stated role in comparison to the mean base pay of men in a similar role. We also assess our gender pay gap for employees in the U.K. Our latest report can be found [here](#).
35. Includes permanent and contracted employees, excludes contractors (e.g., construction, janitorial, food services).
36. Industry composed of 15 leading pharmaceutical company peers.
37. Contractor DACR: Includes construction-related contractors only.
38. Fleet insurance provided was changed in 2020 resulting in change in definition of collision.



SASB Content Index

Code	Accounting Metric	Biogen 2021 Response
Safety of Clinical Trial Participants		
HC-BP-210a.1.	Discussion, by world region, of management process for ensuring quality and patient safety during clinical trials	<p>Biogen has a Global Pharmacovigilance (PV) team comprised of medical and scientific professionals with extensive safety and/or clinical or healthcare experience who are trained in PV and worldwide health authority regulations relevant to medicinal product safety.</p> <p>Biogen's safety signal management processes, combined with our robust safety governance framework, allow Biogen to determine if new safety information on our products (a 'signal') poses a risk to patients and how best to manage, mitigate and communicate the risk. All safety and benefit/risk decisions for marketed and investigational products are made by the Safety Monitoring Committee (SMC). The Safety team collaborates with Regulatory Affairs to communicate product information in a timely, transparent and accurate manner to regulatory agencies across the globe.</p> <p>In addition to complying with our company's global standards, the conduct of our clinical trials adheres to the International Council for Harmonization Good Clinical Practice (ICH GCP) standards and to the principles that have their origin in the Declaration of Helsinki.</p> <p>Each country has its own regulatory authority with its own regulations, or laws, for conducting a clinical trial. The regulatory authority reviews and approves the protocol and ensures that the clinical trial follows national regulations.</p> <p>An Institutional Review Board (IRB) or Ethics Committee (EC) is an independent committee that includes medical, scientific and non-scientific members, whose responsibility is to protect the rights, welfare, safety and well-being of clinical trial participants. Each clinical trial location is monitored by a specific IRB/EC. It is responsible for reviewing all clinical trials as well as conducting ongoing reviews of active clinical trials.</p> <p>↗ For more information, please visit our clinical trials webpage</p>
HC-BP-210a.2.	Number of FDA-Sponsored inspections related to clinical trial management and pharmacovigilance that resulted in: (1) Voluntary Action Indicated (VAI) and (2) Official Action Indicated (OAI)	Biogen is committed to collaborating with regulatory agencies on a wide range of issues, including clinical trial management and pharmacovigilance and taking any actions that are needed. Please see Biogen's 2021 Annual Report for any relevant disclosures.
HC-BP-210a.3.	Total amount of monetary losses as a result of legal proceedings associated with clinical trials in developing countries	Biogen did not sustain any monetary losses in 2021 as a result of legal proceedings associated with clinical trials in developing countries. Biogen discloses all material legal and regulatory proceedings in our Annual Report and Quarterly Reports on Form 10-Q .
Access to Medicines		
HC-BP-240a.1.	Description of actions and initiatives to promote access to healthcare products for priority diseases and in priority countries as defined by the Access to Medicine Index	<p>While not listed as a company in scope for the 2022 Access to Medicine Index ("Index"), Biogen is deeply committed to health access and equity across our business. We are expanding its portfolio and pipeline, which includes a focus on diseases and conditions prioritized by the Index, including Alzheimer's disease, depression and stroke. Additionally, Biogen serves patients in a number of countries included in the Index, such as Brazil, China, India and Mexico, and we actively work with a variety of stakeholders to understand opportunities to meet patient needs. For example, in India, we advanced our SPINRAZA Individual Patient Humanitarian Aid Access Program (SIPHAP) to a total of 211 patients across 14 public hospitals in 2021. In India and in other markets we serve, we are continuing to explore opportunities and advance programs that promote health access.</p> <p>For additional detail on this and other programs designed to promote health access and equity, please see the Patients section of Biogen's 2021 Year in Review and Biogen's Early Access webpage.</p>
HC-BP-240a.2.	List of products on the WHO List of Prequalified Medicinal Products as part of its Prequalification of Medicines Programme (PQP)	Biogen has no products on the WHO List of Prequalified Medicinal Products .

SASB CONTENT INDEX

Code	Accounting Metric	Biogen 2021 Response
Affordability & Pricing		
HC-BP-240b.1.	Number of settlements of Abbreviated New Drug Application (ANDA) litigation that involved payments and/or provisions to delay bringing an authorized generic product to market for a defined time period	Biogen does not comment on confidential legal matters.
HC-BP-240b.2.	Percentage change in: (1) average list price and (2) average net price across U.S. product portfolio compared to previous year	<p>In 2021, we saw a list price increase of 3.805% and a net price decrease of 4.324% across our U.S. product portfolio compared to the previous year.</p> <p>In addition, Biogen's anti-TNF biosimilars may have provided healthcare savings of approximately €2.6 billion in 2021 in the markets where they are sold. These savings may provide headroom for new innovative therapies to come to market.</p> <p>We regularly review our pricing strategy and prioritize patient access to our therapies. We have a value-based contracting program designed to align the price of our therapies to the value our therapies deliver to patients. We also work with regulators, clinical researchers, ethicists, physicians and Change to Patient Advocacy Groups and communities, among others, to determine how best to address requests for access to our investigational therapies in a manner that is consistent with our patient-focused values and compliant with regulatory standards and protocols.</p> <p>Additional information is available here: 2021 Annual Report Biogen Pricing Principles</p>
HC-BP-240b.3.	Percentage change in: (1) list price and (2) net price of product with largest increase compared to previous year	<p>We regularly review our pricing strategy and prioritize patient access to our therapies. We have a value-based contracting program designed to align the price of our therapies to the value our therapies deliver to patients. We also work with regulators, clinical researchers, ethicists, physicians and Change to Patient Advocacy Groups and communities, among others, to determine how best to address requests for access to our investigational therapies in a manner that is consistent with our patient-focused values and compliant with regulatory standards and protocols.</p> <p>Additional information is available here: 2021 Annual Report Biogen Pricing Principles</p>
Drug Safety		
HC-BP-250a.1.	List of products listed in the FDA's MedWatch Safety Alerts for Human Medical Products database	There were no listings relevant to Biogen's products on the FDA's MedWatch Safety Alerts for Human Medical Products database in 2021.
HC-BP-250a.2.	Number of fatalities associated with products as reported in the FDA Adverse Event Reporting System	All information related to fatalities associated with Biogen products is available via the FDA Adverse Event Reporting System .
HC-BP-250a.3.	Number of recalls issued, total units recalled	A Class II VUMERITY recall that was initiated in December 2020 was closed in September 2021. For any relevant disclosures, please see Biogen's 2021 Annual Report .
HC-BP-250a.4.	Total amount of product accepted for takeback, reuse, or disposal	Biogen does not track the amount of product accepted for takeback, reuse or disposal; the volume of Biogen products is too low to warrant managing our own product takeback, reuse or disposal program. Biogen does, however, participate in several takeback programs across various U.S. states and counties, and several other countries. In addition, Biogen provides guidance on appropriate disposal methods for our products.
HC-BP-250a.5.	Number of FDA enforcement actions taken in response to violations of current Good Manufacturing Practices (cGMP), by type	Biogen did not receive any FDA enforcement actions associated with Form 483 observations, warning letters, seizures, recalls or consent decrees in 2021.

SASB CONTENT INDEX

Code	Accounting Metric	Biogen 2021 Response
Counterfeit Drugs		
HC-BP-260a.1.	Description of methods and technologies used to maintain traceability of products throughout the supply chain and prevent counterfeiting	<p>Counterfeiting is now the largest criminal enterprise in the world, accounting for more than 3% of global trade. Not one industry is exempt from this growing threat. Patient safety is our number one priority, and we take the issue of counterfeit, falsified drugs very seriously. The main goal of our Product Security function is to implement a holistic strategy in order to proactively identify, mitigate and manage illicit trade risks that could be impacting reputation and trust, and most importantly jeopardizing the health and safety of patients who take our drugs. We aim to disrupt diversion, counterfeiting, theft and other nefarious activities through the following five pillars:</p> <ul style="list-style-type: none"> • Threat Assessments: Identify, assist and mitigate risks and vulnerabilities across the supply chain. • Auditing: Audit supply chain partners to ensure industry best practice requirements are met regarding product security. • Monitoring: Monitor markets, channels, supply chain, customer complaints and other network elements to detect illicit trade signals and potential threats to supply chain resiliency and robustness. • Investigations: Respond to incidents with robust investigation and enforcement capability, including legal actions to stop and deter illicit trade. • Product Security: Ensure we have the appropriate level of security measures for products and supply chain nodes in order to minimize the threat of counterfeits, diversions and thefts for the purpose of ensuring patient safety. <p>In addition to the above, a majority of our global production is serialized, meeting all global compliance requirements on serialization including requirements in the U.S. and the EU. Whenever we serialize, we also aggregate the serialization information to enable Track&Trace. We have implemented Track&Trace capabilities at our main distribution sites, beyond compliance requirements, to provide additional elements of traceability. For example, in the EU each medication is verified against the list of serial numbers in circulation prior to dispensing. If a medicine's serial number cannot be verified, a notification, called an alert, is electronically generated by the relevant National Medicines Verification Organization (NMVO) and shared with TraceLink, Biogen's Serialization System. Biogen reviews these alerts and resolves them in correspondence with the relevant NMVO. Serialization alerts that indicate suspect or illegitimate product will trigger the internal process described above.</p>
HC-BP-260a.2.	Discussion of process for alerting customers and business partners of potential or known risks associated with counterfeit products	<p>Biogen employs quality governed processes to manage the handling of suspect or illegitimate medicinal products: Upon detecting a potential or known product security risk, the event is captured as a complaint in the TrackWise system for formal tracking. Furthermore, there are requirements on segregation of product and the investigation process. Once the product is physically acquired, the technical product complaints group performs an investigation to verify if the product is genuine or falsified. If determined that the suspected product is falsified, potentially falsified or high risk of being falsified, a DMRB (global distributed material review board) must be completed, defining further specific market actions and communications. As necessary, all impacted competent authorities and impacted distribution partners are then notified. Once a case is closed, Biogen notifies the applicable authorities and impacted trading partners.</p> <p>In addition to the above internal processes, Biogen also participates in industry-wide systems and processes utilizing serialization data. For example, in the EU, each medication is verified against the list of serial numbers in circulation, prior to dispensing. Medicines shall not be dispensed if the number cannot be verified. If a medicine's serial number cannot be verified, a notification, called an alert, is electronically generated by the relevant National Medicines Verification Organization (NMVO) and shared with TraceLink, Biogen's Serialization System. Biogen reviews these alerts and resolves them in correspondence with the relevant NMVO. Serialization alerts that indicate suspect or illegitimate product will trigger the internal process described above.</p>
HC-BP-260a.3.	Number of actions that led to raids, seizure, arrests, and/or filing of criminal charges related to counterfeit products	Biogen did not take any actions in 2021 that led to raids, seizure, arrests and/or filing of criminal charges related to counterfeit products.
Ethical Marketing		
HC-BP-270a.1.	Total amount of monetary losses as a result of legal proceedings associated with false marketing claims	Biogen did not sustain any monetary losses in 2021 as a result of legal proceedings associated with false marketing claims. Biogen discloses all material legal and regulatory proceedings in our Annual Report and Quarterly Reports on Form 10-Q .
HC-BP-270a.2.	Description of code of ethics governing promotion of off-label use of products	Please visit our Early Access page for a description of Biogen's approach to off-label use.

SASB CONTENT INDEX

Code	Accounting Metric	Biogen 2021 Response
Employee Recruitment, Development & Retention		
HC-BP-330a.1.	Discussion of talent recruitment and retention efforts for scientists and research and development personnel	<p>Biogen has a range of active initiatives to help build a diverse talent pipeline. For example, the Biogen Community Lab is the longest-running hands-on corporate science education program in the U.S., and now reaches students in more than 19 countries. Collaborations with Massachusetts General Hospital and Duke University are giving the next generation in-depth exposure to the field of neurology. Through a collaboration with Morehouse School of Medicine, we welcomed intern cohorts from historically Black colleges and universities (HBCUs) through our Summer Health Equity Fellowship Program. The fellowship program, which engages M.D. and Ph.D. students, aims to advance health equity and improve patient experiences. In 2021, we increased overall participation from 5 to 18 interns, falling just shy of our goal to increase participation by 300% from our 2020 number. In 2016, Biogen helped create The Partnership Inc.'s BioDiversity Fellows Program, which nurtures the potential leadership of mid-career professionals who are underrepresented in the life sciences industry. In Latin America, the Biogen Intercontinental Region (BIR) developed FemSTEM, a campaign to empower girls and women to pursue a path in STEM. The campaign includes a podcast series and opportunities for participants to engage via Women in Bio, U.N. Women and NS Innovation in South America. Biogen employees volunteer in Women in Bio.</p> <p>We remain actively involved in a wide variety of industry programs that allow us to increase the visibility of Biogen as a purpose-driven company with a wide variety of career opportunities and a culture focused on helping employees thrive. We have a particular focus on increasing visibility and engagement with communities historically underrepresented and underserved in neuroscience, including through our engagement with groups such as Women of Color in Pharma (WOCIP) and American Women in Science (AWIS), among many others.</p> <p>We also have continued to expand our focus on talent retention, growth and engagement through programs such as Thrive@Biogen. A broader discussion of those efforts can be found in the Our People section of the 2021 Year in Review.</p>
HC-BP-330a.2.	(1) Voluntary and (2) involuntary turnover rate for: (a) executives/senior managers, (b) mid-level managers, (c) professionals, and (d) all others	<p>Total Turnover Rate: 14%</p> <p>Voluntary Turnover Rate: 11%</p> <p>Involuntary Turnover Rate: 3%</p> <p>Please see disclosures in Biogen's 2021 ESG Data Table.</p>
Supply Chain Management		
HC-BP-430a.1.	Percentage of (1) entity's facilities and (2) Tier I suppliers' facilities participating in the Rx-360 International Pharmaceutical Supply Chain Consortium audit program or equivalent third-party audit programs for integrity of supply chain and ingredients	Biogen outsources anywhere from 10% to 15% of our external supplier audits. We perform the vast majority of our audits through our own audit program using outsourced support or the use of third-party auditors depending on the type of service provided, risk and availability.
Business Ethics		
HC-BP-510a.1.	Total amount of monetary losses as a result of legal proceedings associated with corruption and bribery	<p>Biogen did not sustain any monetary losses in 2021 as a result of legal proceedings associated with corruption, bribery or anti-competitive behaviors.</p> <p>Biogen discloses all material legal and regulatory proceedings in its Annual Report and Quarterly Reports on Form 10-Q.</p>
HC-BP-510a.2.	Description of code of ethics governing interactions with healthcare professionals	We comply with the Pharmaceutical Research and Manufacturers of America's (PhRMA) Code on Interactions with Healthcare Professionals. See our Code of Business Conduct section on Interactions with Healthcare Professionals.
Activity Metrics		
HC-BP-000.A	Number of patients treated	Biogen has treated more than 2 million patients worldwide from 1996 through the end of 2021. Additionally, we have approximately 30 clinical programs across a broad set of disease areas.
HC-BP-000.B	Number of drugs (1) in portfolio and (2) in research and development (Phases 1–3)	As of report publication, Biogen has 10 marketed therapies, as outlined on the Product Portfolio page of Biogen.com and approximately 30 therapies in the pipeline.



GRI Content Index

Prepared in accordance with the most current standard, which can be found on www.globalreporting.org.

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
GRI 102 GENERAL DISCLOSURES			
Organizational profile			
102-1	Name of the organization	Biogen Inc.	
102-2	a. A description of the organization's activities. b. Primary brands, products and services, including an explanation of any products or services that are banned in certain markets.	CEO Letter – 2021 Year in Review Item 1., Business, 2021 Annual Report	
102-3	Location of the organization's headquarters.	Corporate Headquarters: Cambridge, Massachusetts (U.S.)	
102-4	Number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report.	Pharmaceutical Operations & Technology Item 2., Properties, 2021 Annual Report	
102-5	Nature of ownership and legal form.	Board of Directors Corporate Governance Documents	
102-6	Markets served, including: <ul style="list-style-type: none"> • Geographic locations where products and services are offered. • Sectors served. • Types of customers and beneficiaries. 	Item 1., Business, 2021 Annual Report	
102-7	Scale of the organization, including: <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 (for private sector organizations) broken down in terms of debt and equity. • Quantity of products or services provided. 	2021 Annual Report Item 1., Business, 2021 Annual Report ESG Data Table – 2021 Year in Review	
102-8	a. Total number of employees by employment contract (permanent and temporary), by gender. b. Total number of employees by employment contract (permanent and temporary), by region. c. Total number of employees by employment type (full-time and part-time), by gender. d. Whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed by workers who are not employees. e. Any significant variations in the numbers reported in Disclosures 102-8-a, 102-8-b and 102-8-c (such as seasonal variations in the tourism or agricultural industries). f. An explanation of how the data have been compiled, including any assumptions made.	Item 1., Business, 2021 Annual Report ESG Data Table – 2021 Year in Review	
102-9	A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products and services.	Item 1., Business, 2021 Annual Report	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
102-10	Significant changes to the organization's size, structure, ownership, or supply chain, including: <ul style="list-style-type: none"> Changes in the location of, or changes in, operations, including facility openings, closings and expansions. Changes in the share capital structure and other capital formation, maintenance and alteration operations (for private sector organizations). Changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers, including selection and termination. 	Item 1., Business, 2021 Annual Report	
102-11	Whether and how the organization applies the Precautionary Principle or approach.	Biogen applies the precautionary principle through a variety of environment, health and safety (EHS) and risk management policies and programs designed to ensure the safety of products, patients, employees and the environment. Details are available in Annual Report and on Biogen.com	
102-12	A list of externally-developed economic, environmental and social charters, principles or other initiatives to which the organization subscribes, or which it endorses.	Principles, Policies and Positions Code of Business Conduct All major charters, principles or other initiatives are included in the boundaries of this report	
102-13	A list of the main memberships of industry or other associations, and national or international advocacy organizations.	Community and Reporting – 2021 Year in Review	
Strategy			
102-14	A statement from the most senior decision-maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability.	CEO Letter – 2021 Year in Review	
102-15	A description of key impacts, risks and opportunities.	Item 1A., Risk Factors, 2021 Annual Report TCFD Report – 2021 Year in Review *	
Ethics and Integrity			
102-16	A description of the organization's values, principles, standards and norms of behavior.	Principles, Policies and Positions Code of Business Conduct Our Purpose – 2021 Year in Review	
102-17	A description of internal and external mechanisms for: <ul style="list-style-type: none"> Seeking advice about ethical and lawful behavior, and organizational integrity. Reporting concerns about unethical or unlawful behavior, and organizational integrity. 	Code of Business Conduct *	
Governance			
102-18	a. Governance structure of the organization, including committees of the highest governance body. b. Committees responsible for decision-making on economic, environmental and social topics.	Executive Leadership Board of Directors Corporate Governance Documents ESG Data Table – 2021 Year in Review	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
102-21	<p>a. Processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics.</p> <p>b. If consultation is delegated, describe to whom it is delegated and how the resulting feedback is provided to the highest governance body.</p>	<p>Executive Leadership Board of Directors Corporate Governance Documents Reporting – 2021 Year in Review [Materiality Assessment]*</p>	
102-22	<p>a. Composition of the highest governance body and its committees by:</p> <ul style="list-style-type: none"> • Executive or non-executive. • Independence. • Tenure on the governance body. • Number of each individual's other significant positions and commitments, and the nature of the commitments. • Gender. • Membership of under-represented social groups. • Competencies relating to economic, environmental and social topics. • Stakeholder representation. 	<p>Item 1., Business, 2021 Annual Report ESG Data Table – 2021 Year in Review*</p>	
102-26	<p>Highest governance body's and senior executives' roles in the development, approval and updating of the organization's purpose, value or mission statements, strategies, policies and goals related to economic, environmental and social topics.</p>	<p>Our Purpose Our Purpose – 2021 Year in Review*</p>	
102-30	<p>Highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental and social topics.</p>	<p>Code of Business Conduct Sustainability Policy Environmental Health and Safety Policy Climate Change Position</p>	
102-33	<p>Process for communicating critical concerns to the highest governance body.</p>	<p>Code of Business Conduct</p>	
Stakeholder engagement			
102-40	<p>A list of stakeholder groups engaged by the organization.</p>	<p>2021 Annual Report Item 1., Business, 2021 Annual Report Executive Leadership Board of Directors Community and Reporting – 2021 Year in Review</p>	
102-41	<p>Approximately 13.1% of Biogen's employees are under a collective bargaining agreement using a time-weighted average basis.</p>	<p>ESG Data Table – 2021 Year in Review</p>	
102-42	<p>The basis for identifying and selecting stakeholders with whom to engage.</p>	<p>Executive Leadership Board of Directors Corporate Governance Documents ESG Data Table – 2021 Year in Review Reporting – 2021 Year in Review</p>	
102-43	<p>The organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.</p>	<p>Executive Leadership Board of Directors Corporate Governance Documents ESG Data Table – 2021 Year in Review*</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
102-44	Key topics and concerns that have been raised through stakeholder engagement, including: <ul style="list-style-type: none"> How the organization has responded to those key topics and concerns, including through its reporting. The stakeholder groups that raised each of the key topics and concerns. 	Patients and Reporting – 2021 Year in Review	
Reporting practice			
102-45	a. A list of all entities included in the organization's consolidated financial statements or equivalent documents. b. Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	Item 1., Business, 2021 Annual Report All major entities are included in the boundaries of this report.	
102-46	a. An explanation of the process for defining the report content and the topic Boundaries. b. An explanation of how the organization has implemented the Reporting Principles for defining report content. Additional requirements for compiling: When compiling the information specified in Disclosure 102-46, the reporting organization shall include an explanation of how the Materiality principle was applied to identify material topics, including any assumptions made.	Reporting – 2021 Year in Review	
102-47	A list of the material topics identified in the process for defining report content.	Reporting – 2021 Year in Review *	
102-48	The effect of any restatements of information given in previous reports, and the reasons for such restatements.	Restatements for previous disclosed metrics are identified in the ESG Data Table .	
102-49	Significant changes from previous reporting periods in the list of material topics and topic Boundaries.	Biogen conducted an ESG materiality assessment in 2021. The results inform the topic boundaries of this report and can be found in the Reporting section of this 2021 Year in Review.	
102-50	Reporting period for the information provided.	Data cover fiscal year ending Dec. 31, 2021 (Some activities from 2022 are also included).	
102-51	If applicable, the date of the most recent previous report.	April 23, 2021	
102-52	Reporting cycle.	We report on an annual basis.	
102-53	The contact point for questions regarding the report or its contents.	Biogen Reputation contact: public.affairs@biogen.com Responsibility contact: responsibility@biogen.com	
102-54	The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: <ul style="list-style-type: none"> 'This report has been prepared in accordance with the GRI Standards: Core option'. 'This report has been prepared in accordance with the GRI Standards: Comprehensive option'. 	This report has been prepared in accordance with the GRI Standards: Core option/ Alignment option.	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
102-55	<p>a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report.</p> <p>b. For each disclosure, the content index shall include:</p> <ul style="list-style-type: none"> • The number of the disclosure (for disclosures covered by the GRI Standards). • The page number(s) or URL(s) where the information can be found, either within the report or in other published materials. • If applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made. <p>Additional requirements for compiling:</p> <p>6.3 When reporting the GRI content index as specified in Disclosure 102-55, the reporting organization shall:</p> <p>6.3.1 Include the words 'GRI Content Index' in the title.</p> <p>6.3.2 Present the complete GRI content index in one location.</p> <p>6.3.3 Include in the report a link or reference to the GRI content index, if it is not provided in the report itself.</p> <p>6.3.4 For each GRI Standard used, include the title and publication year (e.g., GRI 102: General Disclosures 2016).</p> <p>6.3.5 Include any additional material topics reported on which are not covered by the GRI Standards, including page number(s) or URL(s) where the information can be found.</p>	GRI Content Index	
102-56	<p>a. A description of the organization's policy and current practice with regard to seeking external assurance for the report.</p> <p>b. If the report has been externally assured:</p> <ul style="list-style-type: none"> • A reference to the external assurance report, statements or opinions. If not included in the assurance report accompanying the sustainability report, a description of what has and what has not been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process. • The relationship between the organization and the assurance provider. • Whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report. 	Independent Assurance Statement to Biogen Inc.	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
GRI 103 MANAGEMENT APPROACH			
103-1	<p>a. An explanation of why the topic is material.</p> <p>b. The Boundary for the material topic, which includes a description of:</p> <ul style="list-style-type: none"> • Where the impacts occur. • The organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. <p>c. Any specific limitation regarding the topic Boundary.</p>	<p><u>Reporting</u> – 2021 Year in Review [Materiality assessment]</p>	
103-2	<p>a. An explanation of how the organization manages the topic.</p> <p>b. A statement of the purpose of the management approach.</p> <p>c. A description of the following, if the management approach includes that component:</p> <ul style="list-style-type: none"> • Policies. • Commitments. • Goals and targets. • Responsibilities. • Resources. • Grievance mechanisms. • Specific actions, such as processes, projects, programs and initiatives. 	<p><u>Principles, Policies and Positions</u> <u>Code of Business Conduct</u> <u>Our Purpose</u> – 2021 Year in Review <u>Reporting</u> – 2021 Year in Review [Materiality assessment]</p>	
103-3	<p>An explanation of how the organization evaluates the management approach, including:</p> <ul style="list-style-type: none"> • The mechanisms for evaluating the effectiveness of the management approach. • The results of the evaluation of the management approach. • Any related adjustments to the management approach. 	<p><u>Consolidated Financial Statements</u> <u>Item 1., Business, 2021 Annual Report</u> <u>Independent Assurance Statement to Biogen Inc.</u> <u>Reporting</u> – 2021 Year in Review [Materiality assessment]</p>	
GRI 200 ECONOMIC			
201 Economic Performance			
201-1	<p>a. Direct economic value generated and distributed (EVG&D) on an accruals basis, including the basic components for the organization's global operations as listed below. If data are presented on a cash basis, report the justification for this decision in addition to reporting the following basic components:</p> <ul style="list-style-type: none"> • Direct economic value generated: revenues. • Economic value distributed: operating costs, employee wages and benefits, payments to providers of capital, payments to government by country, and community investments. • Economic value retained: 'direct economic value generated' less 'economic value distributed'. <p>b. Where significant, report EVG&D separately at country, regional, or market levels, and the criteria used for defining significance.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 201-1, the reporting organization shall, if applicable, compile the EVG&D from data in the organization's audited financial or profit and loss (P&L) statement, or its internally audited management accounts.</p>	<p><u>Political Contribution Disclosures</u> <u>ESG Data Table</u> – 2021 Year in Review *</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
201-2	<p>Risks and opportunities posed by climate change that have the potential to generate substantive changes in operations, revenue or expenditure, including:</p> <ul style="list-style-type: none"> • A description of the risk or opportunity and its classification as either physical, regulatory or other. • A description of the impact associated with the risk or opportunity. • The financial implications of the risk or opportunity before action is taken. • The methods used to manage the risk or opportunity. • The costs of actions taken to manage the risk or opportunity. <p>Additional requirements for compiling:</p> <p>2.2 When compiling the information specified in Disclosure 201-2, if the reporting organization does not have a system in place to calculate the financial implications or costs, or to make revenue projections, it shall report its plans and timeline to develop the necessary systems.</p>	<p>TCFD Report – 2021 Year in Review [2021 CDP Climate Change disclosure]</p>	
201-3	<p>a. If the plan's liabilities are met by the organization's general resources, the estimated value of those liabilities.</p> <p>b. If a separate fund exists to pay the plan's pension liabilities:</p> <ul style="list-style-type: none"> • The extent to which the scheme's liabilities are estimated to be covered by the assets that have been set aside to meet them. • The basis on which that estimate has been arrived at. • When that estimate was made. <p>c. If a fund set up to pay the plan's pension liabilities is not fully covered, explain the strategy, if any, adopted by the employer to work toward full coverage, and the timescale, if any, by which the employer hopes to achieve full coverage.</p> <p>d. Percentage of salary contributed by employee or employer.</p> <p>e. Level of participation in retirement plans, such as participation in mandatory or voluntary schemes, regional or country-based schemes, or those with financial impact.</p>	<p>Consolidated Financial Statements Item 1., Business, 2021 Annual Report</p>	
201-4	<p>a. Total monetary value of financial assistance received by the organization from any government during the reporting period, including:</p> <ul style="list-style-type: none"> • Tax relief and tax credits. • Subsidies. • Investment grants, research and development grants, and other relevant types of grant. • Awards. • Royalty holidays. • Financial assistance from Export Credit Agencies (ECAs). • Financial incentives. • Other financial benefits received or receivable from any government for any operation. <p>b. The information in 201-4-a by country.</p> <p>c. Whether, and the extent to which, any government is present in the shareholding structure.</p> <p>Additional requirements for compiling:</p> <p>2.5 When compiling the information specified in Disclosure 201-4, the reporting organization shall identify the monetary value of financial assistance received from government through consistent application of generally accepted accounting principles.</p>	<p>Consolidated Financial Statements Item 1., Business, 2021 Annual Report*</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
203 Indirect Economic Impacts			
203-2	<p>a. Examples of significant identified indirect economic impacts of the organization, including positive and negative impacts.</p> <p>b. Significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and international standards, protocols and policy agendas.</p>	<p>2021 Annual Report Annual Report Reporting – 2021 Year in Review</p>	
204 Procurement Practices			
204-1	<p>a. Percentage of the procurement budget used for significant locations of operation that is spent on suppliers local to that operation (such as percentage of products and services purchased locally).</p> <p>b. The organization's geographical definition of 'local'.</p> <p>c. The definition used for 'significant locations of operation'.</p>	<p>Biogen discloses this information only on a global level</p> <p>Principles, Policies & Positions Supplier Diversity – Working With Us</p> <p>Pioneering Science – 2021 Year in Review</p>	
205 Anti-corruption			
205-3	<p>a. Total number and nature of confirmed incidents of corruption.</p> <p>b. Total number of confirmed incidents in which employees were dismissed or disciplined for corruption.</p> <p>c. Total number of confirmed incidents when contracts with business partners were terminated or not renewed due to violations related to corruption.</p> <p>d. Public legal cases regarding corruption brought against the organization or its employees during the reporting period and the outcomes of such cases.</p>	<p>ESG Data Table – 2021 Year in Review *</p>	
207 Tax			
207-1	<p>A description of the approach to tax, including:</p> <ul style="list-style-type: none"> • Whether the organization has a tax strategy and, if so, a link to this strategy if publicly available. • The governance body or executive-level position within the organization that formally reviews and approves the tax strategy, and the frequency of this review. • The approach to regulatory compliance. • How the approach to tax is linked to the business and sustainable development strategies of the organization. 	<p>Biogen Global Tax Policy</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
GRI 300 ENVIRONMENTAL			
302 Energy			
302-1	<p>The reporting organization shall report the following information:</p> <ol style="list-style-type: none"> Total fuel consumption within the organization from non-renewable sources, in joules or multiples, and including fuel types used. Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used. In joules, watt-hours or multiples, the total: <ul style="list-style-type: none"> Electricity consumption. Heating consumption. Cooling consumption. Steam consumption. In joules, watt-hours or multiples, the total: <ul style="list-style-type: none"> Electricity sold. Heating sold. Cooling sold. Steam sold. Total energy consumption within the organization, in joules or multiples. Standards, methodologies, assumptions and/or calculation tools used. Source of the conversion factors used. 	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review</p>	
302-3	<ol style="list-style-type: none"> Energy intensity ratio for the organization. Organization-specific metric (the denominator) chosen to calculate the ratio. Types of energy included in the intensity ratio; whether fuel, electricity, heating, cooling, steam or all. Whether the ratio uses energy consumption within the organization, outside of it, or both. <p>Additional requirements for compiling:</p> <p>2.5 When compiling the information specified in Disclosure 302-3, the reporting organization shall:</p> <p>2.5.1 Calculate the ratio by dividing the absolute energy consumption (the numerator) by the organization-specific metric (the denominator).</p> <p>2.5.2 If reporting an intensity ratio both for the energy consumed within the organization and outside of it, report these intensity ratios separately.</p>	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review [2021 CDP Energy disclosure]</p>	
303 Water and Effluents			
303-1	<ol style="list-style-type: none"> A description of how the organization interacts with water, including how and where water is withdrawn, consumed and discharged, and the water-related impacts caused or contributed to, or directly linked to the organization's activities, products or services by a business relationship (e.g., impacts caused by runoff). A description of the approach used to identify water-related impacts, including the scope of assessments, their timeframe, and any tools or methodologies used. A description of how water-related impacts are addressed, including how the organization works with stakeholders to steward water as a shared resource, and how it engages with suppliers or customers with significant water-related impacts. An explanation of the process for setting any water-related goals and targets that are part of the organization's management approach, and how they relate to public policy and the local context of each area with water stress. 	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review [2021 CDP Water Security disclosure]</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
303-2	<p>A description of any minimum standards set for the quality of effluent discharge, and how these minimum standards were determined, including:</p> <ul style="list-style-type: none"> • How standards for facilities operating in locations with no local discharge requirements were determined. • Any internally developed water quality standards or guidelines. • Any sector-specific standards considered. • Whether the profile of the receiving body of water was considered. 	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review [2021 CDP Water Security disclosure]</p>	
303-3	<p>a. Total water withdrawal from all areas in megaliters, and a breakdown of this total by the following sources, if applicable:</p> <ul style="list-style-type: none"> • Surface water. • Groundwater. • Seawater. • Produced water. • Third-party water. <p>b. Total water withdrawal from all areas with water stress in megaliters, and a breakdown of this total by the following sources, if applicable:</p> <ul style="list-style-type: none"> • Surface water. • Groundwater. • Seawater. • Produced water. <p>Third-party water, and a breakdown of this total by the withdrawal sources listed under a. and b.</p> <p>c. A breakdown of total water withdrawal from each of the sources listed in Disclosures 303-3-a and 303-3-b in megaliters by the following categories:</p> <ul style="list-style-type: none"> • Freshwater ($\leq 1,000$mg/L Total Dissolved Solids). • Other water ($> 1,000$mg/L Total Dissolved Solids). <p>d. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies and assumptions used.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 303-3, the reporting organization shall use publicly available and credible tools and methodologies for assessing water stress in an area.</p>	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
303-4	<p>a. Total water discharge to all areas in megaliters, and a breakdown of this total by the following types of destination, if applicable:</p> <ul style="list-style-type: none"> • Surface water. • Groundwater. • Seawater. • Third-party water, and the volume of this total sent for use to other organizations, if applicable. <p>b. A breakdown of total water discharge to all areas in megaliters by the following categories:</p> <ul style="list-style-type: none"> • Freshwater ($\leq 1,000$ mg/L Total Dissolved Solids). • Other water ($> 1,000$ mg/L Total Dissolved Solids). <p>c. Total water discharge to all areas with water stress in megaliters, and a breakdown of this total by the following categories:</p> <ul style="list-style-type: none"> • Freshwater ($\leq 1,000$ mg/L Total Dissolved Solids). • Other water ($> 1,000$ mg/L Total Dissolved Solids). <p>d. Priority substances of concern for which discharges are treated, including:</p> <ul style="list-style-type: none"> • How priority substances of concern were defined, and any international standard, authoritative list or criteria used. • The approach for setting discharge limits for priority substances of concern. • Number of incidents of non-compliance with discharge limits. <p>e. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies and assumptions used.</p>	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review [2021 CDP Water Security disclosure]</p>	
303-5	<p>a. Total water consumption from all areas in megaliters.</p> <p>b. Total water consumption from all areas with water stress in megaliters.</p> <p>c. Change in water storage in megaliters, if water storage has been identified as having a significant water-related impact.</p> <p>d. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies and assumptions used, including whether the information is calculated, estimated, modeled or sourced from direct measurements, and the approach taken for this, such as the use of any sector-specific factors.</p>	<p>Environment – 2021 Year in Review ESG Data Table – 2021 Year in Review [2021 CDP Water Security disclosure]</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
305 Emissions			
305-1	<p>a. Gross direct (Scope 1) GHG emissions in metric tons of CO₂ equivalent.</p> <p>b. Gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃, or all.</p> <p>c. Biogenic CO₂ emissions in metric tons of CO₂ equivalent.</p> <p>d. Base year for the calculation, if applicable, including:</p> <ul style="list-style-type: none"> The rationale for choosing it. Emissions in the base year. The context for any significant changes in emissions that triggered recalculations of base year emissions. <p>e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source.</p> <p>f. Consolidation approach for emissions; whether equity share, financial control, or operational control.</p> <p>g. Standards, methodologies, assumptions, and/or calculation tools used.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 305-1, the reporting organization shall:</p> <p>2.1.1 Exclude any GHG trades from the calculation of gross direct (Scope 1) GHG emissions.</p> <p>2.1.2 Report biogenic emissions of CO₂ from the combustion or biodegradation of biomass separately from the gross direct (Scope 1) GHG emissions. Exclude biogenic emissions of other types of GHG (such as CH₄ and N₂O), and biogenic emissions of CO₂ that occur in the life cycle of biomass other than from combustion or biodegradation (such as GHG emissions from processing or transporting biomass).</p>	<p>Environment – 2021 Year in Review</p> <p>ESG Data Table – 2021 Year in Review [2021 CDP Climate disclosure]*</p>	 
305-2	<p>a. Gross location-based energy indirect (Scope 2) GHG emissions in metric tons of CO₂ equivalent.</p> <p>b. If applicable, gross market-based energy indirect (Scope 2) GHG emissions in metric tons of CO₂ equivalent.</p> <p>c. If available, the gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃ or all.</p> <p>d. Base year for the calculation, if applicable, including:</p> <ul style="list-style-type: none"> The rationale for choosing it. Emissions in the base year. The context for any significant changes in emissions that triggered recalculations of base year emissions. <p>e. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source.</p> <p>f. Consolidation approach for emissions; whether equity share, financial control or operational control.</p> <p>g. Standards, methodologies, assumptions and/or calculation tools used.</p> <p>Additional requirements for compiling:</p> <p>2.3 When compiling the information specified in Disclosure 305-2, the reporting organization shall:</p> <p>2.3.1 Exclude any GHG trades from the calculation of gross energy indirect (Scope 2) GHG emissions.</p> <p>2.3.2 Exclude other indirect (Scope 3) GHG emissions that are disclosed as specified in Disclosure 305-3.</p> <p>2.3.3 Account and report energy indirect (Scope 2) GHG emissions based on the location-based method, if it has operations in markets without product or supplier-specific data.</p> <p>2.3.4 Account and report energy indirect (Scope 2) GHG emissions based on both the location-based and market-based methods, if it has any operations in markets providing product or supplier-specific data in the form of contractual instruments.</p>	<p>Environment – 2021 Year in Review</p> <p>ESG Data Table – 2021 Year in Review [2021 CDP Climate disclosure]*</p>	 



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
305-3	<p>a. Gross other indirect (Scope 3) GHG emissions in metric tons of CO₂ equivalent.</p> <p>b. If available, the gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃ or all.</p> <p>c. Biogenic CO₂ emissions in metric tons of CO₂ equivalent.</p> <p>d. Other indirect (Scope 3) GHG emissions categories and activities included in the calculation.</p> <p>e. Base year for the calculation, if applicable, including:</p> <ul style="list-style-type: none"> • The rationale for choosing it. • Emissions in the base year. • The context for any significant changes in emissions that triggered recalculations of base year emissions. <p>f. Source of the emission factors and the global warming potential (GWP) rates used, or a reference to the GWP source.</p> <p>g. Standards, methodologies, assumptions and/or calculation tools used.</p> <p>Additional requirements for compiling:</p> <p>2.5 When compiling the information specified in Disclosure 305-3, the reporting organization shall:</p> <p>2.5.1 Exclude any GHG trades from the calculation of gross other indirect (Scope 3) GHG emissions.</p> <p>2.5.2 Exclude energy indirect (Scope 2) GHG emissions from this disclosure. Energy indirect (Scope 2) GHG emissions are disclosed as specified in Disclosure 305-2.</p> <p>2.5.3 Report biogenic emissions of CO₂ from the combustion or biodegradation of biomass that occurs in its value chain separately from the gross other indirect (Scope 3) GHG emissions. Exclude biogenic emissions of other types of GHG (such as CH₄ and N₂O), and biogenic emissions of CO₂ that occur in the life cycle of biomass other than from combustion or biodegradation (such as GHG emissions from processing or transporting biomass).</p>	<p>Environment – 2021 Year in Review</p> <p>ESG Data Table – 2021 Year in Review [2021 CDP Climate disclosure]*</p>	 
305-5	<p>a. GHG emissions reduced as a direct result of reduction initiatives, in metric tons of CO₂ equivalent.</p> <p>b. Gases included in the calculation; whether CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃ or all.</p> <p>c. Base year or baseline, including the rationale for choosing it.</p> <p>d. Scopes in which reductions took place; whether direct (Scope 1), energy indirect (Scope 2) and/or other indirect (Scope 3).</p> <p>e. Standards, methodologies, assumptions and/or calculation tools used.</p> <p>Additional requirements for compiling:</p> <p>2.9 When compiling the information specified in Disclosure 305-5, the reporting organization shall:</p> <p>2.9.1 Exclude reductions resulting from reduced production capacity or outsourcing.</p> <p>2.9.2 Use the inventory or project method to account for reductions.</p> <p>2.9.3 Calculate an initiative's total reductions of GHG emissions as the sum of its associated primary effects and any significant secondary effects.</p> <p>2.9.4 If reporting two or more Scope types, report the reductions for each separately.</p> <p>2.9.5 Report reductions from offsets separately.</p>	<p>Environment – 2021 Year in Review</p> <p>[2021 CDP Climate disclosure]</p>	 



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
305-7	<p>a. Significant air emissions, in kilograms or multiples, for each of the following:</p> <ul style="list-style-type: none"> • NO_x. • SO_x. • Persistent organic pollutants (POP). • Volatile organic compounds (VOC). • Hazardous air pollutants (HAP) • Particulate matter (PM). • Other standard categories of air emissions identified in relevant regulations. <p>b. Source of the emission factors used.</p> <p>c. Standards, methodologies, assumptions and/or calculation tools used.</p> <p>Additional requirements for compiling:</p> <p>2.13 When compiling the information specified in Disclosure 305-7, the reporting organization shall select one of the following approaches for calculating significant air emissions:</p> <p>2.13.1 Direct measurement of emissions (such as online analyzers).</p> <p>2.13.2 Calculation based on site-specific data.</p> <p>2.13.3 Calculation based on published emission factors.</p> <p>2.13.4 Estimation. If estimations are used due to a lack of default figures, the organization shall indicate the basis on which figures were estimated.</p>	<p>Environment – 2021 Year in Review</p> <p>ESG Data Table – 2021 Year in Review</p>	 
306 Waste			
306-1	<p>For the organization's significant actual and potential waste-related impacts, a description of:</p> <ul style="list-style-type: none"> • The inputs, activities and outputs that lead or could lead to these impacts. • Whether these impacts relate to waste generated in the organization's own activities or to waste generated upstream or downstream in its value chain. 	<p>Environment – 2021 Year in Review</p>	
306-2	<p>a. Actions, including circularity measures, taken to prevent waste generation in the organization's own activities and upstream and downstream in its value chain, and to manage significant impacts from waste generated.</p> <p>b. If the waste generated by the organization in its own activities is managed by a third party, a description of the processes used to determine whether the third party manages the waste in line with contractual or legislative obligations.</p> <p>c. The processes used to collect and monitor waste-related data.</p>	<p>Environment – 2021 Year in Review</p>	
306-3	<p>a. Total weight of waste generated in metric tons, and a breakdown of this total by composition of the waste.</p> <p>b. Contextual information necessary to understand the data and how the data have been compiled.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 306-3-a, the reporting organization shall:</p> <p>2.1.1 Exclude effluent, unless required by national legislation to be reported under total waste.</p> <p>2.1.2 Use 1,000 kilograms as the measure for a metric ton.</p>	<p>ESG Data Table – 2021 Year in Review</p>	



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GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
307 Environmental Compliance			
307-1	<p>a. Significant fines and non-monetary sanctions for non-compliance with environmental laws and/or regulations in terms of:</p> <ul style="list-style-type: none"> • Total monetary value of significant fines. • Total number of non-monetary sanctions. • Cases brought through dispute resolution mechanisms. <p>b. If the organization has not identified any non-compliance with environmental laws and/or regulations, a brief statement of this fact is sufficient.</p>	<p>There were no significant instances of non-compliance in 2021.</p> <p>Principles, Policies & Positions Item 1A., Risk Factors, 2021 Annual Report</p>	
308 Supplier Environmental Assessment			
308-1	Percentage of new suppliers that were screened using environmental criteria.	<p>Responsible Supply Chain update Environment – 2021 Year in Review</p>	
308-2	<p>Negative environmental impacts in the supply chain and actions taken</p> <ol style="list-style-type: none"> Number of suppliers assessed for environmental impacts. Number of suppliers identified as having significant actual and potential negative environmental impacts. Significant actual and potential negative environmental impacts identified in the supply chain. Percentage of suppliers identified as having significant actual and potential negative environmental impacts with which improvements were agreed upon as a result of assessment. Percentage of suppliers identified as having significant actual and potential negative environmental impacts with which relationships were terminated as a result of assessment, and why. 	<p>Responsible Supply Chain update Item 1A., Risk Factors, 2021 Annual Report Environment – 2021 Year in Review Reporting – 2021 Year in Review</p>	
GRI 400 SOCIAL			
401 Employment			
401-1	<ol style="list-style-type: none"> Total number and rate of new employee hires during the reporting period, by age group, gender and region. Total number and rate of employee turnover during the reporting period, by age group, gender and region. 	<p>Our People – 2021 Year in Review ESG Data Table – 2021 Year in Review SASB Content Index – 2021 Year in Review *</p>	
403 Occupational Health and Safety			
403-1	<ol style="list-style-type: none"> A statement of whether an occupational health and safety management system has been implemented, including whether: <ul style="list-style-type: none"> • The system has been implemented because of legal requirements and, if so, a list of the requirements. • The system has been implemented based on recognized risk management and/or management system standards/guidelines and, if so, a list of the standards/guidelines. A description of the scope of workers, activities and workplaces covered by the occupational health and safety management system, and an explanation of whether and, if so, why any workers, activities or workplaces are not covered. 	<p>Corporate Responsibility Environmental, Health and Safety Policy Statement Our People – 2021 Year in Review</p>	 



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
403-2	<p>a. A description of the processes used to identify work-related hazards and assess risks on a routine and non-routine basis, and to apply the hierarchy of controls in order to eliminate hazards and minimize risks, including:</p> <ul style="list-style-type: none"> How the organization ensures the quality of these processes, including the competency of persons who carry them out. How the results of these processes are used to evaluate and continually improve the occupational health and safety management system. <p>b. A description of the processes for workers to report work-related hazards and hazardous situations, and an explanation of how workers are protected against reprisals.</p> <p>c. A description of the policies and processes for workers to remove themselves from work situations that they believe could cause injury or ill health, and an explanation of how workers are protected against reprisals.</p> <p>d. A description of the processes used to investigate work-related incidents, including the processes to identify hazards and assess risks relating to the incidents, to determine corrective actions using the hierarchy of controls, and to determine improvements needed in the occupational health and safety management system.</p>	<p>Environmental, Health and Safety Policy Statement Our People – 2021 Year in Review</p>	
403-3	A description of the occupational health services' functions that contribute to the identification and elimination of hazards and minimization of risks, and an explanation of how the organization ensures the quality of these services and facilitates workers' access to them.	<p>Environmental, Health and Safety Policy Statement Our People – 2021 Year in Review</p>	
403-4	<p>The reporting organization shall report the following information for employees and for workers who are not employees but whose work and/or workplace is controlled by the organization:</p> <p>a. A description of the processes for worker participation and consultation in the development, implementation and evaluation of the occupational health and safety management system, and for providing access to and communicating relevant information on occupational health and safety to workers.</p> <p>b. Where formal joint management-worker health and safety committees exist, a description of their responsibilities, meeting frequency, decision-making authority, and whether and, if so, why any workers are not represented by these committees.</p>	<p>Environmental, Health and Safety Policy Statement Our People – 2021 Year in Review</p>	
403-5	A description of any occupational health and safety training provided to workers, including generic training as well as training on specific work-related hazards, hazardous activities, or hazardous situations.	<p>Environmental, Health and Safety Policy Statement Our People – 2021 Year in Review</p>	
403-6	<p>a. An explanation of how the organization facilitates workers' access to non-occupational medical and healthcare services, and the scope of access provided.</p> <p>b. A description of any voluntary health promotion services and programs offered to workers to address major non-work-related health risks, including the specific health risks addressed, and how the organization facilitates workers' access to these services and programs.</p>	<p>Our People – 2021 Year in Review*</p>	
403-7	A description of the organization's approach to preventing or mitigating significant negative occupational health and safety impacts that are directly linked to its operations, products or services by its business relationships, and the related hazards and risks.	<p>Our People – 2021 Year in Review</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
403–9	<p>a. For all employees:</p> <ul style="list-style-type: none"> • The number and rate of fatalities as a result of work-related injury. • The number and rate of high-consequence work-related injuries (excluding fatalities). • The number and rate of recordable work-related injuries. • The main types of work-related injury. • The number of hours worked. <p>b. For all workers who are not employees but whose work and/or workplace is controlled by the organization:</p> <ul style="list-style-type: none"> • The number and rate of fatalities as a result of work-related injury. • The number and rate of high-consequence work-related injuries (excluding fatalities). • The number and rate of recordable work-related injuries. • The main types of work-related injury. • The number of hours worked. <p>c. The work-related hazards that pose a risk of high-consequence injury, including:</p> <ul style="list-style-type: none"> • How these hazards have been determined. • Which of these hazards have caused or contributed to high-consequence injuries during the reporting period. • Actions taken or underway to eliminate these hazards and minimize risks using the hierarchy of controls. <p>d. Any actions taken or underway to eliminate other work-related hazards and minimize risks using the hierarchy of controls.</p> <p>e. Whether the rates have been calculated based on 200,000 or 1,000,000 hours worked.</p> <p>f. Whether and, if so, why any workers have been excluded from this disclosure, including the types of worker excluded.</p> <p>g. Any contextual information necessary to understand how the data have been compiled, such as any standards, methodologies and assumptions used.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 403–9, the reporting organization shall:</p> <p>2.1.1 Exclude fatalities in the calculation of the number and rate of high-consequence work-related injuries.</p> <p>2.1.2 Include fatalities as a result of work-related injury in the calculation of the number and rate of recordable work-related injuries.</p> <p>2.1.3 Include injuries as a result of commuting incidents only where the transport has been organized by the organization.</p> <p>2.1.4 Calculate the rates based on either 200,000 or 1,000,000 hours worked, using the following formulas: Refer to standard 403.</p>	<p>Environmental, Health and Safety Policy Statement</p> <p>Our People – 2021 Year in Review</p> <p>ESG Data Table – 2021 Year in Review</p>	 

GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
404 Training and Education			
404-1	Average hours of training that the organization's employees have undertaken during the reporting period, by: <ul style="list-style-type: none"> • Gender. • Employee category. 	Our People – 2021 Year in Review ESG Data Table – 2021 Year in Review	
404-2	a. Type and scope of programs implemented and assistance provided to upgrade employee skills. b. Transition assistance programs provided to facilitate continued employability and the management of career endings resulting from retirement or termination of employment.	Our People – 2021 Year in Review	
404-3	Percentage of total employees by gender and by employee category who received a regular performance and career development review during the reporting period.	Our People – 2021 Year in Review ESG Data Table – 2021 Year in Review	
405 Diversity and Equal Opportunity			
405-1	a. Percentage of individuals within the organization's governance bodies in each of the following diversity categories: <ul style="list-style-type: none"> • Gender. • Age group: under 30 years old, 30-50 years old, over 50 years old. • Other indicators of diversity where relevant (such as minority or vulnerable groups). b. Percentage of employees per employee category in each of the following diversity categories: <ul style="list-style-type: none"> • Gender. • Age group: under 30 years old, 30-50 years old, over 50 years old. • Other indicators of diversity where relevant (such as minority or vulnerable groups). 	Item 1., Business, 2021 Annual Report* Board of Directors Our People – 2021 Year in Review ESG Data Table – 2021 Year in Review *	
405-2	a. Ratio of the basic salary and remuneration of women to men for each employee category, by significant locations of operation. b. The definition used for 'significant locations of operation'.	Our People – 2021 Year in Review ESG Data Table – 2021 Year in Review *	
406 Non-Discrimination			
406-1	a. Total number of incidents of discrimination during the reporting period. b. Status of the incidents and actions taken with reference to the following: <ul style="list-style-type: none"> • Incident reviewed by the organization. • Remediation plans being implemented. • Remediation plans that have been implemented, with results reviewed through routine internal management review processes. • Incident no longer subject to action. <p>Additional requirements for compiling: 2.1 When compiling the information specified in Disclosure 406-1, the reporting organization shall include incidents of discrimination on grounds of race, color, sex, religion, political opinion, national extraction or social origin as defined by the ILO, or other relevant forms of discrimination involving internal and/or external stakeholders across operations in the reporting period.</p>	Our People – 2021 Year in Review	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
413 Local Communities			
413-1	<p>Percentage of operations with implemented local community engagement, impact assessments and/or development programs, including the use of:</p> <ul style="list-style-type: none"> • Social impact assessments, including gender impact assessments, based on participatory processes. • Environmental impact assessments and ongoing monitoring. • Public disclosure of results of environmental and social impact assessments. • Local community development programs based on local communities' needs. • Stakeholder engagement plans based on stakeholder mapping. • Broad-based local community consultation committees and processes that include vulnerable groups. • Works councils, occupational health and safety committees and other worker representation bodies to deal with impacts. • Formal local community grievance processes. 	<p>Grants Management and Strategic Giving Patients and Community – 2021 Year in Review</p>	 
414 Supplier Social Assessment			
414-1	Percentage of new suppliers that were screened using social criteria.	<p>Responsible Supply Chain update Code of Business Conduct Supplier Diversity – Working With Us Pioneering Science and Reporting – 2021 Year in Review</p>	  
414-2	<p>a. Number of suppliers assessed for social impacts.</p> <p>b. Number of suppliers identified as having significant actual and potential negative social impacts.</p> <p>c. Significant actual and potential negative social impacts identified in the supply chain.</p> <p>d. Percentage of suppliers identified as having significant actual and potential negative social impacts with which improvements were agreed upon as a result of assessment.</p> <p>e. Percentage of suppliers identified as having significant actual and potential negative social impacts with which relationships were terminated as a result of assessment, and why.</p>	<p>Responsible Supply Chain update Code of Business Conduct Supplier Diversity – Working With Us Pioneering Science and Reporting – 2021 Year in Review ESG Data Table – 2021 Year in Review</p>	  
415 Public Policy			
415-1	<p>a. Total monetary value of financial and in-kind political contributions made directly and indirectly by the organization by country and recipient/beneficiary.</p> <p>b. If applicable, how the monetary value of in-kind contributions was estimated.</p> <p>Additional requirements for compiling: 2.1 When compiling the information specified in Disclosure 415-1, the reporting organization shall calculate financial political contributions in compliance with national accounting rules, where these exist.</p>	<p>Political Contributions, Disclosures Community – 2021 Year in Review</p>	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
416 Customer Health and Safety			
416-1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	Principles, Policies & Positions Patient Safety Environment, Product Stewardship Pioneering Science and Patients – 2021 Year in Review	
416-2	<p>a. Total number of incidents of non-compliance with regulations and/or voluntary codes concerning the health and safety impacts of products and services within the reporting period, by:</p> <ul style="list-style-type: none"> Incidents of non-compliance with regulations resulting in a fine or penalty. Incidents of non-compliance with regulations resulting in a warning. Incidents of non-compliance with voluntary codes. <p>b. If the organization has not identified any non-compliance with regulations and/or voluntary codes, a brief statement of this fact is sufficient.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 416-2, the reporting organization shall:</p> <p>2.1.1 Exclude incidents of non-compliance in which the organization was determined not to be at fault.</p> <p>2.1.2 Exclude incidents of non-compliance related to labeling. Incidents related to labeling are reported in Disclosure 417-2 of GRI 417: Marketing and Labeling.</p> <p>2.1.3 If applicable, identify any incidents of non-compliance that relate to events in periods prior to the reporting period.</p>	Patient Safety Pioneering Science – 2021 Year in Review ESG Data Table – 2021 Year in Review	
417 Marketing and Labeling			
417-1	<p>a. Whether each of the following types of information is required by the organization's procedures for product and service information and labeling:</p> <ul style="list-style-type: none"> The sourcing of components of the product or service. Content, particularly with regard to substances that might produce an environmental or social impact. Safe use of the product or service. Disposal of the product and environmental or social impacts. Other (explain). <p>b. Percentage of significant product or service categories covered by and assessed for compliance with such procedures.</p>	Principles, Policies & Positions Patient Safety Pioneering Science , Patients and Environment – 2021 Year in Review	



GRI CONTENT INDEX

GRI indicator	Reporting Requirements	2021 Response	Alignment SDG
417-2	<p>a. Total number of incidents of non-compliance with regulations and/or voluntary codes concerning product and service information and labeling, by:</p> <ul style="list-style-type: none"> Incidents of non-compliance with regulations resulting in a fine or penalty. Incidents of non-compliance with regulations resulting in a warning. Incidents of non-compliance with voluntary codes. <p>b. If the organization has not identified any non-compliance with regulations and/or voluntary codes, a brief statement of this fact is sufficient.</p> <p>Additional requirements for compiling:</p> <p>2.1 When compiling the information specified in Disclosure 417-2, the reporting organization shall:</p> <p>2.1.1 Exclude incidents of non-compliance in which the organization was determined not to be at fault.</p> <p>2.1.2 If applicable, identify any incidents of non-compliance that relate to events in periods prior to the reporting period.</p>	<p>There were no significant instances of non-compliance in 2021.</p> <p><u>Principles, Policies & Positions</u></p>	
417-3	<p>a. Total number of incidents of non-compliance with regulations and/or voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by:</p> <ul style="list-style-type: none"> Incidents of non-compliance with regulations resulting in a fine or penalty. Incidents of non-compliance with regulations resulting in a warning. Incidents of non-compliance with voluntary codes. <p>b. If the organization has not identified any non-compliance with regulations and/or voluntary codes, a brief statement of this fact is sufficient.</p> <p>Additional requirements for compiling:</p> <p>2.2 When compiling the information specified in Disclosure 417-3, the reporting organization shall:</p> <p>2.2.1 Exclude incidents of non-compliance in which the organization was determined not to be at fault.</p> <p>2.2.2 If applicable, identify any incidents of non-compliance that relate to events in periods prior to the reporting period.</p>	<p>There were no significant instances of non-compliance in 2021.</p> <p><u>Principles, Policies & Positions</u></p>	

* Aligns to World Economic Forum Stakeholder Capitalism Metrics.



Task Force on Climate-related Financial Disclosures Statement

Biogen is committed to supporting the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to enhance transparency on climate-related matters. This statement represents our second disclosure aligned with the TCFD recommendations. It covers all facilities and operations globally which are owned by Biogen or for which we have operational control. Our 2021 CDP Climate Change disclosure provides further background on our approach to climate change and should be read alongside these disclosures.

[OUR CDP RESPONSES ARE AVAILABLE HERE](#)

Governance

TCFD recommendations for disclosures on Governance

- A. Describe the board's oversight of climate-related risks and opportunities.
- B. Describe management's role in assessing and managing climate-related risks and opportunities.

Biogen's Board of Directors has oversight of Environmental, Social and Governance (ESG) issues. This includes our Healthy Climate, Healthy Lives™ program, launched in September 2020, which is an important framework to identify and act on climate-related risks and opportunities. This \$250 million, 20-year initiative was developed with input from members of the Board of Directors and our Executive Leadership Team, governing bodies which authorized and approved the program.

Our CEO is ultimately responsible for assessing and managing Biogen's climate-related risks and opportunities, including Biogen's performance on our Healthy Climate, Healthy Lives initiative. That effort is managed and tracked by a formal Governance Committee comprised of executive-level members from across the business. The Committee meets quarterly to guide and deliver on Healthy Climate, Healthy Lives commitments, and provides regular updates to the full Executive Leadership Team. Nicole Murphy, EVP and head of Pharmaceutical Operations & Technology, a direct report of the CEO, is executive sponsor and Chair of the Healthy Climate, Healthy Lives Governance Committee.

Biogen has aligned Healthy Climate, Healthy Lives with its Enterprise Risk Management (ERM) process to ensure climate-related risks and opportunities are integrated into our overall business strategy. Our ERM team monitors strategic climate-related risks across all aspects of our business and utilizes climate scenarios as part of its assessments. On an annual basis, the ERM team evaluates identified risks, including any climate-related physical and transitional risks, by engaging the leaders who oversee and run the day-to-day work of the Healthy Climate, Healthy Lives initiative. The ERM team provides annual updates on their findings and activities to the Biogen Executive Team, including those with oversight of Healthy Climate, Healthy Lives, as well as the Board of Directors.

Starting in 2021, to support Biogen's strategic management of climate-related issues and ESG generally, a portion of the compensation of every executive officer and all other employees has been tied to advancing our ESG strategy, which includes our Healthy Climate, Healthy Lives targets.

Strategy

TCFD recommendations for disclosures on Strategy

- A. Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.
- B. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.
- C. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

Through Healthy Climate, Healthy Lives and our ERM progress, we are taking a strategic approach in identifying and responding to climate-related risks and opportunities and their impacts on our business, including impacts on our financial planning, products and services, supply chain management, investment in R&D, and operations. Our

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES STATEMENT

responses are guided by science and aim to advance our collective understanding of fossil fuels and health, including brain health.

[➤ ADDITIONAL DETAILS AND A ONE-YEAR PROGRESS REPORT ON BIOGEN'S HEALTHY CLIMATE, HEALTHY LIVES INITIATIVE](#)

Based on our most recent assessment in 2022, including climate scenario analyses conducted in 2021, we identified the following short-, medium- and long-term risks and opportunities:

Risks and Opportunities Identified	Time Horizon (short, medium, long term)	Potential Impacts	Management Approach
Increased frequency of extreme weather and climate-related natural disasters	Short, medium and long term	The vast majority of Biogen sites are not expected to be exposed to an increased material risk of extreme weather through 2040. Four third-party manufacturing sites are "at risk" due to their location in southern Europe and California.	We are launching a Responsible Supplier Program in 2022, which includes an analysis of multiple ESG factors. All suppliers "at risk" for potential climate impacts will be prioritized for assessment to understand mitigation steps being taken and needed in the future.
Expectation for sustainable and/or low carbon products and services from healthcare providers in some countries	Medium and long term	As national health systems specify life cycle impacts for products they purchase, competitive products having lower environmental impacts might succeed in various markets, which could impact Biogen's market access and revenue in some countries. The potential risks to and opportunities for Biogen relate to our ability to demonstrate and/or improve the sustainability of our products and packaging with sufficient speed, while maintaining or improving health outcomes and other customer requirements.	As part of Healthy Climate, Healthy Lives, Biogen is establishing an enhanced Sustainable Drug Development program to incorporate green chemistry principles into all stages of therapy development by 2023 and set 2025 goals for sustainable packaging. As part of these efforts, 14 Biogen labs piloted a My Green Lab program in 2021, achieving certification of "Gold" or better; the company is expanding the program in 2022. Biogen conducted life cycle assessments (LCAs) on three biosimilar products in four markets. We are also working with MIT and other leading institutions to evaluate alternative materials and approaches for primary medicine delivery with a reduced environmental footprint. Biogen has published updates on these efforts in our 2021 Year in Review.
Ban and/or restrictions on the sale or use of petrol and diesel vehicles in some markets	Short and medium term	Biogen has approximately 1,800 leased vehicles in its commercial fleet, which rely primarily on petrol and diesel fuel. Some local, state and national governments are banning or restricting sales of internal combustion engine vehicles, which we expect to translate into an increase in duties on fossil fuels and other limitations associated with our commercial fleet. In addition, an increase in the number of clean air zones being established at the local and regional level might restrict Biogen's fossil fuel vehicles from entering those regions or require us to pay a surcharge for access. Either development might limit our access to specific markets or increase our costs of access for legacy vehicles with internal combustion engines (ICE). Based on current plans to establish an all-electric vehicle fleet, we do not anticipate a material impact from either of these potential changes.	In 2020, we completed a market readiness study across all markets where we operate and, as part of Healthy Climate, Healthy Lives, committed to transition to 100% BEVs by 2025 for all new leases. We are implementing a phased roll out strategy, starting with seven markets that are comparatively EV ready today. With the help of existing and new e-mobility partners, the transition in those markets will be voluntary for interested employees through 2024, and mandatory for all new employees starting in 2025 and for all new leases starting in 2025. As signatories to the Climate Group's EV100 commitment, our management approach addresses, at a minimum, all our markets that are projected to ban fossil fuel vehicles or have clean air zones in place by 2025, thereby addressing the identified risks. BEVs are also creating an opportunity for Biogen to decrease the future cost of ownership of leased vehicles and maintain access to restricted clean air zones. Further, we expect to act on the opportunity to expand BEVs to additional markets when they become EV-ready.
Carbon pricing and future environmental taxation	Medium and long term	We expect that carbon pricing and/or environmental taxation will increase in nearly all markets where we operate.	As part of Healthy Climate, Healthy Lives, we committed to eliminate the use of fossil fuels, beginning with zero emissions within our operations by 2040. We also have committed to a net zero supply chain by 2045, a commitment currently under review by the Science Based Targets initiative. This strategy can mitigate our exposure to future carbon pricing and/or environmental taxation and might also create an advantage relative to peer companies that have yet to establish a pathway away from fossil fuels.
Access to capital on favorable terms	Medium and long term	Some financial institutions are signaling a long-term shift in their approach to capital allocation away from projects or organization with higher climate risk. Growth in sustainable finance mechanisms, such as green bonds, might result in greater access to capital and more favorable terms for more sustainable businesses.	Biogen seeks to favorably position itself to access sustainable finance mechanisms as and when we seek new sources of funding.



TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES STATEMENT

Risk Management

TCFD recommendations for disclosures on Risk Management

- A. Describe the organization's processes for identifying and assessing climate-related risks.
- B. Describe the organization's processes for managing climate-related risks.
- C. Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.

We identify and assess climate-related risks – both physical risks and transitional risks – by utilizing the Global Enabling Sustainability Initiative (GeSI)-CDP Scenario Analysis Toolkit (the Toolkit). Our 2020 assessment of physical risks included screening studies of two future climatic scenarios to explore our physical climate-related risks, notably water scarcity, inland/coastal floods, extreme heat, tornados, hurricanes and wildfires. This was updated in 2021.

Representative Concentration Pathways (RCP) 4.5 (+2°C) and RCP 8.5 (+4°C) were the selected scenarios for this study with projected impacts out from 2020 to 2030 and 2040 or 2050 depending on the criteria data set available. These scenarios were applied to Biogen's three manufacturing and R&D locations and 10 of the contract manufacturing organization sites we rely on to manufacture our products. Commercial sites, which consist of leased office space, were not included in the screening studies, because we determined that they posed a low material risk. The outcome of these 2020 studies across the 13 sites was combined with a revenue-based assessment to identify short-, medium- and/or long-term risks. Subsequently, in 2021, we expanded our assessment of physical risks to include our broader value chain, specific to our most critical suppliers.

We also utilize the Toolkit to identify and assess the risks and opportunities associated with the transition to a low-carbon economy. For this purpose, in 2020, we adopted two climate scenarios: the IEA INDC Scenario (~3°C) as a base case and the IEA WEO 450 Scenario (~2°C) as a higher ambition case toward meeting the Paris Agreement

to understand policy and technology impacts through 2040. Risks and opportunities were assessed at an enterprise level as well as specific to our biosimilar product segment.

All identified material risks and opportunities are reported to the Enterprise Risk Management team and Healthy Climate, Healthy Lives Working Governance Committee, which report to the Executive Leadership Team and Board of Directors. Through this layered accountability, we consider and address those risks and opportunities that are financially material and may impact our business model, as well as mitigation measures that are in place or need to be adopted.

Metrics and Targets

TCFD recommendations for disclosures on Metrics and Targets

- A. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
- B. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
- C. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

There is increased attention and focus from consumers, investors and regulators on decarbonization of the medicines we make. Therefore our overall strategy to manage and mitigate climate-related risks includes focus on the following metrics and targets, which are consistent with the aims of the Paris Agreement and keeping temperature rise to 1.5°C.

- In 2020, we committed to reduce absolute Scope 1 and 2 emissions by 55% by 2032 compared to 2019 and 100% by 2040 through the Science Based Targets initiative.
- We are also committed to working with our suppliers to reduce our indirect climate impacts from purchased goods, services and capital equipment, where 80% of suppliers by spend¹ will have a science-based target by 2025. We also are committed to strengthening our resilience through the mitigation of environmental and humanitarian



TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES STATEMENT

related risk throughout our global supply chain and are currently expanding our Responsible Sourcing Program, which includes the establishment of sustainable procurement principles.

- Additionally, we were the first Fortune 500 company to commit to becoming fossil fuel free across our operations by 2040. In September 2021 we issued our first progress report, which details our efforts to go fossil fuel free, including engagement with our employees and suppliers, and ongoing collaborations with renowned institutions to improve health – especially for vulnerable populations most impacted by climate-related events.

We track our performance in relation to these targets through disclosure of our progress in Healthy Climate, Healthy Lives™ and related climate-related risks and opportunities. Every year, our [ESG Data Table](#) in our annual Year in Review provides comprehensive disclosure of our annual environmental metrics, including those we use to assess climate-related risks and opportunities and in efforts to reduce our emissions. Additional annual updates to metrics associated with greenhouse gas emissions, energy, and water are disclosed through CDP Climate Change Questionnaire and CDP Water Security Questionnaire.

1. This target addresses emission impacts from Scope 3 for categories 1 and 2, which represents approximately 87% of our 2019 Scope 3 emission baseline.

REPORTING ON TAX

■ United States ■ Rest of the world

Revenue by Jurisdiction (in million)



Number of Employees by Jurisdiction



Income Tax Paid (Cash Basis) by Jurisdiction² (in million)



Profit (or Loss) before Tax by Jurisdiction¹ (in million)



Income Tax Accrued by Jurisdiction² (in million)



Total Tax Contribution by Jurisdiction³ (in million)



1. United States excludes net unrecognized losses on strategic equity investments.

2. Includes prepayment in 2020 of 2021 U.S. corporate taxes.

3. Amounts include income taxes paid, payroll taxes (employer contribution) and other indirect taxes. Totals exclude employee income or payroll taxes withheld and remitted.

Biogen's approach to tax is grounded in the company's values and Code of Conduct, with decisions based on the company's commercial business and activities. We are committed to the principles of openness and transparency with tax authorities and do not engage in activities with the sole purpose of tax avoidance. We consider tax laws and transfer pricing guidelines, applying the arm's length standard of transfer pricing under the Organization for Economic Co-operation and Development and local country requirements

to ensure intercompany arrangements result in appropriate remuneration, supported by proper documentation and facts. We also monitor compliance with relevant tax laws, regulations and guidance, as well as this policy, including maintaining communication and holding periodic meetings with external advisors on developments in tax laws, regulations and their potential implications for the company and its stakeholders. For additional background on these matters, please see Biogen's [Global Tax Policy](#) and the company's [2021 Annual Report](#).



Safe Harbor

This report contains forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, relating to: our strategy and plans; potential of, and expectations for, our commercial business and pipeline programs; capital allocation and investment strategy; clinical development programs, clinical trials, and data readouts and presentations; risks and uncertainties associated with drug development and commercialization; regulatory discussions, submissions, filings, and approvals and the timing thereof; the potential benefits, safety, and efficacy of our and our collaboration partners' products and investigational therapies; the anticipated benefits and potential of investments, collaborations, and business development activities; our future financial and operating results; 2022 financial guidance; plans relating to share repurchases. These forward-looking statements may be accompanied by such words as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "goal," "intend," "may," "plan," "potential," "possible," "prospect," "will," "would," and other words and terms of similar meaning. Drug development and commercialization involve a high degree of risk, and only a small number of research and development programs result in commercialization of a product. Results in early stage clinical trials may not be indicative of full results or results from later stage or larger scale clinical trials and do not ensure regulatory approval. You should not place undue reliance on these statements or the scientific data presented. These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including: our dependence on sales from our products; the impact of the final NCD; uncertainty of long-term success in developing, licensing, or acquiring other product candidates or additional indications for existing products; risks that uncertainty as to whether the anticipated benefits of the transaction with Samsung Biologics can be achieved; uncertainty as to whether the anticipated benefits of the cost-reduction and

10 productivity measures can be achieved; failure to compete effectively due to significant product competition in the markets for our products; failure to successfully execute or realize the anticipated benefits of our strategic and growth initiatives; difficulties in obtaining and maintaining adequate coverage, pricing, and reimbursement for our products; our dependence on collaborators, joint venture partners, and other third parties for the development, regulatory approval, and commercialization of products and other aspects of our business, which are outside of our full control; the potential impact of the conflict in Ukraine; risks associated with current and potential future healthcare reforms; risks related to commercialization of biosimilars; failure to obtain, protect, and enforce our data, intellectual property, and other proprietary rights and the risks and uncertainties relating to intellectual property claims and challenges; the risk that positive results in a clinical trial may not be replicated in subsequent or confirmatory trials or success 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; risks associated with clinical trials, including our ability to adequately manage clinical activities, unexpected concerns that may arise from additional data or analysis obtained during clinical trials, regulatory authorities may require additional information or further studies, or may fail to approve or may delay approval of our drug candidates; the occurrence of adverse safety events, restrictions on use with our products, or product liability claims; risks relating to the distribution and sale by third parties of counterfeit or unfit versions of our products; risks relating to the use of social media for our business; risks relating to technology failures or breaches; risks relating to management and key personnel changes, including attracting and retaining key personnel; failure to comply with legal and regulatory requirements; the risks of doing business internationally, including currency exchange rate fluctuations; risks relating to investment in our manufacturing capacity; problems with our manufacturing processes; fluctuations in our

effective tax rate; the direct and indirect impacts of the ongoing COVID-19 pandemic on our business, results of operations, and financial condition; fluctuations in our operating results; risks related to investment in properties; the market, interest, and credit risks associated with our investment portfolio; risks relating to share repurchase programs; risks relating to access to capital and credit markets; risks related to indebtedness; change in control provisions in certain of our collaboration agreements; environmental risks; and any other risks and uncertainties that are described in other reports we have filed with the U.S. Securities and Exchange Commission.

These statements are based on our current beliefs and expectations and speak only as of April 28, 2022. We do not undertake any obligation to publicly update any forward-looking statements, except as required by law.

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2021 YEAR IN REVIEW

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