



# Making An Impact

2022 SUSTAINABILITY REPORT



**REPLIGEN**

INSPIRING ADVANCES IN BIOPROCESSING

Sustainability is at the heart of our business. In 2022 we reinforced our commitment to drive positive impacts across environmental, social and governance topics by building out a core Sustainability team, expanding from one dedicated employee to four. Together, we are advancing Repligen commitments at an ambitious pace and embedding sustainability principles into our daily operations.

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- United Nations Sustainable Development Goals (SDGs)
- Global Reporting Initiative (GRI) 2021 Universal Standard
- Sustainability Accounting Standards Board (SASB)
- Task Force on Climate-related Financial Disclosures (TCFD)

# A Message From Our CEO



It is my pleasure to share with you our “Making an Impact” report, to convey our Progress on Repligen’s Integrated Sustainability Management (PRISM) program.

PRISM recognizes that an effective sustainability strategy reflects multiple stakeholders’ lenses and perspectives on materiality and measurements of success. This report is intended to provide transparency and color on Repligen’s program for all of our stakeholders.

At Repligen, sustainability is a strategic priority impacting all aspects of our organization. Formally embracing sustainability into our company culture has influenced how we operate and has allowed us to identify areas where we are most able to make positive change. Our initial report published in 2021 helped to elevate awareness in the company and prompted higher levels of internal action. In 2022, with the full support of our Board, we established a dedicated Sustainability team that promotes and manages our increasingly ambitious set of environmental, social and governance (ESG) initiatives.

In preparation for this report, we set our sights on key focus areas. On the environment side, we transitioned key sites to renewable energy and made advances in water conservation and landfill waste diversion. Our social programs made tremendous strides through diversity, equity and inclusion (DEI) target setting and achievement and by creating new avenues to encourage and support employee engagement and advancement. In the area of governance, we established the Repligen Performance System (RPS) for continued process improvement, fortified our cybersecurity systems, and ratified our corporate By-laws to implement shareholder proxy access. These are just a few of many areas where we are “Making an Impact” and will expand upon in this report. While we were met with challenges in certain areas such as post-use product recycling, we nevertheless gained actionable knowledge, and more so, we discovered opportunities for success in other important areas.

Since 2020, we have heightened our ESG awareness and are ever more mindful of how our actions are reflected and amplified from a number of vantage points:

- As innovators, to deliver systems and solutions to enable more efficient bioproduction, supporting advances in medicine that are improving the lives of patients worldwide
- As mentors and managers, to support our employees’ well-being and provide them opportunities for advancement
- As suppliers, to ensure our customers’ needs are at the forefront of everyday operations
- As purchasers, to advocate for responsible sourcing
- As business leaders, to return long term value to our shareholders
- As operators, to prioritize the safety and security of our systems and our employees
- As individuals, to create a respectful work environment with freedom to voice ideas and take action
- As stewards, to preserve our planet by minimizing the impact of our global operations
- As a diverse and inclusive team, to make a positive impact

It is my hope that this report demonstrates our positive impacts, while reinforcing Repligen’s strong commitment to “inspiring advances”, within the bioprocessing industry and as a responsible corporate citizen.

A handwritten signature in black ink that reads "Tony J. Hunt". The signature is written in a cursive, flowing style.

**Tony J. Hunt**  
Chief Executive Officer

# Impact Highlights 2022

## Environmental

Protecting our planet is a priority; our products enable higher bioprocessing efficiencies with reduced environmental impact.

- **Reduced greenhouse gas (GHG) emissions intensity** by 40% from 2020 to 2022 on a revenue normalized basis
- Transitioned to **100% renewable electricity** at 9 of 18 manufacturing sites by year-end 2022, representing 75% of our total global energy consumption and 62% of total emissions
- Added **Scope 3 emissions tracking and benchmarking** (in addition to Scope 1 and Scope 2), for 9 of 15 categories as defined by the GHG Protocol
- Established detailed **waste tracking and reduction** mechanisms with monthly review by leadership steering committee

## Social

Our people are our greatest asset and inspiration; our sustainability progress reflects their talent and collaborative spirit.

- Completed our **engagement survey** in first half 2023 with **>90% participation** and 76% favorability rating
- Formalized **diversity, equity and inclusion (DEI)** programs; set and achieved reach goals for gender diversity, expanded awareness events
- Launched our global intranet **The R Circle**, introduced our **Blue Marble** sustainability newsletter, and formed three new Employee Resource Groups (ERGs)
- **Increased volunteerism** with a record 16 sites participating in our annual Community Outreach Week; **contributed over \$300,000** to support underrepresented groups and our local communities

## Governance

Our [R TEAM Values](#), behaviors we value most, guide our actions and decisions every day.

- Fortified our **cybersecurity systems and protocols**, to follow CIS 20 Controls and implemented a Zero Trust framework
- Introduced the **Repligen Performance System (RPS)** for continuous operational process improvement
- **Expanded our Enterprise Resource Planning system (SAP)** from 9 to 13 sites, covering 76% of our manufacturing footprint
- Initiated cross-functional **risk management** program to identify, prioritize and mitigate operational, reputational, and strategic risks
- Updated our charters and policies to maintain **strong governance** practices

## Reporting Indexes

Transparency in our disclosures is foundational to our values and commitment to sustainability.

[Read our 2022 Sustainability Reporting Indexes](#) which includes:



# Recognition & Ratings

For Repligen, 2022 was another notable year. We remain focused on executing our ambitious sustainability strategy, and several influential organizations have recognized our impacts.

## UNGC SDG Pioneer Award



WE SUPPORT



Dianne Heiler, Senior Director of Packaging and Sustainability, receiving the SDG Pioneer Award

The United Nations Global Compact (UNGC) selected Repligen as its “2022 SDG Pioneer, USA Network” award winner from among many extremely qualified candidates, including the three finalists representing Microsoft Corporation, AD&V, and PepsiCo, Inc. A multi-stakeholder Pioneers Selection Group comprised of representatives from the Global Compact Network Board, the United Nations, government representatives, academia and civil society selected the finalists. Our program was recognized during the 2022 UN General Assembly in September at the SDG Summit USA event, which showcased what the American private sector is doing to advance the Sustainable Development Goals (SDGs) and the 2030 Agenda for Sustainable Development at large.

## Sustainalytics Low-risk Rating



Sustainalytics (part of the Morningstar family) is a leading independent ESG and corporate governance research, ratings and analytics firm that supports investors and institutions around the world. Its ESG Risk Ratings are categorized across five risk levels: negligible, low, medium, high, and severe.

In September 2022 Repligen was assessed to be at low risk of experiencing material financial impacts from ESG factors. **Repligen also received two Top Rated awards for 2022 (Industry and Regional) and one for 2023 (Industry). The industry badge is awarded to companies in the top 7% of their industry.** We believe this recognition and rating help demonstrate that we are managing our material ESG risks in a diligent and comprehensive manner. In no event shall the Top Rated badges be construed as investment advice or expert opinion as defined by the applicable legislation.\*

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## MSCI AA Rating



MSCI is a leading provider of decision support tools and services for the global investment community, including its ESG Ratings and Climate corporate search tools.

In November 2022 Repligen received a rating of AA (Leader) through the MSCI ESG assessment, which is scored on an industry-relative scale across the most relevant key issues based on a company’s business model. The ratings categories range from leader (AAA, AA), average (A, BBB, BB), to laggard (B, CCC). We view our current AA rating as a measure of our company’s resilience to long term ESG risks in the Healthcare Equipment and Supplies Industry. Prior to formalizing our sustainability strategy and broadening our disclosures, our MSCI rating was BBB; we remain committed to ESG actions that can help us maintain or even improve upon this rating.\*\*

# About Repligen



# Repligen At A Glance

2022 REVENUE

~\$802M

3-YEAR AVERAGE BASE REVENUE GROWTH

28% (2019 – 2022)

LOCATIONS

18 Manufacturing Sites

7 Countries

GLOBAL EMPLOYEES

>2,000

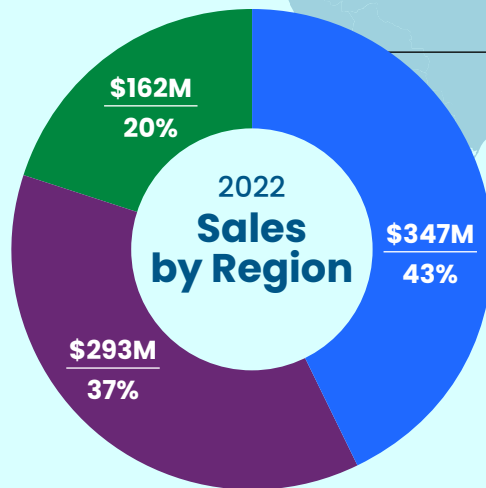
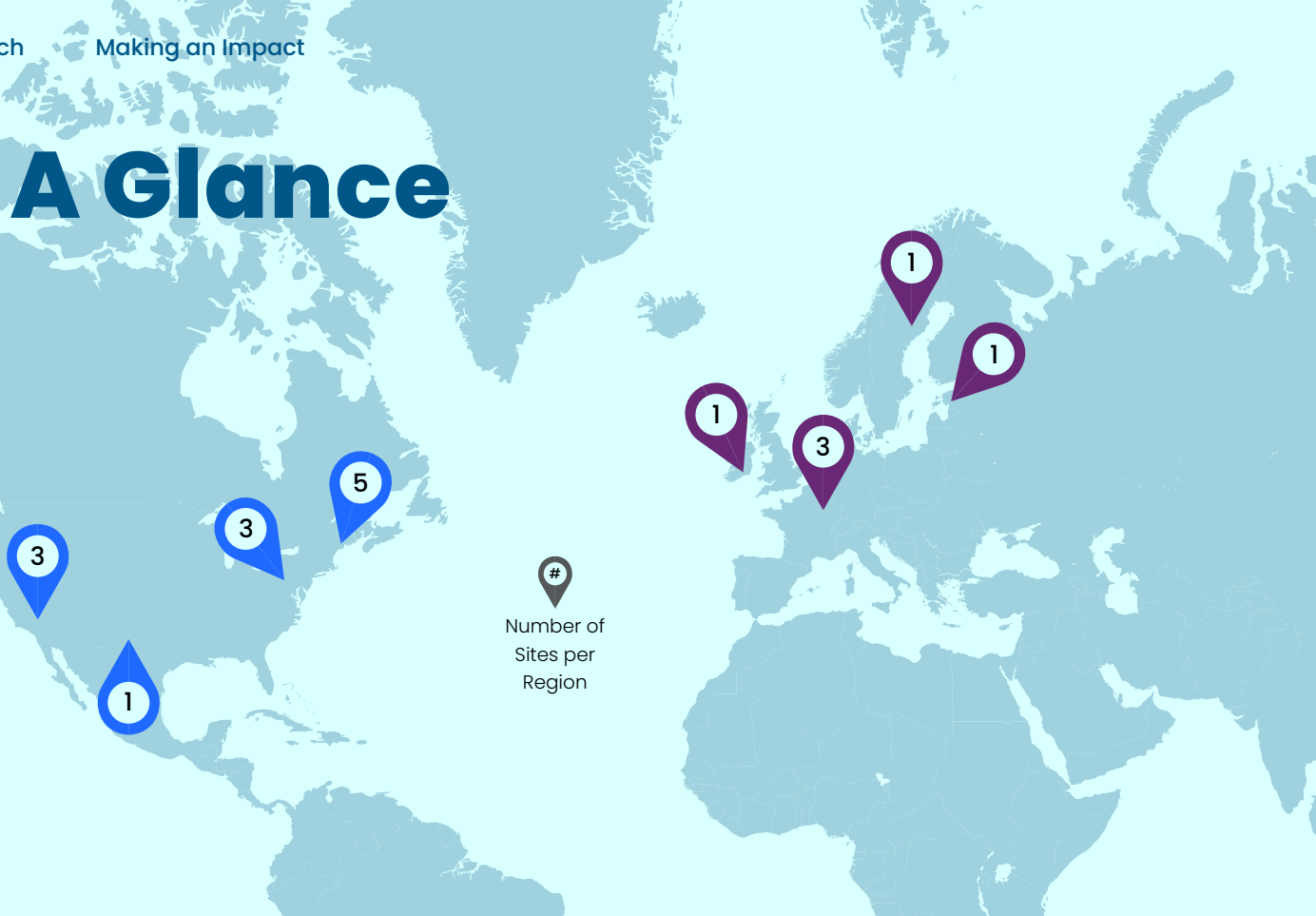
OUR BUSINESSES

Filtration, Chromatography, Process Analytics, Proteins

See Revenue Distribution on page 9.

MARKETS WE SERVE

Biopharmaceutical Companies, Contract Development and Manufacturing Organizations (CDMOs), Integrators



NORTH AMERICA	EUROPE	ASIA PACIFIC
---------------	--------	--------------

- | SITES  | SITES                  | SITES   |
|--|------------------------|---|
| Anaheim, CA                                    | Breda, The Netherlands | Sales sites only in this region, no manufacturing sites |
| Auburn, MA                                     | Lund, Sweden           |   |
| Bridgewater, NJ                                | Ravensburg, Germany    |   |
| Dallas (Irving), TX                            | Tallinn, Estonia       |   |
| Clifton Park, NY                               | Toulouse, France       |   |
| Hopkinton, MA                                  | Waterford, Ireland     |   |
| Lebanon, NH                                    |                        |   |
| Marlborough, MA                                |                        |   |
| Newton, NJ                                     |                        |   |
| Rancho Dominguez, CA                           |                        |   |
| Simi Valley, CA                                |                        |   |
| <b>Waltham, MA</b><br>(Corporate Headquarters) |                        |   |

# The Repligen Story

## The Root of Repligen: *replien*

The word replien can be traced to the late 14th century, meaning “**respond**”, “**make an answer**” or “**bend back**” or the Latin derivative meaning “**to reply, to repeat**”. Adding a “g” to represent the genes or proteins that are the therapeutic targets of the biological drug development industry that we serve, we created Repligen. Established in 1981, Repligen has been focused on staying connected to our customers, receiving their input, responding to their needs by resolving (answering to) their challenges, and continuously repeating the process. We address bioprocessing challenges with innovation that is surpassing traditional expectations and inspiring important advances in the life sciences.

## Our Customers

In 2012, we made the timely decision to focus our efforts 100% on bioprocessing innovation to meet the rapidly evolving needs of biological drug manufacturers. Today, primary Repligen customers are biopharmaceutical drug developers and contract development and manufacturing organizations (CDMOs), as well as other life sciences companies. We view these relationships as symbiotic from a sustainability lens. With our focus on cost and process efficiencies, we continuously monitor and improve our own manufacturing and distribution processes, while the products we sell enable our customers to do the same. See our [Enabling Efficiencies in Bioprocessing](#) spotlights.

## We R... Staying Close to our Customers

Staying connected to our customers goes beyond solving their complex manufacturing challenges. By having an increased physical proximity to them in key regions, we are able to provide more rapid service and mitigate environmental impacts, a consideration that has risen as a priority in the company since we began our ESG journey in earnest in 2019.

**“Our customer-first approach has been core to our strategy and guided our path since ‘Day 1’. This connection allows us to stay at the forefront of innovation in a rapidly evolving industry.”**

**Linda Federico,**  
*Senior Director of Customer Service*



## We R... Cultivating R TEAM Values

In 2021, with the launch of our global intranet, we introduced R TEAM to define the behaviors we value and to serve as a guide for how we interact with each other and our stakeholders. These behaviors help us to achieve business goals in a sustainable and ethical way and retain what is most important to our culture as we grow. These R TEAM concepts also help us to attract, retain and inspire our employees.

### R TEAM promotes the following behaviors:

- **T**eam up with each other
- **E**ngage authentically
- **A**chieve with excellence
- **M**ove things forward

## We R... Inspiring Advances in Bioprocessing

We provide a range of highly innovative systems and consumable products – including single-use offerings – that help set new standards for the way biologics are manufactured. These products fall into four business categories: Filtration (including Fluid Management), Chromatography, Process Analytics and Proteins; learn more about [our technologies](#) on our corporate website.

In short, we are committed to “inspiring advances in bioprocessing” as a trusted partner in our customers’ production of critical biologic drugs – including monoclonal antibodies (“mAbs”), recombinant proteins, vaccines, and cell and gene therapies (“C&GT”) – that are improving human health worldwide.



## We R... Delivering Long Term Growth through Innovation

With accelerated sales of our products, particularly in the 2020 – 2022 timeframe with COVID-19 related demand, we increased our investments in operations and expanded manufacturing capacity by a range of 3- to 9-times depending on the product line. In the same period, we continued to prioritize investments in R&D to retain our innovation edge in our industry; we supported next-generation and new product development at a rate of 5% to 6% of revenue, even as sales more than doubled during the two-year period. We feel well positioned to continue to serve the needs of the growing biopharmaceutical drug market with highly differentiated products.

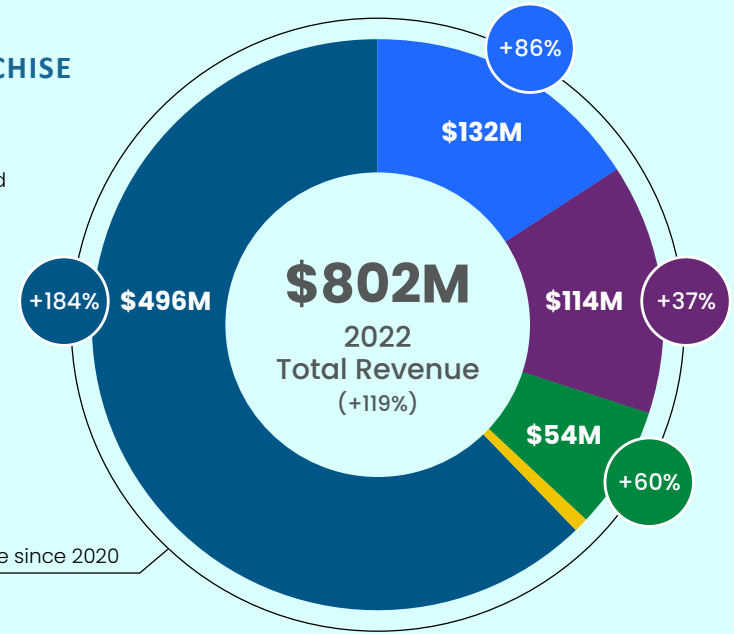


### REVENUE AND GROWTH BY FRANCHISE

In 2022, overall business was driven primarily by our Filtration and Chromatography franchises, which were up 23% and 45%, respectively, compared to 2021. Within each of these franchises, our base business revenues increased by more than 50%. The chart at right shows growth by franchise since 2020 (a two-year period).

- Filtration
- Chromatography
- Proteins
- Process Analytics
- Other

% increase since 2020

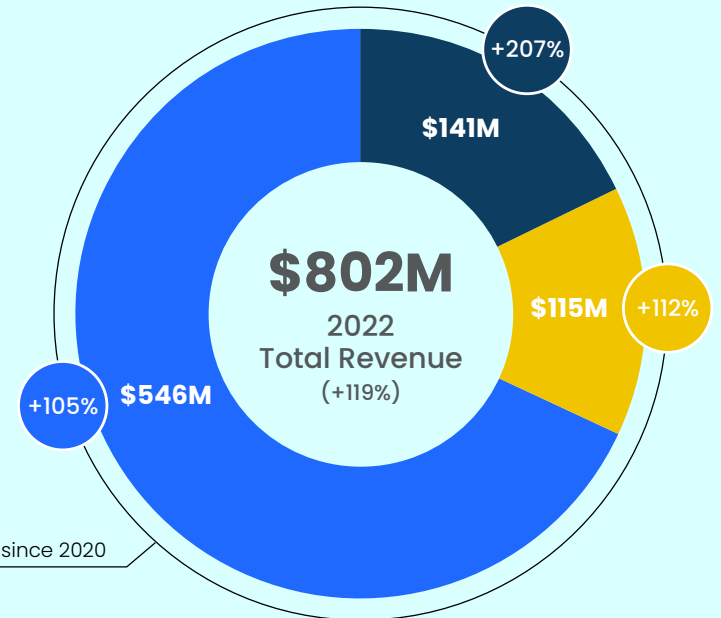


### REVENUE BY BIOLOGIC TYPE

In 2022, established monoclonal antibody markets continued to drive the majority of our revenue. Demand for developers of cell and gene therapies (C&GT) accounted for 14% of our revenue as customers adopted and scaled up Repligen technologies in manufacturing processes for this emerging market. The chart at right shows growth by biologic type since 2020 (a two-year period).

- Monoclonal Antibodies (mAbs)
- COVID-19
- Cell & Gene Therapies (C&GT)

% increase since 2020



## We R... Enabling Efficiencies in Bioprocessing

Our bioprocessing solutions enable efficiencies for our customers. We aim to unlock opportunities for biopharmaceutical manufacturers to **yield more product, in less time and space, and with less waste**, thus positively impacting their Scope 2 and Scope 3 emissions. The closed nature of many of our products can also minimize the risk of drug contamination during the manufacturing process.

Below are just three of many examples to demonstrate the impact of our products and systems in providing solutions to bioprocessing challenges.

### CASE STUDY 1

## Increasing mAb Production Using XCell® ATF

We provided Samsung Biologics (SBL), a leading CDMO, with XCell ATF devices to study Alternating Tangential Flow technology in enabling the inoculation of large (15,000 L) bioreactors in a fed-batch production platform. SBL later announced that the company successfully performed N-1 (3,000 L) perfusion using XCell ATF devices to supply a (15,000 L) commercial production process. SBL reported a **reduction in monoclonal antibody production time of up to 30%** for its pharmaceutical client and stated:

**“The ATF perfusion system allows us to cultivate higher cell culture densities (up to 10-fold) whilst retaining high cell viabilities (>98%) at the seed stage (N-1) to enable inoculation of the production bioreactors (15,000L) at higher cell densities and achieve peak cell densities within shorter culture durations. This allows for improved productivity and reduction in production time.”**

— SBL press release August 12, 2019

Lower right images, left to right: OPUS 45R PPC, XCell ATF 6 device, KrosFlo TDF system

<sup>1</sup> See full paper: Tran, Michelle Y., and Armin A. Kamen. 2022. “Production of Lentiviral Vectors Using a HEK-293 Producer Cell Line and Advanced Perfusion Processing.” *Frontiers in Bioengineering and Biotechnology* 10 (887716). doi: 10.3389/fbioe.2022.88771.

### CASE STUDY 2

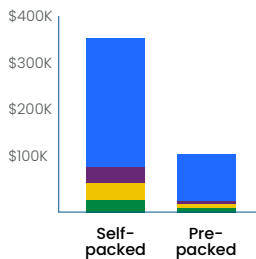
## Cost and Time Savings Using OPUS® Chromatography Columns

We evaluated use of our larger OPUS Pre-packed Columns (PPC) as compared to traditional customer self-packed columns. This demonstrated the significant cost and time savings using OPUS PPCs. Embedded in “costs” are meaningful **reductions in utility use (water and electricity)** as the intensive cleaning and sanitization required of self-packed (stainless steel) columns is eliminated.

### POSITIVE PROCESS IMPACTS

In this example, over 65% cost savings and up to 80% labor savings were achieved when using OPUS PPCs compared to customer self-packed columns.

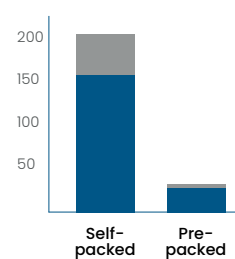
#### Total Costs



■ Total Materials ■ Total Suite  
■ Column ■ Resin\*  
■ Total Labor ■ Storage Costs\*

\*De minimis

#### Total Hours



■ Total Manufacturing FTE Hours  
■ Total QC FTE Hours

### CASE STUDY 3

## Increasing Lentiviral Vectors Production Using KrosFlo® TDF Technology<sup>1</sup>

We collaborated with the Bioprocessing Group at McGill University to explore how our KrosFlo TDF technology could be used in lentivirus production. Lentiviral vectors (LV) are a gene delivery tool used to enable expression of chimeric antigen receptors in CAR-T cell therapies. One of the major challenges in the field is how to produce enough vectors to meet the demand for treating patients as well as producing high and consistent quality of vectors.

**“Given its scale-up potential, the TDF is an excellent candidate to be further evaluated to determine optimized conditions that can ultimately support continuous manufacturing of LVs at large scale.”**

— *Frontiers in Bioengineering and Biotechnology*, June 2022, Volume 10, Article 887716

Use of TDF as a cell retention device in perfusion mode produced **31-fold increases in LV** production of a producer cell line. In addition, the TDF perfusion run produced **1.5-fold higher functional yield, cumulatively**.



# Reporting Approach



# Approach, Structure and Scope

## Transparency in Reporting

This report demonstrates our commitment to transparency and the positive impacts of our ESG programs.

We plan to issue periodic sustainability reports and aim to establish an annual reporting rhythm. Evergreen information related to our approach and guiding principles of sustainability will be maintained on the [Sustainability page](#) of our website.

## Impact-Based Report Structure

Nine areas of impact serve as the organizational structure for this report. These are:

### Environmental Impacts

- Energy/Emissions
- Water
- Waste

### Social Impacts

- Talent Engagement and Development
- Value Chain Engagement
- Community Engagement

### Governance Impacts

- Structure and Practices
- Policies and Charters
- Risk Management

## Expanded Reporting Scope

For this report, we have captured 2022 data for all 18 of our manufacturing sites across all geographies in which Repligen was operating as of December 31, 2022. This report does not include data sets for companies acquired in 2023. For companies acquired through year-end 2022, we were able to capture historical data to include those facilities in our data set. This data positions us well for upcoming work toward developing a science-based target for reduced GHG emissions. Unless otherwise noted, all environmental **data sets** in this report cover the period of **January 1, 2022 through December 31, 2022**, which we compared to 2020 data for perspective, including those data disclosures in our selected reporting frameworks. All **narrative** in this report covers the period of **July 1, 2021 through June 30, 2023**.

## Additional Disclosure Frameworks

For this edition we continue to disclose against internationally recognized reporting frameworks, including the UNGC Communication on Progress (CoP), GRI Universal Standard 2021 and SASB Standards frameworks. We are also adding to our formalized reporting commitment with our first CDP responses on Climate and Water, using guidance from the GHG Protocol and the Task Force on Climate-related Financial Disclosures (TCFD).

As a signatory of the UNGC, Repligen aligns with its Ten Principles on human rights, labor, the environment and anti-corruption. We maintain focus on seven SDGs as the most relevant to our business.

[Read our 2022 Sustainability Reporting Indexes.](#)

## Sustainable Development Goals



Repligen GICS® classification is “Life Sciences Tools and Services” within the Pharmaceuticals, Biotechnology & Life Sciences industry group of the Health Care sector.

### We Don't

When considering Repligen's ESG performance, note that we do not develop or sell biopharmaceuticals. With the exception of a small product line representing less than 1% of our 2022 revenue, we also do not sell medical equipment or supplies to the medical community. Products representing approximately 99% of our 2022 revenue are not sold to patients, dependent on payor reimbursement or marketed to the medical community. Our product development and testing are technology focused and thus do not involve human or animal studies. We continue to engage with key reporting frameworks and ratings firms to clarify our business model.

### We Do

As a bioprocessing technology company, we do develop and sell technologies and systems that improve the process of manufacturing biopharmaceuticals. Our direct customers are global biopharmaceutical developers and manufacturers, as well as other life sciences companies. We are proud of our indirect impact on improving human health, by bringing innovation to biopharmaceutical production processes. Read more about our business in [About Repligen](#).

## Methodologies

### Data Collection

- GHG Protocol Guidance was used for all emissions accounting and market-based emission factors were utilized for the calculations.
- The U.S. Environmental Protection Agency (EPA) Emissions and Generation Resource Integrated Database (eGRID) and data from the EPA Energy Information Administration (EIA) were used to prepare our emissions inventories.
- EPA Global Warming Potential (GWP) values were used to standardize all emissions by carbon dioxide equivalents (CO<sub>2</sub>e).
- Energy usage and GHG emissions metrics are based on utility invoices of purchased energy consumed on-site, and best estimates from property managers of shared rental spaces and in-house calculations from site-level data.
- The annual impact of renewable energy credits (RECs) on our total GHG emissions is based on aggregate market-based site-level data.
- Water withdrawal and consumption metrics are based on utility invoices. In the case of Newton, NJ, a site supported by well water, metrics are derived from expected baseline usage.
- Water discharge metrics, as reported to CDP for 2022, are tracked for water that is used in manufacturing processes and treated before discharge.
- Waste metrics are predicated on hauler invoices, regular service provider reporting and in-house calculations.
- Employee-related data covers all Repligen sites, unless otherwise indicated.
- We implemented a rigorous verification process to update our 2019 baseline data set with energy, water and waste data, essential for developing our forthcoming Science Based Targets initiative (SBTi) proposal and tracking progress over time.

### Data Monitoring

The Repligen ESG Ambassador network is responsible for collecting and monitoring site-level data on an ongoing basis while our corporate Sustainability team oversees uploads to our financial-grade ESG software platform.

### Data Assurance

Other than audited financial data, the content of this report has not been externally verified. However, the feasibility of third-party assurance is under evaluation for future installments of our corporate sustainability report.

### Financial Data

Any financial data sets in this report are historical only and have been fully audited by our independent registered public accounting firm based on criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). All financial information in this report is limited to continuing operations and is reported in U.S. dollars.

### Sustainability Contact

For more information about Repligen's approach to ESG reporting, email us at: [sustainability@repligen.com](mailto:sustainability@repligen.com)

## Materiality Assessment



The first table on the following page summarizes Repligen's initial, and still relevant, materiality assessment aligned with our four pillars of sustainability – our 4Ps.

At Repligen, we understand the value in monitoring emerging issues material to our business and our value chain, assessing related topics according to new information and evolving stakeholder expectations.

During 2022 and into 2023, we led and participated in numerous stakeholder communications across the business with key customers, critical suppliers, leading institutional investors and employee resource groups to learn about and better understand their interests, priorities, targets and challenges through the increasingly relevant lens of sustainability.

We remain committed to periodically updating our materiality matrices to ensure close alignment with our stakeholders' priorities in the rapidly evolving bioprocessing industry.

### Scope 3 Materiality

The second table on the following page summarizes our Scope 3 GHG emissions category materiality assessment. In our inaugural 2020 Sustainability Report, only two of the 15 Scope 3 emissions categories had been tracked: those from company business travel (category 6) and employee commuting (category 7). See [page 14](#) for a complete list of Scope 3 emissions categories.

In 2022 we expanded our tracking of actual\* Scope 3 emissions data to include seven additional categories (1, 2, 3, 4, 5, 8, and 9) as part of our ambitious commitment to setting an emissions reduction target through the SBTi. Emissions inventories for use of sold products (category 11) and end-of-life treatment of sold products (category 12) categories will be added in 2023.

In 2023 and beyond, we will continue to strengthen our emissions inventory data for these 11 categories to better inform our overarching emissions reduction strategy. We consider the four remaining Scope 3 emissions categories (10, 13, 14 and 15) as not material to Repligen in 2022.

\*See Scope 3 Ambition on page 21 of this report.

# Materiality

Material to Repligen

## ASSESSMENT

	Communities	Customers	Employees	Investors	Suppliers
<b>PRINCIPLES</b>					
Working Responsibly					
Business Ethics & Compliance	○	○	○	○	○
Enterprise Risk Management	○	○	○	○	
Financial Integrity			○	○	
Cybersecurity & Data Privacy		○	○		○
Partner (Supplier) Ethics & Compliance		○			
<b>PEOPLE</b>					
Caring About Our Employees and Communities					
Health, Safety & Well-Being	○	○	○		○
Diversity, Equity & Inclusion	○		○	○	
Employee Attraction, Development & Retention			○	○	
Community Engagement & Impact	○		○		
Labor Practices	○	○	○	○	○
<b>PRODUCT</b>					
Innovating Through a Sustainability Lens					
Innovation		○	○	○	○
Supply Chain Management		○		○	○
Product Quality & Safety		○	○		
Product Design & Lifecycle Management		○	○	○	○
<b>PLANET</b>					
Protecting the Environment					
Environmental Impact	○	○	○	○	○
Energy Use & Climate Impact	○	○	○	○	○
Water Use	○		○	○	
Solid Waste Management	○		○		

## SCOPE 3 EMISSIONS CATEGORIES

- 1 Purchased goods and services
- 2 Capital goods
- 3 Fuel- and energy-related activities
- 4 Transportation and distribution (upstream)
- 5 Waste generated in operations
- 6 Business travel
- 7 Employee commuting
- 8 Upstream leased assets
- 9 Transportation and distribution (downstream)
- 10 Processing of sold products
- 11 Use of sold products
- 12 End-of-life treatment of sold products
- 13 Downstream leased assets
- 14 Franchises
- 15 Investments

# Sustainability Oversight

Our commitment to sustainability oversight at both the Board and management levels reflects the importance we place on ESG-driven policies and programs to support our long-term strategic plan.



## SUSTAINABILITY GOVERNANCE STRUCTURE

### Board of Directors

#### BOARD COMMITTEES

- Nominating and Corporate Governance
- Executive Compensation
- Audit

The Chair of our **Nominating and Corporate Governance** (N&CG) Committee oversees our ESG matters and practices as set forth in the N&CG Committee charter as well as reviews and approves the information contained in our sustainability reports. The N&CG Committee reports to the full Board on ESG matters and the company's progress on sustainability programs and initiatives.

### Executive Team

Our **Operating Leadership team** — including our President and CEO, and our COO, as ESG executive sponsors — is responsible for company strategy and performance, including the integration of sustainability and ESG initiatives into our overall strategy and investments for long-term value creation.

**Executive sponsors** periodically (typically quarterly) engage with the Board's N&CG Committee Chair on ESG strategy and to review progress against the company's ESG objectives and performance measures. On an annual basis, an ESG program and status report is presented to the full Board.

### Head of Sustainability

We first established a Corporate Responsibility Team (CRT) in 2020. This was a cross-functional team with responsibility for publishing our first report and establishing reporting frameworks and methods for data collection. In 2021, we modified our structure, naming our Senior Director of Global Packaging and Sustainability as our Head of Sustainability and subsequently hired full-time sustainability staff.

Our Head of Sustainability leads a four-person **Sustainability team** and oversees a well-established network of global ESG Site Ambassadors.

### ESG Steering Committees

Each of the **three steering committees** is led by our Head of Sustainability:

#### Environmental

Meets monthly, championed by our COO (executive sponsor) and comprised of key site leads who track metrics, share best practices and identify actionable opportunities.

#### Social

Meets quarterly, championed by our COO (executive sponsor) and comprised of key HR personnel who track metrics, create standard processes, and support the business networks in their talent-related goals.

#### Governance

Meets quarterly, championed by our President and CEO (executive sponsor) comprised of legal, finance, IT and other operations personnel who review policies, identify opportunities for improvement, and track risk assessment and mitigation plans.

# Making an Impact





# Progress Through Multiple Lenses

In 2021 and 2022, Repligen focused on serving the high-volume demands of COVID-19 vaccine manufacturers while still delivering growth in our base business. Through one lens, our capacity expansions resulted in increased utility consumption and increased GHG emissions. Through another lens, these expansions presented us with opportunities to embed manufacturing efficiencies into our own facilities while continuing to deliver high-value products to our customers. We took a similar approach to embedding sustainability into our daily operations through ambitious investments, bold actions, and sharing best practices and lessons learned across the business. This enabled us to achieve scale with select projects and drive results across our main impact areas.

## Positive Impacts in Energy, Water and Waste

One of our five strategic priorities for 2022 was to complete capacity expansions at three key facilities. Major expansion work took place in Hopkinton, Marlborough and Waltham, while less major work occurred in Bridgewater, Clifton Park, Lund and Waterford.

Cumulatively, we added **over 200,000 square feet** of additional manufacturing, warehouse and office space, which supports our robust business continuity plan and provides a solid foundation for meeting increased demand from our customers for the years ahead.

Despite our larger footprint, and through a systematic and disciplined approach toward optimization, **overall intensity decreases in energy consumption, GHG emissions intensity and water usage were achieved in 2022 compared to 2020 when normalized to revenue.** In 2022, we accelerated our waste reduction efforts and expect to increase positive impacts around waste in the years ahead.

## Expanding Our Baseline

We continue to track Repligen energy usage and GHG emissions data using our financial-grade software platform. For this report, we focused heavily on building out our 2019 baseline data sets for energy, emissions, water and waste, and carrying them through year-end 2022. This important work will inform our upcoming science-based target-setting process aligned with SBTi and the latest climate science. See page 18 for our 2019 – 2022 data summary.

We are evaluating the potential use of third-party data verification audits for future reporting to optimize the robustness and transparency of our data sets.

**Investments and other actions in 2022 accelerated our transition to renewables and had a favorable impact on GHG emissions avoidance.**

Total projected 2022 GHG emissions:

**7,753**  
TONS CO<sub>2</sub>e



Actual 2022 GHG emissions:

**4,269**  
TONS CO<sub>2</sub>e



GHG emissions avoidance:

**↓45%**  
(3,484 tons CO<sub>2</sub>e)



# 2022 Environmental Data\*



## Energy

Totals include renewable and non-renewable sources

Energy	2020	2022
Energy Consumption (MWh)	16,091	<b>30,970</b>
Overall Change		<b>↑ 93%</b>
Energy Consumption Intensity	43.9	<b>38.6</b>
Intensity Change		<b>↓ 12%</b>



## Water\*

The majority of Repligen operations are not water intensive

Water	2020	2022
Water Withdrawals (cubic meters)	113,333	<b>136,140</b>
Overall Change		<b>↑ 20%</b>
Water Withdrawal Intensity	309.4	<b>169.9</b>
Intensity Change		<b>↓ 45%</b>



## GHG Emissions

Calculations utilize market-based emission factors

GHG Emissions	2020	2022
Total GHG Emissions (tons CO <sub>2</sub> e)	3,250	<b>4,269</b>
Overall Change		<b>↑ 31%</b>
GHG Emissions Intensity	8.9	<b>5.3</b>
Intensity Change		<b>↓ 40%</b>



## Waste

Waste	2020	2022
Waste (tons)	668	<b>1,898</b>
Overall Change		<b>↑ 184%</b>
Waste Intensity	1.8	<b>2.4</b>
Intensity Change		<b>↑ 30%</b>

\* All intensity data is per million USD 2022 revenue. See page 13 for information on methodologies used to prepare data.

For a comprehensive data breakdown see [page 38](#).

# Energy

## Renewable Electricity

We entered 2022 with four of 18 manufacturing sites, representing approximately 37% of total demand, actively participating in renewable electricity purchases. Three of these were using 100% renewables. We set a goal to double the number of active sites from four to eight, and by year-end, the number of active sites quadrupled to 16. Nine of these were using 100% renewables, which increased the total demand being met by renewable from 37% to 75%. Of the nine sites not yet at 100%, each had a “transition to renewables” plan in development to maximize their use of renewables. By June 2023 two additional sites (11 total) were at 100%.

### EXPANSION OF MANUFACTURING SITES USING RENEWABLES

	2020	2021	2022	1H2023
Sites participating	<b>2 of 8</b>	<b>4 of 18</b>	<b>16 of 18</b>	<b>16 of 18</b>
% of total consumption	<b>38%</b>	<b>37%</b>	<b>65%</b>	<b>85%</b>
Sites at 100% renewable	<b>2</b>	<b>3</b>	<b>9</b>	<b>11</b>
% of total consumption	<b>38%</b>	<b>32%</b>	<b>75%</b>	<b>82%</b>



Waterford, Ireland, rooftop solar panels.

### SITE-LEVEL ENERGY REDUCTION HIGHLIGHTS

## Expansion Leads to Reduction in Marlborough

### Transition to Renewables

The company's second-largest manufacturing facility, Marlborough, consumed 21% of total global energy demand (fuel plus electricity) and contributed 44% of total Scope 1 and Scope 2 emissions in 2022. That same year we nearly doubled the size of this site to 130,700 square feet. This accelerated our motivation to transition to 100% renewable electricity purchases and the conversion was made in late October.

Our expectation is that this site will continue to consume 21% of total energy demand; however, it will emit only 12% of total Scope 1 and Scope 2 emissions. This reflects an anticipated 83% reduction in actual emissions for the site based on 2022 usage with a full 12 months of 100% renewable electricity purchases. These anticipated impacts do not account for company-wide capacity expansions, production increases or new sites acquired in 2022 whose data is not yet tracked.

Local utility renewable options, favorable electricity generation rates, and a deregulated market made the transition possible and the Marlborough site expects monthly utility bills to noticeably decrease.

### HVAC Upgrades

As part of the site's capacity expansion project, variable frequency drives (VFDs) were installed in the office space heating, ventilation and air conditioning (HVAC) system to reduce electricity demand, thereby making it more efficient. The total impact of this change has yet to be quantified, but at least 20–25% of the annual increased load demand for the larger building is expected to be fully mitigated.

## RE and EV in Rancho Dominguez

Rancho Dominguez, our third-largest manufacturing facility, started making direct utility purchases of 100% renewable electricity in 2021 and achieved an emissions avoidance of over 900 tons of CO<sub>2</sub>e in 2022. Looking for additional opportunities in 2022, the site explored rooftop solar panels, but an exhaustive review confirmed their infeasibility. However, as part of our deep commitment to renewables, an investment in 14 electric vehicle (EV) chargers was made that same year and were operational as of June 2023.

## Let There Be Light in Waterford

In late 2021 a 166-kilowatt capacity rooftop solar photovoltaic array was installed on their newest build-out to offset about 10% of annual electricity grid demand. By the end of 2022 it was fully operational. For a bird's eye view of this building enhancement, see photo on [page 19](#).

## Other Programs

### Window Glazing in Newton

Our Newton team invested in a 2022 GHG emissions reduction initiative centered on window glazing for its 11,000-square-foot facility. By reducing heat transfer compared to the original unglazed windows, the building will stay cooler during high-temperature summer months and warmer during low-temperature winter months. Ambient heat from site machinery is also reused as passive heating and reduces the need for auxiliary forms of heating. The glazing process began in February 2023 and is expected to yield efficiency improvements throughout the year.

## Heat Pump Upgrades in Auburn

Though a relatively small contributor (1%) to total global energy demand, our Auburn site sits in the northeastern U.S. and experiences wide temperature swings in summer and winter months. In 2022 the team invested in an electric-powered heat pump project to lower annual natural gas use, directly reducing their Scope 1 emissions. Having no previous cooling capacity at the site, rebates offered through the Inflation Reduction Act (IRA) offset project costs. May 2023 saw completion of the upgrade, and while full impact will depend on seasonal temperature extremes and durations, significant positive impacts are expected to coincide with the site's purchases of 100% renewable electricity (since 2019) while providing consistent levels of employee comfort. We expect to report on impact updates in our third sustainability report.

## Going Local in Europe

In 2022 Repligen expanded capacity in Breda and Waterford to provide EU-manufactured products, thus reducing transportation-related product carbon footprints via shorter delivery distances compared to U.S.-based manufacturing and shipping points in Waltham and Rancho Dominguez. See our route optimization example below.

While full product life cycle assessments (LCAs) have not been performed, these locally produced products allow for decreased product carbon footprints via reduced shipping distances of an estimated 3,000 to 6,000 miles (4,828 to 9,656 km).



## Scope 3 Emissions

### Expanded Tracking to Nine Categories in 2022

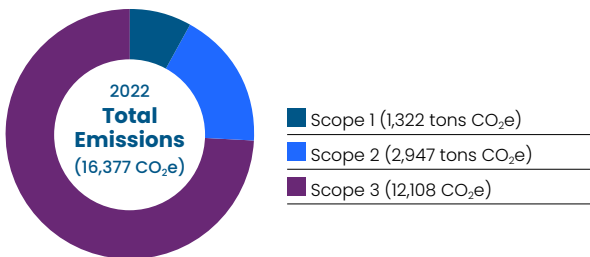
As stated on page 13 of this report, only two of 15 Scope 3 emissions categories were being tracked in 2020 – those from company business travel (category 6) and employee commuting (category 7).

Starting in 2022, seven additional categories (1, 2, 3, 4, 5, 8, and 9) are being tracked as part of our ambitious commitment to setting an emissions reduction target through the SBTi. Two additional emission inventory categories, use of sold products (category 11) and end-of-life treatment of sold products (category 12), will be added in 2023. The four remaining emissions categories (10, 13, 14 and 15) were not material to Repligen in 2022.

### Majority GHG Emissions

Scope 3 emissions account for an estimated 74% of total Repligen GHG emissions. Based on current estimates of the emissions we track (nine categories), three categories represent the bulk (87%) of our Scope 3 emissions. These include commuting (42%), purchased goods and services (23%), and downstream transportation and distribution (22%). We continue to strengthen emission inventories for the 11 categories material to Repligen to inform our overall emissions reduction strategy.

See [page 14](#) for a complete list of Scope 3 emissions categories.



## Purchased Goods & Services and Upstream Transportation

### Emissions categories 1 and 4

In 2022 and into 2023, we conducted a **pilot study with 12% of our suppliers** as part of an expanded category 1 and category 4 emissions assessment. Key suppliers of our Lund and Waltham sites were surveyed and invited to share their EcoVadis scorecards. Results of this information-gathering effort are under evaluation for use in upcoming supplier engagement and emissions reduction initiatives. We plan to expand our supplier engagement to include labor, ethics and other key value chain topics in future reporting.

## Employee Commuting

### Emissions category 7

Employee commuting emissions are considered material to Repligen, and in 2023 we conducted a new pilot commuting survey representing half of the employees. Results for year-end 2022 revealed personal vehicle use from 90% of responders and an estimated 15% contribution toward Repligen’s total Scope 1, 2 and 3 GHG emissions. Had the full employee base participated, the adjusted contribution estimate would be closer to 30%. In general, this aligns with two previous site-level commuting studies reported in our inaugural 2020 Sustainability Report. However, as we continue to expand data sets for all Scope 3 emission categories material to our business, the total contribution of employee commuting toward our total carbon footprint is expected to decrease while others are expected to increase.

To attenuate this impact, investments in on-site electric vehicle charging stations were made over the last few years and the potential for expansion continues to be explored, along with other related programs where feasible, such as company-sponsored incentives for lower-impact commuting modes.

## Scope 3 Ambition

It is important to recognize that most organizations reporting Scope 3 emissions use broad-based calculation methods based on spend. Rarely is enough actual data available to develop an informed Scope 3 emissions reduction target.

While this is a widely accepted approach, we at Repligen have higher ambitions and are building a **Scope 3 inventory supported by actual emissions data** (versus consumption data) from suppliers, service providers and our own internal reporting systems.

We believe that better quality data makes for a better overall program and that our pioneering efforts will continue to drive value through our Scope 3 emissions reduction target setting and progress tracking efforts.



# Water

For this sustainability report, 2021–2022 water usage was tracked for our 18 manufacturing sites using monthly, quarterly and annual utility invoices, depending on the provider or property manager. Availability of actual 2022 data was limited to 13 sites; however, we expect to expand our water data set going forward.

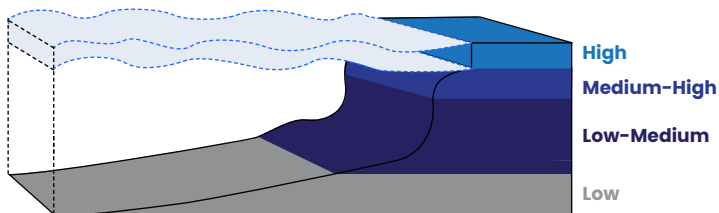
## Water Risk Assessment

In 2022, we revisited the WRI Aqueduct Water Risk Atlas, which maps and analyzes current and future water risks across all geographic regions, to update each site’s risk classification and confirmed that five are in regions with medium-high or high overall water risk. These include three sites in California, one in Texas and one in France. Our site in Estonia, while reported as high risk in 2020, is currently classified as low-medium risk.

Repligen’s largest consumer is our Lund, Sweden site, which accounted for over 40% of total global demand in 2022, yet is located in a low-medium water risk region. To better understand our usage through a lens of deeper granularity than what is available through post-dated municipal records, we initiated monthly water meter readings at Lund and two other sites in 2022. This allows us to more proactively set and manage ongoing usage expectations.

### 2022 OVERALL WATER RISKS

The chart below represents the overall water risk profile for Repligen. It provides context for our 2022 water project priorities and is based on *Aqueduct 4.0*, the latest iteration of WRI’s water risk framework designed to translate complex hydrological data into intuitive indicators of water-related risk. In 2020, we reported on physical water risk only.



### Physical Water Risk

#### Extreme

- Anaheim, CA
- Rancho Dominguez, CA
- Simi Valley, CA

#### High

- Auburn, MA
- Bridgewater, NJ
- Irving, TX
- Newton, NJ
- Tallinn, Estonia
- Toulouse, France
- Waltham, MA

#### Medium-High

- Breda, The Netherlands
- Hopkinton, MA
- Lund, Sweden
- Marlborough, MA

#### Low-Medium

- Lebanon, NH
- Ravensburg, Germany
- Waterford, Ireland

#### Low

- Clifton Park, NY

### Overall Water Risk

#### Extreme

- N/A

#### High

- Rancho Dominguez, CA
- Simi Valley, CA

#### Medium-High

- Anaheim, CA
- Irving, TX
- Toulouse, France

#### Low-Medium

- Auburn, MA
- Bridgewater, NJ
- Hopkinton, MA
- Lund, Sweden
- Marlborough, MA
- Newton, NJ
- Tallinn, Estonia
- Waltham, MA

#### Low

- Breda, The Netherlands
- Clifton Park, NY
- Lebanon, NH
- Ravensburg, Germany
- Waterford, Ireland

## WATER REDUCTION HIGHLIGHTS

Each site with elevated water risk received information from our corporate Sustainability team on its water usage and risk level. Locally available tools, such as rebates and tax incentives, and site-specific project ideas, including low-flow plumbing fixtures and signage to encourage water conservation, were also considered as site teams developed their risk mitigation, efficiency improvement and usage reduction strategies. Examples of our still-evolving approach to water management at the site level are shared here.

### Rainwater Reuse in Waterford

The Waterford site is classified as low risk for water and has an average annual rainfall of 41.1 inches (1,045 mm). To leverage this natural abundance of water, a **9,000-liter rooftop rain catchment system was installed to meet site-level grey water plumbing demands.**

### Rinse Water Reuse in Toulouse

The team in Toulouse, France, qualified a process of reusing 1 m<sup>3</sup> per hour of rinsing-bath water on the TFF fiber spinning line. This resulted in 2022 **savings of 5,100 m<sup>3</sup> of freshwater withdrawals and 77,500 kWh of water-heating electricity**, plus an estimated \$16,000 in water costs and \$14,000 in electricity costs.

See more of our water reduction and optimization highlights on the following page.

## Low-flow in Rancho and Anaheim

The Rancho Dominguez site completed several water conservation projects in 2022 to reduce overall consumption, including a manufacturing process improvement that **saves over 57,000 liters annually**. Low-flow and waterless fixtures were installed to conserve water throughout the site.

Similarly, the Anaheim site converted its kitchen and restrooms to low-flow in early 2022 and evaluated its milling and tooling shops, which are already considered low water use, to ensure high operating efficiencies.

## Addressing Water Scarcity in Rancho

On average, Rancho Dominguez receives 13.9 inches of rainfall per year. In 2019, the site built a 100-square-foot **biofiltration planter** adjacent to its main building. Fed by a rooftop drainage downspout, the planter is capable of filtering 16,000 liters of rain per year back into the soil and local water ecosystem.

As part of a 2022 capacity expansion to add some 14,000 square feet, construction began for a new and larger rainwater biofiltration system situated near the site's entrance. Comprised of two 160-square-foot sections, the multi-layered system is capable of returning up to **58,000 liters of filtered water back to the local groundwater system, and ultimately the Pacific Ocean**, every year. Plantings of low-water native species help stabilize the landscaping, are butterfly- and bee-friendly, and provide visual appeal. This system was completed and fully functional in February 2023. See photo above-right.

Together these **two natural water filtration systems**, totaling 420 square feet, work to direct **up to 74,000 liters** of rainfall back into the local groundwater system, handle unexpected overflows and lessen the effects of drought in the water-stressed region that is the Lower Colorado River Basin.



Rancho Dominguez, CA, biofiltration system.

## Equipment Investments in Irving

Our Dallas (Irving) site completed three water-related upgrades in 2022 to reduce overall site water usage and mitigate its water risk. These included a **water heater replacement, chiller equipment upgrade, and other water system improvements**. To further mitigate site water risk, a new drinking water bottle refill station was approved in 2022 and installed in March 2023. Based on a 16-ounce size bottle, and as of June 30, 2023, the use of an estimated one thousand bottles was averted at the site.

## Water Access Partnership

Our Toulouse facility is among our three highest water-consuming sites and is working to reduce demand and increase efficiencies in manufacturing operations. To further compensate for its water use, the site supports a program led by the international

solidarity association Un Enfant par la Main (A Child by the Hand) to improve drinking water accessibility in rural areas of Madagascar, a small island nation with high water risk that lays off the southeastern coast of Africa.

According to [The World Bank](#), the nation's access to basic water and sanitation suffers from severe inequalities and low-quality services, exacerbated in early 2022 by successive cyclones and tropical storms. Only 54.4% of the population has access to basic water services, and only 12.3% to basic sanitation services. Of the 76 developing countries with the lowest access to basic sanitation, Madagascar ranks last.

Through a partnership with key customer, Fonto De Vivo, 540 ORISA® water purifiers were distributed in 2022 across four districts of the rural municipality of Morafeno to help 2,160 beneficiaries, mainly families and children, currently deprived of autonomous access to water. These ORISA® water purifiers are Polymem® Inside products, which means they are designed, developed and manufactured by Repligen with Polymem ultrafiltration hollow fibers.



# Waste

In our inaugural 2020 Sustainability Report, we committed to addressing waste-related metrics and reduction strategies in future reports. In 2022 we developed a robust tracking methodology for all waste types and waste streams. Analysis of this detailed data set, including hazardous and non-hazardous waste, highlighted opportunities for reduction and landfill diversion. It also informed site-level mitigation decisions and enabled proactive discussions with haulers toward improving their data quality, thereby benefiting a wider set of their climate-conscious clients interested in tracking and reducing waste. As a result, symbiotic relationships with select waste-related service providers have evolved over the last two years and set an example for what is possible when we collaborate and constructively challenge each other.

## WASTE REDUCTION HIGHLIGHTS

Our 2022 waste data showed that **five of 18** manufacturing sites **were responsible for 73% (1,377.5 tons)** of Repligen's total waste (1,898.3 tons), three of which (Waltham, Marlborough, Rancho Dominguez) generated 52% (986.8 tons) of that total. Four illustrations of our progress on waste are presented here.

## Recycling Scrap in Waltham and Marlborough

Teams at these large manufacturing sites recognized an opportunity to divert clean manufacturing scrap from landfill and partnered with the same local aggregator to collect and channel the materials toward a new use. **In 2022, the sites tallied 2.9 and 3.8 tons diverted respectively.** Both programs continue to be successful in 2023, and other sites are learning from these examples to develop similar programs.

## From Landfill to Energy in Waltham



In mid-2022 the Waltham team evaluated its waste haulage for improvement opportunities. **13% of the site's total waste, representing 34% of its landfill-bound waste stream, was identified as non-hazardous cell paste,** a

material comprised of inactivated (non-viable) Escherichia coli (E. coli) lysates produced during our fermentation process for Protein A and other affinity ligands.

In collaboration with our waste hauler, the unrecyclable material was confirmed to be a feasible candidate for use as feedstock for a local waste-to-energy facility. As a result, in late 2022, **we diverted from landfill 14%, or 7.1 tons, of all cell paste** generated that year, and the program continues in 2023.

## Silicone Rubber Hits the Road at Two Sites

Silicone is widely used in the bioprocessing industry, especially for single-use fluid management systems, where durability, flexibility and sterility are essential requirements. Historically, options other than landfill at end-of-life were a challenge unless certain thresholds of scale could be achieved. By the end of 2022, previously landfill-bound silicone manufacturing scrap was being diverted from our Clifton Park and Rancho Dominguez sites to a specialized recycling processor that transforms the waste into a silicone fluid for industrial use worldwide. **Totals sent by these sites for recycling amounted to 11,547 pounds (5.7 tons) and 96 pounds (0.1 tons) respectively.** The program continues to be successful in 2023, and we are looking to expand to two additional manufacturing sites in the United States and Europe.

## Composting Gains Ground at Five Sites

2022 saw the rollout of five site-level composting programs, which **diverted 11,624 pounds (5.8 tons) of valuable organic material from landfill.** Three of these programs are at our largest manufacturing sites in Waltham, Marlborough and Rancho Dominguez. The five early adopters—Waltham, Marlborough, Rancho Dominguez, Bridgewater and Ravensburg—are sharing best practices and lessons learned with colleagues globally. Additional sites are expected to launch composting programs in 2023.



# Environmental Targets

In 2022, we continued to embed sustainability into daily operations through specific corporate objectives to help drive company-wide assimilation and demarcate accountability. Key objectives were to reduce global site carbon emissions by 10% and expand renewable energy participation from four sites to eight. As outlined earlier in this report, we met and surpassed both objectives.

## Single-use Recycling Pilot

Another key objective sought to improve sustainability performance and pilot a single-use recycling program with select customers. We identified a number of interested partners and addressed various challenges in handling, transportation and documentation throughout 2022. We continue to lead collaborative discussions to resolve each process gap and are progressing toward a restyled pilot program launch later in 2023.

## SBTi Commitment Letter

As in 2022, sustainability themes have been woven into our Board-approved corporate objectives for 2023. This includes submitting a commitment letter to the SBTi by year-end 2023, establishing our intent to set a science-based emissions reduction target in line with the latest climate science and SBTi criteria. From there, we will work over a 2-year period to prepare and submit, for SBTi approval, a robust plan for short- and long-term targets. We also continue to expand and broaden our own internal targets to inspire and mobilize our employee base to incorporate role-appropriate aspects of sustainability into their daily responsibilities.

**In 2023, we are taking additional actions to inform and strengthen our commitment to sustainability, including:**

- Partnering with key customers toward the advancement of their climate goals through active projects and via sustainability surveys
- Building out our Scope 3 inventories to cover 11 emissions categories material to our business
- Developing a robust Repligen supplier engagement program to drive increased sustainability through our value chain and reduce Scope 3 emissions
- Submitting our letter of commitment to SBTi to develop a science-based emissions reduction target aligned with SBTi criteria and the latest climate science
- Developing a proactive conflict minerals compliance program to drive supply chain due diligence, disclose smelter information and facilitate compliance with sourcing regulations, such as the Dodd-Frank Act, and other related requirements

# Talent Engagement and Development

## Employee Satisfaction and Engagement

One of the tools we use to measure employee satisfaction is the periodic engagement survey, which provides meaningful and actionable insight relating to our performance, culture, and work relationships.

Our last survey was conducted in 2021, and our most recent survey was conducted in the first half of 2023, with a very strong 90% participation rate. We believe this indicates that our employees care and support keeping Repligen a great place to work. Their participation demonstrates widespread commitment to our core **R TEAM Values**. We appreciate the honest feedback and encourage it as part of everyday communications as they **T**eam up and **E**ngage with each other authentically to **A**chieve with excellence and **M**ove things forward.

Survey results further showcased the **team spirit** at Repligen. Top scores were around collaboration and teamwork. Responses showed that employees **enjoy working with each other** and feel they are **treated with respect**. Further, responses made clear that employees understand and **value how they contribute** to the overall success of the company.

In response, we are making efforts to ensure and increase employee engagement and satisfaction. As examples in 2022, we launched our corporate intranet, introduced new employee resource groups (ERGs), rolled out goal-setting and feedback programs, and continued to offer leadership development opportunities.



**90%**  
Survey  
Participation



**76%**  
Survey  
Favorability  
Scores

## Supporting Professional Growth

### Mentoring Program Pilot

In 2022 we conducted a pilot program to retain talented individuals by supporting and encouraging their professional development through direct mentorship with strong leaders. This program involved 24 employees and based on its success, including positive feedback from mentors and mentees alike, we are looking to implement the program more broadly in 2023, targeting early-stage managers who can benefit from the real-life experience and coaching of more senior leaders.

“It’s important to support employees, especially those that regularly go above and beyond, by providing tools to help prioritize and set appropriate boundaries.”

**Mentor: Mike McLaughlin**  
*Site Leader, Director,  
Operations (Hopkinton, MA)*



“When I feel fully supported in my work, it inspires me to continue developing myself as an individual and an employee.”

**Mentee: Tanya Kuna**  
*Planner I  
(Simi Valley, CA)*



## Leadership Development Programs

### Building Leaders for Today and Tomorrow

**Leadership Essentials**, a 2022 training program delivered to front-line through mid-level managers, was aimed at helping managers to develop engaged and empowered team members to drive results. Content included Creating Psychological Safety by Fostering an Inclusive Culture; Navigating Difficult Conversations; Receiving and Delivering Feedback; Focus and Prioritization; and Delegation and Empowerment

In 2022, we delivered

**2**  
**MANAGEMENT PROGRAMS**

under the umbrella of Building Leaders for Today and Tomorrow



and attended by

**125**  
**MANAGER+ LEVEL**

employees, who represent 22% of total employees

**Leading Through Growth and Change**, focused on helping experienced leaders (typically Associate Directors and above who lead multi-leveled teams) collaborate, lead across organizational boundaries, and manage change and growth to achieve strategic and organizational goals. Content included Leading through High Growth; Powerful Conversations; Coaching for Results; Leading Others through Change.

### Executive Development

During the second half of 2022, we conducted a three-day Executive Development Program in conjunction with Babson Executive Education. Attended by the most senior leaders of Repligen, this program aimed to maintain an entrepreneurial spirit while standardizing processes to manage growth; understand the symbiosis between strategy and finance; make data-driven decisions; and grasp the importance of social-emotional competence in leading high-performing teams. This program was expanded in 2023 to include additional leaders, who will be challenged to apply their learning to tackle key opportunities defined by the Executive team.

### Front-Line Supervisor Training

In 2023, we have rolled out a new front-line supervisor training program that is focused on coaching, managing performance and resolving workplace conflict. We will continue to build out this program in 2023 and beyond.

### Steady Progress

We continue to stay focused on our goal of achieving parity in leadership roles. Through this commitment, we have increased the percentage of Women and People of Color on our Executive team to 31% and 31%, respectively. This compares to 2020, when Women and People of Color comprised 25% and 31% of our Executive team, respectively.

## Talent Review

We have a robust talent review process that looks at talent across the organization and across employment levels. Our work in this area informs succession planning efforts, helps build out and strengthen our bench, identifies gaps and allows us to consider options for rotating talent to mitigate risk as appropriate.



**27% and 26%**

of our Management team (Associate Director and above) was comprised of Women and People of Color, respectively, in 2022. This represents an increase from 22% and 20% in 2020.

**“We continue our work to improve our management diversity statistics and reach our DEI goals.”**

**Leslie Galvin**  
Global Head of Human Resources

## DEI Awareness and Actions

### Council

In 2002 we established a DEI Council, selecting leaders from across functional areas to serve as DEI champions within the organization. This directly impacted our work to create actionable DEI metrics and expand Education and Awareness activities. One result was the launch of our intranet-based DEI content-sharing platform, *The Bigger Picture*.

### Committee

A DEI Education and Awareness Committee was also established to curate educational materials and plan local celebrations to regularly recognize the diversity of our employee base. Examples of these well-attended events include Asian and Pacific Islander Heritage Month, International Women’s Day, PRIDE Month, Juneteenth, Hispanic Heritage Month, Autism Awareness Month, and Black History Month.

### Challenge

We also launched an internal DEI Challenge focused on themes of Empathy and Allyship. For four consecutive Fridays, participants received a short video and article to read, culminating in a roundtable for deeper discussion with colleagues on the content. This was well attended, with participation by over 200 employees globally.

## Diversity Goals in Management

In 2022, we set specific goals to increase gender and racial diversity in management roles. To help achieve these goals, we advanced more robust DEI hiring practices including diverse candidate pools and interview panels when hiring for these roles. Our progress against this ambitious goal is reviewed on a bi-annual basis.

### DEI Expert Keynote: Dr. Monica Wang

In remembrance and honor of Juneteenth, in 2022, we were thrilled to have Dr. Monica Wang provide a keynote-style address on the history, context, and mechanisms underlying racial inequities. The intent was to explore ways to cultivate an inclusive and antiracist work environment through individual, interpersonal and organizational strategies. Dr. Wang is an award-winning health equity researcher and a thought leader on the past, present, and future of racial health equity.

## Employee Resource Groups (ERGs)



In 2022 we surveyed our employee population regarding their interest in ERGs. Based on responses, an ERG Planning Session was held to identify focus areas and leadership for three groups: **Women and Friends**, **PRISM and Allies** (supporting the LGBTQI+ population), and **Green** (supporting climate-conscious employees). All three are subgroups of **ASPIRE** (Advancing the Success of People Inside Repligen). This is the original Repligen employee resource group that is now the umbrella organization for all ERGs.

The events to date – ranging from TED Talk discussions, open Q&A sessions with leadership panels, community marches and more – have been well attended. Employee feedback has been positive, which has motivated these groups to expand upon their missions.



# Workforce Data 2022\*

## TOTAL GLOBAL EMPLOYEES

Regular Full-time & Regular Part-time

# 2,023

## GLOBAL EMPLOYEES BY GENDER

Self-Reported

**34%** Female  
**66%** Male

## TOTAL EMPLOYEES BY GENDER AND REGION

### NORTH AMERICA

**70%**  
1,425

36% Female  
64% Male

### EUROPE

**25%**  
505

35% Female  
65% Male

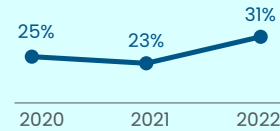
### ASIA PACIFIC

**5%**  
93

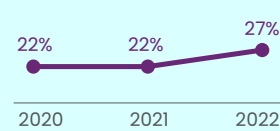
22% Female  
78% Male

## WOMEN (GLOBAL)

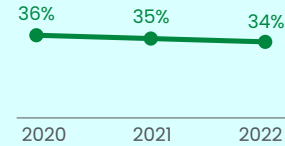
### Executives



### Managers

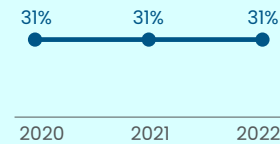


### Total Employees

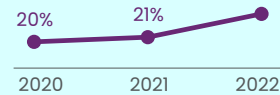


## PEOPLE OF COLOR (U.S.)

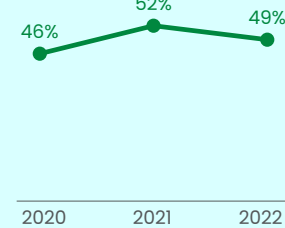
### Executives



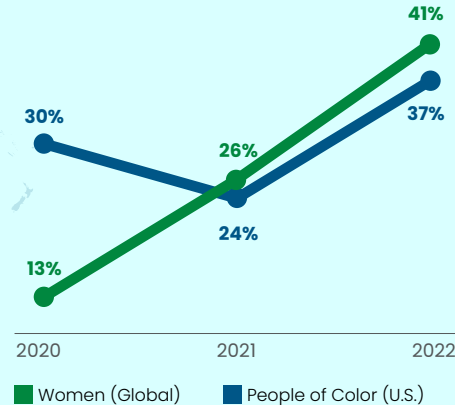
### Managers



### Total Employees

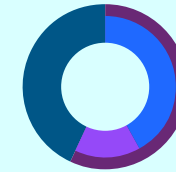


## MANAGER NEW HIRES



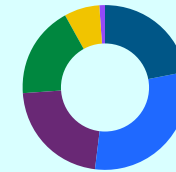
## EMPLOYEES BY STATUS

	2020	2021	2022
Hourly	4	4	3
Temporary	14	20	8
Part-time***	18	21	29
Full-time***	1,269	1,793	1,994
Permanent***	1,287	1,814	2,023



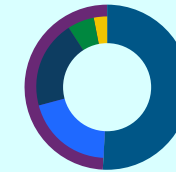
## EMPLOYEES BY JOB SECTOR

Manufacturing	43%
Non-manufacturing	57%
Non-administrative**	45%
Administrative	12%



## EMPLOYEES BY AGE

18-29	22%
30-39	30%
40-49	22%
50-59	18%
60-69	7%
70+	1%



## U.S. EMPLOYEES BY ETHNICITY

White	51%
People of Color	49%
Hispanic or Latino	20%
Asian	20%
Black or African American	6%
American Indian, Pacific Islander, two or more races	3%

\* As of December 31, 2022, unless otherwise noted. Managers are defined as Associate Director level and above.

\*\* Includes Commercial, Engineering, Product Management, Purchasing, Quality, R&D and Supply Chain.

\*\*\* This type of headcount data is not tracked by gender or by region.

# Value Chain Engagement

At Repligen, our value chain is characterized by both **physical and virtual components**. It relates to the development, production and delivery of goods as well as the creation, delivery and sharing of information. Both are considered important aspects of providing innovative solutions and delivering value to our customers and stakeholders.

Here we provide a view into our value chain from internal and external lenses, including our employees, investors, and various collaborators across the spectrum of our business.

## Employee Connections

- Repligen publishes a two-page internal sustainability newsletter, *Blue Marble*, several times a year. It launched in February 2022 and drives a multitude of benefits across the global organization, such as informing colleagues about ongoing sustainability efforts and projects, offering tips and advice on how to be more sustainable in our everyday lives, and showcasing highlights of employee-led environmental efforts around the company.
- We also established a **sustainability intranet page** with tools, information, links, and other helpful items as an approachable way for all employees to connect with the Sustainability team and access information.
- As presented earlier, we also introduced **three ERGs** under our ASPIRE umbrella: Women and Friends, PRISM and Allies, and Green.
- Each site at Repligen has at least one **designated ESG Ambassador** who collaborates with and provides site-level information to the Sustainability team. Together, we enable these colleagues to

implement sustainability initiatives at their sites and deliver important data to the company level on important sustainability topics and goals.

## Investor Connections

In addition to traditional investor communications and outreach activities, we have a proactive outreach program to engage ESG-focused portfolio managers and analysts. These conversations have been essential to understanding particular areas of interest from an ESG lens; in combination with customer inputs, these conversations have directly influenced our sustainability strategy and related governance actions.

Through 2021 and 2022, our Investor Relations team conducted an ESG outreach program to encourage sustainability-centered discussions. We focused on our “top 20” institutional shareholders who represent approximately 42% of total shares outstanding. Ten of these top 20, representing approximately 20% of shares outstanding, engaged in the discussions. Several others “had no concerns” and declined to participate.

Where engaged, the most common areas of interest were where and how the company is positively impacting energy consumption; the status of single-use recycling programs; actions being taken to support and advance our human capital; and steps taken to advance DEI initiatives and tracking – all of which we address in this report.

By June 30, 2023, Repligen shares were held by 276 ESG-dedicated funds, representing 6.5% of our total shares outstanding. We believe the true representation is higher, as many of our largest holders’ funds are not defined as ESG-dedicated, although those institutions have ESG investment mandates for portfolio managers.

## Supplier Connections

In 2022, we started collecting and analyzing real data on our Scope 3 emissions totals through proactive discussions with key suppliers. We aim to use these robust data sets to inform practical emissions reduction plans and targets.

We are engaging with our supply chain through the online sustainability ratings provider EcoVadis. Our work began in 2022 with an initial group of five suppliers and continued in 2023 with five more. We have plans to expand our engagement going forward.

## Customer Connections

Our “customer-first” culture promotes being in constant communication with our customer base of biopharmaceutical developers, CDMOs and integrators. These connections inform our commercial and R&D strategies and also provide opportunities for collaboration on sustainability.

We enthusiastically engage with our customers, including many of the world’s largest pharmaceutical manufacturers, who are looking to leverage their supply chain to achieve their Scope 3 emissions reduction targets.

In addition, we create and pursue opportunities to work directly with key customers on special sustainability projects such as our evolving single-use product recycling pilot program (see more on [Environmental Targets](#) page of this report).

## Partner Connections

At Repligen, we believe developing and maintaining strong partnerships are a crucial aspect of our responsibility to customers and all stakeholders. They help **keep us engaged, informed and proactively adaptive** to the shifting tides of customer needs, technological innovations, regulations and new developments in the industry. They also provide us with **opportunities to share ideas and opinions** and, in some cases, provide leadership. Examples of these symbiotic partnerships are provided here.

### BioPhorum

Since 2022, Repligen has been a member of the Technology Forum and was a guest speaker at the Sustainability Phorum May 2023 leadership meeting, SUST05.

### EcoVadis

Repligen leverages this platform to respond to customer sustainability surveys, share results, and collect information from key suppliers.

### GRI

A member of our corporate Sustainability team is a GRI Certified Sustainability Professional.

### USGBC

Repligen incorporates LEED principles across our global sites where appropriate and explores the potential for LEED certification where feasible. A member of our corporate Sustainability team has kept her LEED Green Associate (LEED GA) credential current for the last several years, and a second member is in the process of recertifying.

### UNGC

Repligen continues to be a participating member of the UNGC and actively supports its Ten Principles. In 2022, we successfully completed the USA Network's Climate Ambition Accelerator program and were named their 2022 SDG Pioneer, USA Network award winner!



Bio-Process Systems Alliance  
Advancing Single-Use Worldwide



ecovadis



BioPhorum



NIMBL



ALLIANCE  
— ORGANIZATIONAL —  
MEMBER



WE SUPPORT

# Community Engagement

Repligen continues to invest in and partner with the communities in which we work and live. We demonstrate this commitment through our many local employee outreach and volunteer events, donation drives, and philanthropic giving. Our Community Outreach Week, a global program with significant local impacts, has become one of the most anticipated and engaging events across the company.

In 2022, **16 sites, or 89%, participated in community giving projects** such as building houses for local communities, constructing playhouses for local veteran families with young children, filling backpacks with essential personal care goods for people without housing, and collecting healthy food staples for food banks.

## CORPORATE DONATIONS

**CARE USA:** Works around the globe to save lives, defeat poverty and achieve social justice.

**Global Fund for Children:** Invests in community-based organizations around the world to help children and youth reach their full potential and advance their rights.

**In Our Own Voices:** Works for and ensures the physical, mental, spiritual, political, cultural and economic survival and growth of Lesbian, Gay, Bisexual and Transgender people of color communities.

**Inner City Child Development & Youth Foundation, Inc.:** Promotes education, prevents gang participation, improves school attendance and assists with life-threatening issues.

**New Jersey Institute for Social Justice:** Seeks to empower people of color by building reparative systems that create wealth, transform justice and harness democratic power.

**Scholar Shot:** Helps at-risk students exit poverty by completing career-ready vocational, associate, or bachelor's degrees.

**Second Growth:** Works to reduce substance abuse and violence among adolescents.

**Youth Enrichment Services:** Inspires youth through outdoor experiences and leadership opportunities that build confidence and prepare them to summit life's challenges.

## SUPPORTING LOCAL COMMUNITIES

### MASSACHUSETTS SITES

**Holiday Drives:** Massachusetts Coalition for the Homeless and Healthy Waltham Women's Lunch Place.

**Operation Playhouse:** Building homes, communities and hope for local families and veterans.

**Project Warm Up:** Helping Boston's homeless population by rallying resources and volunteers to make a difference.

### BREDA

**Kinderboerderij Parkhoeve Breda-Noord:** A unique place where people can learn, recreate, participate, integrate and become acquainted with different animal and plant species in a playful, accessible way to increase awareness of their living environment and nature.

### BRIDGEWATER

**Raritan Food Pantry:** Community nonprofit food bank whose mission is to fight food insecurity and poverty while recognizing and advancing self-worth and human dignity.

### CLIFTON PARK

**Habitat for Humanity:** Working together with families, local communities, volunteers and partners from around the world to enable more people to live in affordable and safe homes.

**Northern Rivers Family Services:** Empowering children, adults, and families to change their lives and build stronger communities.



Waltham, MA, 2023  
GotSneakers Drive

**\$300,000**

in 2022 corporate donations and dollars contributed to supporting our annual Community Outreach events, as part of our commitment to underserved populations.

### DALLAS (IRVING)

**Irving Cares:** Provides focused assistance for area residents to address a financial crisis.

### LEBANON

**Kids in Need Foundation:** Partnering with teachers and students in under-resourced schools to provide equal opportunities and access to quality education.

### LUND, RAVENSBURG AND TALLINN

Employees from each site collaborated to perform a thorough clean-up exercise throughout the surrounding facility grounds.

### NEWTON

**The Samaritan Inn:** Providing emergency food and temporary shelter to homeless families, along with counseling and skill-building programs for family maintenance and growth.

### RANCHO DOMINGUEZ

**Love Beyond Limits:** Provides exceptional enrichment and leadership development opportunities to youth nationwide.

### WATERFORD

**Brill Family Resource Center:** Family resource center that provides a range of universal and targeted services and development opportunities that address the needs of families.



# Governance

## Strong Governance

We routinely evaluate our governance practices to ensure they remain current and relevant. Here is a summary of our corporate governance practices, as detailed in our [2023 Proxy Statement](#).

### Board Independence and Diversity\*

- Separation of the positions of Chairperson and CEO
- 7 of 8 directors are independent
- Independent Board committees
- 37.5% of directors are diverse
- 2 of 8 (25% of) directors are female, including our Chairperson
- The Board is committed to 30% female members by the 2024 annual meeting
- Average age is 61 years; average tenure is 6 years
- Strong skills and diverse experience

### Stock Ownership Requirements

- Directors are required to hold a minimum level of Company shares\*\*
- Executives and directors are prohibited from hedging, pledging and/or shorting company stock
- No re-pricing of stock options

### Director Elections

- Annual Board elections
- Directors are elected by a majority of votes cast
- Directors not elected by a majority of votes cast are subject to the company's resignation policy

### Compensation Practices

- Executive compensation links pay with individual and corporate performance
- Compensation clawback policy in place
- Significant percentage of target compensation is at risk through short-term and long-term incentive awards
- No tax gross-up payments, excess perquisites or guaranteed bonuses
- Double-trigger severance benefits
- Individual ESG goals for Named Executive Officers (NEOs)\*\*\*

### Board Practices

- Non-employee directors meet in executive session without management at each regularly scheduled Board meeting
- Annual Board and Committee self-evaluations
- Annual director evaluations and board refreshment as appropriate

### Stockholder Rights

- Our By-laws include shareholder rights to amend our By-laws
- Proxy access via the 3% ownership/3 year/20 holders/20% standard
- No super-majority voting requirements

**“This second installment of our sustainability report tracks the significant positive impacts we have made, and continue to make, toward advancing a comprehensive sustainability strategy backed by full board support.”**



**Karen A. Dawes**  
*Chair of the Board of Directors*

\* As of April 2023 Proxy Statement.

\*\* In 2022, we made extensive changes to our stock ownership guidelines to cover named executive officers and to increase the required share ownership for our CEO and NEOs from 1x base salary to 5x base salary, and for our non-employee directors from 3x annual cash retainer to 4x annual cash retainer.

\*\*\* Beginning in 2022, the N&CG Committee determined that our NEOs will annually be assigned certain ESG responsibilities, as appropriate to their roles, to support and advance defined corporate ESG goals. Their level of effectiveness in helping to achieve the corporate ESG goals is considered when determining individual achievement and related incentive compensation.

## Governing Policies and Charters

Our most current Policies and Charters are available in the Investors area of our website.

- [Corporate Governance Guidelines](#)
- [Business Partner Code of Conduct](#)
- [Code of Business Conduct and Ethics](#)
- [Insider Trading Policy](#)

## Compliance Hotline — “See Something, Say Something”

Our business codes of conduct and insider trading policy highlight multiple channels — direct and anonymous — for our employees and business partners to report any concerns of improper conduct. When a situation does not feel right, we encourage and provide avenues for employees to speak up, knowing that any concern raised will be treated seriously, confidentially and without fear of retribution.

## Financial Integrity

Our focus on ethics applies to financial integrity, and we are committed to acting with honesty, integrity and reliability to safeguard our investors and the public’s confidence in Repligen.

As outlined in our Code of Business Conduct and Ethics, our commitment to financial integrity also encompasses record keeping and financial reporting, gifts and entertainment, political and charitable contributions, and government interactions.

## Internal and External Financial Controls

Repligen has a robust set of internal controls to ensure proper accounting and compliance across all locations. With oversight of our Controller, extensive financial and control reviews are conducted to ensure our financial statements align with the U.S. Generally Accepted Accounting Principles (GAAP). These controls are designed in coordination with our internal audit team and Chief Compliance Officer, who is also our CFO, to apply risk-based rankings across the organization and to apply risk mitigation programs as required.

In addition to internal responsibilities for preparing and presenting complete and accurate financial statements, our independent registered public accounting firm, Ernst & Young LLP, performs an audit of the company’s financial statements in accordance with the standards of the U.S. Public Company Accounting Oversight Board (PCAOB) and issues quarterly and annual audit reports. The Audit Committee oversees and monitors the company’s management and its independent registered public accounting firm throughout the financial reporting process.

**“Robust internal controls are central to ensuring Repligen operates with continued integrity.”**

**Kim Brown**  
*Corporate Controller*



## Risk Management Oversight

Our risk management program is spearheaded by our General Counsel. High-level material risks are reviewed with the Board every six months while the Senior Management team meets every six weeks to track progress on risk areas and update the risk hierarchy, assessing the profile of each and assigning actions to mitigate them.

The company conducts periodic risk assessments, including corporate governance audits, in order to ensure that our policies and guidelines are best-in-class, in line with peers and aligned with stakeholder interests.

## Reporting and Tracking Risk

During the first half of 2022, our risk tracking and reporting methods were thoroughly reviewed. As part of the process, we leveraged industry-accepted standards and frameworks and performed an in-depth analysis of each business unit and function within the organization. In the interest of elevating our risk management capabilities, we assessed a variety of risk management tools available on the market, including the current provider we use for financial compliance with Sarbanes-Oxley. We ultimately selected this provider’s risk management module and began implementing it in November 2022.

## Cybersecurity

In our 2020 Sustainability Report, we discussed cybersecurity as a key area for risk assessment and management. We are pleased to report that, as security threats and data breaches have become more common, we have continued to elevate our cybersecurity systems and protocols to protect our company, our employees and our stakeholders.

Repligen deploys information security systems to meet regulatory and customer obligations and to protect our internal systems, data and employees.

## Oversight

Our Chief Information Officer is responsible for the development and implementation of our data privacy and information security programs. The Information Technology team drives the execution of these programs, supported by staff representing Human Resources, Finance, Legal, Supply Chain, and Operations. The CIO and/or our Head of IT Infrastructure & Operations provide regular updates to our Executive team on our information security programs and progress.

We continue to invest strategically in this area to protect the company and all stakeholders. Our Board is responsible for ensuring that the company's cybersecurity policies and practices are effective, up-to-date, and aligned with the organization's overall strategy and risk appetite. It does this through quarterly evaluations with oversight by the Audit Committee.

## Every Employee's Responsibility

All employees are expected to participate in safeguarding all computer equipment and data against security breaches. These can include efforts by individuals or organizations to gain or restrict access to company data via deploying malicious codes and viruses, social engineering, or other attempts to gain unauthorized access to company computers, systems or networks with the intent to cause damage.

**"My team provides the knowledge, tools and training to ensure that awareness is high and reporting of suspicious activity is made simple. Behind the advanced tools and systems we have in place, our best protection is employee vigilance."**

**Rich Richison**  
*Director, IT Infrastructure & Operations*

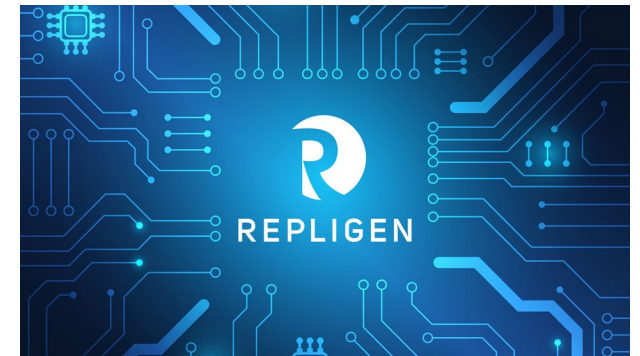


## Training and Results

Our robust cybersecurity training programs recognize that a fortified human firewall strengthens our security posture. On a quarterly basis, every employee is required to participate in comprehensive security awareness training.

We continuously increase our employees' awareness of cyber threats through monthly phishing simulation campaigns. We are pleased to report training participation rates in 2021 and 2022 that are consistently above 95% and marked increases in employee identification and reporting of phishing simulations.

In September 2022, we elevated our security awareness training platform to leverage artificial intelligence-driven (AIDA) phishing email campaigns. Using data from our platform's AIDA enables us to automate the dynamic selection of unique phishing security test templates for each user.



## Monitoring

Cybersecurity risk is monitored 24/7 using multiple security platforms and a Security Operations Center. Repligen follows the CIS 20 Controls framework and leverages the following security platforms: SIEM (Security Information and Event Management), continuous VM (Vulnerability Management), and EDR (Endpoint Detection and Remediation).

The Center for Internet Security (CIS) Top 20 Critical Security is a prioritized set of best practices created to stop the most pervasive and dangerous threats of today.

## Impact

Repligen has significantly increased its maturity across the CIS 20 Controls. Over the past two years, we have made significant progress in hardware and software inventory, secured configurations, application and software security, continuous vulnerability monitoring, malware, and boundary defense.

## Cyber Incident Response Plan

Repligen has a robust Cyber Incident Response Plan in place, which follows a documented framework for handling high-severity security incidents and facilitates coordination across multiple locations of the company. We routinely perform simulations and exercises at both a technical and management level, and incorporate external expertise and reviews in all aspects of our cybersecurity program.

## Adherence to Data Privacy Regulations

Repligen follows guidance from regional and local data privacy regulations (GDPR, CCPA, etc.) and leverages approved frameworks to ensure that our data privacy and security are relevant. We hired our first Data Protection Officer in November 2022. We also partner with formidable security partners to ensure we follow the latest security and data privacy practices and train our employees on the importance of these regulations.

## Implementing a Zero Trust Framework

Repligen continues to increase its maturity level through the implementation of a Zero Trust framework, initiated during the first half of 2023. Zero Trust is a strategic approach to cybersecurity that secures an organization by eliminating implicit trust and continuously validating every stage of a digital interaction. We continuously fortify our security posture — including consolidated domains and wide area network redesign to reduce network vulnerability — and in 2022 fully implemented reduced access and separation of duties in our Enterprise Resource Planning (ERP) system.

## Advancing Our Enterprise Resource Planning System

Repligen management takes seriously its responsibility for effective internal controls over the company's financial reporting. In 2022 we expanded our ERP system (SAP) from 9 to 13 sites, covering 76% of our manufacturing footprint. By mid-2023, we had completed Phase 5 of the ERP implementation plan at 18 sites,

including three non-manufacturing sites. Our Phase 6 (and final) ERP implementation is scheduled for completion by year-end 2024, covering recent acquisitions. All major sites and distribution centers are now operating on the same ERP system. The system has allowed for improved controls and enhanced reporting and business capabilities through access to real-time information across multiple sites. The scalability of our ERP system has resulted in more efficient business processes and strategic planning.

**“One benefit of a common ERP system is the ability to see inventory levels across all ERP sites in real-time. This enables improved management of delivery dates through greater visibility into all phases of the manufacturing process. Completion of Phase 5 is a true testament to the diligence of our implementation team.”**

**Keith Lee Robinson**  
Chief Information Officer



## Scaling with Repligen Performance System

“Process repeatability leads to higher quality, higher efficiency and less waste, we consider RPS foundational to the way we operate and embed sustainability into daily operations.”

Jim Bylund  
Chief Operating Officer



In late 2021 we introduced the Repligen Performance System (RPS), a continuous improvement program founded in proven LEAN tools and methodologies, at key manufacturing sites. RPS provides a common framework for enabling everyone to become an effective problem solver. It’s how we create a culture of empowered people to inspire, identify, and implement daily improvements and drive efficiency across the company toward a value-driven purpose.



### RPS Rollout

Marlborough, Rancho Dominguez and Clifton Park were selected as model locations for RPS impact and capability. Tiered management systems were introduced to track performance-to-plan progress for top metrics and to drive priority problem-solving. Team-based Kaizen workshops were also used to streamline key processes. Infrastructure building via site RPS experts and a new process manager development program to certify leaders for expanded team training in RPS came next. A series of simple communication tools to share best practices and provide practical guidance on how every employee can engage in RPS to improve job-related processes rounded out the launch strategy. Practical training modules, a bi-monthly RPS newsletter and an RPS intranet site provide all employees with ready access to all RPS content and a library of additional best practices.

### RPS Impact

Clifton Park significantly reduced manufacturing scrap, materials usage, energy consumption, and processing time while maintaining the same level of customer orders. Rancho Dominguez yielded similar results with its top product line, and Marlborough reduced order processing time and paper waste associated with batch-record reviews while further error-proofing the overall process for improved quality.

Through RPS, site teams have simplified their work, gained valuable problem-solving skills, and reported an increase in job satisfaction. In total, these examples, combined with numerous other improvements, generated a **sixfold increase in productivity savings** compared to the prior year. The successes also helped to hone our standard RPS framework to enable scaling the model-site approach in 2023.

## 2022 Environmental Data and Trends

	2019	2020	2021	2022	Reporting year 2020 v 2022
--	------	------	------	------	-------------------------------

### ENERGY

Number of sites	8	15	16	18	20.0%
Annual Revenue (M\$USD)	270.2	366.3	670.5	801.5	118.8%
Consumption (MWh)	13,776	16,091	23,223	30,970	↑ 92.5%
YOY Consumption % Change	-	16.8%	44.3%	33.4%	-
Consumption Intensity	51.0	43.9	34.6	38.6	↓ -12.0%
YOY Intensity % Change	-	-13.8%	-21.2%	11.6%	-
Renewables	4,092	4,486	6,229	12,580	180.4%
Renewables Intensity	15.1	12.2	9.3	15.7	28.2%
Non-renewables	9,684	11,605	16,994	18,390	58.5%
Non-renewables Intensity	35.8	31.7	25.3	22.9	-27.6%

### WATER

Number of sites	8	11	16	18	63.6%
Annual Revenue (M\$USD)	270.2	366.3	670.5	801.5	118.8%
Withdrawals (cubic meters)	82,734	113,333	85,606	136,140	↑ 20.1%
YOY Withdrawal % Change	-	37.0%	-24.5%	59.0%	59.6%
Withdrawal Intensity	306.2	309.4	127.7	169.9	↓ -45.1%
YOY Intensity % Change	-	1.0%	-58.7%	33.0%	-

	2019	2020	2021	2022	Reporting year 2020 v 2022
--	------	------	------	------	-------------------------------

### GHG EMISSIONS

Number of sites	8	15	16	18	20.0%
Annual Revenue (M\$USD)	270.2	366.3	670.5	801.5	118.8%
Total Market-based Emissions (tons CO <sub>2</sub> e), Scopes 1 and 2	2,736	3,250	3,960	4,269	↑ 31.4%
YOY Emissions % Change	-	18.8%	21.8%	7.8%	-
Emissions Intensity	10.1	8.9	5.9	5.3	↓ -40.0%
YOY Intensity % Change	-	-12.1%	-33.6%	-10.3%	-
Total Emissions (tons CO <sub>2</sub> e), Scopes 1, 2 and 3	-	-	-	16,377	-
Scope 1 Emissions	517	598	823.6	1,322	121.1%
Scope 1 Intensity	1.9	1.6	1.2	1.6	1.0%
Scope 2 Emissions	2,219	2,653	3,136	2,947	11.1%
Scope 2 Intensity	8.2	7.2	4.7	3.7	-22.3%
Scope 3 Emissions	-	-	-	12,108	-
Scope 3 Intensity	-	-	-	15.1	-

### WASTE

Number of sites	-	8	10	18	125.0%
Annual Revenue (M\$USD)	270.2	366.3	670.5	801.5	118.8%
Annual Waste Generation (tons)	-	668.3	1,059.3	1,898.3	↑ 184.0%
YOY Generation % Change	-	-	58.5%	79.2%	-
Waste Generation Intensity	-	1.8	1.6	2.4	↑ 29.8%
YOY Intensity % Change	-	-	-13.4%	51.9%	-

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