

moderna<sup>®</sup>

# Impacting Human Health

2023 ESG Report

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## Moderna's Mission:

Delivering the greatest possible impact to people through mRNA medicines.

# Message from our CEO



June 2024

## Dear Stakeholders,

I am pleased to share Moderna's Impacting Human Health report, where we reflect on our 2023 Environmental, Social, and Governance (ESG) priorities and progress. We care deeply about our patients, our employees, the environment and our communities, and we recognize that our responsibility to create sustainable long-term value for them is critical to our mission. In 2023, we impacted more than 100 million people around the world, and we advanced our development pipeline across all our franchises, including respiratory disease, latent disease, oncology and rare disease. We believe that we are many steps closer to reaching millions more people with unmet medical needs.

Our mRNA platform is well positioned to accelerate the development of vaccines against viral disease outbreaks that pose global public health threats. In 2023, we announced a strategic partnership with the Coalition for Epidemic Preparedness Innovations (CEPI) to strengthen pandemic preparedness and speed up public health initiatives to respond to the next global viral threat. Additionally, the continuous expansion of our mRNA Access program reinforces our dedication to public health. This program can play a key role in helping the next generation of researchers and engineers advance mRNA science.

I am proud of our team and award-winning culture, which earned Moderna recognition from Science as a top employer for the ninth consecutive year, from BioSpace as the no. 1 large employer in its Best Places to Work report for the third year in a row, and from the Human Rights Campaign Foundation as an Equality 100 company for the first time in 2023. Moderna has always been at the intersection of science, technology and health, and today our people are rapidly adopting Artificial Intelligence across the organization to build and scale as we deliver on our mission for patients.

Being our best also means building a company that is responsible and minimizes our impact on the planet. We are applying a sustainability by design principle as we expand our footprint, like in our new global headquarters, designed to be one of the most energy-efficient buildings in Cambridge, Massachusetts. Sustainability is top of mind in all our new sites.

Our culture is also driven by our passion for giving back to our communities. By addressing the social determinants of health that impact so many

people around the world, we are helping to close the inequality gap. Two thirds of our employees engaged in charitable activities in 2023, either through volunteering or giving. Further, our Moderna Charitable Foundation donated \$7.2 million in grants to organizations around the world. We are proud of this work and will continue to extend our societal impact. Our continuous focus on quality, transparency and ethics is critical to building and maintaining trust with all our stakeholders.

Looking ahead, we will continue to lead with our Values, our Mindsets and a deep sense of purpose embedded in everything we do. I invite you to read this report and learn about our progress across our Environmental, Social and Governance commitments. There is much work to do, and we are grateful for your engagement in this exciting journey. Together, we can have a profound impact on human health over the next several decades.

Warmest regards,

A handwritten signature in black ink that reads "S. Bancel". The signature is fluid and cursive, with a long horizontal stroke at the end.

**Stéphane Bancel,**

*Chief Executive Officer, Moderna*

# moderna in 2023

## Key ESG Highlights

### Medicines for Patients

**100 million**  
people impacted in 2023

**45**  
Development programs

**9**  
programs in late-stage development

**\$4.8 billion**  
in R&D investment

### Global Public Health

**12**  
priority pathogens in research and development

**18**  
institutions participating in mRNA Access

### Employees

**49%**  
women in workforce

**39%**  
women executives

**9**  
Employee Resource Groups

Equal pay for equal work study



### Environment

Committed to net-zero carbon emissions in Scope 3 by 2045

Published Scope 3 emissions, water usage and waste management metrics

Incorporated sustainability into the design and construction of new manufacturing plants

Performed climate risk and scenario analysis project

Completed energy, water and waste assessments at our manufacturing facility in Norwood

### Community

**169%** increase in tracked volunteer hours from 2022

**70%** employee participation rate in volunteering and/or giving

**2,390** nonprofits supported globally

**\$7.2 million** in grants by the Moderna Charitable Foundation

**\$1.3 million** in donations from employee matching program

**\$1.4 million** in grants by the Moderna Charitable Foundation focused on humanitarian disaster relief

### Governance & Ethics

**97%** employees trained in Reimagined Code of Ethics and Business Conduct

Launched double-materiality assessment

### Awards

#### BioSpace's Best Places to Work

Ranked number 1 in large employer category on 2023 list

#### Science Careers' Top Employers

Ranked for ninth consecutive year

# Our areas of focus

At Moderna, our ESG strategy and corporate social responsibility program are built upon a foundation of integrity, quality, and respect. These values provide a foundation for us to build and support long-term programs that demonstrate our commitment to patients, employees, the environment, and local communities.



Our efforts are driven by our belief that:

**With the impact and potential of our science comes a responsibility to the multitude of patients our technology could help,** regardless of whether they have a disease shared by millions, or one that is unique to them alone

**We have a responsibility to do our part to ensure the sustainability of our planet,** and we will consider our impact on the environment in the decisions that we make

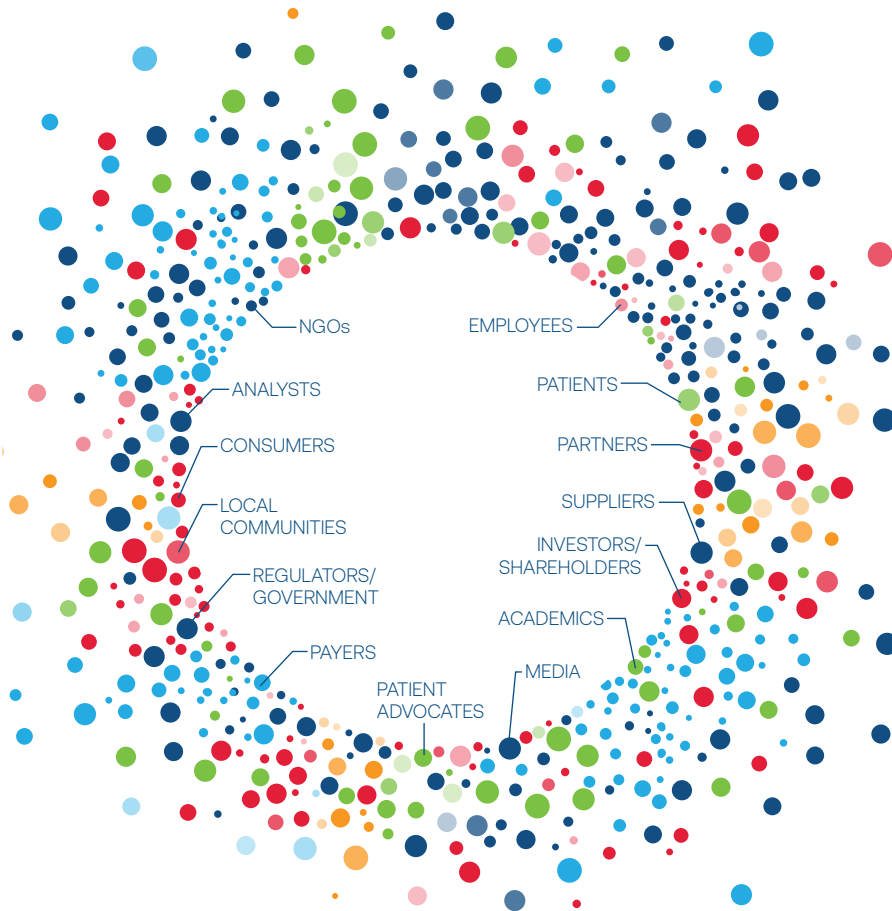
**We can and should use our expertise and resources** to give back to the communities in which we operate

**We have a responsibility to our employees to provide fulfilling, purposeful careers,** and to reward our employees for their dedication

**We must hold ourselves to high ethical standards across all areas of our business and with our stakeholders—**both internal and external—while ensuring we have the governance and practices in place to meet these standards

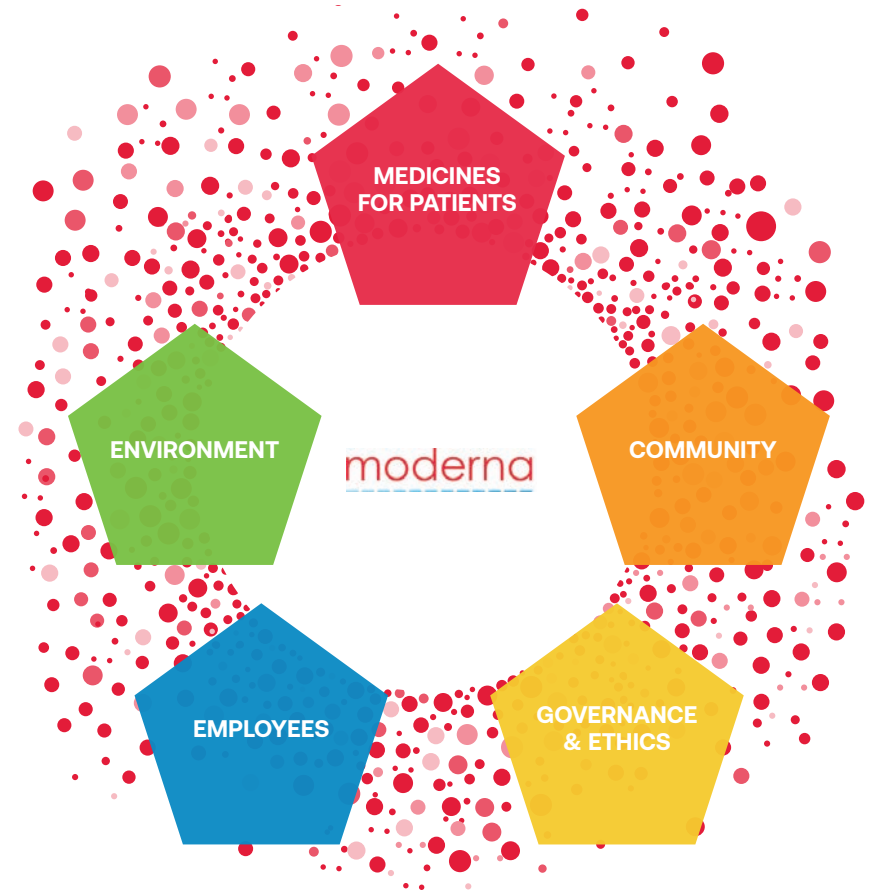
## Who are our Stakeholders?

By identifying and engaging with the groups that impact—or are impacted by—our business, we can better align our company’s corporate responsibility activities to their long-term objectives. We have identified and defined our key stakeholders and will continue working to understand their interests as we grow and advance our potential medicines through our pipeline. Moderna’s stakeholders include:



## Our Corporate Citizenship Framework

Moderna’s **corporate responsibility strategy** considers the needs and priorities of our key stakeholders and the areas where we believe we can have a direct impact today and in the future. Our work now and beyond is centered on five focus areas:

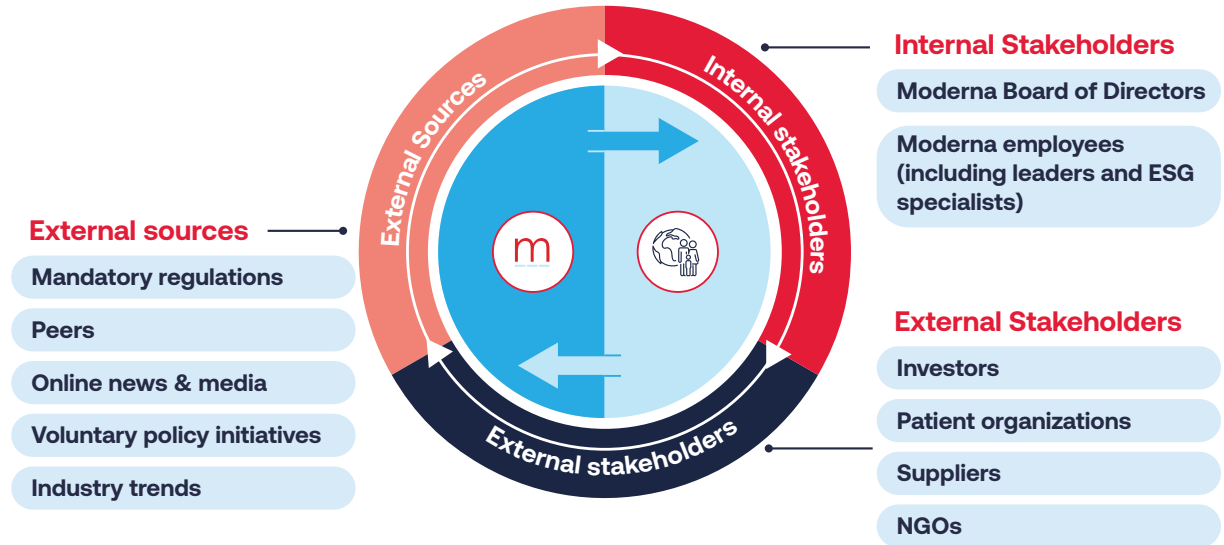


## Our Priorities

As part of our commitment to advancing in our ESG journey and transparency, we conducted a double-materiality assessment in 2023. This assessment encompassed two perspectives: the impact of external factors on our company and the impact of our company on the environment and society. This dual lens assists us in identifying, prioritizing, and managing ESG matters that are most significant to both our business operations and our stakeholders—including investors, employees, customers, and the communities in which we operate.

### Our Approach

We conducted this assessment supported by a third-party, AI-based analytics platform that provides the foundation to our data-driven materiality process. Leveraging the tool's database, we gathered data on global regulations, voluntary initiatives, industry-specific insights, online news and media, benchmarks and peer reports. To complement these data-driven insights, we conducted a stakeholder survey, reaching out to key stakeholders across various groups: Moderna leaders, internal contributors working on ESG matters, employees, investors, patient organizations, suppliers, and NGOs. The survey aimed to gather direct feedback on the perceived importance of different ESG topics and our company's impact on these areas.



## 2023 ESG Reporting Priorities

Our first double-materiality assessment has helped us to confirm that we remain focused on those ESG topics that matter most to our business and stakeholders, and that there was strong alignment between those topics that we have identified as priorities and those identified by outside stakeholders.

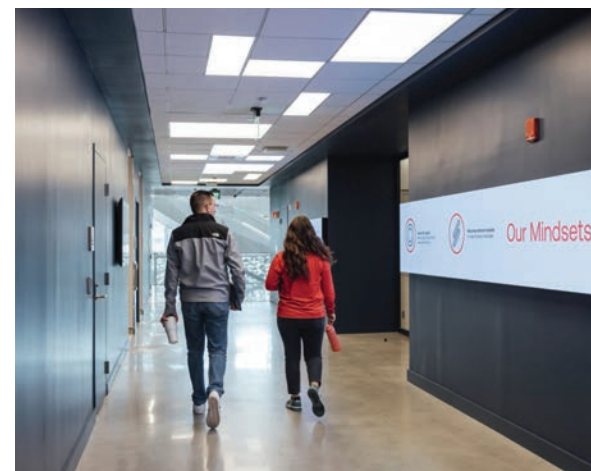
Additionally, we were able to prioritize a few new and emerging topics for inclusion in our ESG reporting strategy, including our tax strategy and responsible use of artificial intelligence (AI). In this report we discuss our strategic and priority ESG topics, as validated by our 2023 assessment.

Strategic area	Priority Topic	Topics in ESG report
Medicines for patients	<b>1. Product Quality &amp; Patient Safety</b>	<ul style="list-style-type: none"> <li>• Clinical trials</li> <li>• Quality</li> <li>• Clinical safety and pharmacovigilance</li> <li>• Product counterfeiting</li> </ul>
	<b>2. Health equity</b>	<ul style="list-style-type: none"> <li>• Access principles</li> <li>• Global health strategy</li> <li>• Diversity in clinical trials</li> <li>• Rare diseases</li> </ul>
Employees	<b>3. Employee diversity &amp; inclusion</b>	<ul style="list-style-type: none"> <li>• Belonging, inclusion, and diversity</li> <li>• Pay equity</li> <li>• Human rights</li> <li>• Anti-harassment and anti-discrimination</li> </ul>
	<b>4. Talent Management</b>	<ul style="list-style-type: none"> <li>• Attracting and retaining talent</li> <li>• Employee engagement</li> <li>• Learning</li> <li>• Benefits &amp; rewards</li> </ul>
	<b>5. Employee health &amp; safety</b>	<ul style="list-style-type: none"> <li>• Occupational health &amp; safety</li> <li>• Wellbeing &amp; benefits</li> </ul>
Environment	<b>6. Environmental Sustainability</b>	<ul style="list-style-type: none"> <li>• Climate risk &amp; scenario analysis (New in 2023)</li> <li>• Environmental sustainability strategy</li> <li>• Sustainability by design</li> <li>• Natural resource conservation (GHG emissions, Waste, Water*, Air Emissions*)</li> <li>• Decarbonizing the value chain</li> </ul>
Community	<b>7. Community</b>	<ul style="list-style-type: none"> <li>• Employee volunteering and giving</li> <li>• Moderna Charitable Foundation</li> </ul>
Governance and Ethics	<b>8. Governance &amp; Compliance</b>	<ul style="list-style-type: none"> <li>• Corporate governance</li> <li>• Transparency</li> <li>• Corporate policies</li> <li>• Data privacy &amp; cybersecurity</li> <li>• Speak Up</li> <li>• Tax strategy (New in 2023)</li> </ul>
	<b>9. Ethical conduct</b>	<ul style="list-style-type: none"> <li>• Transparency in clinical trials</li> <li>• Animal welfare</li> <li>• Responsible use of AI (New in 2023)</li> </ul>
	<b>10. Sustainable supply chain</b>	<ul style="list-style-type: none"> <li>• Sustainable and responsible procurement</li> </ul>

\* Although this topic was not identified as a priority in our double-materiality assessment, we will continue to play an active role and report on our efforts.

## Looking Ahead

Our double-materiality assessment is not a one-time exercise but a continuous process that will guide our ESG strategy and reporting in the years to come. We are committed to regularly updating our assessment to reflect changing conditions and stakeholder expectations. This work will also be part of our preparations for anticipated reporting obligations under the EU Corporate Sustainability Reporting Directive (CSRD). We welcome feedback from our stakeholders on this assessment and our ESG journey more broadly. We are excited to continue to engage and to learn how we can create long-term value together.





# Medicines for patients

We are harnessing the power of mRNA to create a new category of medicines and a company that maximizes its impact on human health.

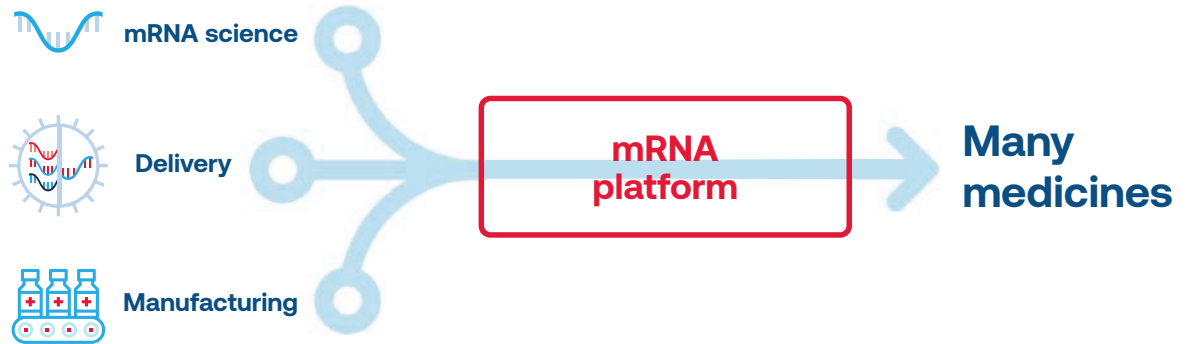


**mRNA has the potential to transform the way we stand up to diseases, from the widespread to the extremely rare. One strand of mRNA could change life for the better - everywhere.**

## Delivering the greatest possible impact through mRNA medicines

Through more than a decade of progress and investment in science, Moderna has led in establishing the field of mRNA medicine. Since our founding, our imperative has been to build an mRNA platform that could bring not one, but many medicines to patients and to invest in science to understand what our technology can do for human health. Now that it is clear our mRNA platform is working, our commitment to leveraging mRNA to deliver transformative medicines for patients has never been stronger.

We have demonstrated the potential for clinical benefit in multiple infectious disease vaccines, in skin cancer and in three different rare genetic diseases. Based on these clinical successes, we have advanced a broad and diverse pipeline. Our pipeline as of the end of 2023 included 45 therapeutic and vaccine programs, nine of which are in late-stage development.



Our first commercial product, Spikevax (our COVID-19 vaccine), has helped hundreds of millions of people worldwide combat COVID-19. Beyond COVID-19, in 2023, we prepared for the 2024 launch of our investigational respiratory syncytial virus (RSV) vaccine for adults, which further demonstrates the potential of our mRNA platform to protect people from respiratory diseases.

We are developing vaccines against a broad range of diseases with unmet or underserved needs, including cytomegalovirus (CMV), Zika virus (ZIKV), Epstein-Barr virus (EBV), norovirus, HIV and Lyme disease. Moderna launched our CMV clinical program in 2017 and we anticipate potential efficacy data from the pivotal Phase 3 study of our CMV vaccine candidate in 2024. CMV is the most common infectious cause of birth defects in the U.S. and has been designated as a top priority in new vaccine development by the U.S. National Academy of Medicine for more than two decades.

In cancer, in December 2023, we reported additional data at a planned median follow-up of three years from our Phase 2b trial evaluating our individualized neoantigen therapy (INT) in combination with Merck’s KEYTRUDA in melanoma patients, compared to KEYTRUDA alone. The treatment continued to show significant and clinically meaningful improvement in recurrence-free survival and reduced the risk of recurrence or death by 49%. We believe that these data demonstrate the durability of the therapy, and we have initiated Phase 3 studies in the adjuvant setting in patients with high-risk melanoma and non-small cell lung cancer. Encouraged by these early successes, in 2024, we and Merck have initiated three new randomized clinical studies in additional tumor types,

including a Phase 2 adjuvant treatment in patients with renal cell carcinoma, or kidney cancer; a Phase 2 adjuvant treatment in patients with high-risk muscle-invasive bladder cancer; and a Phase 2/3 neoadjuvant and adjuvant treatment in patients with cutaneous squamous cell carcinoma, the second most common form of skin cancer.

We have also demonstrated the potential for clinical benefit in three different rare genetic diseases (propionic acidemia (PA), methylmalonic acidemia (MMA) and glycogen storage disease type 1a (GSD1a)) and expect to advance our PA and MMA programs into pivotal studies in 2024.

We have an exciting late-stage pipeline, and we are preparing to launch up to 15 products in the next five years. We are many steps closer to reaching millions of additional people with unmet medical needs.

## 2023 Highlights

**100 million**

people impacted in 2023

**45**

programs in pipeline

**9**

programs in late-stage development

**\$4.8 billion**

in R&D investment

**18**

institutions participating in mRNA Access

**12**

priority pathogens in research and development



## Removing barriers to health equity

Impacting human health depends on our ability to bring our mRNA medicines to the people who need them. But as the COVID-19 pandemic highlighted, unequal access to healthcare continues to be a reality for too many people in the world. According to the World Health Organization (WHO), at least half of the world’s population still does not have access to essential health services. To deliver on our mission, we must be relentless in removing barriers to equitable access to healthcare and building sustainable health systems. This means remaining an active partner and engaging with stakeholders who share our goals and commitment to removing barriers to health equity.

*For the 2023/2024 season in the U.S., we delivered on our commitment to ensure that anyone who wanted our vaccine could obtain one, independently of their ability to pay. We collaborated with the CDC, the US Department of Health and Human Services, and nonprofit organizations to make more than half million doses of our COVID-19 vaccine available to uninsured Americans.*

### Access Principles

In December 2020, at the same time that we were scaling up manufacturing of our first commercial mRNA product, we published our access and pricing principles, which helped us to put health equity at the heart of our efforts during the COVID-19 pandemic ahead of the launch of our first COVID-19 vaccine.

As we transitioned to a company with nine late-stage programs, aiming to launch up to 15 products by 2028, we decided to review and update our access principles in 2024 to ensure they continue to reflect our mission and the needs of patients and healthcare systems. We believe our updated principles will help us to systematically integrate access strategies as our portfolio evolves.

### Access Principles

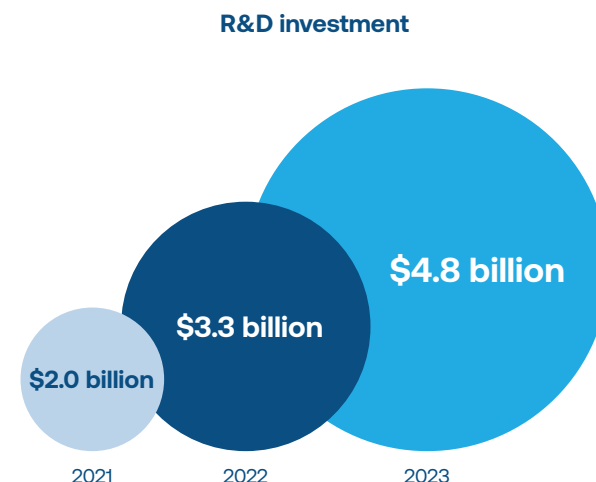
**We recognize that access to medicines remains a challenge in many parts of the world. That’s why Moderna is committed to working on multiple levels to optimize the impact of mRNA vaccines and therapeutics. Our commitment to access and pricing reflects a few basic principles:**

- Moderna will invest in R&D in areas of unmet medical need.
- Moderna is committed to developing a broad portfolio of mRNA medicines to address epidemiological challenges worldwide.
- Moderna will work to include communities in our development programs that have historically been underrepresented in clinical research, as well as those that are disproportionately impacted by the respective diseases.
- Moderna is committed to systematically evaluating late-stage R&D programs to identify which of our mRNA medicines will benefit low- and lower middle-income countries and develop access plans.
- Moderna will price its mRNA medicines through differential pricing frameworks.
- Moderna is committed to collaborating with global, regional, and local partners to provide broad access.

Updated in June 2024

## Investing in R&D to address unmet need

Our continuous investment in research and development (R&D) allowed us to advance nine programs into late-stage development in 2023. Of these nine, one has been submitted for approval in key markets and three have completed Phase 3 enrollment.



### Accelerating our impact to global public health and pandemic preparedness

In 2022, we articulated our global health strategy, aimed at addressing priority pathogens identified as the greatest threats, sharing our mRNA technology with experts around the world through our mRNA Access collaborative, and leveraging our skills and knowledge to accelerate our impact to global health. By the end of 2023, we had 12 vaccines against priority pathogens in research and development and had established collaborations with 18 institutions in our mRNA Access program.

### Increasing representation in clinical research

For us, health equity means making sure people of all backgrounds have access to the promising medicines of tomorrow. In 2023, we continued to include broad demographic objectives across our Phase 1, 2 and 3 trials and delivered on our commitment to diversity in clinical research.

### Seeking solutions to the lack of infrastructure

We continue to innovate on our platform to address cold chain supply issues faced by countries during the pandemic. mRNA-1283, our next-generation COVID-19 vaccine, which is designed to be refrigerator-stable, could help to reduce the burdens associated with storing mRNA vaccines in developing countries. mRNA-1283 dosed the first participant in its Phase 3 trial in 2023 and in March 2024, we announced that mRNA-1283 had successfully met the primary endpoints of its Phase 3 clinical trial, demonstrating a higher immune response against SARS-CoV-2 when compared to mRNA-1273.222, Moderna’s licensed COVID-19 vaccine.

Beyond our platform, we remain active in supporting partners to address broader infrastructure challenges, and in 2023, Moderna donated \$1 million to Direct Relief to support cold-chain infrastructure projects in Africa and efforts aimed at enhancing cold-chain capacity and expanding healthcare access around the world.

Additionally, through the Moderna Charitable Foundation, we continue to work with partners who share our vision of strengthening healthcare systems and tackling the many inequalities in social determinants of health of vulnerable populations. For example, in 2023, our Foundation supported Amref Health Africa in a project across four counties in Kenya (Nairobi, Nyeri, Machakos, and Nakuru) that used innovative approaches to engage communities on the

uptake of COVID-19 vaccination, to increase access to COVID-19 vaccines through mobile vaccination clinics and outreach events, and to integrate non-communicable disease education and screening with COVID-19 vaccination.

### Partnering to seek equitable access

From the beginning, we have been committed to ensuring vaccine access to low- and lower middle-income countries. Our agreement with Gavi led in 2021 to the supply of nearly 70 million doses of COVID-19 vaccines to the 92 Gavi COVAX Advance Market Commitment (AMC) low- and middle-income countries (LMICs), in addition to our Company facilitating the donation of more than 100 million doses to these countries (25% of all doses shipped in 2021). In 2023, we entered into a new framework agreement with Gavi to provide up to 100 million bivalent booster COVID-19 vaccines if there was any demand. In 2023, there was no request or demand through Gavi for our vaccine. Moderna maintains regular contact with Gavi and UNICEF to explore opportunities to provide access to the most updated vaccine. We also provide regular updates on our vaccine development portfolio. We recently entered into an agreement with the Pan American Health Organization (PAHO) to deliver our COVID-19 vaccine to countries in the Americas and help meet the demands of public health.

### Pricing for value

We understand that impacting human health means enabling populations to access our medicines at fair prices and striking a balance between fueling future innovation and operating a sustainable business that delivers on our mission. For our first commercialized product, we have been committed to pricing that reflects the impact our vaccine has on patients and healthcare systems. Our tiered-pricing framework means we remain committed to providing the lowest access price to the poorest countries.

### Approaching IP responsibly

In October 2020, we became the first company to commit to not enforcing our COVID-19-related IP rights during the pandemic. In 2022, to further underscore our commitment to LMICs, and as part of our continued support for achieving global health equity, we updated our patent pledge to never enforce our patents for COVID-19 vaccines against manufacturers in or for the 92 LMICs in the Gavi COVAX AMC, provided that the manufactured vaccines are solely for use in AMC 92 countries. In non-AMC 92 countries, we expect those using Moderna-patented technologies will respect Moderna’s intellectual property. We remain willing to license our technology for COVID-19 vaccines to manufacturers in these countries on commercially reasonable terms. Doing so enables us to continue to invest in research to develop new vaccines, prepare for the next pandemic, and meet other pressing areas of unmet medical need. We have not only updated our patent pledge, but as our Company enforces its intellectual property rights, we are conscious of doing so in a manner that will not impede access in low- and lower middle-income countries.



## Our Global Health Strategy: accelerating pandemic preparedness and outbreak response globally

The world needs novel, innovative approaches to address both known and emerging infectious diseases. At Moderna, we are bringing the full force of our mRNA vaccine platform to combat infectious diseases of public health concern to be part of the solution to prevent future pandemics. In 2022, we articulated our Global Health Strategy, which is centered around engaging the scientific community through our mRNA Access program, advancing research against priority pathogens and building regional manufacturing capacity to ensure medicines are available when and where they are needed.

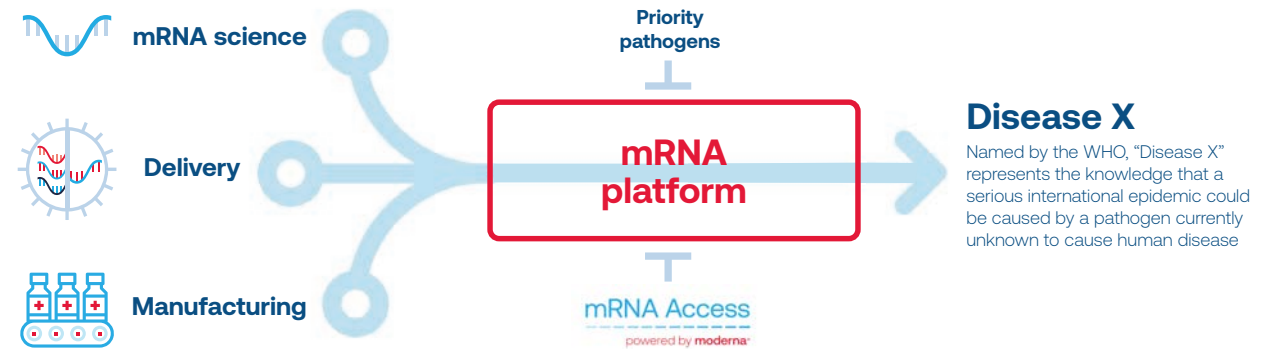
### Pandemic preparedness

We believe that our platform is uniquely suited for rapid response to public health threats with pandemic potential. Our most notable example to date is our COVID-19 vaccine. In less than one year, we used our deep understanding of mRNA science, delivery science and manufacturing to bring our first COVID-19 vaccine to emergency use authorization. Subsequently, we have demonstrated an ability to respond rapidly to new variants of concern. In 2022, we were able to bring forward a variant targeting vaccine in in 63 days, the time from strain selection by the FDA to approval of the updated vaccine. In 2023, we made the update in 87 days. This reinforces that our technology is not only capable of rapid response, but that we have the people, the processes, and the know-how to deploy the technology to address a public health threat.

In 2023, we initiated clinical development of pandemic influenza vaccines targeting avian influenza strains with pandemic potential. Influenza pandemics occur when a novel reassortant virus is introduced to the population. There have been four influenza pandemics since the early 1900s and there is a considerable risk that we will each see multiple influenza pandemics in our lifetimes. Our investment in pre-pandemic readiness is intended to position Moderna to rapidly respond to a future influenza pandemic, potentially saving millions of lives.

Ultimately the threats to our public health extend well beyond COVID-19 and influenza. This threat extends to Disease X, which is the name given by the WHO to a potential serious international epidemic that could be caused by a pathogen currently unknown to cause human disease. The speed, scale and flexibility of our mRNA platform is uniquely suited for rapid response to Disease X.

Our global health strategy is aimed at advancing mRNA vaccines for the prevention of infectious diseases and built on the potential of our platform for pandemic preparedness against Disease X.



## mRNA Access

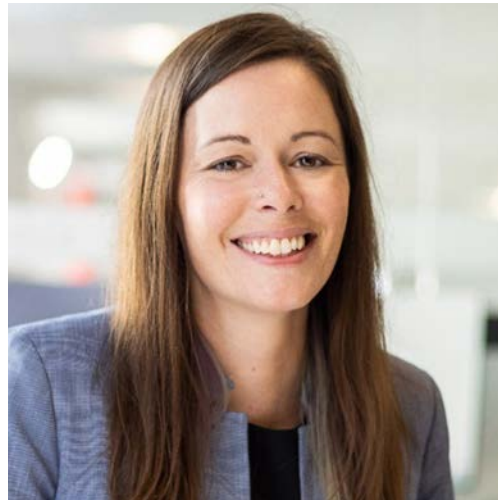
In 2022, we launched [mRNA Access](#), a first-of-its-kind program that offers researchers use of Moderna’s mRNA technology to explore new vaccines against emerging or neglected infectious disease.

The mRNA Access program opens our preclinical manufacturing capabilities, research and development expertise to global partners, to promote a collaborative approach to exploring the possibility of mRNA to tackle the world’s greatest global public health threats. Through the program, researchers at partnering institutions are invited to take advantage of our mRNA platform to develop mRNA medicines for infectious diseases. These programs will leverage our early development capabilities to advance vaccine candidates to the clinic. mRNA Access will also allow scientists around the world to explore novel vaccine designs against prototype viral families in preparation for Disease X. We believe that this program, and mRNA, can transform the field of vaccinology by continuing to advance our science and engage the next generation of researchers and engineers in the process. In 2023, we nearly doubled the size of the mRNA Access network, now 18 institutions strong.

## mRNA Access

powered by **moderna**

**12 vaccines against priority pathogens in research and development by the end of 2023.**



**By the end of 2023, we had 18 geographically dispersed institutions taking part in mRNA Access.**

**“mRNA Access is a first of its kind collaborative model for innovative research, and the type of bold approach that Moderna will take in our mission to have the greatest impact on human health.”**

**Hamilton Bennett**  
Senior Director, Vaccine Access and Partnerships at Moderna

## CEPI and Moderna Harness mRNA Technology to Advance 100 Days Mission

In 2023, we announced a new strategic partnership with the Coalition for Epidemic Preparedness Innovations (CEPI) to harness our mRNA platform to accelerate the development of vaccines against viral disease outbreaks that threaten global health. The work undertaken as part of this partnership could expand the infectious disease targets for mRNA vaccine technology and strengthen pandemic preparedness and public health efforts in alignment with the 100 Days Mission, a global goal to compress vaccine development timelines to 100 days and to ensure that these vaccines are available when and where they are needed.

The partnership will kick off with an initial project to evaluate the performance of novel AI-generated antigen designs and mRNA technology against a range of viral families that carry the greatest risk of causing the next pandemic.

## Addressing priority pathogens

We are committed to advancing into clinical studies a portfolio of vaccine programs targeting emerging or neglected infectious diseases where we believe that our mRNA platform can make a difference for patients. This portfolio includes advancing vaccines that address current diseases of significant impact to LMICs as well as those that prepare for Disease X. Our development efforts prioritize work against pathogens identified as persistent global health threats, neglected tropical diseases and the priority pathogens of the WHO and CEPI.

We have advanced clinical candidate vaccines against COVID-19, Zika, Chikungunya, HIV and Nipah. In 2023, we launched two additional Phase 1/2 clinical studies for pandemic influenza and Mpox vaccine candidates. Our portfolio will remain in continuous evolution as we work with global partners to monitor emerging and re-emerging diseases around the world.

## Global Public Health Portfolio

Priority Pathogen	ID #	Preclinical Development	Phase 1	Phase 2	Phase 3	Commercial	Collaborators
COVID-19	mRNA-1273						BARDA/NIAID
Zika	mRNA-1893						BARDA
Chikungunya	mRNA-1388						--
HIV	mRNA-1574						IAVI/BFMG/NIAID & Others
HIV	mRNA-1644						IAVI/Others
Mpox	mRNA-1769						--
Nipah	mRNA-1215						NIH
Pandemic Flu	mRNA-1018						
Dengue	--						--
Ebola	--						UTMB
Lassa virus	--						UTMB
MERS-CoV	--						--
Marburg	--						UTMB
CCHF	--						--
Malaria	--						--
Rift Valley Fever	--						--
SFTS	--						KNIH
Tuberculosis	--						--

As of May 25, 2024  
Source: Compiled from Global Health groups

### Abbreviations:

**CCHF**, Crimean Congo Hemorrhage Fever; **HIV**, Human Immunodeficiency Viruses; **MERS-CoV**, Middle East respiratory syndrome coronavirus; **SFTS**, Severe fever with thrombocytopenia syndrome; **BARDA**, Biomedical Advanced Research and Development Authority; **NIAID**, National Institute of Allergy and Infectious Diseases; **IAVI**, International AIDS Vaccine Initiative HYPERLINK; **BMGF**, Bill & Melinda Gates Foundation; **NIH**, National Institute of Health; **UTMB**, University of Texas Medical Branch; **KNIH**, Korea National Institute of Health. **JPEO**: Joint Program Executive Office

## Innovating in vaccine strategies to deliver impact in Global Health

### Human Immunodeficiency Virus (HIV)

HIV is the underlying cause of approximately 650,000 deaths per year, and it continues to cause nearly 1.5 million new infections worldwide each year<sup>(1)</sup>. A highly effective HIV vaccine has been the goal of vaccinologists for nearly 35 years.

We currently have two investigational HIV vaccines in clinical testing. Both programs are capitalizing on the deep expertise that exists in the field of HIV at institutions like Scripps, the International AIDS Vaccine Initiative (IAVI), and the National Institute of Allergy and Infectious Diseases (NIAID), and bringing their expertise to our platform to tackle what is largely recognized as the greatest infectious disease challenge of our lifetime. Our first program, mRNA-1644, aims to induce the generation of broadly neutralizing antibodies through sequential administrations of HIV antigens that prime and boost the immune system. This program relies on an iterative vaccine design/test cycle, one that learns from in-progress clinical studies to adapt and deploy new boosting vaccines, taking advantage of the speed and flexibility of our platform. This program is in a Phase 1 trial sponsored by IAVI and supported by the Bill & Melinda Gates Foundation. Our second vaccine candidate, mRNA-1574, tests three distinct antigen designs to understand the interplay of immunogen design and the induction of neutralizing antibodies. This program is in a Phase 1 trial and sponsored and funded by the Division of AIDS (DAIDS) of the NIAID.

(1) [HIV Global Statistics. https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics](https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics)

### Nipah (NiV) virus

NiV, a zoonotic virus transmitted to humans from animals, contaminated food, or through direct human-to-human transmission, causes a range of illnesses including fatal encephalitis. In infected people, it causes a range of illnesses from asymptomatic (subclinical) infection to acute respiratory illness and fatal encephalitis. The case fatality rate is estimated at 40% to 75%<sup>(2)</sup>. This rate can vary by outbreak depending on local capabilities for epidemiological surveillance and clinical management.

Nipah virus was first recognized in 1999 during an outbreak among pig farmers in Malaysia. Sporadic outbreaks have since been reported in multiple countries in South East Asia and recently there have been annual outbreaks of human infection in Bangladesh and India. The natural host are fruit bats which have a wide geographic distribution extending from Asia to Africa. There are currently no drugs or vaccines specific for Nipah virus infection although a veterinary vaccine is available in Australia for a closely related virus, Hendra, affecting horses. Because of its high pandemic potential, NiV is listed as a high-priority pathogen by the WHO, Centers for Disease Control and Prevention (CDC), and CEPI.

Our Nipah virus (NiV) vaccine candidate, mRNA-1215, has been developed in collaboration with the Vaccine Research Center (VRC), a division of the National Institute of Allergy and Infectious Diseases (NIAID) at the National Institutes of Health (NIH). The vaccine candidate is being studied in a Phase 1 trial, sponsored and funded by NIAID.

(2) <https://www.who.int/news-room/fact-sheets/detail/nipah-virus>

### Pandemic Influenza

A flu pandemic is a global outbreak of a new flu A virus. Flu pandemics happen when a new flu A virus emerges that is able to infect people easily and spread from person to person in an efficient and sustained way, and to which most of the world's population do not have immunity. There have been four influenza pandemics since the early 1900s. In 1918, the largest influenza pandemic on record resulted in more than 50 million deaths worldwide. Over the subsequent decades, 1957, 1968 and 2009 novel strains of the virus were introduced and caused between 0.5 million to 1.5 million deaths<sup>(3)</sup>. The last flu pandemic occurred in 2009 when a novel influenza A (H1N1) virus emerged.

Moderna initiated a Phase 1/2 clinical study of mRNA-1018 against avian influenza viruses of the H5 and H7 subtype. The goal is not simply to respond to these specific viruses, but to create the capability to respond to future threats, and to do so quickly.

(3) <https://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html>

### Mpox (or monkeypox)

Mpox (monkeypox) is a viral illness caused by the monkeypox virus, a species of the genus Orthopoxvirus. Two different clades exist: clade 1 and clade 2. Clade 1 is mainly reported in Central and Eastern Africa and results in less severe disease, and clade 2 which is reported in Central Africa and causes more severe disease and is associated with up to 10% mortality. Mpox can be transmitted to humans through physical contact with someone who is infectious, with contaminated materials, or with infected animals.

After 1970, mpox occurred sporadically in rural areas in western and central Africa, mostly due to contact with infected animals. In 2003, an outbreak in the United States was linked to imported wild animals (clade 2). Since 2005, thousands of suspected cases are reported in the DRC every year and have increased significantly since 2014. In 2017, mpox re-emerged in Nigeria and continues to spread between people across the country and in travelers to other destinations. From 1970 to 2021, there were fewer than 60 cases of mpox reported outside of the endemic areas in western and central Africa. In May 2022, an outbreak of clade 2 mpox appeared suddenly and rapidly spread across Europe, the Americas and then all six WHO regions, with 117 countries reporting about 93 thousand cases and 179 deaths. The main mode of transmission was sexual contact. The global outbreak of mpox was declared a public health emergency of international concern (PHEIC) from July 23, 2022 to May 11, 2023. There is an ongoing Clade 1 mpox outbreak in the DRC with 21,630 suspected pox cases and 1003 suspected deaths between January 2022-January 2024; in 2024 alone, 1265 suspected cases and 102 suspected deaths have been reported. The majority of these cases were reported in children under 15 years of age.

Moderna started a Phase 1/2 clinical study of our mpox vaccine candidate, mRNA-1769, in response to recent outbreaks caused by vaccine shortage and inequitable access.

<https://www.who.int/news-room/fact-sheets/detail/monkeypox>  
[https://worldhealthorg.shinyapps.io/mpx\\_global/#1\\_Overview](https://worldhealthorg.shinyapps.io/mpx_global/#1_Overview)  
<https://www.cdc.gov/mmwr/volumes/72/wr/mm7203a4.htm>  
<https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON493>



## Advancing Health Equity through Inclusive Research

**Moderna is developing medicines for everyone, and we realize we cannot maximize the potential of mRNA without ensuring that access to these medicines is inclusive of all populations. Our approach to developing innovative medicines is fundamentally rooted in the diversity of our clinical trials.**

### Diseases don't discriminate—neither should scientific research

Diversity in clinical trials is vitally important because diseases can affect anyone, yet their impact varies based on each person's unique genetic makeup, environmental context, and lifestyle. Ensuring a diverse group of participants in clinical trials means that we can better understand how a treatment works for everyone, leading to treatments that are safe and effective for a wide spectrum of individuals. We remain unwavering in our commitment to researching mRNA vaccines and therapies with a goal of bringing better health for all populations.

We delivered on this commitment during our very first Phase 3 study. As the world was looking to our industry to run clinical trials for vaccines against COVID-19 as quickly and safely as possible, we slowed enrollment in our COVID-19 Phase 3 COVE study to ensure broad representation and inclusion across participants. In the end, our clinical trial included more than 11,000 Participants of Color, representing 37 percent of the clinical trial population.

## Diversity at our Clinical Trials

At Moderna, a clinical trial can be qualified as “diverse” in healthy volunteer trials when 37% of the sample population are from Global Ethnic Majority<sup>(1)</sup> (GEM) groups, at least 50% are female assigned at birth, and all age groups are appropriately represented across numerous geographies, extending beyond the U.S. Through this commitment, Moderna is consistently reaching out to medically underserved communities and underrepresented populations.

### By the end of 2023:

#### Ethnicity

**38%**  
**Moderna Average**  
 Global Ethnic Majority (GEM) enrollment across 37 infectious disease trials in U.S.

#### Sex

**52%**  
**Moderna Average**  
 Female enrollment across 36 infectious disease trials in U.S. (Excluded one 100% female trial)

#### Age

**39%**  
**Moderna Average**  
 65+ enrollment across 24 infectious disease trials; only inclusive of trials that enroll 65+ year old participants in U.S.

#### Engaging clinical trial sites in 32 countries

## Our approach to inclusive clinical trials

We recognize that there is not a “one size fits all” approach to cultivating inclusivity. To that end, we have centered our efforts on driving strategy and managing initiatives to build trust and ensure traditionally underrepresented groups can be better engaged in our trials:

- Embedding the importance of diversity in clinical trials into our company's culture
- Establishing demographic objectives and diversity plans for each clinical trial
- Selecting clinical trial sites with inclusion in mind
- Developing outreach and education materials tailored for specific populations
- Providing transparency about our clinical trials to participants throughout the drug development process

We firmly believe that access to a clinical trial should not be a peripheral consideration, but rather, a fundamental aspect of care that offers individuals of all backgrounds the opportunity to benefit from innovative treatments. Therefore, our efforts are anchored in fostering trust and revolve around three central pillars: increasing awareness, bringing trials into communities, and providing options.

Moderna is committed to **increasing diversity** in our clinical trials by identifying the **barriers that currently impede inclusion**, and implementing approaches to more efficiently **identify, engage, recruit, and retain** study participants from racial/ethnic **minority communities and vulnerable populations.**

(1) GEM = “Global majority” is a collective term for non-white people of African, Asian, Latin American, and Arab descent, who constitute approximately 85 percent of the global population.



### About CMV

**Cytomegalovirus (CMV) is a leading cause of birth defects around the world. CMV is a common viral infection that usually goes unnoticed or only causes mild symptoms in most people. But if a woman becomes infected with CMV while she is pregnant, she can pass the infection to her unborn baby. This can cause her child to suffer long-term disability due to birth defects, including hearing loss, or even death in very severe cases. Currently, there is no approved vaccine against CMV.**

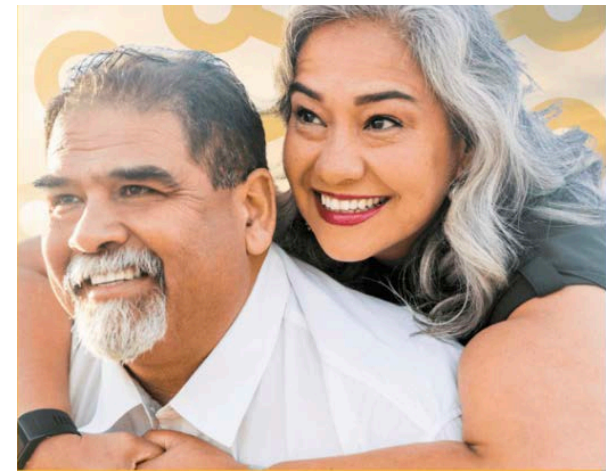
### Delivering on our commitment in 2023

We continued to hold ourselves accountable to enroll the entire spectrum of intended populations in our clinical trials by establishing demographic objectives for the Phase 3 trials of our cytomegalovirus (CMV) vaccine and respiratory syncytial virus (RSV) vaccine candidates. For the Phase 3 clinical trial of our investigational cytomegalovirus (CMV) vaccine, we exceeded our goal of enrolling 42% Participants of Color in the U.S. Similarly, for the Phase 3 clinical trial of our RSV vaccine candidate, we again exceeded our goal of enrolling at least 31% Participants of Color in the U.S.

#### Moderna won

“The Delivering Inclusive Trials Award”  
at Reuters Pharma Europe 2022

Our approach to inclusive research is comprehensive, and we go to great lengths to ensure our clinical trials inspire confidence, cultivate trust, and accurately represent those at greatest risk, and most likely to benefit from our products, thereby ensuring people have access to the potential and exciting therapies of tomorrow.



### About RSV

**Respiratory syncytial virus (RSV) causes a substantial disease burden in older adults aged 65 years and older. There are up to 160,000 RSV-related hospitalizations in adults 65 and older in the U.S. each year and up to 10,000 RSV-related deaths. Globally, there are more than 1.5 million episodes of acute respiratory tract infection related to RSV each year.**

## Bringing new hope in rare diseases

Rare diseases affect the lives of millions of people and their families. There are approximately 7,000 rare diseases that impact more than 300 million people worldwide.

Collectively, people living with rare diseases represent one of the largest underserved patient communities in the world, with drugs approved for only five percent of known rare diseases. We recognize the impact of rare diseases on patients and their families, particularly when the disease lacks any effective treatment options. We are advancing mRNA therapeutics with the goal of one day bringing treatment options to patients and their families.

### Our programs

Our rare disease portfolio, which includes therapies targeting methylmalonic acidemia (MMA), propionic acidemia (PA), glycogen storage disease type 1a (GSD1a) and Phenylketonuria, continued to show promise. As of the end of 2023, the Phase 1/2 trial for our MMA therapy candidate has dosed fifteen participants and all participants had opted into the Open-Label Extension study. A global Phase 1/2 trial for our PA candidate is ongoing and we have fully enrolled all five dose optimization cohorts, as well as a dose confirmation cohort. We have received Rare Pediatric Disease Designation, Orphan Drug Designation and Fast Track Designation from the FDA and Orphan Designation from the European Commission for the PA program. In June 2024, the FDA selected mRNA-3705 for the Support for Clinical Trials Advancing Rare Disease Therapeutics (START) pilot program. We expect to advance our programs for PA (mRNA-3927) and MMA (mRNA-3705) into pivotal studies in 2024.

Our GSD1a therapy candidate has been granted Orphan Drug Designation by the FDA and the European Medicines Agency (EMA) and the trial is in Phase 1/2.

We believe this is just the beginning and that mRNA could potentially help patients with a large variety of protein and enzyme deficiencies. We are committed to advancing mRNA therapeutic candidates to address diseases – whether they affect one person or a million.

### Propionic Acidemia (PA)

Propionic Acidemia (PA) is an incredibly rare and severe pediatric disease in which the body can't break down certain parts of proteins and amino acids, which leads to the build-up of toxic chemicals. PA is an inherited metabolic disorder with significant morbidity and mortality, affecting one in 100,000-150,000 individuals worldwide. Currently, there is no approved therapy for PA that targets the underlying root cause of the disease.

### Methylmalonic Acidemia (MMA)

Methylmalonic Acidemia (MMA) is a rare genetic metabolic disease with significant morbidity and mortality. Mortality rates are estimated to be as high as 40 to 50 percent, and there is no approved therapy that addresses the underlying disease. Kidney and liver transplants can provide a benefit, but access to donors is limited and transplants also carry significant risk of morbidity and mortality.

### Glycogen Storage Disease Type 1a (GSD1a)

In Glycogen Storage Disease Type 1a (GSD1a), stored glycogen cannot be metabolized into glucose to supply energy and to maintain steady blood glucose levels for the body. There are no approved therapies except cornstarch, which children must receive through feeding tubes when they're very young to avoid life threatening loss of sugar. For these children, their lives may depend on a functioning alarm clock to wake them and their caregivers when it is time for their next dose of cornstarch. If a dose is missed, the disease can lead to seizures and, in rare instances, even death. Long term complications of GSD1a include kidney and liver damage, and risk of liver cancer.

#### Meet Jordan, who lives with GSD1a



## Our commitment to addressing ultra-rare diseases

We are proud of our collaboration with the Institute for Life Changing Medicines to develop an mRNA therapeutic (mRNA-3351) for Crigler-Najjar type 1 (CN1), an ultra-rare disease. The goal of this partnership is to make an mRNA therapy for the treatment of CN-1 available at no cost to patients and their families. The Institute will not pay Moderna an upfront fee or any downstream payments and Moderna will also provide the mRNA-3351 material free of charge. We are proud to be able to deploy our mRNA platform to help combat this ultra-rare disease.

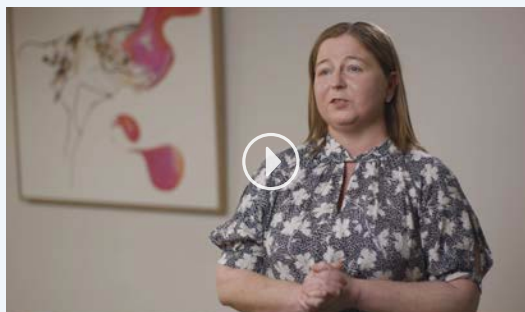
### Crigler-Najjar Syndrome Type 1 (CN-1)

Crigler-Najjar Syndrome Type 1 (CN-1) is a severe condition characterized by high levels of a toxic substance called bilirubin in the blood (hyperbilirubinemia). Symptoms become apparent shortly after birth and can be life-threatening. It is estimated that there are only approximately 70 to 100 known cases of CN-1 in the world. Current standard of care treatments relies on phototherapy treatments of up to 12 hours a day throughout life. The only definitive treatment is a liver transplant, which is associated with its own set of side effects and risk of death.

## Moderna Research Fellowships

In 2021, we launched Moderna Research Fellowships and since then we have supported more than 30 fellows globally. The goal of our Fellowship programs is to support the next generation of scientists and healthcare professionals as they innovate in the field of mRNA research toward improving patient care and population health.

### Moderna Australia Fellowship awarded to Dr Lauren Holz of The Peter Doherty Institute for Infection and Immunity for malaria vaccine development.



University of Melbourne's [Dr. Lauren Holz](#), Postdoctoral Researcher in the Heath Group at the Doherty Institute, is one of two scientists selected to join Moderna's inaugural Australia Fellowship Program. Her project aims to develop the first effective mRNA-based malaria vaccine that targets the liver stage of the parasite lifecycle, which if proven effective, has the power to address a health issue of global importance.

[https://youtu.be/WPhuRF\\_Evpw](https://youtu.be/WPhuRF_Evpw)

## Ensuring high product quality and patient safety

**There is nothing more important to us than the safety of the people receiving our medicines.**

### Clinical trials

We design and conduct clinical trials in accordance with the highest scientific and ethical standards and in compliance with all applicable regulatory requirements. We have defined a framework of policies and standards to design all Moderna-sponsored clinical trials in accordance with local laws and regulations, international standards including those defined under the International Conference for Harmonization-Good Clinical Practice and Moderna's policies and procedures. Our standards are applicable to all Moderna employees and agents and to all parties with whom Moderna contracts (e.g., contract research organizations (CROs), vendors, or consultants) involved in Moderna-sponsored clinical trials. A qualified and independent Institutional Review Board (IRB) or Ethics Committee must review and approve all Moderna-sponsored trials prior to initiation of a given study. Study participants may only be enrolled in a clinical trial only after providing their voluntary informed consent or informed assent, as applicable, in compliance with local laws and regulations. Moderna respects the privacy rights of its study participants and safeguards the confidentiality of their medical information in accordance with all applicable laws and regulations.

### Quality

#### Leadership

Quality is essential to our mission, and we have established a culture that encourages transparency, accountability, and ownership of quality at all levels in the organization. Our leaders at Moderna are

responsible and accountable to drive our quality culture and to ensure risks are proactively mitigated. Quality Assurance teams are deployed globally across our operations to ensure quality standards are applied consistently and thoughtfully across the globe. Our Quality Unit is led by Moderna's Chief Technical Operations and Quality Officer, who is a member of our Executive Committee. The Product Development Committee of the Board has oversight on Moderna's product quality and safety programs.

### Quality Management System

We seek to ensure quality and compliance at Moderna through a combination of a robust and integrated Quality Management System (QMS), governance processes, our quality culture and company values, and the capabilities and commitment of our people. We have established, documented, and implemented a global QMS to assure continued compliance with applicable national and international regulations and laws related to product quality. Our QMS includes policies, standards, and operating procedures for which employees and contractors are trained and which are required to follow. Senior management is engaged in the review of the quality system's performance, the setting of quality objectives and the monitoring of the organizational health, while driving a culture of sustainable compliance, learning, and continuous improvement.

Moderna's QMS applies across our product lifecycle starting with development, through commercial manufacturing and post-marketing surveillance. It includes procedures that define requirements for inspection and testing of incoming materials and manufactured product throughout the production lifecycle. Specifications for inspection and testing are defined for incoming raw material through finished product and stability testing. Samples are collected throughout the manufacturing process for testing and

release according to pre-determined specifications. Testing may be performed at Moderna owned facilities or at qualified third-party contract testing laboratories, as may be required in accordance with our filed dossiers.

### Third parties

We work with qualified third parties to ensure Moderna standards are understood and followed. All Moderna employees and contractors are required to complete training on the company's policies and the procedures related to services provided. Completion of training is routinely monitored, and metrics are reported to leadership as part of the quality management review.

All suppliers and third party service providers are qualified, routinely audited, and monitored to ensure compliance with Moderna and international regulatory requirements. Quality Agreements define the Moderna requirements that these providers must meet. As part of our governance and oversight obligations, Moderna's QMS requires that manufacturing and testing third party partners and vendors be qualified through audit where the compliance status and capabilities to consistently deliver high quality products are assessed as part of the initial selection process. Performance is then routinely monitored through testing and audit, and, in the case of our third party manufacturers, Moderna provides direct oversight of the manufacturing operations during production of Moderna's products. Continued compliance with Moderna and regulatory requirements are routinely verified, and effectiveness confirmed. Outcomes are reported to our senior leadership as part of the ongoing quality management review requirements.

### Audits and inspections

Moderna's manufacturing and testing facilities are routinely audited and inspected by global regulatory authorities. Acceptable compliance has been

confirmed and international GMP clearances and certificates authorizing Moderna's product across its multiple markets have been obtained. Moderna also hosts national inspections at its country organizations which provide authorization for distribution in each market.

### Clinical Safety and Pharmacovigilance

The safety and quality of our products is paramount to us, and we are deeply dedicated to the safety of all our patients in our clinical trials and of those receiving our products after authorization. The Clinical Safety and Pharmacovigilance team supports our mission with proactive safety assessment, effective risk management, and transparent risk communication throughout the life cycle of our products. All products in clinical development have dedicated cross-functional Safety and Risk Management Teams (SRMTs) which continuously review and assess all emerging safety data for the program. The SRMTs are overseen by Moderna's Safety Review Board (SRB), a senior level, cross-functional, safety governance body led by the Chief Safety Officer.

We have a pharmacovigilance (PV) system that assures comprehensive safety monitoring and signal detection across Moderna's portfolio of products and clinical programs. Moderna's standards and our QMS assure compliance with national and international reporting requirements as well as special reporting obligations in accordance with regulatory commitments. As part of Moderna's governance and oversight obligations, the effectiveness of the PV system is monitored and periodically audited, with outcomes reported to our senior leadership.

All Moderna employees and contractors must complete annual training on the company's adverse event reporting policy.

## Product quality and patient safety performance indicators

	2023	2022	2021
<b>Total health authorities inspection</b>	<b>26</b>	<b>17</b>	<b>18</b>
Inspections found to be acceptable (%) <sup>(1)</sup>	92%	94%	94%
<b>Total FDA Inspections</b>	<b>12</b>	<b>6</b>	<b>6</b>
Total FDA Inspections of Clinical Trial Management/Pharmacovigilance	11	6	5
Total VAI outcome	4	1	1
Total OAI outcome	0	0	0
Total NAI outcome	1	5	4
Total FDA GMP Inspections	1	0	1
Total FDA 483	4	0	0
Total FDA Warning Letter <sup>(2)</sup>	0	0	0
<b>Total International Health Authority Inspections</b>	<b>14</b>	<b>11</b>	<b>12</b>
Total Inspections of Clinical Trial Management/Pharmacovigilance	5	7	8
Total inspections with critical observations/legal action	1	1	1
Total inspection without critical observations/legal action	4	6	7
Total GMP Inspections	9	4	4
Total inspections with critical observations/legal action	1	0	0
Total inspection without critical observations/legal action	8	4	4
<b>Total GxP Audits</b>	<b>452</b>	<b>312</b>	<b>281</b>
Internal audits (Moderna audit on own facilities)	68	26	9
Supplier audits (Moderna audit on supplier facilities)	381	286	272
External audits (Third party conducting an audit)	3	-	-
<b>Total Recalls</b>	<b>0</b>	<b>1</b>	<b>0</b>
Class I recalls	0	1	0
Class II recalls	0	0	0 <sup>(3)</sup>
<b>US FDA recalls</b>	<b>0</b>	<b>0</b>	<b>0</b>

(1) Acceptable defined as general 483 findings not resulting in a warning letter/injunction or critical findings

(2) No FDA warning letters on Moderna owned facilities or Moderna product

(3) One recall was performed by the MAH Takeda

## Protecting against product counterfeiting

The trade in counterfeit medicines can have a serious impact on public health and safety, lead to social and environmental concerns (substandard labor and production practices), and result in other criminal acts, such as fraud.

We aim to ensure that all patients are securely delivered genuine and uncompromised Moderna medicines. Our Brand Protection and Supply Chain Security (BPSCS) team has established a proactive, concerted approach to combat illicit trade, mitigate risk of theft, tampering, diversion, and prevent the production and sale of counterfeit products. This multi-tiered approach includes the development of intelligence-based threat matrices to identify target countries and regions, outreach and training to domestic and international officials, continuous monitoring of the internet and dark web, and market surveillance.

We work diligently to find the best partners and most advanced technology to collect timely and relevant brand threat intelligence. Close partnerships with law enforcement and regulatory bodies enable us to share intelligence, provide tools needed to investigate illicit trade of Moderna's medicines, identify perpetrators and criminal networks, and disrupt criminal activity. As potential threats are identified, BPSCS works closely with internal stakeholders to create business solutions and incorporate best practices to mitigate risks to the product, supply chain, and the patient.

# Employees

We are guided by our unwavering belief that Moderna’s mRNA platform will continue to solve the world’s greatest health challenges—and our ability to positively impact human health is made possible by our incredible team, who continues to work with a deep sense of responsibility to deliver on our mission each day.

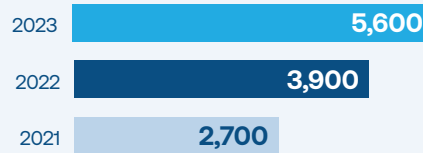


**“Our people are everything. They are the creators and changemakers who are building a company that is revolutionizing how medicines are made and delivered. I’m incredibly proud to be part of such a diverse team that cares deeply about our patients, communities and each other.”**

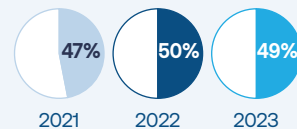
**Tracey Franklin,**  
Chief Human Resources Officer

## 2023 Highlights<sup>(1)</sup>

### Full-time employees



### Women in workforce



### Turnover<sup>(2)</sup>



(1) As of December 31, 2023

(2) Voluntary and involuntary, based on total FTEs by the end of 2023

	2021	2022	2023
<b>By gender</b>			
Women executives <sup>(3)</sup>	39%	41%	<b>39%</b>
Women in R&D and Manufacturing functions	-	50%	<b>50%</b>
<b>By race and ethnicity – U.S. only</b>			
Asian	24%	26%	<b>27%</b>
Black and African American	6%	6%	<b>7%</b>
Hispanic / Latinx	8%	8%	<b>8%</b>

(3) Defined as employees at Vice President level and above

## Building a global and diverse workforce

In 2023, our workforce continued to expand as we rapidly scaled to become a global commercial company. At year-end, we had 5,600 employees in 19 locations across North America, Europe and Asia Pacific.

As we scale our business and our culture, we are focused on creating an inclusive and diverse environment where everyone feels like they belong. We are proud that women make up 49 percent of our workforce and 39 percent of our executives.

Additionally, our diverse team represents more than 30 nationalities and we continued to increase racial and ethnic representation in our U.S. workforce in 2023.

Further, we conducted an externally verified global pay equity study in 2023, and we are pleased to confirm that for the second consecutive year, we provide equal pay for equal work. This study concluded we have zero statistical differences in pay on the basis of gender globally and no statistical difference based on race and ethnicity in the U.S. We are committed to measuring pay equity annually and sharing our results publicly and committing to addressing unexplainable differences that we might identify.

Recognizing the value of transparency, we also publicly disclose our consolidated EEO-1 reports for our U.S. workforce. We will continue to upload our most recent filings to our [Corporate website](#).

## Scaling a unique culture

As an organization, we are bold, collaborative, curious and relentless.



These values are underpinned by a core set of what we call “basecamp” values – they are non-negotiable for every Moderna employee: **integrity, quality, respect.**



### Bold

Deliver on the promise of mRNA technology to transform the lives of patients. Be a visionary.



### Collaborative

Accomplish goals by working together and respecting others’ viewpoints. Be a part of one team.



### Curious

Seek to challenge and improve upon the status quo. Be innovative.



### Relentless

Stay undaunted by challenges and build quickly on successes. Be tenacious in pursuit of our mission for patients.

## Our Mindsets



### We act with urgency

Action today compounds the lives saved tomorrow.



### We pursue options in parallel

to make the best choice later.



### We accept risk

as the only path to impact.



### We obsess over learning

We don’t have to be the smartest—we have to learn the fastest.



### We pivot fearlessly

in the face of new data.



### We question convention

because proven models don’t always fuel the future.



### We push past possible

because greatness lives outside of comfort zones.



### We behave like owners

The solutions we’re building go beyond any job description.



### We act with dynamic range

driving strategy and execution at the same time and at every step.



### We remove viscosity

to encourage collective action.



### We prioritize the platform

over any single product.



### We digitize everywhere possible

using the power of digital information to maximize our impact on patients.

<https://www.modernatx.com/moderna-mindsets>



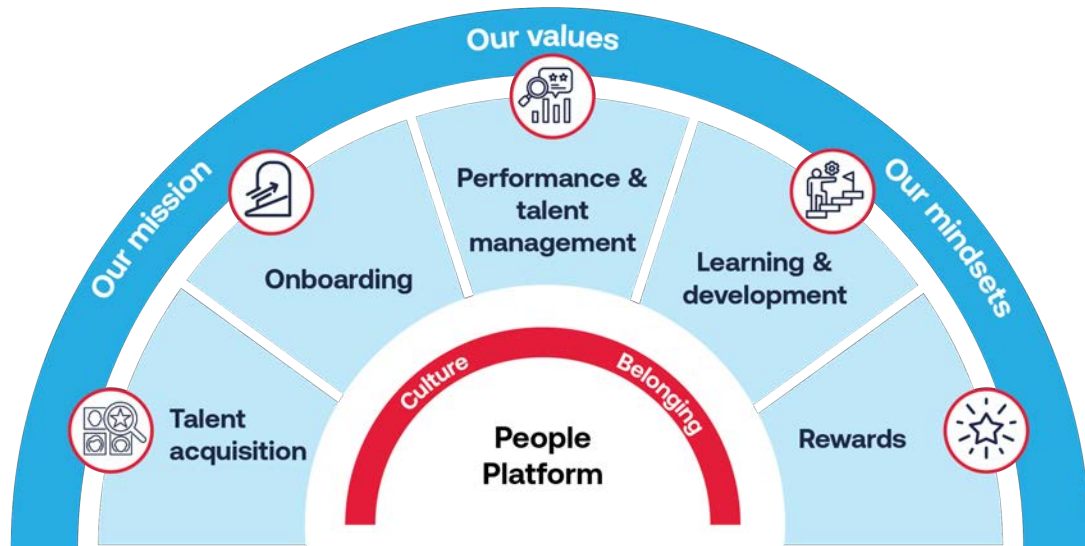
For more information on our Mindsets, visit <https://www.modernatx.com/en-US/about-us/our-mission/modernas-mindsets>.



## Creating a platform for our people

We continue to focus on the elements of our culture to create an environment where everyone can have an impact. Our Mission, Values and Mindsets support our ways of working and unite our people in our shared goal to change how medicines are made and delivered. As part of our efforts to scale our culture, we've established the concept of our people platform.

Our Human Resources programs and systems are built upon this platform with the aim of ensuring that every employee, regardless of their role, location, or level goes through the same employee experience and that our culture is embedded throughout their journey. We give our people a platform to change medicine and an opportunity to change the world.



## Leading with Belonging

Our commitment to diversity and inclusion starts with belonging, which we see as essential for our people to thrive at Moderna. We have taken steps to create an environment where our employees feel they belong, their seats at the table are secure and patients will benefit from their very best thinking.

As an example, our Employee Resource Groups (ERGs) provide support, help with personal or career development, and create a safe space where all employees can bring their whole selves to work. ERGs enhance our culture with a focus on shared identities, experiences and allyship. In 2023, we introduced our ninth employee resource group, mCARE, which is dedicated to supporting and empowering our employees who are caregivers and parents. mCARE joins our eight other ERGs:

- **ADAPT** (Accessibility and Disability Allies Partnering Together) serves employees with disabilities and allies
- **ASPIRE** (ASian and Pacific Islander Resources and Engagement) serves Asian, Asian American, and Pacific Islander employees and allies
- **RaiNbow Alliance** serves lesbian, gay, bisexual, transgender, queer/questioning, asexual, intersex, nonbinary, and two-spirit employees and allies
- **mPOWER** serves Black, African American, and African employees and allies
- **VETs** (Moderna Veteran Employees Together) serves veteran employees and allies
- **UNIDOS** serves Hispanic and Latinx employees and allies
- **WISDM** (Women in Science Driving Moderna) serves women and allies committed to gender equality at work
- **VOE** (Voice of the Employee) serves all Moderna employees who are interested in strengthening and supporting our culture

## WISDM



In 2023, Moderna’s Women’s Employee Resource Group (WISDM) achieved a 50% surge in membership, now exceeding 600 members company-wide, reinforcing our dedication to an inclusive workplace. Central to this year’s success was the third annual Mentoring Program, which connected over 150 mentors and mentees, marking a significant influence on career advancement and Moderna’s culture of inclusion. Additionally, our Toastmasters collaboration honed members’ leadership and communication skills, while networking initiatives strengthened community ties and innovation. WISDM’s focus on holistic wellness and philanthropy, recognized by the Life Sciences Care award, resonated deeply within and beyond Moderna. Our partnership with the Benefits Team addressed critical women’s health issues and supported new mothers in their transition back to work. WISDM’s efforts this year have not only empowered women at Moderna but also aligned closely with the company’s expansive ESG goals.

## mCare



In September 2023, we proudly launched the mCARE ERG at our organization, marking a significant milestone in our commitment to fostering an inclusive and supportive work environment. This initiative is dedicated to recognizing and addressing the unique challenges faced by our employees who balance their professional responsibilities with caregiving roles at home. The launch of the mCARE underscores our recognition of the silent dedication, resilience, and compassion exhibited by caregivers in our workforce. Whether caring for aging parents, children, or loved ones with special needs, caregivers embody a spirit of selflessness and commitment that mirrors the core values of our organization. Through mCARE, we aim to provide a platform for sharing resources, support, and strategies to help our caregiving employees thrive both at work and at home. This group is not just about offering support; it’s about celebrating the incredible strength and contributions of our caregivers, acknowledging the dual roles they play with grace and perseverance. We believe that by acknowledging and supporting our caregivers, we enrich our workplace, strengthen our community, and uphold our commitment to diversity and inclusion.

## Rainbow Alliance



In 2023, Moderna’s Rainbow Alliance led a pioneering worldwide Pride celebration in 10 of our global offices and proudly marched in the inaugural Boston Pride for the People Parade, reaffirming our commitment to inclusivity and community advocacy. By continuing our sponsorship of Fenway Health, a leader in healthcare for LGBTQ+ people and other underserved communities, we reinforced our focus on healthcare equity for Fenway’s more than 87,000 patients and other clients.

Our commitment as a “Hope Partner” of the National AIDS Memorial underscored our dedication to addressing global health issues and the ongoing AIDS epidemic, which continues to significantly impact LGBTQ+ and other underserved communities. In September 2023, Moderna hosted National AIDS Memorial to support the creation of the Moderna HIV/AIDS quilt, which commemorates colleagues and loved ones lost to HIV/AIDS.

Our collaboration with the Ali Forney Center for the Transgender Day of Resilience event celebrated the lives and accomplishments of the transgender community against increasing instances of anti-trans sentiment and violence.



**We were recognized by the Human Rights Campaign Foundation as an Equity 100 company for the first time in 2023 – a proud moment for Moderna as we continue to build a culture of belonging.**

## Attracting and retaining talent

We operate in a highly competitive environment for talent, particularly as we seek to attract and retain individuals with the skills and mindsets to help us to achieve our mission. We are focused on ensuring that our employees find that their careers at Moderna are filled with purpose and growth. We believe that a career at Moderna provides opportunity for:

- **Impact:** Our people have the opportunity to do work that is unparalleled in terms of its innovation and scope of impact on people’s lives.
- **Growth:** We provide incredible opportunities for growth and we obsess over learning. We invest substantially through Moderna University in the development of our people.
- **Well-being:** We are deeply invested in the health and wellness of our employees and provide benefits and resources that support each person at work, at home and in their communities.
- **Belonging:** We believe that innovation happens through bringing together a diverse set of perspectives and backgrounds, and creating an environment where differences are celebrated.

**Talent Development:** All our employees go through quarterly and annual performance reviews. We also conduct periodic talent reviews that identify key talent within the organization. We use these data to inform specific development opportunities for key current and potential leaders, and to support our succession planning activities for key roles. Not only does this help ensure Moderna has a robust understanding of our workforce and a talent pipeline to cultivate future leaders, but it also gives our employees the opportunity to continuously grow and advance in a way that meets their aspirations and skills.

**Health and well-being:** We provide quality and affordable programs to support employees in their health needs. We also support our employees’ financial well-being by providing advisory services, and when our people are unable to work, protecting their income through highly competitive leave plans.

Moderna also offers subsidized green transportation and meals across all our campuses in the U.S. Every employee globally is provided with a Lifestyle Spending Account, a monthly investment that can be used for well-being activities of their choosing. More than 95 percent of the company utilizes this benefit for things like gym memberships and fitness classes, healthy meal delivery, nutritional coaching and in support of time away from work.

Additionally, our employees and their families have access to 24/7 support on a spectrum of needs, from coaching to licensed mental health therapists and psychologists, legal and financial services, guidance and resources for child and elder care. We recognize that not everyone has equitable access to quality care, and we’ve partnered with an organization that provides curated support and specialized navigational programs to support our LGBTQ+ colleagues’ healthcare needs, as an example.

**Time off and sabbaticals:** It is important that our employees take time to rest and recharge to bring the best possible version of themselves to work each day. Our paid time off programs continue to evolve with our teams’ input to ensure they are truly representative of our people and their lives. In 2022 we announced that starting in 2023, employees would receive three annual Global “Recharge” days, providing our employees with the opportunity to disconnect collectively. The program was a success and we were pleased to offer this again for employees in 2024. Our global offices are closed between Christmas and New Years to allow employees to recharge and be with family and friends. Additionally, Moderna’s sabbatical program provides employees with a paid month off

after five years of service, then every three years thereafter.

**Life & Family benefits:** We understand that building a family can take many shapes and sizes, which is why we offer unlimited access to world-class fertility coverage, adoption and surrogacy benefits, 18 weeks of paid parental leave for all new parents, and personal care navigation programs to help prepare for parenthood. Employees have access to up to a month’s worth of back-up childcare to provide them with the peace of mind to cover life’s unexpected surprises.

**Compelling rewards:** All employees participate in our corporate long-term incentive programs through the receipt of equity grants. We believe that in addition to incentivizing growth that leads to shareholder value, broad eligibility for our equity programs helps promote employee retention as these awards generally vest over a four-year period and embed our “we behave like owners” mindset.

We operate in multiple locations and jurisdictions that have varying minimum-wage requirements, but employees’ starting salaries are typically well above applicable minimum-wage requirements. With a keen interest in retaining and recruiting top talent to help advance our mission, we continue to offer best-in-class employee benefits and to adapt our offerings to address the needs of our people.



## Key Learning Programs in 2023

As one of our core Mindsets, we continue to invest in innovative and transformational learning for our people. In 2023 we continued evolving learning at Moderna, where our people’s curiosity and obsession for learning meet, in-person and online, to unleash their potential. We made investments in expanding our functional and cross-functional curricula, as well as subscriptions to third party learning content libraries.

In 2023, we updated our digital learning platform, which is available to all employees, with offerings from external providers leading, making it possible for our teams to discover content that meets their individual upskilling goals. In addition to our own learning content, our employees have unlimited access to learning from providers such as BigThink+, Coursera, getAbstract, JoVE, LinkedIn Learning, and TED@Work.

Additionally, through our partnership with the Harvard Medical School External Education Program (HMX), we offer our employees unlimited access to a diverse set of learning offerings. Learners may choose from a variety of fundamental subjects like Pharmacology and Biochemistry, as well as more advanced topics like Cancer Genomics and Precision Oncology and Vaccines and Viral Immunology. In 2023, 640 employees received certificates from HMX.



## MBA Internship Program

In 2023, we launched our MBA internship program. The inaugural class was highly diverse and included candidates from institutions such as Harvard Business School, MIT Sloan School of Management, and Wharton, underscoring our commitment to attracting and nurturing exceptional talent. Members of the MBA internship program’s first cohort were placed across key business functions including Business Development, Commercial, Digital, and R&D Strategy. During their 10-week experience, the MBA interns worked alongside Moderna teams, participated in curated trainings, attended executive committee speaker series, and completed a capstone presentation. This program has become a key pipeline for future talent with five interns choosing to return to Moderna post-graduation in 2024.



## Moderna ONE

We firmly believe that our culture thrives when we are together, and we recognize that the first few months at Moderna are critical to our employees’ success. We continue to invest in bringing all our new hires together in-person for onboarding, no matter where in the world they are hired.



## AI Academy

Launched in 2021, Moderna’s Artificial Intelligence (AI) Academy is a cross-organization hybrid, and highly interactive learning experience focused on topics like data visualization, machine learning algorithms and AI ethics, and deep dives into how our teams can use AI in their specific job functions. The program is continuously evolving based on employee feedback and newly available technology. All employees, regardless of function, are encouraged to take part in our AI Academy, which doubles as an ongoing incubator for innovative employee ideas that can be executed within the organization.

## Health Literacy

In 2023, we developed and launched a Health Literacy Learning Pathway to educate our employees on key principles and best practices for developing content that is easy to understand and enables patients and consumers to make informed health decisions. Recognizing that everyone must manage health information at some point in their lives, we invested in resources for enhancing our employees’ ability to create health literate materials. Courses are available to all employees and have been mandated for employees in teams that directly influence material

creation, such as informed consent forms and patient education materials. Approximately 540 employees completed this training in 2023.

### Engaging Our Employees

We measure employee engagement annually through a vendor-supplied engagement survey, using validated external benchmarks to track employee engagement factors.



In 2023, we ranked as the number one large employer in BioSpace’s 2023 Best Places to Work in Biopharma report for the third consecutive year.

We were ranked one of the top employers in the global biopharmaceutical industry by Science and Science Careers’ 2023 Top Employers Survey for the ninth consecutive year. We were ranked no. 9 on the list and recognized for our commitment to innovative leadership, respect for employees and corporate social responsibility.



## Committing to Human Rights

Our commitment to respecting human rights is described in our [Human Rights policy](#).

We do not tolerate any form of harassment or discrimination, provide our employees with policies, reporting mechanisms to raise concerns, and annual mandatory training to promote a workplace that is free from all forms of discriminatory harassment. We are committed to promptly, thoroughly, and impartially investigate all reports of discrimination and harassment, and strictly prohibit any kind of retaliation for employees raising concerns.

We are also committed to equal employment opportunity and non-discrimination for all employees and applicants without regard to a person’s race, color, gender, gender identity, age, religion, national origin, ancestry, disability, veteran status, genetic information, sexual orientation, or any characteristic protected under applicable law.

## Owning our health, safety and environment

### Our mission depends on the health, well-being and safety of our employees

Achieving our mission relies on our employees being at their best, feeling well, staying safe and taking care of the environment. It requires us all to take personal ownership for managing health and safety risks, looking after our well-being, and minimizing the environmental impacts of our work.

We have developed [Moderna’s Global Environment, Health and Safety \(EHS\) Policy](#) to formalize our commitments to protect the environment in all the locations where we operate and the health and safety of all our employees, third party contractors and communities. Our Global EHS Policy embodies our

principles as we build our EHS management system to ensure strategic planning and continual improvement, in alignment with recognized global standards such as ISO 14001 and ISO 45001.

### Leadership and Worker Responsibility



The Head of Global EHS, supported by senior leaders at Moderna sites, is tasked with the system’s efficacy, regulatory adherence, and continual improvement. Senior management’s role is pivotal in providing the necessary resources and fostering a culture of safety and environmental stewardship. Roles and responsibilities have been clearly defined in our internal EHS Management System Manual.

### Employee and Contractor Training

Training programs are regularly updated to meet the evolving needs of our workforce and the dynamic nature of our industry. All employees and contractors undergo comprehensive safety training pertinent to their roles, with refresher courses administered to sustain high levels of EHS proficiency.

## Environmental Aspects & Impacts, Health and Safety Hazards and Risks

We conduct a periodic evaluation of the environmental aspects and health and safety hazards associated with our manufacturing activities and related processes and products. Those impacts to the environment and/or health and safety risks that pose a greater significance are identified, documented, and action plans are initiated to reduce these aspects and hazards. Environmental aspects and health and safety hazards are reviewed annually as part of the EHS Management Review process or as warranted due to changes in our activities.

In 2023, we developed new event management tools, which enhance the capability of employees to report events via mobile or web based-services. These tools empower supervisors to actively engage in the classification, investigation, and creation of corrective actions for events, as well as facilitating our leadership at all levels, to be actively engaged in the management of these events. We believe this approach enables everyone at Moderna to take an active role in improving the health, safety, and environmental conditions of their work.

### Occupational Health and Employee Well-Being

We continue to expand our programs that oversee the health and well-being of our employees. In 2023, we initiated *ModernaReady*, an on-site ergonomics program, at our main U.S. sites that proactively identifies and manages ergonomic risks, helping to prevent injury through stretching, core and grip strength programs, early symptom interventions, workstation and remote set-up services, and personalized chair massages.

### Event Management and Performance Monitoring

In 2023, there were no fatalities among employees or contractors related to our operations. We maintain an EHS event management process, ensuring that all work-related injuries, occupational illnesses, and lost days are tracked and analyzed.



EHS fair in 2023

### Continual Improvement and Compliance

Our EHS management system is subject to regular internal audits based on operational risk, driving continual improvement and ensuring compliance with local laws and regulations. Management reviews of EHS performance are conducted annually, with findings and opportunities for enhancement informing our strategic EHS planning.

### EHS Committees and Worker Participation

Our dedication to worker participation is exemplified through our EHS Committees, which include direct employee representation. These committees, established across various departments, are integral in discussing EHS programs, performance, and fostering a proactive safety culture. We encourage employee feedback and actively involve our workforce in safety inspections and the development of EHS initiatives. Approximately 70 percent of our total workforce is represented in formal EHS Committees.

## 2023 Global Health & Safety Performance<sup>(1)</sup>

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged to provide limited assurance of 2023 HEALTH & SAFETY PERFORMANCE data.

[See the June 2024 ERM CVS Assurance Statement for details.](#)

	Case #
Fatalities <sup>(2)</sup>	0
Days Away from Work <sup>(3)</sup>	5
Injuries requiring Job Transfer or Restriction <sup>(4)</sup>	1
Other Recordable Injuries <sup>(5)</sup>	7

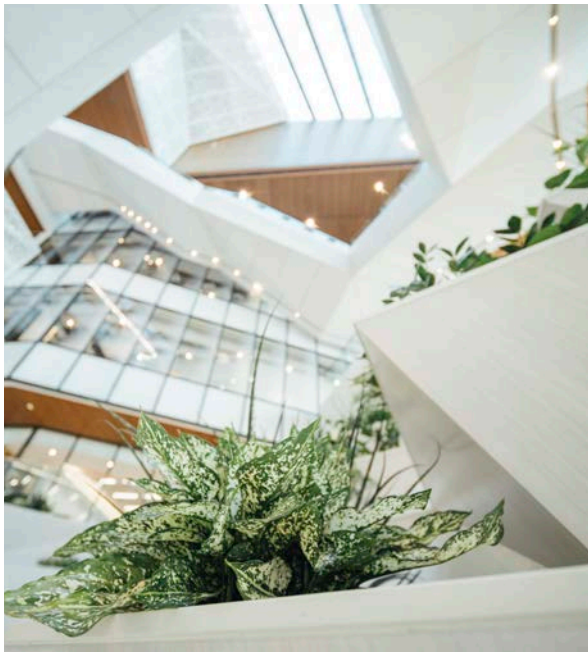
- (1) Work-related injuries and illnesses are reported by employees and entered into the Moderna EHS Information Management System for recordkeeping and investigation. Moderna defines a recordable injury or illness in accordance with the Occupational Safety and Health Administration's (OSHA) definition.
- (2) Fatalities refers to the total number of work-related deaths.
- (3) Days Away from Work represents the number of incidents an employee is unable to perform their regular job duties for at least one full day, assigned restricted duties, or transferred to another job as a result of a work-related injury or illness.
- (4) Injuries requiring Job Transfer or Restriction indicates the total number of incidents that resulted in an employee being assigned to another job on a temporary basis or working under restricted conditions due to a work-related injury or illness.
- (5) Other Recordable Injuries encompass work-related incidents that required medical treatment beyond first aid, but did not result in fatalities, days away from work, or job transfer or restriction.

	Case Rate <sup>(6)</sup>
Total Recordable Incident Rate (TRIR) <sup>(7)</sup>	0.23
Days Away, Restricted or Transferred (DART) Rate <sup>(8)</sup>	0.10
Lost Time Injury Frequency Rate (LTIFR) <sup>(9)</sup>	0.09

- (6) The standard multiplier of 200,000 hours is used to normalize the rates for comparison across different industries and organization sizes and Total Hours Worked assumes 2,000 hours worked per year for exempt employees.
- (7) TRIR: Total number of recordable cases x 200,000 hours ÷ by the total hours worked.
- (8) DART: (total number of cases involving days away from work + the total number of cases with job transfer or restriction) x 200,000 hours ÷ the total hours worked.
- (9) LTIFR: Total number of cases with days away from work x 200,000 hours ÷ the total hours worked.

# Environment

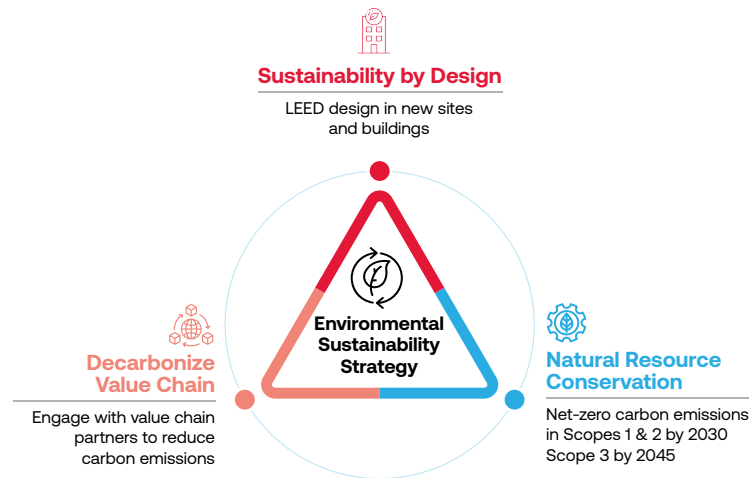
**At Moderna, we are building a company to drive change through what we make and how we make it. We believe that ensuring the health of our planet is critical to positively impacting human health, and that it is our responsibility to grow our company in a way that protects the planet and minimizes adverse impacts on the environment.**



Moderna Science Center (MSC) in Cambridge, Massachusetts, U.S.

## Our Approach

As we continue to build our company, we have an opportunity to grow in a way that puts the protection of the environment as a key consideration in the design of new facilities, processes and products. As we continue to expand our manufacturing capabilities, we are committed to protecting the planet, based on a three-pronged strategy: sustainability by design; natural resource conservation; and decarbonizing the value chain.



### Sustainability by design

**A fundamental pillar of our strategy is incorporating sustainability by design principles in new sites and buildings.**

In February 2024, we began operations in our new Moderna Science Center (MSC) in Cambridge, Massachusetts, a purpose-built space to support our next chapter of discovery. This high-performance building includes geothermal heating and cooling, rooftop solar, an exhaust air heat pump, and ultra-efficient building systems with acoustical and light

pollution mitigation measures and is targeting LEED Platinum Core & Shell and LEED Zero Carbon certifications.

We have also incorporated sustainability into the design and construction of our new manufacturing plants in Marlborough, Massachusetts; Laval, Canada; Melbourne, Australia; and Harwell, U.K. At these locations we will install heat pumps and/or electric boilers to reduce our reliance on fossil fuels and reduce associated greenhouse gas emissions and air pollutants.

## Natural resource conservation

We believe human and planetary health are interconnected, and both are impacted by climate change, loss of biodiversity, water scarcity and plastic pollution. We continue to focus on understanding the use of natural resources in our manufacturing and value chain operations to help frame strategies that protect the environment.

In support of natural resource conservation, we are committed to achieve net-zero carbon emissions in Scopes 1 & 2 by 2030.

### Air Pollutants:

Pursuant to our mission to improve human health, Moderna joined the World Economic Forum’s Alliance for Clean Air. The Alliance’s aim is to establish air pollution footprints and set ambitious targets to reduce air pollution emissions, raise awareness among stakeholders about the impact of air pollution and harness innovation capability to showcase and pilot pioneering projects that reduce air pollution. As a member of the Alliance, we are taking action to collect information and measure air pollutant emissions and will share on [www.modernatx.com/responsibility](http://www.modernatx.com/responsibility) when completed.

## Decarbonize Value Chain

Our ability to impact carbon reductions extends to the operations of our value chain. We have committed to achieve net-zero carbon emissions in Scope 3 by 2045. We are collaborating with our partners to help set or accelerate their carbon reduction goals in alignment with SBTi expectations.

Our employees are also empowered to be part of this journey, and we continue to support initiatives that reduce Scope 3 emissions, such as offering fully-subsidized public transportation, bike sharing and free electric vehicle charging at our campuses.

## Climate Risk and Scenario Analysis

In 2023, we completed our first qualitative assessment of climate-related risks and opportunities to enhance our understanding of physical and transition risks and opportunities under varying climate scenarios to our business, supply chain and operations over the short, medium, and long term. The process involved stakeholder engagement across multiple business areas, highlighting Moderna’s commitment to sustainability and strategic planning, ensuring resilience against climate risks while exploring potential opportunities for innovation and sustainability. The top three physical risks identified were rising mean temperatures, flooding and severe storms. The top three transition risks identified were changing customer behaviors, regulations on existing products or services and cost and availability of raw materials. The next phase of our assessment will be to perform a quantitative assessment of the identified risks.



**“Our effort to integrate sustainability into the very fabric of our operations is a testament to our resolve to push past possible. We’ve set ambitious targets that reflect our dedication to environmental stewardship and our commitment to a sustainable future.”**

**Jerh Collins,**  
Chief Technical Operations and Quality Officer



## Employee Engagement

Employee understanding and support of our environmental sustainability journey is critical to our success. We continually invest in raising internal awareness and activation through employee engagement. Efforts include:

- Initiated My Green Lab assessments to understand awareness, behaviors and energy consumption within our laboratory spaces. My Green Labs is a globally recognized organization that assists many companies in improving laboratory sustainability performance;

- Established Green Teams at our campuses to improve site sustainability by identifying and implementing ideas to reduce waste and conserve natural resources;
- Organized employee events to encourage green commuting habits and outdoor activities, meet with vendors for education on employee contributions to our waste management practices, and celebrate national and international events, such as Earth Day;

- Conducted ESG sessions during new hire onboarding; and
- Presented global-wide seminar on our Environmental Sustainability strategy and progress.



In 2023, one of our fairs at the Norwood campus focused on employee commuting, encouraging mass transit, car-pooling and biking to campus, caring both for the health our employees and our planet.

## 2023 Environmental Sustainability Performance

### Energy and GHG Emissions

In 2023, energy consumption increased as we expanded operations at our existing Moderna Technical Center (MTC) in Norwood, Massachusetts. Greenhouse gas emissions decreased as a result of additional renewable energy certificates purchased for electricity consumption at our North American operations and reductions in fugitive emissions. As we continue to expand operations at MTC, and to support our transition away from fossil fuels, we performed an independent energy assessment of our operations to identify efficiency and technology opportunities. These opportunities are the foundation of our roadmap to achieve net-zero carbon emissions for Scopes 1 and 2 by 2030.

During the year, we also enhanced our third-party assurance of energy, Scope 1 and Scope 2 emissions from Limited Assurance to Reasonable Assurance, in accordance with the International Standard on Assurance Engagements ISAE 3000 (Revised) 'Assurance Engagements other than Audits or Reviews of Historical Financial Information'. With our enhanced understanding of our greenhouse gas inventory, we are on-track to submit our carbon reduction targets to the Science-based Target Initiative (SBTi) for validation.

Energy and greenhouse gas emissions data are presented in Table 1 on the next page.

Scope 3 data is presented in Table 2. Scope 3 data from 2023 will be shared on [www.modernatx.com/responsibility](http://www.modernatx.com/responsibility) after completion of third-party verification.

### Water and Waste

In 2023, our water intake increased as a result of expansion and waste generation remained consistent. In 2023, we conducted water and waste management assessments at our manufacturing facility in Norwood, Massachusetts, and we continue to raise awareness of water consumption and waste generation for operational efficiency and waste management improvements.

Water intake and waste metrics are presented in Table 3.



## TABLE 1: ENERGY and EMISSIONS DATA

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged to provide reasonable assurance of 2023 ENERGY & EMISSIONS data. See the June 2024 ERM CVS Assurance Statement for details.

### Energy Consumption

ENERGY megawatt hours (MWh)		2021 <sup>(*)</sup>	2022 <sup>(*)</sup>	2023
TOTAL DIRECT ENERGY (MWh)		45,145	55,616	57,084
<b>Direct Energy – Stationary Sources<sup>(a)</sup></b>				
Natural Gas	MWh	44,298	54,515	55,834
Diesel	MWh	758	498	271
ENERGY [STATIONARY SOURCES] (MWh)		45,056	55,013	56,105
<b>Direct Energy – Mobile Sources<sup>(b)(*)</sup></b>				
Motor Gasoline	MWh	69	70	80
Diesel	MWh	20	4.6	3.9
Kerosene-Type Jet Fuel	MWh	-	528	895
ENERGY [MOBILE SOURCES] (MWh)		89	603	979
<b>Indirect Energy (Purchased electricity)<sup>(c)</sup></b>				
TOTAL PURCHASED ELECTRICITY (MWh)		33,569	43,840	47,595
<b>Indirect Energy – Fuel Mix: market-based<sup>(d)</sup></b>				
Fossil Fuel	MWh	2,064	2,746	516
Nuclear	MWh	1,013	1,328	303
Renewable	MWh	30,492	39,766	46,775
<b>Indirect Energy – Fuel Mix: location-based<sup>(e)</sup></b>				
Fossil Fuel	MWh	18,060	24,669	26,544
Nuclear	MWh	8,862	11,478	12,208
Renewable	MWh	6,647	7,693	8,843

#### Notes

- a) Direct Energy [Stationary Sources] is energy from fuels combusted in assets under Moderna's operational control, such as energy from natural gas combustion in boilers and diesel fuel combustion in emergency generators. Energy from natural gas consumption was determined from utility invoices. If invoices were not available from the utility or landlord, energy information was estimated using energy intensity factors from the 2018 U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey (energy/square foot) of occupied space. Energy from diesel consumption was determined based on generator run hours and generator fuel consumption specifications. For some leased assets, estimates on fuel consumption are estimated based on known usage at similar buildings in our inventory.
- b) Direct Energy [Mobile Sources] is energy from fuels combusted in assets under Moderna's operational control, such as energy from motor gasoline and diesel in logistics vehicles and jet fuel consumed during executive travel. Energy from fuels was calculated using the consumption volume and the U.S. EPA's Center for Corporate Climate Leadership Emission Factors for Greenhouse Gas Inventories - Table 1 (13 February 2024) energy/volume values.
- (\*) Direct Energy [Mobile Sources] data has not completed independent verification as of the publication date of this ESG Report and is therefore not incorporated by reference in the June 2024 ERM-CVS Assurance Statement.
- c) Indirect Energy is energy generated offsite and purchased by Moderna, such as electricity. Moderna does not purchase steam or heating and cooling at facilities under our operational control.
- d) Indirect Energy Fuel Mix (market-based) reflects action taken by Moderna to source energy, including energy attribute certificates. In 2023, Moderna purchased unbundled renewable energy certificates for our North American operations, resulting in 98% of our indirect energy being attributed to renewable energy. For our operations in Spain, the market-based indirect energy fuel mix was determined using country specific information for the generation of electricity from

the 2022 European Residual Mixes. For operations in Japan, the location-based indirect energy fuel mix was determined using the U.S. Energy Information Administration's country specific information for the generation of electricity.

- e) Indirect Energy Fuel Mix (location-based) represents indirect energy obtained from electric grids in regions where our facilities are located. For facilities in the U.S., the location-based indirect energy fuel mix was determined using the U.S. EPA eGRID Summary Table 2022. For our operations in Spain and Japan, the location-based indirect energy fuel mix was determined using the U.S. Energy Information Administration's country specific information for the generation of electricity. For operations in Canada, the location-based indirect energy fuel mix was determined using Canada's 2023 National Inventory Report energy generation for Quebec (Table A13-6).

### Greenhouse Gas (GHG) Emissions Scopes 1 & 2

GREENHOUSE GAS (GHG) EMISSIONS metric tons (mt) of carbon dioxide equivalents (CO2e)		2021 <sup>(*)</sup>	2022 <sup>(*)</sup>	2023
<b>Scope 1: Direct Emissions<sup>(f)</sup></b>				
On-site Combustion (Stationary Sources)	mt CO2e	8,221	10,007	10,191
Executive Travel	mt CO2e	-	131	222
Logistics Vehicles	mt CO2e	23	18	20
Fugitive - Refrigerant and Purchased CO2	mt CO2e	899	1,407	807
TOTAL SCOPE 1: (mt CO2e)		9,142	11,563	11,240
<b>Scope 2: Indirect Emissions [Market-based]<sup>(g)</sup></b>				
TOTAL SCOPE 2: Market-based Emissions Methodology	mt CO2e	928	1,197	431
<b>Scope 2: Indirect Emissions [Location-based]<sup>(h)</sup></b>				
TOTAL SCOPE 2: Location-based Emissions Methodology	mt CO2e	8,119	10,730	11,506

- f) Emissions are reported as carbon dioxide equivalents (CO2e), which standardizes the impact of other greenhouse gases, such as methane and nitrous oxide, to carbon dioxide based on their respective global warming potentials. Moderna uses the IPCC's Sixth Assessment Report for global warming potentials of methane and nitrous oxide.

Scope 1: Direct Emissions result from the combustion of fuel in owned or operated equipment such as boilers, emergency generators, aircraft used for executive travel, and onsite logistic vehicles. Scope 1 emissions also include fugitive emissions from unintentional refrigerant losses and from purchased carbon dioxide, including dry ice purchased for shipment of materials.

Emissions from fuel combustion in stationary equipment were calculated using the U.S. EPA's Center for Corporate Climate Leadership Emission Factors for Greenhouse Gas Inventories - Table 1 (13 February 2024). Emissions from fuel combustion in mobile equipment were calculated using the U.S. EPA's Center for Corporate Climate Leadership Emission Factors for Greenhouse Gas Inventories Tables 2-5 (13 February 2024). Emissions from refrigerant losses are calculated using associated global warming potentials for individual refrigerants.

- g) Scope 2: Indirect Emissions [market-based] for our North American locations were calculated using unbundled Green-e® Certified renewable energy certificates (with zero greenhouse gas emissions). Indirect Emissions [market-based] for our operations in Spain were calculated using the 2022 European Residual Mixes emission factor for CO2 and the International Energy Agency's emission factors for electricity (2023) for CH4 and N2O. Indirect Emissions [market-based] for our operations in Japan were calculated using the International Energy Agency's emission factors for electricity.
- h) Scope 2: Indirect Emissions [location-based] for U.S. locations were calculated using the U.S. EPA eGRID Summary Table 2022. Indirect Emissions [location-based] for our operations in Spain and Japan were calculated using the International Energy Agency's emission factors for electricity (2023). Indirect Emissions [location-based] for our operations in Canada were calculated using Canada's 2022 National Inventory Report emission factors for Quebec (Table A13-6).

\*2021 and 2022 Updates:

For reporting year 2023, Moderna enhanced its methodology for evaluation of operational control and completeness of reported data. Based on these enhancements, Moderna has also recalculated data for reporting years 2021 (base year) and 2022. Summary of enhancements: removal of entities/assets not under Moderna's operational control (e.g., operating leases for administrative/office spaces where Moderna does not have influence over landlord-managed utilities, removal of emissions associated with use of personal vehicles for business purposes); inclusion of landlord-managed electricity at an entity under Moderna's operational control that was not previously included; and additional disclosure of energy used in mobile sources.

Inclusion of landlord managed electricity at an entity under Moderna's operational control resulted in increased electricity consumption for reporting years 2021 and 2022. This inclusion also required updates to associated metrics (e.g., fuel mix and Scope 2 emissions for both location-based and market-based). Updates to metrics associated market-based methodology account for electricity consumption not covered by renewable energy certificates.

## TABLE 2: INDIRECT GREENHOUSE GAS EMISSIONS (SCOPE 3)

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged to provide limited assurance in relation to the 2021 and 2022 scope 3 emissions data. See ERM CVS Assurance Statement (October 6, 2023) for details.

SCOPE 3: EMISSIONS		2021	2022
Metric tons (mt) of carbon dioxide equivalents (CO2e)			
1. Purchased Goods and Services	mt CO2e	380,369	1,096,111
2. Capital Goods	mt CO2e	78,621	86,041
3. Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2	mt CO2e	5,501	7,750
4. Upstream Transportation and Distribution	mt CO2e	15,975	44,243
5. Waste Generated in Operations	mt CO2e	468	627
6. Business Travel	mt CO2e	1,978	3,037
7. Employee Commuting	mt CO2e	1,906	2,342
8. Upstream Leased Assets	mt CO2e	73	397
9. Downstream Transportation and Distribution	mt CO2e	2,876	1,938
12. End-of-Life Treatment of Sold Products	mt CO2e	1,741	1,696
15. Investments	mt CO2e	-	under evaluation

2023 Scope 3 data will be shared on [www.modernatx.com/responsibility](http://www.modernatx.com/responsibility) after completion of third-party verification.

### Notes (by category):

- Emissions from purchased goods and services were calculated using spend data, and where available, weight data for purchased items. If weight-based data was available, it was used to calculate the product's or service's emissions. Emission factors for weight-based calculations came from Ecolvent and U.S. Life Cycle Inventory Database. Where weight data was not available, emissions were calculated based on spend and emission factors from the U.S. EPA's Supply Chain GHG Emission Factors for US Commodities and Industries v1.1.
- Emissions from capital goods were calculated based on spend data and then matched to U.S. EPA spend-based emissions factors (U.S. EPA's Supply Chain GHG Emission Factors for US Commodities and Industries v1.1) to calculate the emissions attributable to each line item.
- Emissions from fuel-and-energy related activities were calculated using electricity and fuel data from providers or energy consumption estimates based on square footage and then applying UK DEFRA Emission factors for well-to-tank emissions.
- We requested primary data from distributors. When distance and weight data was provided, we used this data to calculate tonne-km. Emissions were then calculated using the tonne-km and UK DEFRA Emission Factors. For the other suppliers, emissions were calculated and provided directly by the supplier and incorporated into our footprint. Where primary data was not provided, we used the spend-based methodology to calculate emissions. Warehousing – For warehouses, energy consumption data was provided directly by the supplier. For others, square footage was provided by the supplier and refrigerant and energy usage was estimated using capacity estimates and average intensities, respectively. Refrigerant GWPs came from the California Air Resources Board, U.S. EPA, and Australian Department of Climate Change, Energy, the Environment and Water global warming potential. Electricity emission factors were from AIB, Carbon Footprint, Greene, and UK DEFRA. Natural gas emission factors came from the U.S. EPA Emission Factors for Greenhouse Gas Inventories (Table 1).

- Emissions from waste generated in operations were calculated using data obtained from vendors responsible for waste management and disposal. Where data was not available, we used estimates based on waste generated at similar operations or from industry standards. We then applied emission factors for specific waste types and treatment methods from the U.S. EPA Emission Factors for Greenhouse Gas Inventories (Table 9).
- Emissions from business travel were calculated using data provided by our travel management company. For air, car rental (vehicle), and US rail travel, U.S. EPA Emission Factors for Greenhouse Gas Inventories (Table 10) were used. For international rail travel and hotel room emission, UK DEFRA emission factors were used.
- Emissions from employee commuting were calculated using internal data collected on employee commuter habits. To calculate the relevant emissions, the employee commuter benefit election was matched to the correct EPA transportation mode and U.S. EPA Emission Factors for Greenhouse Gas Inventories (Table 10).
- Emissions from upstream leased assets (i.e., assets not under our operational control) are calculated using square footage data from lease agreements, applying energy intensity factors from the 2018 U.S. Energy Information Administration's Commercial Buildings Energy Consumption Survey and then using fuel and electricity generation (location based) emission factor associated with those locations.
- For downstream transportation, shipments identified as paid for by the buyer were included in this category. Emissions data was provided by the suppliers. When estimating emissions for the storage of vaccines (at the site-of-vaccination), we used the total doses distributed and acquired supplier-specific information about doses per vial, vials per carton, and cartons per fridge / freezer. Supplier-specific refrigerator and freezer information, such as the refrigerant used and the amps required for each machine, were provided. This information was used to calculate the electricity consumption and refrigerant leakage. For emissions associated with electricity consumption, we calculated shipments to each country as a percentage of total shipments. It was assumed that where the dosages were shipped was where they were administered. These country-specific percentages were applied to the overall electricity consumption and then multiplied by the country-specific emission factors for electricity generation (AIB, Carbon Footprint, Green-e, and DEFRA).
- We estimated the number of cartons, partitions, shipping cases, vials, stoppers and seals, based on the number of doses distributed (which was sourced internally) using weights, measurements, or densities of each material. Emission factors based on the material and type of disposal were sourced from the U.S. EPA to calculate emissions.
- We used total investment value (converted to euros) and the Partnership for Carbon Accounting Financials emission factors (adjusted for inflation) to calculate emissions associated with investments.

Other GHG CATEGORIES not reported on:

- Processing of Sold Products: Moderna does not produce intermediate products and does not have relevant emissions from processing of sold intermediate products by third parties subsequent to sale.
- Use of Sold Products: Moderna does not produce products that directly or indirectly consume energy during use.
- Downstream Leased Assets: Emissions from downstream leased assets (i.e., emissions associated with assets under Moderna ownership (or agreement) and leased to another entity) are not relevant in the reporting years.
- Franchises: Moderna does not operate franchises.

### TABLE 3: ROUTINE WASTE AND WATER INTAKE

#### Routine Waste

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged to provide limited assurance of 2023 ROUTINE WASTE data. See the June 2024 ERM CVS Assurance Statement for details.

ROUTINE WASTE (METRIC TONS)	2021*	2022*	2023
TOTAL ROUTINE WASTE GENERATED	1,886	1,995	1,987
<b>HAZARDOUS WASTE</b>			
TOTAL HAZARDOUS WASTE	370	379	363
Incinerated with Energy Recovery	130	131	167
Incinerated without Energy Recovery	179	165	88
Recycled	0.002	0.01	3.0
Landfill	-	-	-
Treated	62	83	106
<b>NON-HAZARDOUS WASTE</b>			
TOTAL NON-HAZARDOUS WASTE	1,516	1,616	1,625
Incinerated with Energy Recovery	278	413	748
Incinerated without Energy Recovery	623	504	56
Composted	46	3.6	20
Recycled	331	382	286
Landfill	239	314	450
Treated	-	-	65

**Notes:**

- Information on routine waste generation and disposal is obtained from transaction data provided by our hazardous and non-hazardous waste vendors.
- Disposition of solid waste from our Massachusetts locations is determined from information provided by our non-hazardous waste vendor regarding the utilization of local waste-to-energy (WTE) facilities and estimates on waste redirected to out-of-state landfills due to capacity issues at the WTE facilities.
- Treated wastes are wastes that undergo physical, thermal, biological, or chemical processing prior to final disposition.
- Information on non-routine waste generated, typically waste associated with construction and demolition projects, is not currently tracked.

\*2021 and 2022 Updates: See footnote in the ENERGY and EMISSIONS DATA Table.

#### Water Intake

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged to provide limited assurance of 2023 WATER INTAKE data. See the June 2024 ERM CVS Assurance Statement for details.

WATER INTAKE (cubic meters)	2021*	2022*	2023
TOTAL WATER INTAKE	67,494	88,934	95,097

**Notes:**

- Information on water intake is obtained from local water suppliers. If invoice information is not available, the U.S. Energy Information Administration 2012 Commercial Buildings Energy Consumption Survey (CBECS): Water Consumption in Large Buildings Summary's estimate was used to determine water consumption.

\*2021 and 2022 Updates: See footnote in the ENERGY and EMISSIONS DATA Table.

**The following summarizes our key progress on climate and environmental initiatives in 2023:**

- ⤵ Enhanced our third-party assurance of energy and Scope 1 & 2 emissions from Limited Assurance to Reasonable Assurance;
- ⤵ Committed to achieve net-zero carbon emissions in Scope 3 by 2045. Published metrics related to Scope 3 emissions, water usage and waste management for our operations (including 2021 (base year) and 2022);
- ⤵ Incorporated sustainability into the design and construction of new manufacturing plants in Marlborough, Massachusetts; Laval, Canada; Melbourne, Australia; and Harwell, U.K. to reduce reliance on fossil fuels for thermal loads;
- ⤵ Launched a climate risk and scenario analysis project to enhance our understanding of climate-related risks and opportunities to our business;
- ⤵ Performed energy, water and waste assessments at our manufacturing facility in Norwood, Massachusetts to identify opportunities to reduce fossil fuel and water usage, improve operational efficiency and enhance our waste management program; and
- ⤵ Encouraged green transportation among our employees by offering fully-subsidized public transport, bike sharing and free electric vehicle charging stations at our campuses.

Further detail on key performance indicators and our efforts to minimize our impact on the environment are included at [modernatx.com](https://www.modernatx.com).

# Community

## We aspire to be an active contributor to the communities where we live and work.

As we work to maximize our positive impact on human health, we recognize our responsibility to play an active role in addressing inequalities in the most vulnerable communities. Our commitment to serve the communities where we live and work has always been part of our identity and is reflected in our **giving strategy**.



Engaging with our communities is also a critical part of understanding the evolving needs of our stakeholders and creating long-term value. We will be more capable of delivering on our mission if we understand the inequalities that exist in the social determinants of health of all populations. Through our giving strategy, we are seeking partners that share our commitments to improving human health and closing opportunity gaps.

## 2023 Highlights

**169%** increase in tracked volunteer hours from 2022

**5<sup>th</sup>** Annual Volunteer week with participation across 15 locations

**70%** overall employee participation rate in volunteering and/or giving (vs. 63% in 2022)

**2,390** nonprofits supported globally

**\$7.2 million** in grants by the Moderna Charitable Foundation

**\$1.3 million** in donations from employee matching program

**\$1.4 million** in grants by the Moderna Charitable Foundation focused on humanitarian disaster relief

## Giving back

At Moderna, we hire talented and passionate people who are committed to making a difference in the world beyond our four walls. As a company, we are proud to support these efforts and offer different programs that enable our employees to engage with causes that matter most to them. All our team members receive eight hours of paid time each year to dedicate toward volunteering, and our Dollars for Doers program matches additional volunteer time with cash donations at a specific hourly rate.

In 2023, we increased by 169 percent the number of tracked volunteering hours compared to 2022, and 70 percent of our workforce participated in volunteering and/or giving activities. Across the world, we supported more than 2,390 nonprofits, and our employee matching program resulted in \$1.3 million in donations to causes that matter to our employees.

This engagement represents our purpose-driven culture, and our commitment to maximize our positive impact on communities and society, at the same speed and with the same determination as we scale up our company. We are grateful to our employees for working relentlessly to build the most impactful version of Moderna.

2023 marked our 5<sup>th</sup> Annual Volunteer Week, and it was our most significant one yet. Teams from across 15 countries helped to make a positive impact in our communities with more than 30 nonprofits around the globe.





## Moderna Charitable Foundation

We launched the [Moderna Charitable Foundation](#) in 2022 with an initial endowment of \$50 million. The Foundation supports organizations that promote public health and access to quality healthcare, advancing scientific education and innovation, and advocating for diversity and inclusion, particularly in underserved populations. The Foundation is an extension of the societal impact we have made with our COVID-19 vaccine and seeks to be a full partner in the pursuit of health and education equity.

We aspire toward a long-lasting impact by:

- Grant-making to support organizations that align with our mission
- Philanthropic giving to provide support during humanitarian crises
- Employee matching to enable our people to support causes that matter most to them

In 2023, the Foundation donated \$7.2 million in grants, from which \$1.4 million were destined to respond to humanitarian crises after disaster events. In this report, we are proud to share some examples of partner organizations that are seeking to make a difference in the lives of our communities.

### Investing in STEM education

Education is critical to lifting people out of poverty and reducing socioeconomic inequalities. Our Foundation seeks to be a full partner in the pursuit of health and education equity and we are excited about our investments in STEM and partners like Science Club for Girls in Boston and Science Journal for Kids, which share our vision of a fully inclusive and innovative ecosystem.

### Science Club for Girls

Based in Cambridge, Massachusetts, the mission of Science Club for Girls is to foster excitement, confidence, and literacy in STEM for girls and gender-expansive youth from underrepresented communities by providing free, experiential programs and by maximizing meaningful interactions with women-in-STEM mentors. Its goals are to reduce barriers to access, improve girls' attitudes toward STEM, increase academic confidence, and bolster resilience through programs that support girls' social and emotional development and strengthen their network of caring adults.



### Science Journal for Kids



Science Journal for Kids is an online scientific journal that makes academic research papers published in high-impact journals available and accessible to children and teens. Working closely with the original researchers, the Journal rewrites published scientific papers for students' grade levels, translating these manuscripts into age-appropriate language to make complex scientific concepts meaningful and interesting. All digital resources are provided free of charge to ensure accessibility.

### Partnering to build resilient and sustainable health systems

To deliver on our mission, we must continue to collaborate with global, regional, and local partners to strengthen healthcare systems and tackle the inequalities that prevent communities from accessing basic healthcare services and medicines. The African continent's particularly fragile healthcare system continues to face a shortage of staff and resources.

**A study published in 2022 showed that Africa had 2.3 healthcare workers per 1,000 people. This is particularly low compared to the Americas, which had 24.8 healthcare workers per 1,000 population<sup>(1)</sup>. We will continue to support partners that are advancing health security in Africa.**

The Foundation is partnering with Seed Global Health (Seed) to support the development of the health workforce in Malawi, Sierra Leone, Uganda and Zambia, while advocating globally for the urgent need of a fit-for-purpose health workforce in every African country. Seed tackles this challenge directly as one of just a few organizations focused on long-term, accompanied training for Africa’s emerging generation of health professionals — the physicians, nurses, and midwives who are too few and far between in the continent’s primary health care systems. Just as an example of the difference made by Seed and partners over the past year:

- In Sierra Leone, Seed and partners observed a 60% reduction in maternal deaths in just 18-months at Makeni Regional Hospital, where they are the only external partner supporting the training of new midwives to better identify and manage high mortality drivers like postpartum hemorrhage.
- Recognizing a systemic barrier for midwifery students to have the ability to translate classroom learning to clinical practice, Seed launched midwifery preceptorship pilot programs in Sierra Leone and Zambia to build nationwide cadres of midwives who will be able to supervise and guide clinical learning for thousands of students annually even in the future as these programs are sustained without Seed’s support.



(1) Nchasi G, Okonji OC, Jena R, Ahmad S, Soomro U, Kolawole BO, Nawaz FA, Essar MY, Aborode AT. Challenges faced by African healthcare workers during the third wave of the pandemic. Health Sci Rep. 2022 Oct 17;5(6):e893. doi: 10.1002/hsr.2893. PMID: 36262807; PMCID: PMC95761



The 2023 Inaugural Class of Midwifery Preceptor Trainees from Bo Government Hospital and Makeni Regional Hospital in Sierra Leone.

In 2023, we began a partnership with Amref Health Africa, an organization working to transform the health of communities in Africa through increasing access to primary healthcare and investing in the wellbeing of women and young people as agents of change. Our Foundation supported a project across four counties in Kenya (Nairobi, Nyeri, Machakos, and Nakuru) that used innovative approaches to engage communities on the uptake of COVID-19 vaccination, without regard to the manufacturer. Amref utilized mobile clinics and outreach events as an accessible and convenient way to provide COVID-19 vaccinations and integrated screening and education on non-communicable diseases.

**As a direct result of Moderna Foundation's partnership with Amref Health Africa in Kenya:**

**1,592,750** people received information on COVID-19 vaccines and non-communicable diseases

**151,647** people received a COVID-19 vaccine

**83,164** people were screened for high blood pressure

**31,075** people were screened for elevated blood sugar

**2,865** people were screened for breast and cervical cancer

# Governance and ethics

**At Moderna, our basecamp values of quality, integrity, and respect guide our work and actions every day. These values are critical to bringing new medicines to patients around the world.**

Central to our mission is our commitment to transparency and upholding high ethical standards. These values are embedded in every aspect of our business, from our preclinical research and clinical trials, our regulatory and manufacturing processes, our commercial functions, and how we conduct ourselves in our relationships with employees, patients, investors and other stakeholders.



## Building good corporate governance

Our Board of Directors believes that sound governance practices and policies provide the foundation for establishing Moderna as a responsible corporate citizen and maintaining the trust of our stakeholders, as well as ensuring the success of our company. Our Board of Directors has set high standards for themselves, our employees, officers and directors.

We have adopted a Code of Ethics and Business Conduct that applies to our Board directors and all our officers and employees. In addition, we have adopted Corporate Governance Guidelines that formalize certain fundamental board policies and practices.

Our Board of Directors has established five committees: Audit, Compensation and Talent, Nominating and Corporate Governance, Product Development and Science and Technology. All members of all five standing committees are independent directors.

**For more information, please see our [Proxy Statement](#) (page 21).**

## Board diversity

We believe that the best decisions arise when people of varied backgrounds, perspectives and experiences come together. Our Board of nine directors includes three that identify as female and two that identify as members of two or more races or ethnicities. As we pursue future Board recruitment efforts, our

Nominating and Governance Committee will continue to seek out candidates who can contribute to the diversity of views and perspectives of the Board in accordance with the committee’s Policies and Procedures for Director Candidates. This includes seeking out individuals of diverse ethnicities, a balance in terms of gender, and individuals with diverse perspectives informed by other personal and professional experiences.

**Please see [Board Diversity Matrix](#) in our [Proxy Statement](#) (page 15).**

## ESG governance

A true commitment to ESG requires engagement and oversight at every level of the organization. Our Board recognizes that as Moderna grows we have the opportunity to lay the foundation for building the best possible version of Moderna. The Board’s Nominating and Corporate Governance Committee oversees ESG matters and practices so that ESG is incorporated into our governance practices at the highest level of the organization. In 2023, this included launching a climate-based risk assessment and a double-materiality assessment to prepare Moderna for potential disclosure requirements related to these matters. In addition, the Committee oversaw efforts to implement policies related to ESG, and increasing transparency on these matters, including reviewing our roadmap to achieving publicly announced greenhouse gas reduction targets.

The committee reports to the full Board on ESG matters and our progress on ESG initiatives. Our Chief Legal Officer, reporting to the CEO, leads Moderna's ESG strategy, with Executive Committee members overseeing additional elements of particular ESG initiatives. For instance, our environmental sustainability strategy pulls on multiple functions, including our facilities team, which is overseen by our Chief Technical Operations and Quality Officer. Our Chief Human Resources Officer leads our efforts to scale up our culture and strategies to attract and retain talent.

Since 2021, we incorporate human capital metrics in our bonus program.

## Transparency

### Clinical trials

It is important for regulators, researchers, trial participants and other concerned parties to have access to clinical trial information to advance medical understanding and progress. Knowledge enlightens and empowers stakeholders to help make sound medical decisions.

It is also important that this access works in ways that protect patient privacy, comply with global laws, regulations, standards and enable new research.

We share clinical trial data in a variety of ways, including trial registration, basic results posting, public disclosure synopsis, publications, and data sharing with researchers. We provide results on ClinicalTrials.gov and the European Union Clinical Trials Register (EU CTR) within the timelines required by U.S. law and regulations issued by the U.S. Department of Health and Human Services (HHS) and the European Medicines Agency (EMA).

Moderna's Transparency and Disclosure policy ensures compliance is met and clinical trials are conducted in accordance with applicable laws and regulations, including principles derived from relevant international standards. We are designing and conducting clinical trials with the highest ethical and scientific standards.

 **Read more about our commitment in our [Moderna Clinical Trial Disclosure and Transparency Policy](#).**

### Political engagement

We believe that public policy and legislation related to our industry and the patients that we serve should be rooted in sound science and an understanding of how innovation benefits us all. To that end, we engage directly with government officials and policymakers, as well as through trade associations and other advocacy organizations, particularly those engaged in healthcare- and technology-related matters, to help ensure that public policy decisions and legislation are well informed and that they continue to promote innovation and our mission of delivering for patients. The Nominating and Corporate Governance Committee of the Board of Directors, which is composed solely of independent directors, annually reviews our Political Engagement Policy and disclosures, and exercises oversight of Moderna's political engagement, including our engagement with trade associations and other tax-exempt organizations that may engage in political activity.

Our approach to political engagement, as outlined in our Political Engagement Policy, is defined by the following principles: We do not contribute corporate funds to political candidates, parties, or committees for public office or to 527 groups (including political

action committees, or PACs); we do not make independent political expenditures or contribute corporate funds in direct support of or in opposition to political campaigns, ballot measures or ballot initiatives; and we do not sponsor an employee PAC, and have no plans to do so.

### Trade associations

Membership in trade associations and contributions to advocacy organizations can help advance the biotechnology industry, promote a policy environment that continues to encourage innovation, and promote our mission. To the extent that we contribute more than \$25,000 in any calendar year to a trade association, we disclose the name of that organization and the dollar amount of any membership dues or contributions that are ineligible for deduction as an "ordinary and necessary" business expense on the [Moderna website](#).

### Our approach to tax

We are committed to acting with integrity and transparency in all tax matters, including compliance with all relevant laws, rules, regulations, and reporting requirements. Our approach is to manage tax risks and costs in a manner consistent with applicable regulatory requirements, considering operational, economic, and reputational factors.

At the highest level, responsibility for taxes resides with Moderna's Global Tax Department. The Senior Vice President, Tax reports to Moderna's Chief Financial Officer. The Senior Vice President, Tax, along with the global tax leadership team have oversight over the material tax matters of Moderna's worldwide business operations and supply chain.

We have implemented standardized compliance processes to ensure we meet all compliance, disclosure, and regulatory obligations, including filing all relevant tax returns and making required tax payments on time. We engage with tax authorities in a timely manner to disclose all relevant facts and circumstances to maintain a transparent and constructive relationship based on trust.

Our approach to tax planning is aligned with, and in furtherance of, our commercial business operations, together with our research, development, and supply chain needs.

We do not engage in aggressive tax planning or utilize artificial tax schemes that lack economic substance and have a principal purpose of obtaining a tax advantage. We may, however, make use of statutorily available tax relief, such as research and development credits. This approach applies to all of our entities and on a global basis.

### Healthcare partners and patient organizations

Collaboration between industry, healthcare professionals, healthcare organizations and patient advocacy organizations is critical to the development and effective use of new vaccines and medicines. We recognize that transparent relationships with healthcare professionals and organizations are critical to our mission to deliver the greatest possible impact to people through mRNA medicines.

We are complying with all applicable laws, regulations, and codes of conduct governing the transparency of our interactions with healthcare professionals and organizations to ensure public trust and confidence. We publicly disclose the transfers of value made to healthcare professionals, healthcare organizations, and patient associations through applicable government portals and the [Moderna website](#).

## Corporate Policies

Working at Moderna is a privilege and responsibility, and we must operate ethically, with integrity and quality in everything we do. The [Moderna Code of Ethics and Business Conduct](#) is our guide to how we conduct ourselves and our activities globally. Our Code outlines the high standards to which we hold ourselves and provides the foundation for our continued success, and alongside our Mindsets and Values, it allows us to build the most impactful Moderna, serving and protecting people across the globe and overcoming challenges together. The Code applies to all directors, officers, employees, contractors and anyone who conducts business for or on behalf of Moderna.

This includes all staff and levels of management as well as external workers, consultants and temporary workers.

As we have grown and evolved as a company, we have reimagined our Code to be principles-based. The new Code was approved by our Executive Committee and Board of Directors in 2022, becoming effective in January 2023.

We Protect <b>Patients</b>	We Safeguard Our <b>Company</b>
We Value Our <b>Communities</b>	We Build <b>Trust</b>

The Code is provided in local languages as needed and we trained over 97 percent of our employees on our new Code in 2023. We have established comprehensive policies to guide our employees in

applying the high ethical standards in their decisions. Some of our key compliance policies and guidance are summarized below:

- **Anti-Bribery:** our [Global Anti-Bribery and Anti-Corruption Policy \(ABAC\)](#) is principles-based and describes our position against corruption. Corrupt activities, including bribery, are not tolerated at Moderna. Among other guidance, our Policy states that facilitation payments are strictly prohibited and giving or receiving entertainment is not permitted.
- **Interactions with HCPs and HCOs:** our Global Policy on Interactions with Healthcare Professionals (HCPs) and Healthcare Organizations (HCOs) describes guiding principles in our interactions with HCPs/HCOs to communicate accurately and appropriately, engage in bona fide service arrangements and based on fair market value, respect HCP independent decision-making, and be transparent about all our interactions.
- **Conflict of Interest:** our employees are responsible for avoiding activities and situations that present a potential or actual conflict between their personal interests and Moderna's interests.
- **Ethical Promotion:** we require and train our employees to follow regulatory requirements for promoting our products for their approved and intended use, and other company policies that govern the creation and review of promotional material to ensure it is consistent with our approved commercial label.
- **Trade Compliance:** we are committed to meeting the regulatory requirements of all countries in which we operate, including international trade regulations. Our Code of Ethics and Business Conduct requires all Moderna personnel to understand how international trade regulations apply to their work.

- **Sexual Harassment and Other Discriminatory Harassment:** our Global Sexual Harassment and Other Discriminatory Harassment Policy promotes a workplace that is free from all forms of discriminatory harassment based on protected personal characteristics, including, without limitation, sexual harassment. We do not tolerate prohibited discriminatory harassment towards our employees and third parties with whom Moderna works, including partners, vendors, and consultants.
- **Human Rights:** Moderna personnel have an obligation to report any human rights concerns they may identify in the course of their work responsibilities, including those that may occur in a Moderna service provider or supplier, as captured in our [Global Humans Right Policy](#).
- **Social Media:** our Global Policy sets forth the principles and minimum standards governing the participation of Moderna personnel and agents acting on behalf of Moderna in social media websites and platforms.
- **Global Privacy:** our Global Data Privacy Policy describes requirements concerning how we process and protect the personal data of our employees and applicant healthcare professionals, business partners, investors, and other individuals.

In 2023, we continued to evolve key elements of our Ethics and Compliance program, focusing on conducting activities to train or refresh knowledge in ABAC, privacy, interactions with HCPs, HCOs and patients, social media, human rights, and UK ABPI<sup>(1)</sup> Code. We also continued to focus on reinforcing due diligence and risk management by automating due diligence process covering ethics, ABAC, human rights, and privacy, applying consistent vendor risk stratification process and monitoring to support continuous learning and improvement.

(1) Association of the British Pharmaceutical Industry

## Safeguarding information and assets

Information is one of our most valuable assets and the security of our data is fundamental to our commitment to patients, HCPs, business partners, the communities we serve and our employees.

### Cybersecurity

Recognizing the threat of security breaches and cyberattacks globally, we have developed a cybersecurity program, overseen by our Chief Information Security Officer (CISO) and Chief Information Officer (CIO), that is designed to protect patient trust, defend our brand, and reduce the risk and impact of cyber-attacks. Our cybersecurity program is informed by industry standards and includes periodic risk assessments and security testing supported by cybersecurity technologies, including third party security solutions, vulnerability management, and monitoring tools, designed to monitor, identify, and manage risks from cyber threats. In addition, we have implemented employee security and awareness training.

To date, we have not experienced a cybersecurity incident that has had a material impact on our business strategy, results of operations, or financial condition.

Our Board of Directors oversees Moderna's overall risk management strategy. The Board exercises oversight of risks from cybersecurity threats primarily through its Audit Committee, which oversees our risk management processes for information security and technology risks. Our cybersecurity risk management processes are integrated into our overall risk management strategy, which is overseen by the Audit Committee. At least annually, the Audit Committee discusses our risk management program, including

information security and technology risks and findings from any audits, with our internal audit staff. For more information, please see our Annual Report.

### Data Privacy

We are committed to protecting the Personal Data entrusted to us by our employees, healthcare professionals, patients, suppliers, and partners and to processing it in an ethical, honest and fair manner, aligned with the applicable global requirements. Our Global Privacy Policy describes the principles for collecting and processing personal data when conducting our business and aligns with the basics of the EU's General Data Protection Regulation (GDPR) as well as other relevant privacy laws, including the U.S. Health Insurance Portability and Accountability Act (HIPAA). We have nominated a Chief Privacy Officer (CPO) and a European Data Protection Officer to oversee the company's commitment. The CPO is part of Moderna's Legal function and reports to the Audit Committee on data protection topics. The Global Privacy team provides advice and support to relevant stakeholders within Moderna. Our employees receive regular training on data protection. We contractually bind our suppliers and partners to comply with any applicable data protection and privacy requirements, including a duty to promptly report any Moderna-related data protection incidents to us. In 2023, we recorded one substantiated incident of a personal data breach, caused by a partner organization and involving one individual. We timely complied with our notification obligations and mitigated potential adverse effects or risks for the individual.

## Sustainable and Responsible Procurement



**“To deliver our mission of tackling some of the greatest health challenges, it is critical for us to partner with suppliers that share our same commitments. As we continue to expand our portfolio of mRNA medicines, we rely on our suppliers to hold unwavering standards on not only quality, but environmental stewardship and human rights. We will continue to increase our due diligence in embracing these values across our supply chain to ensure we have the greatest impact on human health.”**

**Alan Rankin,**  
Chief Procurement Officer

We believe a strategic and resilient supply chain is one composed of business partners who share the same commitments and values. In 2023, we launched the Sustainable and Responsible Procurement Program to incorporate our ESG strategy into our procurement functions. Through this program we hope to fully embed sustainability into our procurement processes, support efforts to decarbonize our value chain and develop robust human rights monitoring and due diligence processes.

### Third Party Code of Business Conduct

Launched in 2022 as the foundational element of our program, the [Third Party Code](#) was developed with robust standards and expectations for our suppliers and business partners on prominent ESG issue areas. Our goal is to ensure that we are working with suppliers and business partners that uphold these principles already or are working towards them through corrective action.

### Climate Action

As addressed in the Environment section of this report, Climate Change is a challenge we take seriously. We have accelerated our efforts to establish our GHG Scope 3 baseline and are committed to submitting our Scope 3 target to the Science Based Target Initiative (SBTi). We have already begun engaging our key suppliers on this topic area and are keeping track of progress. We are also exploring various solutions that will support suppliers in accelerating and enabling climate action.

### Human Rights

Our commitment to respecting human rights extends to our suppliers and partners. We understand that a great amount of the risk exists within global supply chains where visibility can be a challenge. Therefore, we use a combined approach of policies, tools, partnerships, and collaborations with industry coalitions.

For due diligence and monitoring, we have partnered with Ecovadis to assess supplier’s performance on four key themes: Environment, Labor & Human Rights, Ethics, and Sustainable Procurement. The Ecovadis solution enables Moderna to identify inherent human rights risks within the supply chain, assess specific supplier risk areas, verify the validity of supplier responses, and discover opportunities for corrective actions.

In 2023, 80 percent of Moderna’s supplier base by spend has been assessed through the Ecovadis framework. 90 percent of suppliers scored a ‘Good’

(45–64 points) rating or above, with no suppliers scoring below ‘Partial’ (25–44 points) within the Labor & Human Rights theme. Overall, across all themes, 89 percent of suppliers scored a ‘Good’ (45–64 points) rating or above, with no suppliers scoring below a ‘Partial’ (25–44). We will continue to increase coverage of suppliers as well as engage our supply chain in meaningful ways.

We are working to incorporate sustainability into every applicable step of our processes to ensure our Procurement team have a robust understanding of long-term risks and opportunities as we firmly believe sustainability is a core indicator for a successful partnership with suppliers. We will continue our work to deliver the greatest impact possible through our supply chain.

### Pharmaceutical Supply Chain Initiative (PSCI)

Moderna has recently joined many peers and suppliers in our industry’s most comprehensive coalition focused on tackling the most pressing sustainability issues that exist in pharmaceutical supply chains. As a member of PSCI, we are able to benchmark efforts, collaborate in working groups, share best practice and leverage collective action.

Moderna will also begin to take advantage of PSCI’s robust Audit database and program to have greater levels of due diligence across our supplier base.

### Ecovadis Responsible Health Initiative (RHI)

Moderna has recently joined an Ecovadis sector initiative dedicated to the Health industry. The Responsible Health Initiative allows members to pool Ecovadis scorecards across our shared supplier base, gain special access to unique tools for greater insights, and join efforts in raising the standard towards continual improvement.



## Responsible use of AI

We celebrate the extraordinary potential of AI, yet we also understand the unique challenges the use and integration of AI in our business presents. Our [AI Code of Conduct](#) reflects our commitment to responsible AI development and usage. This commitment is not static but dynamic, reflecting Moderna's pioneering spirit. We anticipate that our guiding principles will continue to evolve as our knowledge and experience with AI deepens, mirroring our commitment to continual learning and growth.

## Animal welfare

Sometimes using animals in testing is the only way to advance science, but we take our responsibility to these animals seriously and look for non-animal alternatives whenever possible. Moderna's Institutional Animal Care and Use Committee (IACUC) oversees the welfare and humane treatment of any animals used for testing at Moderna. Animals used for research at Moderna are treated humanely and we embody the 3R-principles (Reduce, Refine, Replace).

To qualify testing facilities to which we contract animal studies, we require IACUC and appropriate accreditation for utilizing animals in research that ensures the welfare of the animals.

## Speak Up

At Moderna, we trust and rely on all of our people to be catalysts for acting with integrity and doing the right thing. Asking a question to gain understanding or speaking up when something may be wrong or inappropriate is part of acting as an owner and in accordance with the [Moderna Mindsets](#). Our [Speak Up Hotline](#) enables our employees and third parties to submit a question or voice a concern that we may not be meeting the values that we strive to achieve every day. Both employees and third parties may choose to submit reports anonymously, where permitted by law. We strictly prohibit retaliation under our Code of Ethics and Business Conduct.

Concerns are promptly reviewed and investigated by relevant functions. Disciplinary actions are taken in cases of failure to comply with our Code, policies or applicable laws. In 2023, we received 90 enquiries, including concerns related to Employee relations, Corporate Security, Ethics & Compliance. Six out of these 90 cases were identified as compliance-related and sent to the Ethics and Compliance function for follow up and investigation, and none of these cases were substantiated. Out of the six reports related to potential employee harassment or discrimination, two cases were fully substantiated.

# Going forward



## Dear Stakeholders,

By working at the intersection of science, technology and health, we are reimagining how medicines are made and how we treat and prevent disease for everyone. It is with the same sense of purpose, inclusion and commitment that we approach our ESG priorities.

We continue our journey to create the most impactful version of Moderna, where we seek to more deeply engage, listen and understand what our stakeholders expect from us as a responsible business and leader in mRNA medicines.

Transparency is a cornerstone of our ESG strategy. Since the publication of our first ESG report in 2022, we have remained committed to share about our efforts and increase visibility into our actions, including through the communication of how we are progressing against clearly-articulated goals.

We know that we cannot make progress on this journey alone. Your continuous input is critical and helps us anticipate your needs as we work to create long-term value. In 2023, we launched our first-ever double-materiality analysis—an important stakeholder engagement initiative to validate our understanding and assessment of priority ESG topics, which are reflected in this report. We are excited for the opportunity to continue our dialogue and demonstrate accountability.

As we look ahead, we remain focused on advancing our ESG program with integrity and purpose. Our journey is one of continuous learning and improvement, guided by our values and the evolving needs of our stakeholders and external landscape.

Your engagement and feedback along the way are invaluable as we strive to create lasting positive impact on human health and the environment. Together, we can build a more sustainable and equitable future.

With best regards,

A handwritten signature in blue ink, appearing to read 'S Klinger', written over a horizontal line.

**Shannon Thyme Klinger,**  
Chief Legal Officer, Moderna  
President, Moderna Charitable Foundation

# Appendix

## Our approach to reporting

As we continue to progress in our corporate social responsibility and ESG journey, we will refer to widely recognized standards to improve our disclosures of environmental, social and governance impacts, and to share how we create value over the long-term. We are presenting our disclosures within the Sustainability Accounting Standards Board (SASB) Framework and Global Reporting Initiative (GRI) Standards. Both indexes

are intended to help our stakeholders locate the relevant disclosures called for by each reporting standard. For a detailed explanation of the indicators included in this index, visit the GRI website and SASB website.

This report covers all our entities and activities for the January 1 – December 31 reporting period. ERM CVS provided limited assurance according to ISAE 3000 for metrics included in pages 30, 35, 36, and 37.

We will continue to expand upon our ability to share metrics that measure our ESG performance and continue to work to be prepared to comply with upcoming reporting requirements as applicable to Moderna.

## SASB Index

Topic	SASB Code	Accounting Metric Description	2023 Disclosure Location
<b>Safety of Clinical Trial Participants</b>	<b>HC-BP-210a.1</b>	Discussion, by world region, of management process for ensuring quality and patient safety during clinical trials	ESG Report, Medicines for patients
	<b>HC-BP-210a.2</b>	Number of FDA Sponsor Inspections related to clinical trial management and pharmacovigilance that resulted in: (1) Voluntary Action Indicated (VAI) and (2) Official Action Indicated (OAI)	ESG Report, Medicines for patients
	<b>HC-BP-210a.3</b>	Total amount of monetary losses as a result of legal proceedings associated with clinical trials in developing countries	None
<b>Access to Medicines</b>	<b>HC-BP-240a.1</b>	Description of actions and initiatives to promote access to health care products for priority diseases and in priority countries as defined by the Access to Medicine Index	ESG Report, Medicines for patients
	<b>HC-BP-240a.2</b>	List of products on the WHO List of Prequalified Medicinal Products as part of its Prequalification of Medicines Programme (PQP)	None
<b>Affordability &amp; Pricing</b>	<b>HC-BP-240b.1</b>	Number of settlements of Abbreviated New Drug Application (ANDA) litigation that involved payments and/or provisions to delay bringing an authorized generic product to market for a defined time period	None
	<b>HC-BP-240b.2</b>	Percentage change in: (1) average list price and (2) average net price across U.S. product portfolio compared to previous year	Our only product sold during 2022 and 2023 in the U.S. was our COVID-19 vaccine, which was only sold to the U.S. government in 2022. We are not reporting this metric, as it could potentially reveal competitive pricing information.

Topic	SASB Code	Accounting Metric Description	2023 Disclosure Location
	<b>HC-BP-240b.3</b>	Percentage change in: (1) list price and (2) net price of product with largest increase compared to previous year	Our only product sold during 2022 and 2023 was our COVID-19 vaccine. We are not reporting this metric, as it could potentially reveal competitive information.
<b>Drug Safety</b>	<b>HC-BP-250a.1</b>	List of products listed in the Food and Drug Administration's (FDA) MedWatch Safety Alerts for Human Medical Products database	<a href="#">(FDA) MedWatch Safety Alerts for Human Medical Products database</a>
	<b>HC-BP-250a.2</b>	Number of fatalities associated with products as reported in the FDA Adverse Event Reporting System	<a href="#">FDA Adverse Event Reporting System</a>
	<b>HC-BP-250a.3</b>	Number of recalls issued, total units recalled	None in 2023.
	<b>HC-BP-250a.4</b>	Total amount of product accepted for take-back, reuse, or disposal	None
	<b>HC-BP-250a.5</b>	Number of FDA enforcement actions taken in response to violations of current Good Manufacturing Practices (cGMP), by type	We report material regulatory issues in our annual 10-K filing.
<b>Counterfeit Drugs</b>	<b>HC-BP-260a.1</b>	Description of methods and technologies used to maintain traceability of products throughout the supply chain and prevent counterfeiting	ESG Report, Medicines for Patients
	<b>HC-BP-260a.2</b>	Discussion of process for alerting customers and business partners of potential or known risks associated with counterfeit products	ESG Report, Medicines for Patients
	<b>HC-BP-260a.3</b>	Number of actions that led to raids, seizure, arrests, and/or filing of criminal charges related to counterfeit products	In 2023, zero actions led to raids, seizure, arrests, and/or filing of criminal charges related to counterfeit products.
<b>Ethical Marketing</b>	<b>HC-BP-270a.1</b>	Total amount of monetary losses as a result of legal proceedings associated with false marketing claims	None
	<b>HC-BP-270a.2</b>	Description of code of ethics governing promotion of off-label use of products	ESG Report, Governance and Ethics
<b>Employee Recruitment, Development &amp; Retention</b>	<b>HC-BP-330a.1</b>	Discussion of talent recruitment and retention efforts for scientists and research and development personnel	ESG Report, Employees
	<b>HC-BP-330a.2</b>	(1) Voluntary and (2) involuntary turnover rate for: (a) executives/senior managers, (b) mid-level managers, (c) professionals, and (d) all others	ESG Report, Employees
<b>Supply Chain Management</b>	<b>HC-BP-430a.1</b>	Percentage of (1) entity's facilities and (2) Tier I suppliers' facilities participating in the Rx-360 International Pharmaceutical Supply Chain Consortium audit program or equivalent third-party audit programs for integrity of supply chain and ingredients	ESG Report, Medicines for Patients
<b>Business Ethics</b>	<b>HC-BP-510a.1</b>	Total amount of monetary losses as a result of legal proceedings associated with corruption and bribery	None
	<b>HC-BP-510a.2</b>	Description of code of ethics governing interactions with health care professionals	ESG Report, Governance and Ethics

## GRI content index

<b>Statement of use</b>	Moderna has reported in accordance with the GRI Standards for the period January 1 – December 31, 2023
<b>GRI 1 used</b>	GRI 1: Foundation 2021
<b>Applicable GRI Sector Standard(s)</b>	No sector guidelines

GRI Standard	Disclosure	Location
<b>GRI 2: General Disclosures 2021</b>	<b>2-1 Organizational details</b>	Annual Report, page 6
	<b>2-2 Entities included in the organization’s sustainability reporting</b>	ESG Report – our approach to reporting
	<b>2-3 Reporting period, frequency and contact point</b>	ESG Report – our approach to reporting
	<b>2-4 Restatements of information</b>	ESG Report – our approach to reporting
	<b>2-5 External assurance</b>	ESG Report – our approach to reporting
	<b>2-6 Activities, value chain and other business relationships</b>	Annual Report, page 6
	<b>2-7 Employees</b>	ESG Report – Employees
	<b>2-8 Workers who are not employees</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement
	<b>2-9 Governance structure and composition</b>	2024 Proxy Statement, page 14
	<b>2-10 Nomination and selection of the highest governance body</b>	2024 Proxy Statement, page 14
	<b>2-11 Chair of the highest governance body</b>	2024 Proxy Statement, page 14
	<b>2-12 Role of the highest governance body in overseeing the management of impacts</b>	2024 Proxy Statement, page 22 ESG Report, Governance and ethics, ESG Governance
	<b>2-13 Delegation of responsibility for managing impacts</b>	ESG Report, Governance and ethics, ESG Governance
	<b>2-14 Role of the highest governance body in sustainability reporting</b>	2024 Proxy Statement, page 22 ESG Report, Governance and ethics, ESG Governance
	<b>2-15 Conflicts of interest</b>	2024 Proxy Statement, page 17
	<b>2-16 Communication of critical concerns</b>	2024 Proxy Statement, Board’s Role in Risk Oversight, page 19 ESG Report, Governance & Ethics
	<b>2-17 Collective knowledge of the highest governance body</b>	2024 Proxy Statement, Governance, page 14
	<b>2-18 Evaluation of the performance of the highest governance body</b>	2024 Proxy Statement, Director Compensation, page 26
	<b>2-19 Remuneration policies</b>	2024 Proxy Statement, Director Compensation, page 26
	<b>2-20 Process to determine remuneration</b>	2024 Proxy Statement, Director Compensation, page 26
	<b>2-21 Annual total compensation ratio</b>	2024 Proxy Statement, CEO Pay Ratio, page 68

GRI Standard	Disclosure	Location
	<b>2-22 Statement on sustainable development strategy</b>	ESG Report, CEO letter
	<b>2-23 Policy commitments</b>	ESG Report, Governance and ethics
	<b>2-24 Embedding policy commitments</b>	ESG Report, Governance and ethics
	<b>2-25 Processes to remediate negative impacts</b>	ESG Report, Governance and ethics
	<b>2-26 Mechanisms for seeking advice and raising concerns</b>	ESG Report, Governance and ethics
	<b>2-27 Compliance with laws and regulations</b>	ESG Report, Governance and ethics
	<b>2-28 Membership associations</b>	ESG Report, Governance and ethics, Trade associations Corporate website, Responsibility, Political Policy and Disclosure
	<b>2-29 Approach to stakeholder engagement</b>	ESG Report, Our approach
	<b>2-30 Collective bargaining agreements</b>	None of our employees are represented by a labor union or works councils, and none of our employees have entered into a collective bargaining agreement with us. A small number of employees in Belgium, France, Italy and Spain are covered by statutory collective bargaining agreements governing certain benefits and working conditions. We consider our employee relations to be good.
<b>GRI 3: Material Topics 2021</b>	<b>3-1 Process to determine material topics</b>	ESG Report, Our approach
	<b>3-2 List of material topics</b>	ESG Report, Our approach
	<b>3-3 Management of material topics</b>	ESG Report, ESG Governance
<b>GRI 201: Economic Performance 2016</b>	<b>201-1 Direct economic value generated and distributed</b>	Annual Report, page 87
	<b>201-2 Financial implications and other risks and opportunities due to climate change</b>	ESG Report, Environment
	<b>201-3 Defined benefit plan obligations and other retirement plans</b>	2024 Proxy Statement, page 38 ESG Report, Employees
	<b>201-4 Financial assistance received from government</b>	Corporate website, Responsibility, Government funding and vaccine access 10-K, page 87
<b>GRI 205: Anti-corruption 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics
	<b>205-1 Operations assessed for risks related to corruption</b>	ESG Report, Governance and ethics, Corporate Policies ESG Report, Governance and ethics, Sustainable and Responsible Procurement
	<b>205-2 Communication and training about anti-corruption policies and procedures</b>	ESG Report, Governance and ethics, Corporate Policies ESG Report, Governance and ethics, Sustainable and Responsible Procurement
	<b>205-3 Confirmed incidents of corruption and actions taken</b>	None
<b>GRI 206: Anti-competitive Behavior 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics, Corporate Policies
	<b>206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices</b>	None (See 10-K, page 80)

GRI Standard	Disclosure	Location
<b>GRI 207 Tax 2019</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics, Our approach to tax
	<b>207-1 Approach to tax</b>	ESG Report, Governance and ethics, Our approach to tax
	<b>207-2 Tax governance, control, and risk management</b>	ESG Report, Governance and ethics, Our approach to tax
	<b>207-3 Stakeholder engagement and management of concerns related to tax</b>	ESG Report, Governance and ethics, Our approach to tax
<b>GRI 302: Energy 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Environment
	<b>302-1 Energy consumption within the organization</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>302-2 Energy consumption outside of the organization</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>302-3 Energy intensity</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>302-4 Reduction of energy consumption</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>302-5 Reductions in energy requirements of products and services</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
<b>GRI 303: Water and Effluents 2018</b>	<b>3-3 Management of material topics</b>	ESG Report, Environment, Natural resource conservation
	<b>303-1 Interactions with water as a shared resource</b>	ESG Report, Environment, Natural resource conservation
	<b>303-1 Management of water discharge-related impacts</b>	ESG Report, Environment, Natural resource conservation
	<b>303-1 Water withdrawal</b>	Metric not reported in 2023.
	<b>303-1 Water discharge</b>	Metric not reported in 2023.
	<b>303-1 Water consumption</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
<b>GRI 305: Emissions 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>305-1 Direct (Scope 1) GHG emissions</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance Corporate website, Responsibility, Energy and Emissions Data
	<b>305-2 Energy indirect (Scope 2) GHG emissions</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>305-3 Other indirect (Scope 3) GHG emissions</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>305-4 GHG emissions intensity</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>305-5 Reduction of GHG emissions</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>305-6 Emissions of ozone-depleting substances (ODS)</b>	Will be reported on our Corporate website once third-party verification has been completed
	<b>305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions</b>	Will be reported on our Corporate website once third-party verification has been completed
<b>GRI 306: Waste 2020</b>	<b>3-3 Management of material topics</b>	ESG Report, Environment, Natural resource conservation
	<b>306-1 Waste generation and significant waste-related impacts</b>	ESG Report, Environment, Natural resource conservation
	<b>306-2 Management of significant waste-related impacts</b>	ESG Report, Environment, Natural resource conservation

GRI Standard	Disclosure	Location
	<b>306-3 Waste generated</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>306-4 Waste diverted from disposal</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
	<b>306-5 Waste directed to disposal</b>	ESG Report, Environment, 2023 Environmental Sustainability Performance
<b>GRI 401: Employment 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees
	<b>401-1 New employee hires and employee turnover</b>	ESG Report, Employees
	<b>401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees</b>	ESG Report, Employees
	<b>401-3 Parental leave</b>	ESG Report, Employees
<b>GRI 403: Occupational Health and Safety 2018</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-1 Occupational health and safety management system</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-2 Hazard identification, risk assessment, and incident investigation</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-3 Occupational health services</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-4 Worker participation, consultation, and communication on occupational health and safety</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-5 Worker training on occupational health and safety</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-6 Promotion of worker health</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-8 Workers covered by an occupational health and safety management system</b>	ESG Report, Employees, Owning our health, safety and environment
	<b>403-9 Work-related injuries</b>	ESG Report, Employees, Owning our health, safety and environment.
<b>403-10 Work-related ill health</b>	ESG Report, Employees, Owning our health, safety and environment.	
<b>GRI 404: Training and Education 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees, Key Learning Programs in 2023
	<b>404-1 Average hours of training per year per employee</b>	ESG Report, Employees, Key Learning Programs in 2023
	<b>404-2 Programs for upgrading employee skills and transition assistance programs</b>	ESG Report, Employees, Key Learning Programs in 2023
	<b>404-3 Percentage of employees receiving regular performance and career development reviews</b>	ESG Report, Employees, Attracting and retaining talent
<b>GRI 405: Diversity and Equal Opportunity 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees, Building a global and diverse workforce
	<b>405-1 Diversity of governance bodies and employees</b>	2024 Proxy Statement, Board Diversity Matrix, page 15 ESG Report, Employees
	<b>405-2 Ratio of basic salary and remuneration of women to men</b>	ESG Report, Employees



GRI Standard	Disclosure	Location
<b>GRI 407: Freedom of Association and Collective Bargaining 2016</b>	<b>3-3 Management of material topics</b>	<a href="#">The Moderna Code of Ethics and Business Conduct</a> , We Respect Others, page 20 <a href="#">Third Party Code of Business Conduct</a> , page 6
	<b>407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk</b>	None of our employees are represented by a labor union or works councils, and none of our employees have entered into a collective bargaining agreement with us. A small number of employees in Belgium, France, Italy and Spain are covered by statutory collective bargaining agreements governing certain benefits and working conditions. We consider our employee relations to be good. ESG Report, Governance and ethics, Sustainable and Responsible Procurement
<b>GRI 408: Child Labor 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees, Human Rights <a href="#">Human Rights Policy</a>
	<b>408-1 Operations and suppliers at significant risk for incidents of child labor</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement <a href="#">Modern Slavery Statement 2023</a>
<b>GRI 409: Forced or Compulsory Labor 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Employees, Human Rights <a href="#">Human Rights Policy</a>
	<b>409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement <a href="#">Modern Slavery Statement 2023</a>
<b>GRI 413: Local Communities 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Community
	<b>413-1 Operations with local community engagement, impact assessments, and development programs</b>	ESG Report, Community
	<b>413-2 Operations with significant actual and potential negative impacts on local communities</b>	ESG Report, Environment
<b>GRI 414: Supplier Social Assessment 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement
	<b>414-1 New suppliers that were screened using social criteria</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement
	<b>414-2 Negative social impacts in the supply chain and actions taken</b>	ESG Report, Governance and ethics, Sustainable and Responsible Procurement
<b>GRI 415: Public Policy 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics, Trade associations Corporate website, Responsibility, Political Policy and Disclosure
	<b>415-1 Political contributions</b>	Moderna does not make direct contributions to political campaigns or candidates, and we are committed to transparency on our engagement with trade associations and other advocacy organizations.
<b>GRI 416: Customer Health and Safety 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety
	<b>416-1 Assessment of the health and safety impacts of product and service categories</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety
	<b>416-2 Incidents of non-compliance concerning the health and safety impacts of products and services</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety

GRI Standard	Disclosure	Location
<b>GRI 417: Marketing and Labeling 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety
	<b>417-1 Requirements for product and service information and labeling</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety
	<b>417-2 Incidents of non-compliance concerning product and service information and labeling</b>	ESG Report, Medicines for patients, Ensuring high product quality and patient safety
	<b>417-3 Incidents of non-compliance concerning marketing communications</b>	ESG Report, Governance and ethics, Corporate Policies
<b>GRI 418: Customer Privacy 2016</b>	<b>3-3 Management of material topics</b>	ESG Report, Governance and ethics, Safeguarding information and assets
	<b>418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data</b>	ESG Report, Governance and ethics, Safeguarding information and assets

# About this report

This report describes our efforts and progress on Environmental, Social and Governance topics that we consider more important based on Moderna's Corporate Social Responsibility Program and that are relevant to reporting standards and frameworks. All our business operations are in scope and have included ESG performance data from January 1, 2023, to December 31, 2023, unless otherwise stated. Our 2023 Annual Report on Form 10-K contains our financial disclosures.

## Forward-Looking Statements

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including statements regarding: the potential for Moderna's mRNA platform to combat potential global public health threats, including a future influenza pandemic and "Disease X"; anticipated milestones for Moderna's pipeline programs in 2024; Moderna's goal to launch up to 15 products by 2028; Moderna's access principles; Moderna's global health strategy; Moderna's environmental sustainability strategy, including its commitment to achieve net-zero carbon emissions in Scopes 1 and 2 by 2030 and in Scope 3 by 2045; Moderna's environmental sustainability strategy; Moderna's ability to expand its portfolio and address critical unmet medical needs with its mRNA platform; the potential for Moderna's mRNA platform to address rare diseases; Moderna's patent pledge; Moderna's ability to enroll study participants from minority communities and vulnerable populations in its clinical trials; and the areas of focus of the Moderna Charitable Foundation. In some cases, forward-looking statements can be identified by terminology such as "will," "may," "should," "could," "expects," "intends," "plans," "aims," "anticipates," "believes," "estimates," "predicts," "potential," "continue," or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. The forward-looking statements in this report are neither promises nor guarantees, and you should not place undue reliance on these forward-looking statements because they involve known and unknown risks, uncertainties, and other factors, many of which are beyond Moderna's control and which could cause actual results to differ materially from those expressed or implied by these forward-looking statements. These risks, uncertainties, and other factors include, among others, those risks and uncertainties described under the heading "Risk Factors" in Moderna's Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the U.S. Securities and Exchange Commission (SEC), and in subsequent filings made by Moderna with the SEC, which are available on the SEC's website at [www.sec.gov](http://www.sec.gov). Except as required by law, Moderna disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this report in the event of new information, future developments or otherwise. These forward-looking statements are based on Moderna's current expectations and speak only as of the date of this report.

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