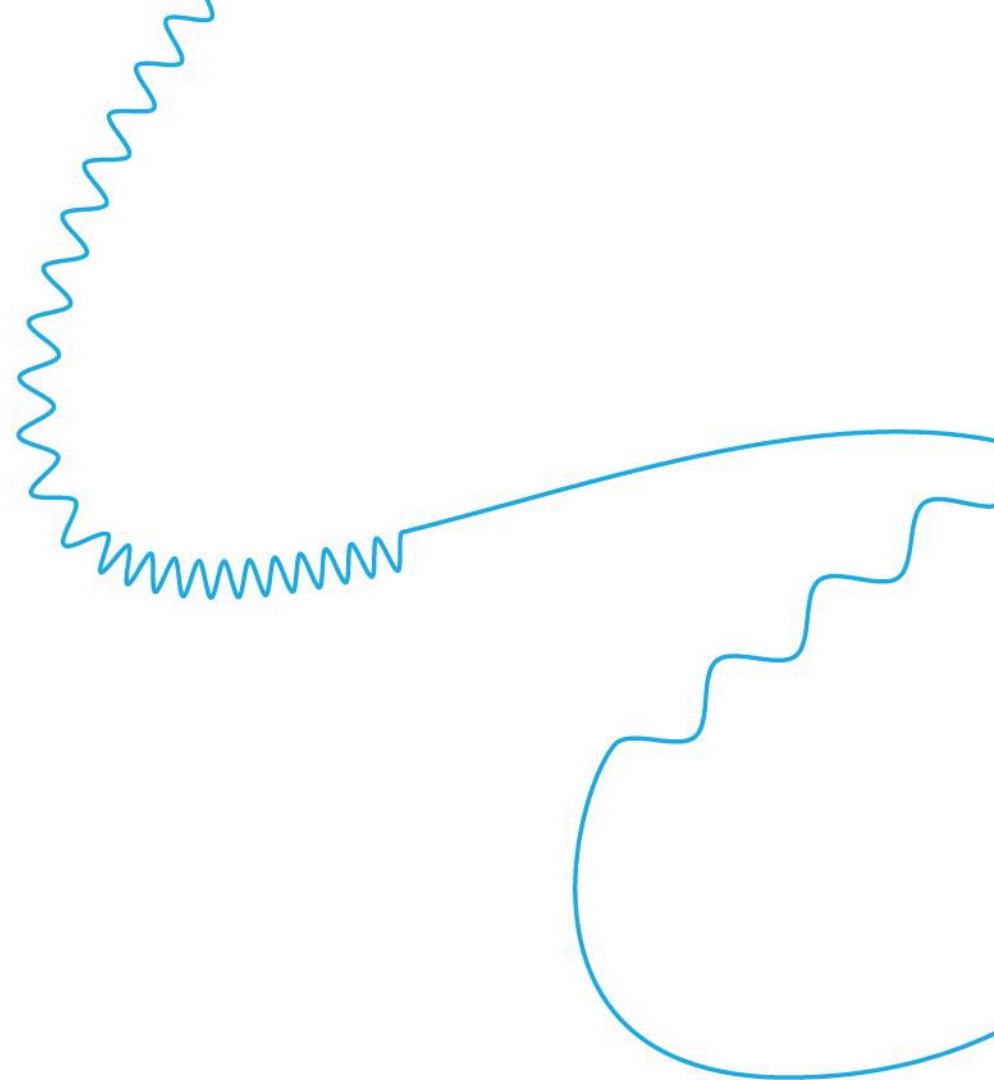




41st Annual J.P. Morgan Healthcare Conference

January 9th, 2023

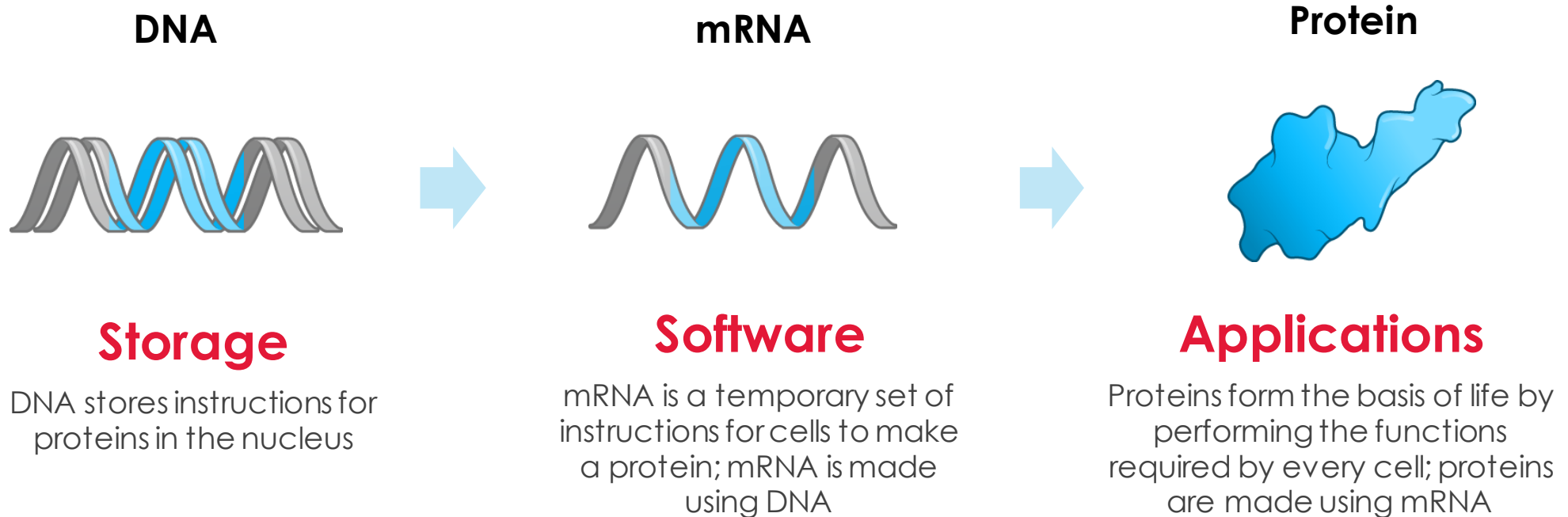


moderna®

Forward-looking statements and disclaimer

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including statements regarding: the potential of mRNA as a new class of medicines; anticipated sales under advance purchase agreements in 2023 and the associated dollar amounts to be received, which should not be construed as expected 2023 revenue; potential additional contracts for COVID-19 vaccine sales; the expected market size for Moderna's products, including those targeting respiratory diseases and latent viruses, including CMV; the expected timing for data from Moderna's Phase 3 studies in flu; the potential for mRNA, including mRNA-4157, to effectively treat different types of cancer, including melanoma, and plans for studying treatment in additional tumor types; plans to conduct a Phase 3 study of mRNA-4157/V940, and the timing of such study; early signs of potential clinical benefit for PA; the potential for mRNA-0184 to result in more durable effects compared to previous approaches targeting heart failure; Moderna's capital allocation priorities, including anticipated spending on R&D for 2023; and Moderna's agreement to acquire OriCiro Genomics and the potential benefits of the acquisition. 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 presentation 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, 2021 and Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2022, each 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. Except as required by law, Moderna disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this presentation 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 presentation.

Moderna mRNA platform uses the natural flow of information in life to develop medicines

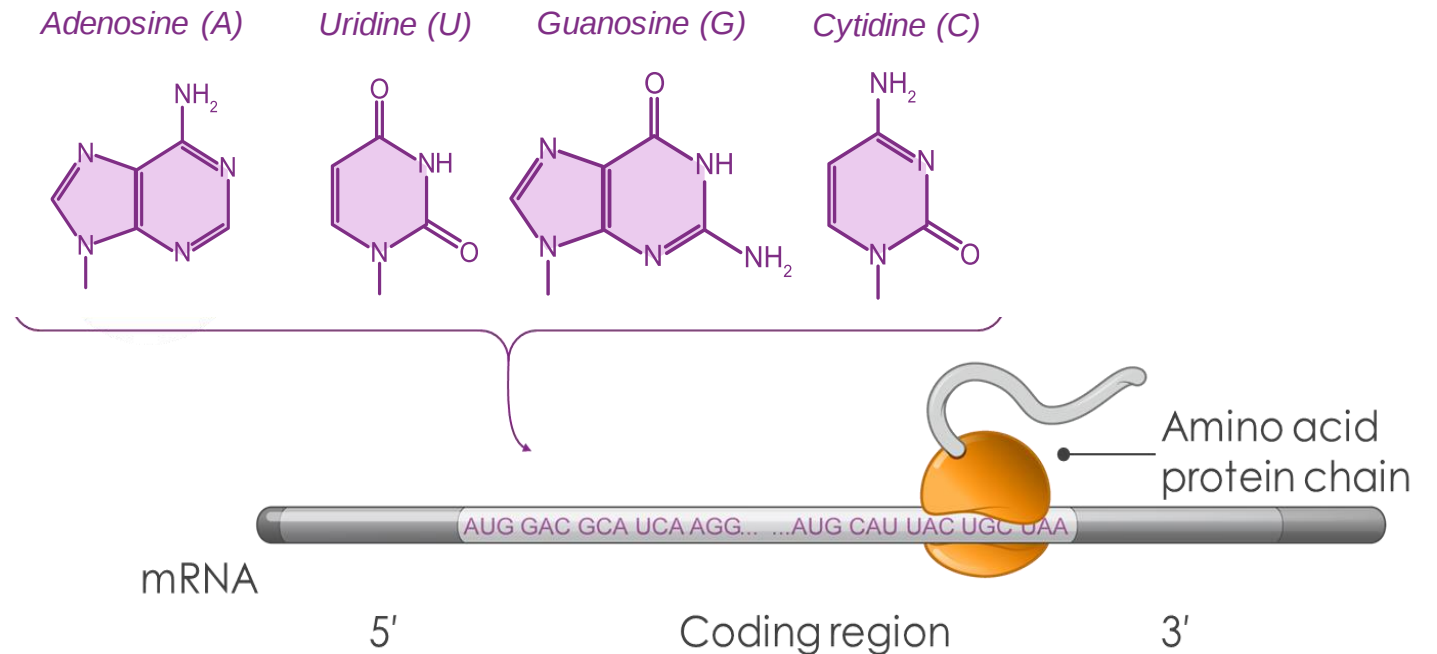


mRNA is an information molecule that encodes for proteins

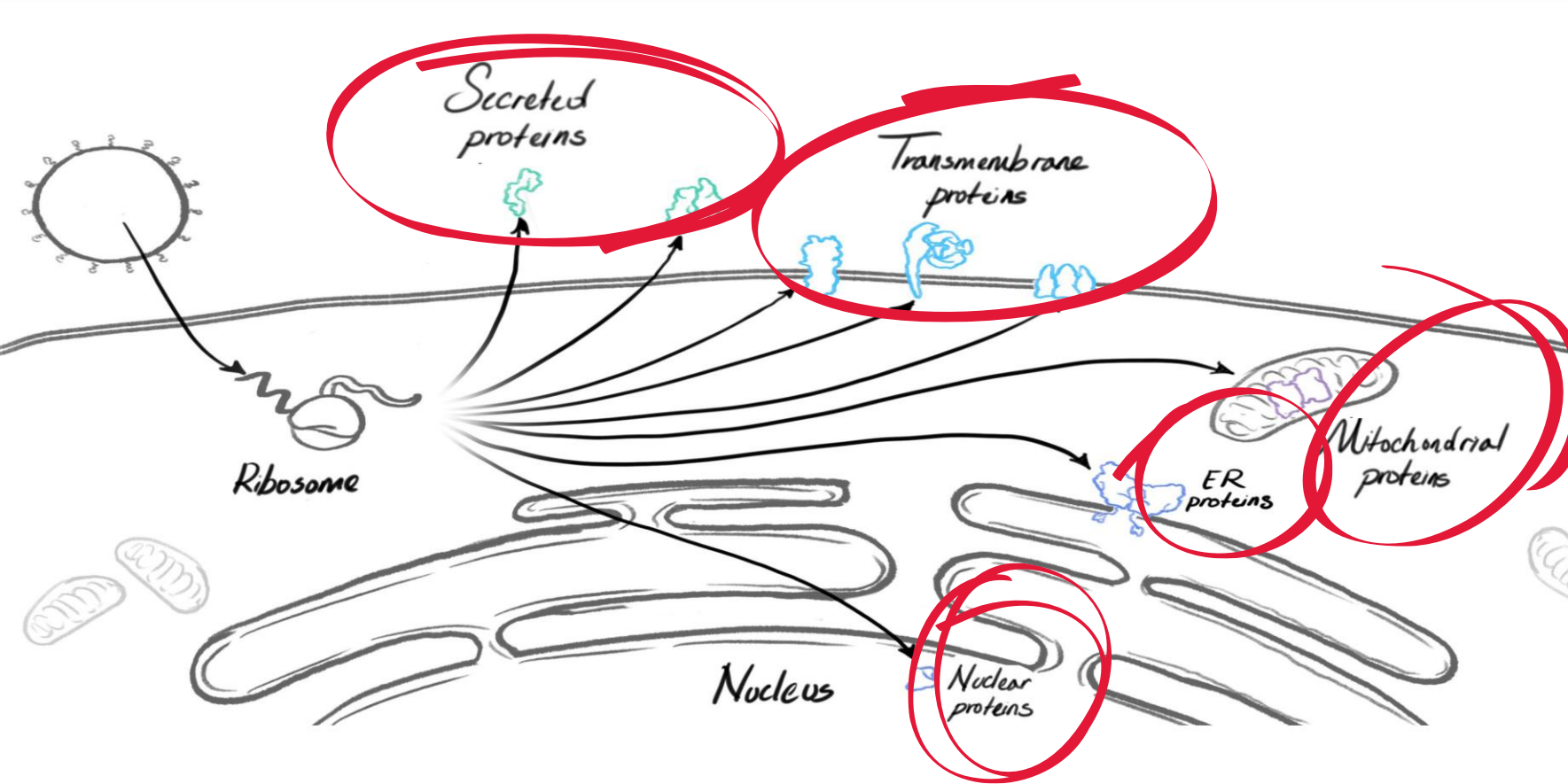
Computers use a binary system



Life uses a quaternary system



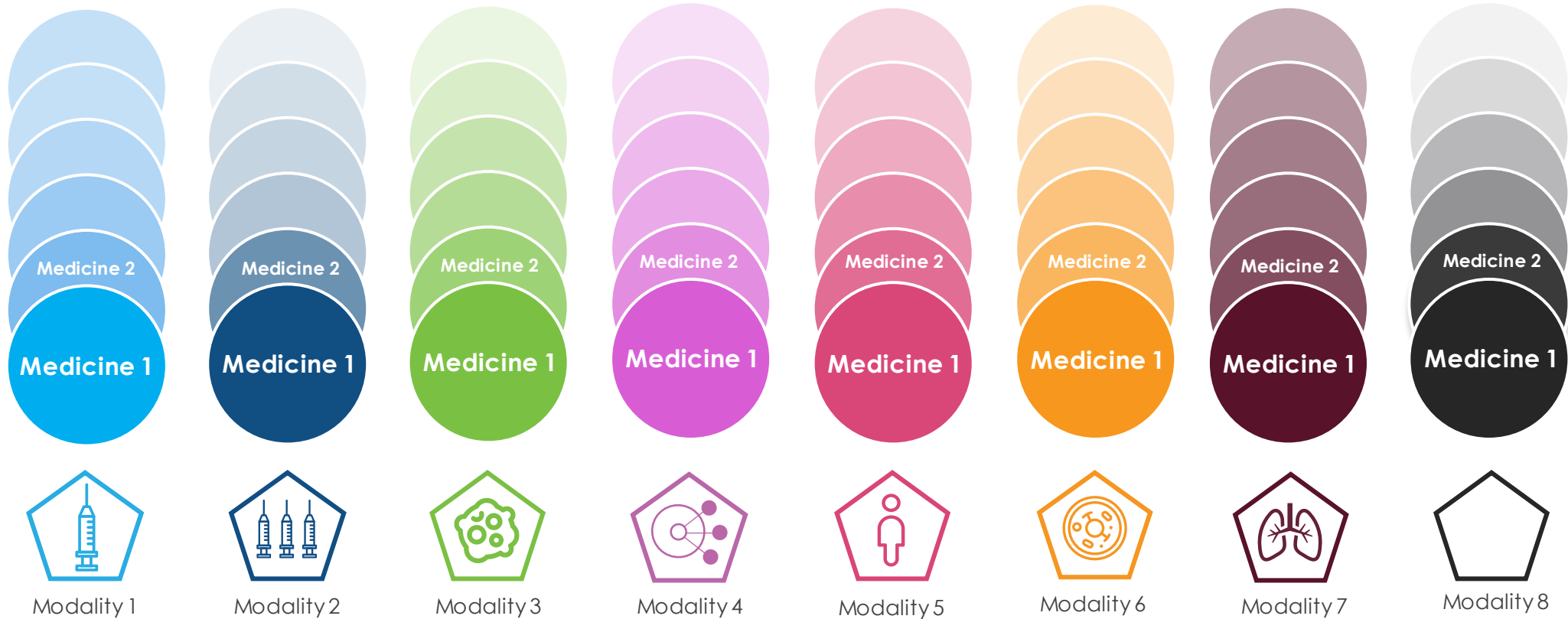
Main advantages of mRNA vs small and large molecules



- 1 Large product opportunity
- 2 Higher probability of technical success
- 3 Accelerated research and development timelines
- 4 Greater capital efficiency over time vs. recombinant technology

Moderna's vision for harnessing the power of mRNA

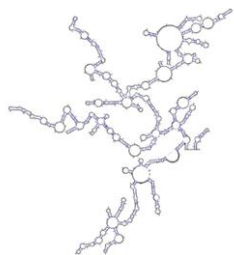
Invest in science to invent novel ways to deliver mRNA into various cell types – each will be a new application, which we call a modality



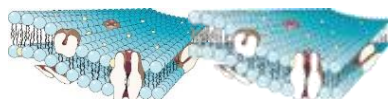
Inventing a new modality is difficult, time-consuming and expensive

Delivery

Because this...

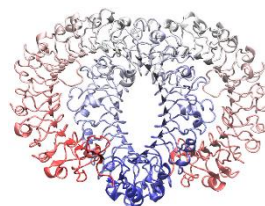


...has to sneak across this...

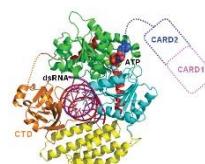


Immunity

...without triggering these...



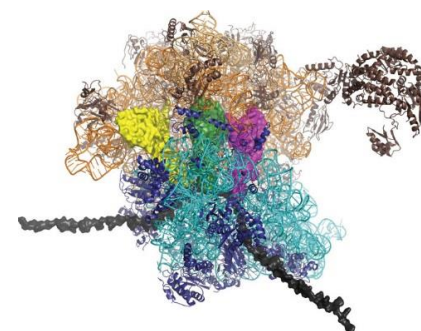
TLRs



RIG-I

Translation

...to engage with the most complex machine in nature and co-opt it to make a protein



Moderna is uniquely positioned: focused, critical mass in science, digitalized for speed and capital

Over the last decade Moderna has created 7 modalities, each with development candidates



**Infectious disease
vaccines**
Modality 1



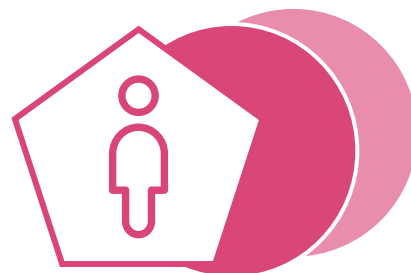
**Cancer
Vaccines**
Modality 2



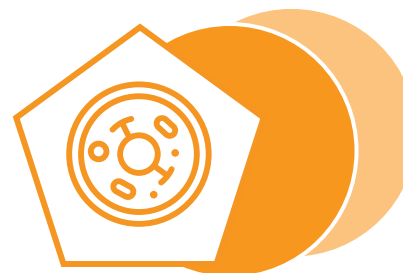
**Intratumoral
immuno-oncology**
Modality 3



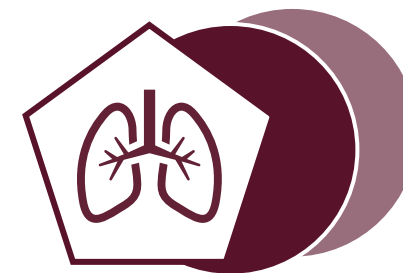
**Localized regenerative
therapeutics**
Modality 4



**Systemic secreted & cell
surface therapeutics**
Modality 5



**Systemic intracellular
therapeutics**
Modality 6

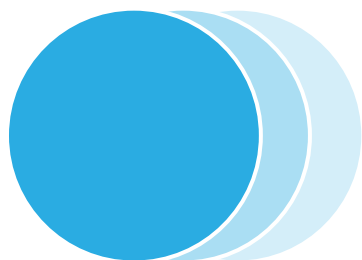


**Inhaled pulmonary
therapeutics**
Modality 7

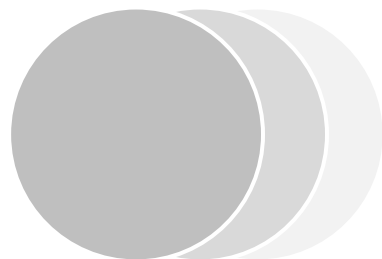


Infectious disease vaccines: significant opportunity to reduce healthcare burden from respiratory viruses

Respiratory viruses



Latent viruses



U.S. adults 65+

Respiratory Virus	Within Season Outpatient (Attack Rate per 1,000)	Annual Inpatient (Attack Rate per 1,000)	Inpatient Mortality	Any Approved Vaccine
SARS-CoV-2	110 ²	15.3 ³	21% ⁴	✓
Influenza (all) ¹	32	4.3	3.3%	✓
Respiratory syncytial virus (RSV) ¹	19	1.9	5.2%	✗
Human coronavirus (HCoV) ¹ excl. SARS-CoV-2	18	2.6	7.3%	✗
Human rhinovirus (HRV) ¹	12	5.9	3.2%	✗
Human metapneumovirus (HMPV) ¹	11	1.6	3.9%	✗
Parainfluenza viruses (PIV) ¹	7	1.5	4.9%	✗
Subtotal	209	33.1	~3-21%	

¹Sieling, William et al., *Influenza Other Respir Viruses* (2021), <https://doi.org/10.1111/irv.12842>

²Assumed that all cases are treated on an outpatient basis. Source: COVID-19 Weekly Cases and Deaths by age, Race/Ethnicity, and Sex. Public Health Surveillance. Dataset updated January 5, 2023. COVID-19 Weekly Cases and Deaths by Age, Race/Ethnicity, and Sex | Data | Centers for Disease Control and Prevention (cdc.gov)

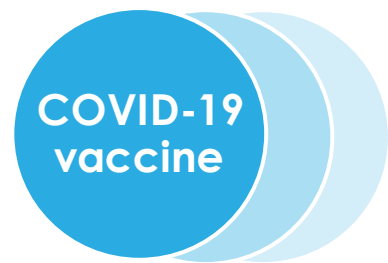
³COVID-19-Associated Hospitalization Rates (per 100,000 population) in 2022 for the COVID-NET Network (downloaded on Jan-06-2023). <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalization-network>

⁴Di Fusco, M., et al. (2021). "Health outcomes and economic burden of hospitalized COVID-19 patients in the United States." *Journal of medical economics* 24(1):308-317

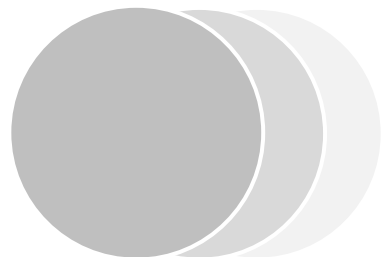


COVID first approved respiratory infectious disease vaccine

Respiratory viruses



Latent viruses



- 1 **2022 COVID vaccine sales of ~\$18.4B¹**
- 2 **2023 COVID vaccine sales floor of ~\$5B** from confirmed Advance Purchase Agreements and 2022 contract deferrals
- 3 **Potential additional contracts** in United States, Europe, Japan and other countries

¹Unaudited financial result; does not include other sources of revenue

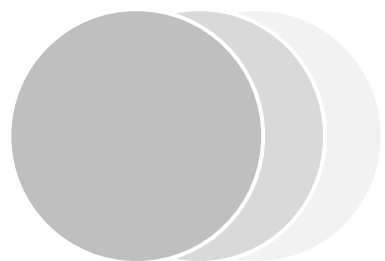


RSV Phase 3 trial has reached required number of cases for first interim efficacy analysis

Respiratory viruses



Latent viruses

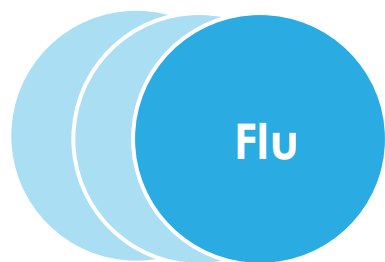


- 1 **Pivotal Phase 3 RSV efficacy study** in older adults (60+) has enrolled 36,604 participants
- 2 Primary endpoints are **safety and vaccine efficacy**
- 3 The Phase 3 RSV study has **now accrued the cases required (64 confirmed cases with 2+ symptoms accrued, minimum of 42 required) to complete our first interim efficacy analysis**

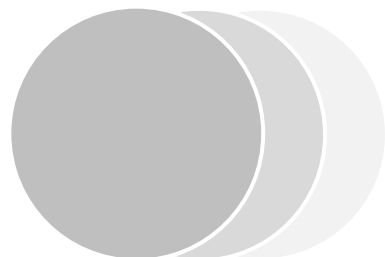


Two ongoing Phase 3 flu studies, expecting Southern Hemisphere immunogenicity results in 1Q23

Respiratory viruses



Latent viruses

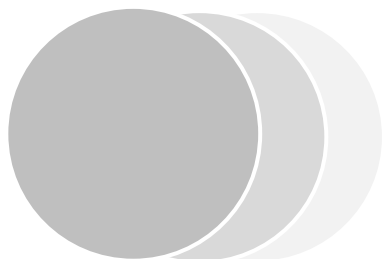


- 1 mRNA-1010 Southern Hemisphere immunogenicity study**
in adults (18+) is fully enrolled (6,000 participants).
Readout expected in 1Q23
- 2 mRNA-1010 Northern Hemisphere efficacy study**
in older adults (50+) is fully enrolled (22,510 participants).
Readout could come this winter depending on number
of cases accrued in the study and vaccine efficacy

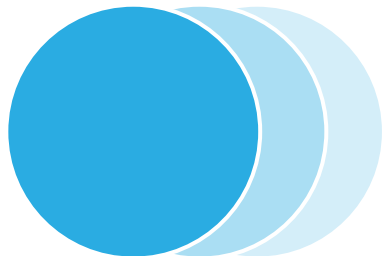


Latent viruses have short-term and long-term health impact

Respiratory viruses



Latent viruses



Virus	Associated disease conditions	Any Approved Vaccine
CMV	Leading infectious cause of birth defects (12-20K congenital CMV cases annually in the U.S. alone) ¹ Major driver of immune dysfunction with aging	✗
EBV	>160K deaths attributed to EBV-related malignancies (2017) ² Major driver of Multiple Sclerosis risk (>30x increase)	✗
HIV	Cause of AIDS, resulting in approximately 700,000 deaths worldwide annually (2020) ³ Developing vaccines with IAVI, NIAID, and Gates Foundation	✗
HPV	Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) in the United States ⁶	✓
HSV	HSV-2 establishes life-long latent infections within sensory neurons from which it can reactivate, leading to genital herpes Globally, ~5% of the population in the 18-49 range is HSV-2 seropositive ⁴	✗
VZV	Declining immunity in older adults leads to reactivation of the virus from latently infected neurons, causing painful and itchy lesions Herpes Zoster occurs in 1 out of 3 adults in the U.S. in their lifetime ⁵	✓

(1) Lanzieri, Tatiana, CDC, <https://www.hhs.gov/sites/default/files/2018-9-13-nvac-exploringthepipeline-cmvvaccines.pdf>

(2) Khan, Gulfaraz et al., *BMJ Open* (2020), <https://doi.org/10.1136/bmjopen-2020-037505>

(3) Global HIV/AIDS epidemic, <https://www.hiv.gov/hiv-basics/overview/data-and-trends/global-statistics>

(4) Looker et al, *BMJ Global Health* (2020), <https://doi.org/10.1136/bmjgh-2019-001875>

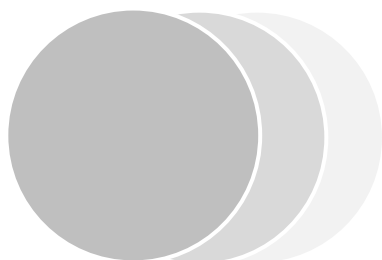
(5) CDC, Shingles, <https://www.cdc.gov/shingles/about/index.html>

(6) <https://www.cdc.gov/std/hpv/stdfact-hpv.htm>

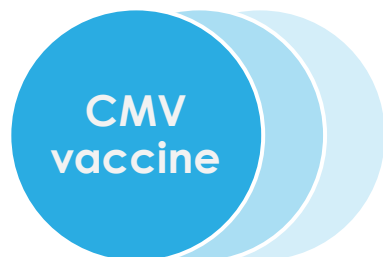


CMV is a large unmet need in women of childbearing age; Phase 3 CMV trial is ongoing

Respiratory viruses



Latent viruses



- 1 Cytomegalovirus (CMV) is a common infection and is the leading cause of birth defects in the US.** About 1 out of every 200 infants in the US are born with congenital CMV infection¹ (12-20K congenital CMV cases annually in the U.S. alone)²
- 2 Phase 3 CMVictory trial is ~40% enrolled.**
Now also enrolling in Japan
- 3 CMV is a \$2-5 billion opportunity with no approved vaccine on the market**

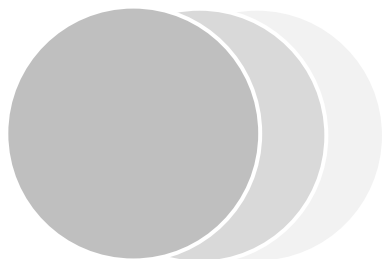
(1) <https://www.cdc.gov/cmvp/clinical/congenital-cmv.html>

(2) Lanzieri, Tatiana, CDC, <https://www.hhs.gov/sites/default/files/2018-9-13-nvac-exploringthepipeline-cmvvaccines.pdf>

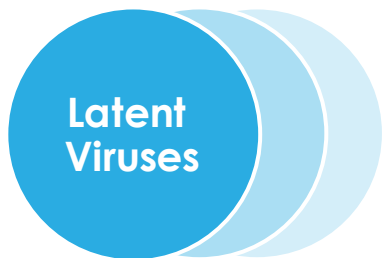


Moderna is currently developing five vaccines against latent viruses, each representing multi-billion-dollar market opportunities

Respiratory viruses

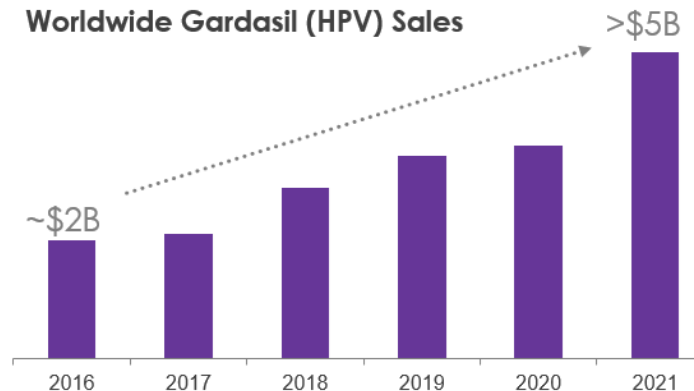


Latent
Viruses

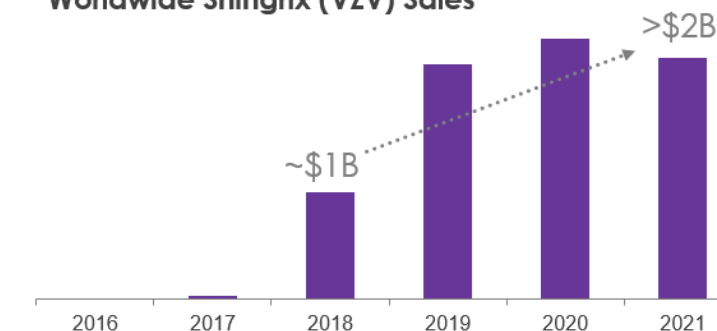


Latent Viruses	Moderna Program	Any Approved Vaccine
Cytomegalovirus (CMV)	mRNA-1647	✗
Epstein-Barr virus (EBV)	mRNA-1189	✗
Herpes simplex virus (HSV)	mRNA-1608	✗
Varicella zoster virus (VZV)	mRNA-1468	✓
Human immunodeficiency virus (HIV)	mRNA-1644/-1574	✗

Worldwide Gardasil (HPV) Sales



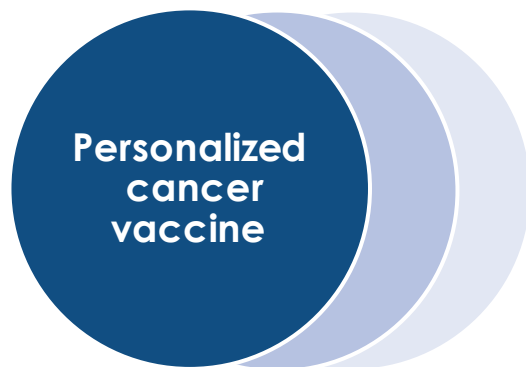
Worldwide Shingrix (VZV) Sales



Source: Evaluate Pharma



mRNA personalized cancer vaccine in combination with Keytruda met primary efficacy endpoint in Phase 2b study



- 1 mRNA-4157/V940 in combination with KEYTRUDA **reduced the risk of recurrence or death by 44% (HR=0.56 [95% CI, 0.31 - 1.08]; one-sided p value=0.0266)** compared with KEYTRUDA alone
- 2 Results are **the first demonstration of efficacy for an investigational mRNA cancer treatment** in a randomized clinical trial
- 3 Companies plan to discuss results with regulatory authorities and **initiate a Phase 3 study in melanoma in 2023 and rapidly expand to additional tumor types**



Phase 1 trial in Chronic Heart Failure has dosed its first patients



Relaxin

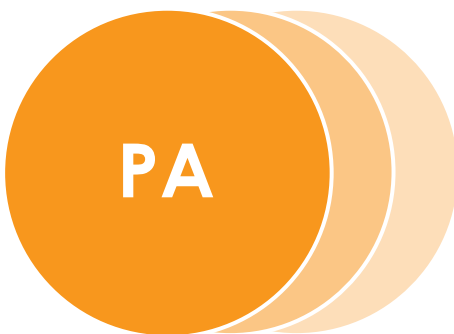
- 1 In the US, Chronic Heart Failure accounts for **~1 million hospitalizations annually**
- 2 **Relaxin (human relaxin-2) is a naturally occurring hormone**, which is known to cause hemodynamic changes that potentially are beneficial in heart failure
- 3 **mRNA-0184 encodes Relaxin protein attached to VLK**, which extends the half-life of the protein – this longer half-life may result in more durable effects compared to previous approaches. **We have initiated a Phase 1 SAD/MAD trial, with the first patients dosed**



Encouraging Phase 1/2 data in rare disease indication PA

As of last clinical update (September 8th, Moderna R&D Day)

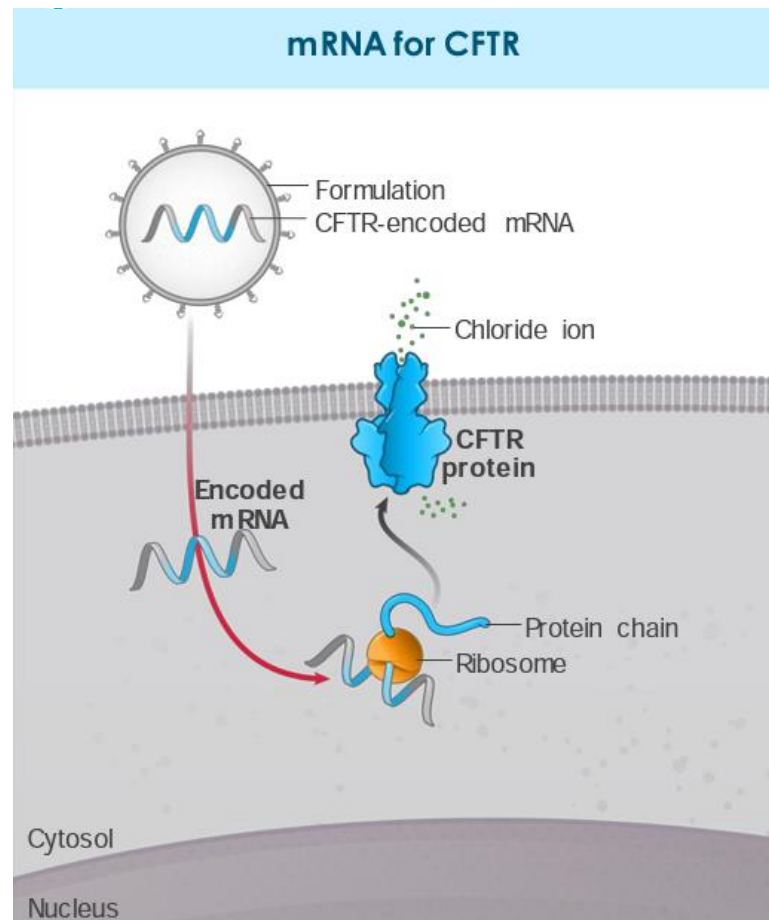
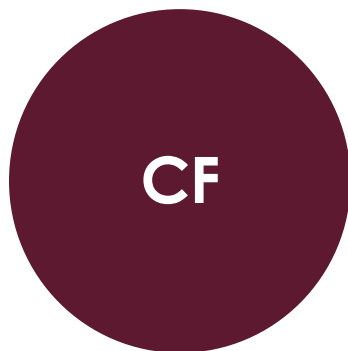
Rare Diseases



- 1 6 patient-years of experience on drug and **all participants eligible have decided to continue on Open Label Extension (OLE) Study**
- 2 Generally **well-tolerated to date**
- 3 Encouraging data shows **decrease in the number of metabolic decompensation events (MDEs)**; initial discussions with regulators supportive of MDE as primary endpoint for a pivotal study



First inhaled pulmonary mRNA therapeutic program now in clinic



- 1 First collaboration between **Moderna and Vertex** to address Cystic Fibrosis
- 2 Partner Vertex has **initiated Phase 1 trial in Cystic Fibrosis with mRNA encoding for CFTR protein**; received Fast Track designation

Moderna as of January 2023

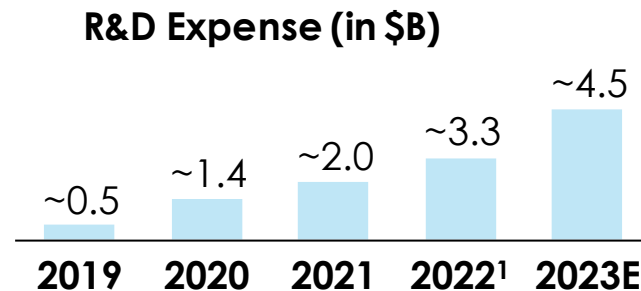
Pipeline	Commercial Moderna COVID-19 Vaccine/Spikevax®, mRNA-1273.222 and mRNA-1273.214	4 in Phase 3 COVID boosters, Flu, RSV, CMV	9 in Phase 2 PCV, Zika, PA, VEGF-A, next generation COVID boosters	48 development programs
Programs in development	Respiratory vaccines • COVID variant boosters (variant-specific and bivalents) • Older adults RSV; Pediatric RSV • Flu (mRNA-1010); Flu (mRNA-1020/-30) • Flu + COVID, flu + COVID + RSV and flu + RSV • hMPV + PIV3 • RSV + hMPV, Endemic HCoV	Latent vaccines • CMV • EBV • HIV • VZV • HSV	mRNA therapeutics 15 medicines in 4 therapeutic areas • 5 Immuno-Oncology • 7 Rare Diseases • 2 Cardiovascular Diseases • 1 Autoimmune Diseases	
Foundations	~3,900 employees ¹	 8th Consecutive year top employer by Science	16 commercial subsidiaries across North America, Europe and Asia Pacific	~\$18B of cash and investments (unaudited) ^{1,2}

1. As of December 31, 2022

2. Cash and investments denotes cash, cash equivalents and investments

I Moderna's capital allocation priorities

Reinvest in the business and accelerate investment in R&D, manufacturing infrastructure and company buildout



- **Phase 3 trials:** Flu, RSV, CMV & COVID boosters
- **Personalized Cancer Vaccine** investments
- **48 development programs**
- **Purchased priority review voucher**

Seek attractive external investment opportunities (licenses and/or M&A) to further expand the reach of Moderna's technology



¹Unaudited financial results

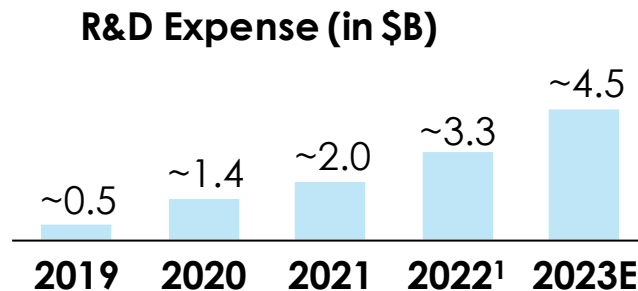
OriCiro Genomics acquisition improves DNA manufacturing capability



- 1 Novel development approach for plasmid DNA manufacturing that allows for cell-free, high-fidelity and rapid plasmid manufacturing amplification**
- 2 Industry standard today is E. coli-based DNA production, which comes with technical challenges**
- 3 Benefits of going cell-free include speed and scalability**

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- **Phase 3 trials:**
Flu, RSV, CMV & COVID boosters
- **Personalized Cancer Vaccine** investments
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- **Purchased priority review voucher**

Seek attractive external investment opportunities (licenses and/or M&A) to further expand the reach of Moderna's technology



Return capital to shareholders

- Repurchased 23 million shares for \$3.3 billion in 2022 (avg. price ~\$143/share)
- We have \$2.8 billion remaining capacity under the \$3.0B August authorization

¹Unaudited financial results

I We are accelerating the scale up of Moderna



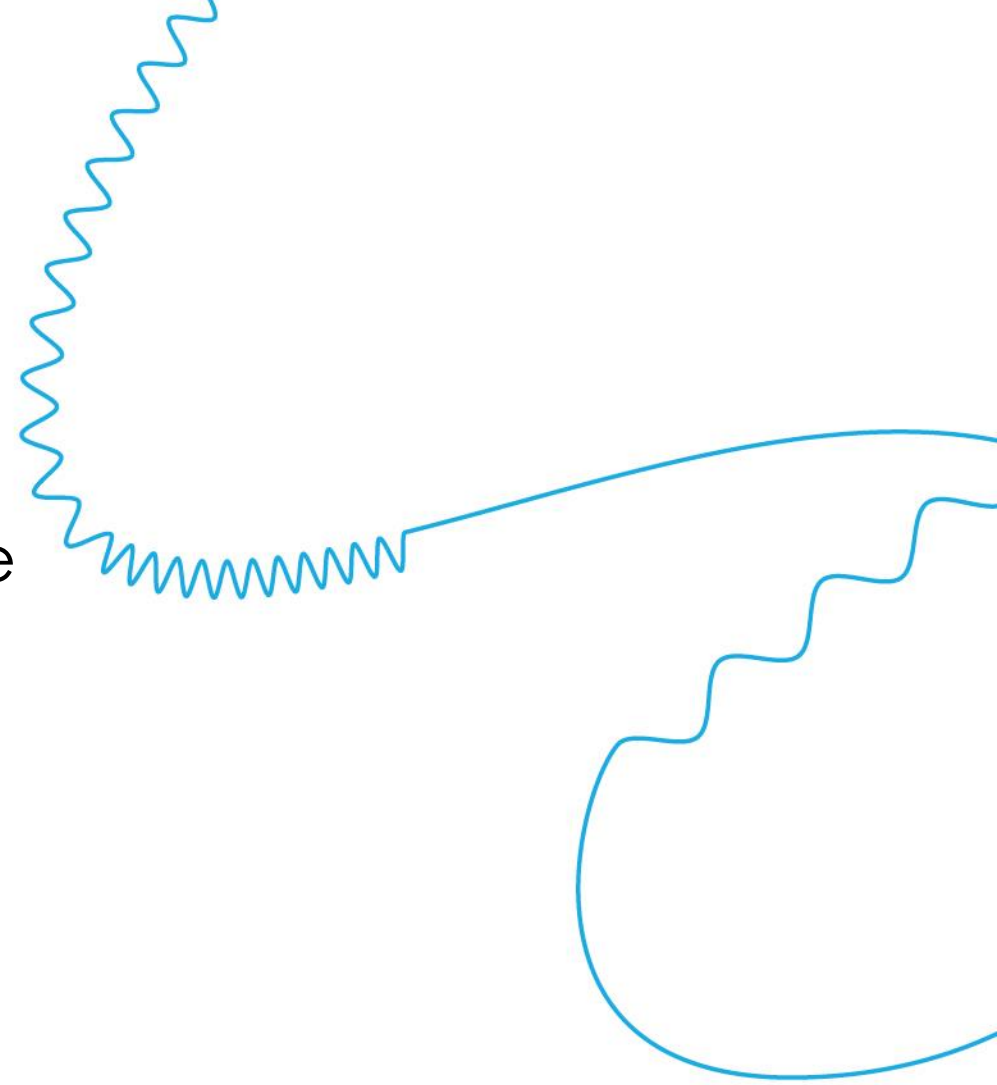
What will be our pipeline in 2024 or 2026?

¹Figure includes several development programs for mRNA-1273, mRNA-1273.214 and mRNA-1273.222 across adult, adolescent and pediatric indications

*Development programs at end of the indicated year

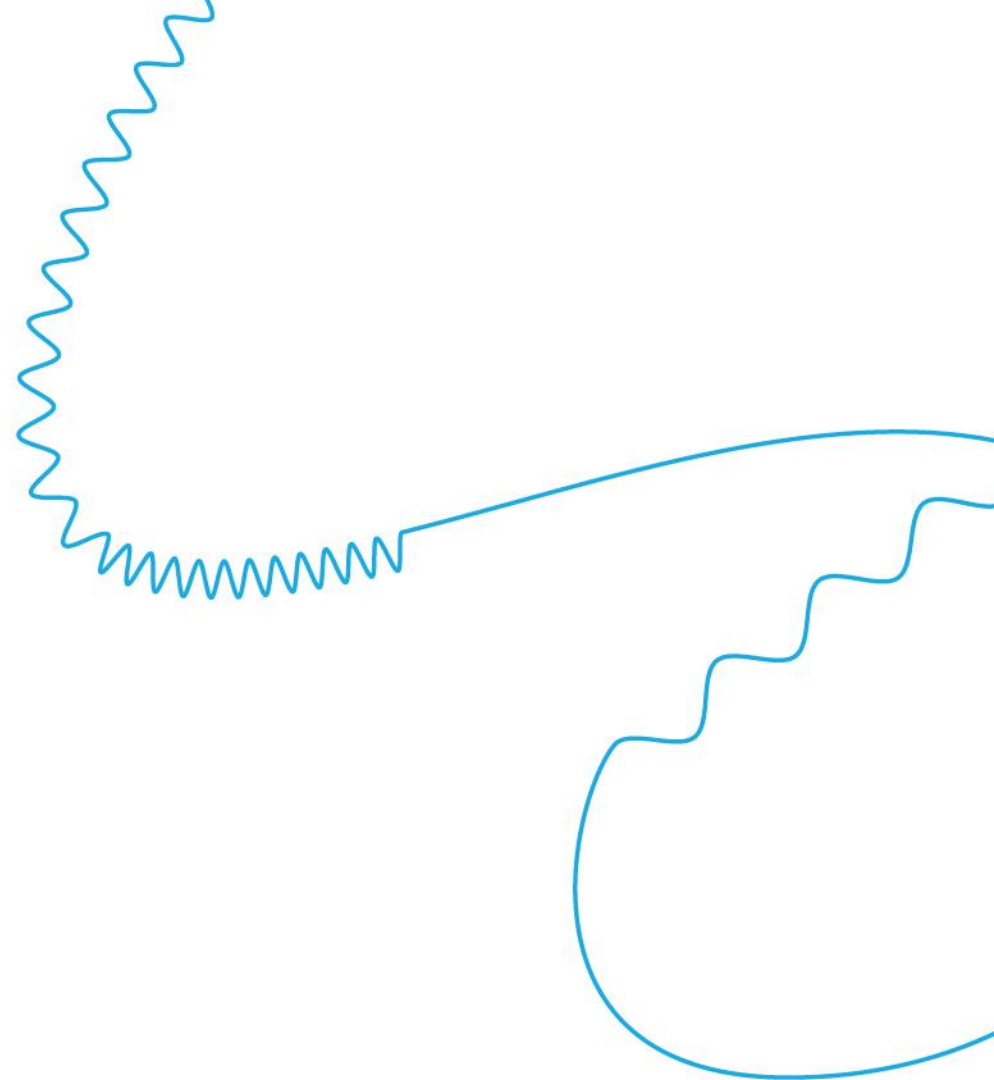
Our Original Mission

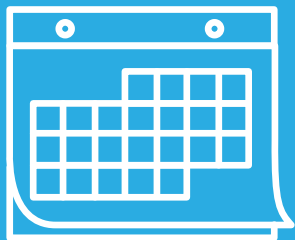
Deliver on the promise of mRNA science to create a new generation of transformative medicines for patients.



Our Mission

Deliver the greatest possible impact to people through mRNA medicines.





Save the Date

Events in 2023

> **Vaccines Day**

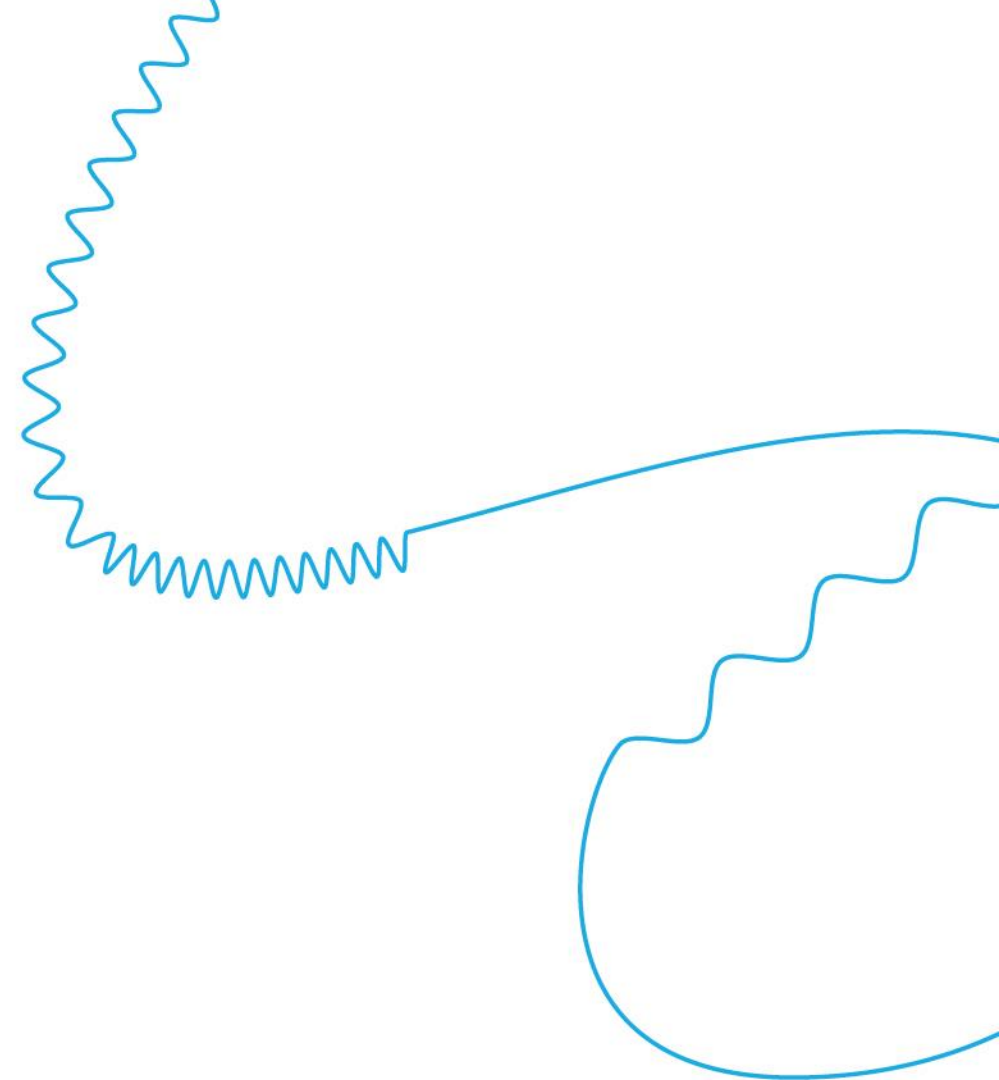
April 11th

> **R&D Day**

September 13th

> **ESG Day**

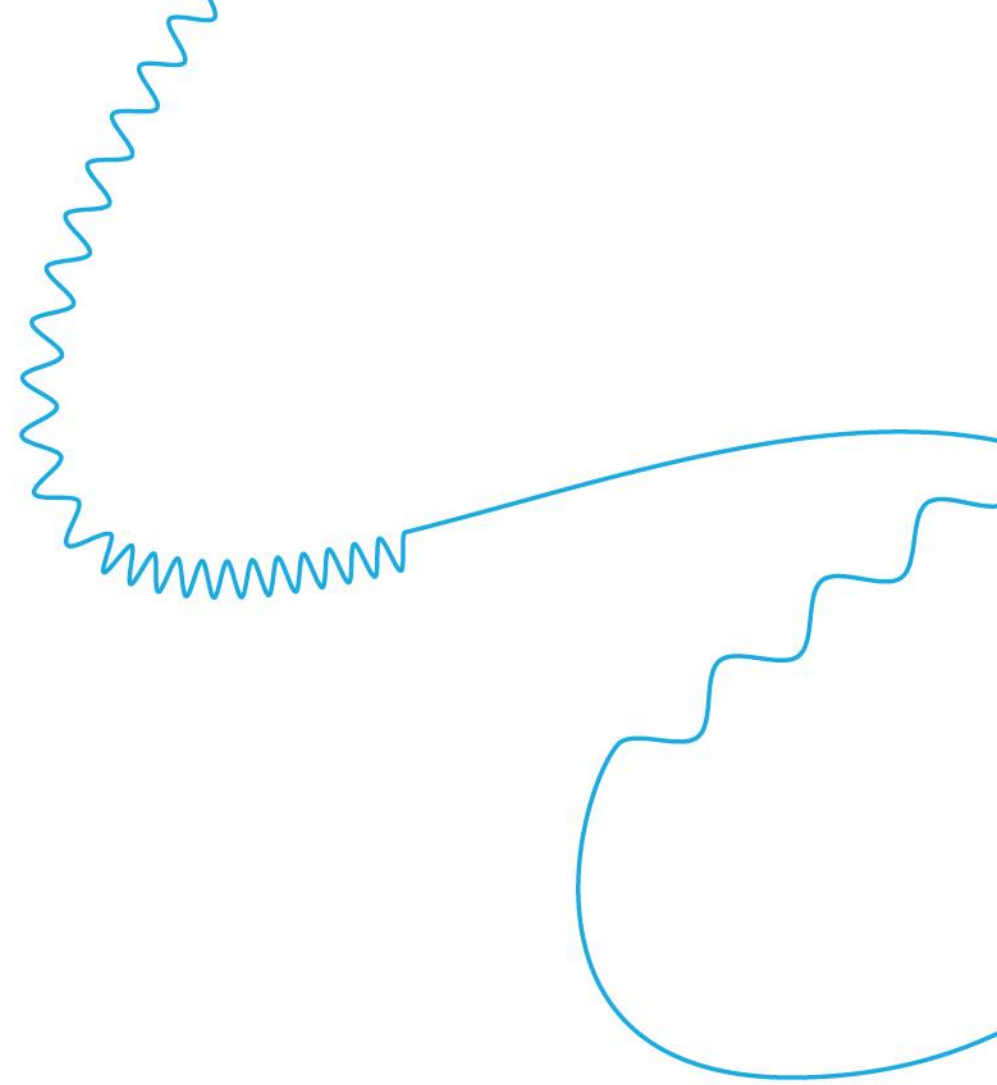
December 7th



Thank you

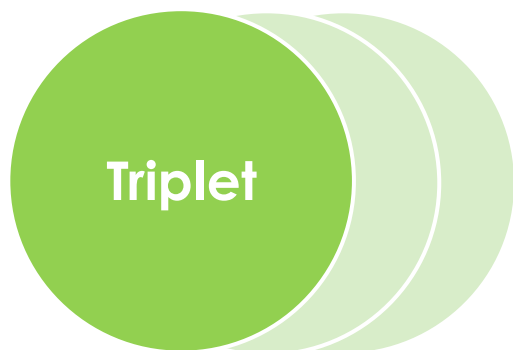


Appendix





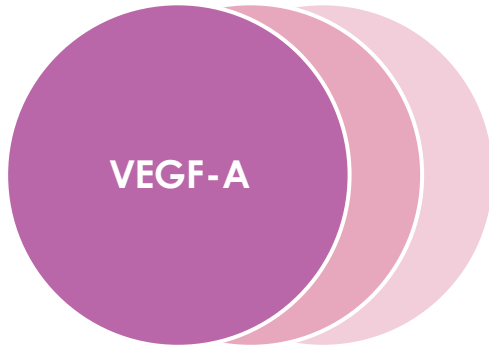
Intratumoral immuno-oncology: Local delivery of mRNA therapeutic targeting cancer cells



- 1 Moderna Triplet program, mRNA-2752, encodes for three proteins, OX40L/IL-23/IL-36γ, **which enhance expansion and proliferation of T cells response locally against tumor**
- 2 Data reported at *Society for Immunotherapy of Cancer (SITC)* in 2021 **showed tumor shrinkage in both injected and un-injected lesions as monotherapy and in combination with durvalumab**
- 3 Triplet (mRNA-2752) **is ongoing in a Phase 1 study in combination with durvalumab in multiple cancer types**



Locally administered mRNA encoding for VEGF-A to promote recovery of cardiac function through partial tissue regeneration



- 1 Coronary artery disease, **the primary cause of ischemic heart failure, affects the arteries providing blood supply to the cardiac muscle.** Coronary heart disease is the most common type of heart disease
- 2 **VEGF-A is a potent angiogenic factor that promotes growth of blood vessels**
- 3 **The EPICCURE study (Phase 2a) met the primary endpoint of safety and tolerability.** Results support further investigation in future larger clinical studies

moderna®

A horizontal dashed line consisting of ten short, white rectangular segments spaced evenly, positioned directly beneath the word 'moderna'.