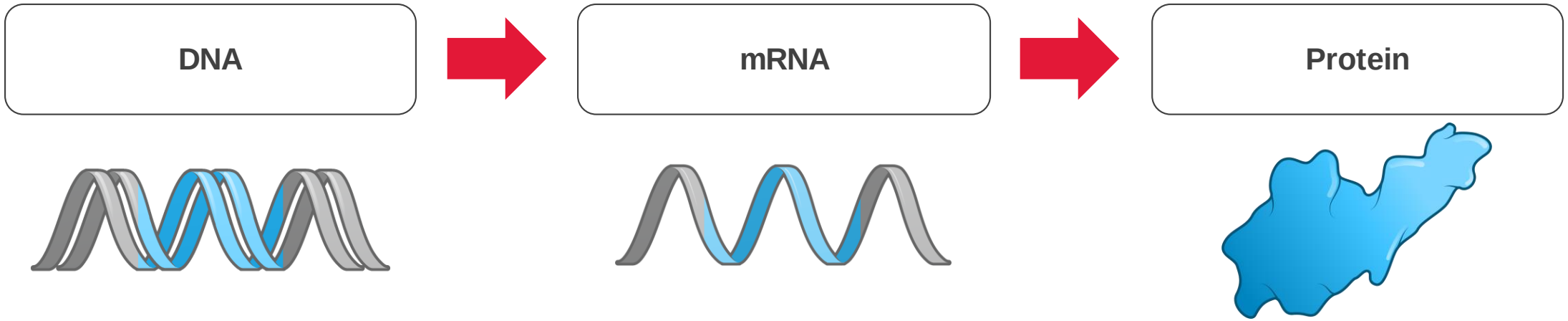
moderna®



Business Updates and First Quarter 2020 Financial Results

May 7, 2020

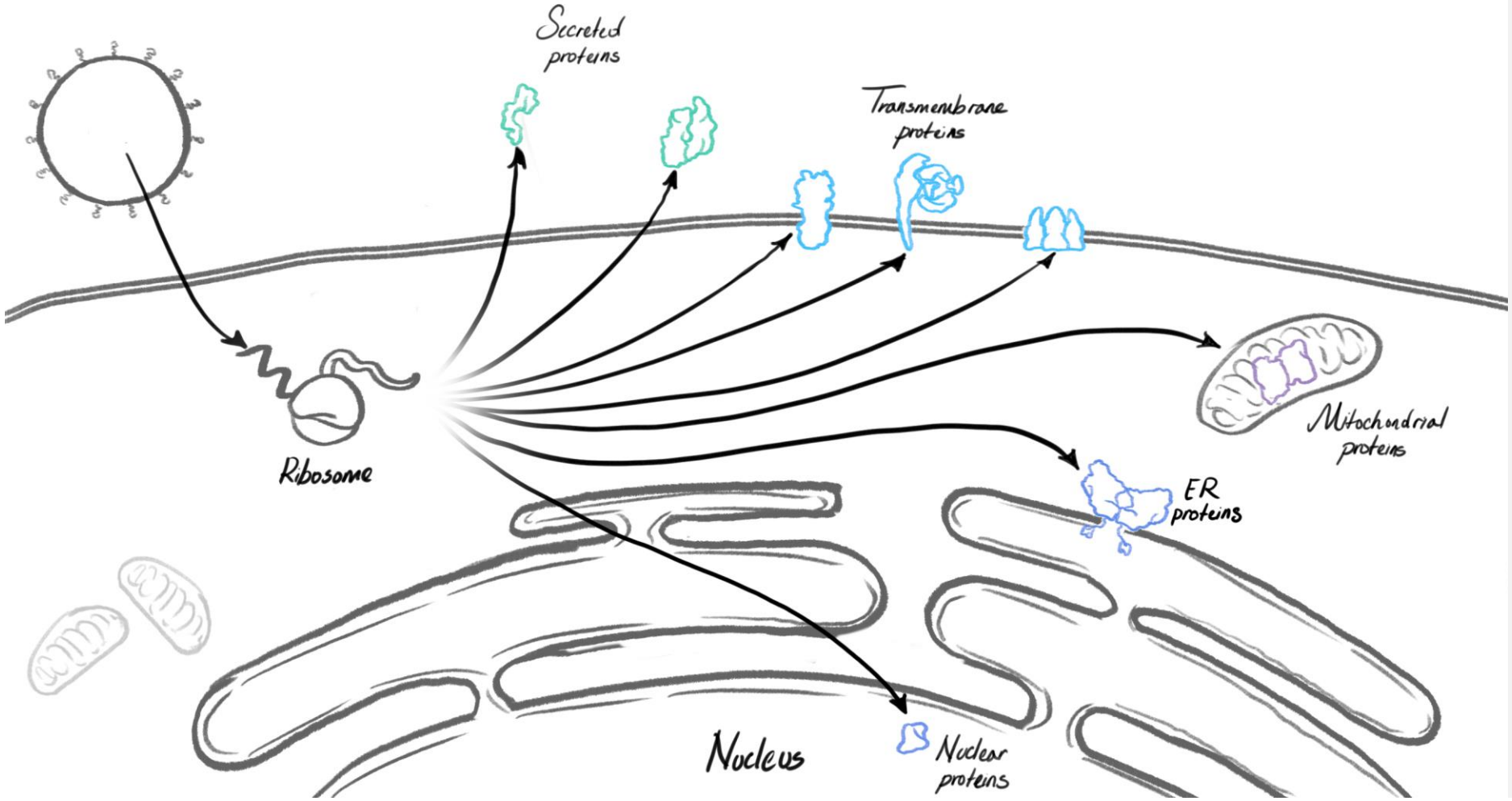
Forward-looking statements and Disclaimer

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended including, but not limited to, statements concerning: the impact of the SARS-CoV-2 pandemic on the Company's clinical trials and operations, including mRNA-1653; the status, timing and results of the Phase 1 trial of mRNA-1273 being conducted by the NIH; the timing of and proposed design for the planned Phase 2 study of mRNA-1273; the timing and proposed protocol for the planned Phase 3 study of mRNA-1273; the next steps, including the timing thereof, and ultimate commercial plan for mRNA-1273; the ability to scale dosing capacity for mRNA-1273, including pursuant to the strategic collaboration with Lonza; the size of the potential market opportunity for mRNA-1273; the timing and approval of a biologics license application for mRNA-1273 and our other development candidates; the timing and results of the Phase 2 dose confirmation study of mRNA-1647; the timing and estimated costs of the planned pivotal Phase 3 study of mRNA-1647 in women of childbearing age; the status, timing and results of the Phase 1 study of mRNA-1172 being conducted by MERCK; the timing and success of the Company's autoimmune therapeutic development candidates; the timing and success of the Company's other development candidates; the continuing success of the extended collaboration with Vertex; the size of the potential commercial market for novel vaccines produced by Moderna or others; the probability of success of the Company's vaccines individually and as a portfolio; the Company's expected net cash used in operating activities and for purchases of property and equipment in 2020; the Company's expectation regarding a general matching of expenses and reimbursements in 2020; the Company's expected cash runway based on its current cash and investments; and the ability of the Company to accelerate the research and development timeline for any individual product or the platform as a whole. In some cases, forward-looking statements can be identified by terminology such as "will," "may," "should," "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: whether the interim or final Phase 1 results for mRNA-1893 will be predictive of any future clinical studies for this or other development candidates with the same LNP formulation; the acceptance of the IND submitted by the NIH for the Phase 2 study of mRNA-1273; the Company's ability to hire and retain key employees; preclinical and clinical development is lengthy and uncertain, especially for a new class of medicines such as mRNA, and therefore our preclinical programs or development candidates may be delayed, terminated, or may never advance to or in the clinic; no mRNA drug has been approved in this new potential class of medicines, and may never be approved; mRNA drug development has substantial clinical development and regulatory risks due to the novel and unprecedented nature of this new class of medicines; the fact that the rapid response technology in use by Moderna is still being developed and implemented; the fact that the safety and efficacy of mRNA-1273 has not yet been established; despite having ongoing interactions with the FDA or other regulatory agencies, the FDA or such other regulatory agencies may not agree with our regulatory approval strategies, components of our or filings, such as clinical trial designs, conduct and methodologies, or the sufficiency of data submitted; the impact of the COVID-19 pandemic on the operation of the Company's clinical trials, preclinical work, and overall operations, including delays and inability to progress with certain clinical trials; potential adverse impacts due to the global COVID-19 pandemic such as delays in regulatory review, manufacturing and supply chain interruptions, adverse effects on healthcare systems and disruption of the global economy; and those risks and uncertainties described under the heading "Risk Factors" in Moderna's most recent Annual Report on Form 10-K 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 hereof.

This presentation also contains estimates, projections and other statistical data made by independent parties and by Moderna relating to market size and growth and other data about Moderna's industry. These data involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. Inaddition, projections, assumptions and estimates of Moderna's future performance and the future performance of the markets in which the Company operates are necessarily subject to a high degree of uncertainty and risk.

moderna

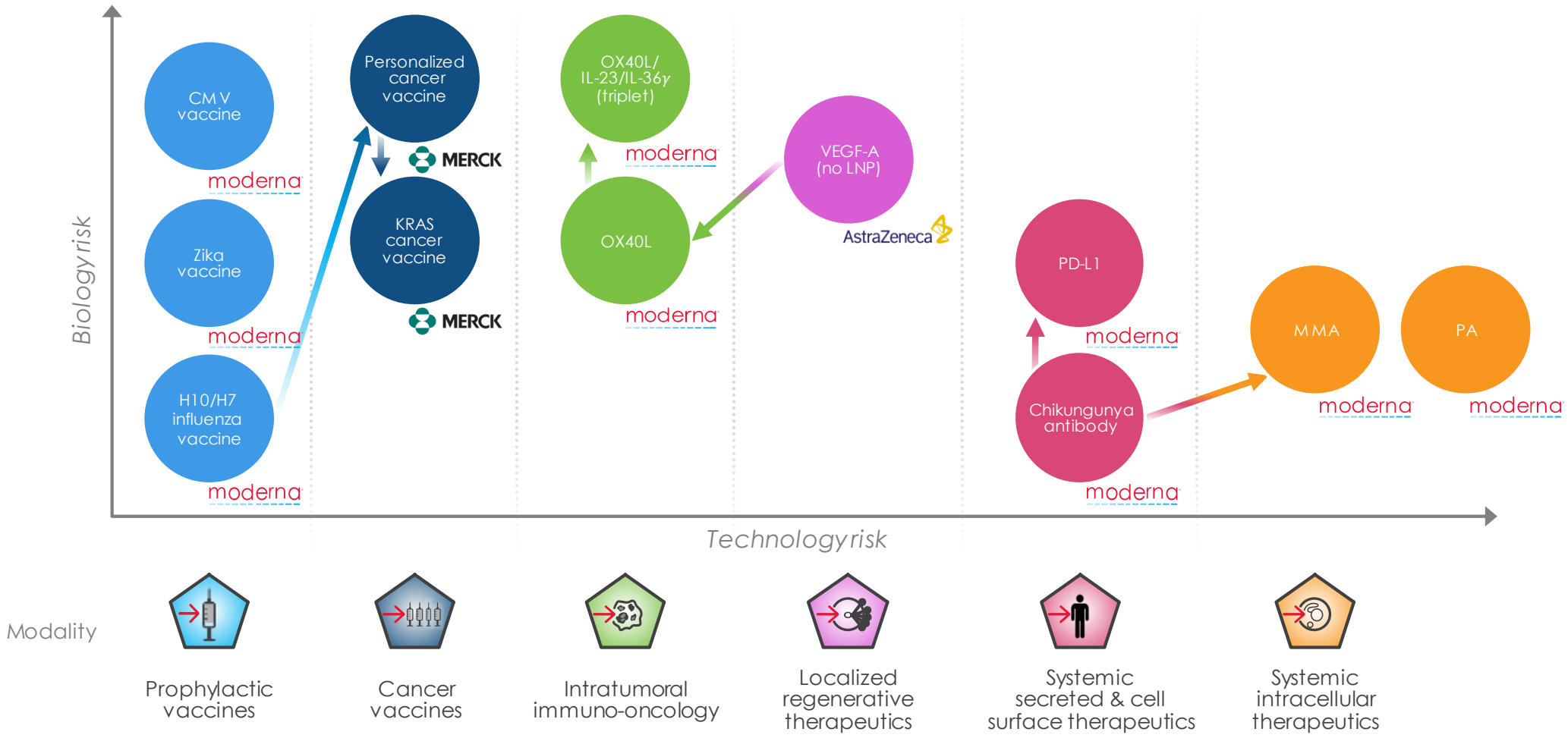
mRNA as a potential new class of medicines



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

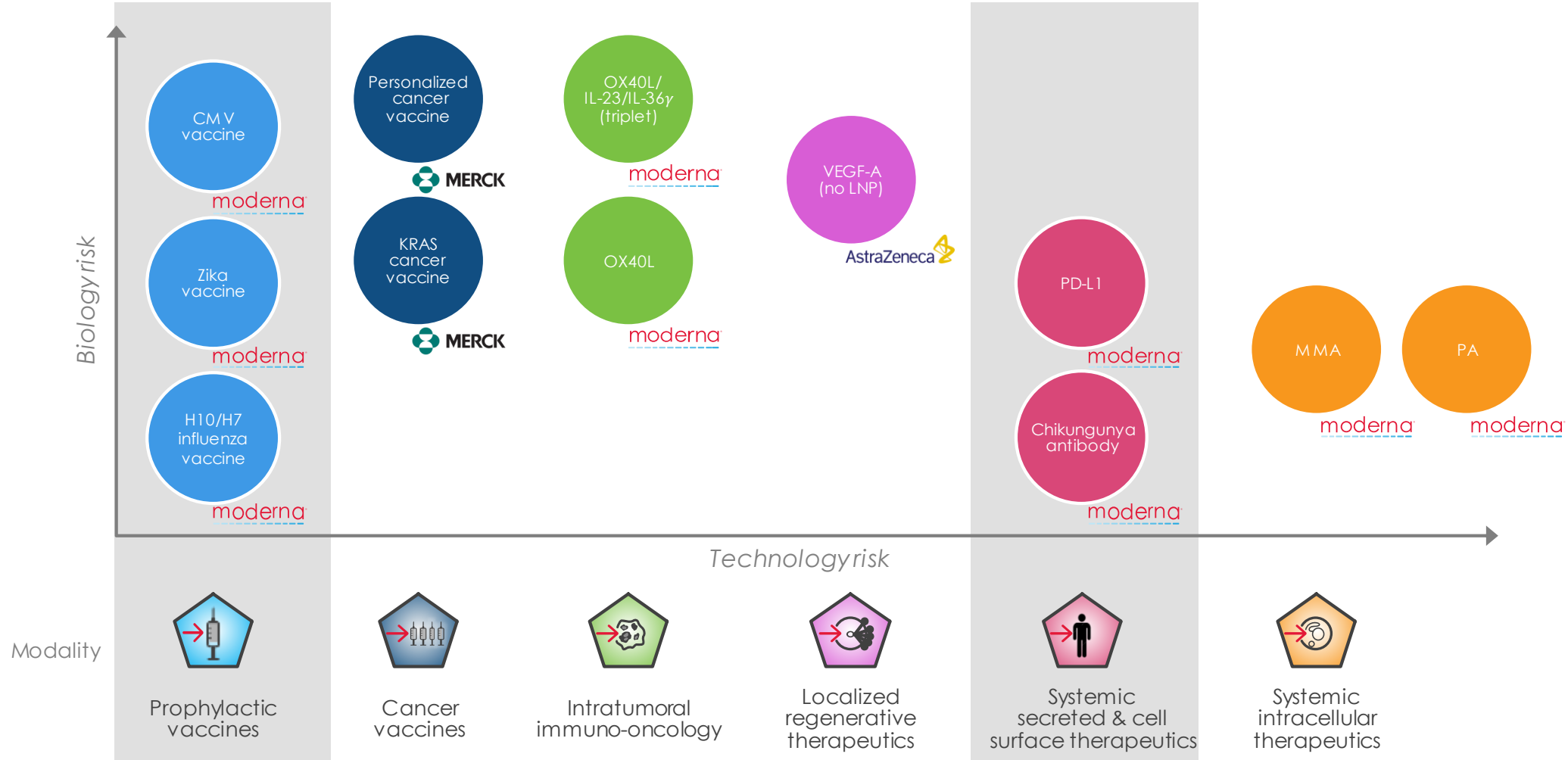
Risk management is essential to building a new class of medicines



moderna

2019 was an inflection year in Moderna's history

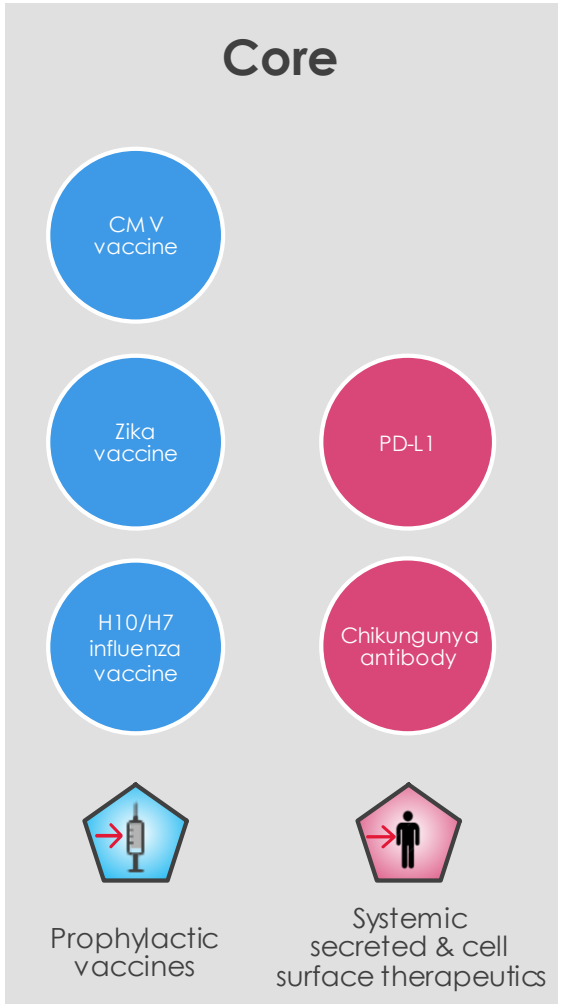
Our modality strategy

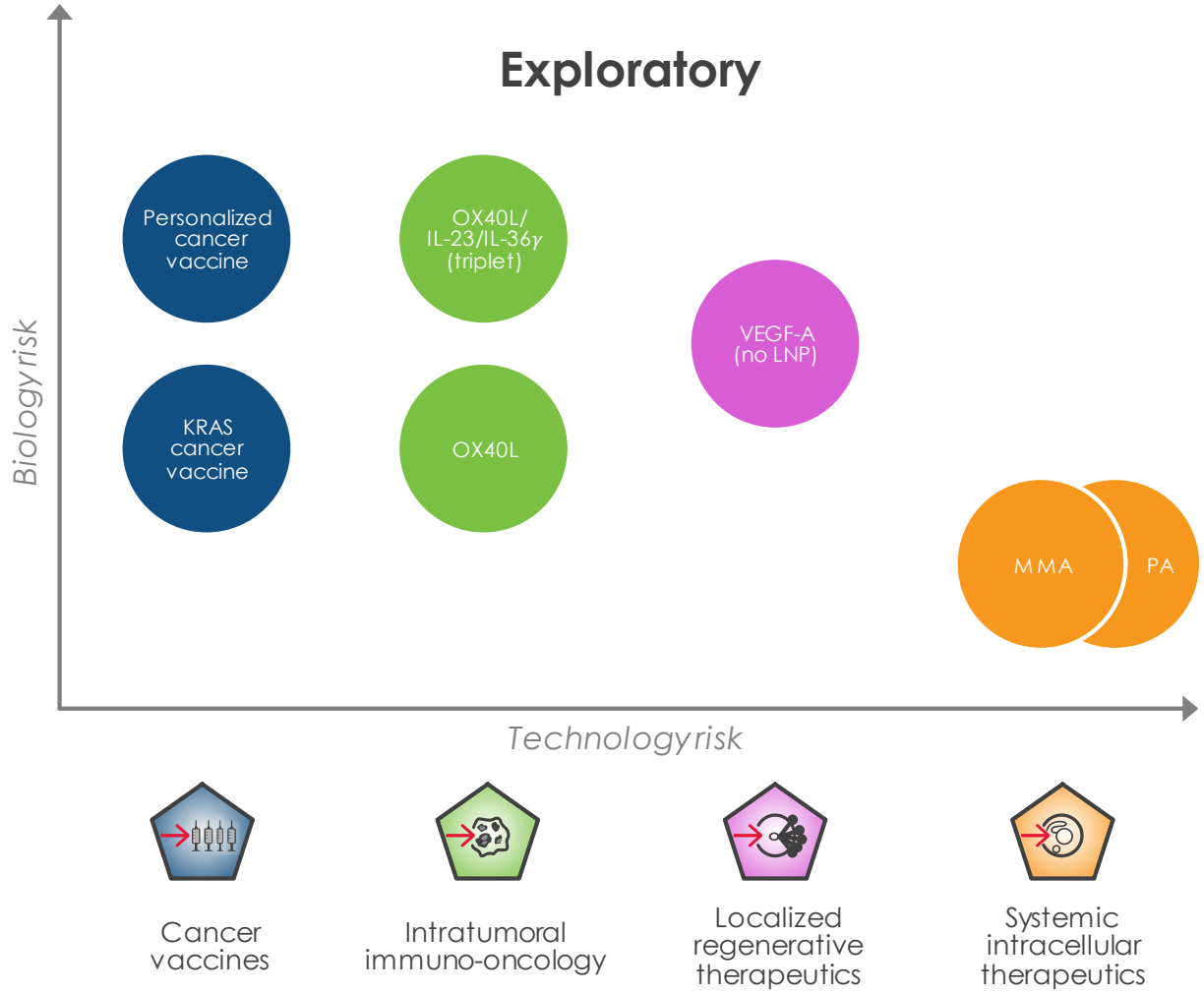


moderna

2019 was an inflection year in Moderna's history

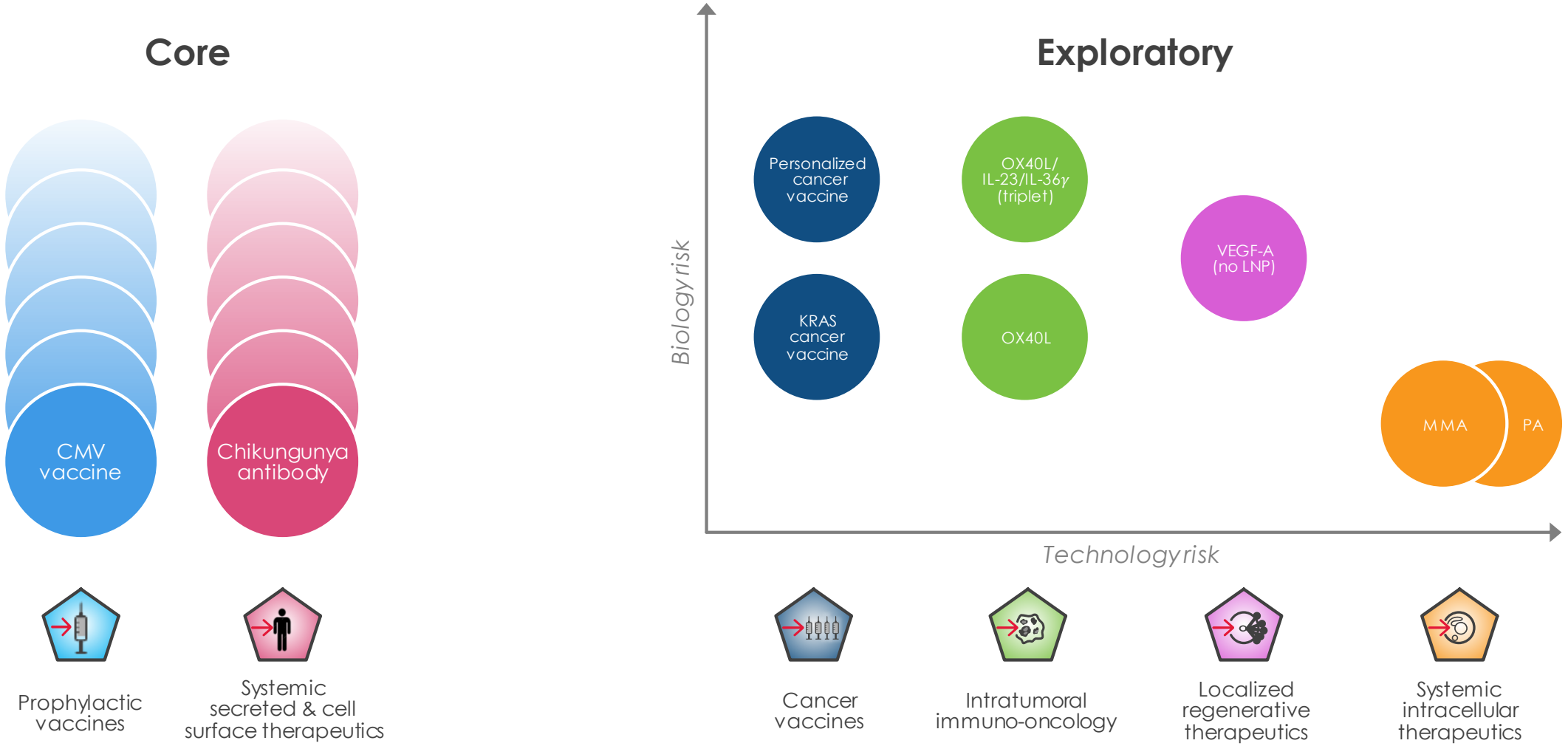
Our modality strategy





moderna

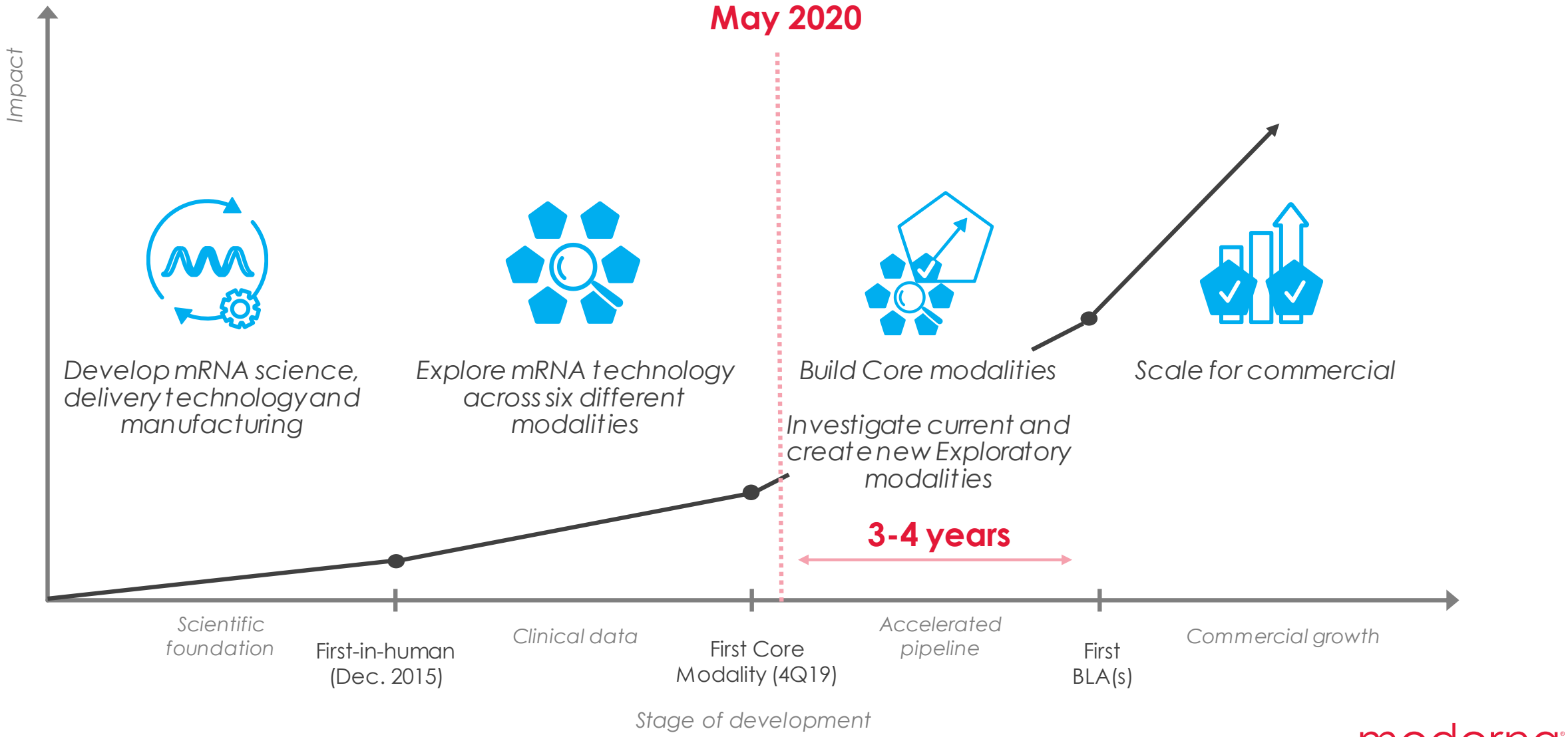
Expanding core modalities with additional development candidates



moderna

Progression towards a new class of medicines

Strategic plan presented in February 2020



moderna

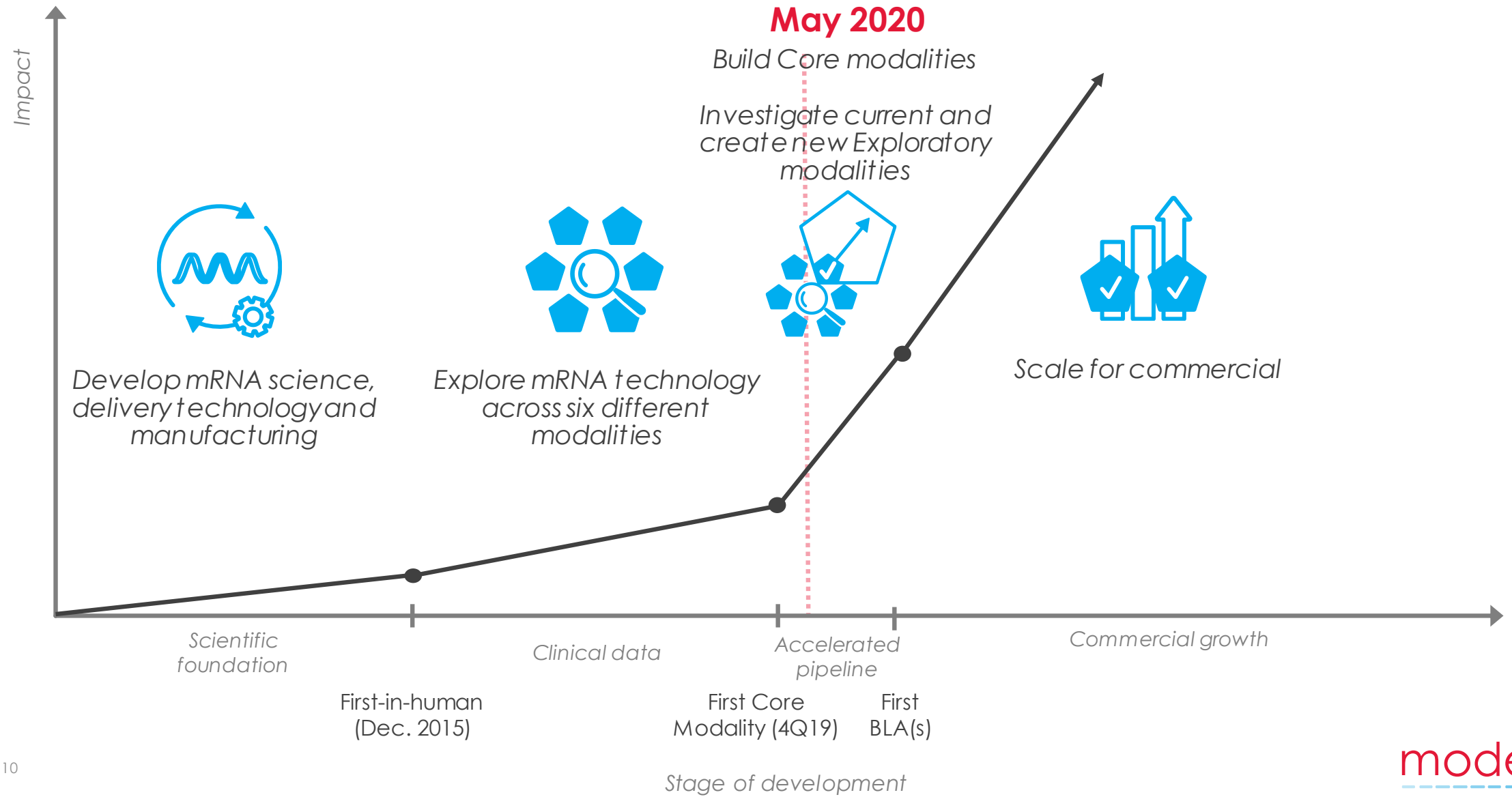
Major acceleration of Moderna's development

SARS-CoV-2 vaccine (mRNA-1273)

- **Phase 2 – FDA clearance to proceed with Phase 2 study on Wednesday, May 6th**
- **Phase 3 – Finalizing protocol for Phase 3 study, expected to begin in early summer 2020**
- **Potential biologic license application (BLA) approval for mRNA-1273 in 2021**

moderna

Progression towards a new class of medicines



moderna

New leadership additions

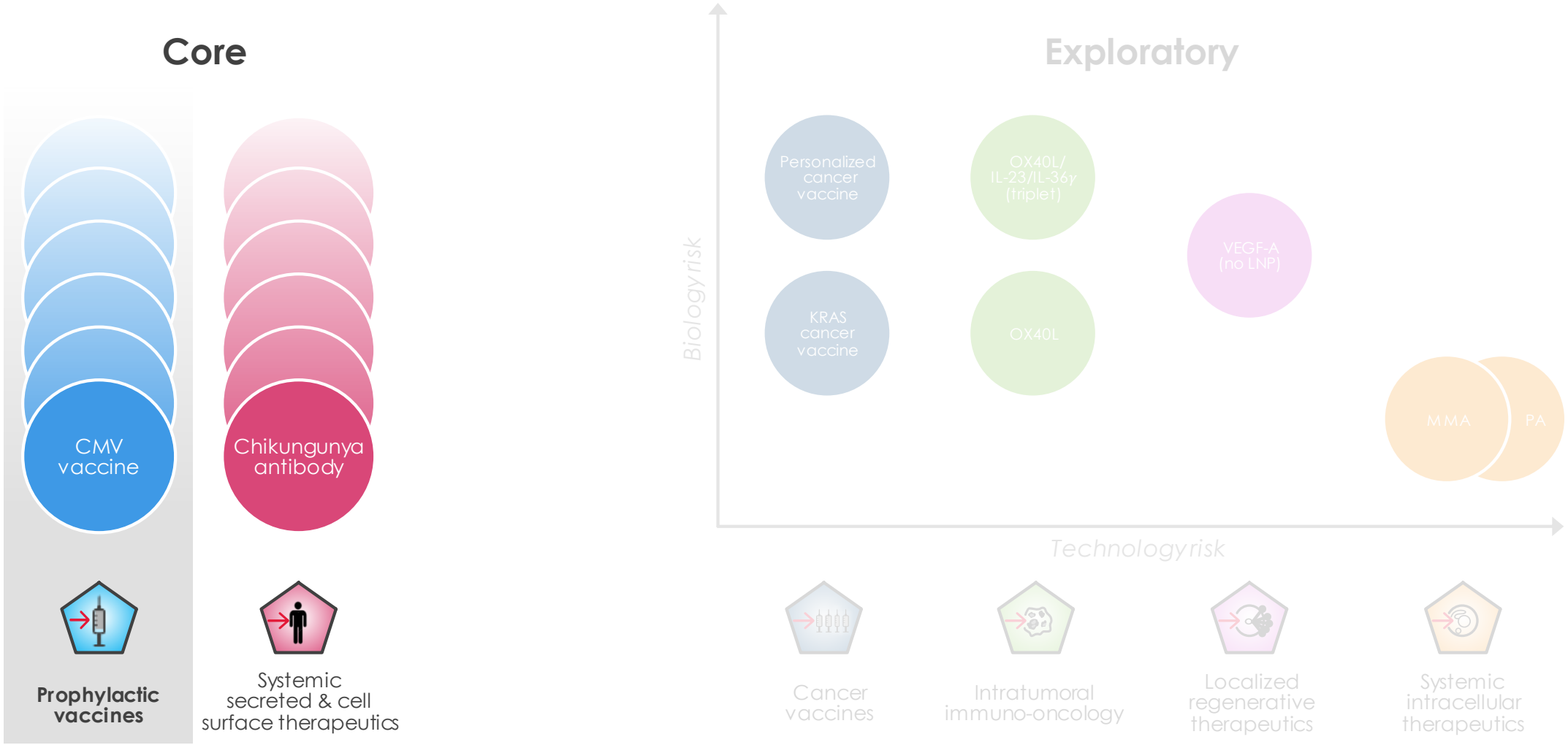
Patrick Bergstedt
SVP, Commercial Vaccines
Joining from Merck & Co.
Previously Head of Global Marketing & Commercial Operations: Vaccines

Jacqueline Miller, M.D., FAAP
SVP, Infectious Disease Development
Joining from GlaxoSmithKline
Previously Vice President and Head, Clinical R&D and Epidemiology

Charbel Haber, M.P.H., Ph.D.
SVP, Regulatory Affairs
Joining from Biogen
Previously Vice President, Global Safety and Regulatory Sciences

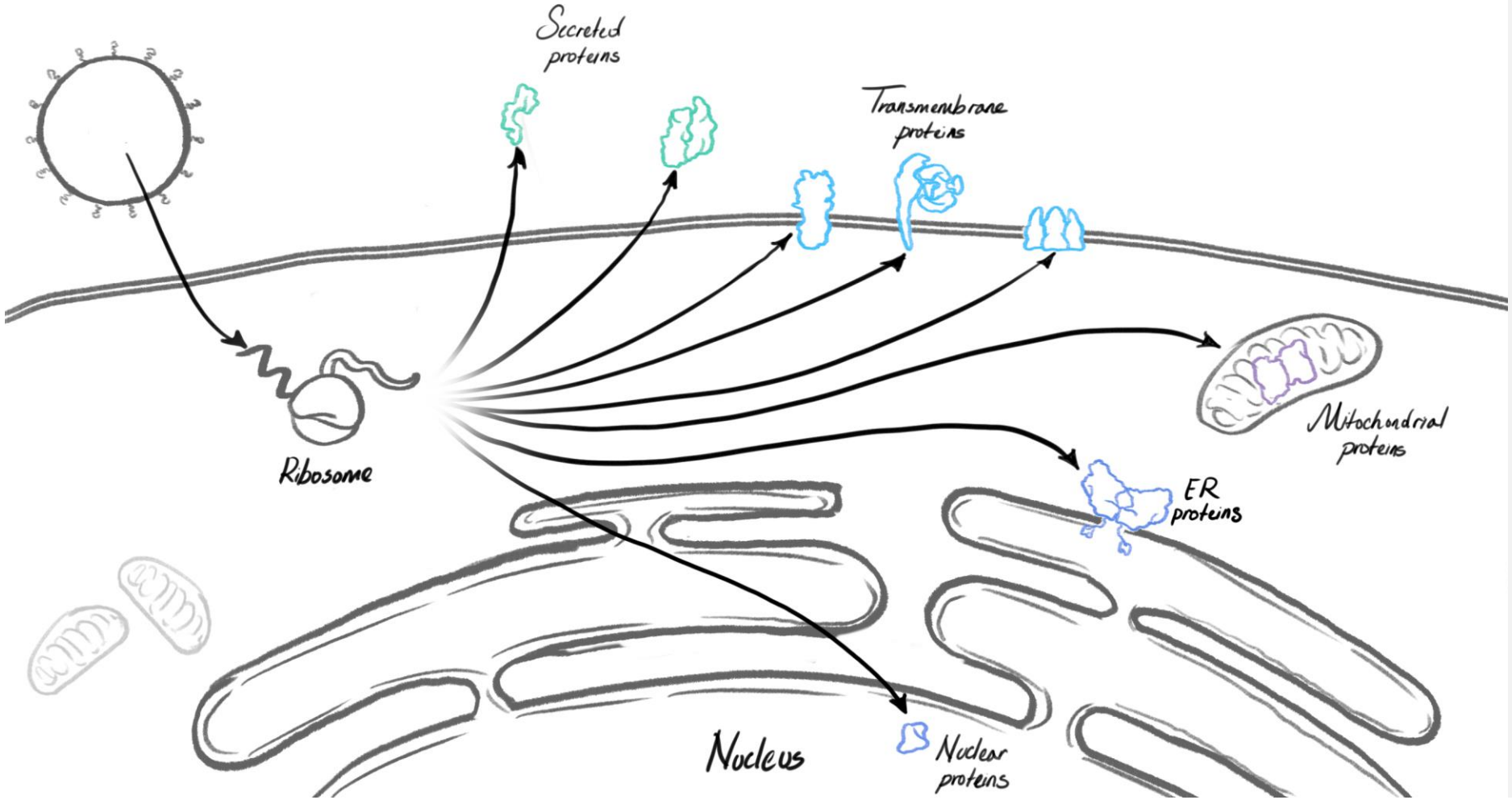
moderna

Core modality: Prophylactic vaccines



moderna

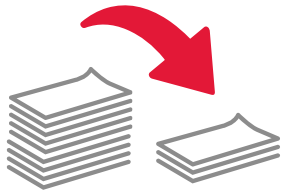
mRNA as a potential new class of vaccines



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

Evidence that the platform is delivering in vaccines

Large product opportunity	Higher probability of technical success	Accelerated research and development timelines	Greater capital efficiency over time (vs. recombinant)
			
Market opportunity	**Probability of success**	**Time requirements**	**Power of the platform**
Worldwide vaccine market was $35 billion in 2019, growing 9% a year[1]	Vaccines have highest overall POS to approval 42% from Phase 2 start to approval[2]	SARS-CoV-2 vaccine (mRNA-1273) Sequence to Phase 1 clinical trial in 63 days	Capex leverage across the value chain

1. Alliance Bernstein research report: Vaccines: The Robin Hood of Therapeutics – THE PRIMER on the oldest biotech drugs in the world (Feb 2020)
2. Chi Heem Wong, Kien Wei Siah, Andrew W Lo, Estimation of clinical trial success rates and related parameters, *Biostatistics*, Volume 20, Issue 2, April 2019, Pages 273–286

moderna

Moderna's vaccine franchise

FDA clearance to proceed with SARS-CoV-2 Phase 2 study

Safety	**>1,500 healthy volunteers enrolled in ten Phase 1 and one Phase 2 vaccine trials (dose levels up to 400µg); emerging safety & tolerability profile consistent with marketed adjuvanted vaccines[1]**
Immunogenicity	**We have observed neutralizing antibodies to viral antigens against all eight viruses for which we have had clinical trial readouts**

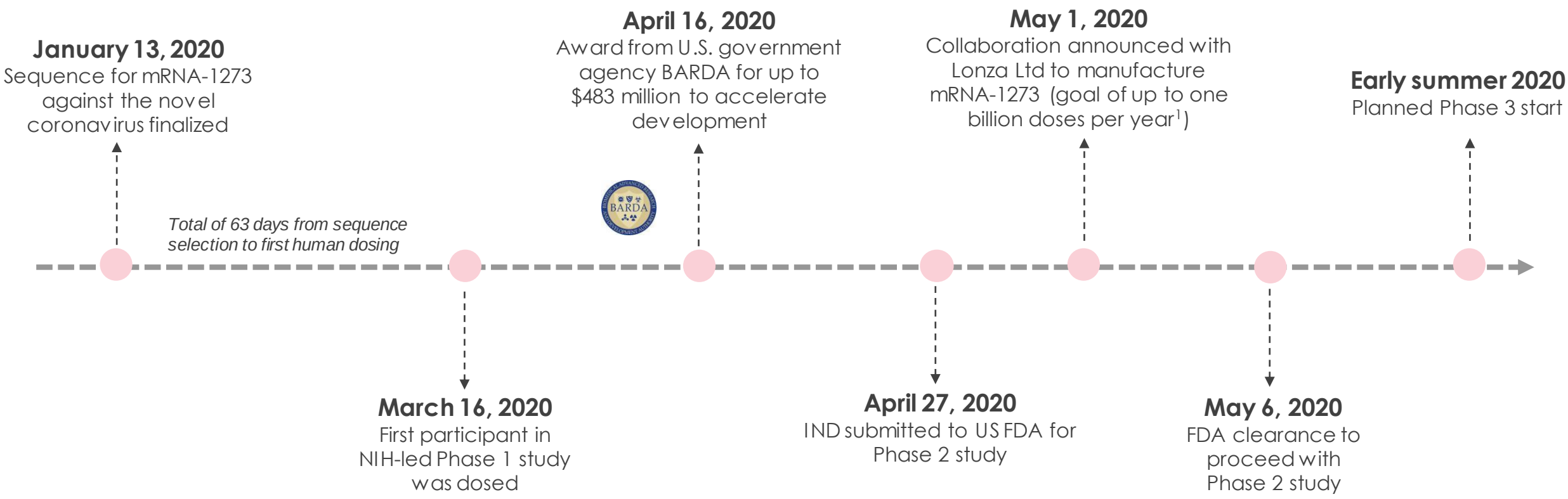
Clinical updates

- **SARS-CoV-2 (mRNA-1273):** NIH-led Phase 1 study has completed enrollment of 3 dose cohorts (25 µg, 100 µg and 250 µg); expanding to an additional 6 cohorts of older adults and elderly adults; FDA clearance to proceed with Phase 2 study
- **CMV (mRNA-1647):** Phase 2 dose confirmation study is fully enrolled; data readout expected 3Q20
- **Zika (mRNA-1893):** First interim analysis of Phase 1 study shows that 10 µg and 30 µg dose levels seroconverted 94% and 100% of seronegative participants, respectively; 100 ug and 250 ug dose cohorts fully enrolled
- **hMPV/PIV3 (mRNA-1653):** Phase 1b age de-escalation study enrollment suspended due to COVID-19 disruption
- **RSV (mRNA-1172/V172):** Phase 1 study led by Merck is ongoing

1. The most common adverse reactions in Moderna's Phase 1 clinical trials in Prophylactic Vaccines include injection site pain, headache, myalgia, and fatigue

Accelerated research and development

SARS-CoV-2 vaccine (mRNA-1273)



1. Assuming the currently expected dose of 50 µg

moderna

SARS-CoV-2 vaccine (mRNA-1273)

Phase 1 trial (run by the National Institutes of Health)

Key objective: To assess the safety, reactogenicity and immunogenicity of mRNA-1273

Study design: Phase 1, open-label dose ranging clinical trial in males and non-pregnant females, 18 to 55 years of age

- Forty-five subjects were enrolled into one of three cohorts (25, 100 and 250 µg)
- Subjects will receive an intramuscular (IM) injection (0.5 milliliter [mL]) of mRNA-1273 on Days 1 and 29 in the deltoid muscle and will be followed through 12 months post second vaccination (Day 394)

Primary endpoint:

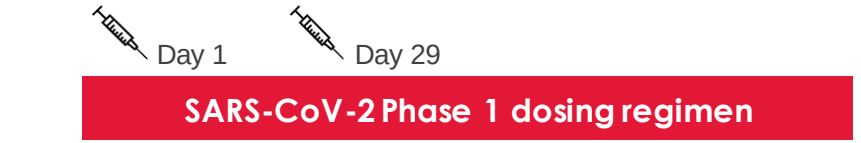
- Safety and reactogenicity of a 2-dose vaccination schedule of mRNA-1273, given 28 days apart, across 3 dosages in healthy adults

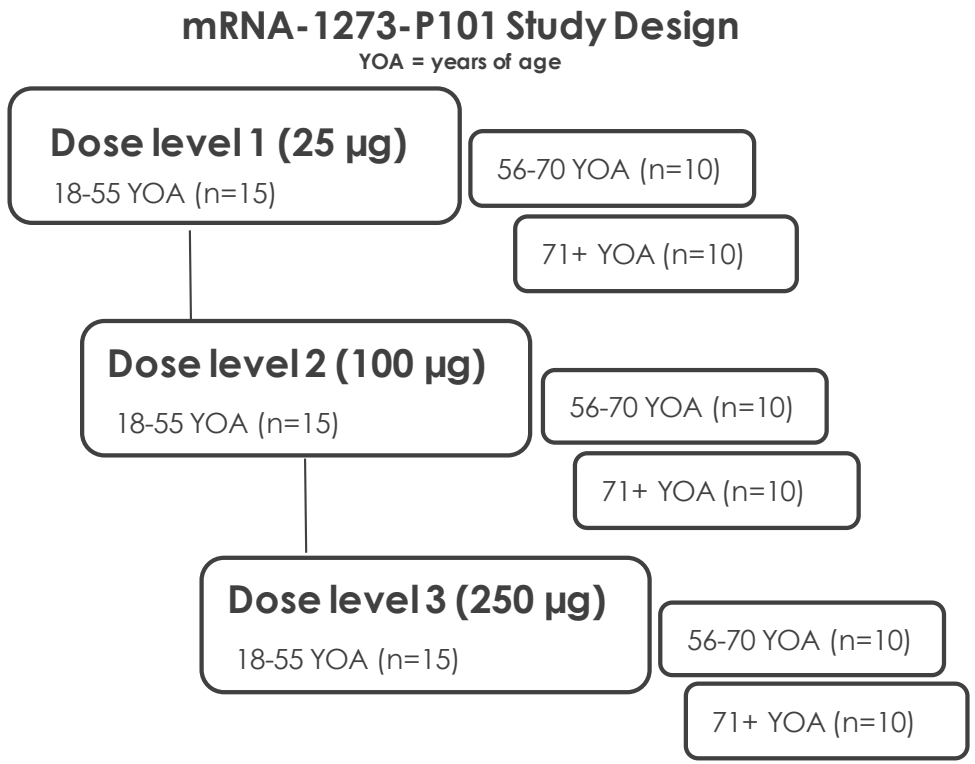
Secondary endpoint:

- Evaluate the immunogenicity as measured by IgG ELISA to the SARS-CoV-2 S protein following a 2-dose vaccination schedule of mRNA-1273 at Day 57

Trial progress/details:

- NIH-led Phase 1 study of mRNA-1273 has completed enrollment of 3 dose cohorts (25 µg, 100 µg and 250 µg); expanding to an additional 6 cohorts of older adults and elderly adults





moderna

Late stage development for SARS-CoV-2 vaccine (mRNA-1273)

Planned Phase 2 study

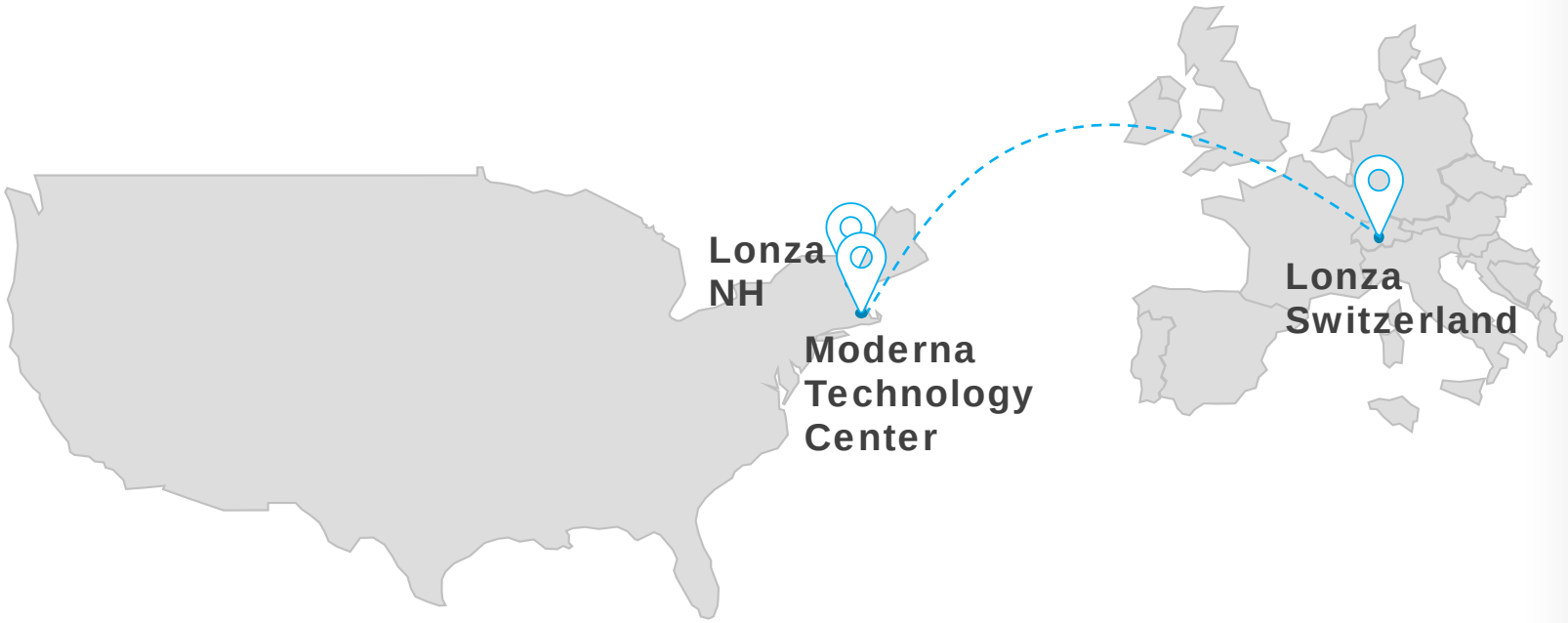
- Expected to begin in 2Q20
- Study will evaluate the safety, reactogenicity and immunogenicity of two vaccinations of mRNA-1273 given 28 days apart
- Subject to receive placebo, 50 µg or a 250 µg dose at both vaccinations
- 600 healthy participants; two cohorts of adults ages 18-55 years (n=300) and older adults ages 55 years and above (n=300)

Finalizing protocol for Phase 3 study; expected to begin in early summer of 2020

moderna

Moderna and Lonza collaboration

Goal to enable manufacturing of up to one billion doses per year[1]



Plan to establish **manufacturing suites** at Lonza's facilities in the U.S. (New Hampshire) and Switzerland

Technology transfer expected to begin in **June 2020**

First batches of mRNA-1273 expected to be manufactured at Lonza NH in **July 2020**

1. Assuming the currently expected dose of 50 µg

moderna

Late stage development for CMV vaccine (mRNA-1647)

Phase 2 dose confirmation study

- 3 dose levels; randomized, observer-blind, placebo-controlled, multicenter
- 252 seronegative & seropositive adults
- Utilizes intended Phase 3 formulation; same lipid nanoparticle (LNP) used in Phase 1
- Phase 2 study fully enrolled; interim data readout expected 3Q20
- Despite COVID-19 disruptions, >70% of participants have received their second vaccination per original protocol; protocol amendment has been submitted to expand window (2-4 months) for remaining participants to receive second vaccination; third vaccination to be administered 6 months after the first vaccination as originally planned

Planned pivotal Phase 3 trial

- **Primary endpoint**: prevention of primary CMV infection in a population that includes women of childbearing age (WOCBA)
- Intended to begin in 2021 in USA and Europe
- Expect **<8,000 participants**
- Type C CMC meeting in 1Q20; received constructive feedback
- Preparation and product manufacturing underway
- Phase 3 trial in WOCBA: costs currently estimated at $200-250 million[1]

1. Current estimates based on benchmarks; final trial design and costs remain to be determined

moderna

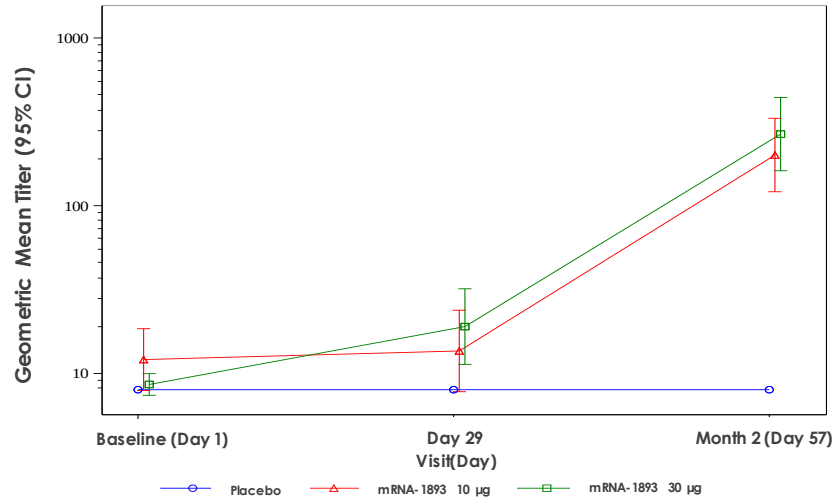
Zika vaccine (mRNA-1893) Phase 1 interim analysis

10 and 30 µg dose levels interim analysis summary

Immunogenicity in Flavivirus Baseline Seronegative Participants (Per-Protocol Set)			
	$PRNT_{50}$		
	Placebo	10µg	30µg
Baseline	8.0	9.5	8.0
GMT post-dose 1	8.0	8.5	14.0
GMT post-dose 2	8.0	195.6	303.4
Seroconversion rate Post-dose 1; Post-dose 2	0%; 0%	5%; 94.4%	40%; 100%

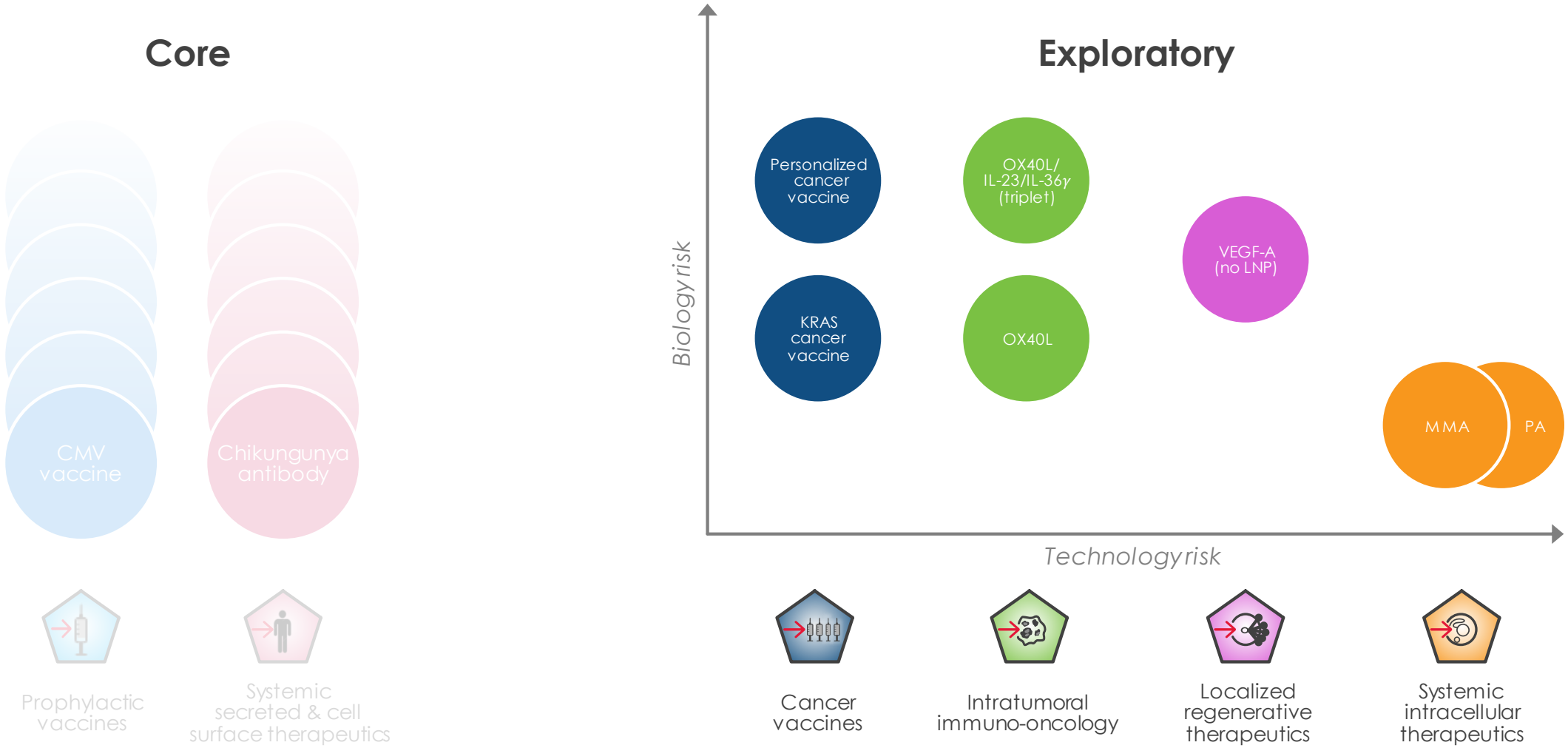
All Participants (Seronegative and Seropositive)

Immunogenicity ($PRNT_{50}$) at Day 57



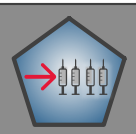
- **Safety:** Both 10 and 30 µg dose levels were generally well tolerated
  - No grade 3 adverse reactions (ARs) were reported
  - No serious adverse events (SAEs) related to mRNA-1893 were reported at either dose levels
- **In the flavivirus-seronegative group:**
  - Seroconversion rates after the second vaccination reached 94.4% in the 10 µg dose level and 100% in the 30 µg dose level, based on the $PRNT_{50}$ (MN data were consistent)
  - A single vaccination of the 30 µg dose level was sufficient to seroconvert baseline flavivirus seronegative participants (however there was a clear benefit of a two-dose series given 28 days apart)
- **In the flavivirus-seropositive group:**
  - The percentage of participants achieving a 4-fold boost in pre-existing $PRNT_{50}$ titers after the second vaccination reached 50% in the 10 µg dose level and 75% in the 30 µg dose level, based on the $PRNT_{50}$ (MN data were consistent)

Exploratory modalities are a critical part of our strategy to maximize applications of our mRNA medicines



moderna

Anticipated clinical next steps and catalysts

Core modalities	Prophylactic vaccines 	• **SARS-CoV-2** – Phase 1 safety and immunogenicity data readout for first 3 cohorts, Phase 2 start • **CMV** – Phase 2 immunogenicity data at 3-month IA, Phase 3 start • **hMPV/PIV3** – Phase 1b seropositive age de-escalation study resumption • **RSV** – Phase 1 safety and immunogenicity data readout • **Zika** – Phase 1 (100 and 250 ug) safety and immunogenicity data readout • **Pediatric RSV** – IND filing • **EBV** – IND filing
	Systemic secreted & cell surface therapeutics 	• **Antibody against Chikungunya virus** – Further development of 0.6 mg/kg dose • **Relaxin** – IND filing (AstraZeneca) • **IL-2** – IND filing • **PD-L1** – IND filing
Exploratory modalities	Cancer vaccines 	• **PCV** – Phase 2 clinical data readout • **KRAS** – Phase 1 clinical data readout
	Intratumoral immuno-oncology 	• **OX40L** – Initiation of dosing of Phase 2 combination cohort • **OX40L/IL-23/IL-36γ (Triplet)** – Completion of dose escalation monotherapy and combination cohorts • **IL-12** – Phase 1 data readout
	Localized regenerative therapeutics 	• **VEGF** – Phase 2a data readout
	Systemic intracellular therapeutics 	• **MMA** – Phase 1/2 study start • **PA** – Phase 1/2 study start • **PKU** – IND filing • **GSD1a** – IND filing

moderna

Vertex Agreement

Extended collaboration to August 2021

Goal: Aimed at discovery and development of potential mRNA medicines for the treatment of cystic fibrosis, or CF, by enabling cells in the lungs of people with CF to produce functional CFTR proteins

July 2016
Entered into a Strategic Collaboration and License Agreement with Vertex[1]

July 2019
Vertex elected to extend the initial research period by 6 months

March 2020
Based on promising preclinical data generation to date, Vertex elected to extend the research period to August 2021

1. Refers to Vertex Pharmaceuticals incorporated and Vertex Pharmaceutics (Europe) Limited

moderna

First quarter 2020 financial results (Unaudited)

Balance Sheets	March 31, 2020	December 31, 2019
Cash, cash equivalents and investments [1]	$ 1.72 billion	$ 1.26 billion
Statements of Cash Flows	**3 months ended Mar. 31, 2020**	**3 months ended Mar. 31, 2019**
Net cash used in operating activities [2]	$ 106 mm	$ 144 mm
Cash used for purchases of property and equipment	$ 6 mm	$ 8 mm
Total	$ 112 mm	$ 152 mm
Statements of Operations	**3 months ended Dec. 31, 2020**	**3 months ended Mar. 31, 2019**
Total revenue	$ 8 mm	$ 16 mm
Research and development expenses	$ 115 mm	$ 130 mm
General and administrative expenses	$ 24 mm	$ 27 mm
Total operating expenses	$ 139 mm	$ 158 mm
Net loss	$ (124) mm	$ (133) mm

1. Excludes restricted cash of $12 mm at March 31, 2020 and December 31, 2019.
2. Includes $22 mm in the first quarter of 2019, of in-licensing payments to Cellscript, LLC and its affiliate, mRNA RiboTherapeutics, Inc. to sublicense certain patent rights. After the first quarter of 2019, we have no further in-licensing payment obligations under the Cellscript-MRT Agreements.

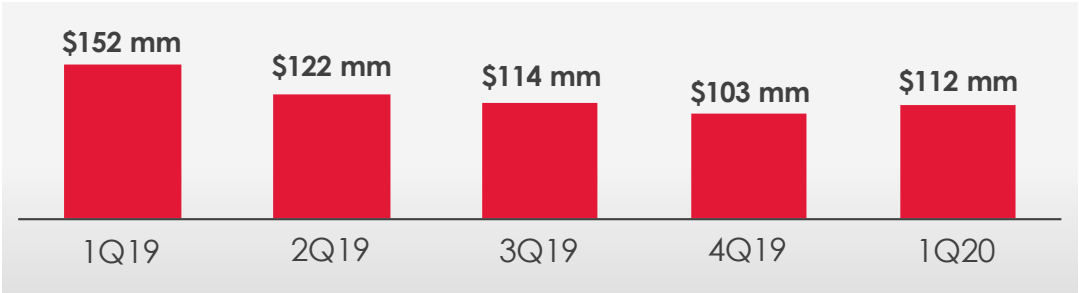
moderna

Selected cash flow information and 2020 guidance

Selected Cash Flow Information

Statements of Cash Flows	3 months ended Mar. 31, 2019 (unaudited)	6 months ended Jun. 30, 2019 (unaudited)	9 months ended Sept. 30, 2019 (unaudited)	Year ended Dec. 31, 2019 (audited)	3 months ended Mar. 31, 2020 (unaudited)
Net cash used in operating activities	$ 144 mm	$ 256 mm	$ 363 mm	$ 459 mm	$106 mm
Cash used for purchases of property and equipment	$ 8 mm	$ 18 mm	$ 25 mm	$ 32 mm	$ 6 mm
Total	$ 152 mm	$ 274 mm	$ 388 mm	$ 491 mm	$ 112 mm

Net cash used in operating activities and for purchases of property and equipment



We expect net cash used in operating activities and for purchases of property and equipment in 2020 to be approximately $500 million

moderna

We have up to $2.4 billion to invest and create value

Cash Position (unaudited)

Approximately **$1.72 billion** of cash and investments[1] as of March 31, 2020

Novel Coronavirus Award

Award from U.S. government agency **BARDA for up to $483 million** to accelerate development of mRNA vaccine (mRNA-1273) against novel coronavirus (entered into on April 16, 2020)

Additional Grants[2] (unaudited)

Total additional funding available from grants is approximately **$180 million** (including amounts not committed) as of March 31, 2020

Multiple years of cash runway

1. Cash and investments denotes cash, cash equivalents and investments
2. Funding from Biomedical Advanced Research and Development Authority (BARDA): Zika vaccine and The Bill and Melinda Gates Foundation (BMGF): HIV. Additional funding is subject to agreement on scope of additional projects.

moderna

Development pipeline

May 2020

		Preclinical *(incl. Open IND)*	Phase 1	Phase 2	Phase 3
Core modalities	Prophylactic vaccines	EBV Pediatric RSV *(mRNA-1345)*	H7N9 Adult RSV *(mRNA1172)* SARS-CoV-2 hMPV/PIV3 Zika	*SARS-CoV-2 (open IND)* *Phase 2 preparations Zika* CMV	*Phase 3 preparations SARS-CoV-2* *Phase 3 preparations CMV*
	Systemic secreted & cell surface therapeutics	Relaxin PD-L1 IL-2	Chikungunya Antibody		
	Cancer vaccines		KRAS	Personalized Cancer Vax	
Exploratory modalities	Intratumoral immuno-oncology		IL-12 OX40L/IL-23/IL-36γ OX40L	*Phase 2 preparations OX40L*	
	Localized regenerative therapeutics			VEGF	
	Systemic intracellular therapeutics	PA *(open IND)* PKU GSD1a	MMA		

moderna

Moderna in May 2020

Pipeline

2
Preparing for Ph 3

6
In or preparing for Ph 2

12
Ph 1 trials ongoing

11
Positive Ph 1 readouts:
7 vaccines, PCV, OX40L, VEGF, anti-Chikungunya antibody

Programs in Development

7
Vaccines for major unmet needs
- SARS-CoV-2 – Ph 1 ongoing; FDA clearance to proceed with Ph 2
- CMV in Ph 2, Ph 3 preparation
- hMPV/PIV3 – started Phase 1b age de-escalation study
- RSV and Zika in Ph 1
- Pediatric RSV, EBV – in preclinical

5
Immuno-Oncology
- PCV in Ph 2
- OX40L preparing for Ph 2 cohort
- Triplet, IL-12, KRAS in Ph 1

4
Rare disease
- MMA, PA – Open IND
- PKU & GSD1a in preclinical

2
Autoimmune disease
- IL-2 and PD-L1 – in preclinical

Foundations

>1,900
Healthy volunteers and patients enrolled

>900
employees

A fully-integrated **GMP site** in Massachusetts

Lonza

Leading biopharma partners

MERCK

AstraZeneca

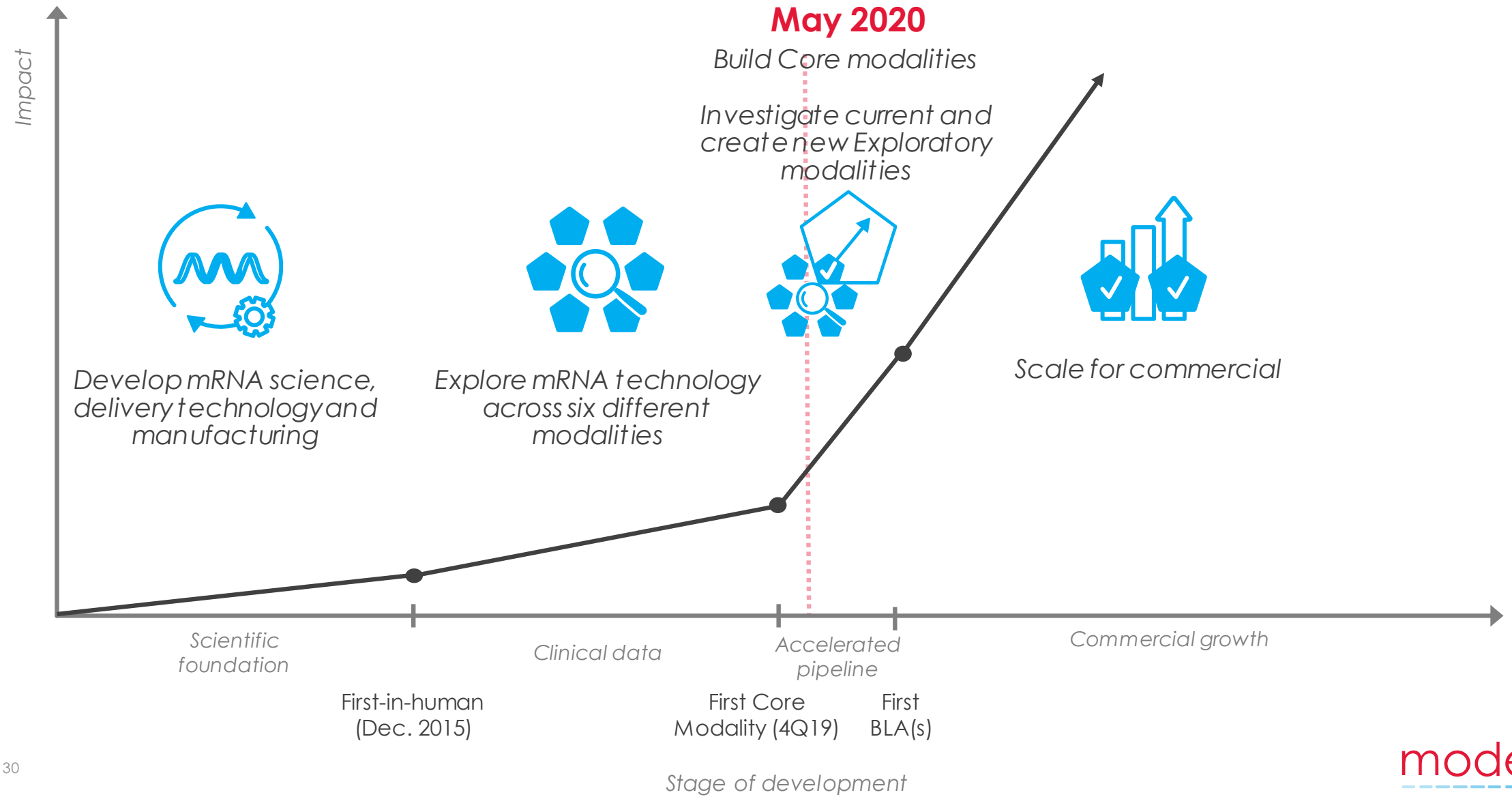
VERTEX

Up to **$2.4bn** to invest and create value[1]

1. Includes $1.72 billion of cash and investments as of March 31, 2020 (unaudited), a BARDA award for up to $483 million to accelerate the development of our mRNA vaccine against novel coronavirus as of April 16, 2020 and up to $180 million in additional grant funding as of March 31, 2020 (unaudited)

moderna

Progression towards a new class of medicines



moderna

Our mission

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

moderna