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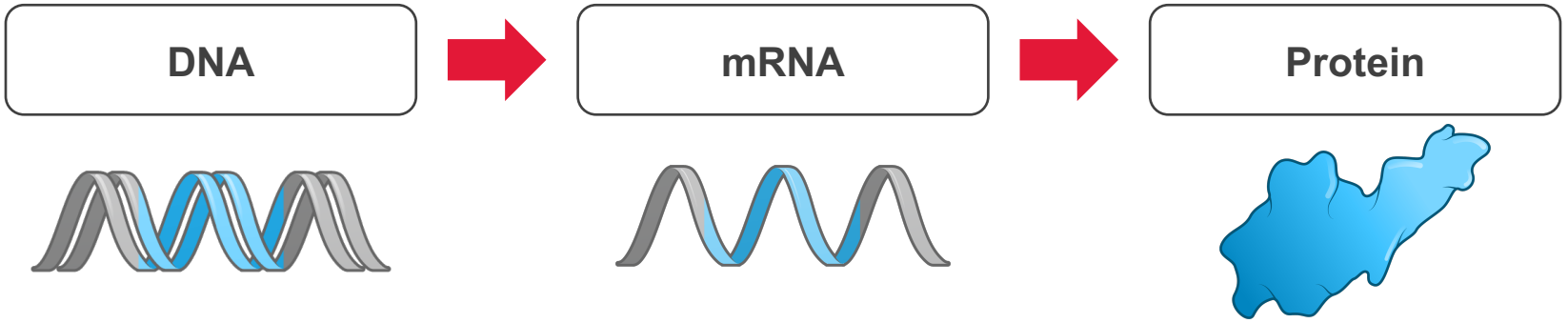

Pipeline Progress, Business Updates, and First Quarter 2019 Financial Results

May 8th, 2019

Forward-looking statements

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 potential development candidate applications, development candidate activities, preclinical and clinical studies, regulatory submissions and approvals, risk management and estimates and forward-looking projections with respect to Moderna or its anticipated future performance or events. In some cases, forward-looking statements can be identified by terminology such as “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: preclinical and clinical development is lengthy and uncertain, especially for a new category of medicines such as mRNA, and therefore Moderna’s 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 category 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 category of medicines; and those described 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 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 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.

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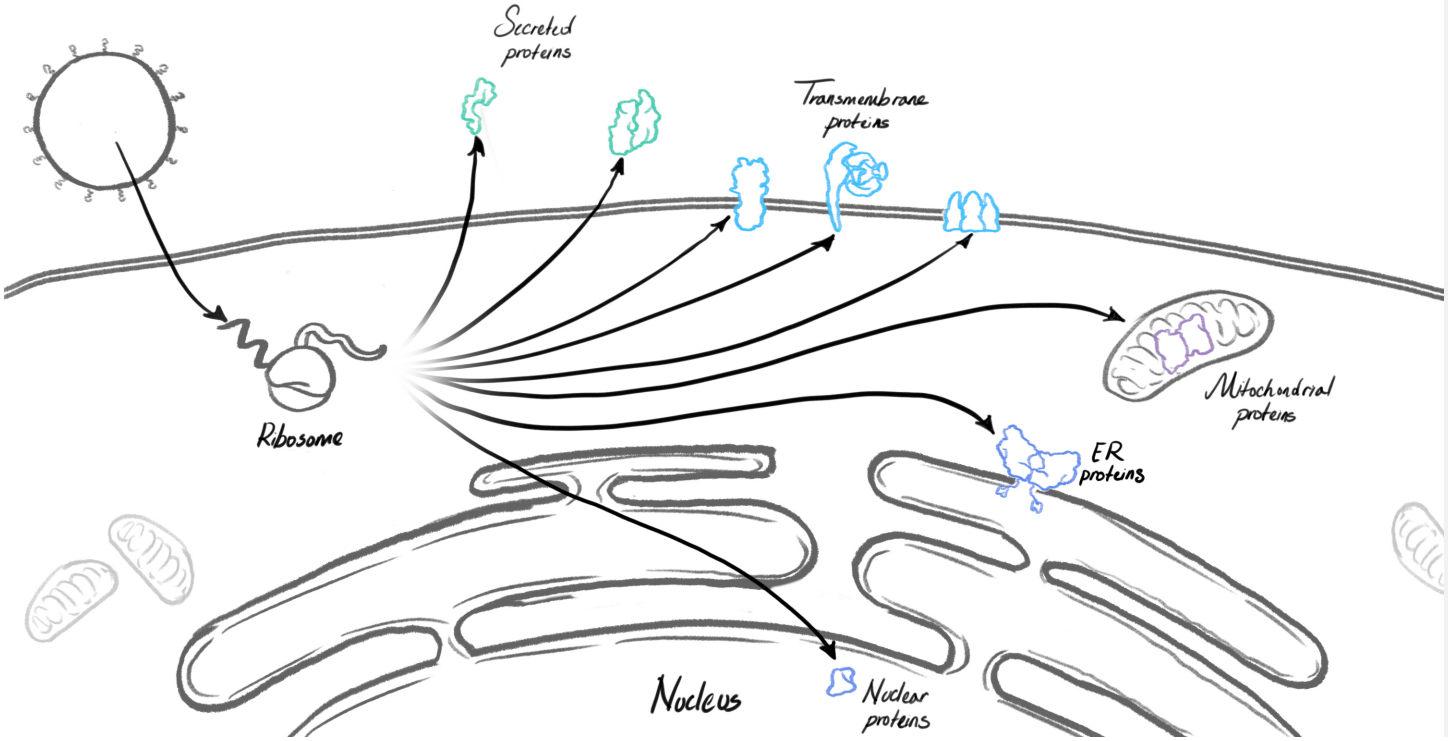
mRNA as a potential new class of medicines



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

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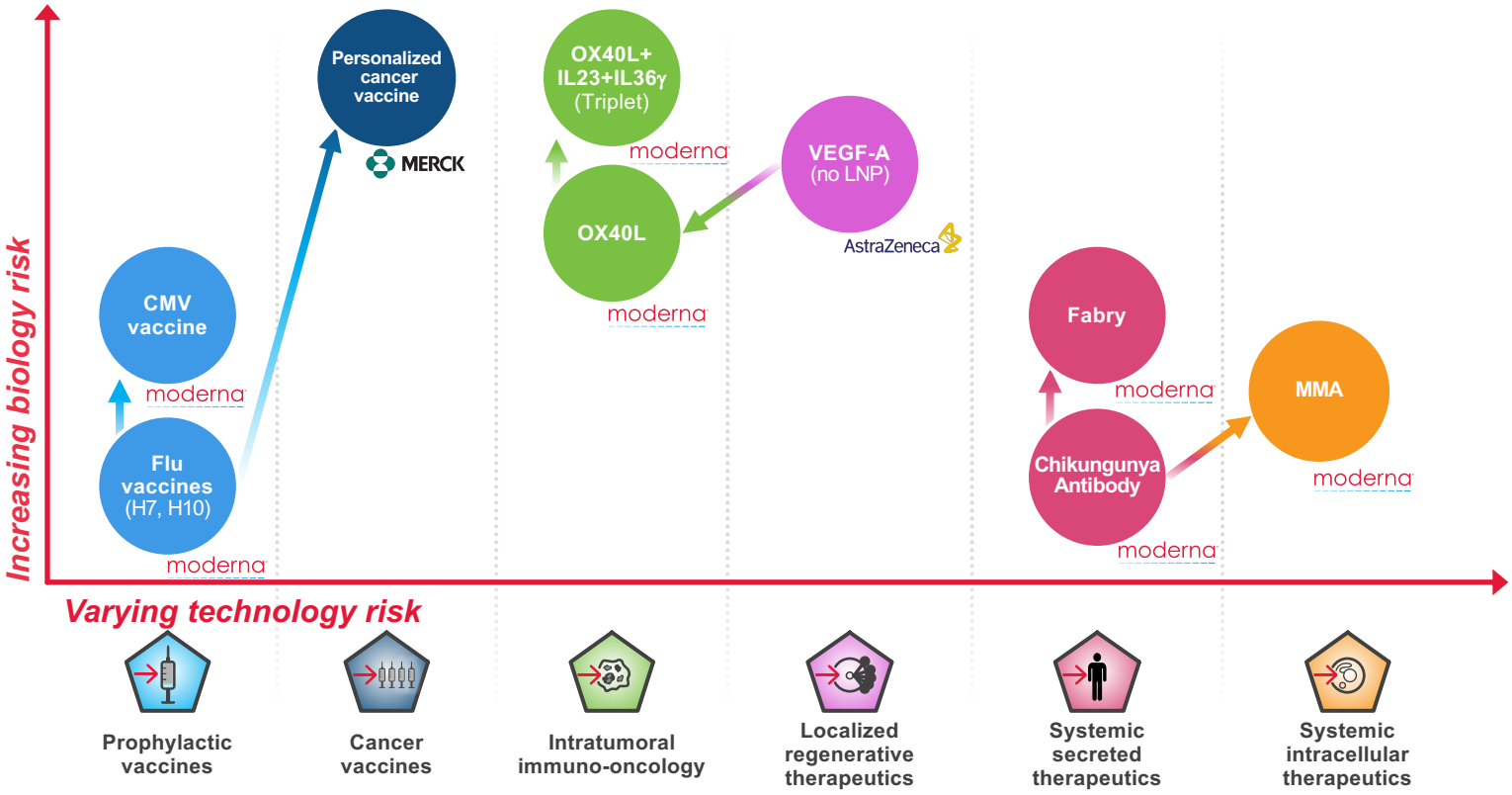
Risk management is essential to building a new class of medicines



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Moderna Priorities for 2019-2020

We focus on our portfolio of potential mRNA medicines, not "lead assets"

1. **Execute on the development pipeline**
   - 20 programs in development
   - Focus on demonstrating human proof of concept
2. **New development candidates in existing modalities**
3. **New development candidates in new modalities**

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Moderna Priorities for 2019-2020

We focus on our portfolio of potential mRNA medicines, not "lead assets"

1 **Execute on the development pipeline**
- 20 programs in development
- Focus on demonstrating human proof of concept
- Update on next slide

2 **New development candidates in existing modalities**
- GSD1a

3 **New development candidates in new modalities**
- Ongoing research highlighted at Science Day (May 7th)

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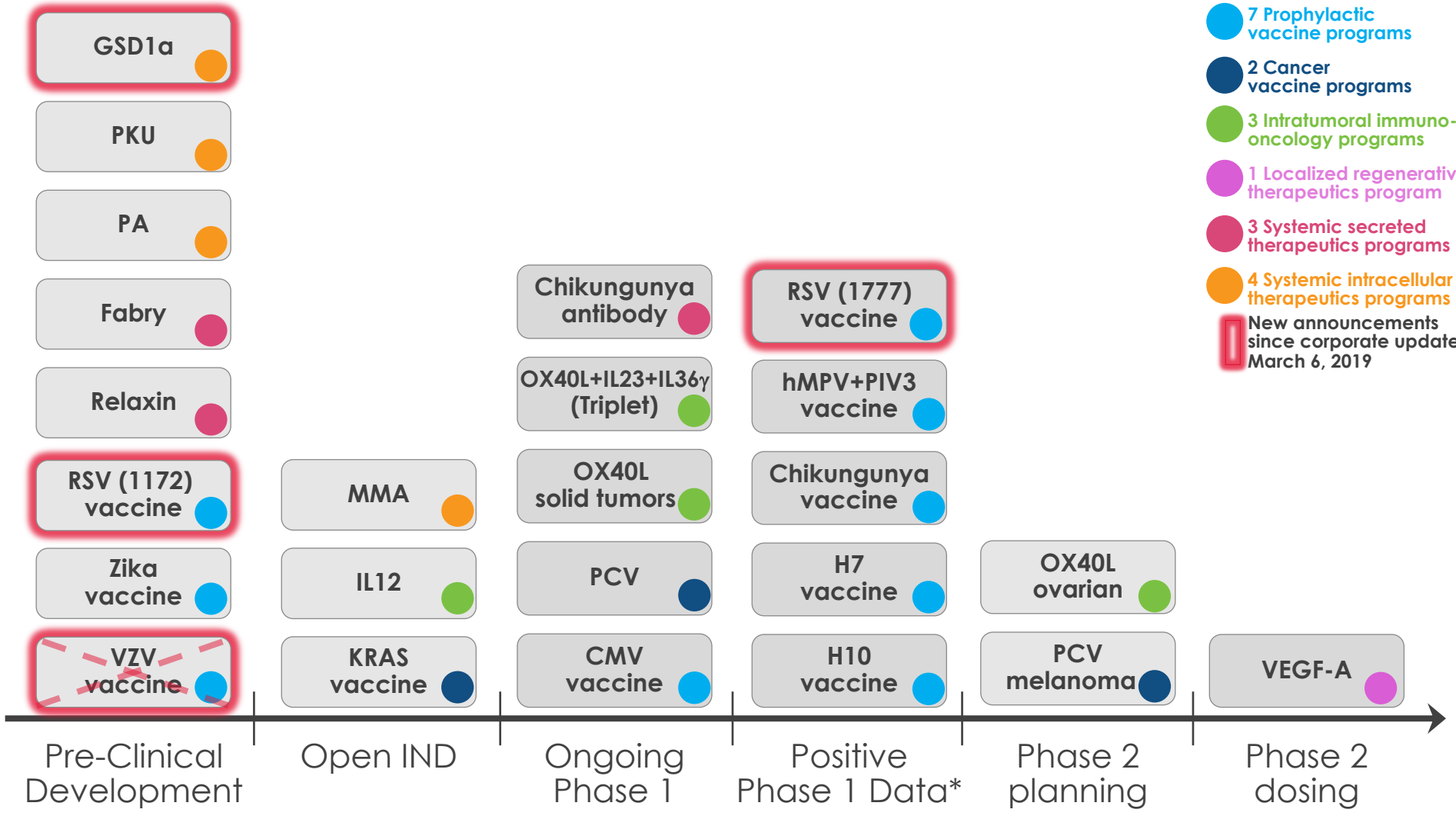
Moderna's development pipeline



*Data in some cases are interim

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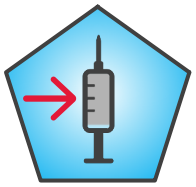
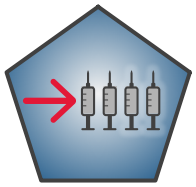
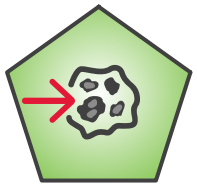
Progress by modality



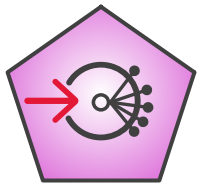
Prophylactic vaccines



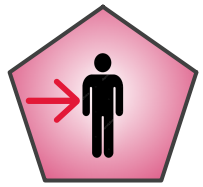
Cancer vaccines



Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics

Systemic intracellular therapeutics

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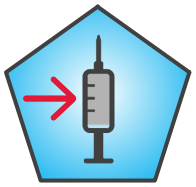
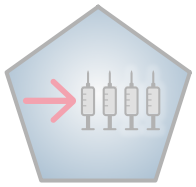
Progress by modality



Prophylactic vaccines



Cancer vaccines

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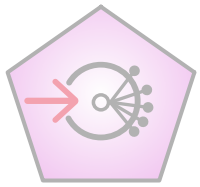

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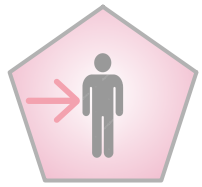
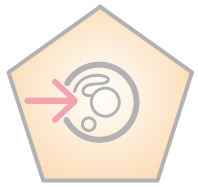


Systemic secreted therapeutics



Systemic intracellular therapeutics

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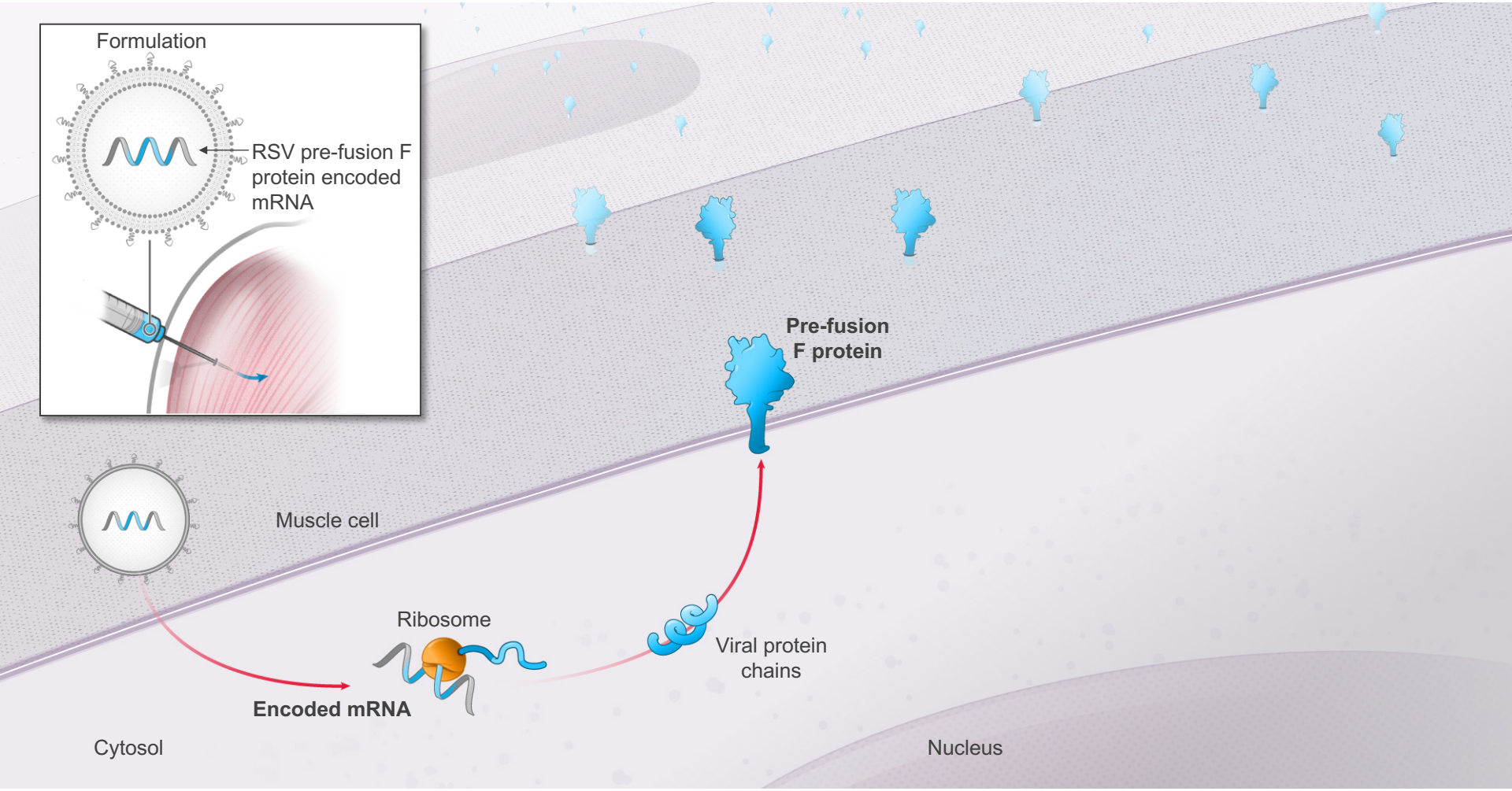
mRNA Vaccine for RSV

Codes for the RSV prefusion F protein



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mRNA-1172 vs. mRNA-1777

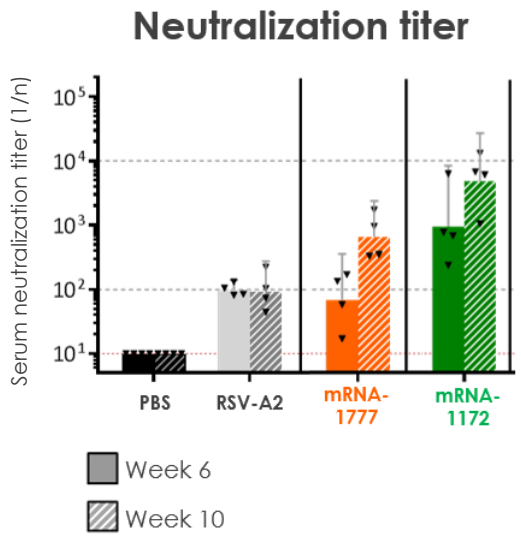
mRNA-1172 is significantly more potent than mRNA-1777 based on preclinical data

mRNA-1172

- An improved RSV antigen with enhanced immunogenicity in preclinical models
- Merck proprietary formulation

Preclinical NHP data:

- **Vaccination:** 500 µl IM (right deltoid) or 250 µl intranasally
- **Challenge:** 1 x $10^{5.5}$ pfu wt RSV A2/ml; 1 ml intranasally + 1 ml intratracheally
- **Animals:** 4 African green monkeys per group
  - No vaccine (naïve control)
  - Wt RSV A2, $10^{5.5}$ pfu
  - mRNA-1777 (5 µg)
  - mRNA-1172 (5 µg)



IND filed for mRNA-1172; mRNA-1777 will not move into a planned Phase 2a study at this time

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Prophylactic vaccines

Five positive Phase 1 readouts; Merck filed IND for second RSV vaccine; Merck discontinued preclinical development of VZV

Clinical data

- **Safety:** ~ 1,000 healthy volunteers enrolled in 7 Phase 1 vaccine trials, at dose levels up to 400µg. Emerging safety and tolerability profile consistent with that of marketed adjuvanted vaccines.
- **Progress:**
  - **CMV** (mRNA-1647) – Initial 3 dose levels fully enrolled; currently enrolling the 4th dose level (300µg)
- **Activity:**
  - **hMPV+PIV3** (mRNA-1653) – vaccination boosted serum neutralization titers against hMPV and PIV3 at all dose levels tested
  - **RSV** (mRNA-1172) – Merck filed IND
  - **Chikungunya** (mRNA-1388) – 100% seroresponse for subjects at the 100µg dose level
  - **H7 influenza** (mRNA-1851) – 96% of subjects at 25µg achieved HAI titer > 1:40
  - **H10 influenza** (mRNA-1440) – 100% of subjects at 100µg achieved HAI titer > 1:40

Preclinical update

- **VZV** (mRNA-1278)**:** Based on an assessment of the commercial opportunity, research priorities and other factors, Merck has discontinued preclinical development. Rights are reverting back to Moderna.

Anticipated next steps

- **CMV** (mRNA-1647) – Phase 1 safety and immunogenicity data; Phase 2 start
- **hMPV+PIV3** (mRNA-1653) – Phase 1b age de-escalation study start
- **RSV** (mRNA-1172) – Phase 1 start
- **Zika** (mRNA-1893) – IND filing

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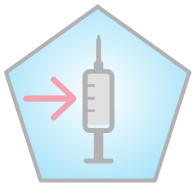
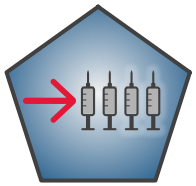
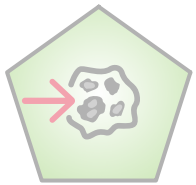
Progress by modality



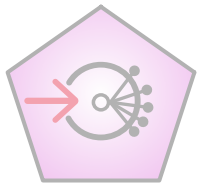
Prophylactic vaccines



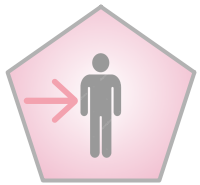
Cancer vaccines



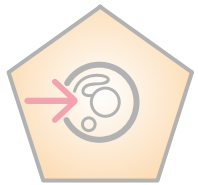
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

- PCV (mRNA-4157, NCI-4650) Phase 1 ongoing – updates to be provided at ASCO
- Preparing for KRAS (mRNA-5671) Phase 1

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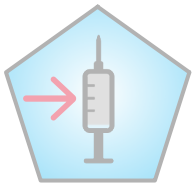
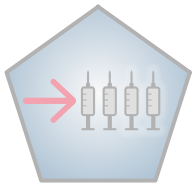
Progress by modality



Prophylactic vaccines



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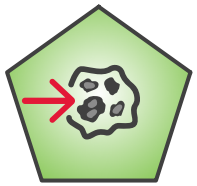

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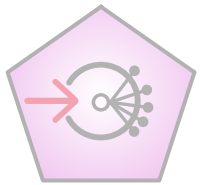

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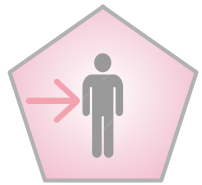

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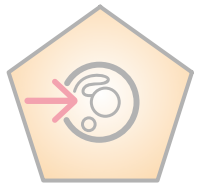

Systemic intracellular therapeutics

- Continuing enrollment for OX40L (mRNA-2416) and OX40L + IL23 + IL36γ (Triplet, mRNA-2752)
- Preparing for Phase 2 cohort for OX40L (mRNA-2416) in ovarian
- AstraZeneca to start Phase 1 dosing for IL-12 (MEDI1191)

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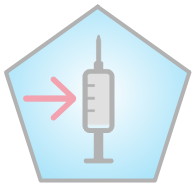
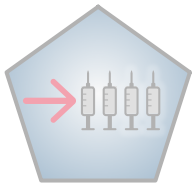
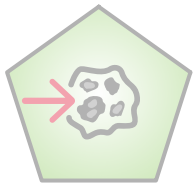
Progress by modality



Prophylactic vaccines



Cancer vaccines



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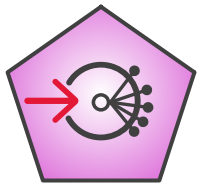
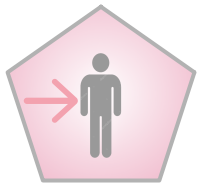
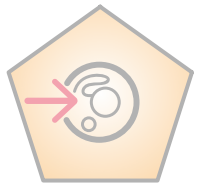


Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

- Randomized Phase 2a ongoing for our VEGF A program (AZD8601) – direct cardiac injection in patients undergoing CABG
- AstraZeneca obtained Clinical Trial Authorization (CTA) approval in the Netherlands

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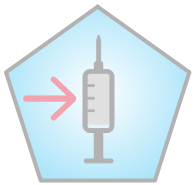
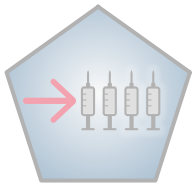
Progress by modality



Prophylactic vaccines



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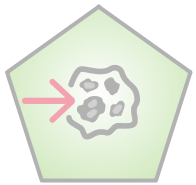

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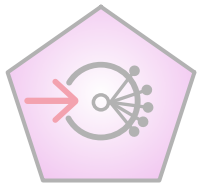

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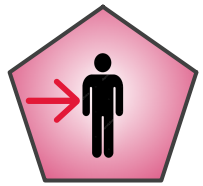
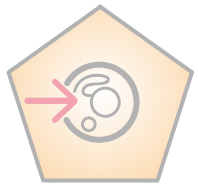


Systemic secreted therapeutics



Systemic intracellular therapeutics

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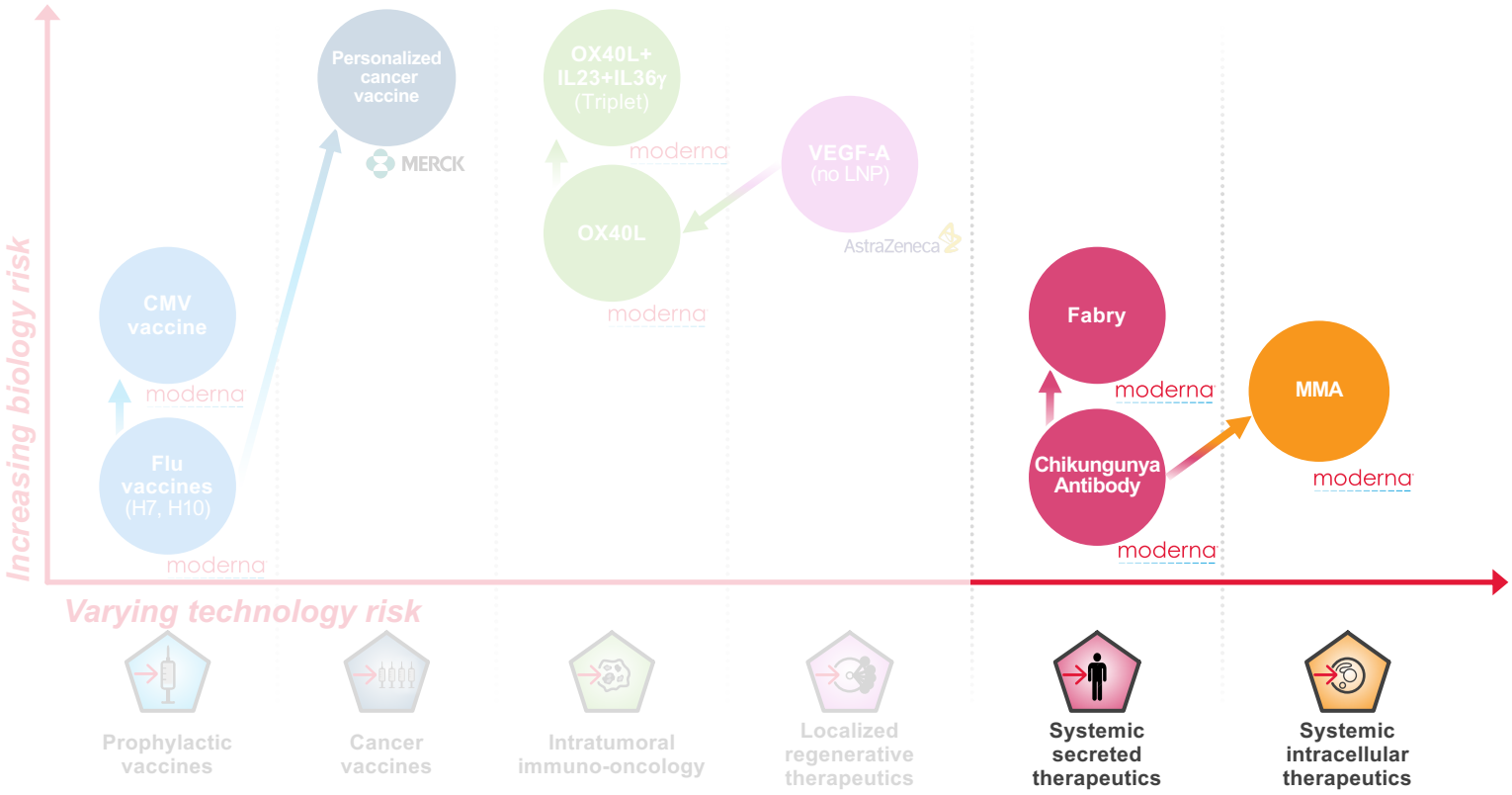
Our Modality Strategy



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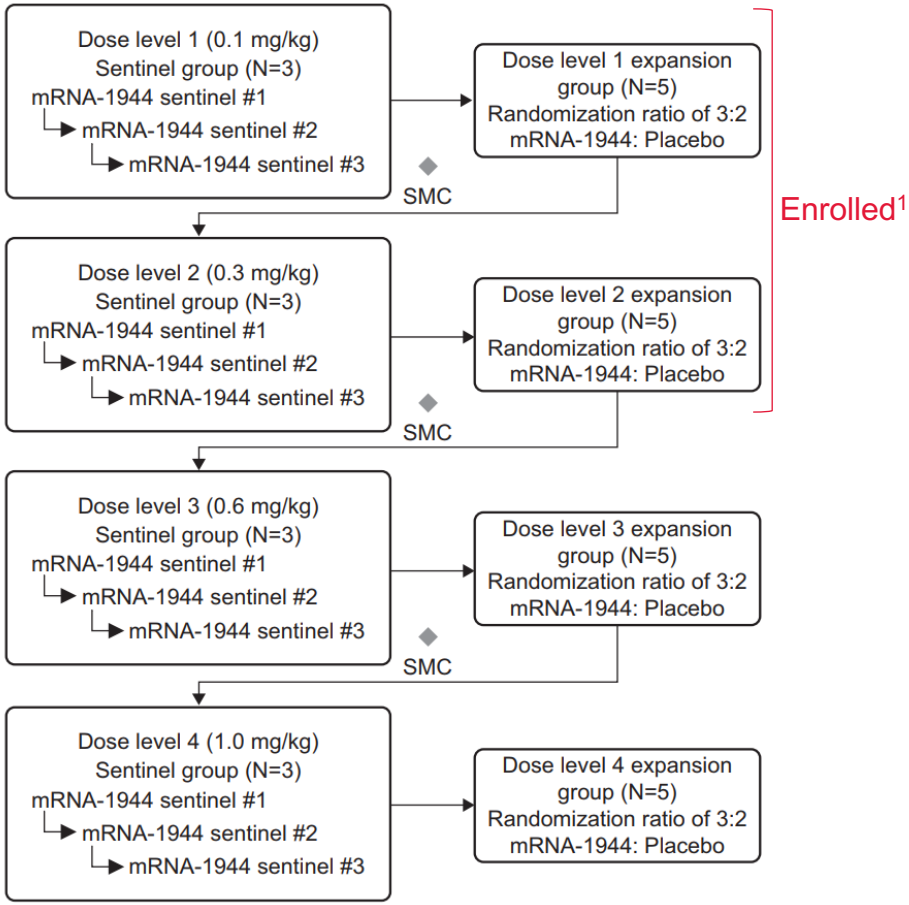
Antibody against Chikungunya virus (mRNA-1944)

Second dose level cohort of healthy volunteers enrolled in Phase 1 trial

- Randomized, placebo-controlled, single ascending dose study in healthy adults

Key Objectives

- Evaluate safety and tolerability of escalating doses of mRNA-1944 administered via intravenous infusion
- Determine pharmacokinetics of up to four dose levels (0.1, 0.3, 0.6, 1.0 mg/kg)
- Determine if the antibodies produced are sufficiently active to neutralize viral infection in assays
- Determine the pharmacodynamics of anti-Chikungunya virus IgG levels



[1] As of April 16, 2019

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Systemic secreted therapeutics

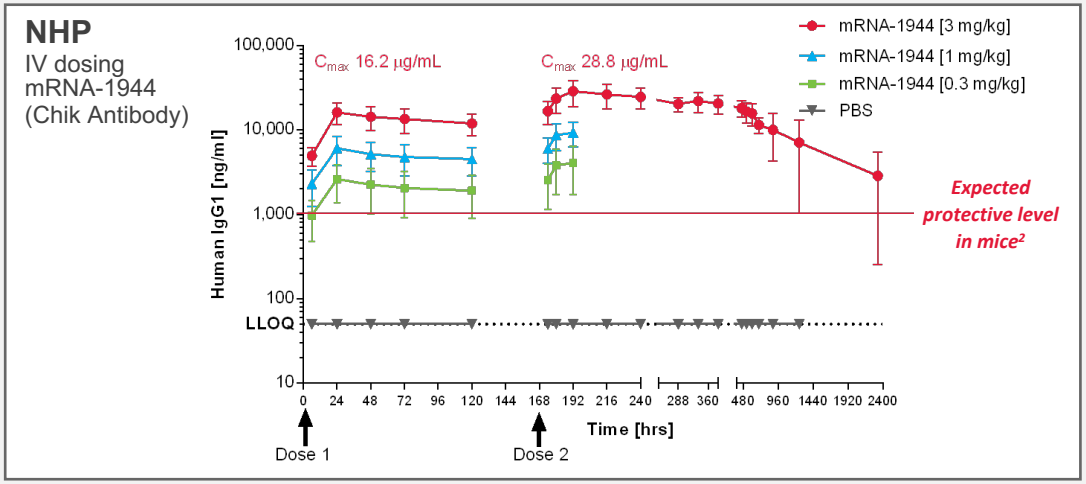
First in human for first systemic therapeutic

Clinical & regulatory update

- **Chikungunya Ab** (mRNA-1944) – Enrolled second dose level (0.3 mg/kg, 8 subjects)[1]

Representative preclinical data

- **Safety: Chikungunya Ab** (mRNA-1944) – Top dose tested in NHPs was NOAEL (no observed adverse event level)
- **Activity:** Dose-dependent expression of mRNA-1944 in NHPs



- **Fabry** (mRNA-3630) – Sustained reduction of substrate beyond 8 weeks in key tissues after single dose in mice
- **Relaxin** (AZD7970) – Showed protein expression over 10 days in NHP

Anticipated next steps

- **Chikungunya Ab** (mRNA-1944) – Phase 1 safety and serum antibody levels
- **Fabry** (mRNA-3630) – IND filing
- **Relaxin** (AZD7970) – IND filing (AstraZeneca)

[1] As of April 16, 2019

[2] Extrapolated from Chik Vaccine mice studies; Source: Yoon I-K, Alera MT, Lago CV, Tac-An IA, Villa D, Fernandez S, et al. (2015) High Rate of Subclinical Chikungunya Virus Infection and Association of Neutralizing Antibody with Protection in a Prospective Cohort in The Philippines. PLoS Negl Trop Dis 9(5): e0003764. doi:10.1371/journal.pntd.0003764

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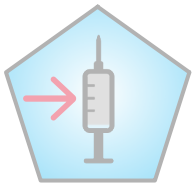
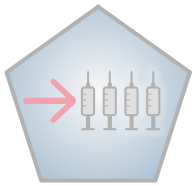
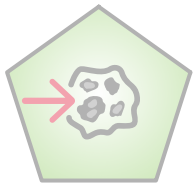
Progress by modality



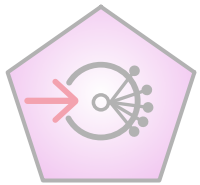
Prophylactic vaccines



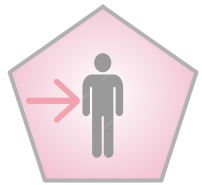
Cancer vaccines



Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics

Systemic intracellular therapeutics

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Systemic intracellular therapeutics

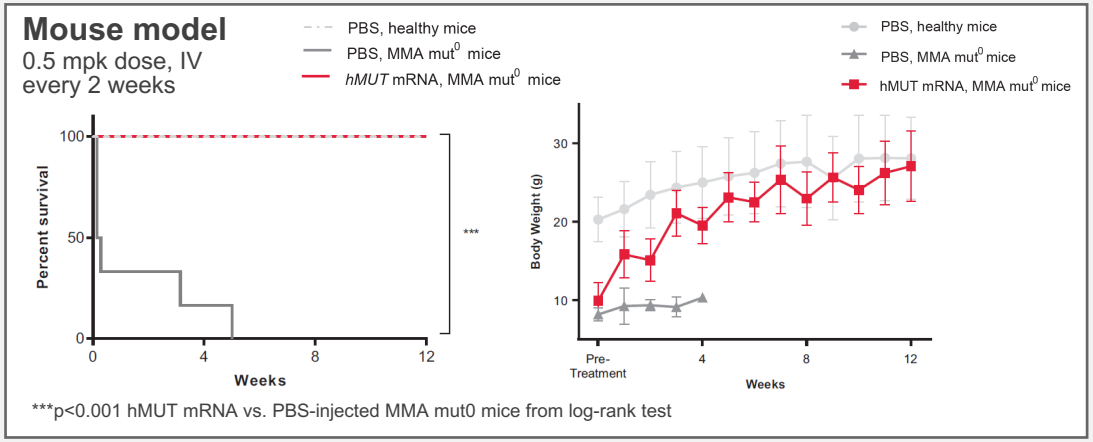
Rare disease programs advancing toward clinic; GSD1a DC nomination

Clinical & regulatory update

- **MMA** (mRNA-3704) – Currently in process of initiating sites for phase 1
- **MMA and PA Natural History Study** (MaP): 45 patients enrolled (26 MMA, 19 PA)[1]
- **PA** (mRNA-3927) – European Commission has adopted recommendation from the Committee for Orphan Medicinal Products for orphan drug designation
- **GSD1a** (mRNA-3745) – Development Candidate (DC) nomination

Representative preclinical data

- **Safety: MMA** (mRNA-3704) – Top dose tested in NHPs was NOAEL (no observed adverse event level)
- **Activity: MMA** – 100% rescue in severe MMA mouse model



- **PA** (mRNA-3927) – Reduction in plasma biomarkers and amelioration of cardiomegaly
- **PKU** (mRNA-3283) – Reduction in PHE with repeat dosing

Anticipated next steps

- **MMA** (mRNA-3704) – safety and proof of concept biomarker Phase 1/2 data
- **PA** (mRNA-3927) – IND filing
- **PKU** (mRNA-3283) – IND filing
- **GSD1a** (mRNA-3745) – IND filing

[1] As of April 15, 2019

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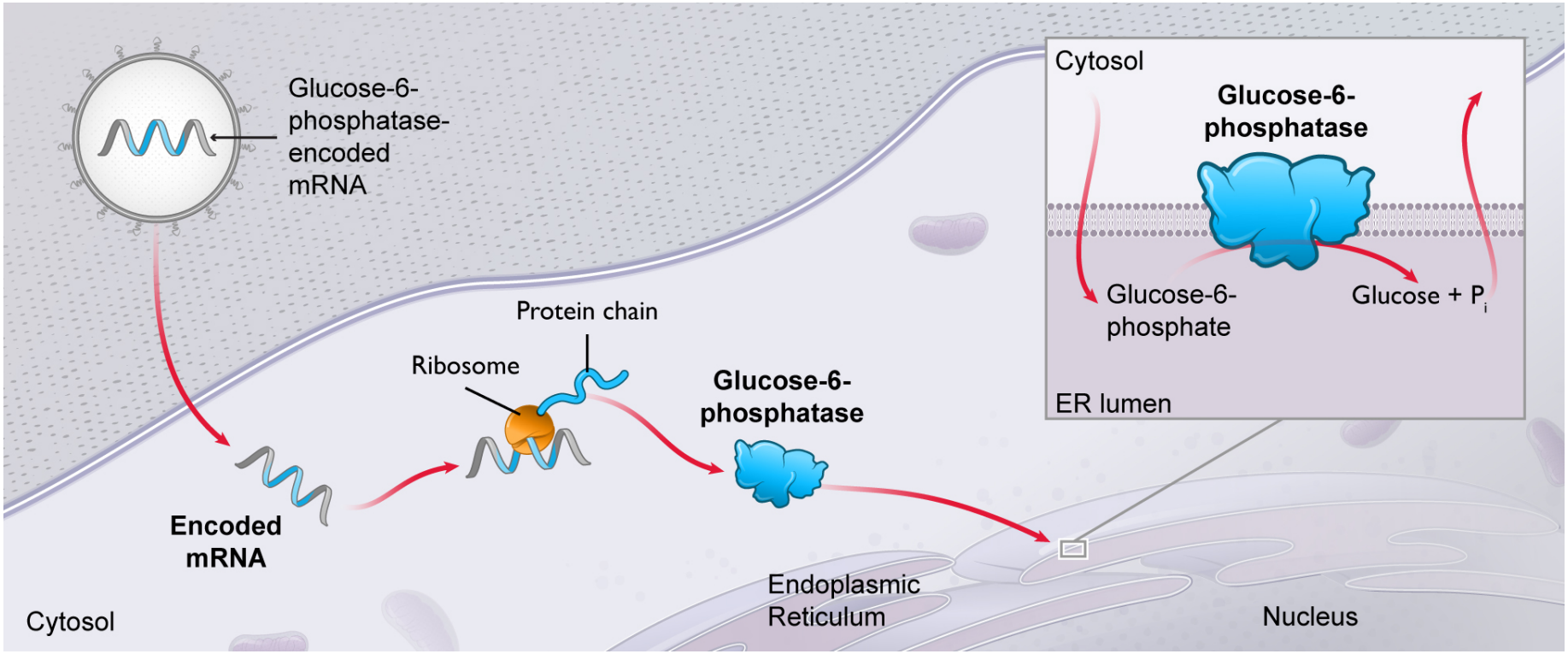
Glycogen storage disease type 1a (GSD1a) (mRNA-3745)

mRNA-encoded enzyme localized to endoplasmic reticulum



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Glycogen storage disease type 1a (GSD1a) overview

New intracellular therapeutics DC – mRNA-3745

- GSD1a is a rare inherited metabolic disease resulting from a deficiency in the metabolism of glucose, due to mutations within the enzyme glucose 6-phosphatase, G6Pase
- **Disease burden:** Life-threatening hypoglycemia, long-term liver & kidney damage
- **Target population:** Incidence of ~1:100k live births
  - 2,500 patients in US*, and >4,000 patients in the EU*
- Standard of care:
  - Strict diet control
  - Frequent consumption of uncooked cornstarch to improve hypoglycemia

Glucose 6-phosphatase (G6Pase)

Moderna concept: IV-administered mRNA encoding G6Pase enzyme to restore deficient or defective intracellular enzyme activity

*Based on estimated incidence of 1:100,000

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Glycogen storage disease type 1a (GSD1a) (mRNA-3745)

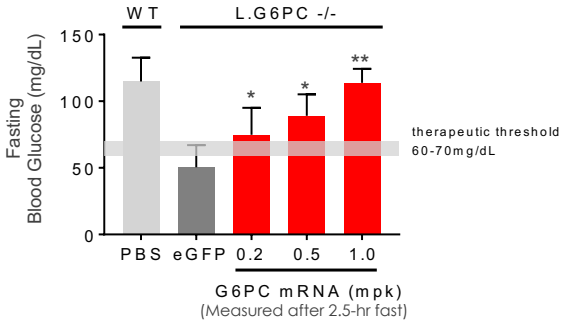
Preclinical data – restoration of enzymatic activity

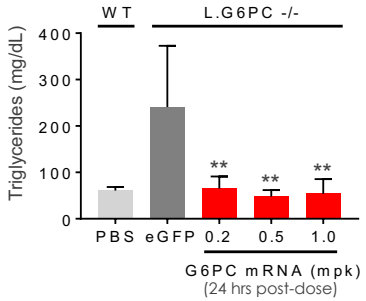
Study Design:

Species: **Mouse**

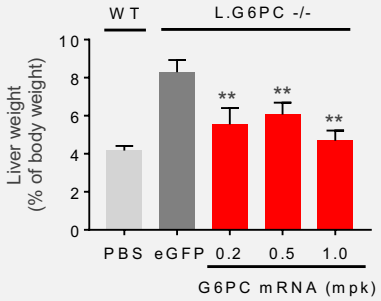
- Animals: Liver-Specific G6PC Knockout (L.G6PC -/-)
- Dose: 0.2, 0.5, 1.0 mpk
- Dosing Schedule: single dose
- Injection Route: IV
- Sample Size: 5-8

Serum biomarkers after single dose of G6Pase mRNA





Reduction in liver weight 24 hours after IV administration of G6Pase mRNA



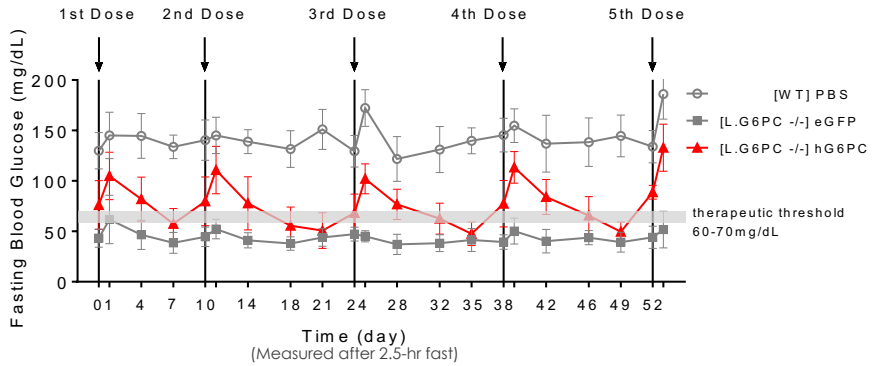
Notes: eGFP is a negative control. Asterisks based on one-way ANOVA of post-treatment vs. eGFP levels:
*p<0.05
**p<0.0001

Study Design:

Species: **Mouse**

- Animals: Liver-Specific G6PC Knockout (L.G6PC -/-)
- Dose: 0.25 mpk
- Dosing Schedule: approx. every other week
- Injection Route: IV
- Sample Size: 7-9

Restoration of blood glucose above therapeutic threshold with repeat dosing of G6Pase mRNA



We have demonstrated preclinical proof-of-concept for G6Pase mRNA therapy in in vivo studies

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Moderna's development pipeline

New announcements since earnings call March 6, 2019

Modality	Program #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Prophylactic vaccines	**mRNA-1172**	Respiratory syncytial virus (RSV) vaccine		***Merck filed IND***			Merck to pay milestones and royalties
	mRNA-1777	Respiratory syncytial virus (RSV) vaccine			***Paused***		
	mRNA-1647	Cytomegalovirus (CMV) vaccine					Worldwide
	mRNA-1653	Human metapneumovirus and parainfluenza virus 3 (hMPV+PIV3) vaccine	Phase 1b (pediatrics)	Phase 1 (adults)			Worldwide
	mRNA-1440	Influenza H10N8 vaccine					Worldwide *Advancing subject to funding*
	mRNA-1851	Influenza H7N9 vaccine					Worldwide *Advancing subject to funding*
	mRNA-1893	Zika vaccine					Worldwide *BARDA funded*
	mRNA-1388	Chikungunya vaccine					Worldwide *Advancing subject to funding*
Cancer vaccines	**mRNA-4157**	Personalized cancer vaccine (PCV)					50-50 global profit sharing with Merck
	NCI-4650	Personalized cancer vaccine (PCV)					
	mRNA-5671	KRAS vaccine					50-50 global profit sharing with Merck
Intratumoral immuno-oncology	**mRNA-2416**	OX40L *Solid tumors/lymphoma* *Advanced ovarian carcinoma (Ph 2 cohort)*	Solid tumors/lymphoma	Ovarian			Worldwide
	mRNA-2752	OX40L+IL23+IL36γ (Triplet) *Solid tumors/lymphoma*					Worldwide
	MEDI1191	IL12 *Solid tumors*					50-50 U.S. profit sharing; AZ to pay royalties on ex-U.S. sales
Localized regenerative therapeutics	**AZD8601**	VEGF-A *Myocardial ischemia*					AZ to pay milestones and royalties
Systemic secreted therapeutics	**mRNA-1944**	Antibody against Chikungunya virus		***Second dose level cohort enrolled***			Worldwide *DARPA funded*
	AZD7970	Relaxin *Heart failure*					50-50 U.S. profit sharing; AZ to pay royalties on ex-U.S. sales
	mRNA-3630	α-GAL *Fabry disease*					Worldwide
Systemic intracellular therapeutics	**mRNA-3704**	MUT *Methylmalonic Acidemia (MMA)*					Worldwide
	mRNA-3927	PCCA+PCCB *Propionic Acidemia (PA)*					Worldwide
	mRNA-3283	PAH *Phenylketonuria (PKU)*					Worldwide
	mRNA-3745	G6Pase *Glycogen Storage Disease Type 1a (GSD1a)*		***DC nomination***			Worldwide

Moderna 2019 Science Day

May 7, 2019

Topic	Speaker
Welcome & Introduction to the Day	Stephane Bancel & Stephen Hoge, Moderna
• Foundations of Immune Silence	Melissa Moore, Moderna
• Improvements in Potency – mRNA Structure and Ribosome Traffic Jams – Big Gains from the Untranslated Regions	 Melissa Moore, Moderna Ruchi Jain, Moderna
• Advancing delivery science – The Physics of nanoparticles	 Michelle Lynn Hall, Moderna
Break	
• Introducing immune system delivery – Why the immune system – Our lead Immune nanoparticle	Stephen Hoge, Moderna
• The importance of trafficking in immune function	Uli von Andrian, Harvard Medical School
Q&A	

Tour of Norwood: Busses will leave from in front of the hotel at 1pm

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Highlights from 2019 Science Day (Part 1)
Making more potent and safer medicines

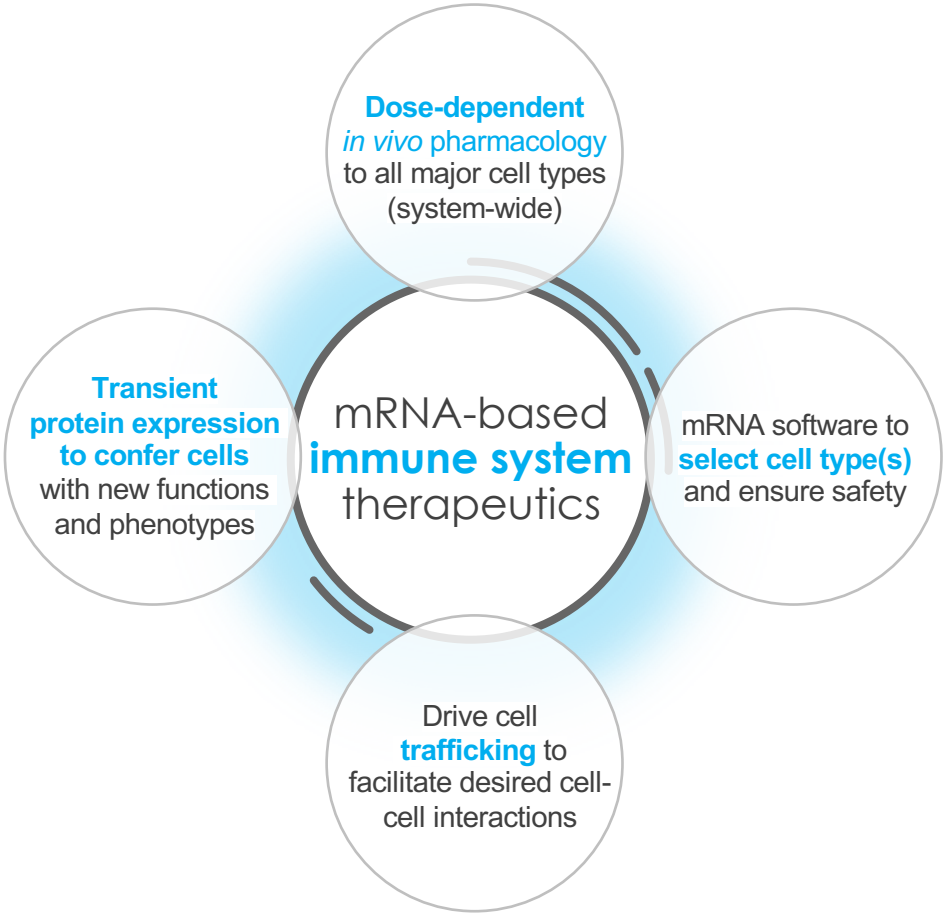
- Latest *in vivo* characterization of the nature of innate immune response and the **importance of uridine modification** to making immune silent mRNA

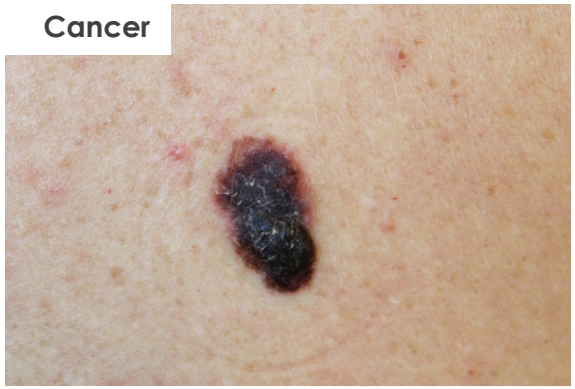
- Advances in how we design our mRNA to maximize potency, for instance how we use 5' UTR sequences to drive **several-fold improvements in protein production** in rare disease animal models (without changing the coding sequence)

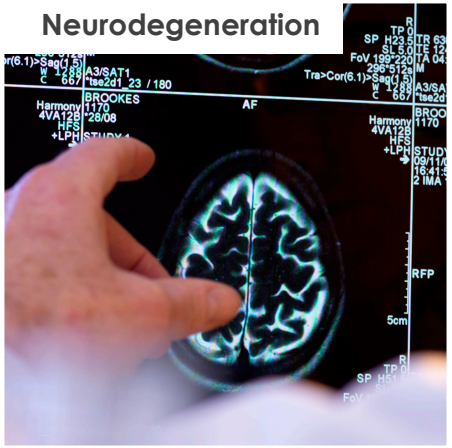
- How we use secondary structure to create "buffer" space and prevent ribosome "traffic jams" and **increase mRNA half-life**

- The **physics of lipid nanoparticles** (LNP), their formation and their surface characterization

Highlights from 2019 Science Day (Part 2)
Introducing our Immune Nanoparticle research







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First Quarter 2019 Financial Results (Unaudited)

Balance Sheets	March 31, 2019	December 31, 2018
Cash, cash equivalents and investments	$ 1,547 mm	$ 1,694 mm
Statements of Cash Flows	**3 months ended March 31, 2019**	**3 months ended March 31, 2018**
Net cash used in operating activities [1]	$ 144 mm	$ 111 mm
Cash used for purchases of property and equipment	$ 8 mm	$ 32 mm
Statements of Operations	**3 months ended March 31, 2019**	**3 months ended March 31, 2018**
Total revenue	$ 16 mm	$ 29 mm
Research and development expenses	$ 131 mm	$ 90 mm
General and administrative expenses	$ 27 mm	$ 16 mm
Total operating expenses	$ 158 mm	$ 106 mm
Net loss	$ (133) mm	$ (72) mm

Notes:
1. Includes $22 mm and $25 mm in the first quarter of 2019 and 2018, respectively, of in-licensing payments to Cellscript, LLC and its affiliate, mRNA RiboTherapeutics, Inc. to sublicense certain patent rights. After 2019, we have no further in-licensing payment obligation under the Cellscript-MRT Agreements.

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Moderna Priorities for 2019-2020

We focus on our portfolio of potential mRNA medicines, not "lead assets"

1. **Execute on the development pipeline**
   - 20 programs in development
   - Focus on demonstrating human proof of concept
2. **New development candidates in existing modalities**
3. **New development candidates in new modalities**

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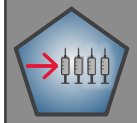
Anticipated clinical next steps

 **Prophylactic vaccines**	• **CMV** – Phase 1 safety and immunogenicity data; Phase 2 start • **hMPV+PIV3** – Phase 1b age de-escalation study start • **RSV** – Phase 1 start for mRNA-1172 • **Zika** – IND filing
 **Cancer vaccines**	• **PCV** – Phase 1 clinical activity; randomized Phase 2 start • **KRAS** – Phase 1 start by Merck; Phase 1 T cell immunogenicity
 **Intratumoral immuno-oncology**	• **OX40L** – Initiation of dosing of Phase 2 advanced ovarian carcinoma cohort • **OX40L+IL23+IL36γ (Triplet)** – Completion of dose escalation and initiation of dosing of disease-specific cohorts • **IL12** – Phase 1 start by AstraZeneca
 **Localized regenerative therapeutics**	• **VEGF** – Perfusion and cardiac function data from randomized Phase 2a study
 **Systemic secreted therapeutics**	• **Chikungunya antibody** – Phase 1 safety and serum antibody levels • **Fabry** – IND filing • **Relaxin** – IND filing (AstraZeneca)
 **Systemic intracellular therapeutics**	• **MMA** – Safety and proof of concept biomarker Phase 1/2 data • **PA** – IND filing • **PKU** – IND filing • **GSD1a** – IND filing

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Moderna on May 8, 2019

Pipeline

3 Open INDs awaiting Ph 1 start

5 Ph 1 trials ongoing

6 Positive Ph 1 readouts

3 Programs in or planning for Ph 2

~1,000 Healthy volunteers and patients enrolled

Programs in Development

5

Immuno-Oncology

- OX40L preparing for Ph 2 cohort
- PCV preparing for Ph 2
- Triplet in Ph 1
- KRAS & IL12 - open INDs

5

Rare Disease

- MMA - open IND
- PA, PKU, Fabry & GSD1a in GLP Tox
- First secreted systemic therapeutic in Ph 1

3

Vaccines for major unmet needs

- RSV – Merck filed IND for mRNA-1172
- hMPV+PIV3 – positive interim Phase 1 data
- CMV in Ph 1

Foundations

>775 employees

A fully-integrated **200,000 sq. ft.** GMP site operational in Norwood, MA

$1.55 bn of cash, cash equivalents, and investments as of Mar 31, 2019 (unaudited)

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Our Mission

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