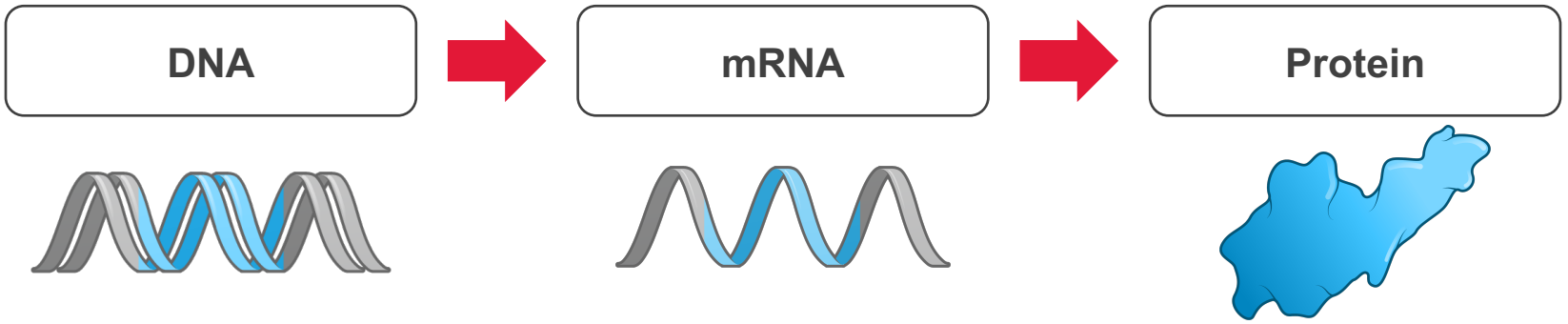
moderna®



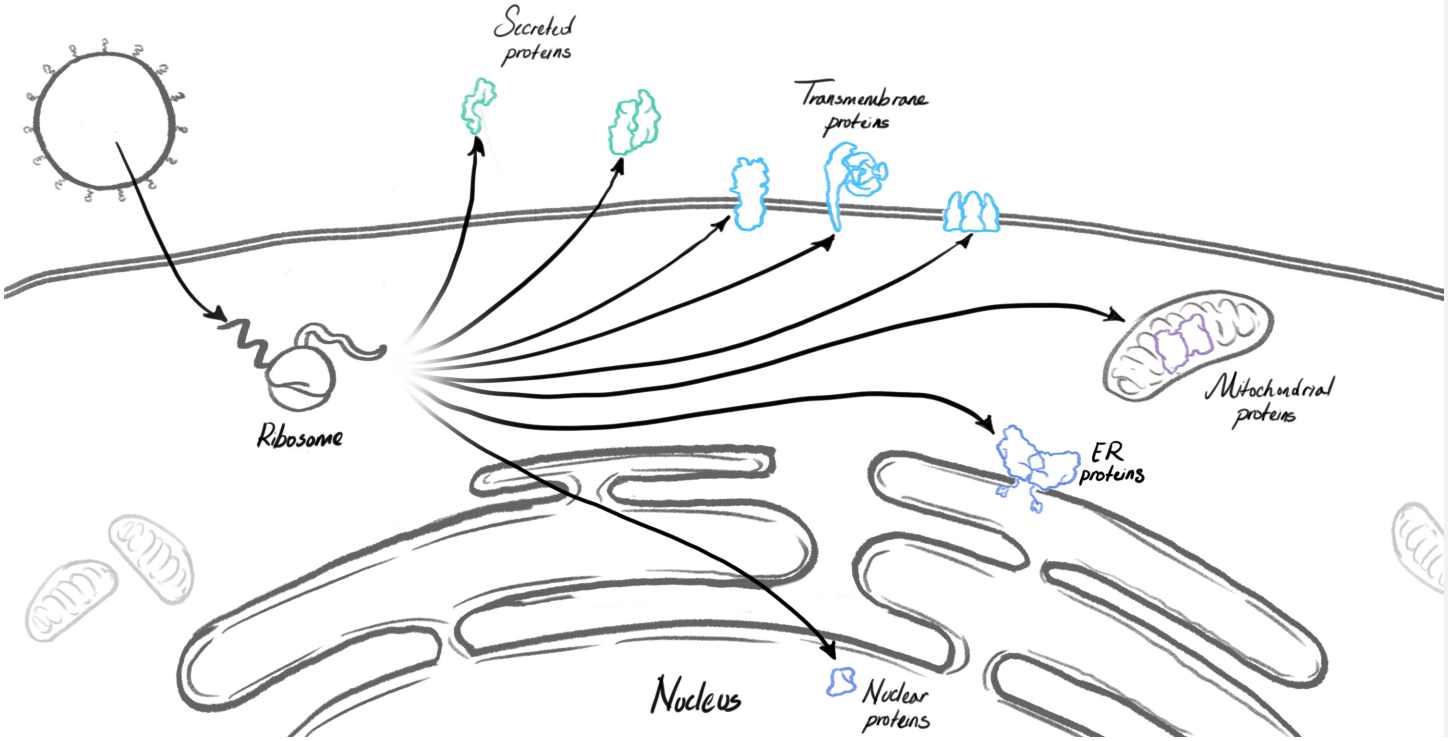
Business Update and Second Quarter 2019 Financial Results
August 7, 2019

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 clinical program next steps, development candidate activities, future clinical study commencement, progression, enrollment, and conclusion, regulatory submissions and approvals, risk management, estimates and forward-looking projections with respect to Moderna or its anticipated future performance or events, and the Company's expected cash, cash equivalents, and investments at December 31, 2019. 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 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; 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.

moderna

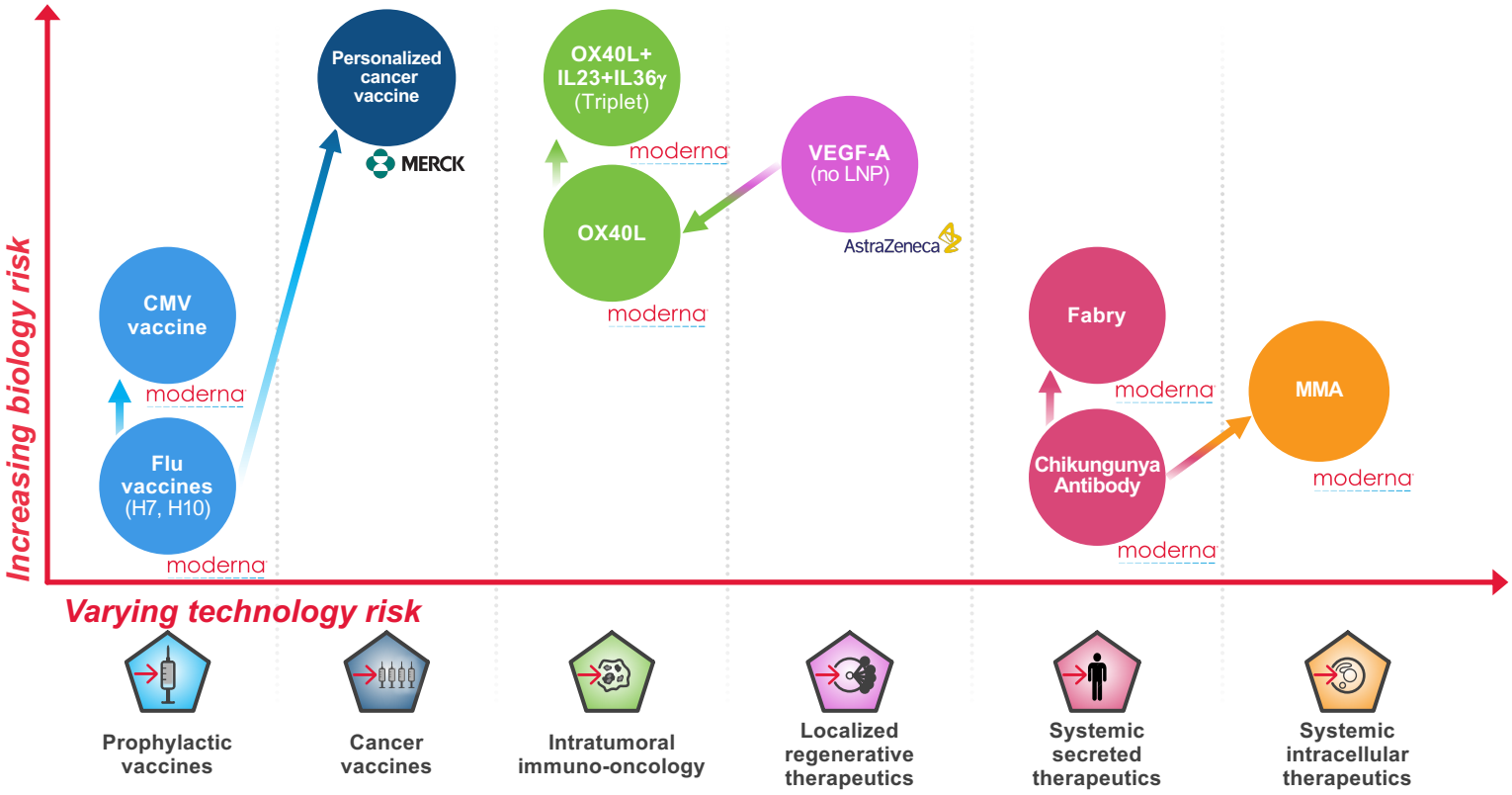
mRNA as a potential new class of medicines



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

Moderna Priorities for 2019-2020

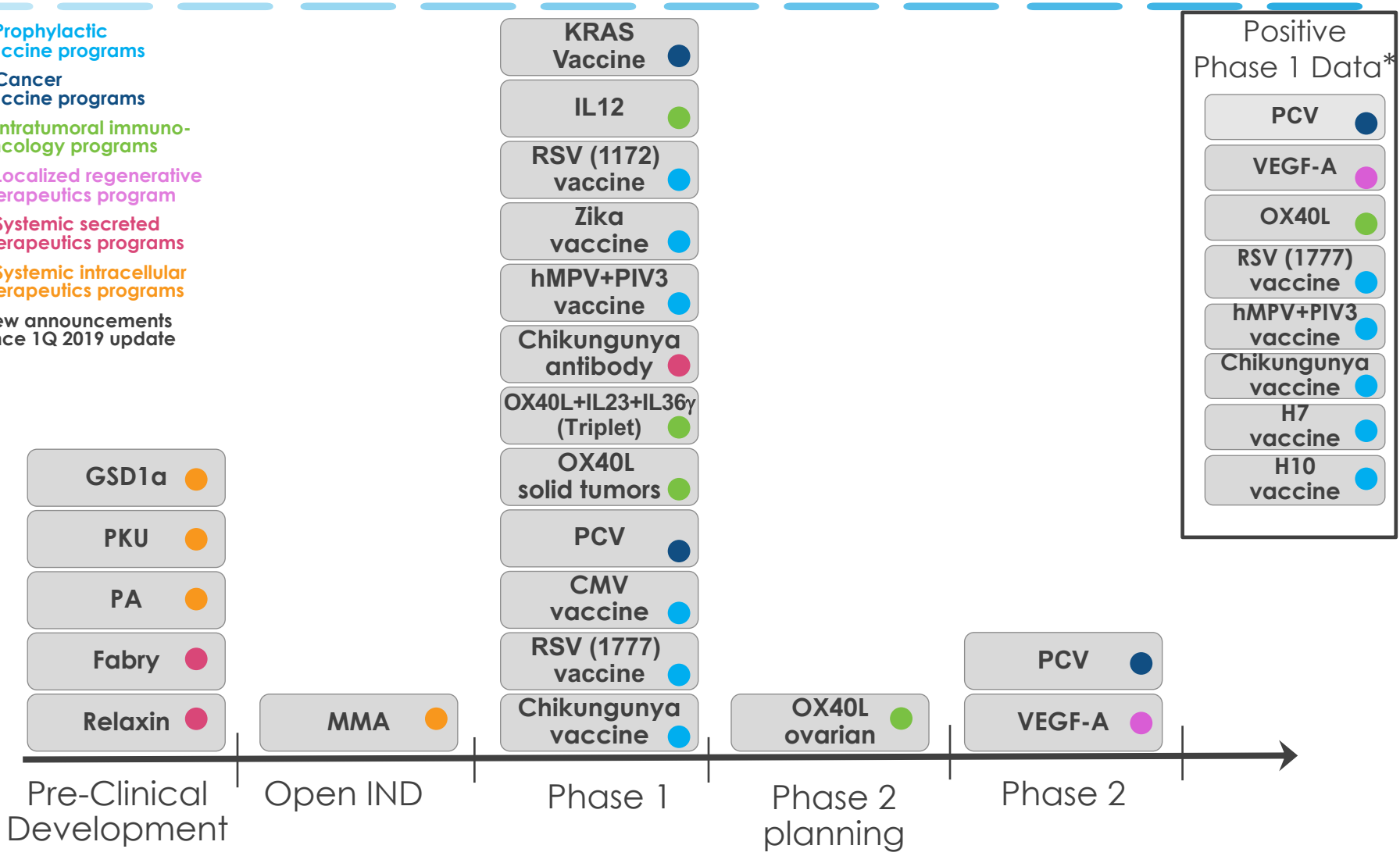
We focus on our portfolio of potential mRNA medicines, not "lead assets"

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**

moderna

Moderna's development pipeline

- 7 Prophylactic vaccine programs
- 2 Cancer vaccine programs
- 3 Intratumoral immuno-oncology programs
- 1 Localized regenerative therapeutics program
- 3 Systemic secreted therapeutics programs
- 4 Systemic intracellular therapeutics programs
- New announcements since 1Q 2019 update

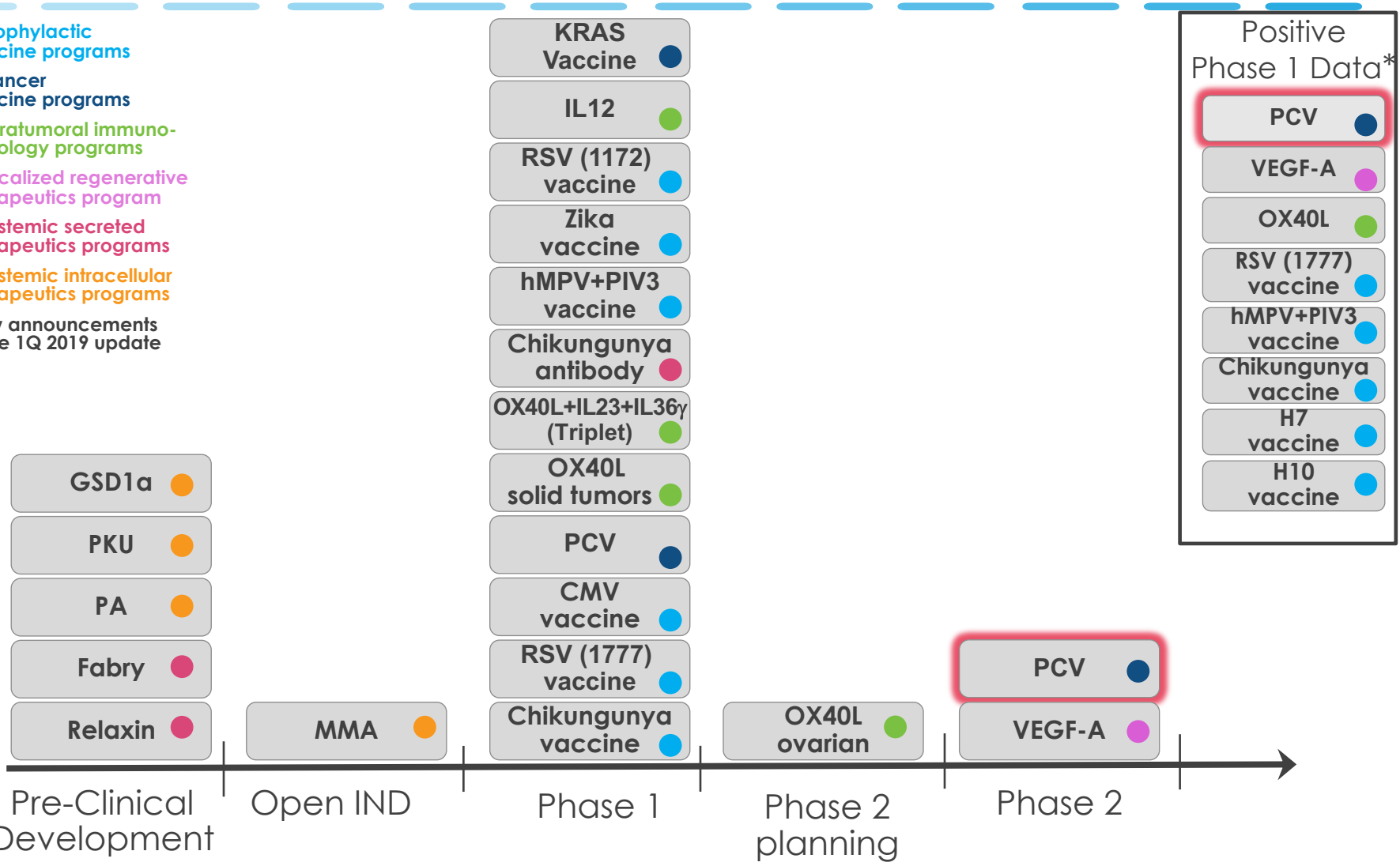


*Data in some cases are interim; positive data means the data warrant continued advancement within a trial or for further development

moderna

Moderna's development pipeline

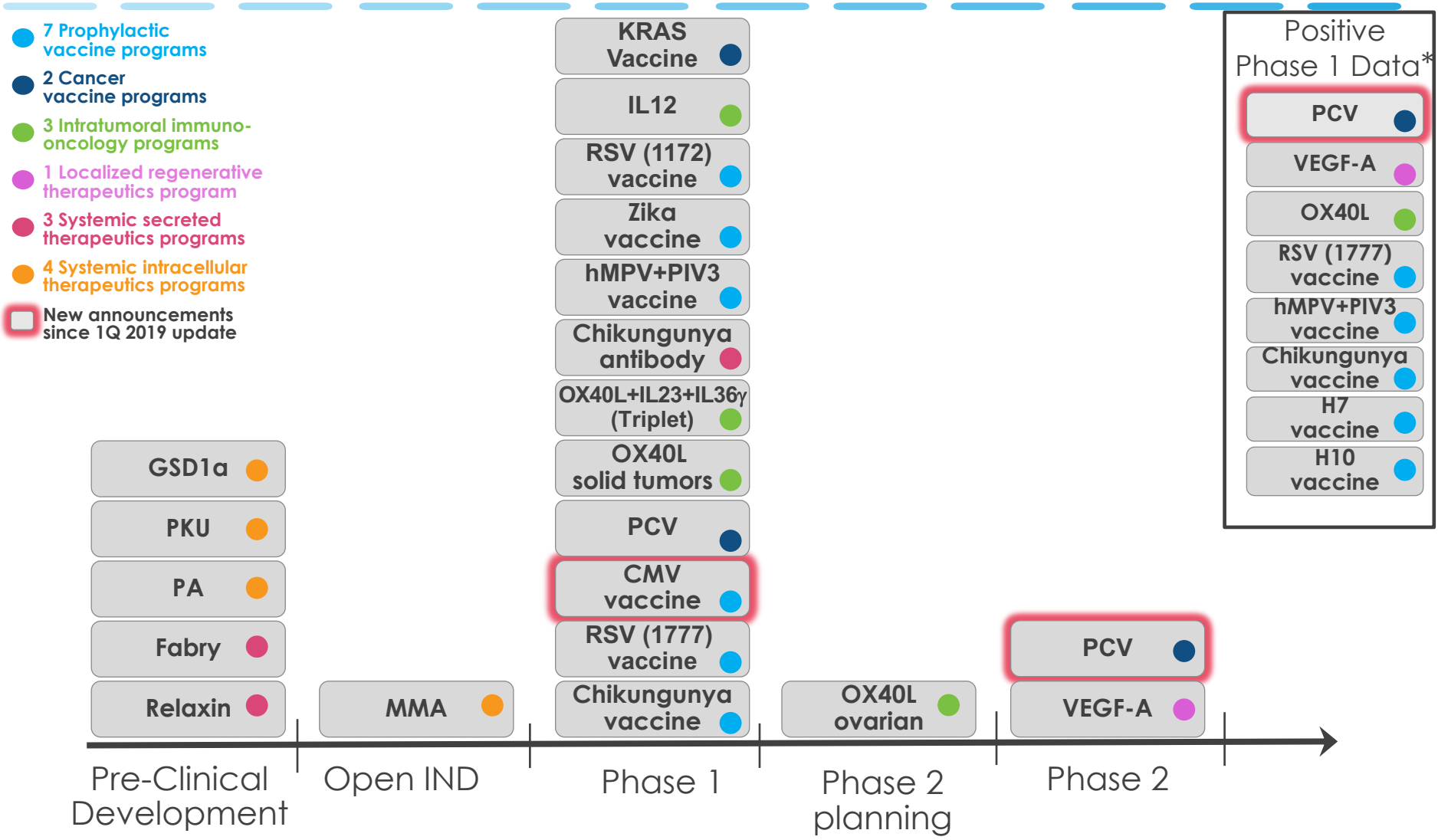
- 7 Prophylactic vaccine programs
- 2 Cancer vaccine programs
- 3 Intratumoral immuno-oncology programs
- 1 Localized regenerative therapeutics program
- 3 Systemic secreted therapeutics programs
- 4 Systemic intracellular therapeutics programs
- New announcements since 1Q 2019 update



*Data in some cases are interim; positive data means the data warrant continued advancement within a trial or for further development

moderna

Moderna's development pipeline

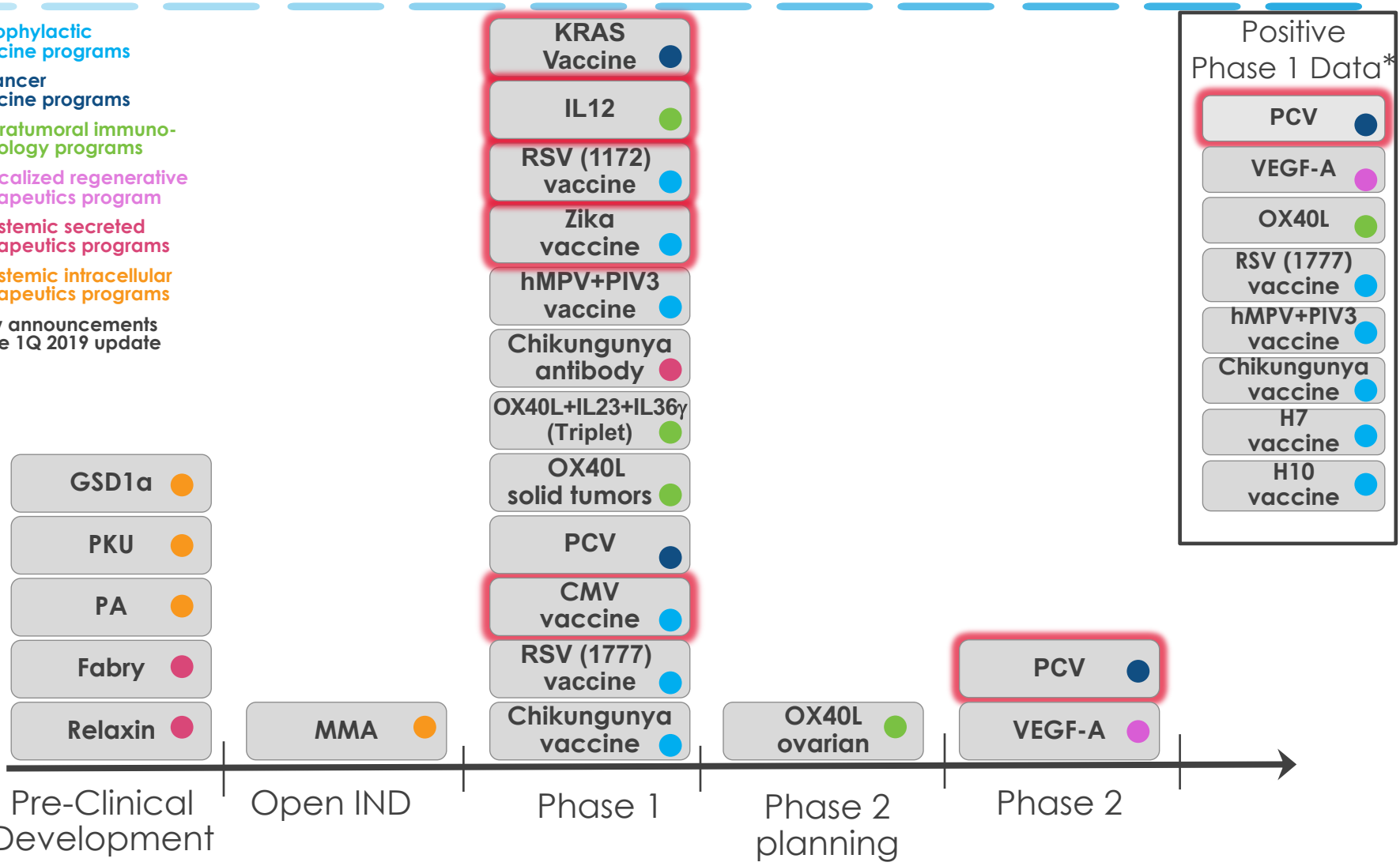


*Data in some cases are interim; positive data means the data warrant continued advancement within a trial or for further development

moderna

Moderna's development pipeline

- 7 Prophylactic vaccine programs
- 2 Cancer vaccine programs
- 3 Intratumoral immuno-oncology programs
- 1 Localized regenerative therapeutics program
- 3 Systemic secreted therapeutics programs
- 4 Systemic intracellular therapeutics programs
- New announcements since 1Q 2019 update



*Data in some cases are interim; positive data means the data warrant continued advancement within a trial or for further development

moderna

Moderna in August 2019

Programs in Development

5
Immuno-Oncology

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

5
Rare Disease

- MMA – Ph 1 actively recruiting
- PA, PKU, Fabry & GSD1a in GLP Tox
- First secreted systemic therapeutic in Ph 1

4
Vaccines for major unmet needs

- CMV in Ph 1, fully enrolled
- RSV in Ph 1
- hMPV+PIV3 – positive interim Ph 1 data
- Zika in Ph 1

Foundations

>1,000
Healthy volunteers and patients enrolled

>800
employees

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

Leading Biopharma Partners

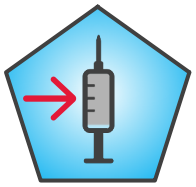
MERCK

AstraZeneca

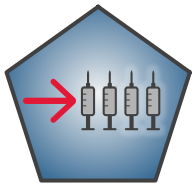
VERTEX

$1.44 bn
of cash, cash equivalents, and investments as of June 30, 2019 (unaudited)

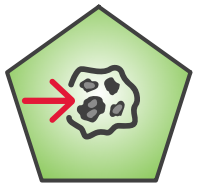
Progress by modality



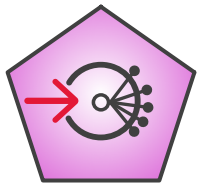
Prophylactic vaccines



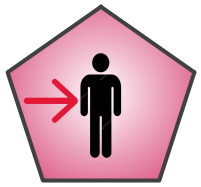
Cancer vaccines



Intratumoral immuno-oncology



Localized regenerative therapeutics

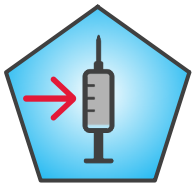


Systemic secreted therapeutics

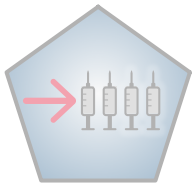
Systemic intracellular therapeutics

moderna

Progress by modality

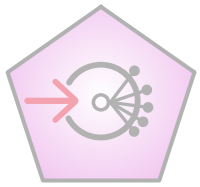


Prophylactic vaccines

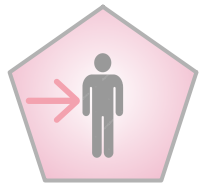


Cancer vaccines

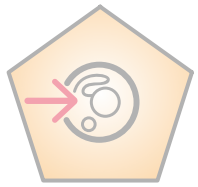
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

moderna

Prophylactic Vaccines

Modality	ID #	Program	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Prophylactic vaccines – Commercial programs	**mRNA-1172/ Merck V172**	RSV vaccine					Merck to pay milestones and royalties
	mRNA-1777	RSV vaccine					
	mRNA-1647	CMV vaccine					Worldwide
	mRNA-1653	hMPV+PIV3 vaccine					Worldwide
	mRNA-1893	Zika vaccine					Worldwide *BARDA funded*
Prophylactic vaccines- Global health programs	**mRNA-1851**	Influenza H7N9 vaccine					Worldwide *Advancing subject to funding*
	mRNA-1440	Influenza H10N8 vaccine					Worldwide *Advancing subject to funding*
	mRNA-1388	Chikungunya vaccine					Worldwide *Advancing subject to funding*

moderna

Prophylactic vaccines

Five positive phase 1 readouts

Clinical summary

- **Safety: >** 1,000 healthy volunteers enrolled in 9 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): Phase 1 fully enrolled, with top dose of 300ug
  - **RSV** (mRNA-1172/Merck V172:; First subject dosed in phase 1
  - **Zika** (mRNA-1893): First subject dosed in phase 1
  - **hMPV+PIV3** (mRNA-1653): Phase 1 second interim data show antibody titers remained above baseline at all dose levels at month 7. Full data to be presented at a future medical meeting
    - Preparing to start phase 1b study in seropositive toddlers following recent meeting with FDA
  - **Chikungunya vaccine** (mRNA-1388): Phase 1 data – 100% seroresponse for subjects at the 100µg dose level at 1 month and 92.9% at 6 months post vaccination
  - **H7 influenza** (mRNA-1851): Phase 1 data: 96% of subjects at 25µg achieved HAI titer > 1:40
  - **H10 influenza** (mRNA-1440): Phase 1 data: 100% of subjects at 100µg achieved HAI titer > 1:40
    - Publication in Vaccine showing mRNA-1851 and mRNA-1440 against H7N9 and H10N8 influenza viruses, respectively, were immunogenic and well tolerated

moderna

Prophylactic vaccines

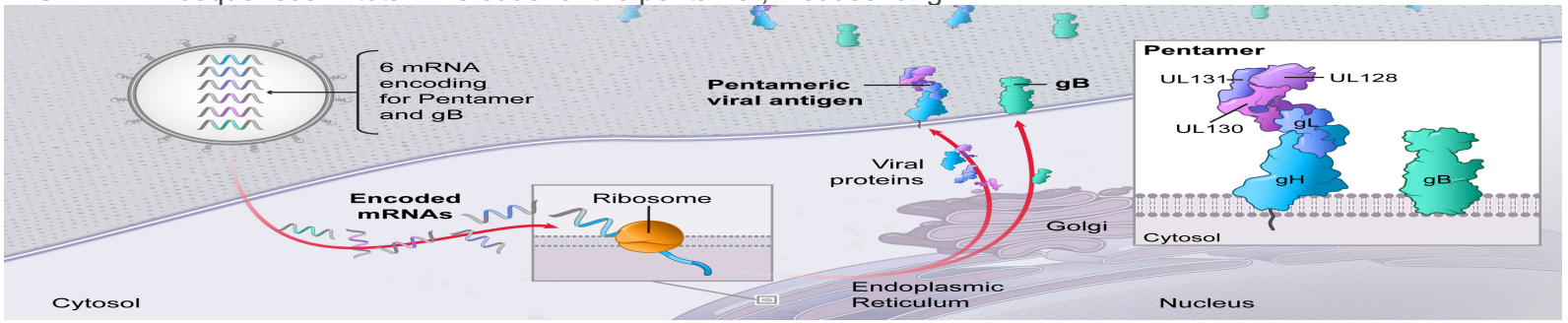
mRNA-1647 for CMV : Phase 1 trial fully enrolled; with top dose of 300μg

Congenital cytomegalovirus (CMV) overview

- Human CMV is a common human pathogen and member of the herpes virus family and is the leading cause of birth defects
- **Disease burden:** Birth defects in 20% of infected babies – permanent neurodevelopment disabilities
  - approximately one third of infants with severe congenital disease die in first year; significant long-term burden on survivors, caregivers, and health systems
  - 0.65% of US newborns infected annually (~25,000 US newborns)
- **Initial target population:** Women of childbearing potential
- **Unmet need:** No approved CMV vaccine

mRNA-1647

- Six mRNA sequences in total: five code for the pentamer, 1 codes for gB



Preclinical:

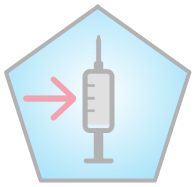
- mRNA-1647 demonstrated pentamer and gB can produce potent and durable antibody titers against the antigens in pre-clinical species

Clinical:

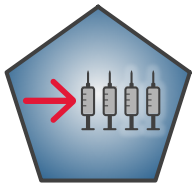
- Phase 1 trial is fully enrolled, no further cohorts after 300 μg dose cohort

moderna

Progress by modality

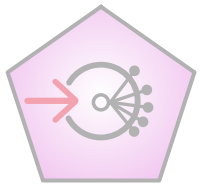


Prophylactic vaccines

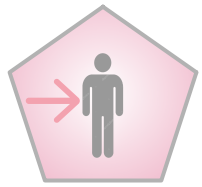


Cancer vaccines

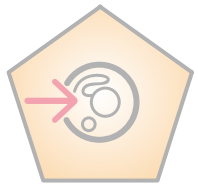
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

moderna

Cancer Vaccines

Modality	ID #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Cancer vaccines	**mRNA-4157**	Personalized cancer vaccine (PCV)					50-50 global profit sharing with Merck
	NCI-4650	Personalized cancer vaccine (PCV)					
	mRNA-5671 Merck V941	KRAS vaccine *CRC, NSCLC, pancreatic cancer*					50-50 global profit sharing with Merck

Note: NCI-4650 differs from mRNA-4157 in its neoantigen selection process

moderna

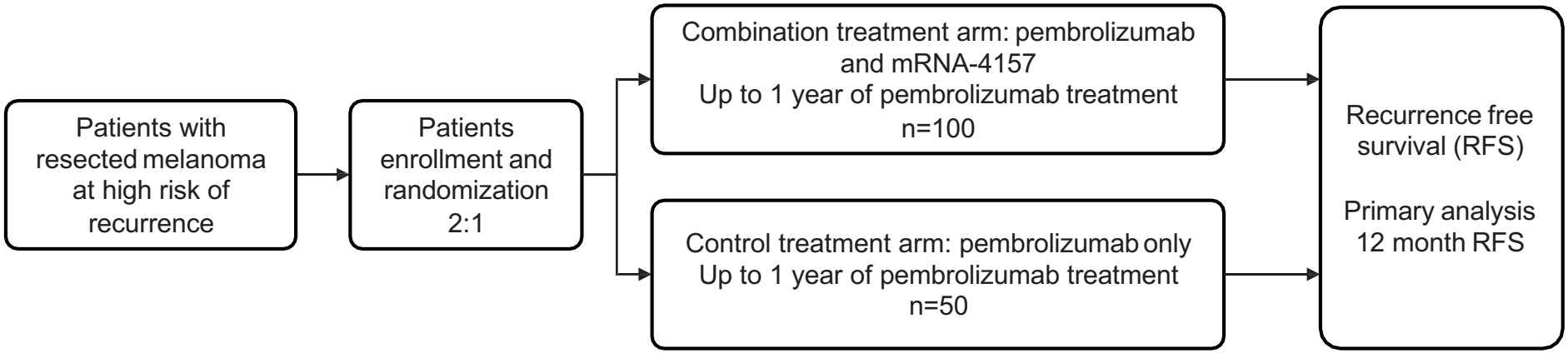
PCV (mRNA-4157)

Phase 2 initiated ; First patient consented

- Randomized phase 2, PCV + pembrolizumab vs. pembrolizumab alone in resected melanoma at high risk of recurrence

Key Objectives

- Assess whether postoperative adjuvant therapy with mRNA-4157 and pembrolizumab improves recurrence free survival compared to pembrolizumab only in patients with complete resection of cutaneous melanoma at high risk of recurrence
- Primary endpoint: recurrence free survival at 12 months



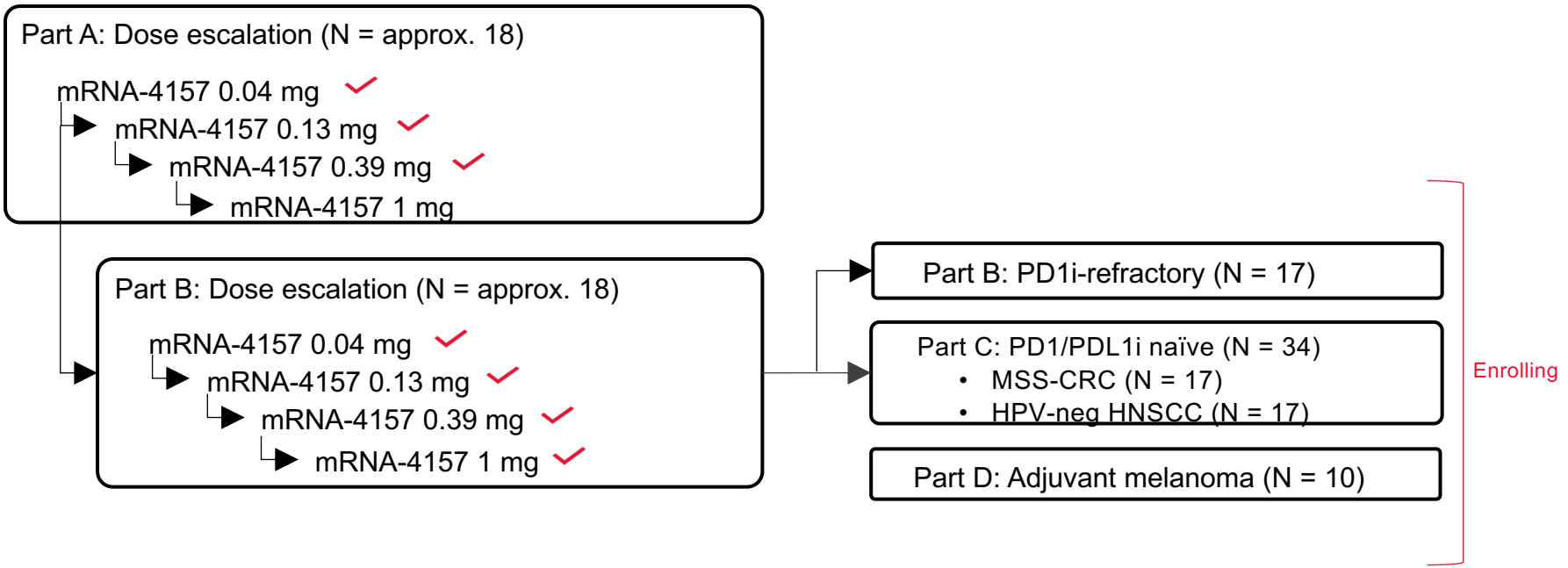
Personalized cancer vaccine (mRNA-4157)

Phase 1 design

MERCK

Key Objectives

- Part A — To assess the safety and tolerability of mRNA-4157 monotherapy in subjects with resected solid tumors, including an apheresis cohort
- Parts B, C and D — To assess the safety, tolerability, and recommended phase 2 dose of mRNA-4157 administered in combination with pembrolizumab
- Part D — To assess the immunogenicity of mRNA-4157 with pembrolizumab from apheresis samples



moderna

Personalized Cancer Vaccines

mRNA-4157: Phase 1 data

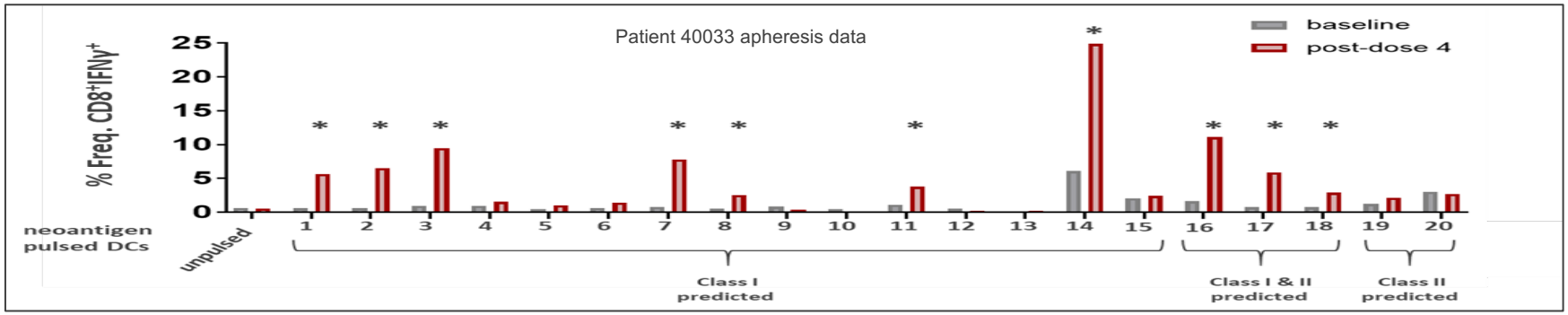
MERCK

Clinical & regulatory update

- Continuing to enroll patients in phase 1 safety, tolerability and immunogenicity trial monotherapy and in combination with pembrolizumab
- Part C&D: Continuing to enroll patients
- Interim safety, tolerability immunogenicity data presented at ASCO 2019[1]
- First patients consented for phase 2 Randomized Controlled Trial

Select clinical data[1]

- **Safety:** mRNA-4157 is well tolerated at all dose levels studied with no DLTs reported. No mRNA-4157 related grade 3/4 AE or SAE was reported. The most common grade 2 adverse events were fatigue, soreness at the injection site, colitis and myalgias.
- **Activity:** Neoantigen specific CD8 T-cell responses were detected in 10 out of 18 class I neoantigens in patient 40033, the first patient dosed at 1 mg who underwent apheresis. 100% of positive CD8 T-cell responses post vaccination were to neoantigens with a high predicted binding affinity of <500 nm



- **Early clinical:** Clinical responses have been seen in 6 out of 20 patients treated with mRNA-4157/pembrolizumab combination. Of these 6 patients, 2 responses have been seen in patients previously treated with PD-(L)1 inhibitor and 1 patient achieved CR prior to vaccination

[1] Data cutoff as of May 10, 2019

moderna

KRAS Vaccine

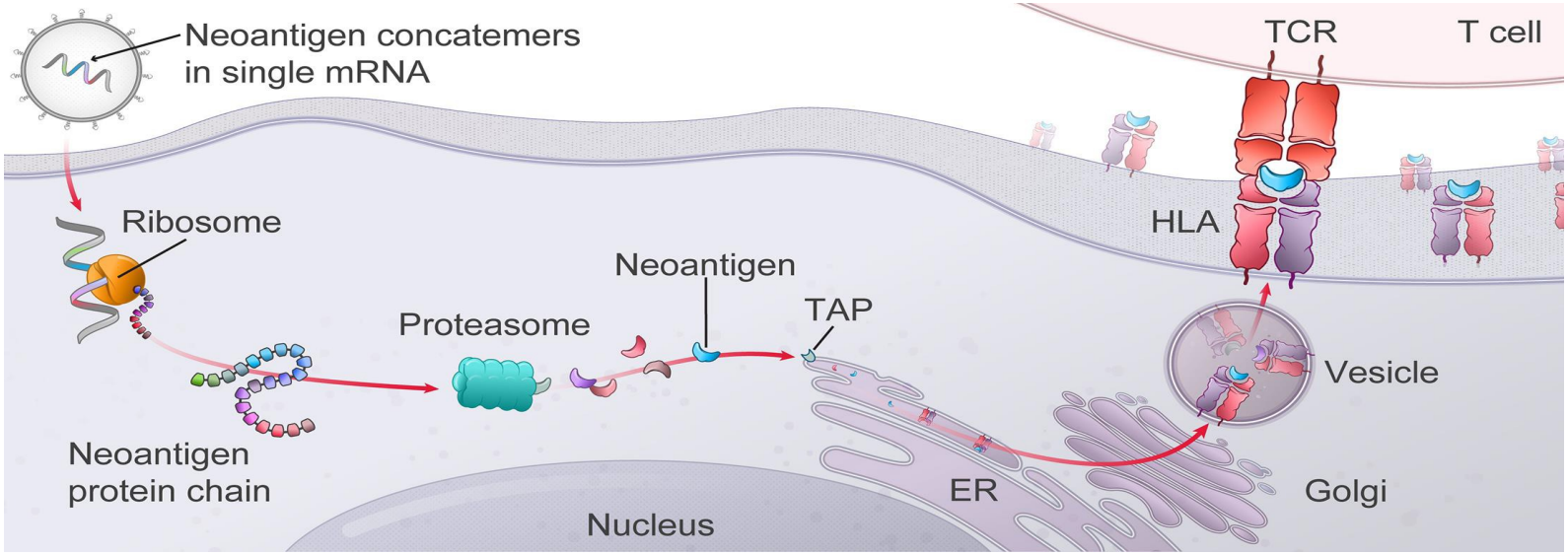
mRNA-5671/Merck V941:

KRAS Overview:

- KRAS is a key regulator of cell proliferation and survival; mutations cause dysregulated cell proliferation
- One of the most frequently mutated oncogenes in human cancers; mutation is present in >20% of human cancers
- Mutations found principally in pancreatic, lung and colorectal cancers
- Recognition of mutated KRAS epitopes by T-cells can lead to cancer cell regression as proven by adoptive T-cell transfer[1]

mRNA-5671/Merck V941:

- Codes for the four most prevalent KRAS mutations G12D, G12V, G13D, and G12C covering 80-90% of KRAS mutations



[1] T-Cell Transfer Therapy Targeting Mutant KRAS in Cancer, NEJM, Eric Tran, Ph.D., et al.

KRAS vaccine (mRNA-5671)/Merck V941

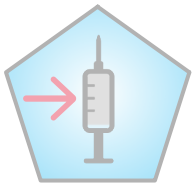
First Patient dosed in Phase 1 trial

Phase 1 study overview

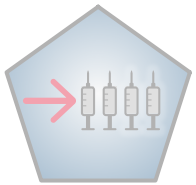
—A Phase 1, Open-Label, Multicenter Study to Assess the Safety and Tolerability of mRNA-5671/Merck V941 as a Monotherapy and in Combination With Pembrolizumab in Participants With KRAS Mutant Advanced or Metastatic Non-Small Cell Lung Cancer, Colorectal Cancer or Pancreatic Adenocarcinoma

—Selecting for HLA subtypes (HLA-A*1101 and/or HLA-C*0802) most likely to respond

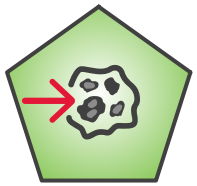
Progress by modality



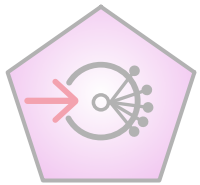
Prophylactic vaccines



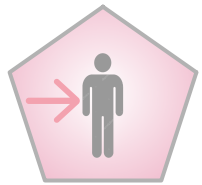
Cancer vaccines



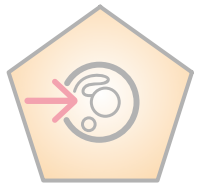
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

moderna

Intratumoral Immuno-Oncology

Modality	ID #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Intratumoral immuno-oncology	**mRNA-2416**	OX40L *Solid tumors/lymphoma* *Advanced ovarian Cancer*					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

moderna

OX40L

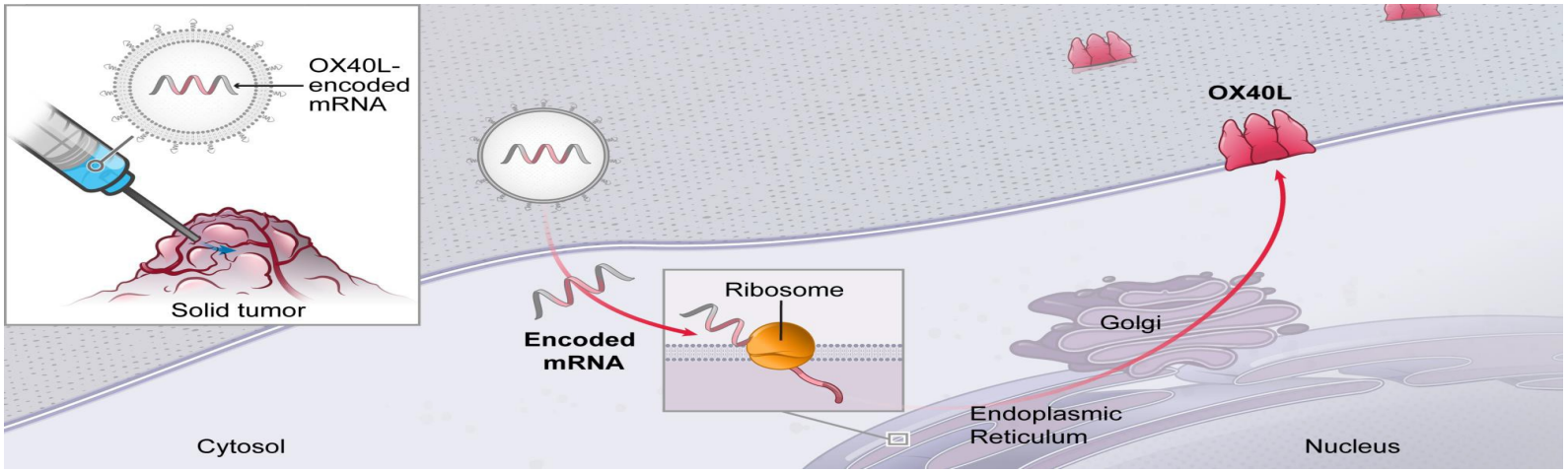
mRNA-2416: Phase 1 ongoing at highest dose level, Phase 2 cohort is being prepared

OX40L Overview:

- OX40L is a potent co-stimulator, which promotes T-cell proliferation and enhanced survival in the presence of antigen

mRNA-2416:

- mRNA-2416 encodes for OX40L, which is a membrane protein that we believe cannot be manufactured by recombinant technologies



Clinical:

- Phase 1/2, open-label, multicenter, dose escalation and efficacy study of mRNA 2416 for intratumoral injection to patients with advanced malignancies
- Interim analysis SITC 2018: mRNA-2416 is tolerable at all dose levels studied with no DLTs reported and the majority of AE's being grade 1 or 2
- A clear increase in OX40L protein expression from mRNA-2416 was observed in both tumor and stromal regions in three out of the five post-treatment biopsies collected from injected tumors
- Dosing at highest levels (8mg) continues in phase 1
- Phase 2 cohort in patients with ovarian cancer, including in combination with durvalumab is being prepared

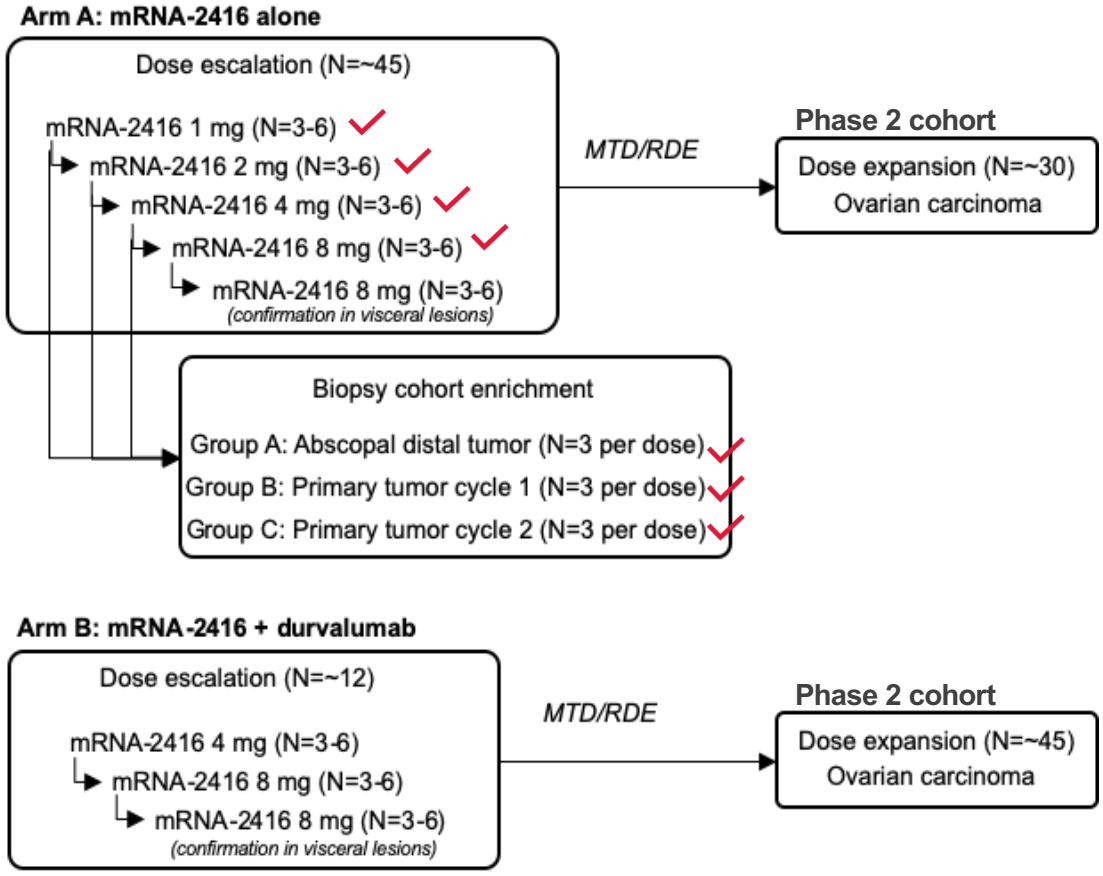
moderna

OX40L (mRNA-2416)

Phase 1/2 design

Key Objectives

- Evaluate safety and tolerability of mRNA-2416 administered intratumorally
- Define the maximum tolerated dose and recommended dose for expansion
- Other endpoints include PK analyses as well as assessment of biomarkers of immunological response in tumor



moderna

OX40L+IL23+IL36γ

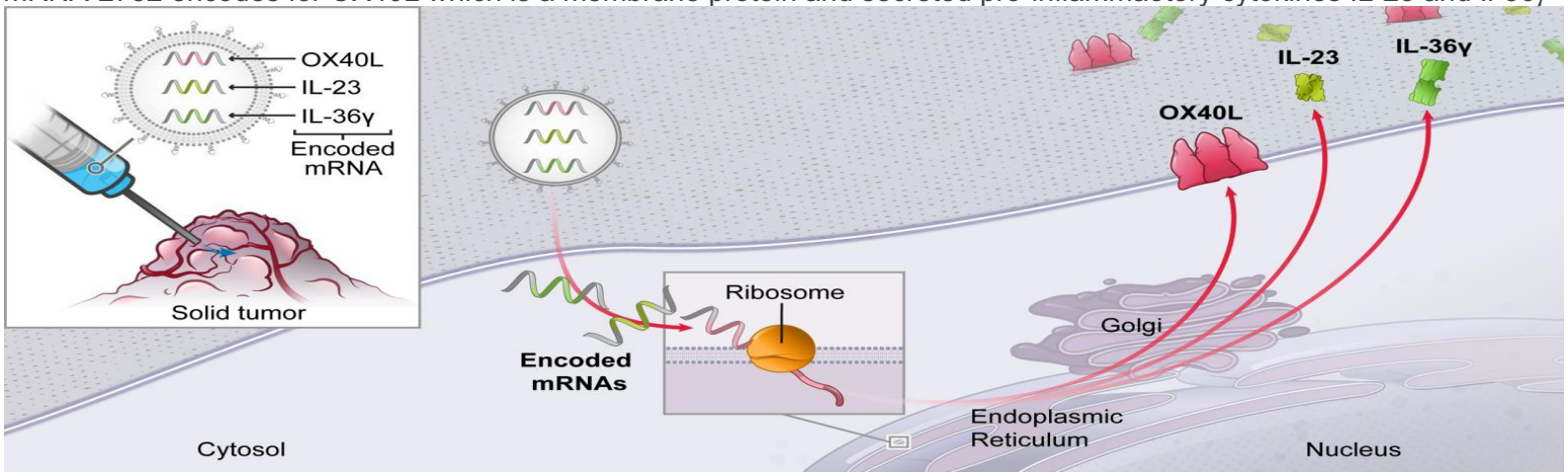
mRNA-2752: Phase 1 ongoing; First patient dosed in combination durvalumab

OX40L+IL23+IL36γ (Triplet) Overview:

- OX40L powerful co-stimulatory protein that enhances T-cell expansion, function and memory formation
- IL23 and IL36γ have established roles in mediating immune responses

mRNA-2752:

- mRNA-2752 encodes for OX40L which is a membrane protein and secreted pro-inflammaotory cytokines IL-23 and Il-36γ



Clinical:

- Phase 1, open-label, multicenter, dose escalation and efficacy study of mRNA 2752 for intratumoral injection alone and in combination with immune checkpoint blockade
- Phase 1 ongoing
- First patient dosed with combination of mRNA-2752 and durvalumab

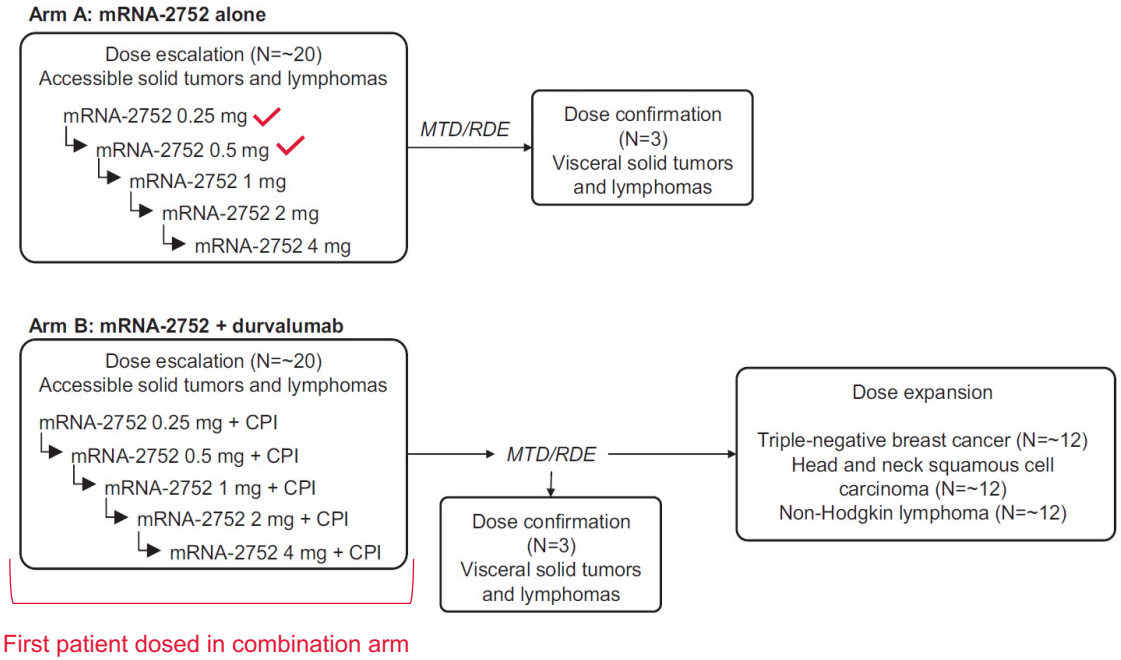
moderna

OX40L+IL23+IL36γ (Triplet) (mRNA-2752)

Phase 1 design

Key Objectives

- Evaluate safety and tolerability of mRNA-2752 administered alone and in combination with checkpoint inhibitors
- Define MTD and recommended dose for expansion for mRNA-2752 alone and in combination with durvalumab
- Intended to assess:
  - Anti-tumor activity
  - Protein expression in tumors
  - Pharmacokinetics



moderna

IL12

MEDI1191: First patient dosed in phase 1

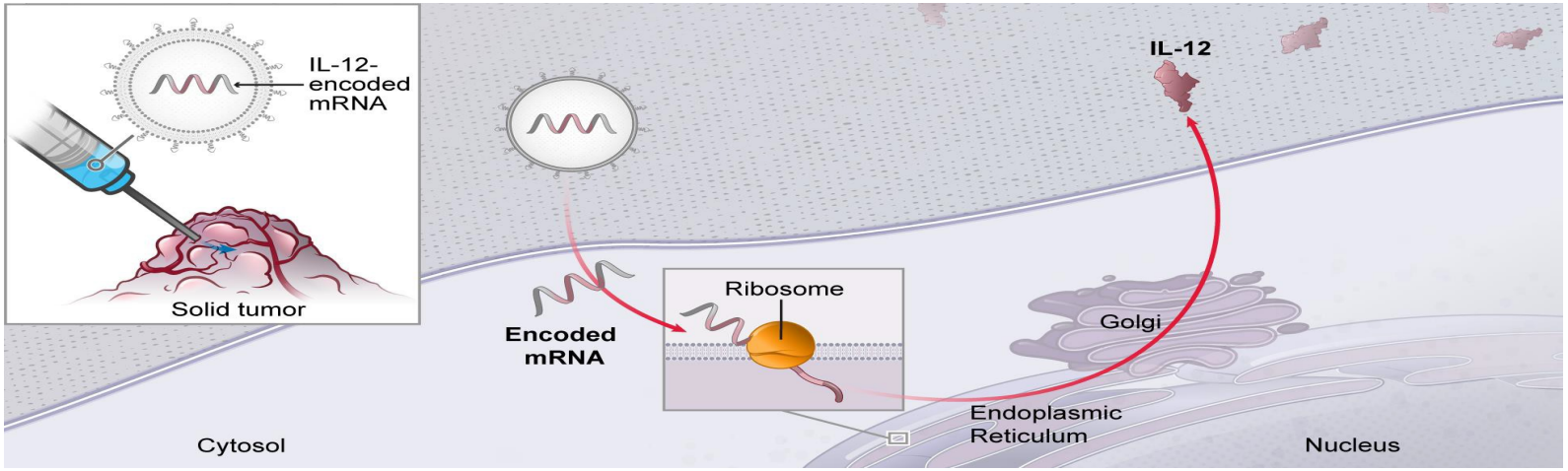
AstraZeneca

IL12 Overview:

- IL12 is a potent immune modulator associated with type 1 immune response and production of interferon gamma

MEDI1191:

- Encodes for IL12, a secreted cytokine that acts locally in the tumor microenvironment (TME)

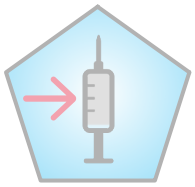


Clinical:

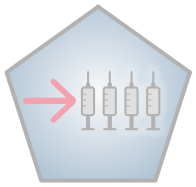
- Phase 1, open-label, multicenter, dose escalation and expansion study of MEDI1191 administered intratumorally as monotherapy and in combination with durvalumab in subjects with advanced solid tumors
- Key objectives to evaluate safety and tolerability in monotherapy and combination arms and objective response rate in patients within expansion arms
- First patient dosed with IL12 monotherapy in phase 1 trial

moderna

Progress by modality

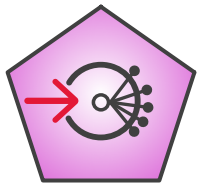


Prophylactic vaccines

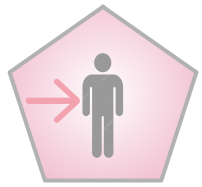


Cancer vaccines

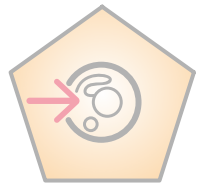
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

moderna

Localized Regenerative Therapeutics

Modality	ID #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Localized regenerative therapeutics	**AZD8601**	VEGF-A *Myocardial ischemia*					AZ to pay milestones and royalties

moderna

VEGF-A

AZD8601: Phase 2a ongoing; additional trial sites open

AstraZeneca

VEGF-A:

- VEGF-A is a potent angiogenic factor that promotes the growth of blood vessels
- Preclinical data suggest that expression of VEGF-A in the ischemic heart could increase blood flow and partially restore cardiac function

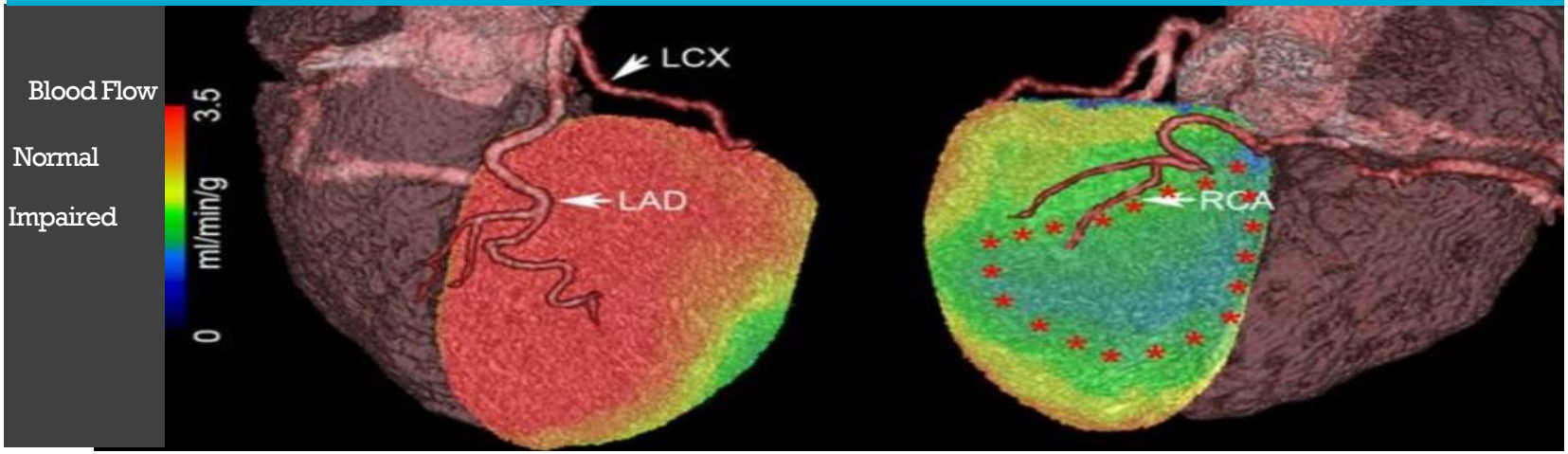
AZD8601:

- Encodes for VEGF-A in saline solution

Clinical:

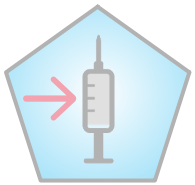
- Phase 1a study demonstrated AZD8601 is well tolerated. Common AEs were mild. Phase 1a results show dose dependent production of VEGF-A
- Phase 1b data show a single dose of intradermal VEGF-A (AZD8601) restored baseline skin blood flow in diabetic patients
- Phase 2a study to evaluate safety in a CABG population is on going
- Additional clinical trial site open in Germany. Sites now open in Finland, Netherlands and Germany

O^{15}-PET imaging is used to create tailored injection maps in patients

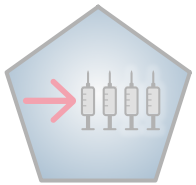


moderna

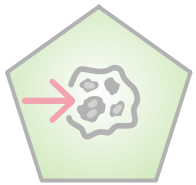
Progress by modality



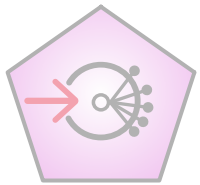
Prophylactic vaccines



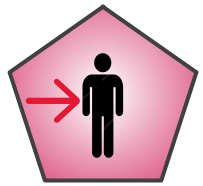
Cancer vaccines



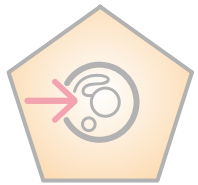
Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics



Systemic intracellular therapeutics

moderna

Systemic secreted therapeutics

Modality	ID #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Systemic secreted therapeutics	**mRNA-1944**	Antibody against Chikungunya virus					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

moderna

Antibody against Chikungunya virus

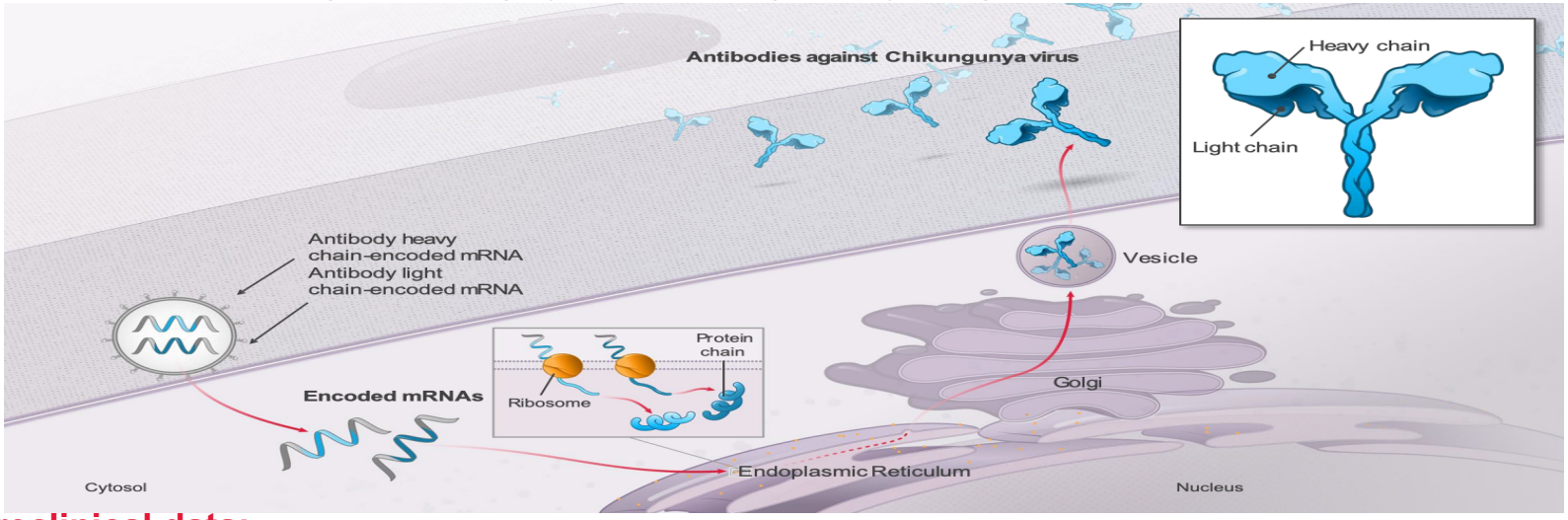
mRNA-1944: 6 of 8 subjects dosed in 3rd cohort of Ph 1 trial[1]

Antibody against Chikungunya virus Overview:

- Circulating antibody to confer passive immunity

mRNA-1944:

- Encodes for antibodies against Chikungunya virus consisting of heavy and light chains



Preclinical data:

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

Clinical:

- Phase 1, Randomized, placebo controlled single ascending dose study in healthy volunteers evaluating safety and tolerability
- Objectives: to determine pharmacokinetics of up to four dose levels on mRNA-1944, to determine if antibodies produced neutralize the virus and to determine pharmacodynamics of Chikungunya virus IgG levels
- Initial 6 subjects (6 of 8 subjects) dosed in 3rd cohort of phase 1 trial[1]

[1] As of July 30, 2019

moderna

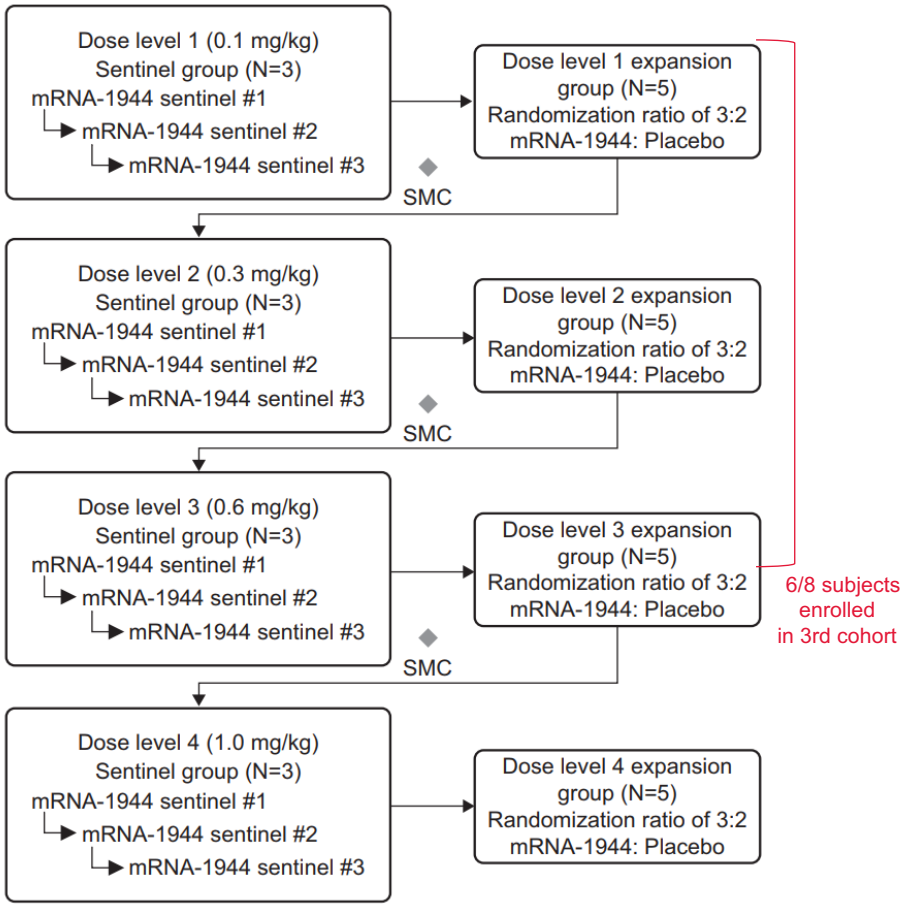
Antibody against Chikungunya virus (mRNA-1944)

6 of 8 subjects dosed in 3rd cohort of Phase 1 trial[1]

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

Key Objectives

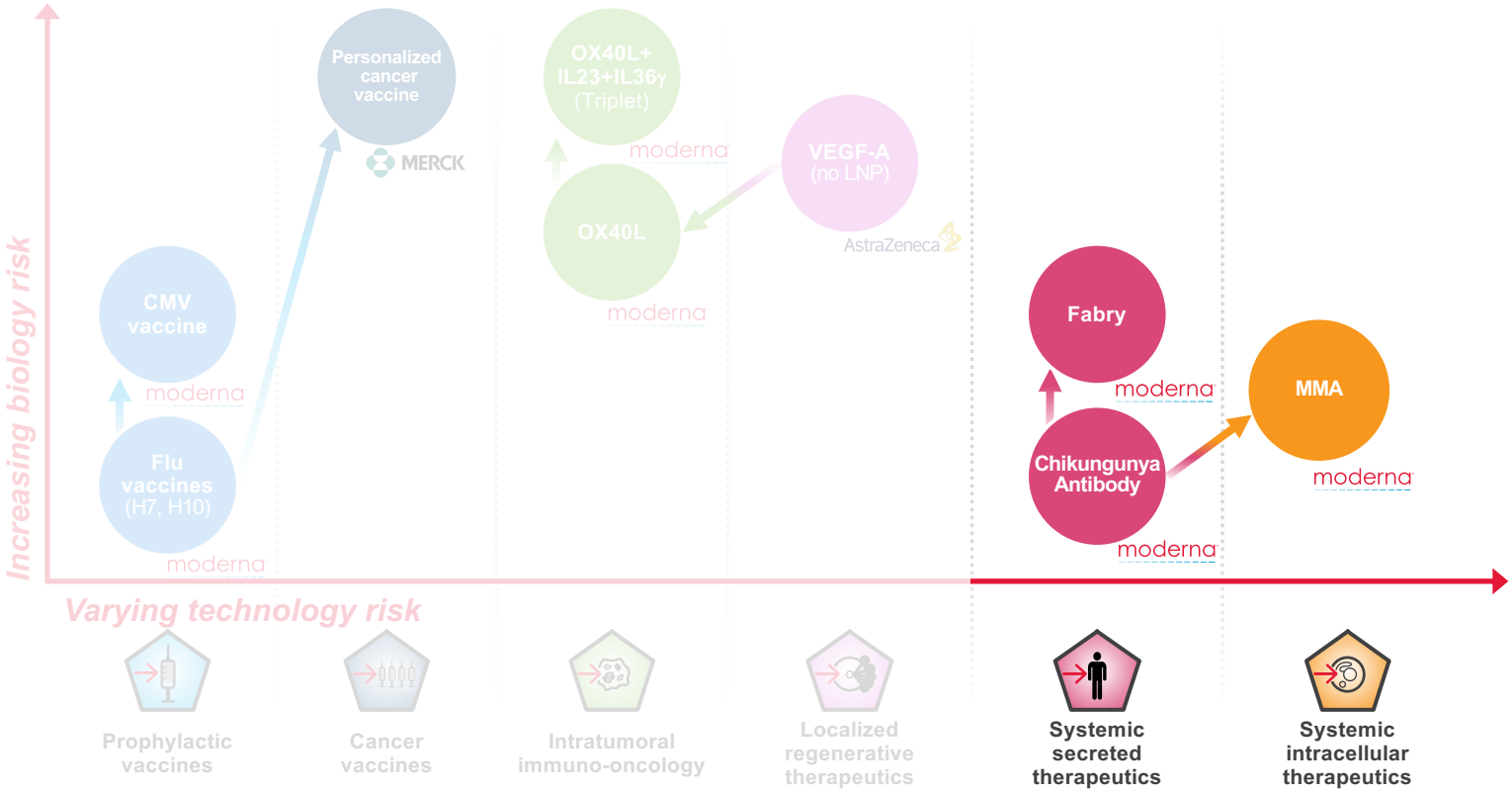
- Evaluate safety and tolerability of escalating doses of mRNA-1944 administered via intravenous infusion
- Determine pharmacokinetics of up to four dose levels (0.1, 0.3, 0.6, 1.0 mg/kg)
- Determine if the antibodies produced are sufficiently active to neutralize viral infection in assays
- Determine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



[1] As of July 30, 2019

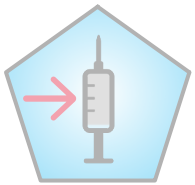
moderna

Our Modality Strategy

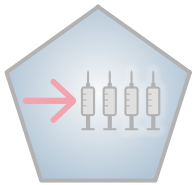


moderna

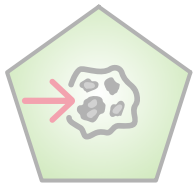
Progress by modality



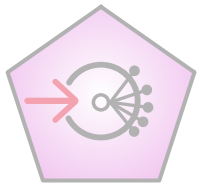
Prophylactic vaccines



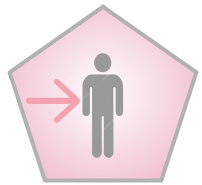
Cancer vaccines



Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics

Systemic intracellular therapeutics

moderna

Systemic intracellular therapeutics

Modality	ID#	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
	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*					Worldwide

moderna

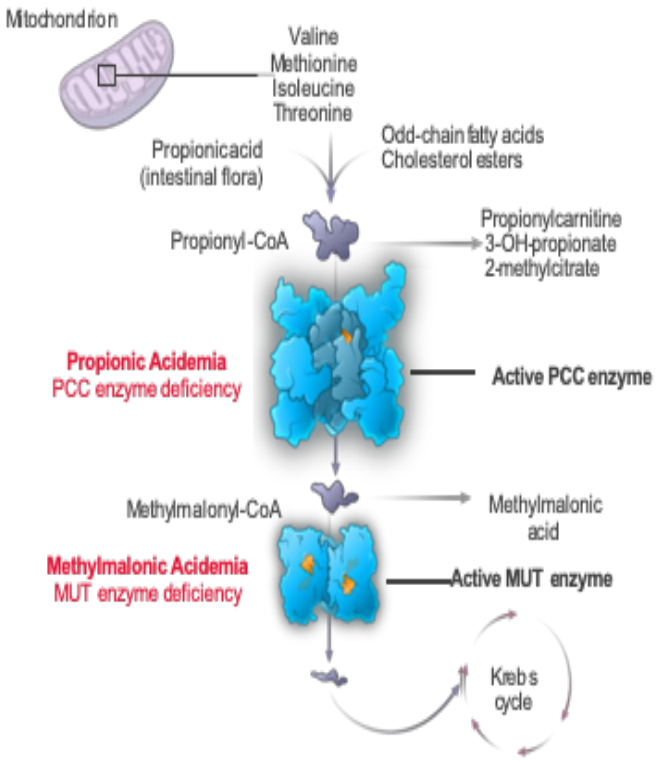
Methylmalonic acidemia (MMA)
Propionic acidemia (PA)

MMA/ PA Overview:

- MMA and PA are inborn errors of protein metabolism caused by MUT enzyme deficiency and PCC enzyme deficiency, respectively
- Similar biology and disease pathology
- Rare diseases: prevalence for each disease in the US:
  - MMA: ~500-2000 patients
  - PA: ~325-2000 patients
- Identified by newborn screening
- Current care regimens include strict dietary restriction, oral and IV medications as supportive care and liver transplant

Organic acidemias

Multiple candidates targeting the same metabolic pathway



moderna

MMA (mRNA-3704): Phase 1/2 trial sites actively recruiting
PA (mRNA-3927): Preparing IND filing

MMA (mRNA-3704):

- **Encodes** for MUT enzyme, an intracellular protein that acts in the mitochondria of liver cells
- **Same proprietary lipid nanoparticle formulation** as antibody against Chikungunya virus (mRNA-1944)
- **FDA orphan drug designation**, FDA rare pediatric disease designation, FDA Fast Track designation, EMA orphan drug designation

PA (mRNA-3927):

- **Encodes** for PCCA and PCCB subunits that form the active PPC enzyme, an intracellular protein that acts in the mitochondria in liver cells
- **Same proprietary lipid nanoparticle formulation** as as antibody against Chikungunya virus (mRNA-1944)
- **FDA orphan drug designation**, FDA rare pediatric disease designation, EMA orphan drug designation

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

Clinical & regulatory update

- **MMA and PA Natural History Study** (MaP): 71 patients enrolled (35 MMA, 36 PA)[1]
- **MMA** (mRNA-3704) – Phase 1/2 trial sites for interventional study open

[1] As of July 15, 2019

moderna

Moderna's development pipeline

Announcements since IPO

Modality	ID #	Program *Indication*	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
Prophylactic vaccines	mRNA-1172	Respiratory syncytial virus (RSV) vaccine			*First patient dosed in phase 1*		Merck to pay milestones and royalties
	mRNA-1777	Respiratory syncytial virus (RSV) vaccine			*Paused*		
	mRNA-1647	Cytomegalovirus (CMV) vaccine			*Phase 1 fully enrolled*		Worldwide
	mRNA-1653	Human metapneumovirus and parainfluenza virus 3 (hMPV+PIV3) vaccine	Phase 1b (pediatrics)	Phase 1 (adults)	*Phase 1 (adults) positive interim data; starting phase1b toddler study*		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			*First patient dosed*		Worldwide *BARDA funded*
	mRNA-1388	Chikungunya vaccine					Worldwide *Advancing subject to funding*
Cancer vaccines	mRNA-4157	Personalized cancer vaccine (PCV)			*Interim phase 1 data presented ASCO '19*		50-50 global profit sharing with Merck
	NCI-4650	Personalized cancer vaccine (PCV)			*Phase 2 started*		
	mRNA-5671	KRAS vaccine			*First patient dosed in phase 1*		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	*Phase 2 cohort actively recruiting*		Worldwide
	mRNA-2752	OX40L+IL23+IL36γ (Triplet) *Solid tumors/lymphoma*			*Dosing in combination with durvalumab*		Worldwide
	MEDI1191	IL12 *Solid tumors*			*First patient dosed in phase 1*		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			*6/8 subjects in 3rd 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)*			*Phase 1/2 trial sites open, Fast Track Designation*		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

Second Quarter 2019 Financial Results (Unaudited)

Balance Sheets	June 30, 2019	December 31, 2018
Cash, cash equivalents and investments [1]	$ 1.44 billion	$ 1.69 billion

Statements of Cash Flows	6 months ended June 30, 2019	6 months ended June 30, 2018
Net cash used in operating activities [2]	$ 256 mm	$ 160 mm
Cash used for purchases of property and equipment [3]	$ 18 mm	$ 66 mm

Statements of Operations	3 months ended June 30, 2019	3 months ended June 30, 2018	6 months ended June 30, 2019	6 months ended June 30, 2018
Total revenue	$ 13 mm	$ 29 mm	$ 29 mm	$ 58 mm
Research and development expenses	$ 128 mm	$ 104 mm	$ 259 mm	$ 195 mm
General and administrative expenses	$ 29 mm	$ 21 mm	$ 56 mm	$ 38 mm
Total operating expenses	$ 157 mm	$ 126 mm	$ 315 mm	$ 232 mm
Net loss	$ (135) mm	$ (91) mm	$ (268) mm	$ (163) mm

2019 expected cash position:
Moderna reiterates its expectation for cash, cash equivalents and investments at December 31, 2019 to be in the range of $1.15 billion to $1.20 billion.

Notes:

1. Excludes restricted cash of $12 mm for both June 30, 2019 and December 31, 2018.
2. 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 the first quarter of 2019, we have no further in-licensing payment obligations under the Cellscript-MRT Agreements.
3. Includes $11 mm in 2019 and $61 mm in 2018 related to our Norwood manufacturing facility.

moderna

Moderna Priorities for 2019-2020

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

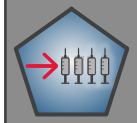
1. **Execute on the development pipeline**
   - 20 programs in development
   - Focus on demonstrating human proof of concept
2. **New development candidates in existing modalities**
3. **New development candidates in new modalities**

moderna

Moderna 2Q19 Highlights

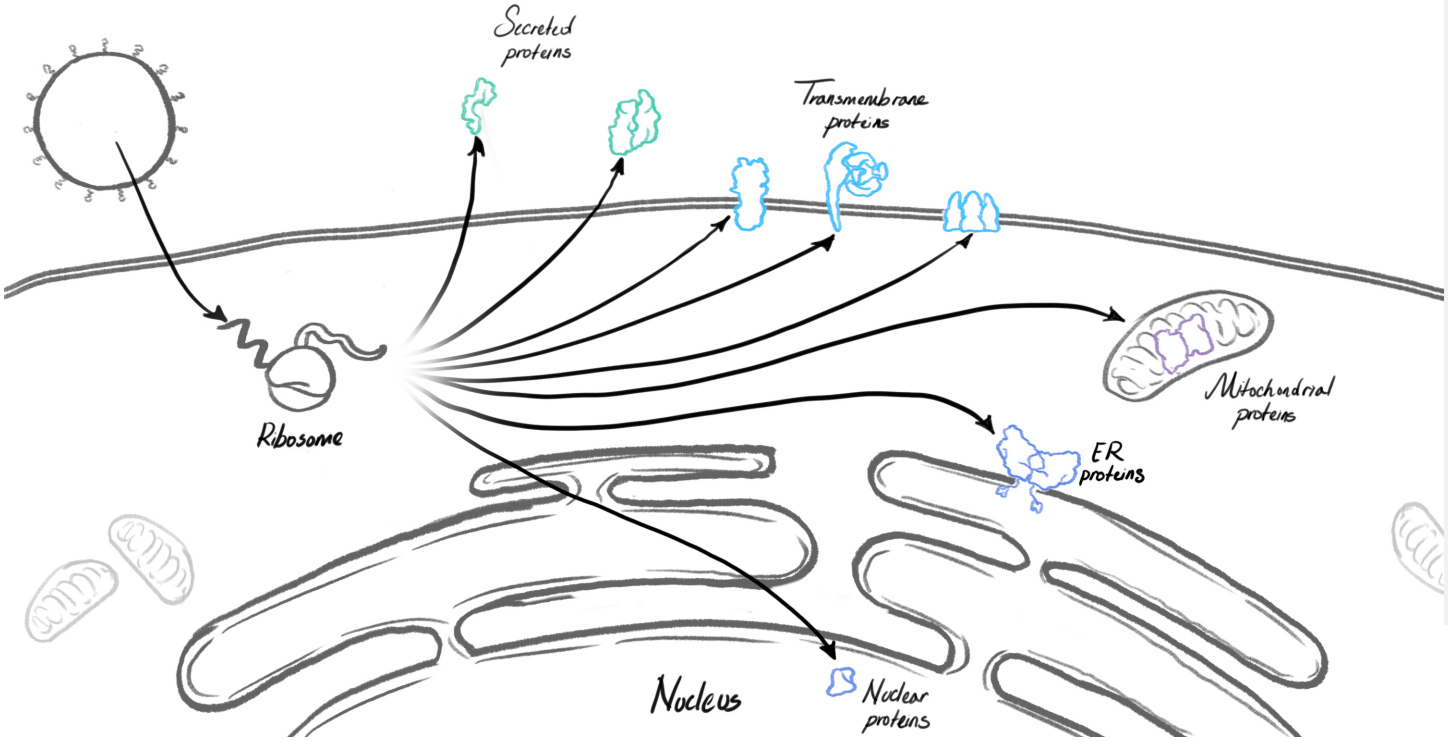
- Phase 2 Personalized Cancer Vaccine (mRNA-4157) study initiated, with first patient consented
- Phase 1 CMV vaccine (mRNA-1647) study fully enrolled
- Four new phase 1 trials have begun, two in immuno-oncology and two in infectious diseases
- Vertex Pharmaceuticals extended the companies' CF research collaboration

Anticipated clinical next steps

 **Prophylactic vaccines**	• **CMV** – Phase 1 safety and immunogenicity data; Phase 2 start • **hMPV+PIV3** – Phase 1b seropositive toddler study start • **RSV** – Phase 1 safety and immunogenicity data • **Zika** – Phase 1 safety and immunogenicity data
 **Cancer vaccines**	• **PCV** – Additional Ph1 data and Phase 2 clinical data • **KRAS** – Phase 1 data
 **Intratumoral immuno-oncology**	• **OX40L** – Initiation of dosing of phase 2 cohort in advanced ovarian carcinoma **OX40L+IL23+IL36γ (Triplet)** – Completion of dose escalation monotherapy and combination cohorts • **IL12** – Phase 1 data
 **Localized regenerative therapeutics**	• **VEGF** – Phase 2a data
 **Systemic secreted therapeutics**	• **Antibody against Chikungunya virus** – 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

moderna

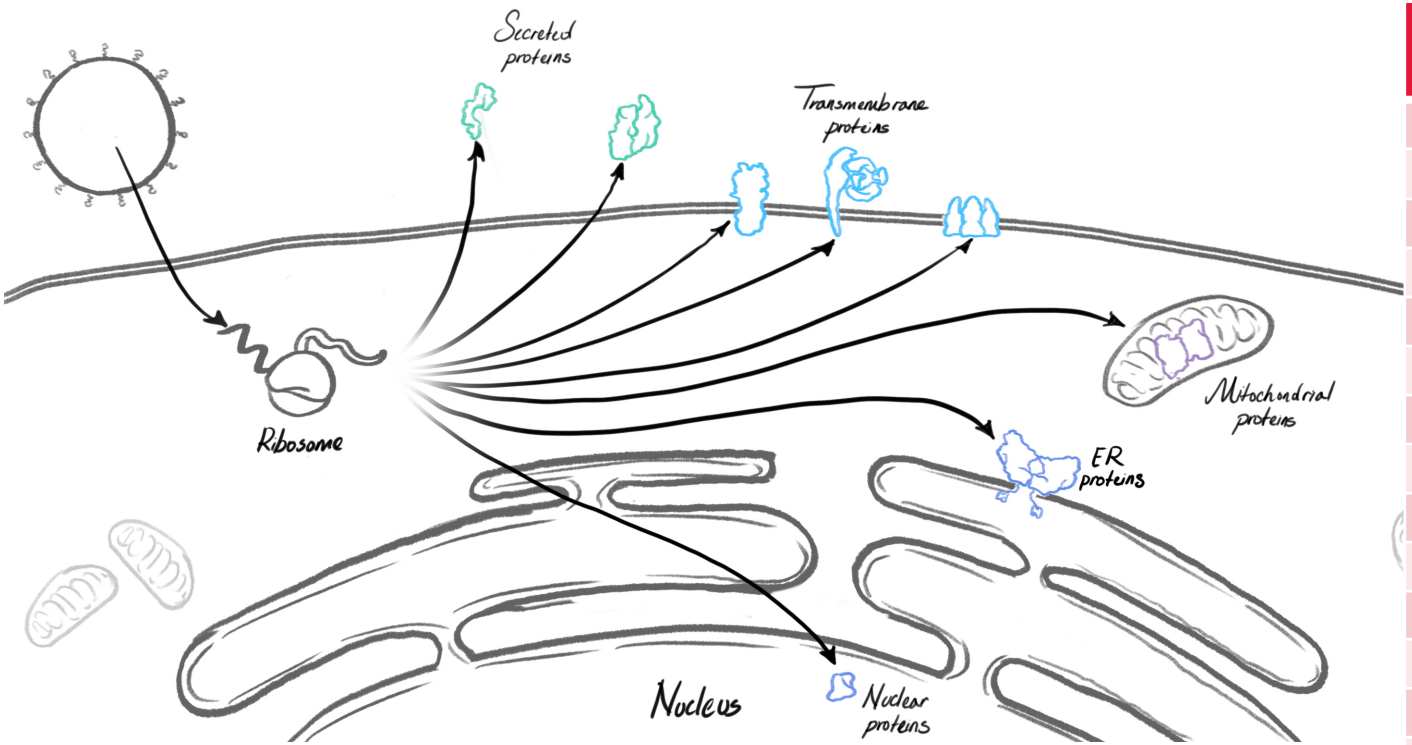
mRNA as a potential new class of medicines



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

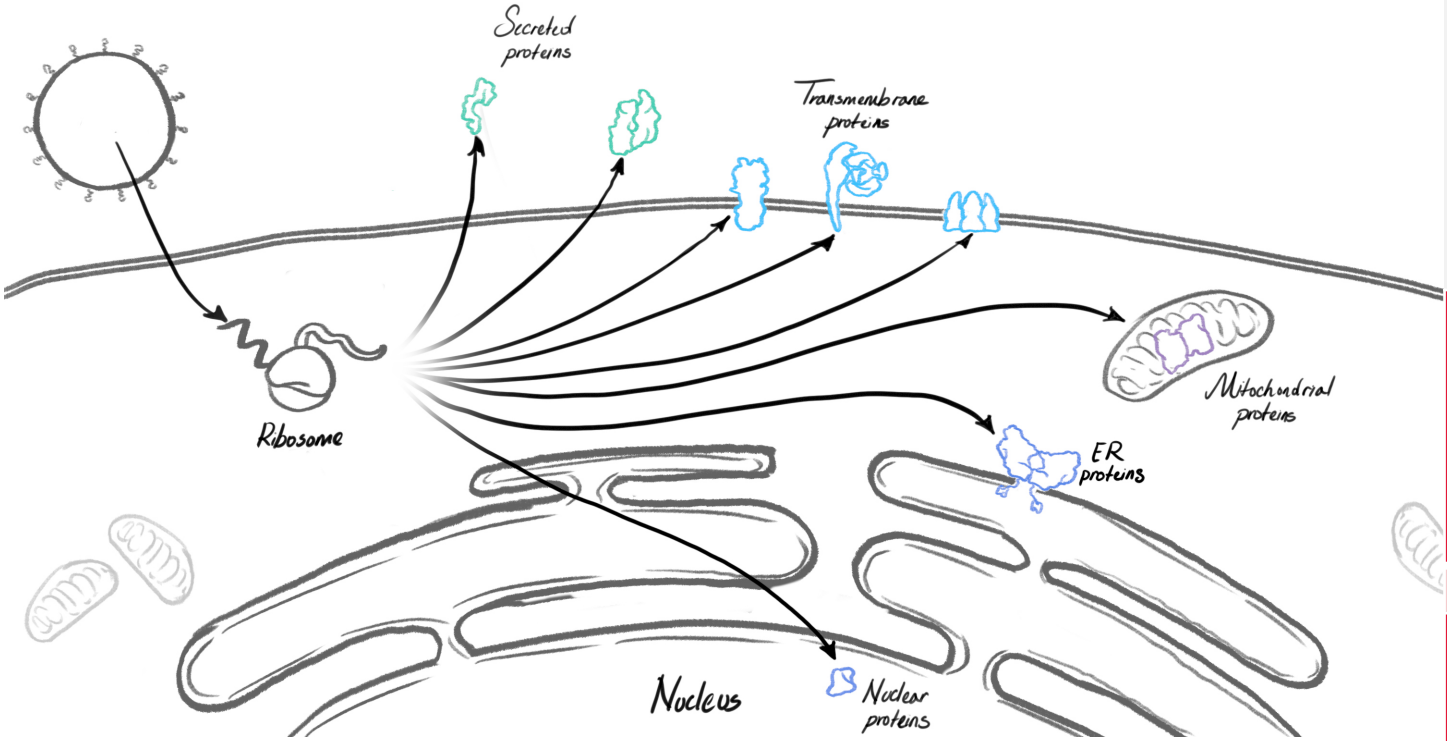
mRNA as a potential new class of medicines



1. Large product opportunity

Indication	Development Candidate
CMV	mRNA-1647
RSV	mRNA-1172/1777
hMPV/PIV3	mRNA-1653
Zika	mRNA-1893
PCV	mRNA-4157
KRAS	mRNA-5671
OX40L	mRNA-2416
Triplet	mRNA-2752
IL12	MEDI1191
MMA	mRNA-3704
PA	mRNA-3927
GSD1A	mRNA-3745
Fabry	mRNA-3630
PKU	mRNA-3283
VEGF-A	AZD8601

mRNA as a potential new class of medicines



1. Large product opportunity
2. Higher probability of technical success
3. Accelerated research and development

19 INDs/CTAs opened

8 positive phase 1 readouts to date *

16 development candidates in clinical trials Since December 2015

*Data in some cases are interim; positive data means the data warrant continued advancement within a trial or for further development

moderna

Our Mission

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


moderna
Please Join us for R&D Day
Thursday, September 12, 2019
JW Marriott Essex House
160 Central Park South
Grand Salon
New York, NY 10019
7:30am – 8:30am
Breakfast and Registration
8:30am – 12:30pm
Presentations
Lunch to Follow
RSVP by Thursday, August 29
Daniella Funaro
daniella.funaro@sternir.com
212.362.1200