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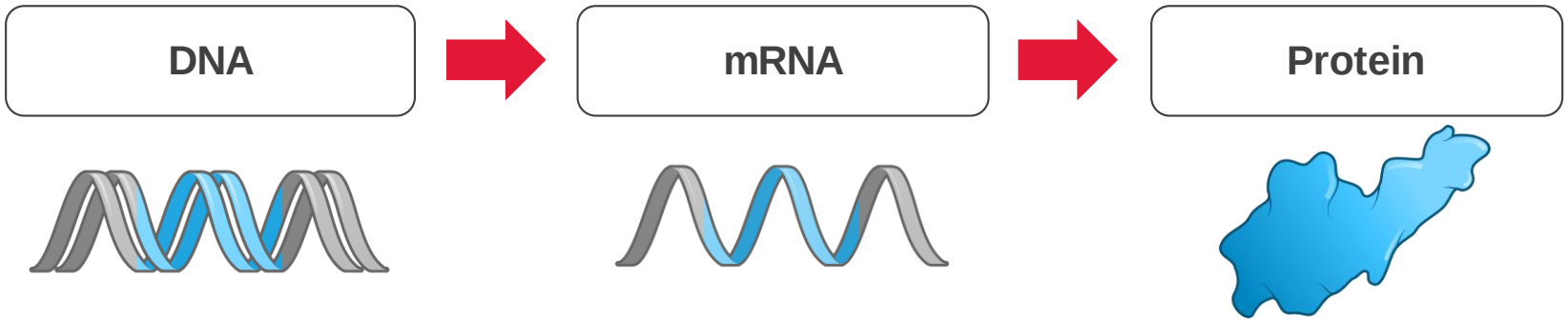

Business Updates and Third Quarter Financial Results
November 6, 2019

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, and the Company's expected net cash used in operating activities and purchases of property and equipment in 2020. 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 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 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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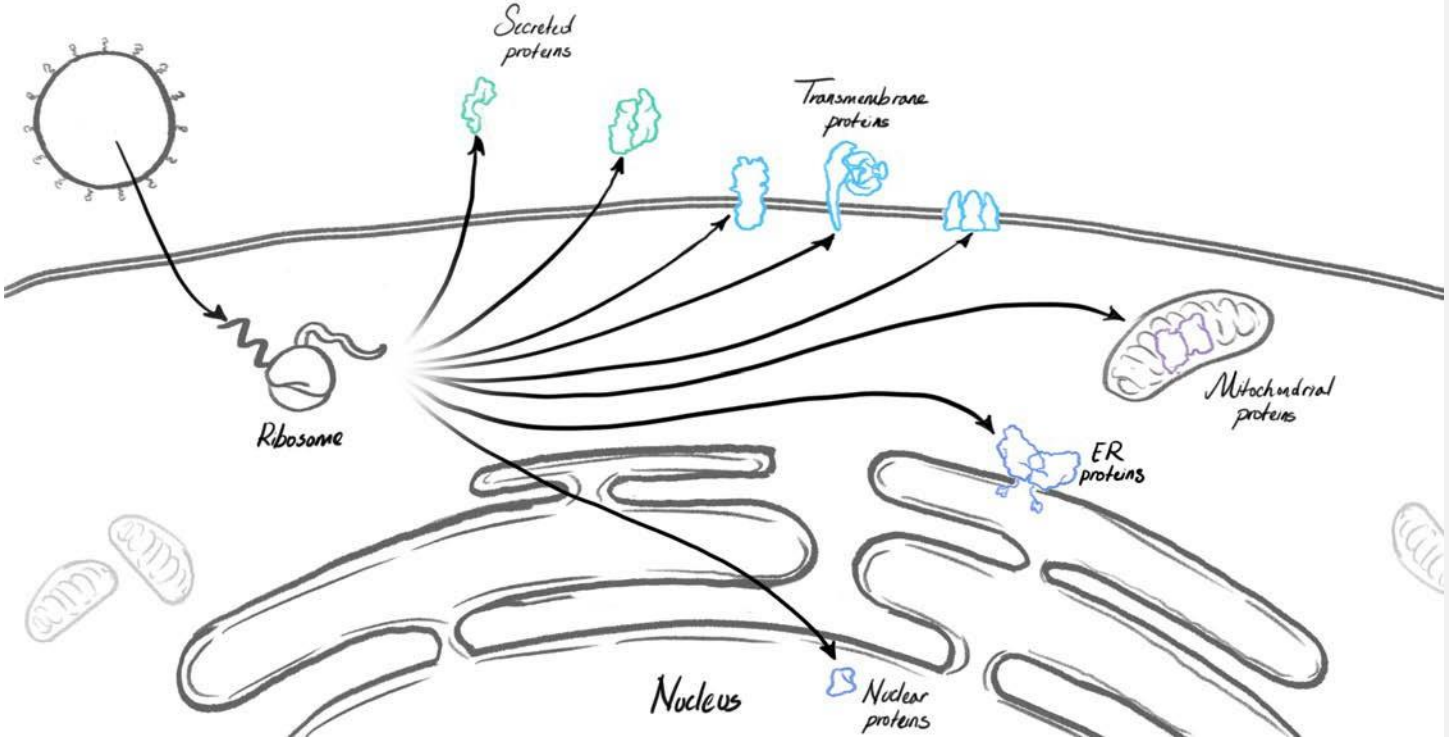
mRNA as a potential new class of medicines



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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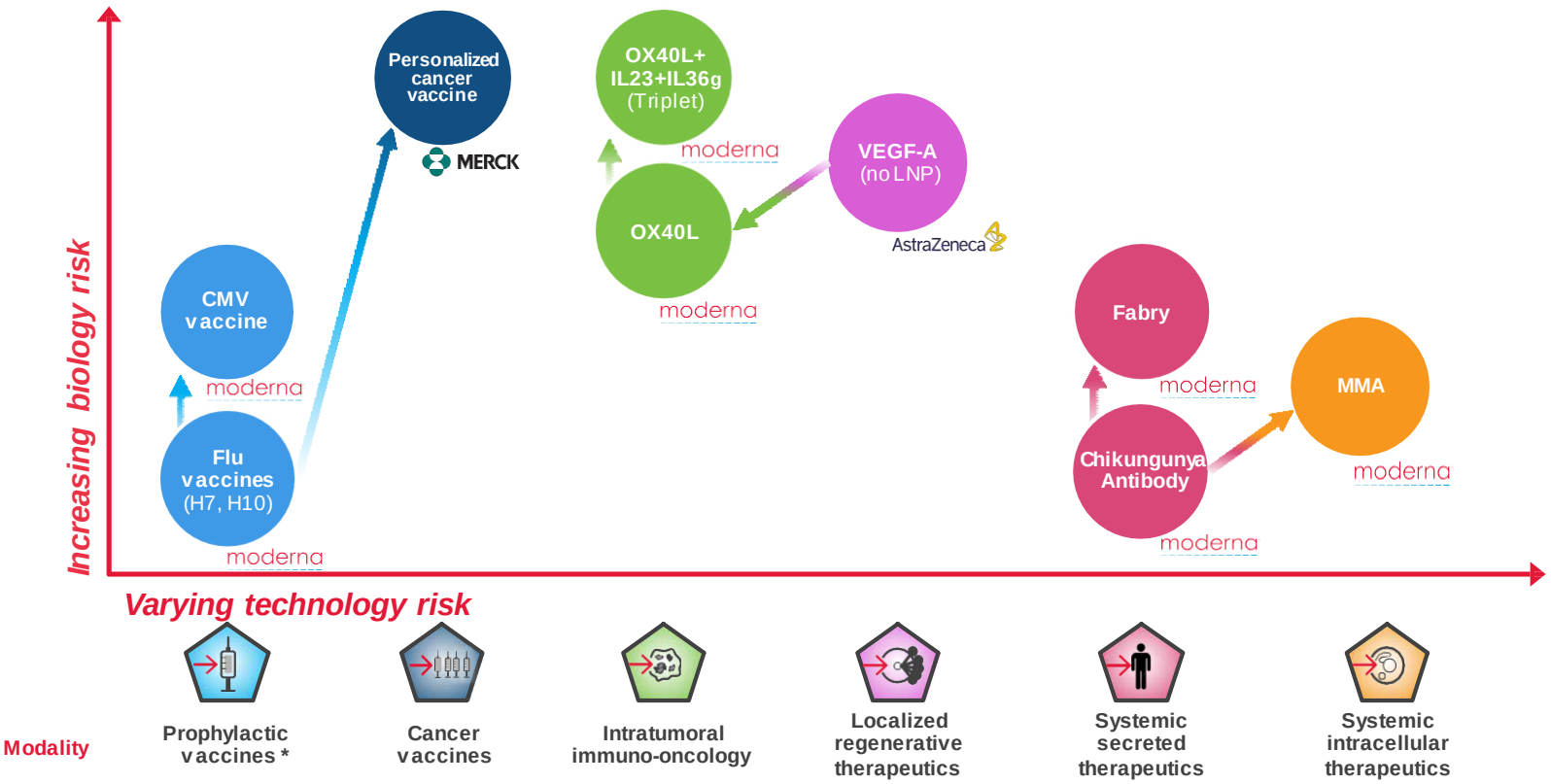
Risk management is essential to building a new class of medicines



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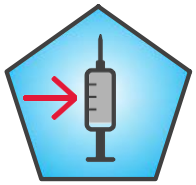
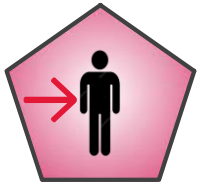
Two important positive clinical milestones in two modalities recently presented at our September 12th R&D Day



Cytomegalovirus (CMV) vaccine (mRNA-1647)

- Positive interim phase 1 data
- Successfully immunized seronegatives and boosted seropositives
- Generally well tolerated
- Phase 2 to start in the near term
- Preparations underway for the phase 3
- Moderna owns the global commercial rights to mRNA-1647



Antibody against Chikungunya virus (mRNA-1944)

- Positive phase 1 data
- Observed dose dependent protein expression
- Achieved expected therapeutic levels at a well tolerated dose (0.3mg/kg)
- Observed expected translation from NHP to human

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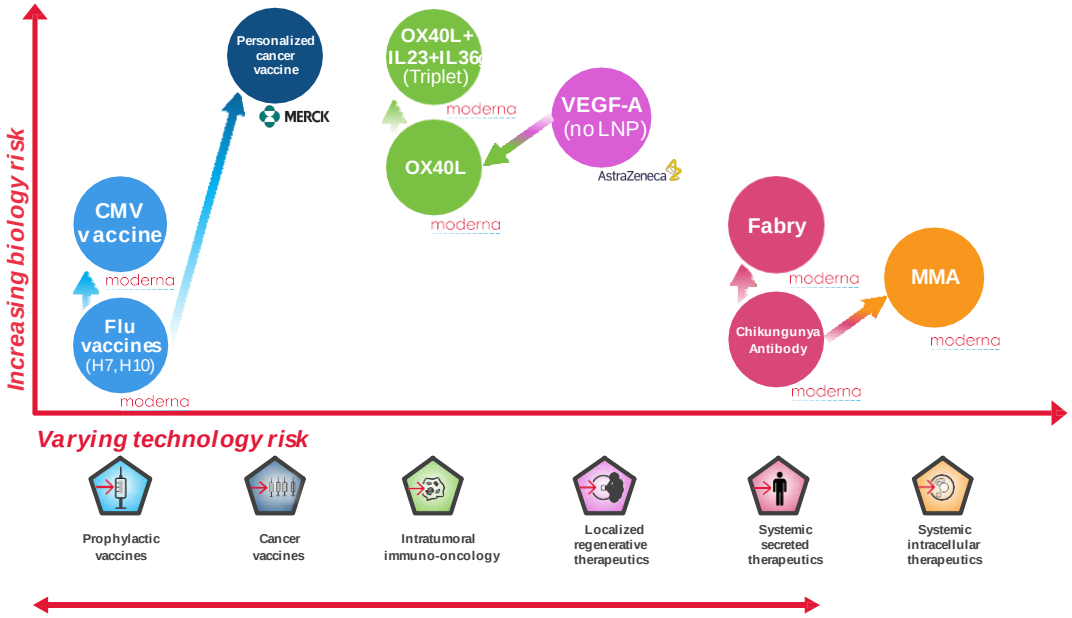
Body of clinical data from Moderna's platform to date

- Moderna platform investments in research, manufacturing and clinical have enabled 16 investigational medicines to start clinical trials in the last 3.5 years
- We have enrolled more than 1,400 subjects and patients across five modalities
- We have administered repeat doses to patients through multiple cycles in our immuno-oncology programs (OX40L & PCV)
- Across 5 modalities we have shown that our development candidates:
  - Have an acceptable safety profile and are generally well tolerated[1]
  - Result in consistent protein expression[2]
  - Encode functional proteins
  - Translate from preclinical models to humans



[1]Common Adverse Events by Modality - Prophylactic Vaccines: injection site pain, myalgia, and fatigue; Cancer Vaccines: for PCV, the most common grade 2 adverse events were fatigue, soreness at the injection site, colitis, and myalgias; Intratumoral Immuno-Oncology: for OX40L, multiple grade 2 and a single grade 3 transient reversible injection related reactions; Localized Regenerative Therapeutics: for VEGF-A, mild injection-site reactions; and Systemic Secreted Therapeutics: see the section below titled Systemic therapeutics secreted
[2]Only mRNA-1325, our initial Zika vaccine did not elicit desired pharmacologic effect

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Moderna named top employer by *Science* for the fifth year in a row

- Moderna ranked one of the global biopharmaceutical industry's top employers in *Science* and *Science* Careers' 2019 Top Employers Survey
- 5th consecutive year
- Annual survey evaluates companies in the biopharmaceutical industry in categories such as:
  - Leadership and direction
  - Work culture and environment
  - Academic and intellectual challenge
- Moderna ranked 11th in 2019

Science 2019
TOP EMPLOYER

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Gaining insights through research collaborations

- Research collaborations have been a key tenet of Moderna's strategy with over 15 collaborations with leading universities and medical centers

- **In October, Moderna announced an mRNA immunotherapy research collaboration with Harvard University**
  - Goal to identify and develop novel therapeutic approaches that could improve the lives of patients with immunological diseases
  - The **Alliance for RNA Therapies for the Modulation of the Immune System (ARTiMIS)** initiative will enable HMS-affiliated investigators to access Moderna's platform for mRNA and novel immune delivery and will provide financial support for exploratory research projects, including the work of postdoctoral researchers at HMS

North America

- Harvard University
- Seattle Children's Research Institute
- University of California, Los Angeles
- University of Pennsylvania
- University of Texas Medical Branch
- University of Utah
- University of Washington, Seattle
- Vanderbilt University Medical Center
- Washington University School of Medicine, St. Louis

Europe

- Institut Pasteur
- Karolinska Institutet, Sweden
- Johannes Gutenberg University
- Universidad de Navarra
- University Children's Hospital, Zurich

Asia Pacific

- Institute of Biomedical Sciences, Taipei
- Kagoshima University

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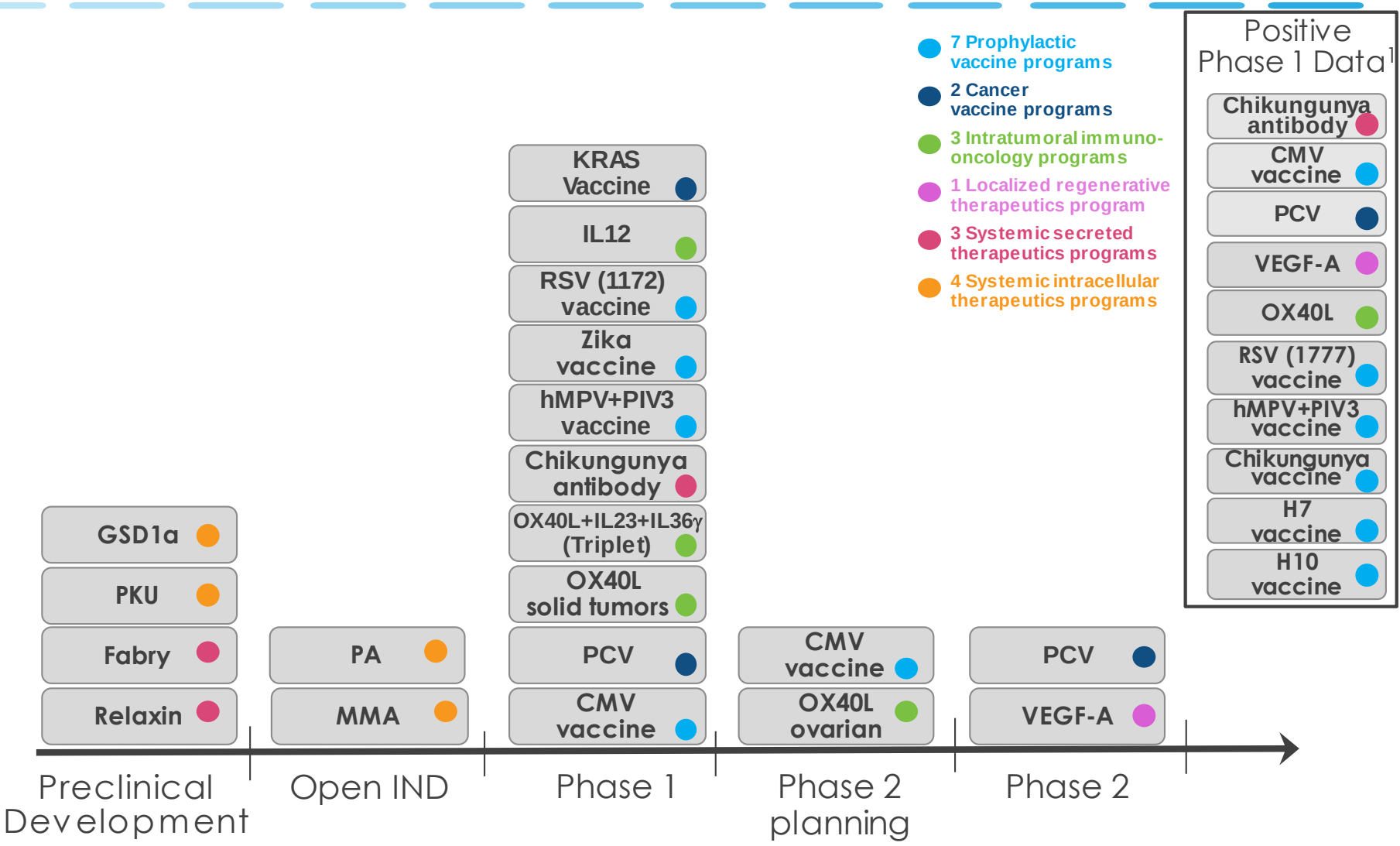
Moderna's development pipeline



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

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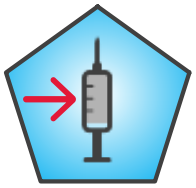
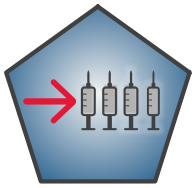
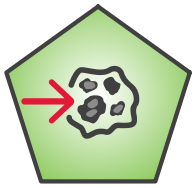
Progress by modality



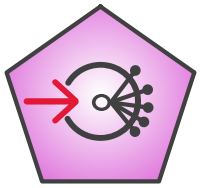
Prophylactic vaccines



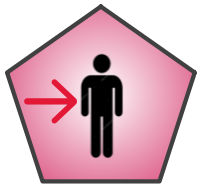
Cancer vaccines



Intratumoral immuno-oncology



Localized regenerative therapeutics



Systemic secreted therapeutics

Systemic intracellular therapeutics

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Prophylactic vaccines

Six positive phase 1 readouts

Clinical summary

- **Safety:** >1,000 healthy volunteers enrolled in nine 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): Positive phase 1 interim analysis showing increased neutralizing antibody titers. Seronegative subjects achieved a 3-5 fold increase relative to seropositive baseline titers in the trial and seropositive subjects were boosted 10-19x above baseline titers
    - Advancing to phase 2 dose confirmation study and preparing for pivotal phase 3 trial
  - **RSV** (mRNA-1172/Merck V172): Phase 1 study is ongoing
  - **Zika** (mRNA-1893): Phase 1 study is ongoing
    - Preclinical data presented at ISV congress shows mRNA-1893 is fully protective at the lowest dose tested in Zika challenge study
  - **hMPV+PIV3** (mRNA-1653): First participant dosed in phase 1b de-escalation study
    - Phase 1 second interim data show antibody titers remained above baseline at all dose levels at month 7. Data presented at IDWeek in October
  - **Chikungunya vaccine** (mRNA-1388): phase 1 data – 100% seroresponse for subjects at the 100µg dose level at 1 month, 92.6% at 6 months and 78.6% at 12 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

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Prophylactic vaccines

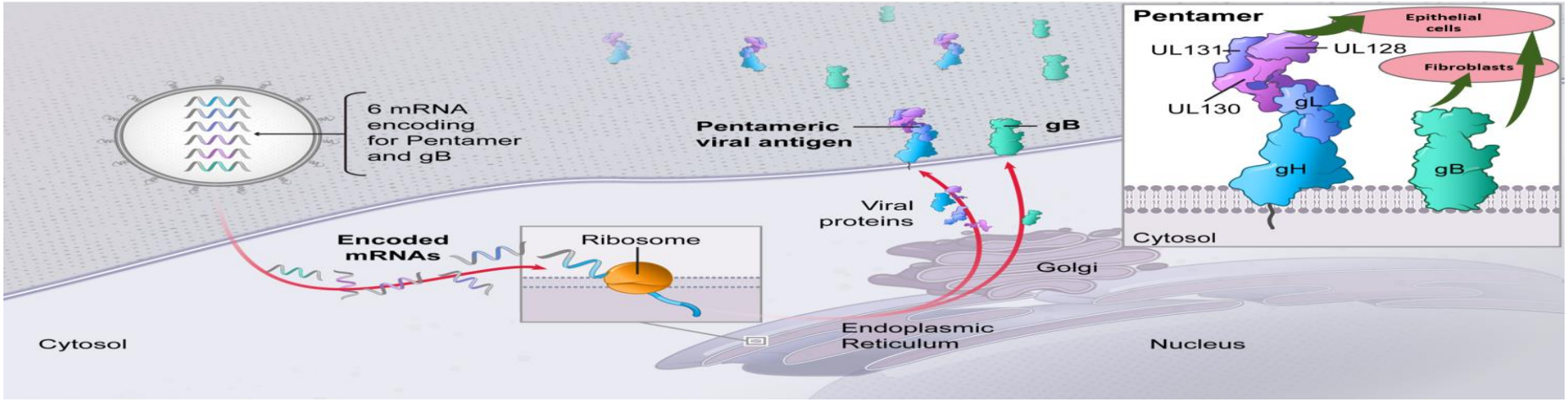
CMV and mRNA-1647 overview

Congenital cytomegalovirus (CMV) overview

- CMV is a common human pathogen and member of the herpes family of viruses and is the most common infectious disease cause of birth defects in the U.S.
- **Disease burden:** Birth defects occur in approximately 20% of infected babies, which include 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 U.S. newborns infected annually (~25,000 U.S. newborns)
- **Initial target population:** Women of childbearing age
- **Unmet need**: No approved CMV vaccine

mRNA-1647

- Six mRNA sequences in total: five encode for the pentamer, one encodes for gB



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CMV vaccine (mRNA-1647) phase 1 interim analysis

Immunogenicity in CMV-seronegative participants, per-protocol set

Variable	Neutralizing Antibodies Against Epithelial Cell Infection			
	Placebo	30 µg	90 µg	180 µg
Baseline GMT	8	8	8	8
GMT post 1st vaccination	8	37	708	1,387
GMT post 2nd vaccination	12	3,263	15,305	30,743
GMT/benchmark ratio	---	0.6	2.7	5.5
	CMV-seropositive GMT benchmark = 5,588			

Variable	Neutralizing Antibodies Against Fibroblast Infection			
	Placebo	30 µg	90 µg	180 µg
Baseline GMT	8	8	8	8
GMT post 1st vaccination	8	8	24	10
GMT post 2nd vaccination	10	305	1,141	1,264
GMT/benchmark ratio	---	0.2	0.9	1.0
	CMV-seropositive GMT benchmark = 1,295			

GMT = geometric mean titer; CMV-seropositive benchmark values derived from baseline values of all CMV-seropositive participants

Subject n at each timepoint

	Placebo	30 µg	90 µg	180 µg
Baseline	13	17	13	15
Post 1st vaccination	12	17	10	15
Post 2nd vaccination	11	14	12	12

- Seronegative subjects successfully immunized to generate neutralizing titers against CMV
- Dose-related increase in neutralizing antibodies
- After the 2nd vaccination, GMTs of the 90 µg and 180 µg dose levels achieved or exceeded the CMV-seropositive benchmark

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CMV vaccine (mRNA-1647) phase 1 interim analysis

Immunogenicity in CMV-seropositive participants, per-protocol set

Variable	Neutralizing Antibodies Against Epithelial Cell Infection			
	Placebo	30 µg	90 µg	180 µg
Baseline GMT (Benchmark = 5,588)	8,169	3,614	5,634	5,700
GMT post 1st vaccination	7,890	24,752	39,020	52,775
GMT post 2nd vaccination	7,490	47,435	62,400	119,829
GMR post 2nd vaccination	0.9	13.2	9.9	19.4
Variable	**Neutralizing Antibodies Against Fibroblast Infection**			
	Placebo	30 µg	90 µg	180 µg
Baseline GMT (Benchmark = 1,295)	1,298	1,094	1,458	1,371
GMT post 1st vaccination	1,278	2,654	3,885	3,879
GMT post 2nd vaccination	1,451	2,935	3,891	5,578
GMR post 2nd vaccination	1.1	2.3	3.0	4.1

GMT = geometric mean titer; GMR = geometric mean ratio, defined here as the average of the ratio between Baseline/post 2nd vaccination for each participant

	Subject n at each timepoint			
	Placebo	30 µg	90 µg	180 µg
Baseline	14	13	12	13
Post 1st vaccination	14	13	12	13
Post 2nd vaccination	12	10	9	9

- Seropositive subjects effectively boosted beyond levels seen in natural infection
- Dose-related increase in neutralizing antibody titers
- mRNA-1647 boosted neutralizing antibody titers against epithelial cells to 10-fold or higher in all treatment groups

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CMV vaccine (mRNA-1647) phase 1 interim analysis

Solicited adverse events (AE) post 2nd vaccination, solicited safety set

	CMV Serostatus at Baseline							
	CMV-seronegative				CMV-seropositive			
	Placebo n=13	30 µg n=15	90 µg n=16	180 µg n=15	Placebo n=13	30 µg n=12	90 µg n=11	180 µg n=11
Local AEs								
Pain	-	11 (73%) -	13 (81%) 2 (13)	12 (80%) 2 (13)	-	9 (75%) 1 (8)	8 (73%) -	10 (91%) 3 (27)
Redness	-	-	-	3 (21) -	-	-	-	2 (18) 1 (9)
Swelling	-	-	-	-	-	-	-	1 (9) -
Most Common Systemic AEs								
Headache	3 (23) -	5 (33) -	10 (63) -	9 (60) 2 (13)	2 (15) -	4 (33) 1 (8)	4 (36) -	9 (82) 2 (18)
Fatigue	2 (15) -	5 (33) 1 (7)	8 (50) 1 (6)	11 (73) 1 (7)	1 (8) -	7 (58) 3 (25)	7 (64) 1 (9)	8 (73) 3 (27)
Myalgia	1 (8) -	5 (33) 1 (7)	8 (50) 3 (19)	11 (73) 2 (13)	-	5 (42) 4 (33)	7 (64) 1 (9)	7 (64) 2 (18)
Chills	1 (8) -	3 (20) 1 (7)	7 (43) 1 (6)	11 (73) 3 (20)	-	6 (50) 1 (8)	7 (64) 1 (9)	9 (82) 3 (27)
Fever	-	3 (20) -	3 (19) 1 (6)	5 (33) -	-	2 (17) -	6 (55) 3 (27)	6 (55) 2 (18)

Values represent n (%) participants reporting each AE, red text=grade 3 AEs

- Solicited AEs after the second vaccination higher than after the first vaccination
- After the first vaccination, AEs higher in the seropositives relative to seronegatives
- One event triggered Study Pause: asymptomatic Grade 4 elevation in partial thromboplastin time (PTT) at 7 days post 2nd vaccination in a subject with Grade 1 PTT elevations throughout study, PTT normal on repeat testing
- No vaccine related serious adverse events (SAEs)

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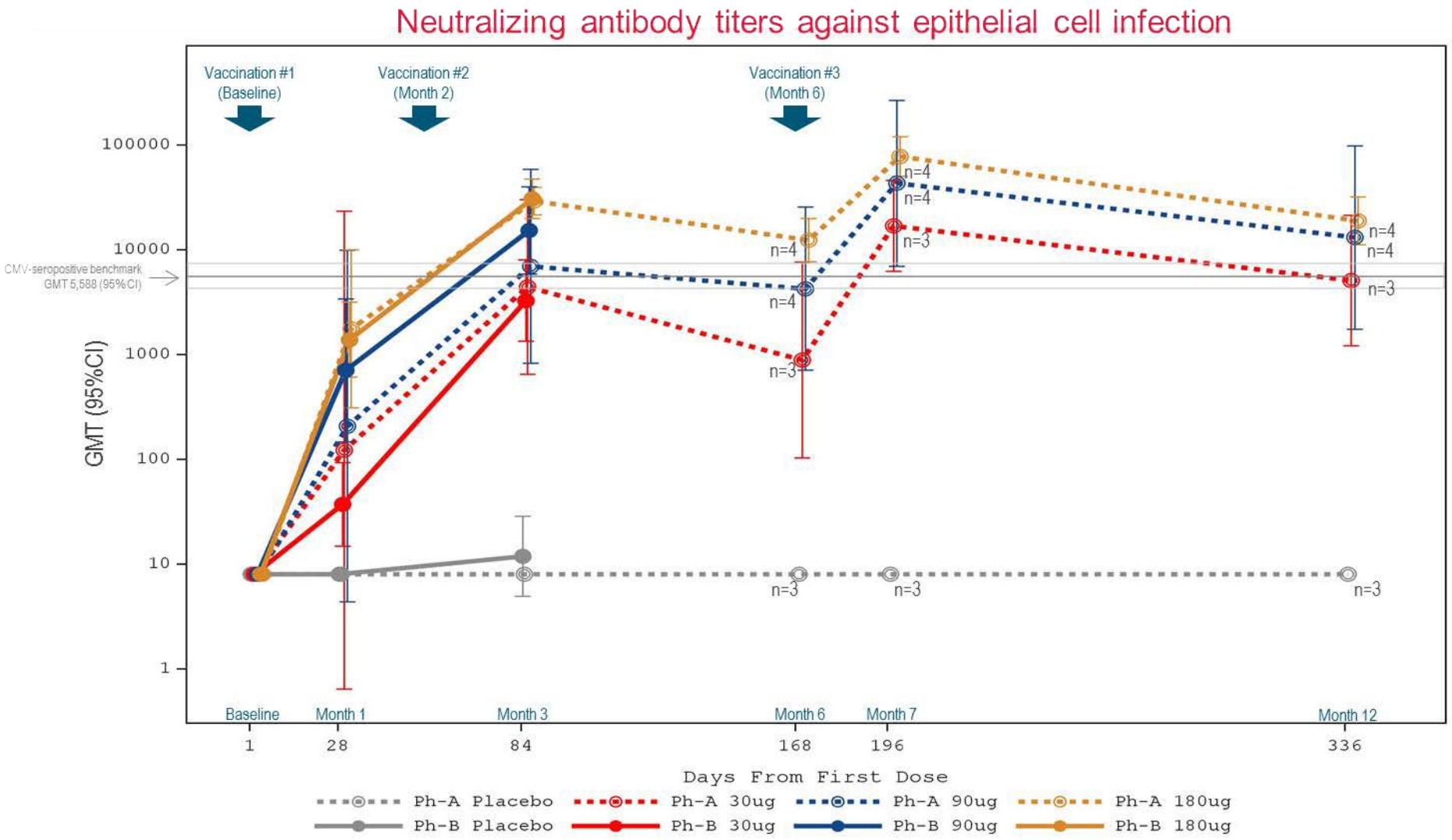
CMV vaccine (mRNA-1647) phase 1 interim analysis

Durable immunogenicity demonstrated in initial cohort followed to one year



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CMV vaccine (mRNA-1647) phase 1 interim analysis

Summary

- mRNA-1647 exhibited dose-related increase in neutralizing antibodies
- Seronegative subjects successfully immunized to generate neutralizing titers against CMV
- Seropositive subjects effectively boosted beyond levels seen in natural infection
- mRNA-1647 was generally well tolerated with no vaccine-related serious adverse events
- Early evidence of neutralizing antibody titers were sustained at or above CMV-seropositive baseline levels for at least 12 months

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CMV vaccine (mRNA-1647)

Next steps

- Phase 2 dose confirmation study to be initiated in the near term
  - N=252 adult females and males 18-40 yrs of age, both seronegative and seropositive status
  - 3 doses: 50 µg, 100 µg and 150 µg
  - 3:1 randomization
  - Dose selection after first interim analysis: safety and immunogenicity through 1 month after 2nd vaccination (3 months after enrollment)
  - Phase 2 supply ready to support study needs

- Phase 3 pivotal trial preparations underway
  - Solicited and received Type C meeting feedback from FDA
  - Primary endpoint: prevention of primary CMV infection in a population that includes women of childbearing age (WOCBA)
  - We believe we can achieve this objective with a trial with <8,000 subjects
  - Country and site feasibility: already reached out to 285 sites in 18 countries across North America, Europe and Asia Pacific with robust positive response, feasibility assessments continue

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CMV is a blockbuster commercial opportunity

Moderna owns global commercial rights to mRNA-1647

- Large unmet medical need with no approved vaccine
- Indication expansion opportunity
- Total addressable market could be as high as 70 million vaccinations per year
- Focused sales effort: OBGYN and Pediatricians
- Opportunity to leverage social media during phase 3 for pre-launch activities to educate a motivated initial target population, women of childbearing age (WOCBA)
- Pricing power for innovative vaccines due to value proposition (GARDASIL[2] US pricing=$450)
- Vaccine sales are annuity-like, scaling with population growth
- Innovative vaccines have EBIT margins of approximately 50%

Top selling vaccines, by 2024 projected sales

Vaccine	Indication	Company	Launch Year	2018 WW Sales	2024E WW Sales
Prevnar 13[1]	Pneumococcus	Pfizer	2000 (PCV7)	$5.8 bn	$6.7 bn
GARDASIL[2]	HPV	Merck	2006	$3.2 bn	$5.9 bn
SHINGRIX[3]	Herpes zoster	GSK	2017	$1.0 bn	$3.5 bn

Source: EvaluatePharma

[1]Prevnar 13 ® is a registered trademark of Wyeth LLC.
[2]GARDASIL ® is a registered trademark of Merck & Co., Inc.
[3]Shingrix is a registered trademark of GSK

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PCV (mRNA-4157): *Phase 1 and phase 2 studies ongoing*
KRAS *(mRNA-5671/Merck V941): Phase 1 study ongoing*

PCV (mRNA-4157)
Phase 1 trial

- Interim safety, tolerability immunogenicity data presented at ASCO 2019[1]
- Continuing to enroll patients in phase 1 safety, tolerability and immunogenicity trial monotherapy and in combination with pembrolizumab
- Part B (PD-1 refractory patients), part C (checkpoint inhibitor naïve head and neck and CRC patients) and part D (adjuvant melanoma patients undergoing apheresis) continue to enroll patients
- First patients dosed in phase 2 randomized controlled trial

Phase 2 trial design

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

Phase 2 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

KRAS (mRNA-5671/Merck V941)
Phase 1 trial

- 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

[1] Data cutoff as of May 10, 2019

Intratumoral immuno-oncology

Three phase 1 programs in combination with checkpoint inhibitor ongoing

- **OX40L (mRNA-2416)**
  - Phase 1 study evaluating safety and tolerability of mRNA-2416 administered intratumorally in monotherapy and combination with durvalumab is ongoing with patients dosed in both arms
  - Monotherapy dose escalation up to 8 mg completed
  - Dose escalation in combination with durvalumab continues
  - Plans to move forward into a phase 2 advanced ovarian cohort with OX40L+durvalumab combination
- **OX40L+IL23+IL36γ (mRNA-2752)**
  - Phase 1 evaluation safety and tolerability of mRNA-2752 administered alone and in combination with durvalumab in patients with accessible solid tumors and lymphomas
  - Key objectives
    - To define maximum tolerated dose (MTD) and recommended dose for expansion for mRNA-2752 alone and in combination with durvalumab
    - Assess anti-tumor activity, protein expression in tumors, pharmacokinetics
  - Dose expansion cohort to include Triple negative breast cancer, head and neck squamous cell carcinoma, Non-Hodgkins lymphoma, urothelial (platinum ineligible, PD-L1 negative urothelial (platinum refractory, PD-L1 naïve)
  - Both monotherapy and combination dose escalation are arms ongoing
- **IL12 (MEDI1191)**
  - 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
    - Evaluate safety and tolerability in monotherapy and combination arms
    - Evaluate objective response rate in patients within expansion arms
  - Phase 1 trial ongoing

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Localized regenerative therapeutics

Modality	Program #	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

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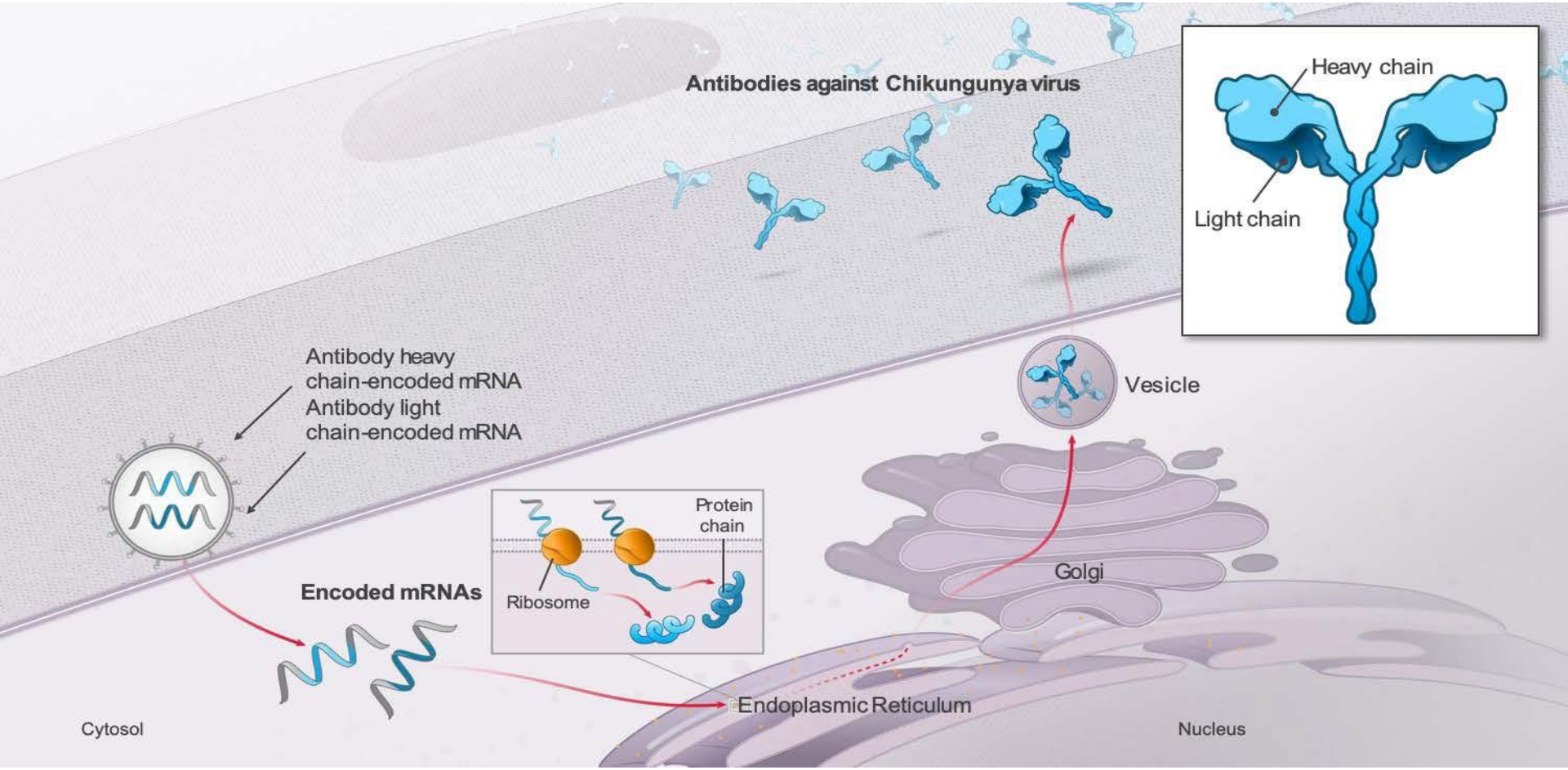
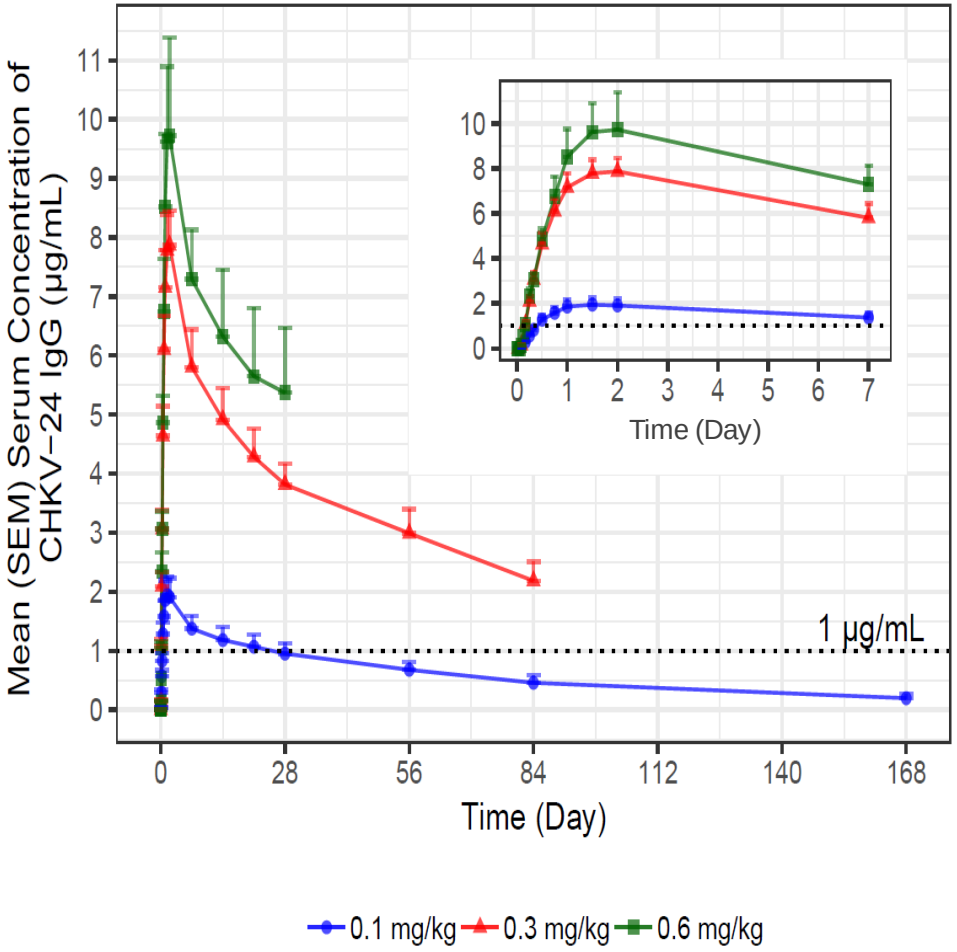
Antibody against Chikungunya virus (mRNA-1944)

mRNA-1944 contains two mRNAs that encode for the heavy and light chains of CHKV-24 antibody, which may confer passive immunity



Antibody against Chikungunya virus (mRNA-1944)

Protective antibody levels of >1µg/mL expected to endure at least 16 weeks at the middle dose of 0.3 mg/kg



Cohort	0.1 mg/kg (N=6)	0.3 mg/kg (N=6)	0.6 mg/kg (N=4)
C_{max} (µg/mL)	2.0	7.9	10.2
C_{max} range (µg/mL)	1.1-3.1	6.3-10.0	7.0-14.2
C_{max} % CV	40.6%	18.2%	29.7%

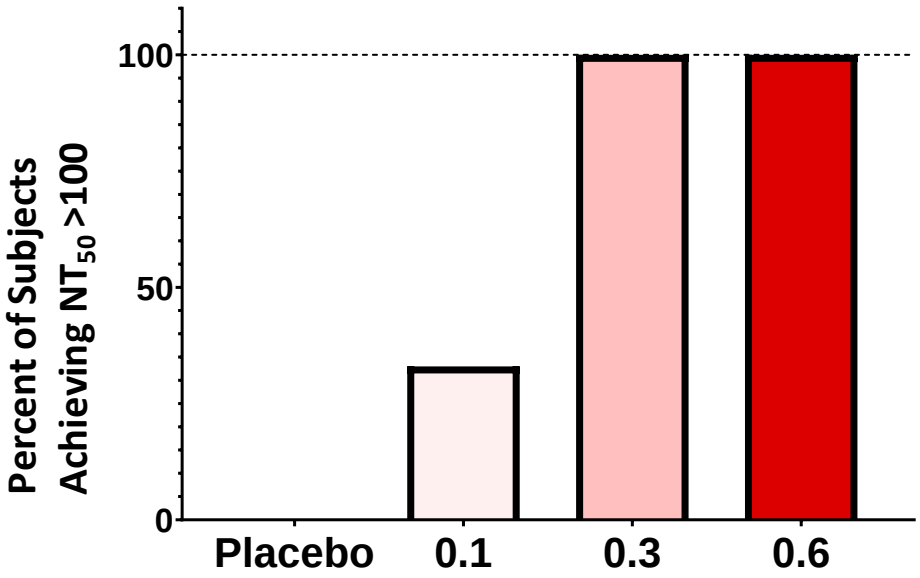
Pharmacology

- Administration of mRNA-1944 resulted in dose-related increase in levels of CHKV-24
- Half life ($t_{1/2}$) of antibody was 62 days
- Middle and high dose (0.3 and 0.6 mg/kg) projected to exceed 1 µg/mL target for at least 16 weeks

Antibody against Chikungunya virus (mRNA-1944)

mRNA-1944 driven protein expression results in functional antibody (CHKV-24)

Serum neutralization activity 48 hr after mRNA-1944 administration



N	6	6	6	4
GMT	<10	113	718	538

- Neutralizing antibody titers observed at all dose levels, indicating functional antibody production by mRNA-1944
- All placebo subjects below the lower limit of detection
- 100% of subjects administered 0.3 and 0.6 mg/kg had titers >100

Antibody against Chikungunya virus (mRNA-1944)

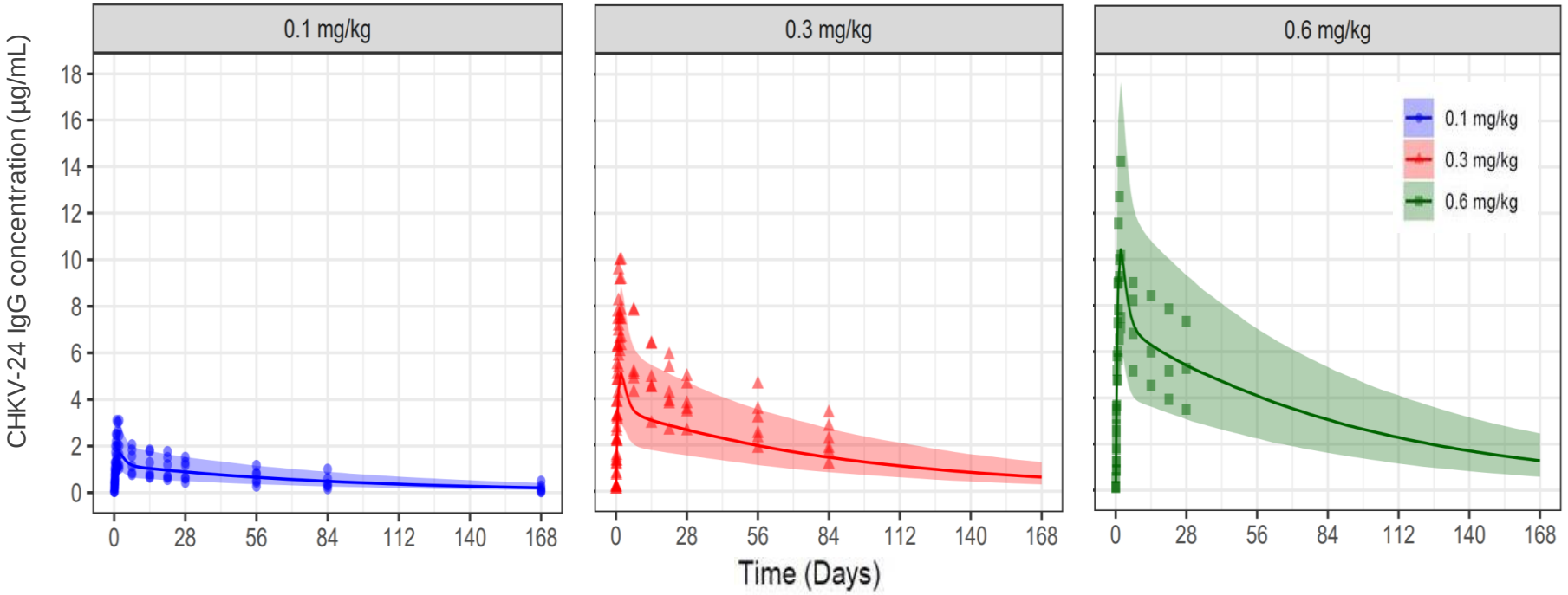
Summary of related adverse events

Cohort		Grade 1	Grade 2	Grade 3
Placebo (N=6)		None	None	None
mRNA-1944 0.1 mg/kg (N=6)		Feeling of warmth, transient (1)	None	None
mRNA-1944 0.3 mg/kg (N=6)		None	None	None
mRNA-1944 0.6 mg/kg (N=4)	*Subject 1*	Sinus tachycardia, fever, infusion associated shivering, lightheadedness, hypotension	None	None
	Subject 2	None	Nausea, emesis	None
	Subject 3	None	None	None
	Subject 4	Chills, headache, lightheadedness, gaseousness	EKG abnormal (T wave inversion), emesis, nausea, fever	Sinus tachycardia, elevated WBC

- All AEs were transient and resolved spontaneously without treatment
- No serious AEs in the study
- No meaningful changes in liver or kidney laboratory results

Antibody against Chikungunya virus (mRNA-1944)

Translation from preclinical species to humans



Solid line = Median predicted
Shaded area = 90% prediction interval
Symbols = Individual participant observations

Antibody against Chikungunya virus (mRNA-1944)

Next steps

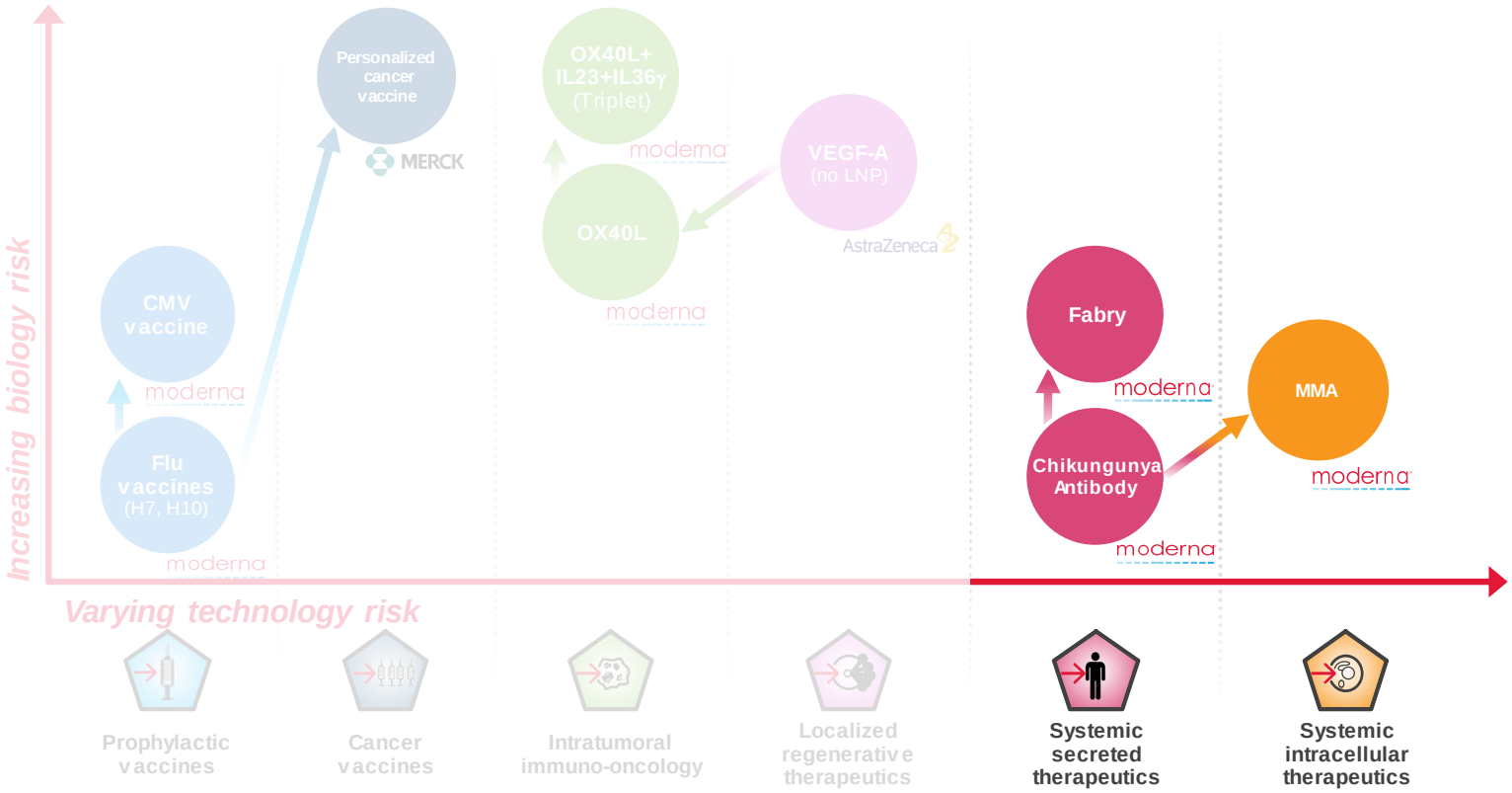
- mRNA-1944 will continue to be explored in two additional cohorts
  - One cohort with steroid premedication at the 0.6mg/kg dose
  - One cohort with two doses of 0.3mg/kg (without steroid premedication) administered one week apart

Antibody against Chikungunya virus (mRNA-1944)

Summary

- Administration of mRNA-1944 resulted in dose-dependent increases in levels of antibody against Chikungunya (CHKV-24)
- Neutralizing antibodies were observed at all dose levels, indicating functional antibody production by mRNA-1944
- None of the participants treated with mRNA-1944 at the low (0.1 mg/kg) or middle (0.3 mg/kg) doses experienced significant AEs. Three of the four participants at the high (0.6 mg/kg) dose had infusion related AEs, with the highest grade by subject being Grade 1 (n=1), Grade 2 (n=1) and Grade 3 (n=1)
- mRNA-1944 at 0.3 mg/kg and 0.6 mg/kg provides antibody levels that are expected to be protective against Chikungunya infection (>1 µg/mL) for at least 16 weeks, supporting further development
- mRNA to protein translation in human was predicted by preclinical data

Our modality strategy



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MMA (mRNA-3704): Multiple clinical trial sites actively recruiting
PA (mRNA-3927): Open IND, plans to start phase 1/2 trial

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
- Medicines and Healthcare Products Regulatory Agency (MHRA) approval in the UK

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, FDA Fast Track designation, EMA orphan drug designation

Preclinical data

- **Safety: MMA** (mRNA-3704) and **PA** (mRNA-3927) – Top dose tested in NHPs was well-tolerated
- **Activity: MMA** – 100% rescue in severe MMA mouse model
- **Activity: PA** – bioactivity of mRNA-3927 demonstrated in PA mouse model

Clinical & regulatory update

- **MMA and PA Natural History Study** (MaP): 87 patients enrolled (37 MMA, 50 PA)[1]
- **MMA** (mRNA-3704) – Phase 1/2 trial sites for interventional study open
- **PA** (mRNA-3927) – Phase 1/2 study startup activities are ongoing

[1] As of Oct 15, 2019

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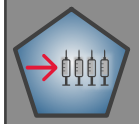
Anticipated clinical next steps and catalysts

 **Prophylactic vaccines**	• **CMV** – Phase 2 dose confirmation study start and immunogenicity data at 3 month IA • **hMPV+PIV3** – Phase 1b seropositive age de-escalation immunogenicity data readout • **RSV** – Phase 1 safety and immunogenicity data readout • **Zika** – Phase 1 safety and immunogenicity data readout
 **Cancer vaccines**	• **PCV** – Additional phase 1 data and phase 2 clinical data readout • **KRAS** – Phase 1 data readout
 **Intratumoral immuno-oncology**	• **OX40L** – Initiation of dosing of phase 2 combination cohort • **OX40L+IL23+IL36γ (Triplet)** – Completion of dose escalation monotherapy and combination cohorts • **IL12** – Phase 1 data readout
 **Localized regenerative therapeutics**	• **VEGF** – Phase 2a data readout
 **Systemic secreted therapeutics**	• **Antibody against Chikungunya virus** – Further development of 0.6 mg/kg dose • **Fabry** – IND filing • **Relaxin** – IND filing (AstraZeneca)
 **Systemic intracellular therapeutics**	• **MMA** – Safety and proof of concept biomarker phase 1/2 data readout • **PA** – Phase 1/2 study start • **PKU** – IND filing • **GSD1a** – IND filing

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Third quarter 2019 financial results (Unaudited)

Balance Sheets	September 30, 2019	December 31, 2018
Cash, cash equivalents and investments [1]	$ 1.34 billion	$ 1.69 billion

Statements of Cash Flows	9 months ended Sept. 30, 2019	9 months ended Sept. 30, 2018
Net cash used in operating activities [2]	$ 363 mm	$ 240 mm
Cash used for purchases of property and equipment [3]	$ 25 mm	$ 92 mm

Statements of Operations	3 months ended Sept. 30, 2019	3 months ended Sept. 30, 2018	9 months ended Sept. 30, 2019	9 months ended Sept. 30, 2018
Total revenue	$ 17 mm	$ 42 mm	$ 46 mm	$ 100 mm
Research and development expenses	$ 120 mm	$ 109 mm	$ 379 mm	$ 304 mm
General and administrative expenses	$ 28 mm	$ 19 mm	$ 84 mm	$ 56 mm
Total operating expenses	$ 148 mm	$ 128 mm	$ 463 mm	$ 360 mm
Net loss	$ (123) mm	$ (80) mm	$ (391) mm	$ (243) mm

1. Excludes restricted cash of $12 mm at September 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 $14 mm in 2019 and $83 mm in 2018 related to our Norwood manufacturing facility.

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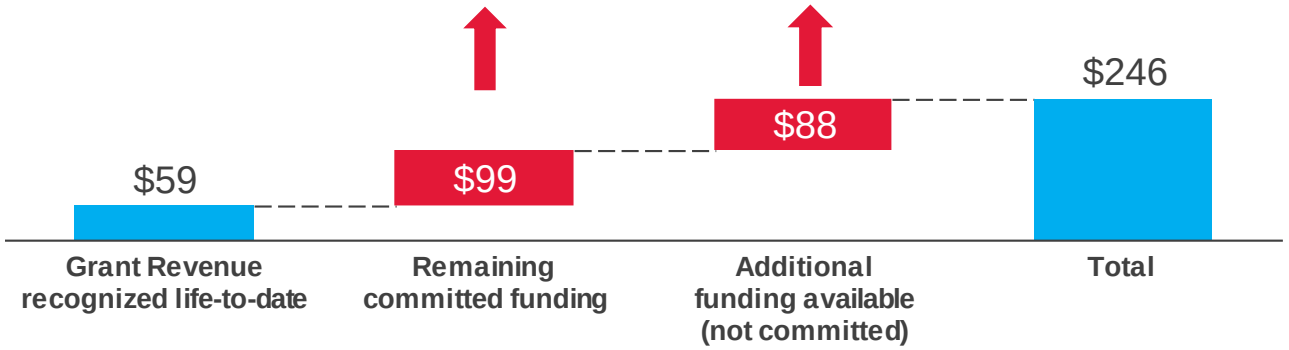
Q3 2019 cash balance and investments[1] and grant funding status (Unaudited)

Cash balance and investments[1] at September 30, 2019

- At September 30, 2019, we had $1.34 billion of cash, cash equivalents and investments

Grant funding status as of September 30, 2019

Total additional funding available from grants is ~$187 million (including amounts not committed) [2]



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

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2019 YE guidance update (Unaudited)

Ended 2018 with cash and investments[1] of $1.69 billion

Guidance

February 2019	May 2019	August 2019	November 2019
Cash and investments[1] at 12/31/19 expected to be in the range of $1.15 billion to $1.20 billion	Reiterated	Reiterated	Cash and investments[1] at 12/31/19 expected at approximately $1.20 billion

	Q1 2019	Q2 2019	Q3 2019	YTD as of Q3 2019
Net cash used in operating activities	$ 144 mm	$ 112 mm	$ 107 mm	$ 363 mm
Cash used for purchases of property and equipment	$ 8 mm	$ 10 mm	$ 7 mm	$ 25 mm
Total	$ 152 mm[2]	$ 122 mm	$ 114 mm	$ 388 mm

We expect net cash used in operating activities and purchases of property and equipment to total approximately $500 million in 2019 [2]

1. "Cash and investments" denotes cash, cash equivalents and investments
2. Includes $22.0 million 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

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2020 guidance

Notable trends in 2020:

- Cellscript in-license payment is non-recurring
- Limited need for significant new facilities/capital expenditures
- Advancement of development pipeline continues, but:
  - CMV phase 3 trial only requires pre-investment in 2020
  - Partners fund significant development costs (RSV, Zika, KRAS, IL12, VEGF, Chikungunya antibody)

We expect net cash used in operating activities and purchases of property and equipment to total $490 million to $510 million in 2020

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Key candidates across modalities are funded by partners

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					**Merck** to pay milestones and royalties
	mRNA-1777	Respiratory syncytial virus (RSV) vaccine					
	mRNA-1647	Cytomegalovirus (CMV) vaccine					Worldwide
	mRNA-1653	Human metapneumovirus and parainfluenza virus 3 (hMPV+PIV3) vaccine	Phase 1 (healthy volunteers)	Phase 1b (seropositives)			Worldwide
	mRNA-1893	Zika vaccine					Worldwide ***BARDA** funded*
	mRNA-1440	Influenza H10N8 vaccine					Worldwide *Advancing subject to outside funding*
	mRNA-1851	Influenza H7N9 vaccine					Worldwide *Advancing subject to outside funding*
	mRNA-1388	Chikungunya vaccine					Worldwide *Advancing subject to outside funding*
Cancer vaccines	**mRNA-4157**	Personalized cancer vaccine (PCV)					50-50 global profit sharing with **Merck**
	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					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)*					Worldwide

Closing Remarks

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Moderna in November 2019

Pipeline

4
In or preparing for Ph 2

12
Ph 1 trials ongoing

10
Positive Ph 1 readouts: 6 vaccines, PCV, OX40L, VEGF, anti-Chikungunya antibody

Programs

4
Vaccines for major unmet needs
- CMV preparing Ph 2
- hMPV+PIV3 – started phase 1 age de-escalation study
- RSV and Zika in Ph 1

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

5
Rare Disease
- MMA – Ph 1 actively recruiting
- PA – Open IND
- PKU, Fabry & GSD1a in GLP Tox

Foundations

>1,400
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

$1.34 bn
of cash, cash equivalents, as of Sept. 30, 2019 (unaudited)

Moderna in November 2019

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4 infectious vaccine pipeline programs with a major unmet medical need

Development candidate	Targeted indication	Currently marketed product	Potential peak sales
mRNA-1647 CMV vaccine	Prevention of CMV infection	No	Multi-billion
mRNA-1172 mRNA-1777 RSV vaccine	Prevention of RSV infection in the children and the elderly	No	Multi-billion
mRNA-1653 HMPV/PIV3 vaccine	Prevention of HMPV/PIV3 infection	No	Multi-billion
mRNA-1893 Zika	Prevention of Zika infection	No	Hundred-millions

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Moderna in November 2019

Pipeline

4
In or preparing for Ph 2

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Ph 1 trials ongoing

10
Positive Ph 1 readouts: 6 vaccines, PCV, OX40L, VEGF, anti-Chikungunya antibody

Programs in Development

4

Vaccines for major unmet needs

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5 I/O programs aimed at improving checkpoint inhibitor activity

Program	Trial Design	Patients enrolled in combination arm
mRNA-4157 PCV phase 2	RCT: Keytruda + PCV vs. Keytruda monotherapy	Yes
mRNA-4157 PCV phase 1	Phase 1: PCV + Keytruda in adjuvant and metastatic settings	Yes
mRNA-2416 OX40L	Phase 1: OX40L monotherapy and OX40L+Durvalumab combination arms	Yes
mRNA-2752 Triplet (OX40L+IL23+IL36γ)	Phase 1: Triplet monotherapy and Triplet + Durvalumab arms	Yes
mRNA-5671 KRAS vaccine	Phase 1: KRAS vaccine monotherapy and KRAS vaccine + Keytruda combination arms	Yes
MEDI1191 IL12	Phase 1: Monotherapy and combination arms	No

Moderna in November 2019

Pipeline

4
In or preparing for Ph 2

12
Ph 1 trials ongoing

10
Positive Ph 1 readouts: 6 vaccines, PCV, OX40L, VEGF, anti-Chikungunya antibody

Programs

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Immuno-Oncology
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AstraZeneca
VERTEX

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of cash, cash equivalents, as of Sept. 30, 2019 (unaudited)

5 rare disease pipeline programs with unmet medical needs and low-biology risk targets

Program	Targeted disease indication	Currently Marketed product	Regulatory designations
mRNA-3704	MMA	No	FDA: orphan drug designation, rare pediatric disease designation, Fast Track designation, EMA orphan drug designation
mRNA-3927	PA	No	FDA: orphan drug designation, rare pediatric disease designation, Fast Track designation, EMA orphan drug designation
mRNA-3745	GSD1a	No	
mRNA-3630	Fabry	Yes	
mRNA-3238	PAH	Yes	

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Moderna priorities for 2019-2020

1

Execute on the development pipeline

- 20 programs in development
- Focus on demonstrating human proof of concept
  - Major progress made with phase 1 CMV and Chikungunya antibody programs

2

New development candidates in existing modalities

- Nominated new rare disease program in 2019

3

New development candidates in new modalities

- Making progress advancing new modalities and new development candidates and look forward to providing updates on both in 2020

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Moderna 3Q19 Highlights

- Announced positive phase 1 clinical data from our
  - CMV vaccine (mRNA-1647)
  - Antibody against Chikungunya virus program (mRNA-1944)

- We have up to $1.5 billion to invest in the company between our cash and grants.

- We expect to invest around $500 million in the company in 2019 and also in 2020.

- We intend to continue to do new partnerships with biopharma companies and to apply for new grants

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Our Mission

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

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Save the Date

Manufacturing and Digital Day

Afternoon of

Wednesday

March 4, 2020