Pipeline Progress, Business Updates, and First Quarter 2019 Financial Results
May 8th, 2019
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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
Risk management is essential to building a new class of medicines

- Personalized cancer vaccine
- CMV vaccine
- Flu vaccines (H7, H10)
- Ox40L
- Ox40L+ IL23+IL36γ (Triplet)
- VEGF-A (no LNP)
- Fabry
- Chikungunya Antibody
- MMA

Varying technology risk:
- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
- Localized regenerative therapeutics
- Systemic secreted therapeutics
- Systemic intracellular therapeutics
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 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)
Moderna’s development pipeline

**Pre-Clinical Development**
- PKU
- PA
- Fabry
- Relaxin
- RSV (1172) vaccine
- Zika vaccine
- VZV vaccine

**Open IND**
- MMA
- IL12
- KRAS vaccine

**Ongoing Phase 1**
- Chikungunya antibody
- OX40L+IL23+IL36γ (Triplet)
- PCV
- CMV vaccine

**Positive Phase 1 Data**
- hMPV+PIV3 vaccine
- Chikungunya vaccine
- H7 vaccine
- H10 vaccine
- PCV melanoma

**Phase 2 planning**
- OX40L ovarian

**Phase 2 dosing**
- VEGF-A

*Data in some cases are interim*
Progress by modality

- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
- Localized regenerative therapeutics
- Systemic secreted therapeutics
- Systemic intracellular therapeutics
Progress by modality

- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
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- Systemic intracellular therapeutics
mRNA Vaccine for RSV
Codes for the RSV prefusion F protein
mRNA-1172 vs. mRNA-1777

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

Preclinical NHP data:

- **Vaccination**: 500 μl IM (right deltoid) or 250 μl intranasally
- **Challenge**: $1 \times 10^{5.5}$ 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)

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

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

- **Prophylactic vaccines**
- **Cancer vaccines**
- **Intratumoral immuno-oncology**
- **Localized regenerative therapeutics**
- **Systemic secreted therapeutics**
- **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)
Progress by modality

- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
- 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
Progress by modality

- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
- Localized regenerative therapeutics
- Systemic secreted therapeutics
- Systemic intracellular therapeutics
Our Modality Strategy

- **Increasing biology risk**
  - Personalized cancer vaccine
  - OX40L+ IL23+IL36γ (Triplet)
  - VEGF-A (no LNP)
- **Localized regenerative therapeutics**
  - Intratumoral immuno-oncology
  - OX40L
- **Intratumoral immunology**
  - OX40L+
  - CMV vaccine
  - Flu vaccines (H7, H10)
- **Systemic secreted therapeutics**
  - Fabry
  - Chikungunya Antibody
- **Systemic intracellular therapeutics**
  - Systemic secreted therapeutics
  - Systemic intracellular therapeutics

- **Varying technology risk**
  - Prophylactic vaccines
  - Cancer vaccines
  - Intratumoral immuno-oncology
  - Localized regenerative therapeutics

- **Prophylactic vaccines**
  - CMV vaccine
  - Flu vaccines (H7, H10)

- **Cancer vaccines**
  - Personalized cancer vaccine

- **Intratumoral immuno-oncology**
  - OX40L

- **Localized regenerative therapeutics**
  - VEGF-A (no LNP)

- **Systemic secreted therapeutics**
  - Fabry
  - Chikungunya Antibody

- **Systemic intracellular therapeutics**
  - MMA
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

As of April 16, 2019
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

<table>
<thead>
<tr>
<th>NHP IV dosing</th>
<th>mRNA-1944 (Chik Antibody)</th>
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<tbody>
<tr>
<td>Dose 1</td>
<td>(C_{\text{mik}} 16.2 \mu g/mL)</td>
</tr>
<tr>
<td>Dose 2</td>
<td>(C_{\text{mik}} 28.8 \mu g/mL)</td>
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<tr>
<td>Time [hrs]</td>
<td>0 24 48 72 96 120 144 168 192 216 240 288 360 480 560 720 960 1200 1440 1920 2400</td>
</tr>
<tr>
<td>Human IgG [ng/mL]</td>
<td>10 100 1000 10000 100000</td>
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<tr>
<td>LLOQ</td>
<td>PBS</td>
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</tbody>
</table>

- **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)

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\(^1\) As of April 16, 2019

Progress by modality

- Prophylactic vaccines
- Cancer vaccines
- Intratumoral immuno-oncology
- Localized regenerative therapeutics
- Systemic secreted therapeutics
- Systemic intracellular therapeutics
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)
- **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

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

Mouse model

0.5 mpk dose, IV every 2 weeks

- PBS, healthy mice
- PBS, MMA mut0 mice
- hMUT mRNA, MMA mut0 mice

**Percent survival**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>0</th>
<th>4</th>
<th>12</th>
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</thead>
<tbody>
<tr>
<td>PBS, healthy mice</td>
<td>100</td>
<td>50</td>
<td>0</td>
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<tr>
<td>PBS, MMA mut0 mice</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>hMUT mRNA, MMA mut0 mice</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

***p<0.001 hMUT mRNA vs. PBS-injected MMA mut0 mice from log-rank test

**Body weight (g)**

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Pre-Treatment</th>
<th>4</th>
<th>8</th>
<th>12</th>
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<tr>
<td>PBS, healthy mice</td>
<td>10</td>
<td>20</td>
<td>30</td>
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<tr>
<td>PBS, MMA mut0 mice</td>
<td>10</td>
<td>20</td>
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<tr>
<td>hMUT mRNA, MMA mut0 mice</td>
<td>10</td>
<td>20</td>
<td>30</td>
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</table>

PA (mRNA-3927) – Reduction in plasma biomarkers and amelioration of cardiomegaly

PKU (mRNA-3283) – Reduction in PHE with repeat dosing

As of April 15, 2019
Glycogen storage disease type 1a (GSD1a) (mRNA-3745)

mRNA-encoded enzyme localized to endoplasmic reticulum
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

*Based on estimated incidence of 1:100,000

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

Last updated: May 8, 2019

We have demonstrated preclinical proof-of-concept for G6Pase mRNA therapy in in vivo studies
# Moderna’s development pipeline

## Prophylactic vaccines

<table>
<thead>
<tr>
<th>Program #</th>
<th>Program Indication</th>
<th>Preclinical development</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3 and commercial</th>
<th>Moderna rights</th>
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<tr>
<td>mRNA-1172</td>
<td>Respiratory syncytial virus (RSV) vaccine</td>
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<td>Merck filed IND</td>
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<td>Merck to pay milestones and royalties</td>
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<td>mRNA-1777</td>
<td>Respiratory syncytial virus (RSV) vaccine</td>
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<td>mRNA-1647</td>
<td>Cytomegalovirus (CMV) vaccine</td>
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<tr>
<td>mRNA-1653</td>
<td>Human metapneumovirus and parainfluenza virus 3 (hMPV+PIV3) vaccine</td>
<td>Phase 1b (pediatrics)</td>
<td>Phase 1 (adults)</td>
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<tr>
<td>mRNA-1440</td>
<td>Influenza H10N8 vaccine</td>
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<td>mRNA-1851</td>
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<td>mRNA-1893</td>
<td>Zika vaccine</td>
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<td>mRNA-1388</td>
<td>Chikungunya vaccine</td>
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## Cancer vaccines

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<td>mRNA-4157</td>
<td>Personalized cancer vaccine (PCV)</td>
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<td>50-50 global profit sharing with Merck</td>
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<tr>
<td>NCI-4650</td>
<td>Personalized cancer vaccine (PCV)</td>
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<td>50-50 global profit sharing with Merck</td>
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<tr>
<td>mRNA-5671</td>
<td>KRAS vaccine</td>
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<td>50-50 global profit sharing with Merck</td>
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## Intratumoral immunoncology

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<td>mRNA-2416</td>
<td>OX40L</td>
<td>Solid tumors/lymphoma</td>
<td>Solid tumors/lymphoma</td>
<td>Ovarian</td>
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<tr>
<td>mRNA-2752</td>
<td>OX40L+IL23+IL36y (Triplet)</td>
<td>Solid tumors/lymphoma</td>
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<td>MED1191</td>
<td>IL12</td>
<td>Solid tumors</td>
<td></td>
<td></td>
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<td>50-50 U.S. profit sharing; AZ to pay royalties on ex-U.S. sales</td>
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## Localized regenerative therapeutics

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<td>AZD8601</td>
<td>VEGF-A</td>
<td>Myocardial ischemia</td>
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## Systemic secreted therapeutics

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<tbody>
<tr>
<td>mRNA-1944</td>
<td>Antibody against Chikungunya virus</td>
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<td>Worldwide DARPA funded</td>
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<tr>
<td>AZD7970</td>
<td>Relaxin Heart failure</td>
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<td>mRNA-3630</td>
<td>α-GAL</td>
<td>Fabry disease</td>
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## Systemic intracellular therapeutics

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<td>mRNA-3704</td>
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<tr>
<td>mRNA-3745</td>
<td>G6Pase</td>
<td>Glycogen Storage Disease Type 1a (GSD1a)</td>
<td></td>
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<td></td>
<td>Worldwide</td>
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New announcements since earnings call March 6, 2019

- Second dose level cohort enrolled
- DC nomination
- Paused
- Merck filed IND
- Worldwide Advancing subject to funding
- Worldwide
- Worldwide
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- Worldwide
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Moderna 2019 Science Day  
May 7, 2019

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

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

- Transient protein expression to confer cells with new functions and phenotypes
- mRNA-based immune system therapeutics
- Dose-dependent in vivo pharmacology to all major cell types (system-wide)
- mRNA software to select cell type(s) and ensure safety
- Drive cell trafficking to facilitate desired cell-cell interactions
First Quarter 2019 Financial Results (Unaudited)

### Balance Sheets

<table>
<thead>
<tr>
<th></th>
<th>March 31, 2019</th>
<th>December 31, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash, cash equivalents and investments</td>
<td>$1,547 mm</td>
<td>$1,694 mm</td>
</tr>
</tbody>
</table>

### Statements of Cash Flows

<table>
<thead>
<tr>
<th></th>
<th>3 months ended March 31, 2019</th>
<th>3 months ended March 31, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net cash used in operating activities</td>
<td>$144 mm</td>
<td>$111 mm</td>
</tr>
<tr>
<td>Cash used for purchases of property and equipment</td>
<td>$8 mm</td>
<td>$32 mm</td>
</tr>
</tbody>
</table>

### Statements of Operations

<table>
<thead>
<tr>
<th></th>
<th>3 months ended March 31, 2019</th>
<th>3 months ended March 31, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total revenue</td>
<td>$16 mm</td>
<td>$29 mm</td>
</tr>
<tr>
<td>Research and development expenses</td>
<td>$131 mm</td>
<td>$90 mm</td>
</tr>
<tr>
<td>General and administrative expenses</td>
<td>$27 mm</td>
<td>$16 mm</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>$158 mm</td>
<td>$106 mm</td>
</tr>
<tr>
<td>Net loss</td>
<td>$(133) mm</td>
<td>$(72) mm</td>
</tr>
</tbody>
</table>

**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.
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**
Anticipated clinical next steps

<table>
<thead>
<tr>
<th>Category</th>
<th>Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prophylactic vaccines</td>
<td>- CMV – Phase 1 safety and immunogenicity data; Phase 2 start&lt;br&gt;- hMPV+PIV3 – Phase 1b age de-escalation study start&lt;br&gt;- RSV – Phase 1 start for mRNA-1172&lt;br&gt;- Zika – IND filing</td>
</tr>
<tr>
<td>Cancer vaccines</td>
<td>- PCV – Phase 1 clinical activity; randomized Phase 2 start&lt;br&gt;- KRAS – Phase 1 start by Merck; Phase 1 T cell immunogenicity</td>
</tr>
<tr>
<td>Intratumoral immuno-oncology</td>
<td>- OX40L – Initiation of dosing of Phase 2 advanced ovarian carcinoma cohort&lt;br&gt;- OX40L+IL23+IL36γ (Triplet) – Completion of dose escalation and initiation of dosing of disease-specific cohorts&lt;br&gt;- IL12 – Phase 1 start by AstraZeneca</td>
</tr>
<tr>
<td>Localized regenerative therapeutics</td>
<td>- VEGF – Perfusion and cardiac function data from randomized Phase 2a study</td>
</tr>
<tr>
<td>Systemic secreted therapeutics</td>
<td>- Chikungunya antibody – Phase 1 safety and serum antibody levels&lt;br&gt;- Fabry – IND filing&lt;br&gt;- Relaxin – IND filing (AstraZeneca)</td>
</tr>
<tr>
<td>Systemic intracellular therapeutics</td>
<td>- MMA – Safety and proof of concept biomarker Phase 1/2 data&lt;br&gt;- PA – IND filing&lt;br&gt;- PKU – IND filing&lt;br&gt;- GSD1a – IND filing</td>
</tr>
</tbody>
</table>
### Moderna on May 8, 2019

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>3</th>
<th>5</th>
<th>6</th>
<th>3</th>
<th>~1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open INDs awaiting Ph 1 start</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Healthy volunteers and patients enrolled</td>
</tr>
<tr>
<td>Ph 1 trials ongoing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Ph 1 readouts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programs in or planning for Ph 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Programs in Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Immuono-Oncology</td>
</tr>
<tr>
<td>• OX40L preparing for Ph 2 cohort</td>
</tr>
<tr>
<td>• PCV preparing for Ph 2</td>
</tr>
<tr>
<td>• Triplet in Ph 1</td>
</tr>
<tr>
<td>• KRAS &amp; IL12 - open INDs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program in Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Rare Disease</td>
</tr>
<tr>
<td>• MMA - open IND</td>
</tr>
<tr>
<td>• PA, PKU, Fabry &amp; GSD1a in GLP Tox</td>
</tr>
<tr>
<td>• First secreted systemic therapeutic in Ph 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program in Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Vaccines for major unmet needs</td>
</tr>
<tr>
<td>• RSV – Merck filed IND for mRNA-1172</td>
</tr>
<tr>
<td>• hMPV+PIV3 – positive interim Phase 1 data</td>
</tr>
<tr>
<td>• CMV in Ph 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foundations</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;775 employees</td>
</tr>
<tr>
<td>A fully-integrated 200,000 sq. ft. GMP site operational in Norwood, MA</td>
</tr>
<tr>
<td>$1.55 bn of cash, cash equivalents, and investments as of Mar 31, 2019 (unaudited)</td>
</tr>
</tbody>
</table>
Our Mission
To deliver on the promise of mRNA science to create a new generation of transformative medicines for patients.