


**moderna**



**10 year vision**

Stephane Bancel, CEO  
March 7, 2018

**Legal notices**

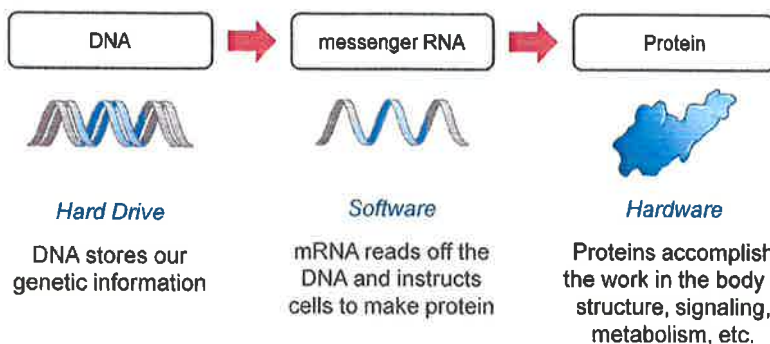
This presentation does not constitute an offer to sell to, or a solicitation of an offer to buy from, anyone in any state or in any other jurisdiction, whether under the Securities Act of 1933, as amended, or otherwise.

Various statements in this presentation concerning the future expectations of Moderna Therapeutics, Inc. (together with its affiliates, the "Company"), plans and prospects, including without limitation, the Company's views with respect to the potential for mRNA therapeutics, its expectations with respect to timing of regulatory filings and the reporting of initial data from any clinical trial(s), the potential therapeutic opportunities for mRNA, its expectations regarding its product strategies, and its plans regarding commercialization of mRNA therapeutics constitute forward-looking statements. Actual results may differ materially from those indicated by these forward-looking statements as a result of various important factors, including, without limitation, the Company's ability to discover and develop novel drug candidates and delivery approaches, the Company's ability to successfully demonstrate the efficacy and safety of its drug candidates, the pre-clinical and clinical results for its product candidates, which may not support further development of product candidates, the actions of regulatory agencies, which may affect the initiation, timing and progress of clinical trials, obtaining, maintaining and protecting intellectual property, the Company's ability to enforce its patents against infringers and defend its patent portfolio against challenges from third parties, obtaining regulatory approval for products, competition from others using technology similar to the Company's and others developing products for similar uses, the Company's ability to manage operating expenses, the Company's ability to obtain additional funding to support its business activities and establish and maintain strategic business alliances and new business initiatives, the Company's dependence on third parties for development, manufacture, marketing, sales and distribution of products, the outcome of litigation, and unexpected expenditures. In addition, any forward-looking statements represent the Company's views only as of today and should not be relied upon as representing its views as of any subsequent date. The Company explicitly disclaims any obligation to update any forward-looking statements.

**moderna**

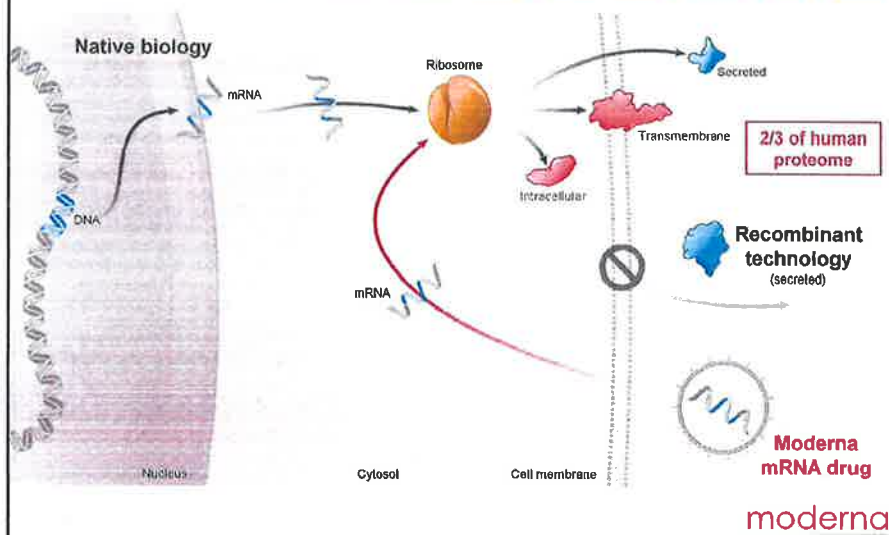
## mRNA is the software of life

### Central Dogma of Molecular Biology

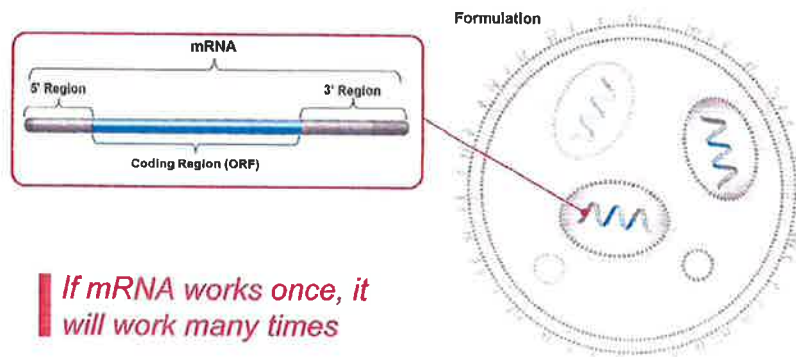


moderna

## mRNA medicines enable new intra-cellular and membrane-bound therapeutic proteins



## mRNA medicines are platform-based



*If mRNA works once, it will work many times*

moderna

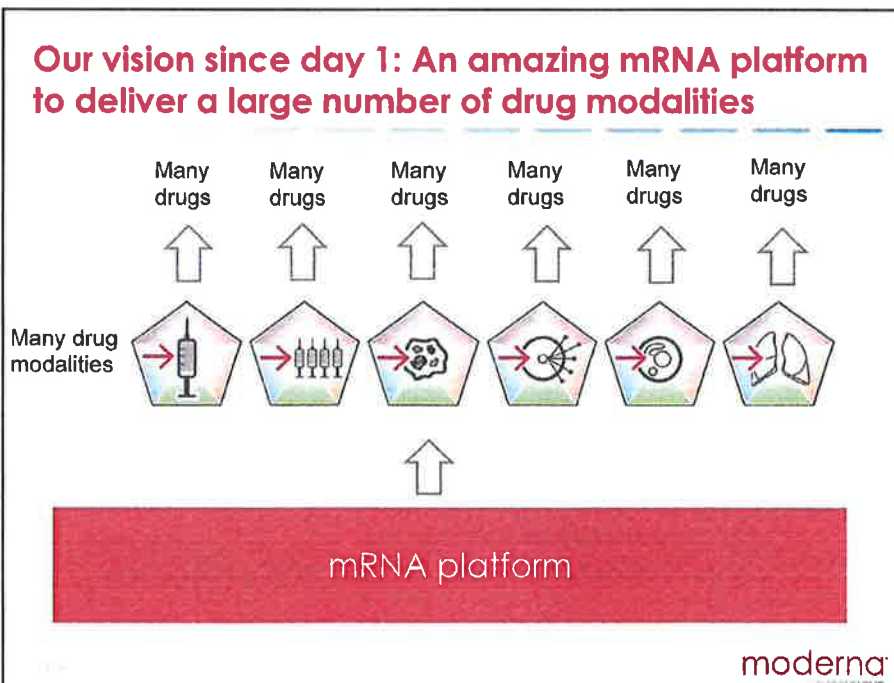
## Four value drivers present a unique opportunity for mRNA medicines and financial returns

- 1. Product abundance:**
  - Any type of protein or variants (native proteins, antibodies, viral proteins)
  - Hundreds of previously undruggable targets
- 2. Higher PTS (probability of technical success):**
  - Platform technology allows de-risking of drugs in the same modality
  - Rational drug design to follow disease biology, including mRNA combinations in the same vial
- 3. Speed:**
  - Faster research to turn ideas into reality
  - Faster early development to generate clinical data
- 4. Manufacturing advantages:**
  - Lower COGS than biologics due to cell-free process
  - De-risked capital expenditures – manufacturing infrastructure serves all pipeline drugs

moderna

moderna

- 1) Looking back 6 years
- 2) Next 10 years



## Moderna vision

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

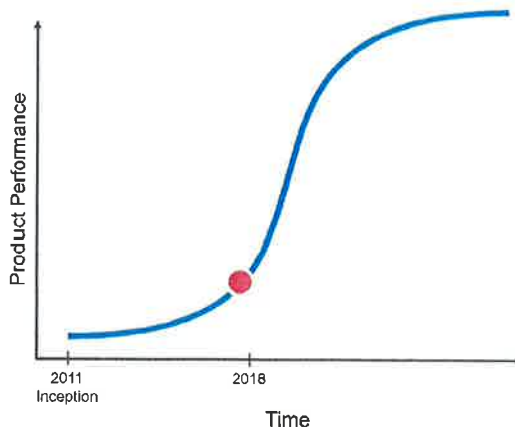
moderna

## Moderna's mRNA Technology Platform

Over **300 scientists and engineers** dedicated to **mRNA platform research** across chemistry, biology, formulation, and technical operations

Committed to **\$100mm annual investment** in the mRNA platform

**Unrivaled scale:**  
\$500mm invested so far in the Moderna platform



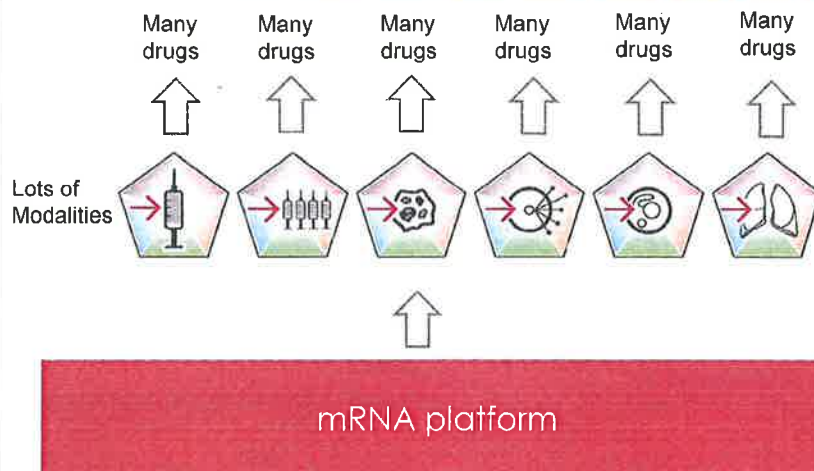
moderna

## Moderna vision

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

moderna

## Our vision since day 1: An amazing mRNA platform to deliver a large number of drug modalities



moderna

## We have been relentlessly executing on that vision since inception, and entered the clinic in 2015

# of Development Candidates

**YE 2015**  
1 Modality  
3 Total DCs  
1 Clinical DCs



mRNA platform

moderna

## We have been relentlessly executing, with modality expansion in 2016

# of Development Candidates

**YE 2016**  
4 Modalities  
10 Total DCs  
4 Clinical DCs

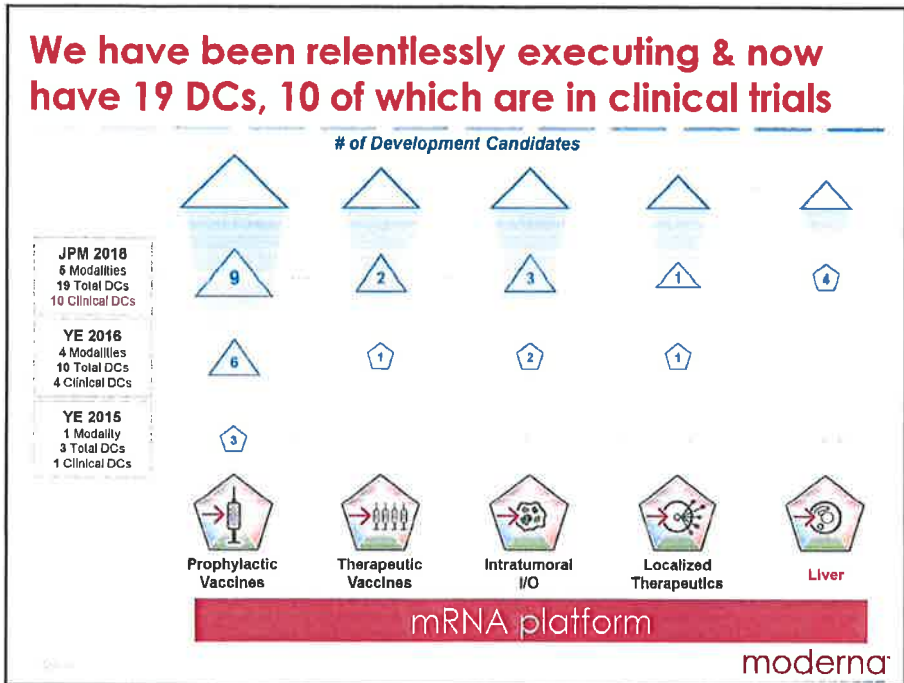


**YE 2015**  
1 Modality  
3 Total DCs  
1 Clinical DCs



mRNA platform

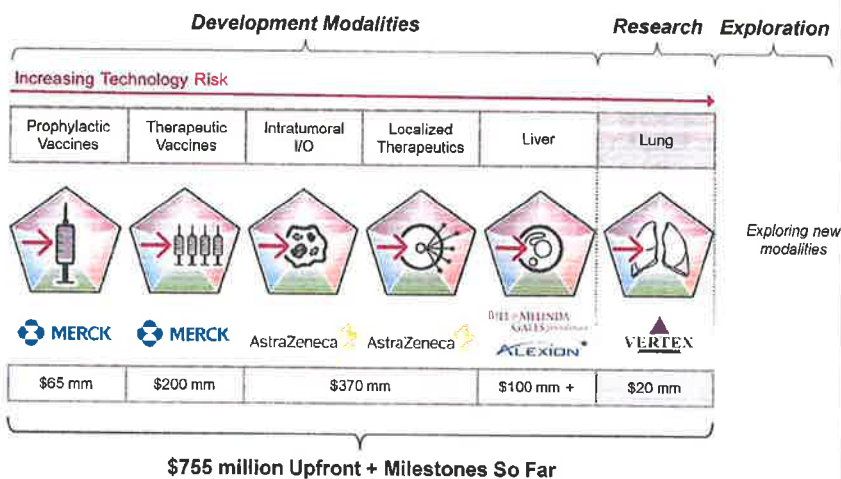
moderna



**moderna** Risk Management



## We reduced technology risk and financing risk with selective strategic deals



moderna

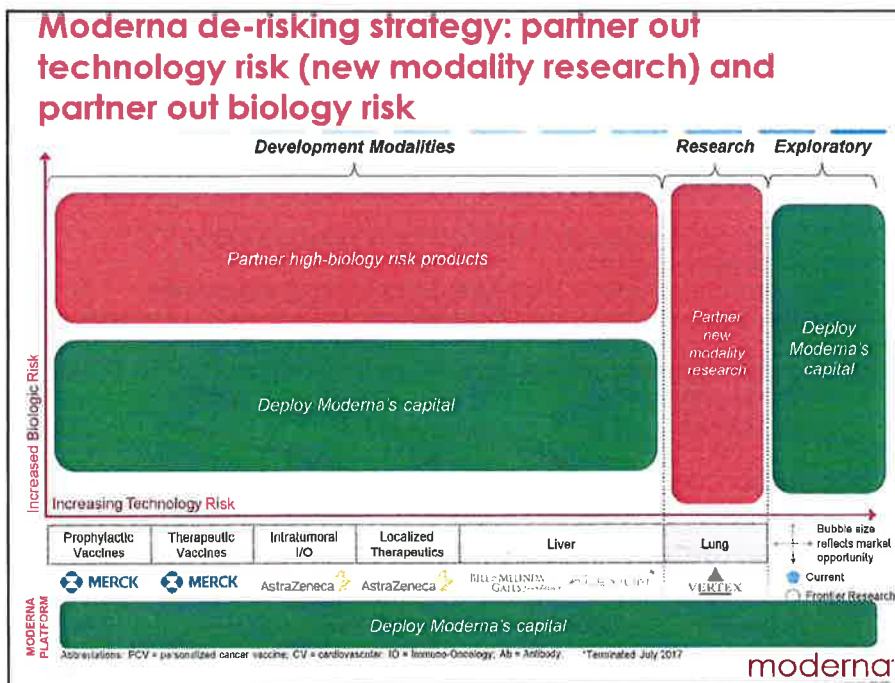
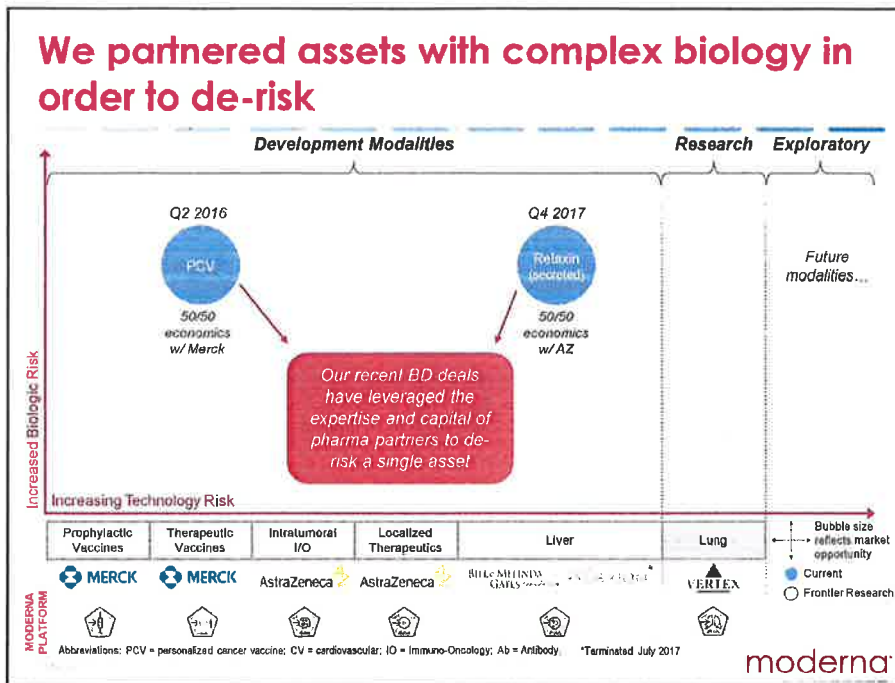
## We manage biology risk for products within modalities

For new drugs in development modalities (where the technology is de-risked)

- (1) We deploy our capital toward a product if the following are all true:
  - (a) large market opportunity
  - (b) no/limited competition, or our product can be highly differentiated
  - (c) low biology risk (mechanism for treating the disease is well understood)
- (2) We partner a product if risks are higher:
  - (a) Commercial risk
  - (b) Biology risk

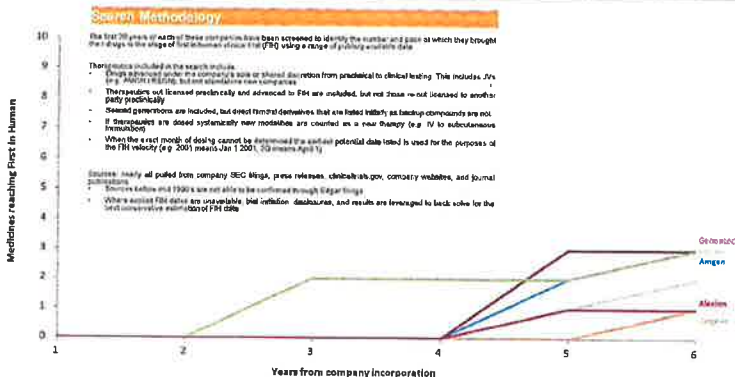
e.g., PCV with Merck (high biology risk, I/O competition)  
 Relaxin with AZ (high biology risk, existing HF drugs)

moderna



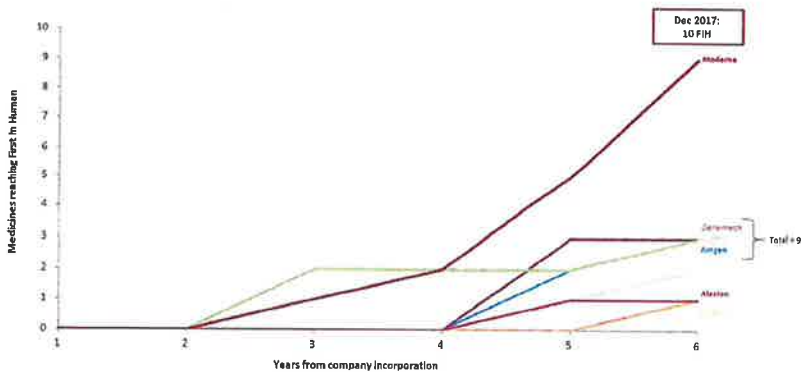
## Top Public Biotechs (6-year horizon)

### Medicines Reaching First in Human – Top Public Biotechs



## Favorable Velocity to Top Public Biotechs (6-year horizon)

### Medicines Reaching First in Human – Top Public Biotechs

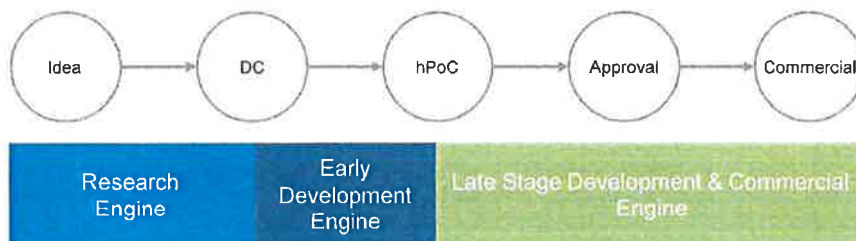


## Moderna vision

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

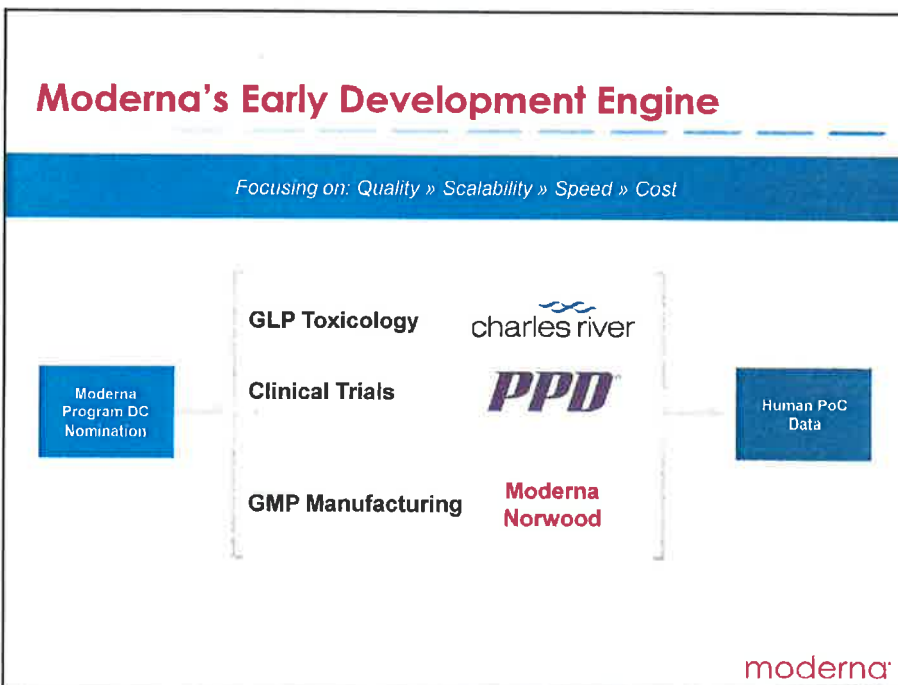
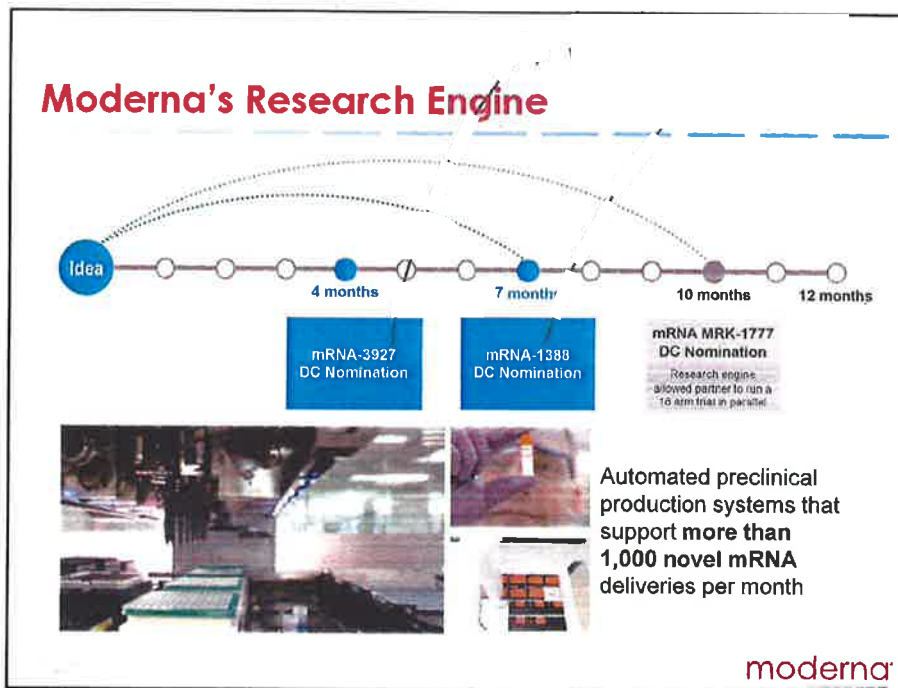
moderna

## Drug business value inflection points



Abbreviations: DC = Development Candidate, hPoC = human proof of concept, generally after a Phase II read out

moderna



## Moderna's Early Development Engine

*Focusing on: Quality » Scalability » Speed » Cost*

### Moderna Norwood

Approx. Sq. Footage: 200,000

Initial Investment: \$120mm

Long term Lease Signed: Aug 2016

# of Employees: 220

Anticipated Site Open: Mid-2018

Annual Capacity: Up to 100 GMP lots



moderna

## Moderna vision

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

moderna

## Talent: A Science Top Employer for 3<sup>rd</sup> Year in a Row



2017 Rank	2016 Rank	2015 Rank	Employer (Global headquarters)
1	1	2	Regeneron (Tarrytown, NY)
2	6	1	Novozymes (Bagsvaerd, Denmark)
3	5	4	Vertex Pharmaceuticals (Boston, MA)
4	11	17	Merck KGaA (Darmstadt, Germany)
5	7	3	Novo Nordisk (Bagsvaerd, Denmark)
6	3	7	Moderna Therapeutics (Cambridge, MA)
7	7	6	Genentech (South San Francisco, CA)
8	4	11	Eli Lilly and Company (Indianapolis, IN)
9	9	13	Biocon (Bangalore, India)
10	12	10	AbbVie (North Chicago, IL)
11	-	-	AstraZeneca/Medimmune (Cambridge, UK)
12	14	-	Syngenta (Basel, Switzerland)
13	10	8	Roche — including Genentech (Basel, Switzerland)
14	19	-	Novartis (Basel, Switzerland)
15	15	14	Abbott (Abbott Park, IL)
16	16	15	Boehringer Ingelheim (Ingelheim, Germany)
17	-	-	Merck & Company (Kenilworth, NJ)
18	13	9	Monsanto Company (Crawfordsville, MO)
19	17	12	Celgene Corporation (Summit, IL)
20	-	-	Lundbeck (Copenhagen, Denmark)



moderna

## Talent: Executive Committee



**Stéphane Bancel**  
Chief Executive Officer  
(previously CEO at bioMérieux, managing director at Lilly)



**Stephen Hoge, MD**  
President  
(previously partner at McKinsey, physician)



**Lorence Kim, MD**  
Chief Financial Officer  
(previously managing director at Goldman Sachs)



**Marcello Damiani**  
Chief Digital Officer  
(previously at bioMérieux, Motorola)



**Tal Zaks, MD, PhD**  
Chief Medical Officer  
(previously head of global oncology at Sanofi)



**Juan Andres**  
SVP of Late Stage Technical Development & Manufacturing  
(previously head of manufacturing at Novartis)



**Annie Drapeau**  
Chief Human Resources Officer  
(previously at Bain Capital, Iron Mountain)



**Steve Harbin**  
Chief of Staff, Chief Sustainability Officer  
(previously at bioMérieux, Lilly)



**John Mendlein**  
President, Corporate and Product Strategy  
(previously CEO of aTyr)

moderna

## Talent: World Class Board of Directors



**Noubar Afeyan, PhD**  
Co-founder and Chairman,  
Moderna;  
CEO, Flagship Pioneering



**Stéphane Bancel**  
Chief Executive Officer  
(previously CEO at  
bioMérieux, managing  
director at Lilly)



**Moncef Slaoui, PhD**  
Former Chairman of Global  
Vaccines, GlaxoSmithKline  
PLC



**Elizabeth Nabel, MD**  
President, Brigham Health;  
Former Director of NHLBI



**John Mendlein, PhD**  
Former CEO aTyr



**Robert Langer, ScD**  
Academic Co-Founder,  
Moderna; David H. Koch  
Institute Professor, MIT



**Stephen Berenson**  
Executive Partner, Flagship  
Pioneering;  
Former Vice Chairman of  
JP Morgan Investment Bank



**Peter Barton Hutt, JD**  
Senior Counsel, Covington  
& Burling;  
Former Chief Counsel for  
the FDA



**Israel Ruiz**  
Executive Vice President  
and Treasurer,  
Massachusetts Institute of  
Technology

moderna

## Talent: World Class Scientific Advisory Board



**Jack Szostak, PhD**  
Moderna SAB chairman, (since  
2011); 2009 Nobel Prize in  
Medicine; Professor of Genetics,  
Harvard Medical School



**Robert Langer, ScD**  
Moderna academic co-  
founder; David H. Koch  
Institute Professor, MIT



**Colin R. Gardner, PhD**  
Previously senior Merck  
executive



**Rachel Green, PhD**  
Professor of Molecular  
Biology and Genetics,  
Johns Hopkins University



**Michael Diamond, MD PhD**  
Head, Division of  
Infectious Diseases,  
Washington University  
School of Medicine



**Sander G. Mills, PhD**  
Previously Head of Global  
Chemistry, Merck



**Ron Eydelloit, DVM**  
Previously senior executive  
of GSK & Merck



**Ulrich H. von Andrian, MD**  
Mallinckrodt Professor of  
Immunopathology,  
Harvard Medical School



**Ralph Weissleder, MD PhD**  
Thrall Professor of Radiology &  
Professor of Systems Biology,  
Harvard Medical School

moderna



## Moderna vision

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

moderna

## Corporate Citizenship @ Moderna

- **Medicines:** We form Private-Public partnerships to research and develop products that present limited commercial opportunity, but which are important for the world: DARPA, BARDA, Gates Foundation
- **Employees:** We are a top employer (Science, Boston Globe...): culture, healthcare plan, benefits, training, ...
- **Environment:** We reduce our footprint on the environment: recycling, promotion of public transportation incentives, promotion of electric car incentives, solar roof panels in Norwood, ...
- **Community:** We engage with our local communities: Pine Street shelter, Habitat for Humanity, ...

moderna

## Moderna vision is intact 6 years into our history

---

- We are the leading mRNA platform and continue to invest like it's the beginning of the journey
- We and our partners are discovering and developing an unprecedented breadth of meaningful vaccines and therapeutics
- We integrate automation and digital technology into everything we do
- We are one team achieving the extraordinary – by being agile, highly networked and deeply committed to our Mission
- We believe corporate citizenship means we do the right thing in the right way

moderna

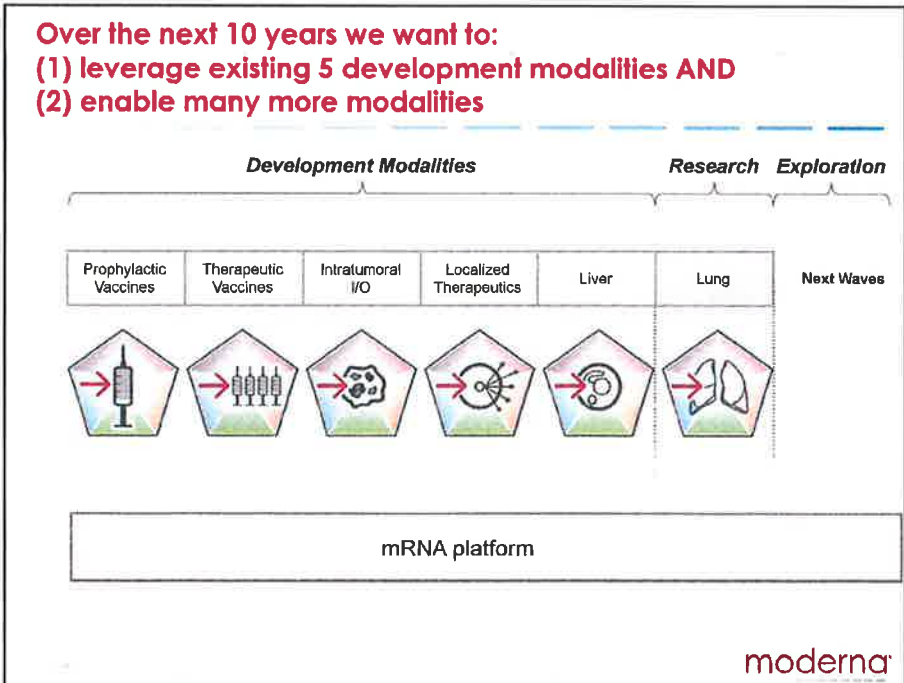
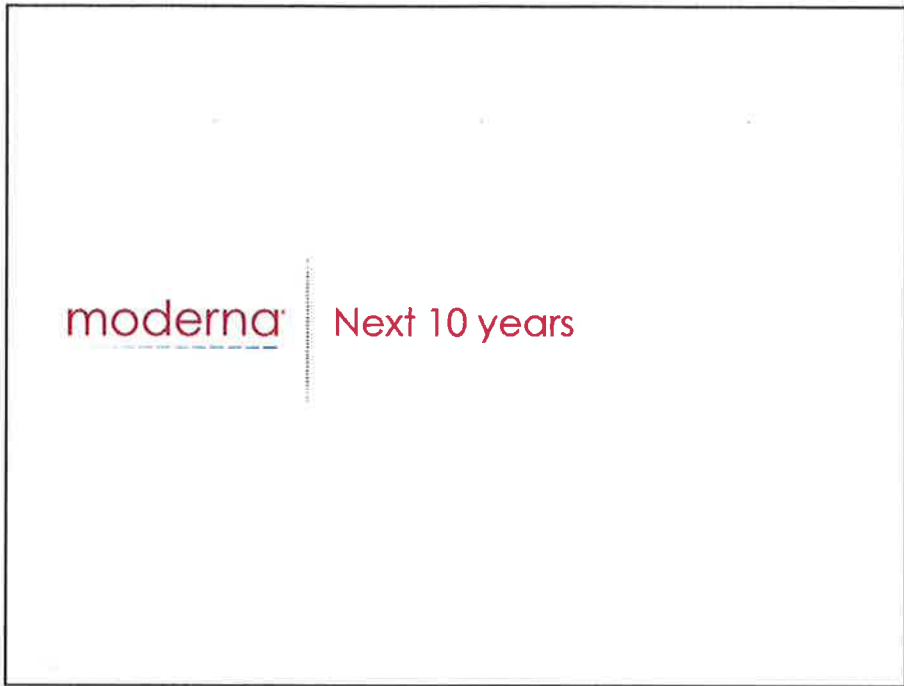
---

**Vision without Execution..**

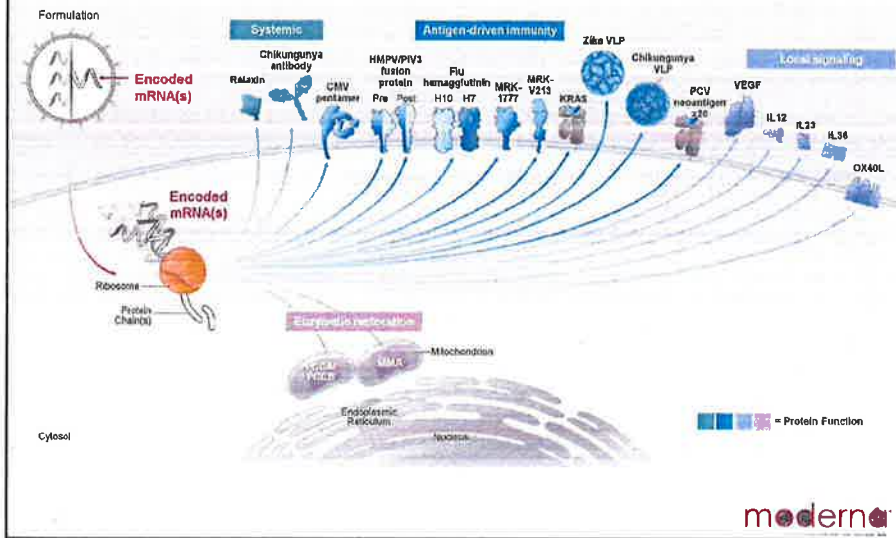
**..is just hallucination**

Thomas Edison

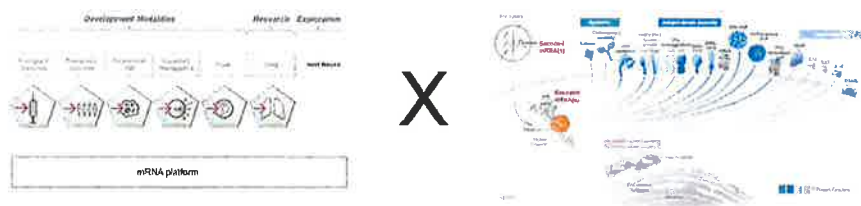
moderna



**mRNA is the software of life. Once we open a new modality (new tissue), our leverage is unique**



**Each time we make 1 new modality work, we have incredible leverage:**



## Moderna has already proven to be highly productive

### First in Human (FIH) Programs, Per Year

<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018+</u>
Start operations	0	0	0	1	3	6	5 / year (aspiration)

Dec 2015 – Dec 2017: 10 FIH phase 1 trials; already a pace of 5 per year

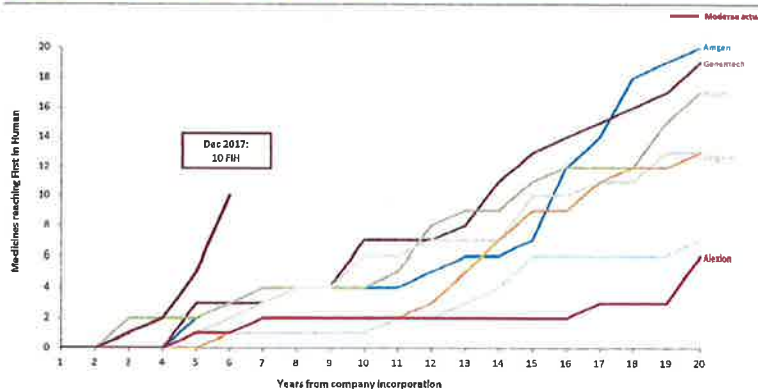
9 DCs not in clinic yet

Our aspiration is 5 FIH programs per year (+/- 2).  
 Our goal is to deliver great medicines.  
 We will not emphasize quantity over quality.

moderna

## Favorable Velocity to Top Public Biotechs (20-year horizon)

### Medicines Reaching First in Human – Top Public Biotechs



Sources: Company SEC filings, press releases, clinicaltrials.gov, FDA documents, company websites, journal publications, Bloomberg, press releases, and other publicly available sources.  
 Note: Assumes midpoint of current CYE 2017 estimates of 2.0 cumulative FIH over 20-year horizon. Biotech firms not included since records that reached FIH > 20 years after Biogen's incorporation.



## Moderna Value Drivers

(1) Existing Pipeline

(2) New DCs in Existing Modalities

(3) New DCs in New Modalities

Cash

Total

moderna

## We Have 12 Commercial DCs Across Four Therapeutic Areas

### 19 Total DCs

- Methylmalonic acidemia (MMA)
- Propionic acidemia (PA)
- VEGF
- Relaxin
- hMPV+PIV3
- Merck mRNA-1777
- CMV
- Merck mRNA-V213
- H10 influenza
- H7 influenza
- Zika
- Chikungunya vaccine
- Chikungunya antibody
- Influenza antibody
- OX40L
- Triplet
- KRAS
- PCV
- IL12

### 12 Commercial DCs

- Methylmalonic acidemia (MMA)
- Propionic acidemia (PA)
- VEGF
- Relaxin
- hMPV+PIV3
- Merck mRNA-1777
- CMV
- Merck mRNA-V213
- Triplet
- KRAS
- PCV
- IL12

2 Rare Disease

2 Cardiovascular

4 Vaccines

4 Immuno-oncology

moderna

## Existing Pipeline: Details

	Competition		Moderna Positioning	Public Market Value
	Clinical?	Commercial?		
Rare Disease	MMA	None	None	First-in-class \$500 mm - 1 bn
	PA	None	None	First-in-class \$500 mm - 1 bn
<b>Total:</b>				<b>2 First-in-class \$1-2 bn</b>



## Existing Pipeline: Details

	Competition		Moderna Positioning	Public Market Value
	Clinical?	Commercial?		
Rare Disease	MMA	None	None	First-in-class \$500 mm - 1 bn
	PA	None	None	First-in-class \$500 mm - 1 bn
Cardio-vascular	VEGF	None	None	First-in-class \$1 bn - 2.5 bn
	Relaxin	None	None	First-in-class \$2.5 bn - 5 bn
<b>Total:</b>				<b>4 First-in-class \$4-9 bn</b>



### Existing Pipeline: Details

		Competition		Moderna Positioning	Peak Sales range
		Clinical?	Commercial?		
<i>Rare Disease</i>	MMA	None	None	First-in-class	\$500 mm - 1 bn
	PA	None	None	First-in-class	\$500 mm - 1 bn
<i>Cardio-vascular</i>	VEGF	None	None	First-in-class	\$1 bn - 2.5 bn
	Relaxin	None	None	First-in-class	\$2.5 bn - 5 bn
<i>Infectious Disease</i>	hMPV+PIV3	None	None	First-in-class	\$1 bn - 2.5 bn
	mRNA-1777	Yes	None	First-in-class	\$2.5 bn - 5 bn
	CMV	Yes	None	First-in-class	\$2.5 bn - 5 bn
	mRNA-V213	Yes	Yes	Fast-follower	\$1 bn - 2.5 bn
<b>Total:</b>				<b>7 First-in-class, 1 Fast-follower</b>	<b>\$11-25 bn</b>

**moderna**

### Existing Pipeline: Details

		Competition		Moderna Positioning	Peak Sales range
		Clinical?	Commercial?		
<i>Rare Disease</i>	MMA	None	None	First-in-class	\$500 mm - 1 bn
	PA	None	None	First-in-class	\$500 mm - 1 bn
<i>Cardio-vascular</i>	VEGF	None	None	First-in-class	\$1 bn - 2.5 bn
	Relaxin	None	None	First-in-class	\$2.5 bn - 5 bn
<i>Infectious Disease</i>	hMPV+PIV3	None	None	First-in-class	\$1 bn - 2.5 bn
	mRNA-1777	Yes	None	First-in-class	\$2.5 bn - 5 bn
	CMV	Yes	None	First-in-class	\$2.5 bn - 5 bn
	mRNA-V213	Yes	Yes	Fast-follower	\$1 bn - 2.5 bn
<i>Immuno-oncology</i>	Triplet	Yes	Yes	Best-in-class	\$1 bn - 2.5 bn
	KRAS	Yes	Yes	Best-in-class	\$1 bn - 2.5 bn
	PCV	Yes	Yes	Best-in-class	\$2.5 bn - 5 bn
	IL-12	Yes	Yes	Best-in-class	\$1 bn - 2.5 bn
<b>Total:</b>				<b>7 First, 4 Best, 1 Fast Follower</b>	<b>\$17-37 bn</b>

**moderna**



## Existing Pipeline: Summary

		Peak Sales range
7	First-in-class programs	\$10-22 bn
4	Best-in-class programs	\$6-13 bn
1	Fast Follower program	\$1-2 bn
12	Total	\$17-37 bn

moderna

## Moderna Value Drivers

- (1) Existing Pipeline
- (2) New DCs in Existing Modalities
- (3) New DCs in New Modalities

Cash

Total

moderna

## 2018-2019 Priorities

- Execute on our 19 DCs currently in the pipeline – initiate several phase 2 trials
- Create important new DCs in our existing 5 modalities, with a priority on rare diseases
- Continue to build the infrastructure to deliver on the promise of our broad mRNA platform
- Continue to invest in mRNA science and technology – it is still only the beginning

moderna

## Moderna at an inflection point

We are at the beginning of a 20 year mRNA innovation cycle



moderna