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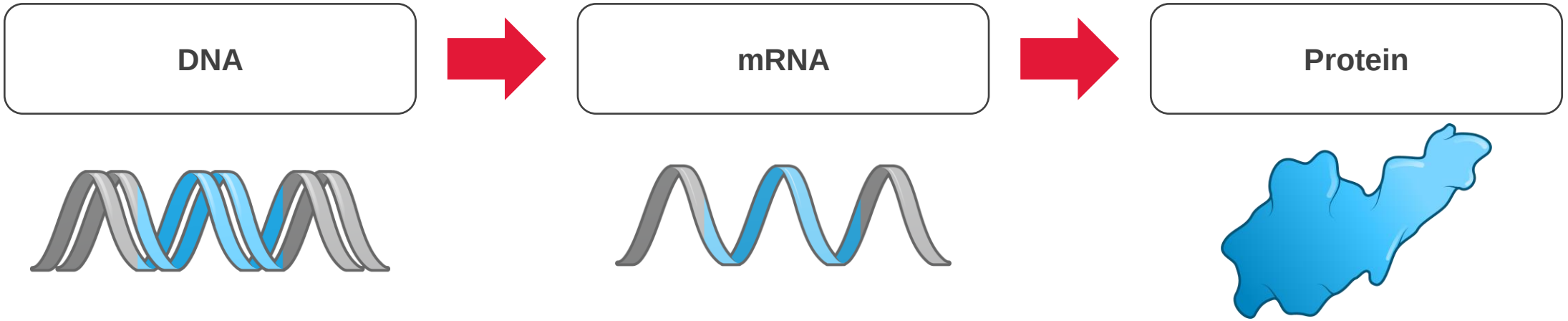

Seasonal Quadrivalent Flu Vaccine (mRNA-1010)
Phase 1 Results

December 10th, 2021

Forward-looking statements and Disclaimer

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including statements regarding: expected timing for the commencement of the Company's Phase 3 study of mRNA-1010 and determination of the regulatory pathway; the potential to combine different vaccines into a single dose and the potential benefits from such combinations; the potential associated with various dose levels of mRNA-1010; the timing for interim analysis data from the Company's Phase 2 study of mRNA-1010; and the potential market opportunity for a pan-respiratory booster vaccine. In some cases, forward-looking statements can be identified by terminology such as "will," "may," "should," "could," "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, those risks and uncertainties described under the heading "Risk Factors" 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 contained 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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Today's agenda

Overview of influenza epidemiology and current influenza vaccines **Our mRNA flu vaccine strategy**	**Stephen Hoge, M.D.**, *President*
Review of mRNA-1010 Phase 1 data	**Jacqueline Miller, M.D.**, *Senior Vice President, Infectious Diseases*
Conclusion	**Stéphane Bancel**, *Chief Executive Officer*
Q&A	

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Seasonal influenza (flu) overview

Seasonal flu (influenza A and influenza B) epidemics occur seasonally and vary in severity each year, causing respiratory illnesses and placing substantial burden on healthcare systems

Disease burden:

- Worldwide, influenza leads to 3-5M severe cases of flu and 290-650K flu-related respiratory deaths annually[1]
- About 8% of the US population experiences symptoms from flu each year, with 140-710K hospitalizations and 12-52K deaths per year[2]
- Peak flu activity is seen in temperate climates during fall to winter and is reflected in increased outpatient visits, urgent care visits, and hospitalizations

Flu symptoms & complications	
Symptoms	Fever Cough Sore throat Nasal congestion Fatigue Vomiting/diarrhea (more common in children)
Complications	Pneumonia (viral and/or bacterial) Ear infections Sinus infections Exacerbation of chronic conditions (e.g. asthma, heart failure)

1. World Health Organization. Influenza (Seasonal). WHO. 2018. https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal)
2. Centers for Disease Control and Prevention. Disease burden of influenza. Available at: https://www.cdc.gov/flu/about/burden/index.html

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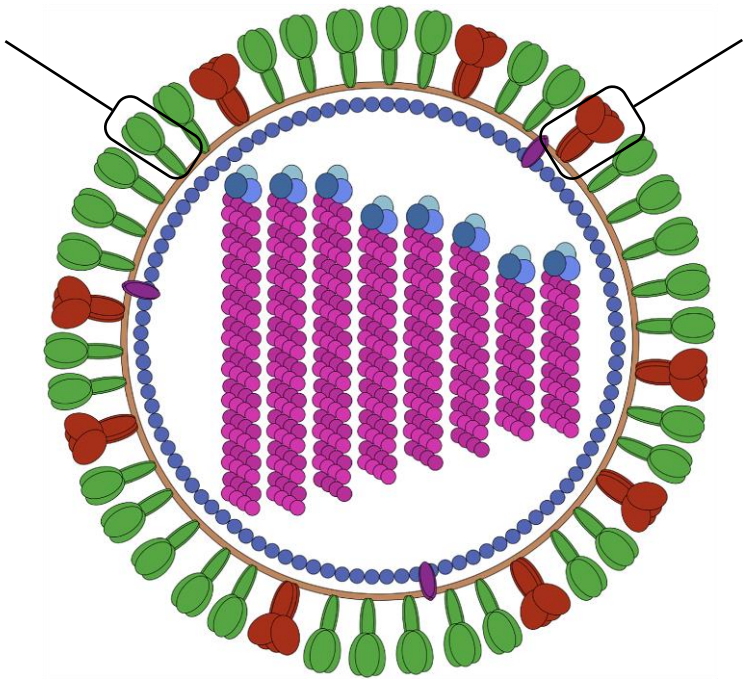
Two major surface glycoproteins on influenza virus

Hemagglutinin (HA)

- Primary target of current influenza virus vaccines
- Major surface glycoprotein
- Globular head experiences significant antigenic drift and is highly variable across subtypes
- Influenza A & B strains



Neuraminidase (NA)

- Component of some Inactivated Influenza Vaccines (IIVs) (content not standardized)
- Surface glycoprotein
- Lower rate of antigenic drift compared to HA head
- NA antibodies independently correlate with protection

Nachbagauer, R. et al, Annu Rev Med (2020), https://doi.org/10.1146/annurev-med-120617-041310

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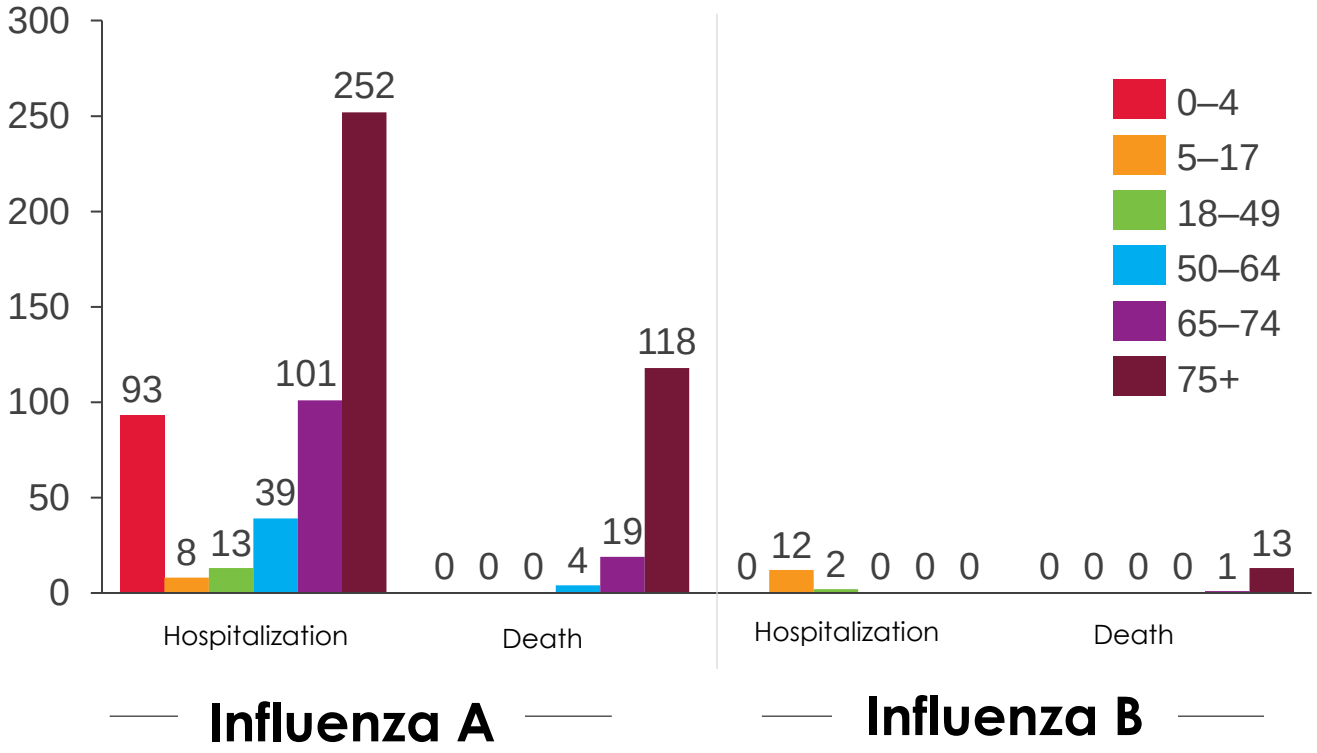
Influenza A strains are the major driver of influenza-related hospitalizations and deaths

Mean Seasonal Hospitalization and Mortality rates per 100K people in the UK (1997-2007)[1]



- Recent study of VE from 2004-2015 found average VE of 33% against illnesses caused by H3N2 viruses, compared with 61% against H1N1 and 54% against influenza B virus illnesses[2]
- Lower vaccine efficacy (VE) against A(H3N2) viruses may contribute to the higher medical burden for Influenza A

1. Matias et al. BMC Public Health (2016), https://doi.org/10.1186/s12889-017-4177-z
2. Belongia et al. The Lancet (2016), https://doi.org/10.1016/S1473-3099(16)00129-8

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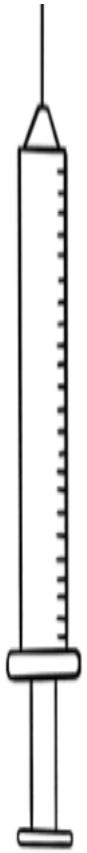
Current flu vaccines & market overview



- In the US, the estimated average **economic burden of flu is ~$11 billion** per year[1]
- **500M+ doses** of seasonal influenza vaccines were administered in 2019[2]
- Currently **approved vaccines are ~40-60%** effective and face significant challenges from strain mismatch and antigenic drift[3]
- An improvement in vaccine efficacy has the potential to **increase the current $5-6B influenza market**

1. Putri W et al. Economic burden of seasonal influenza in the United States. Vaccine 2018; 36(27):3960-3966
2. WHO, Global Vaccine Market Report (December 2020) . https://www.who.int/immunization/programmes_systems/procurement/mi4a/platform/module2/2020_Global_Vaccine_Market_Report.pdf?ua=1
3. Centers for Disease Control and Prevention. Vaccine Effectiveness: How Well Do the Flu Vaccines Work? https://www.cdc.gov/flu/vaccines-work/vaccineeffect.htm

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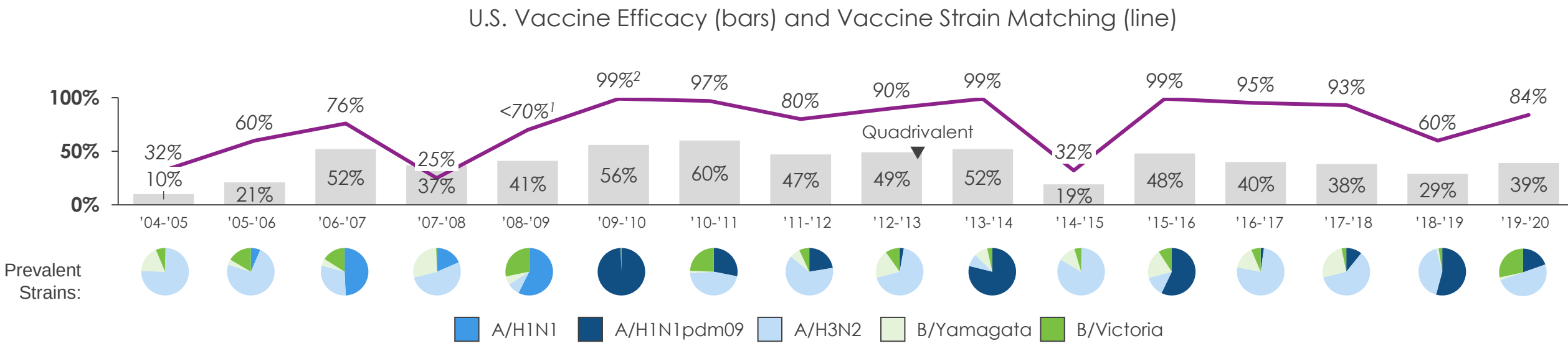
Seasonal influenza virus vaccine effectiveness



Significant vaccine-prevalent strain mismatching (60% or below) occurred in 5 seasons among the last 16 for which data is available

In well-matched years (≥90% matching) efficacy for all subjects ranges from 38 – 60% (efficacy values in the lower part of the range can be due in part to egg-adaptations)

[1] No specific data provided, however, match is <70% as B/Victoria was excluded from vaccines, representing ~30% of strains.
[2] Combination of pandemic swine flu and regular seasonal flu vaccines.
Strain Match Source: MMWR CDC Influenza Vaccine Summary Reports: '04-05, '05-06, '06-07, '07-08, '08-09, '09-10, '10-11, '11-12, '12-13, '13-14, '14-15, '15-16, '16-17, '17-18, '18-19, '19-20
VE Source: https://www.cdc.gov/flu/vaccines-work/past-seasons-estimates.html
2020-2021 influenza vaccine effectiveness was not estimated due to low influenza virus circulation during the 2020-2021 influenza season

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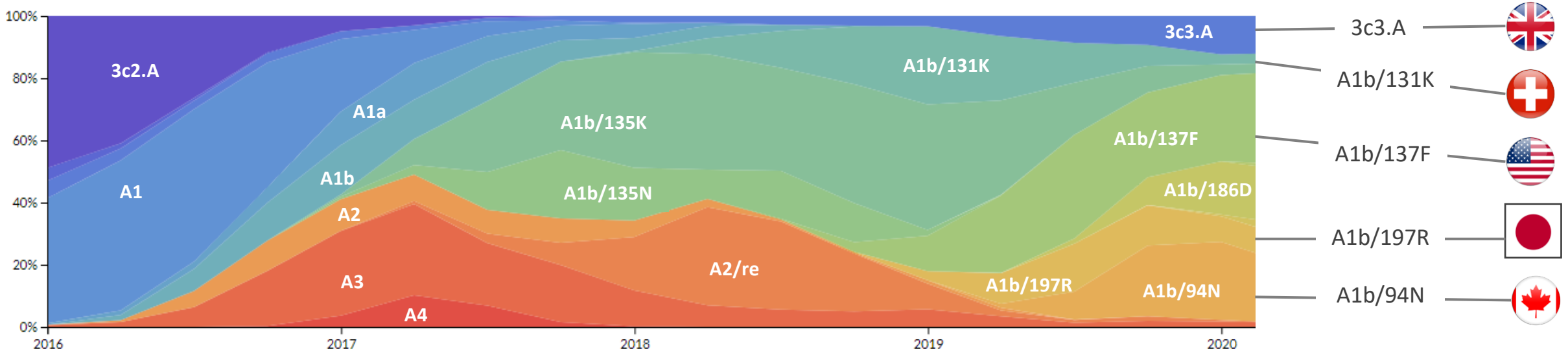
Seasonal influenza virus H3N2 strains

Global circulating H3N2 viruses

(2016-2020, worldwide)



- Data from nextstrain.org over the past six years illustrates the co-circulation of multiple clades of H3N2 viruses each year
- A single clade rarely exceeds 40% of all circulating H3N2 viruses, creating a high likelihood of mismatch with vaccines in at least some countries

An influenza clade or group is a further subdivision of influenza viruses (beyond subtypes or lineages) based on the similarity of their HA gene sequences
Source: https://nextstrain.org/flu/seasonal/h3n2/ha/6y
2020/2021 not included due to low amount of influenza circulation

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Moderna's seasonal influenza vaccine strategy

QUADRIVALENT VACCINE	**Seasonal quadrivalent flu vaccine** (mRNA-1010)	Using WHO recommended strains	Established regulatory pathway (subject to discussions with regulators)
EXPANDED COVERAGE	**Beyond quadrivalent flu vaccines** (mRNA-1011/1012)	Adding Hemagglutinin (HA) antigens (e.g. H3N2, H1N1) to expand strain matching	Provide an enhanced antigen selection opportunity to public health authorities; potential for regional variation
IMMUNOLOGIC BREADTH	**Broader antigen flu vaccines** (mRNA-1020/1030)	Adding Neuraminidase (NA) antigens	Improve immunity by targeting more conserved antigens

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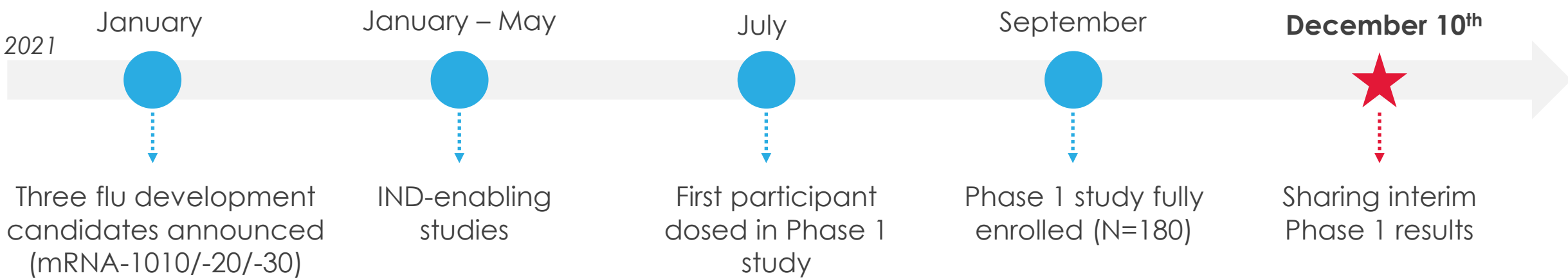
Review of mRNA-1010 Phase 1 data

Jacqueline Miller, M.D.
Senior Vice President, Infectious Diseases

Quadrivalent seasonal flu vaccine (mRNA-1010) **Phase 1 development timeline**



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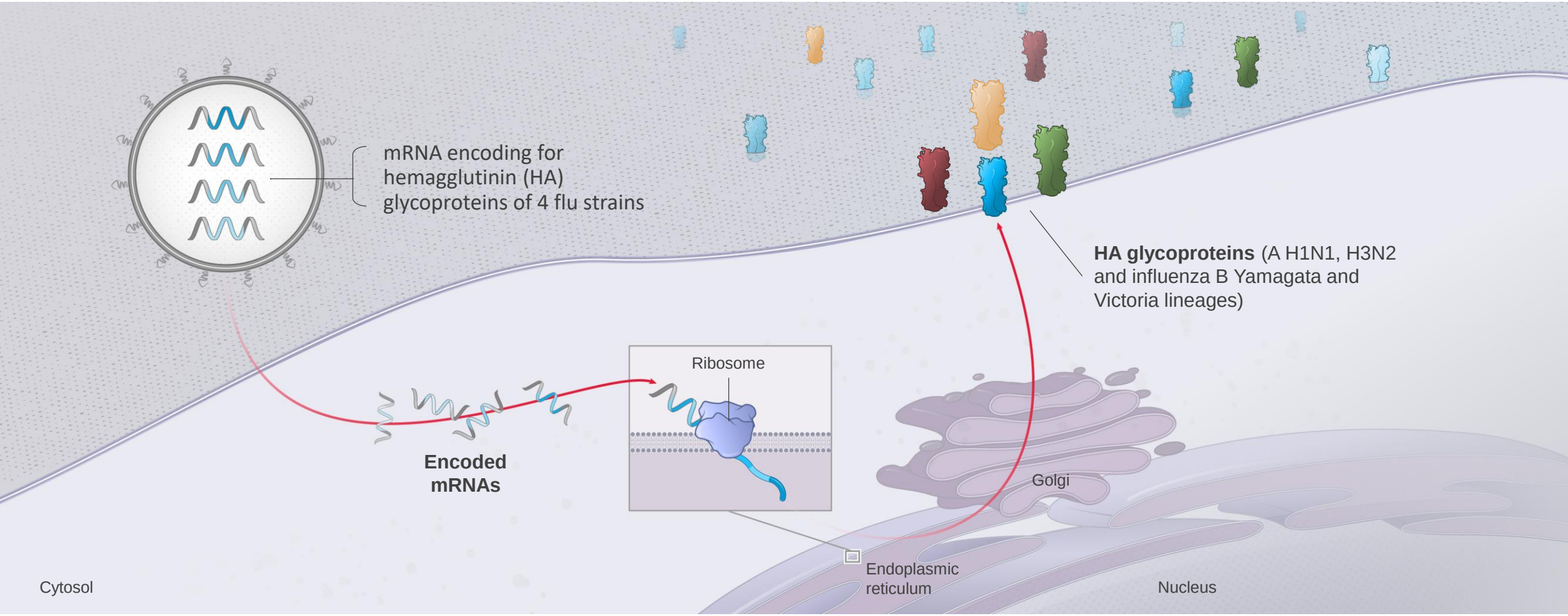
Quadrivalent seasonal flu vaccine (mRNA-1010)



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mRNA-1010: **Overview of Phase 1/2 study**

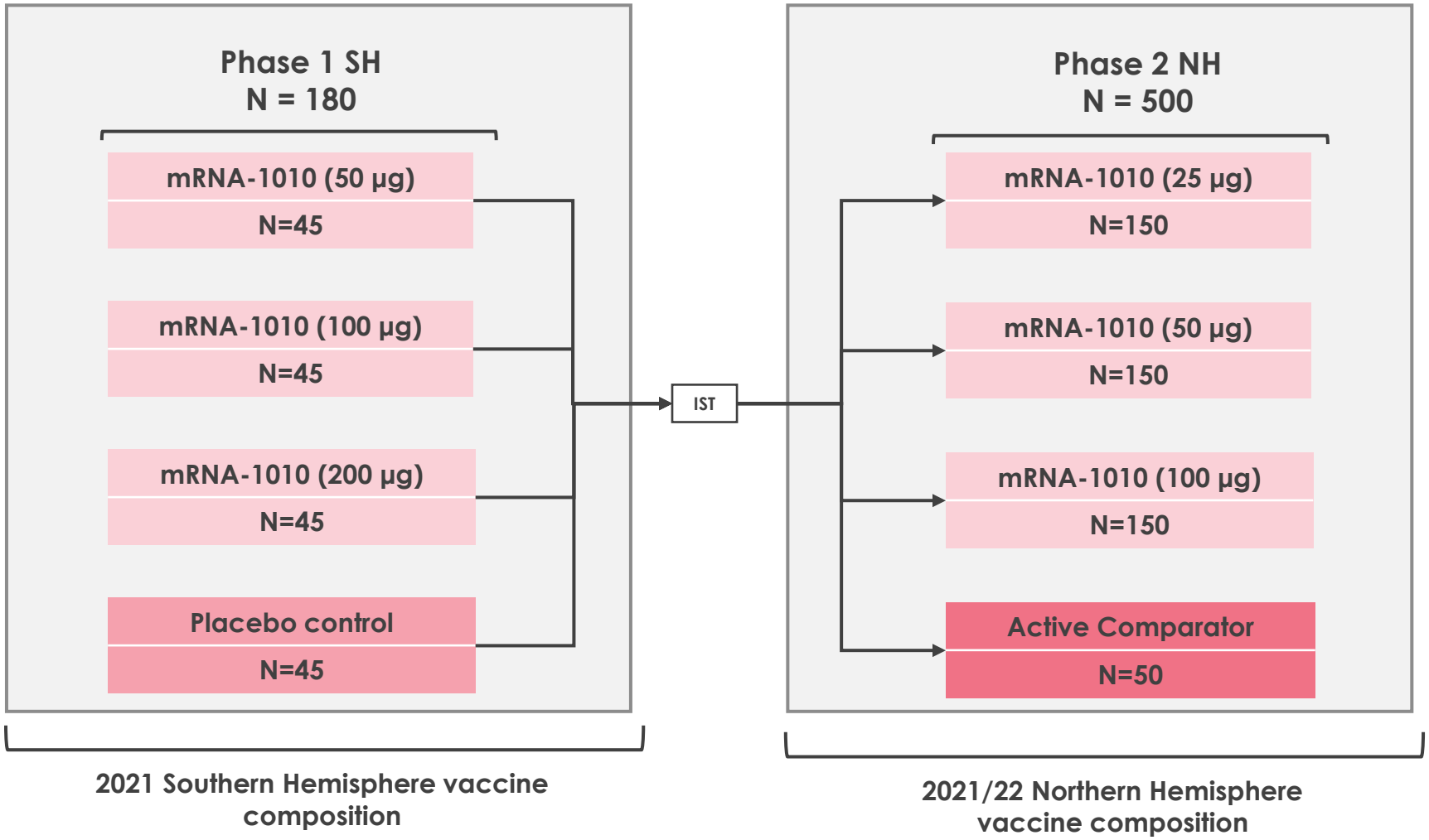
- Evaluating safety and immunogenicity of different dose levels of the mRNA influenza vaccine

Primary outcome measures

- Safety and immunogenicity at Day 29

Trial progress

- All cohorts fully enrolled
- First interim analysis presented December 10th



★ *Data presented today*

IST: Internal Safety Team

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mRNA-1010 Phase 1 interim analysis: **Solicited local adverse reactions**

	≥18 to <50 years old				≥50 years old			
Solicited Adverse Reaction Category Grade	Placebo (N=20) n (%)	50 µg (N=23) n (%)	100 µg (N=21) n (%)	200 µg (N=23) n (%)	Placebo (N=24) n (%)	50 µg (N=22) n (%)	100 µg (N=25) n (%)	200 µg (N=21) n (%)
Solicited Local Adverse Reactions - N1	20	23	21	23	24	22	25	21
Any	4 (20.0)	19 (82.6)	18 (85.7)	21 (91.3)	5 (20.8)	14 (63.6)	23 (92.0)	19 (90.5)
95% CI	5.7, 43.7	61.2, 95.0	63.7, 97.0	72.0, 98.9	7.1, 42.2	40.7, 82.8	74.0, 99.0	69.6, 98.8
Grade 1	4 (20.0)	16 (69.6)	8 (38.1)	6 (26.1)	4 (16.7)	10 (45.5)	16 (64.0)	7 (33.3)
Grade 2	0	3 (13.0)	6 (28.6)	10 (43.5)	0	3 (13.6)	5 (20.0)	11 (52.4)
Grade 3	0	0	4 (19.0)	5 (21.7)	1 (4.2)	1 (4.5)	2 (8.0)	1 (4.8)
Grade 4	0	0	0	0	0	0	0	0

- No serious adverse events or pause rules were observed through Day 29
- The most common solicited local ARs were pain and axillary swelling/tenderness

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mRNA-1010 Phase 1 interim analysis: **Solicited systemic adverse reactions**

	≥18 to <50 years old				≥50 years old			
Solicited Adverse Reaction Category Grade	Placebo (N=20) n (%)	50 µg (N=23) n (%)	100 µg (N=21) n (%)	200 µg (N=23) n (%)	Placebo (N=24) n (%)	50 µg (N=22) n (%)	100 µg (N=25) n (%)	200 µg (N=21) n (%)
Solicited Systemic Adverse Reactions - N1	20	23	21	23	24	22	25	21
Any	6 (30.0)	18 (78.3)	19 (90.5)	21 (91.3)	8 (33.3)	12 (54.5)	23 (92.0)	20 (95.2)
95% CI	11.9, 54.3	56.3, 92.5	69.6, 98.8	72.0, 98.9	15.6, 55.3	32.2, 75.6	74.0, 99.0	76.2, 99.9
Grade 1	3 (15.0)	8 (34.8)	3 (14.3)	4 (17.4)	5 (20.8)	5 (22.7)	7 (28.0)	2 (9.5)
Grade 2	3 (15.0)	7 (30.4)	7 (33.3)	6 (26.1)	2 (8.3)	5 (22.7)	13 (52.0)	13 (61.9)
Grade 3	0	3 (13.0)	9 (42.9)	11 (47.8)	1 (4.2)	2 (9.1)	3 (12.0)	5 (23.8)
Grade 4	0	0	0	0	0	0	0	0

- No serious adverse events or pause rules were observed through Day 29
- The most common solicited systemic ARs were fatigue, myalgia, arthralgia, and headache

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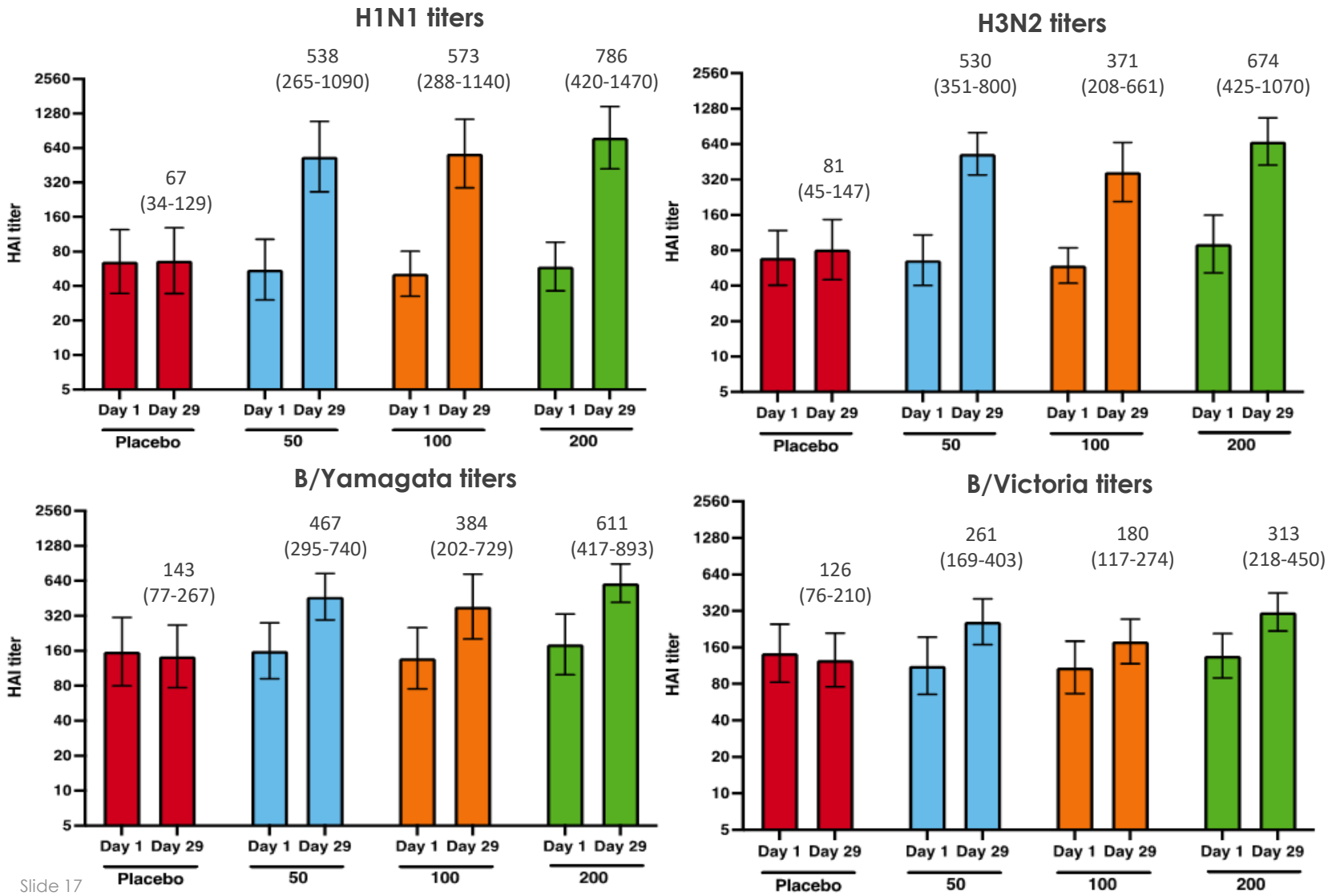
Phase 1 immunogenicity data: **Pre- and post-vaccination GMTs in younger adults (18-49 yrs old)**



- Minimal dose response was observed; exploring lower dose levels
- At the lowest dose level (50 µg), Day 29 geometric mean titers (GMT) against influenza A strains were 530 (H1N1) and 538 (H3N2); GMT against influenza B strains were 467 (B/Yamagata) and 261 (B/Victoria)

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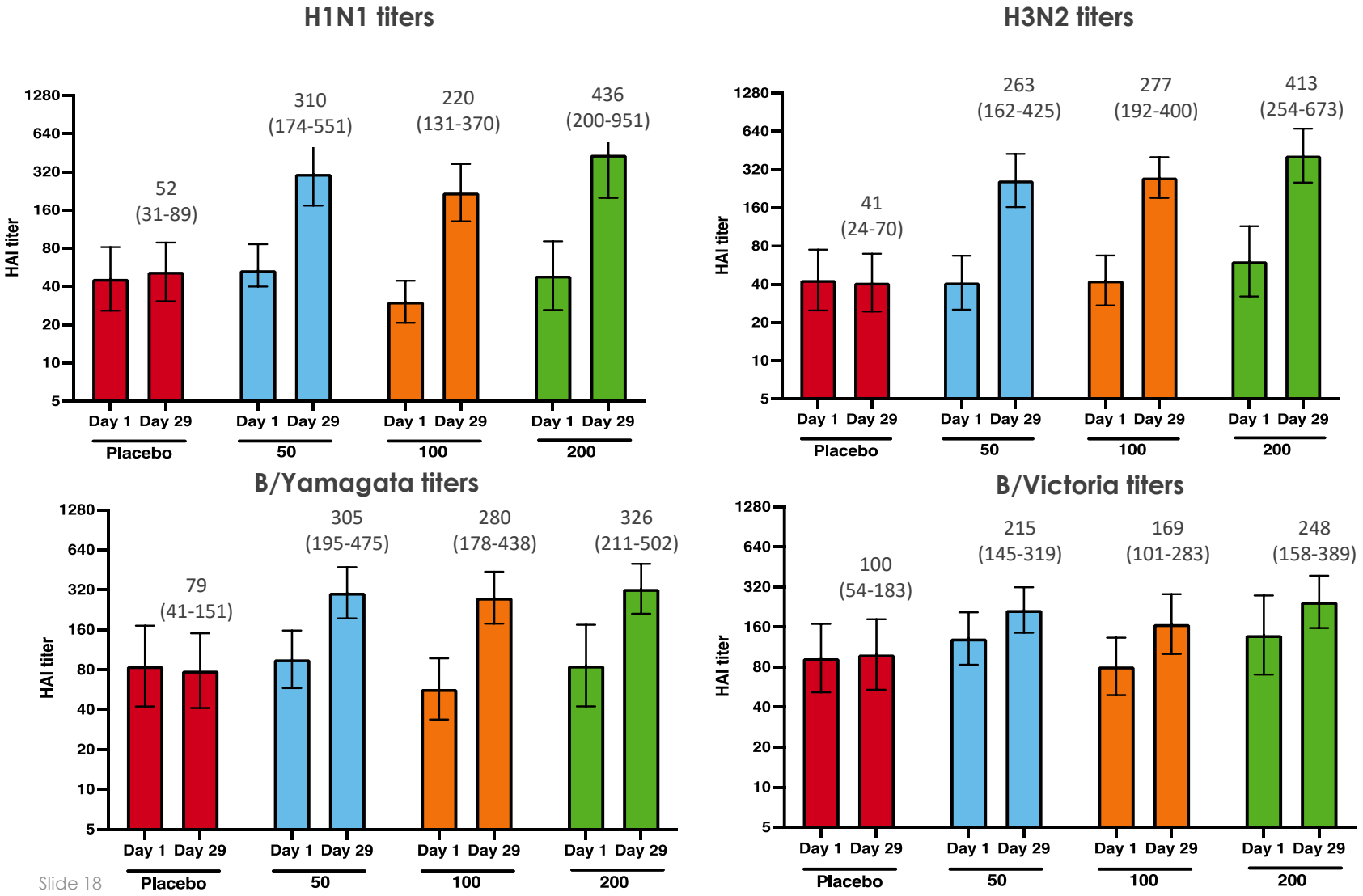
Phase 1 immunogenicity data: **Pre- and post-vaccination GMTs in older adults (≥50 yrs old)**



- Minimal dose response was observed; exploring lower dose levels
- At the lowest dose level (50 µg), Day 29 GMT against influenza A strains were 310 (H1N1) and 263 (H3N2); titers against influenza B strains were 305 (B/Yamagata) and 215 (B/Victoria)

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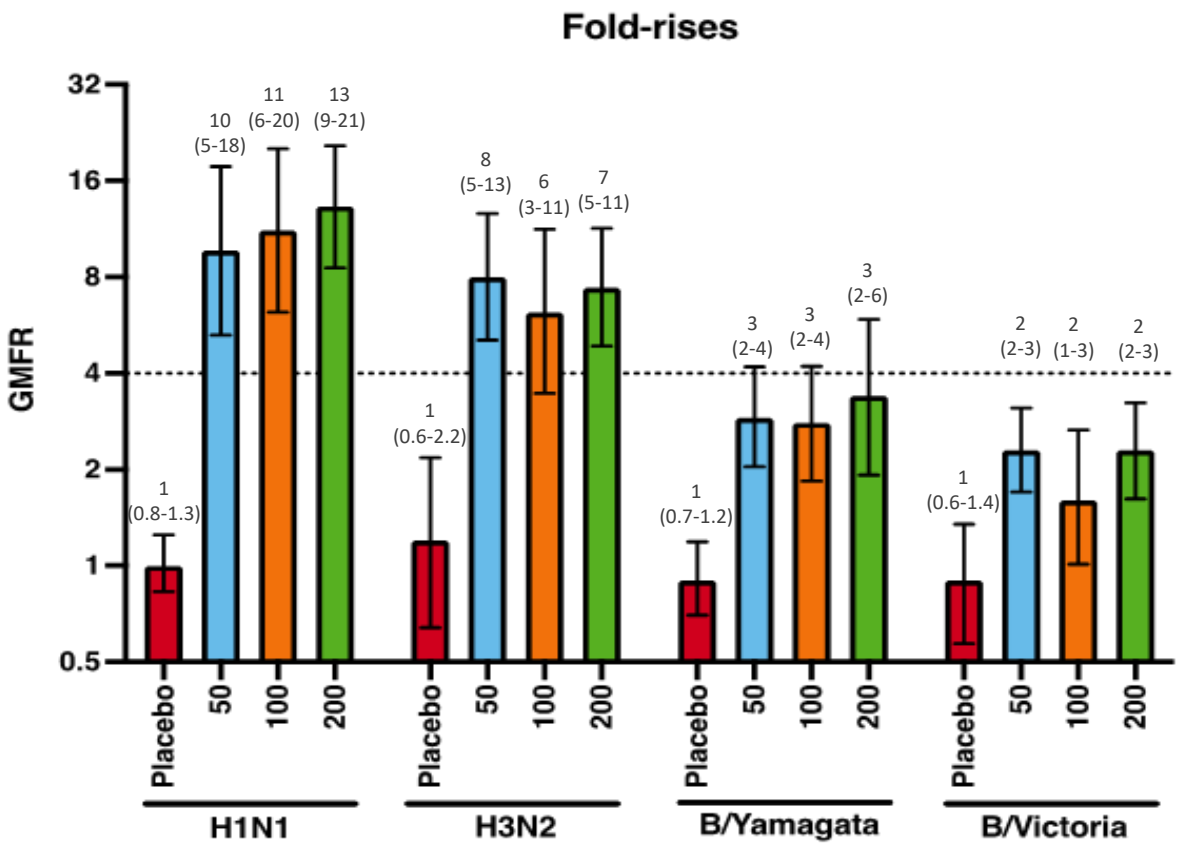
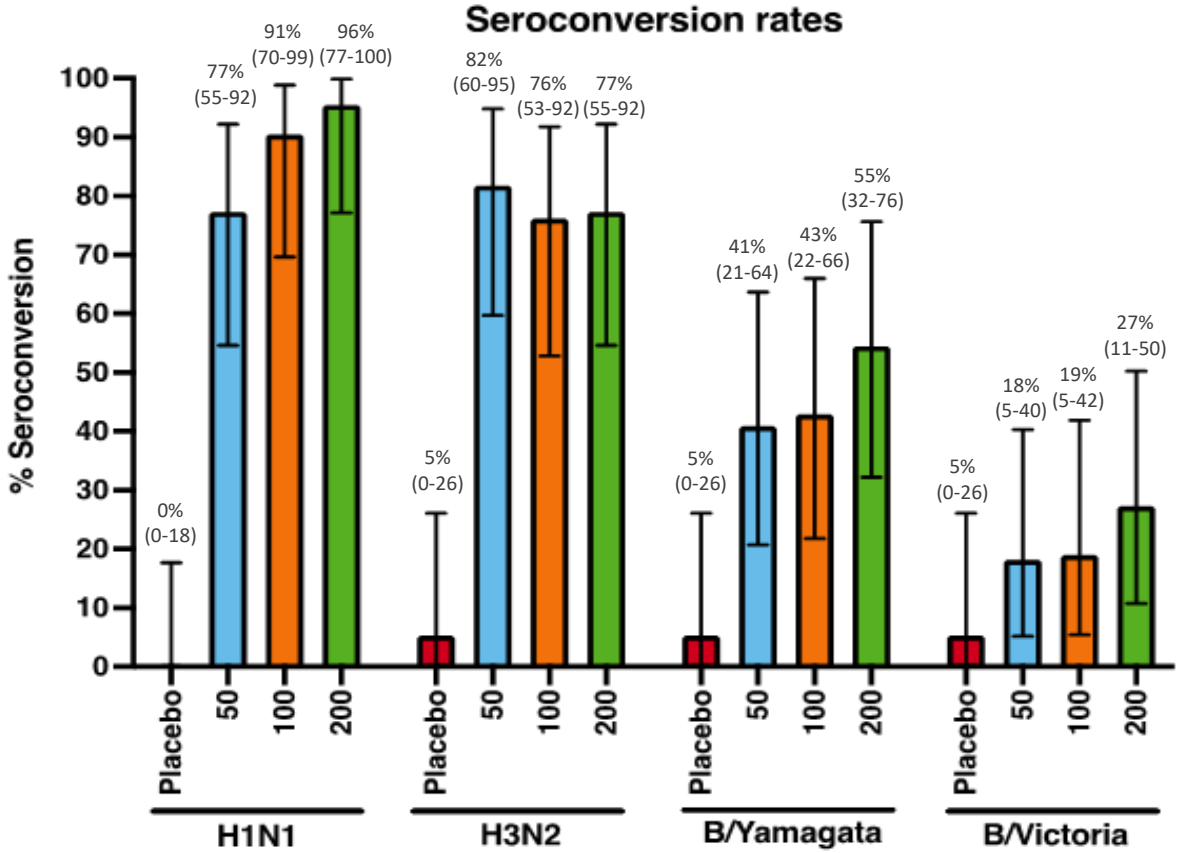
Phase 1 immunogenicity data: **Fold-rises and seroconversion rates for younger adults**

Younger Adults

(18-49 yrs old)





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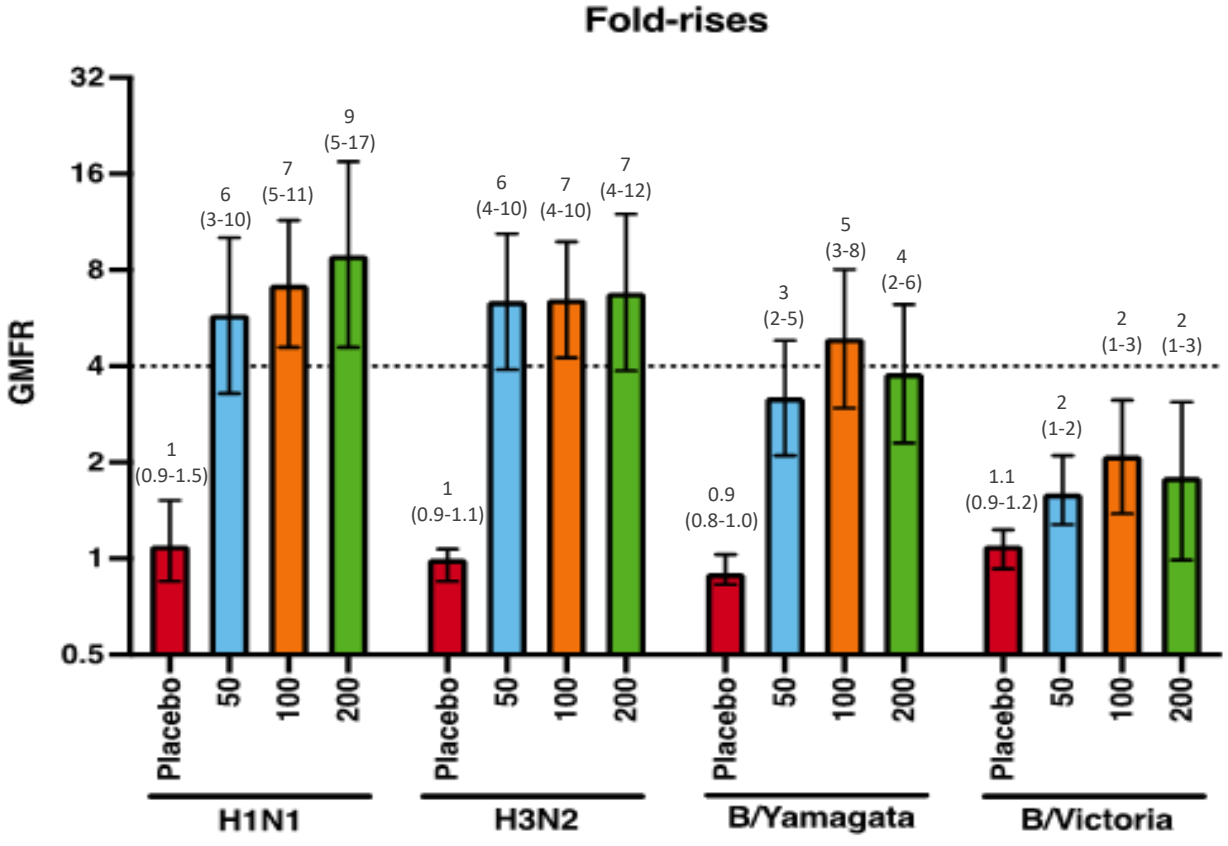
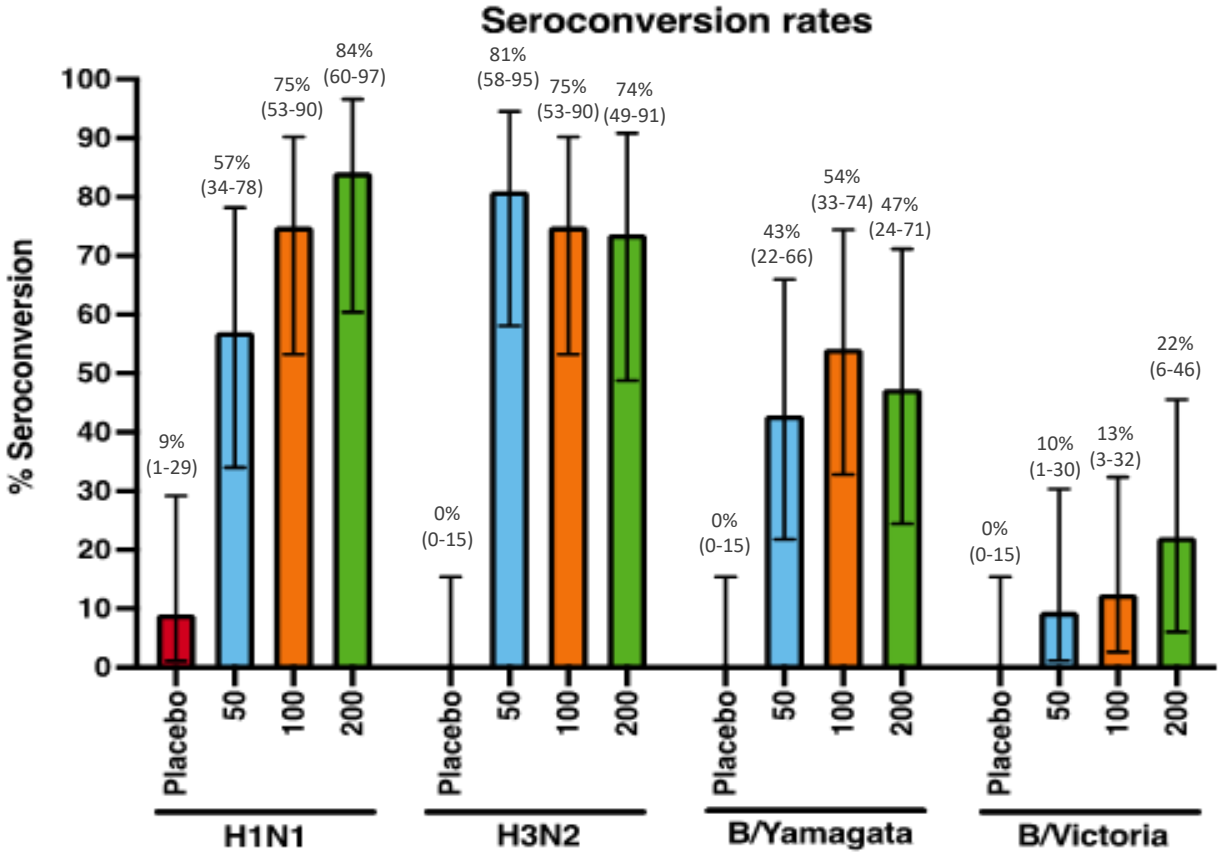
Phase 1 immunogenicity data: **Fold-rises and seroconversion rates for older adults**

Older Adults

(≥50 yrs old)





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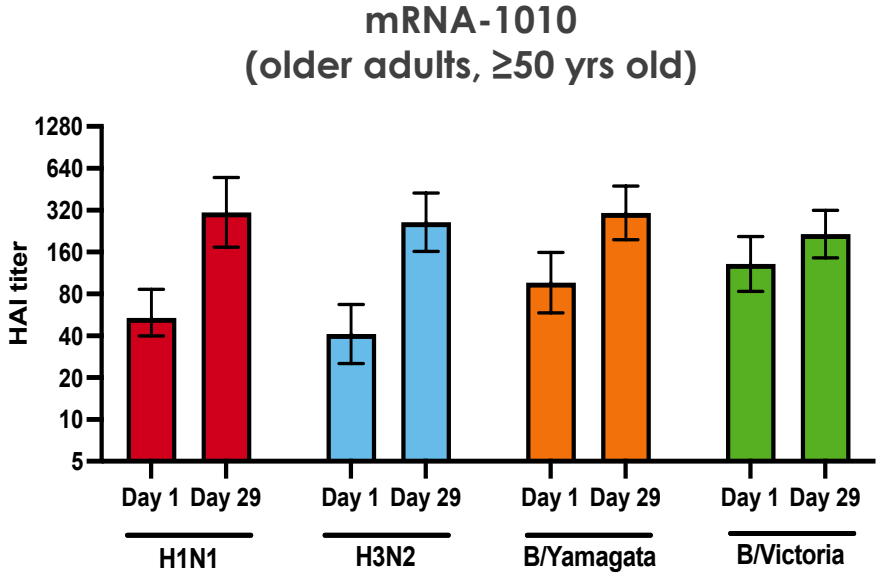
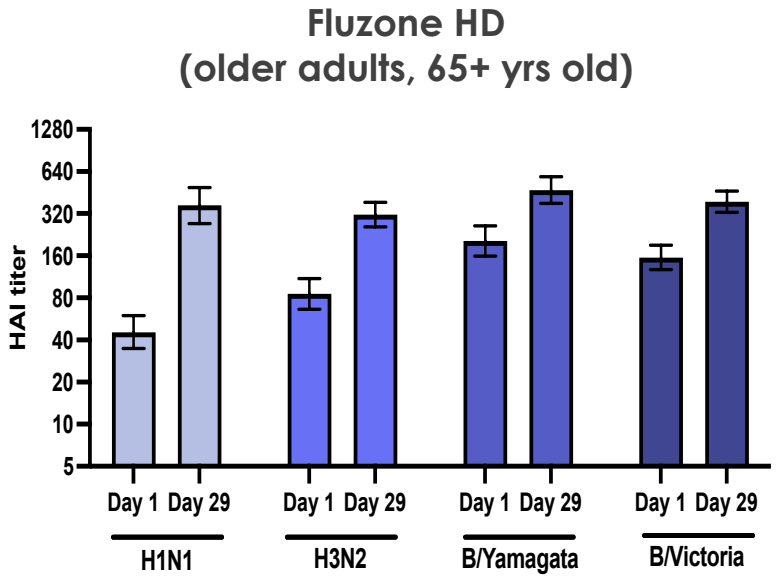
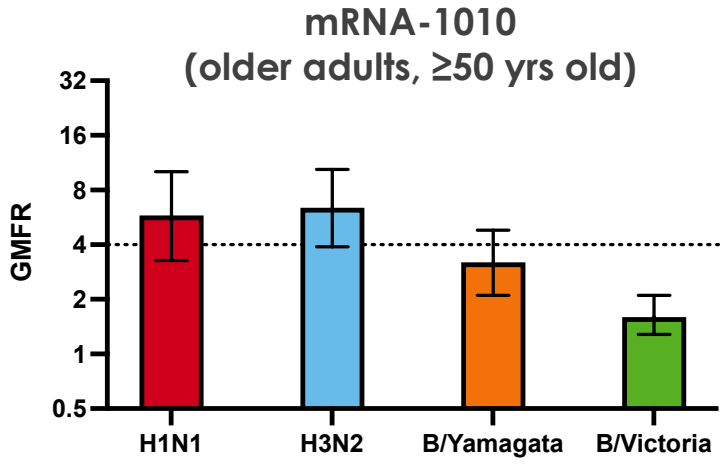
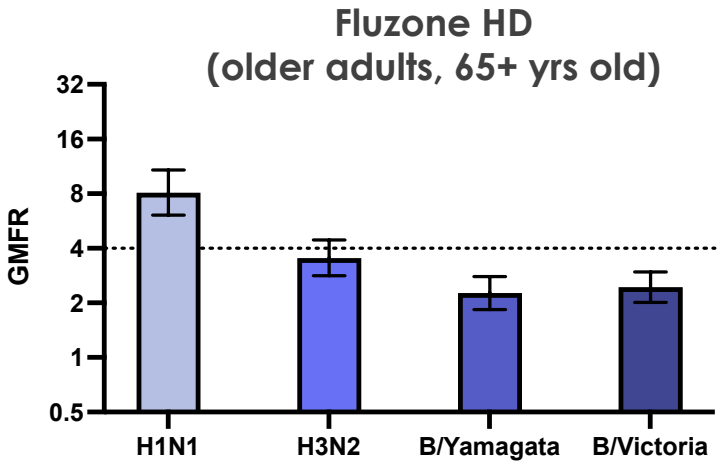
Immunogenicity comparison vs. Fluzone HD in older adults (data from recent Sanofi/Moderna co-admin study)









- Fluzone HD is the[1]:
  - Enhanced vaccine targeting older adults
  - Highest dose vaccine
  - Market leader in older adults

1. Evaluate Pharma, CMS

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mRNA-1010: **Next steps in development**

Phase 2 Overview

- Phase 2 study fully enrolled
  - N=500 participants
  - Three dose levels: 25, 50 and 100 µg (N=150 each arm)
  - Standard dose flu vaccine comparator (N=50)
- Interim analysis data expected in early 2022
- Testing the Northern Hemisphere strains for the 2021 flu season

Phase 3 Overview

- Study preparation ongoing
- Regulatory pathway to be determined following discussion with FDA
- Active comparator arm (licensed standard dose vaccine)
- Expected to start in 2022

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Key takeaways

- mRNA-1010 Phase 1 results demonstrated that the **lowest dose tested (50 µg) achieves high GMTs and reaches immunogenicity endpoints set by regulators for current flu vaccines**
- mRNA-1010 may show **similar immunogenicity as current enhanced flu vaccines**
- **No dose response** between 50, 100 and 200 µg suggests that there is **potential for even lower doses to show similarly strong immunogenicity**
- Testing even lower dose in Phase 2
  - Phase 2 is fully enrolled
  - Interim analysis data expected in early 2022
  - Active arm comparator will allow for head-to-head comparison
- **Phase 2 data to better inform** Phase 3 dose selection

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Conclusion

Stéphane Bancel, Chief Executive Officer

Moderna's **product strategy**

1	Bring to market a **pan-respiratory annual booster vaccine** (which we will continuously customize)
2	Bring to market **first-in-class vaccines for complex viruses**
3	Bring to market **therapeutics based on mRNA-encoded proteins**
4	Bring to market **therapeutics based on mRNA-encoded gene editing enzymes**

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Moderna's seasonal influenza vaccine strategy

QUADRIVALENT VACCINE

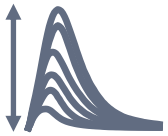
Seasonal quadrivalent flu vaccine (mRNA-1010)

Using WHO recommended strains

EXPANDED COVERAGE

Beyond quadrivalent flu vaccines (mRNA-1011/1012)

Adding additional Hemagglutinin (HA) antigens (e.g. H3N2, H1N1)



IMMUNOLOGIC BREADTH

Broader antigen flu vaccines (mRNA-1020/1030)

Adding Neuraminidase (NA) antigens

Plans to incorporate in:

- COVID + Flu
- COVID + Flu + RSV

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A pan-respiratory annual booster vaccine represents a large opportunity for Moderna

Value creation

- A single vaccine to cover multiple viruses
- Compliance with a pan-respiratory annual booster drives value for payors
- Convenience to the consumer (1 vs. 3 injections) drives preference
- Reduction in vaccine administration cost to the healthcare system (1 vs. 3 injections)

Potential to expand market

- In 2019, the flu market was greater than 500M doses

Potential market share

- We believe Moderna could be first to market with a COVID + Flu, COVID + Flu + RSV booster vaccines
  - Potential for best-in class individual components (COVID-19 vaccine authorized, Flu preparing for Phase 3 and RSV in Phase 2/3 study) in pan-respiratory vaccine

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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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