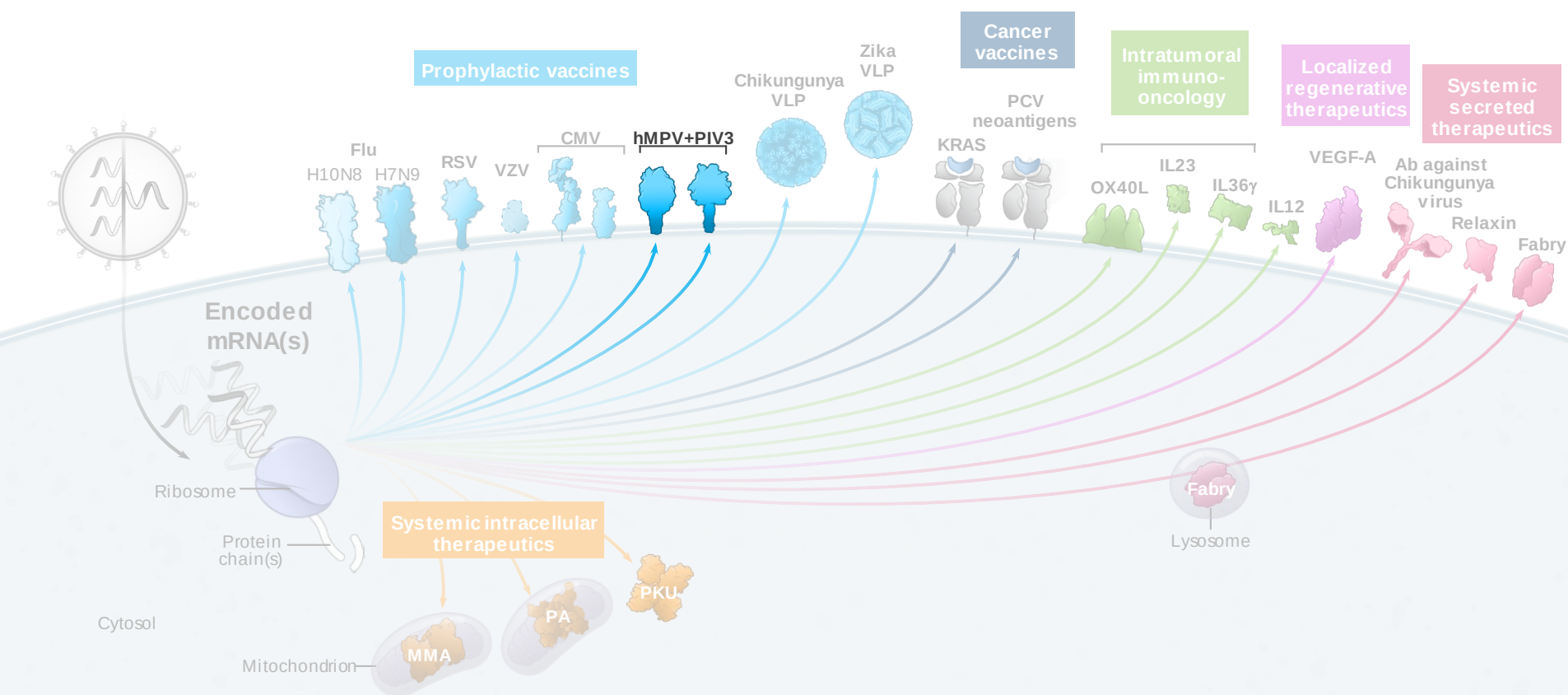




Human metapneumovirus (hMPV) and para-influenza virus 3 (PIV3) vaccine (mRNA-1653)

Conference Call February 12, 2019



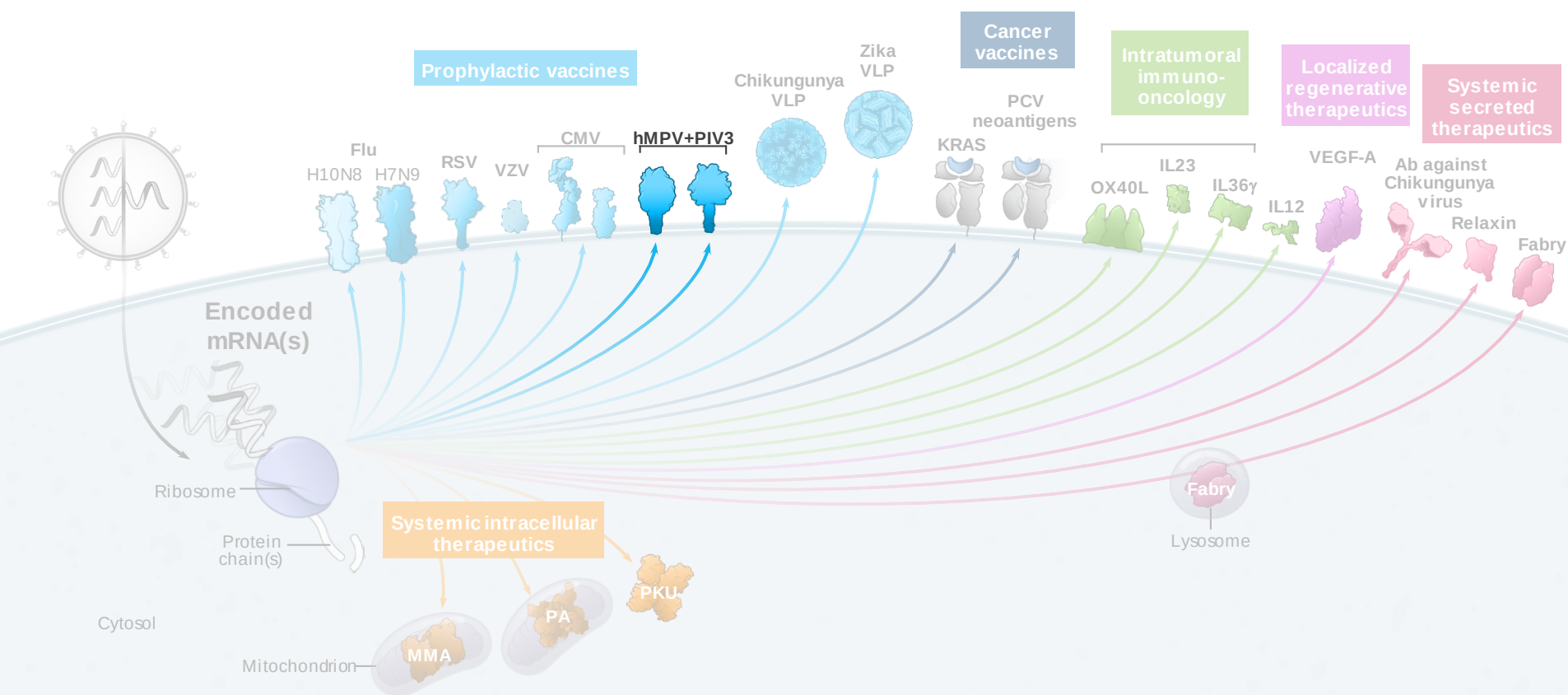
Forward-looking statements

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 the future clinical development of mRNA-1653 and its ability to protect against Human Metapneumovirus (hMPV) and Parainfluenza Virus Type 3 (PIV3). 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 category 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 category of medicines; and those described in Moderna’s Prospectus filed with the U.S. Securities and Exchange Commission (SEC) on December 7, 2018 and in subsequent filings made by Moderna with SEC, which are available on the SEC’s website at www.sec.gov. Except as required by law, Moderna disclaims any intention or responsibility for updating or revising any forward-looking statements in this presentation in the event of new information, future developments or otherwise. These forward-looking statements are based on Moderna’s current expectations and speak only as of the date hereof.

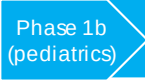
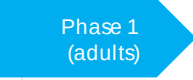


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Prophylactic vaccines pipeline

Modality	Program #	Program	Preclinical development	Phase 1	Phase 2	Phase 3 and commercial	Moderna rights
 Prophylactic vaccines – Commercial programs	mRNA-1777	RSV vaccine					Merck to pay milestones and royalties
	mRNA-1647	CMV vaccine					Worldwide
	mRNA-1653	hMPV+PIV3 vaccine	 				Worldwide
	mRNA-1278	VZV vaccine					Merck to pay milestones & royalties
 Prophylactic vaccines – Global health programs	mRNA-1440	Influenza H10N8 vaccine					Worldwide <i>Advancing subject to funding</i>
	mRNA-1851	Influenza H7N9 vaccine					Worldwide <i>Advancing subject to funding</i>
	mRNA-1325	Zika vaccine					Worldwide <i>BARDA funded</i>
	mRNA-1893	Zika vaccine					Worldwide <i>BARDA funded</i>
	mRNA-1388	Chikungunya vaccine					Worldwide <i>Advancing subject to funding</i>

Abbreviations: CMV, cytomegalovirus; hMPV, human metapneumovirus; PIV3, human parainfluenza 3; RSV, respiratory syncytial virus; VZV, varicella zoster virus

RSV, hMPV, and PIV3 are leading causes of respiratory illness

	Influenza	RSV <i>Respiratory syncytial virus</i>	hMPV <i>Human metapneumovirus</i>	PIV3 <i>Parainfluenza virus type 3</i>
Epidemiology, disease burden	12,000-56,000 deaths per year in the U.S.¹ - Hospitalization rate in children < 5 years old in the U.S.: 0.9:1000²	> 177,000 older adults hospitalized due to RSV associated respiratory infections each year in the U.S.; 14,000 deaths as a result³ - Hospitalization rate in children < 5 years old in the U.S.: 3:1000²	- Hospitalization rate in children < 5 years old in the U.S.: 1.2:1000² - Associated with an estimated 1 million outpatient clinic visits and > 250k ED visits annually among U.S. children < 5 years old⁴	- Hospitalization rate in children < 5 years old in the U.S.: 0.5:1000² - Of 4 PIV types, PIV3 results more frequently and in more serious lower respiratory tract infections⁵
Clinical signs & symptoms		Upper and lower respiratory tract infection		
Target population for current development		Older adults	Infants	
Partnership status		- Merck to pay milestones and royalties - Moderna ran Phase 1 trial; Merck to lead rest of clinical development	Wholly-owned by Moderna	
Moderna program		mRNA-1777	mRNA-1653	

¹Rolfes MA, Foppa IM, Garg S, Flannery B, Brammer L, Singleton JA, et al. Estimated Influenza Illnesses, Medical Visits, Hospitalizations, and Deaths Averted by Vaccination in the United States. 2016 Dec 9.

²Williams JV, Edwards KM, Weinberg GA, et al. Population-based incidence of human metapneumovirus infection among hospitalized children. *J Infect Dis*. 2010;201(12):1890-8.

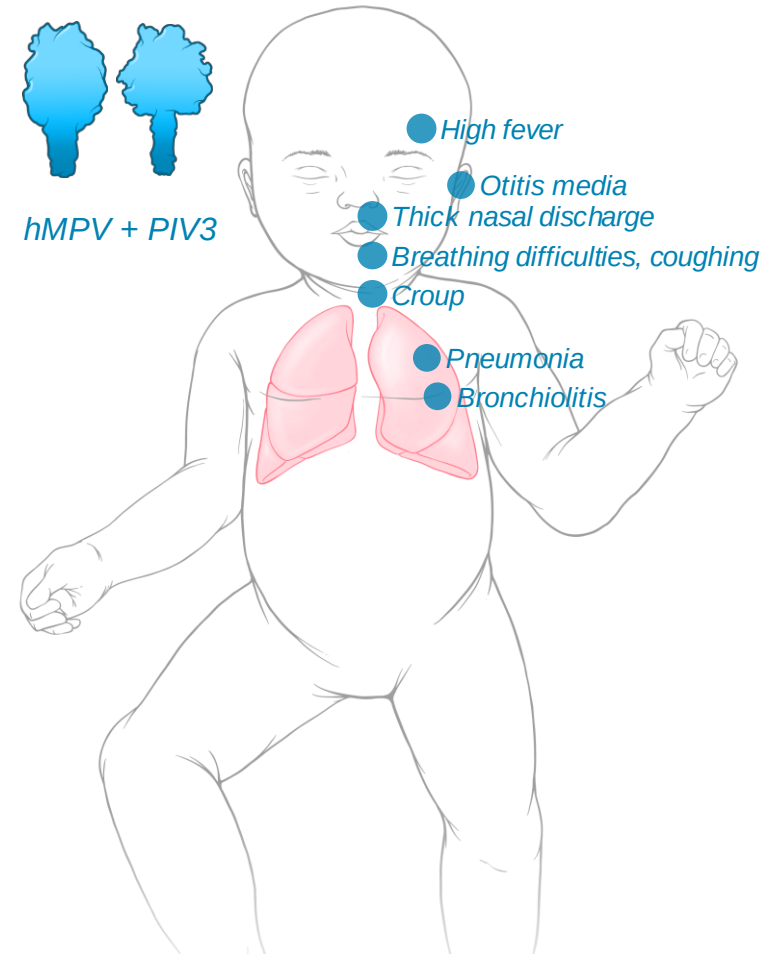
³Nat'l Center for Immunizations, Protect Against Respiratory Syncytial Virus, 2017

⁴Edwards KM, Y. Zhu, M.R. Griffin, G.A. Weinberg, C.B. Hall, P.G. Szilagyi, et al. Burden of human metapneumovirus infection in young children. *N. Engl. J. Med.*, 2013;368(7):633-643.

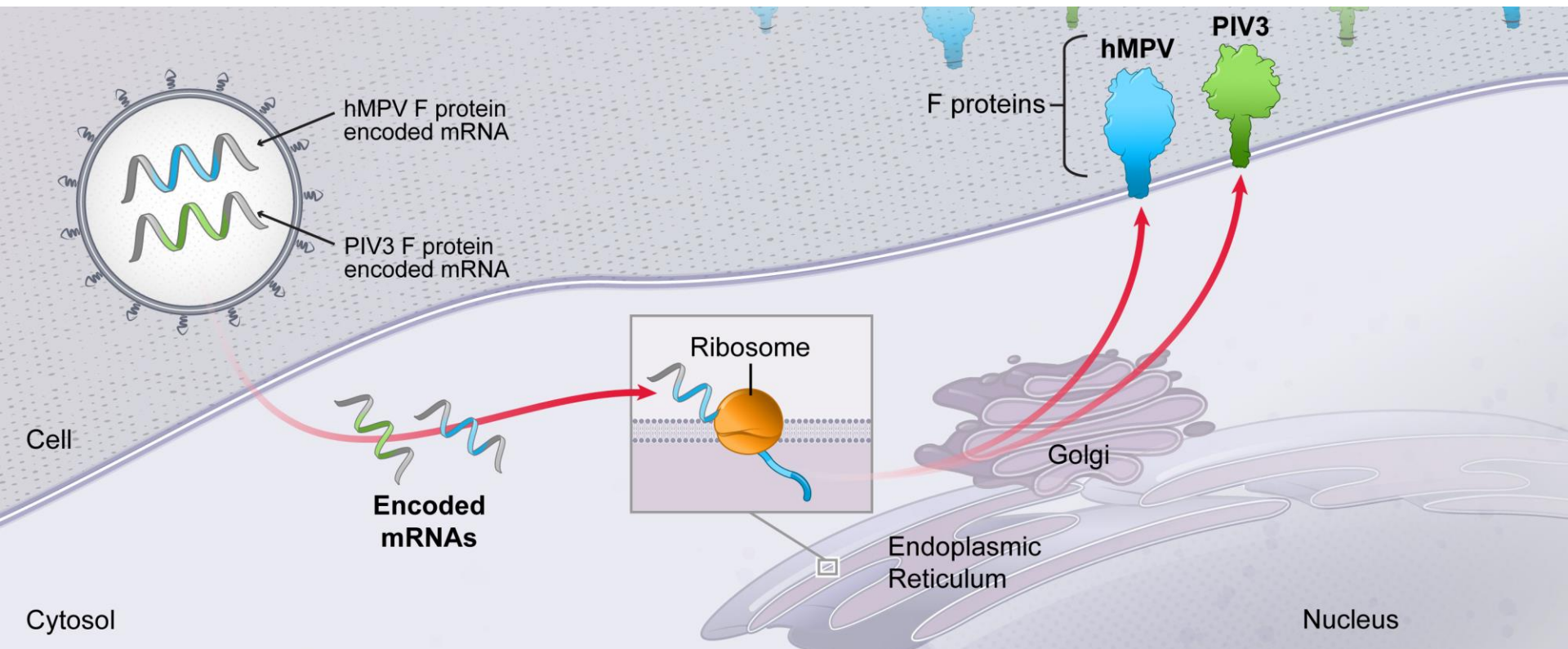
⁵Henrickson KJ. Clin Microbiol Rev. 2003 Apr;16(2):242-64.

Human metapneumovirus (hMPV) and parainfluenza virus type 3 (PIV3) overview

- hMPV and PIV3 are RNA viruses that are important causes of respiratory tract infections, particularly in children
- Increasing rates of diagnosis and association with hospitalization for respiratory illness
- **Disease burden:** Major cause of hospitalization due to respiratory infection
 - Symptoms range from mild upper respiratory tract infection to life threatening severe bronchiolitis and pneumonia
 - Both viruses cause clinically indistinguishable disease
- **Target population: infants**
 - Most hMPV or PIV3-associated hospitalizations in children occur under 2 years old
 - Hospitalization rates in children < 5 years old in the U.S.:
 - hMPV: 1.2 per 1,000
 - PIV3: 0.5 per 1,000
- **Unmet need:** No approved hMPV or PIV3 vaccine
 - Other companies' previous attempts focused only on hMPV or PIV alone (no known attempts at a combo vaccine)



hMPV+PIV3 vaccine combines mRNAs encoding antigens from two different viruses



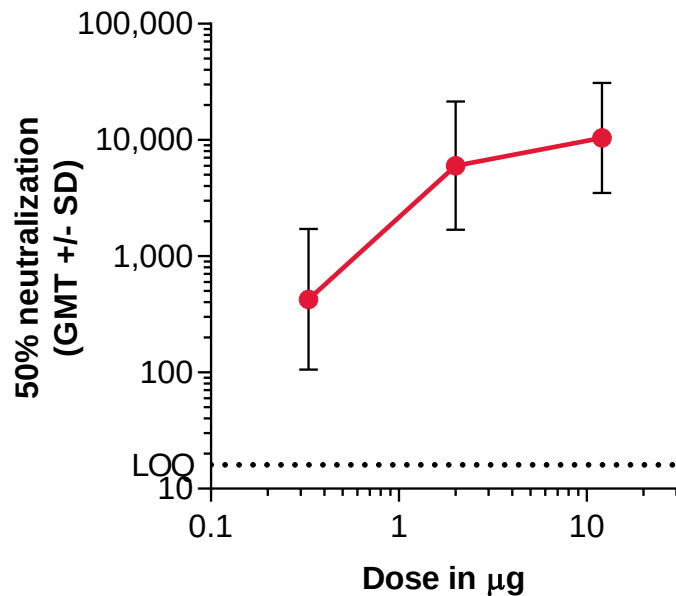
Moderna concept: mRNA vaccine, IM-administered, consisting of 2 distinct mRNA sequences, co-formulated, that encode the membrane-bound F proteins of hMPV and PIV3

hMPV+PIV3 vaccine (mRNA-1653)

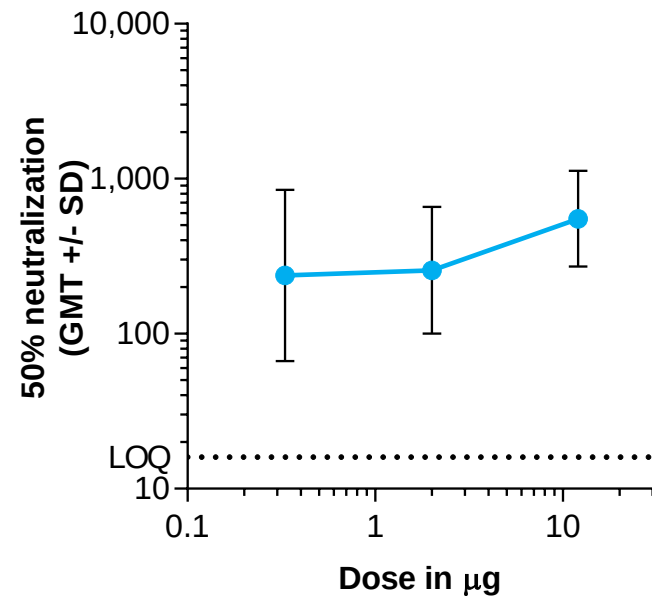
Pre-clinical data – combo vaccine generates neutralizing titers against each virus

Species:
Mouse

hMPV neutralizing titers with
hMPV+PIV3 mRNA vaccine



PIV3 neutralizing titers with
hMPV+PIV3 mRNA vaccine



Pre-clinical studies of hMPV and PIV3 combination vaccine demonstrated ability to generate robust neutralizing antibody titers. In separate experiments in NHP (not shown) vaccination conferred protection against hMPV or PIV3 viral challenge.

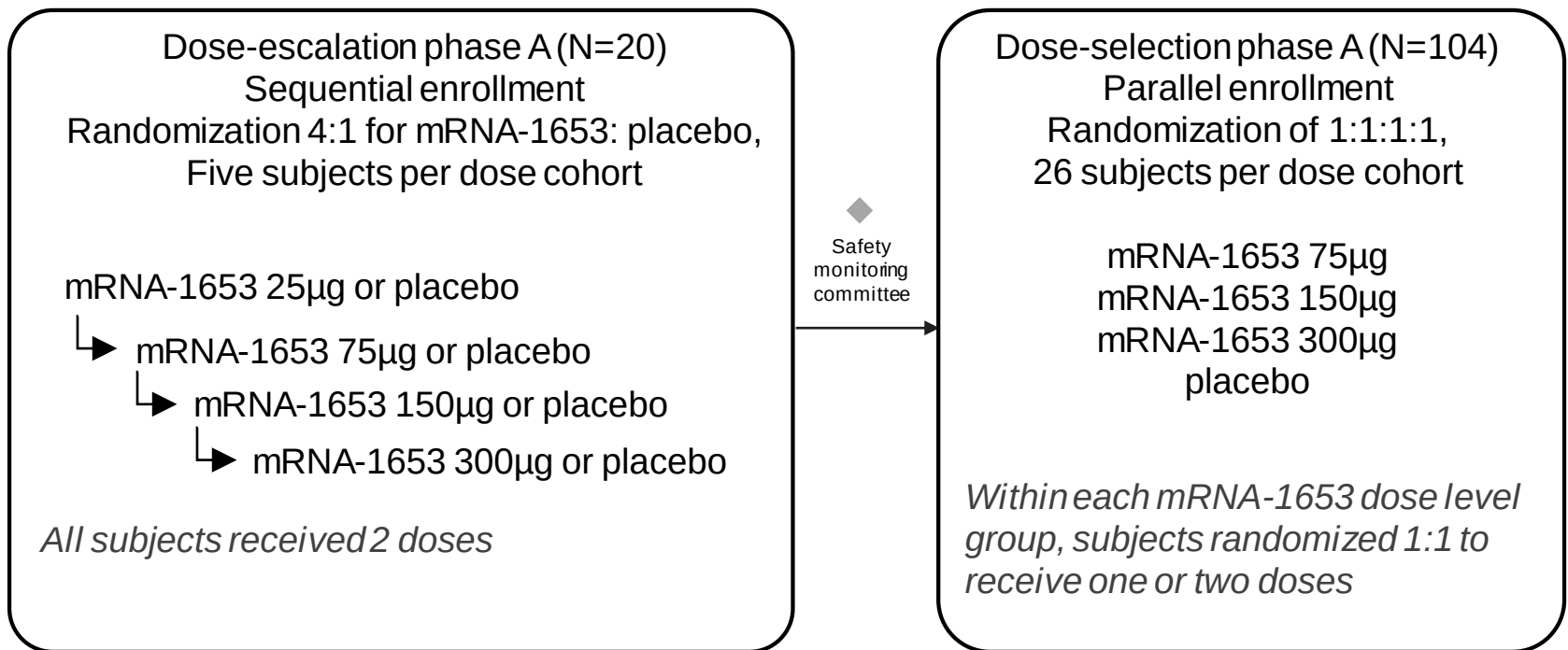
hMPV+PIV3 vaccine (mRNA-1653)

Phase 1 design – healthy adults

Key Objectives

- Evaluate safety and immunogenicity through 12 months after the second vaccination
- Select optimal dose and vaccination schedule for further clinical development

Dosing schedule: Day 1 and Month 1



hMPV+PIV3 vaccine (mRNA-1653)

Phase 1 in healthy adults

Interim results, through study Month 2 (1 month after second vaccination)

Safety and tolerability

- mRNA-1653 was found to be generally well tolerated
- No serious adverse events (SAEs), adverse events of special interest, or adverse events leading to withdrawal were reported
- Injection site pain was most commonly reported solicited adverse event and grade 3 adverse event

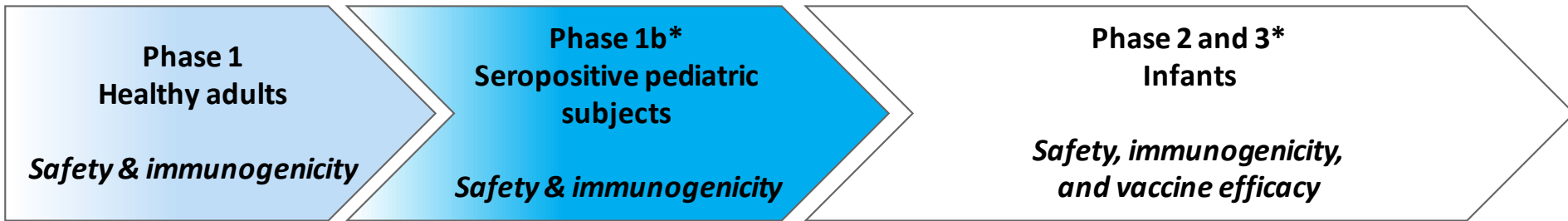
Immunogenicity

- Single vaccination boosted serum neutralization titers against hMPV and PIV3 at all dose levels tested
- Neutralizing antibodies against hMPV and PIV3 present at baseline in all subjects, consistent with prior exposure to both viruses
- 1 month after a single vaccination, hMPV and PIV3 neutralization titers ~6x and ~3x baseline, respectively
- Second vaccination did not further boost antibody titers, suggesting a single vaccination was sufficient to achieve a plateau in neutralizing antibodies in this pre-exposed population

Full data to be presented at future medical meeting

hMPV+PIV3 vaccine (mRNA-1653)

Next step: Phase 1b in pediatric population



*Clinical development plan contingent on regulatory feedback

Pediatric Phase 1b planning in progress

Moderna's mosaic of data

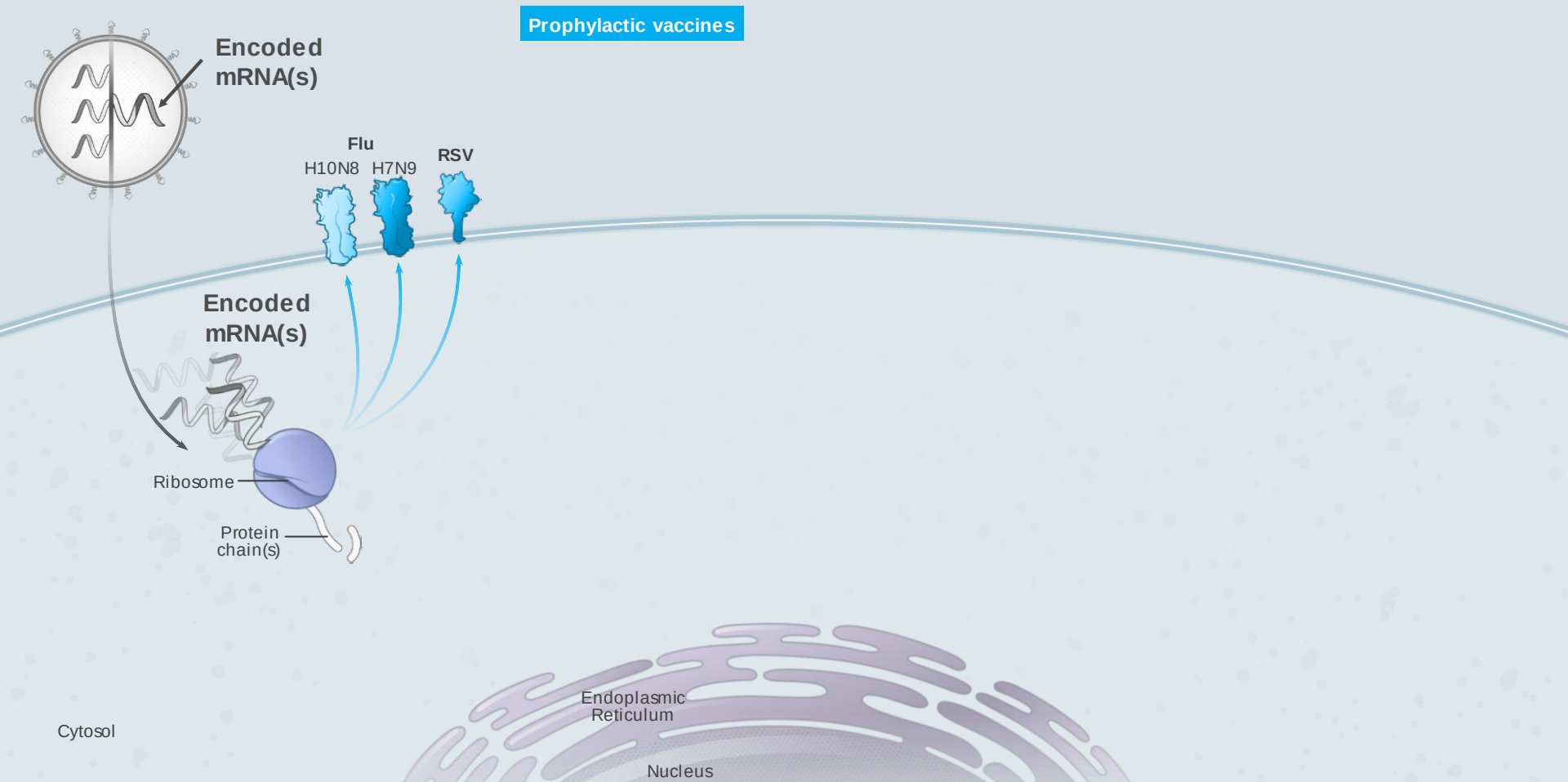
Now 5 positive clinical readouts in prophylactic vaccines

	Tolerability	Protein expression	Protein pharmacology
 Prophylactic vaccines	• 945 subjects dosed across seven vaccine Phase 1 trials, at levels up to 300µg	• 5 positive immunogenicity readouts from six candidates with Phase 1 data to date • hMPV+PIV3 (mRNA-1653) – vaccination boosted serum neutralization titers against hMPV and PIV3 at all dose levels tested • RSV (mRNA-1777) – Merck initiating planning for Phase 2a based on Phase 1 data • 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	

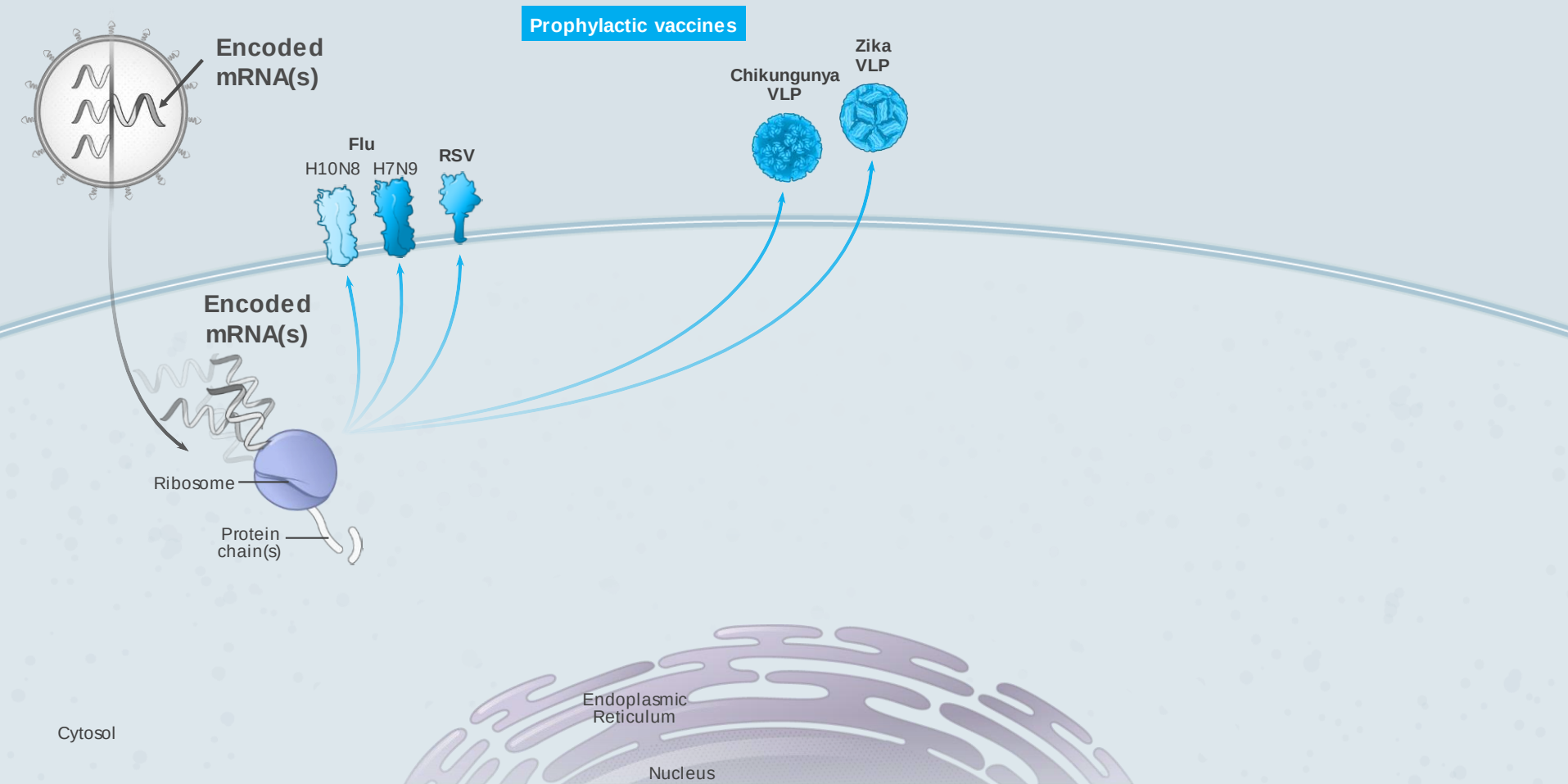
Prophylactic vaccines development pipeline



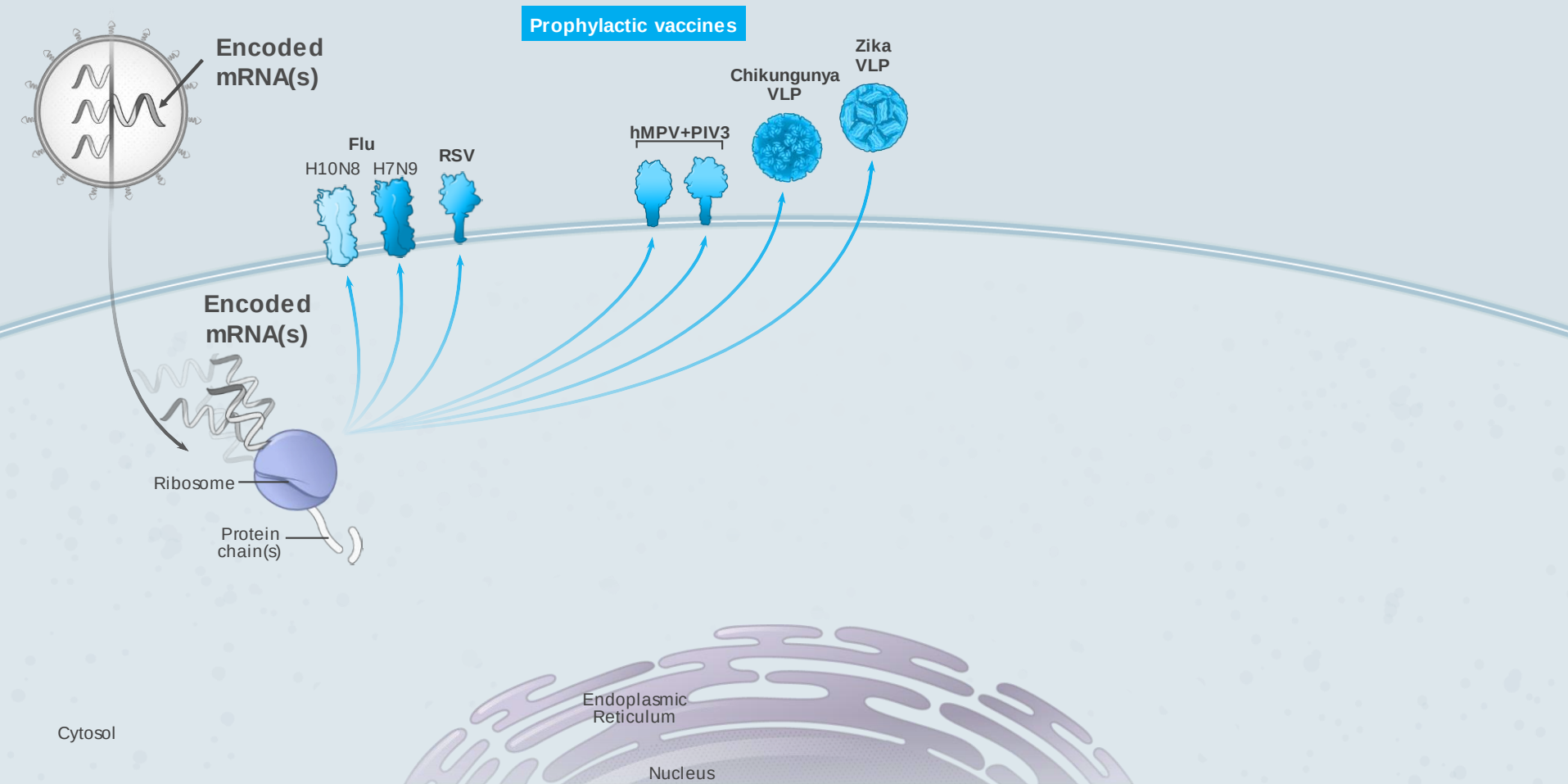
Prophylactic vaccines development pipeline



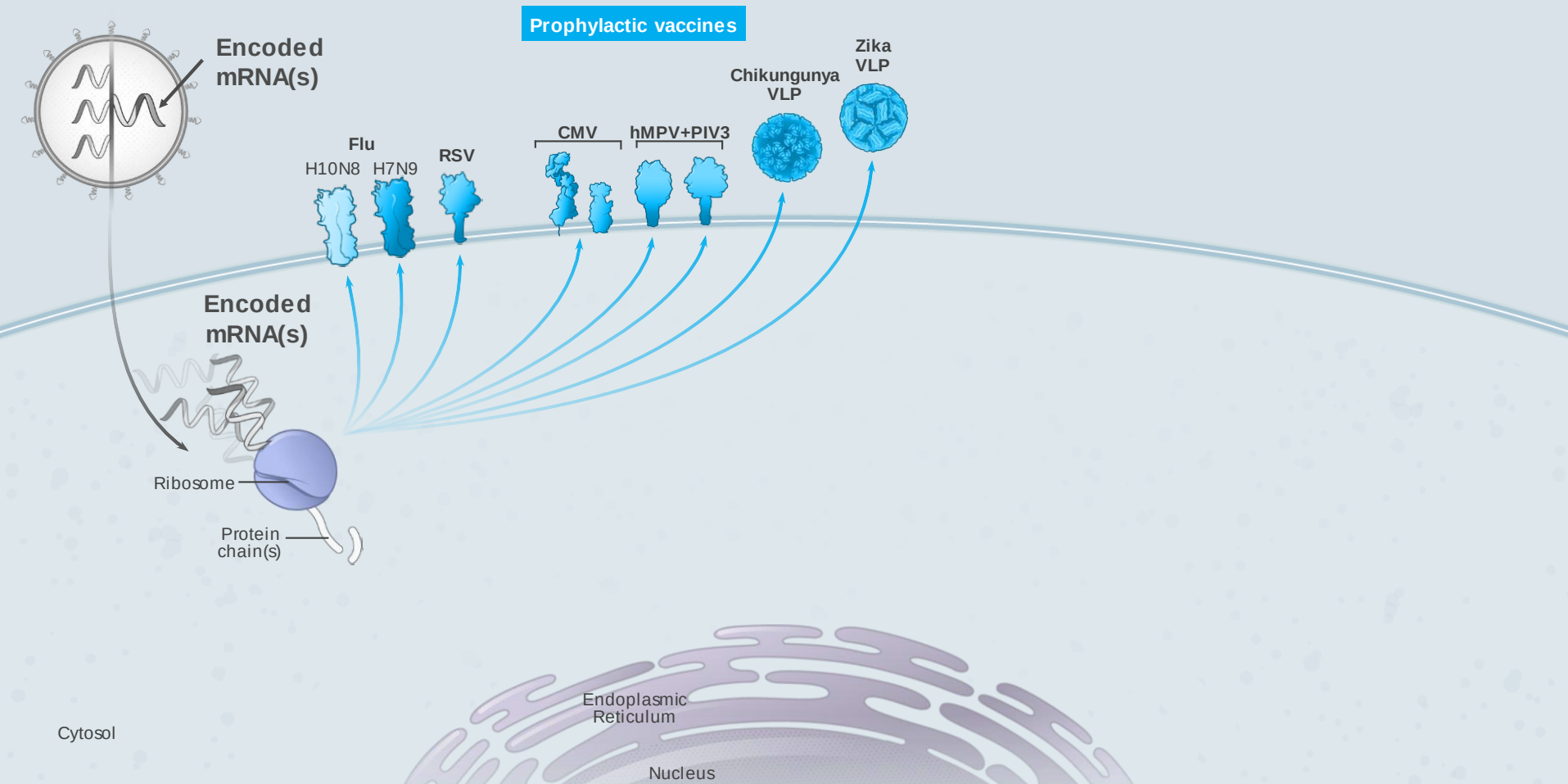
Prophylactic vaccines development pipeline



Prophylactic vaccines development pipeline



Prophylactic vaccines development pipeline





Q&A