



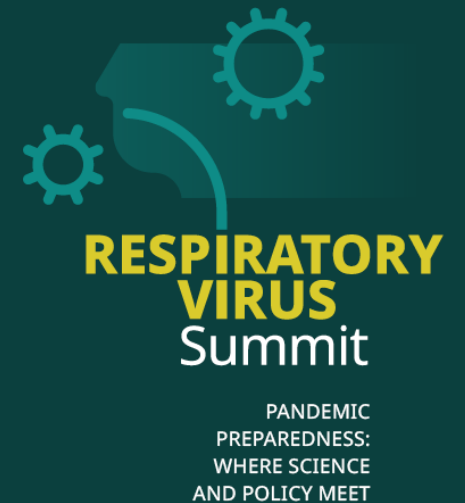
RESPIRATORY VIRUS Summit

organised by **ESWI**

PANDEMIC
PREPAREDNESS:
WHERE SCIENCE
AND POLICY MEET

Options for global and accessible vaccines

Dr. Rino Rappuoli, *GSK, Italy*





Options for Global and Accessible Vaccines

Rino Rappuoli

GSK Vaccines

Toscana Life Sciences Siena, Italy

ESWI Respiratory Virus Summit

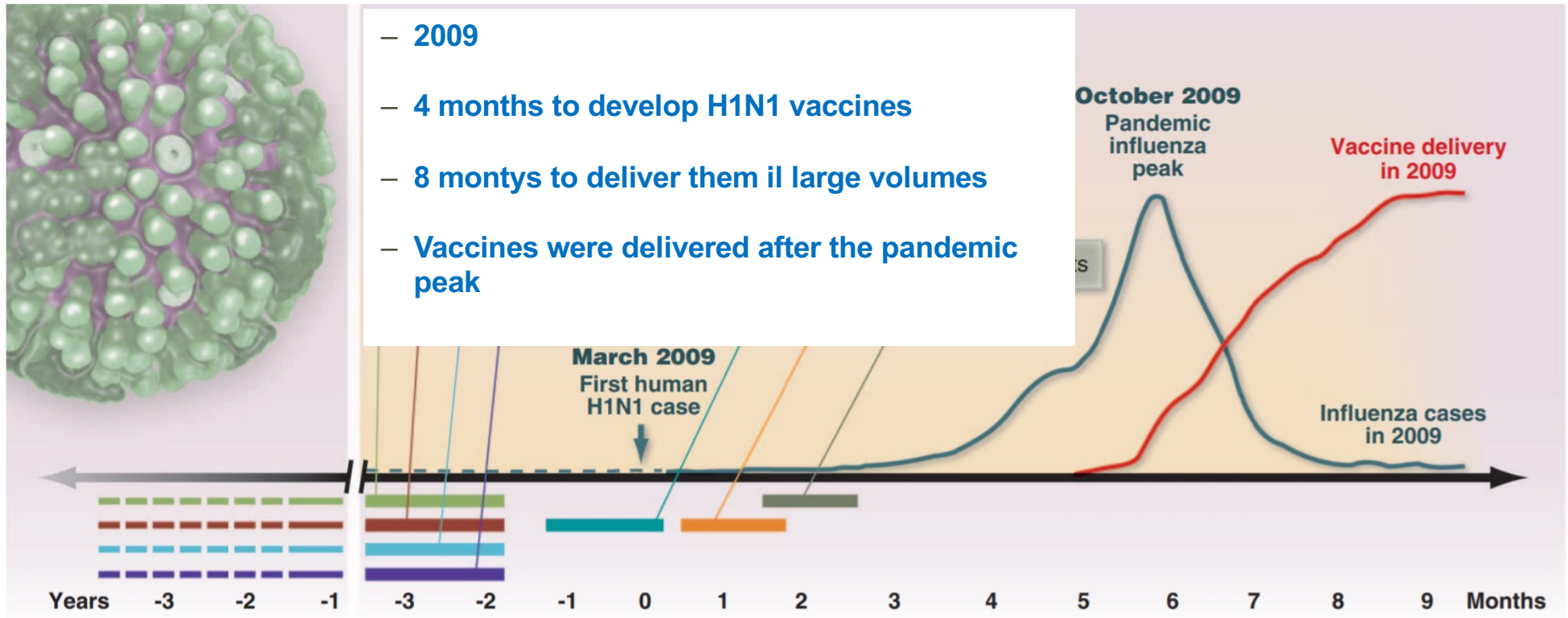
Pandemic Preparedness: where Science and Policy meet

Brussels June 21st 2022



Influenza: Options to Improve Pandemic Preparation

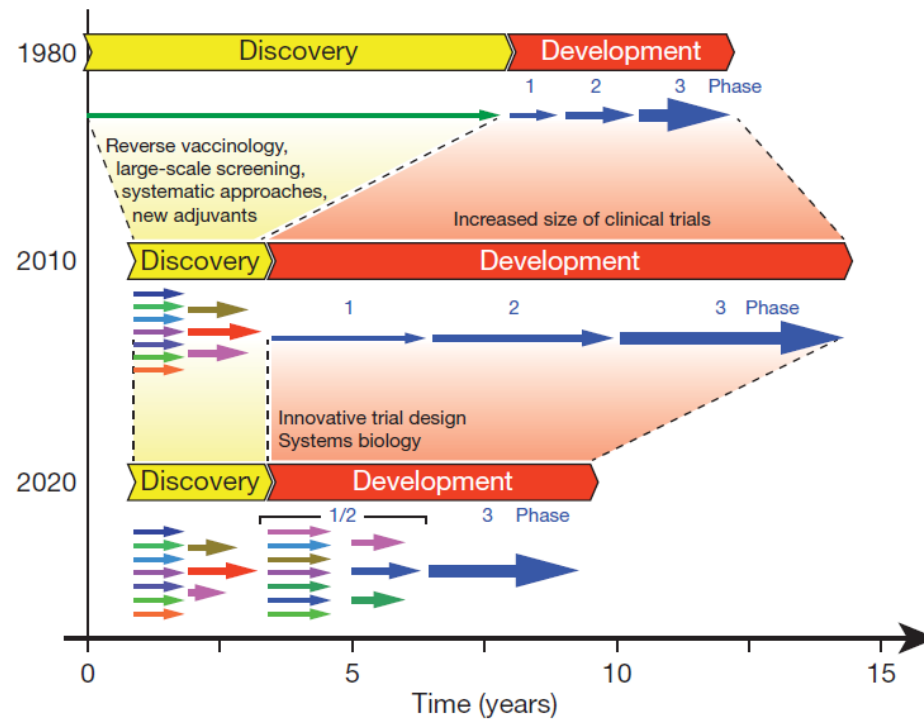
Rino Rappuoli^{1*} and Philip R. Dormitzer²



Transforming vaccine development



Vaccine Vision in 2011



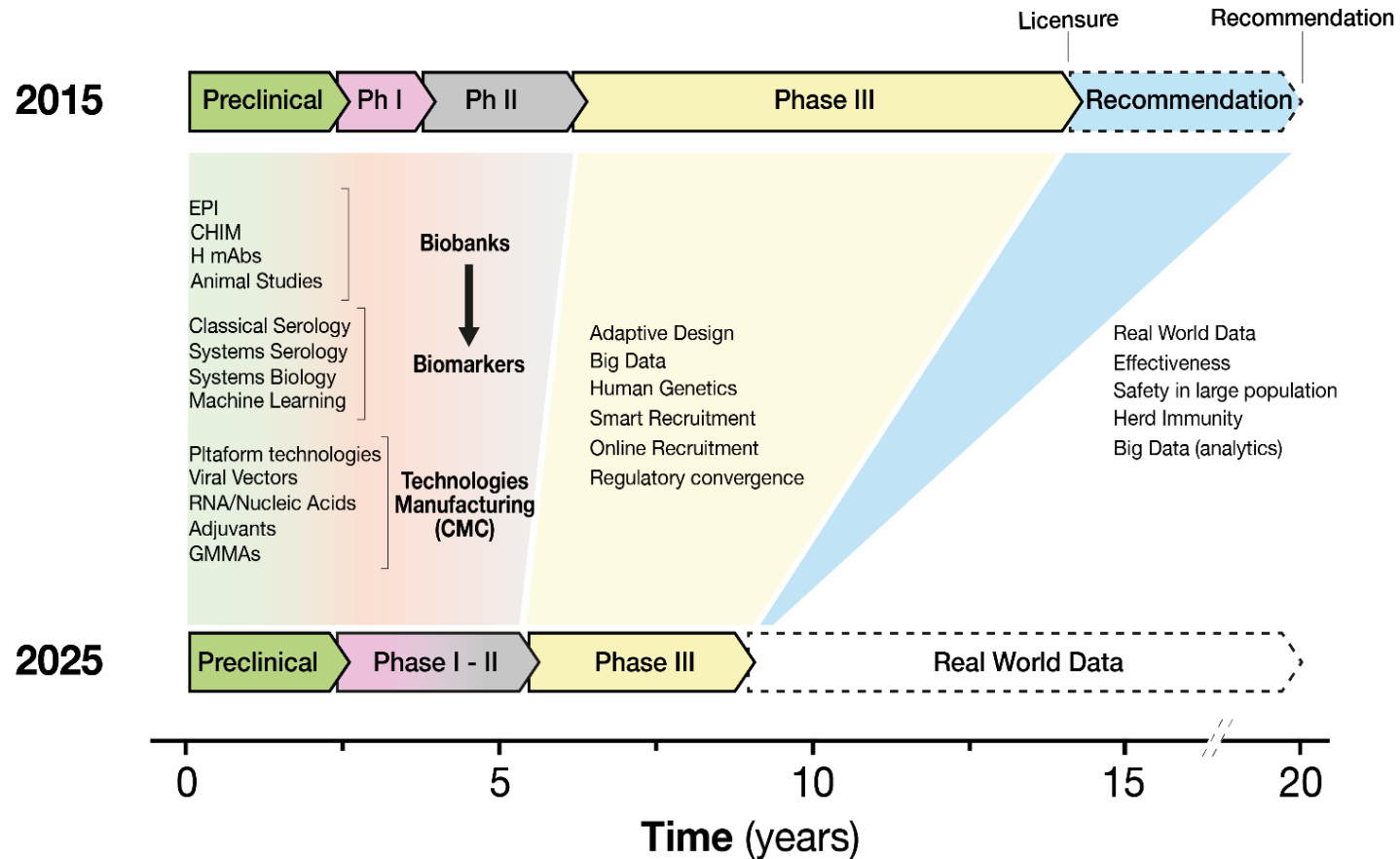
Rino Rappuoli¹ & Alan Aderem²

26 MAY 2011 | VOL 473 | NATURE | 467



Transforming vaccine development is possible

Palio meeting, Rockville, July 1st 2019



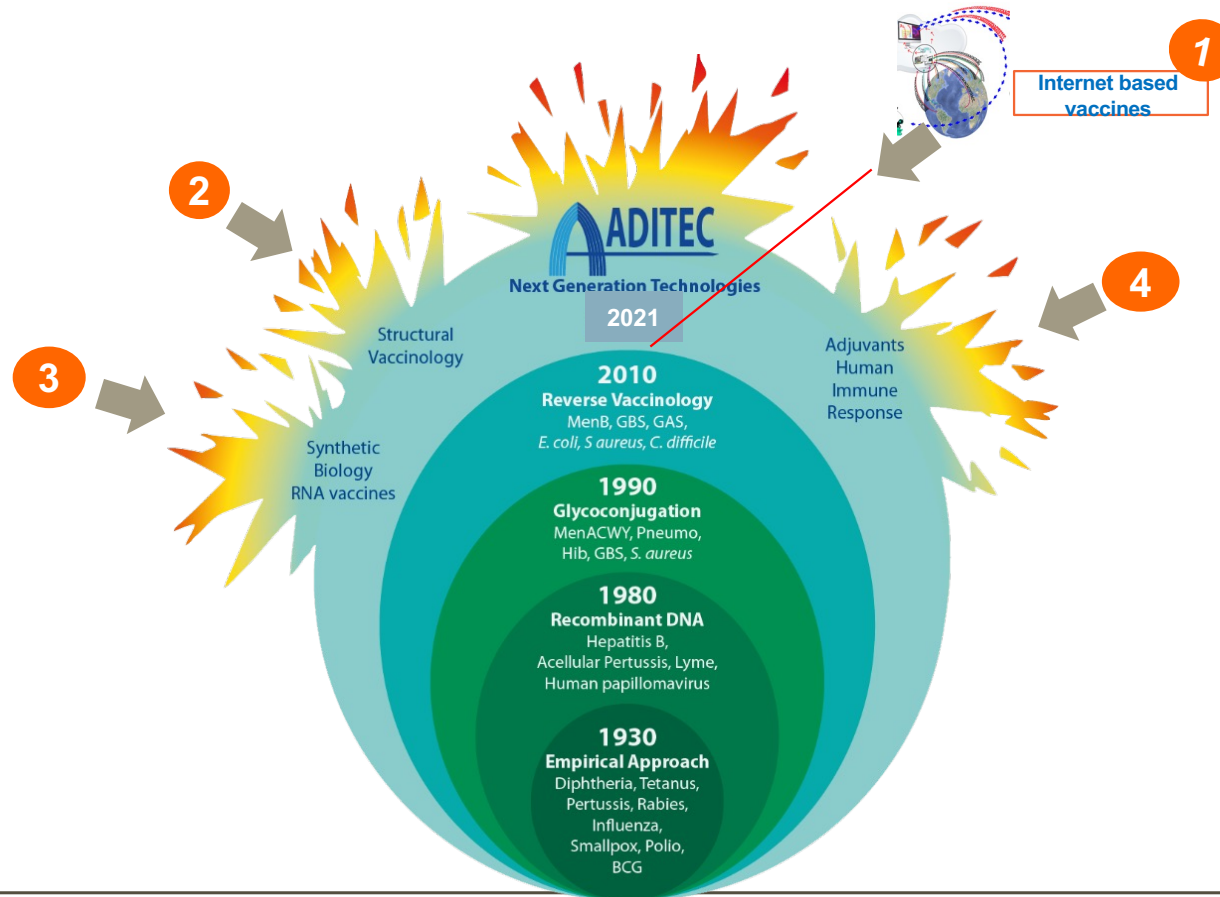


Vaccine development has been transformed by

- New Technologies
- Public sector investment

Technologies

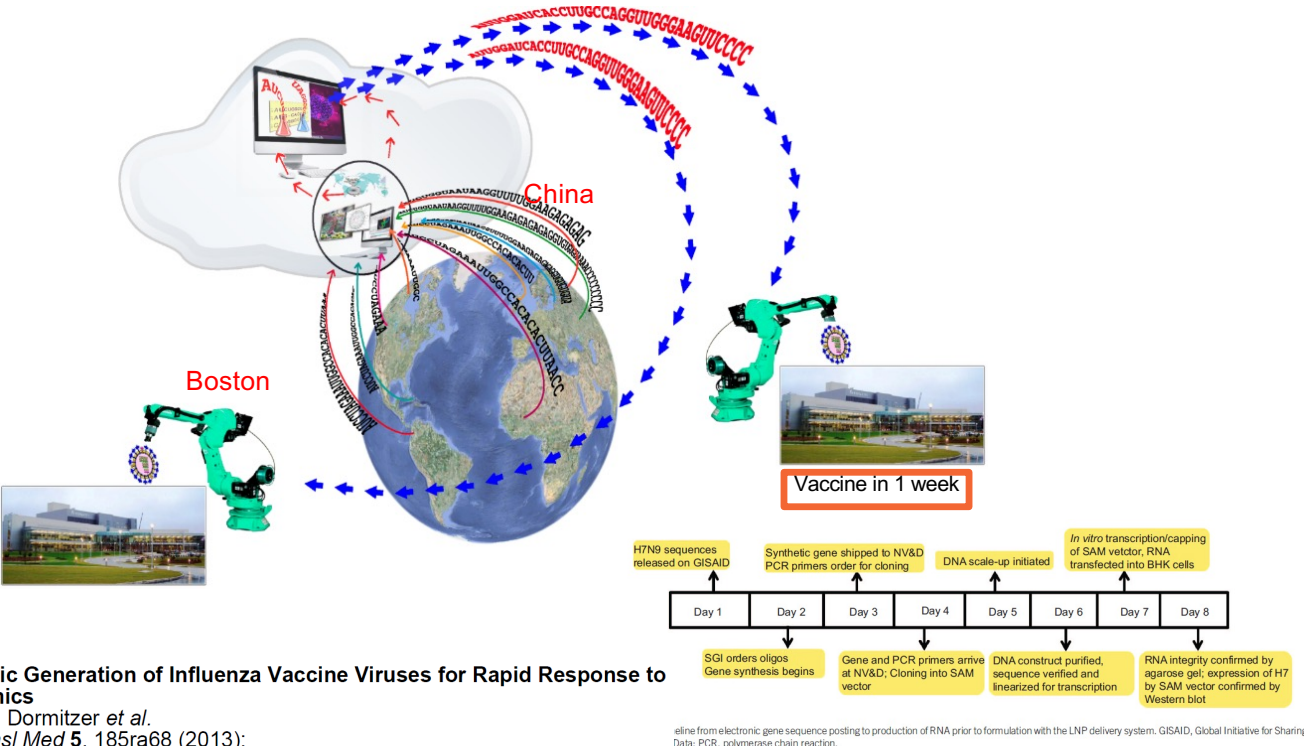
4 technologies allowed fast development of Covid-19 vaccines





2013: Internet-based synthetic vaccines in one week

In 2013 an RNA vaccine and a virus seed in one week using information teleported by internet



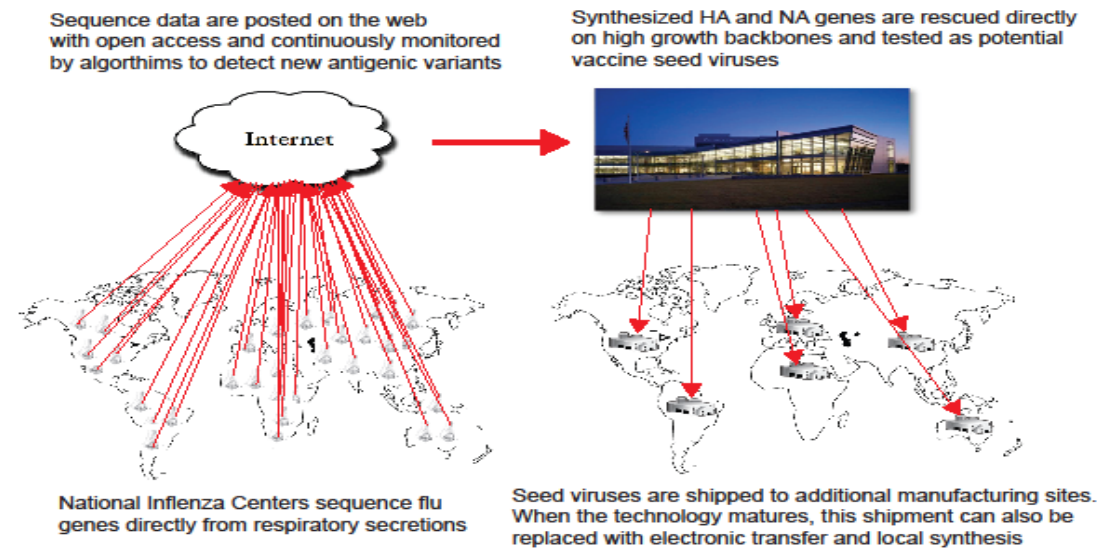
Synthetic Generation of Influenza Vaccine Viruses for Rapid Response to Pandemics
 Philip R. Dormitzer *et al.*
Sci Transl Med 5, 185ra68 (2013);
 DOI: 10.1126/scitranslmed.3006368

Emerging Microbes and Infections (2013) 2, e52; doi:10.1038/emi.2013.54
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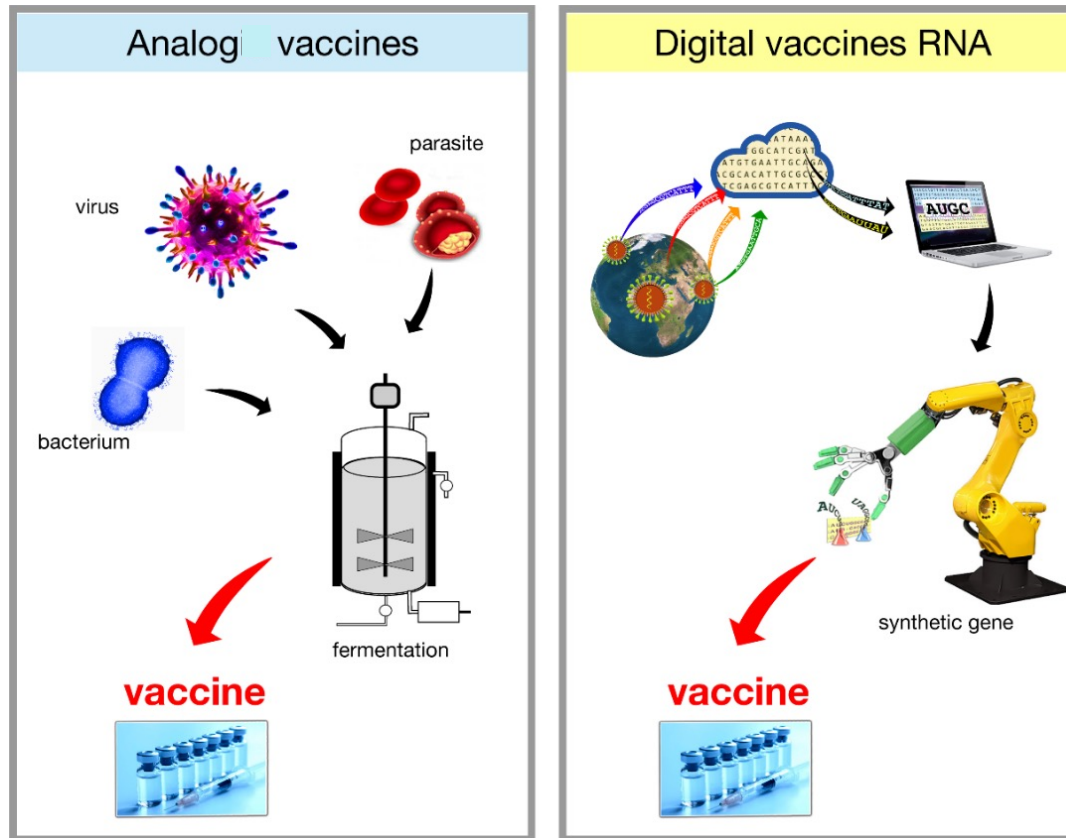
www.nature.com/emi



Shipping information instead of viruses



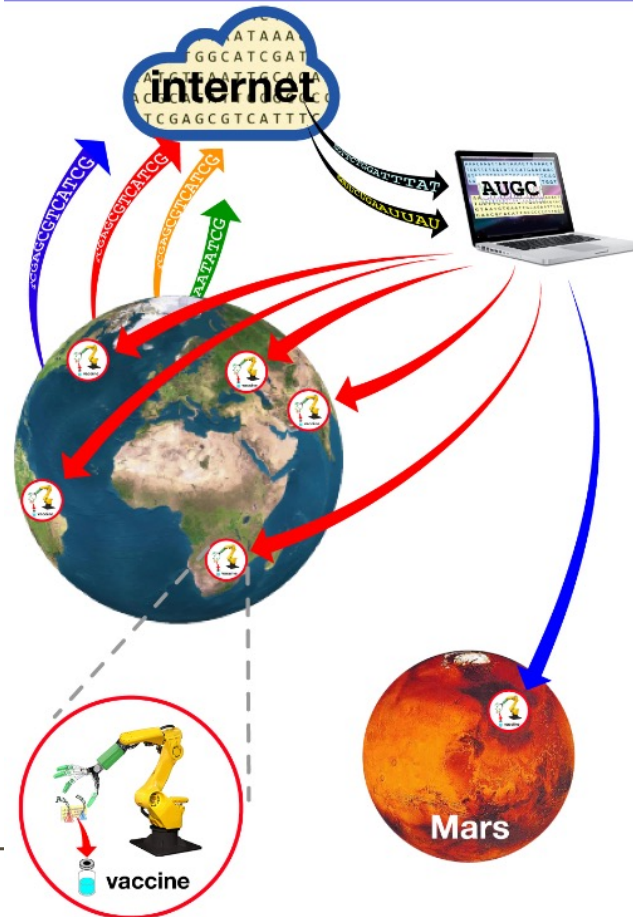
from analog to digital vaccines



Accessible Vaccines Globally and even in Mars



Digital vaccines

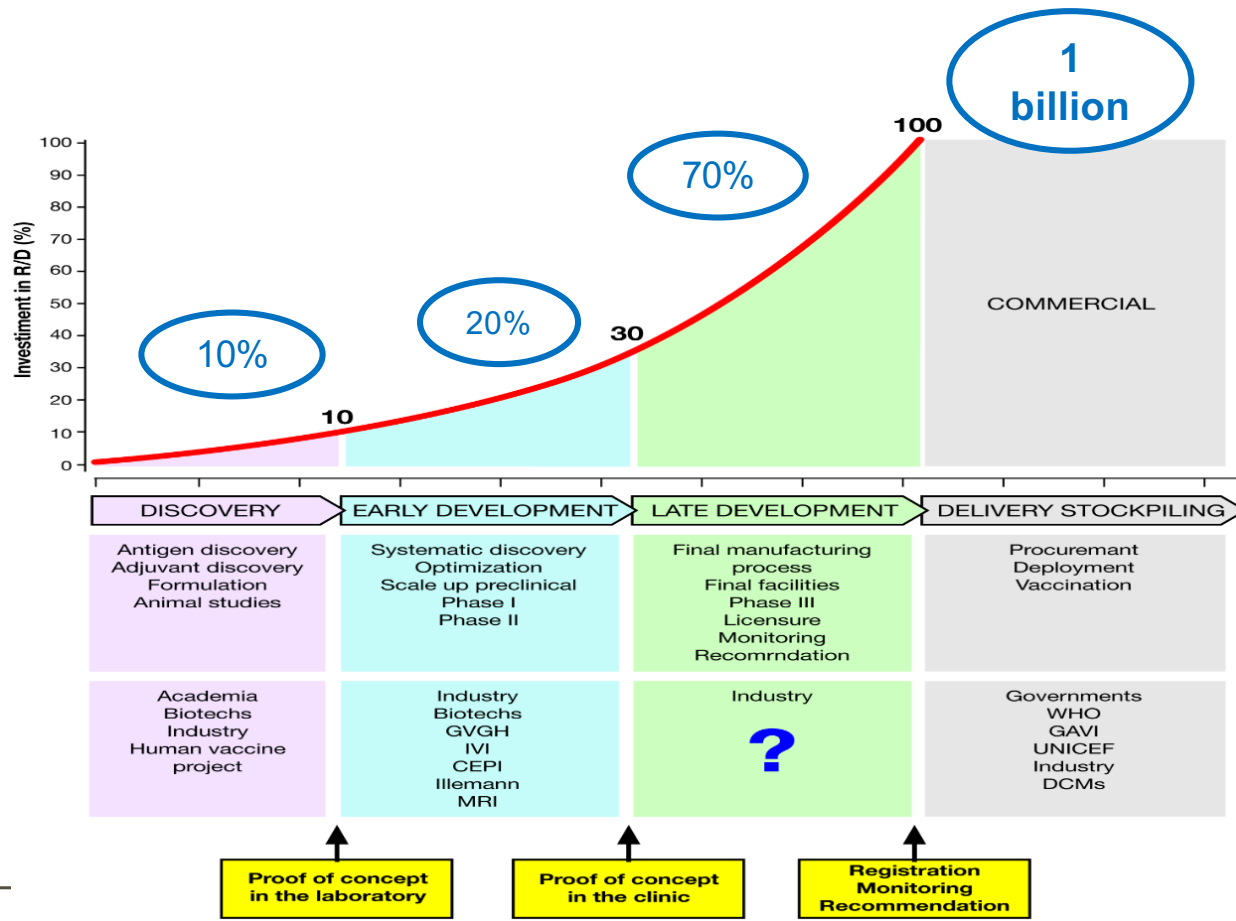




Vaccine development has been transformed by

- New Technologies
- Public sector investment

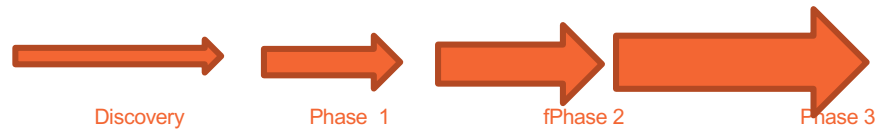
Need to transform classical vaccine development



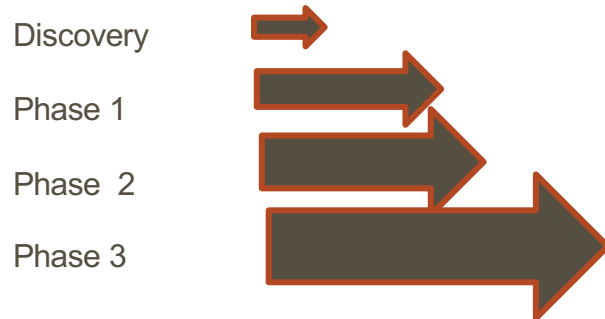
Unprecedented acceleration of Vaccine development



Investment > 15 billion investment from the public sector (>10 billion USA alone) in vaccine Development and Manufacturing allowed at risk development (parallel investment in discovery, early and late development)



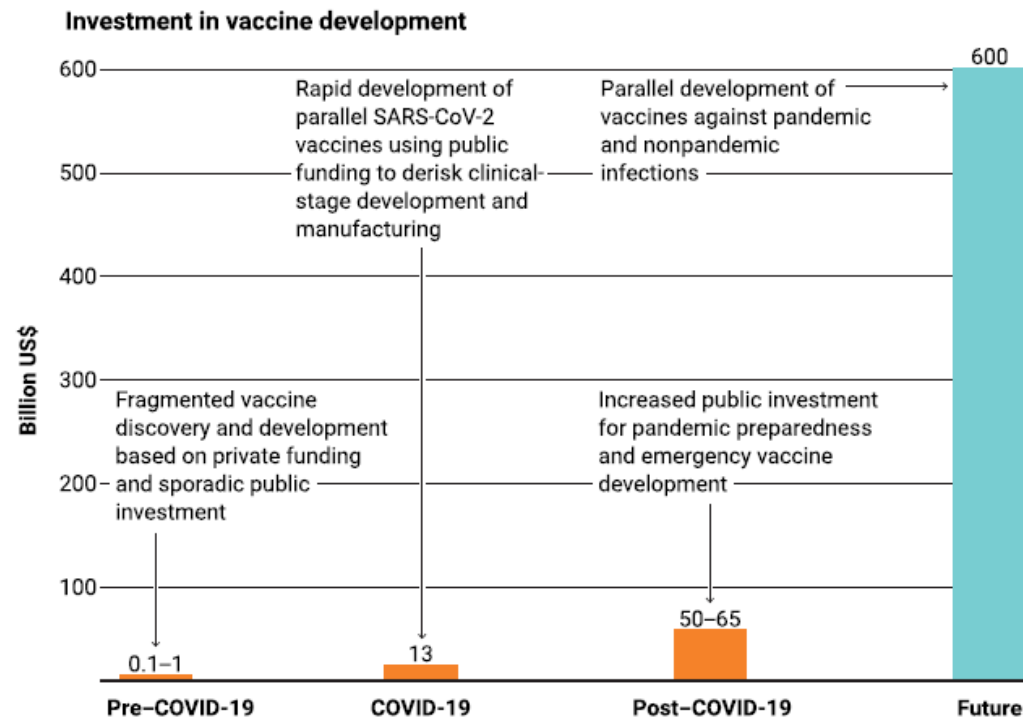
Pre-Covid Vaccines
10-20 years



Covid Vaccines
10 months



The trillion dollar vaccine gap



The trillion dollar vaccine gap

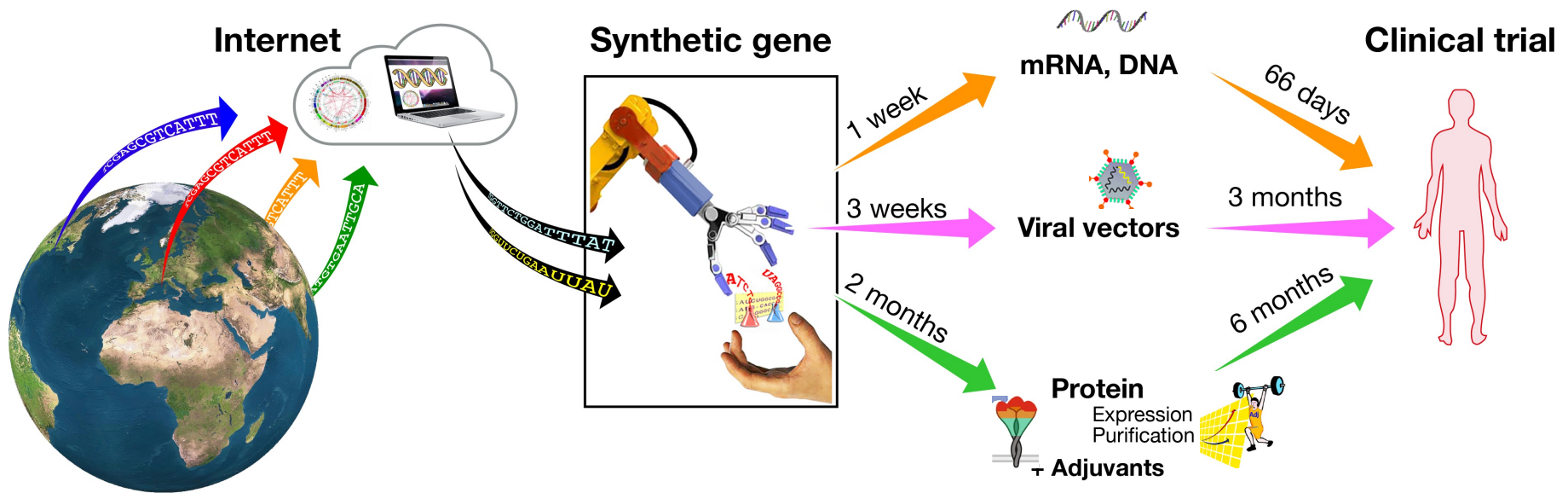
Simone Pecetta¹, Daniel Tortorice², Francesco Berlanda Scorza³, Mariagrazia Pizza³, Gordon Dougan⁴, Richard Hatchett⁵, Steve Black⁶, David E. Bloom⁷, Rino Rappuoli^{1*}

Pecetta *et al.*, *Sci. Transl. Med.* **14**, eabn4342 (2022) 30 March 2022

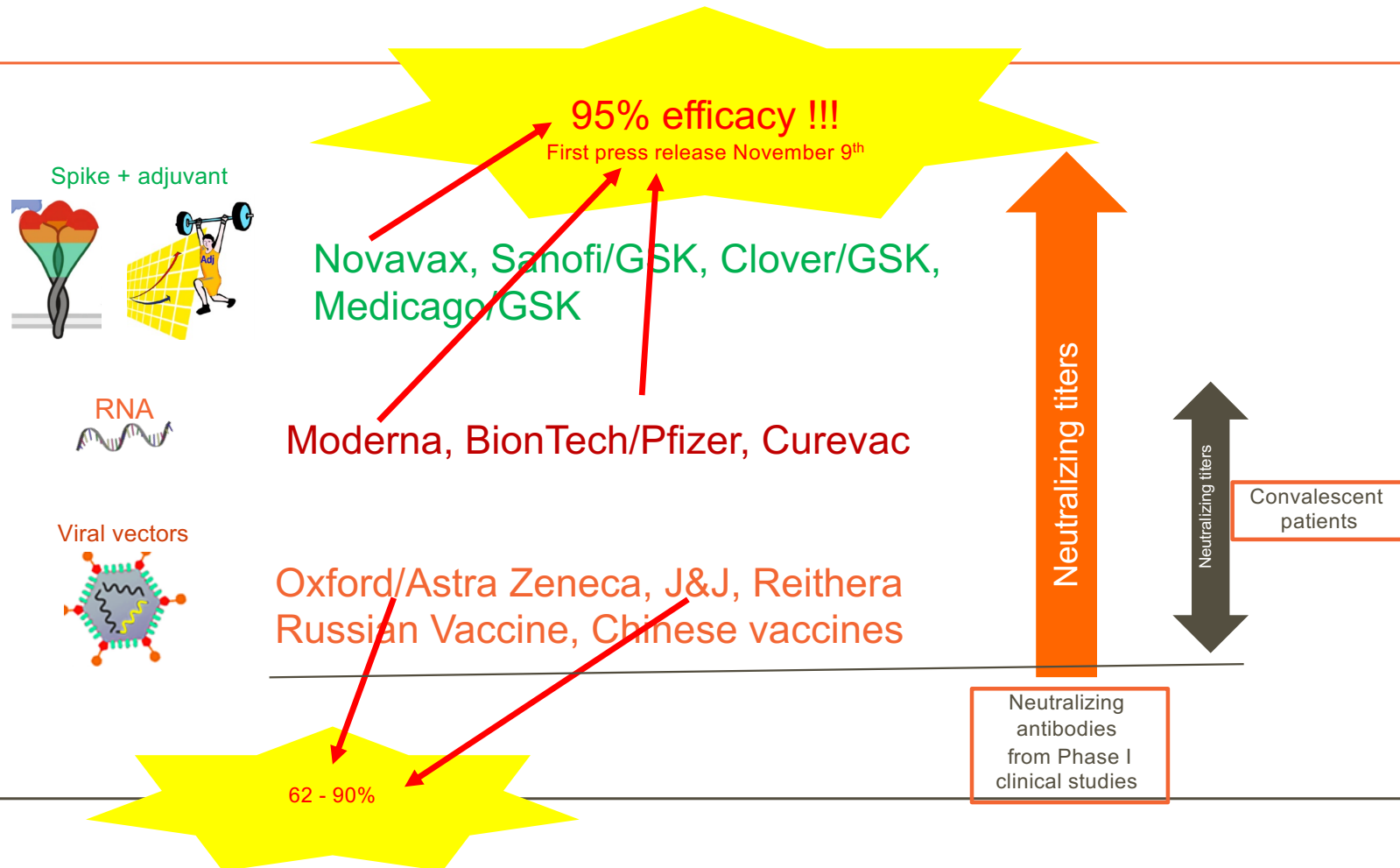


January 10th 2020 SARS-CoV-2 sequence posted in internet

350 labs worldwide used the sequence to make synthetic genes



Three main vaccine types for Covid-19 efficacy

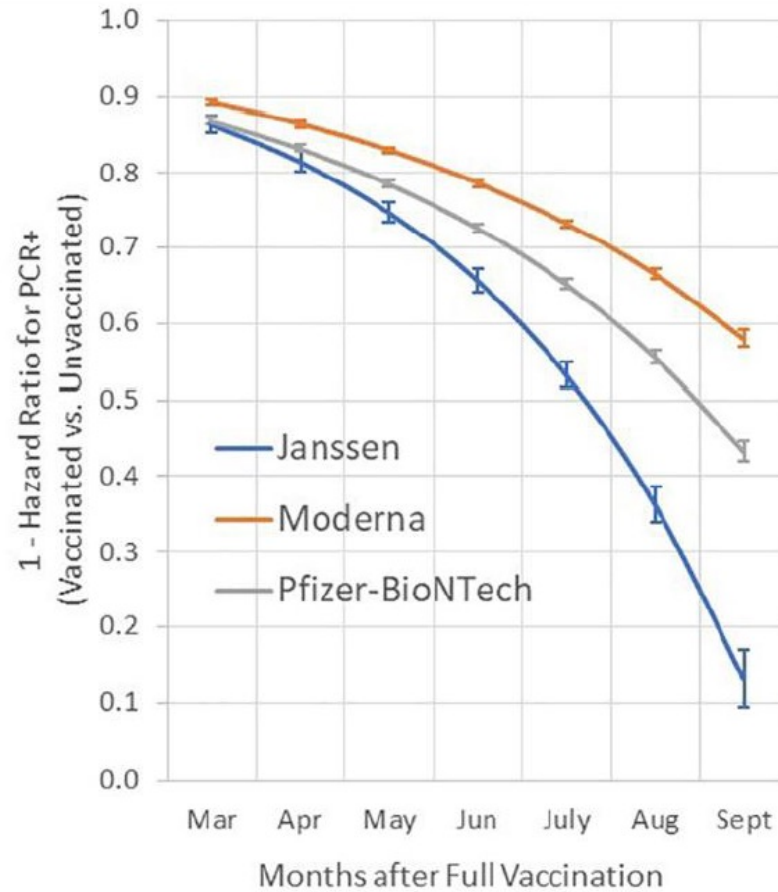


Cite as: B. A. Cohn *et al.*, *Science* 10.1126/science.abm0620 (2021).

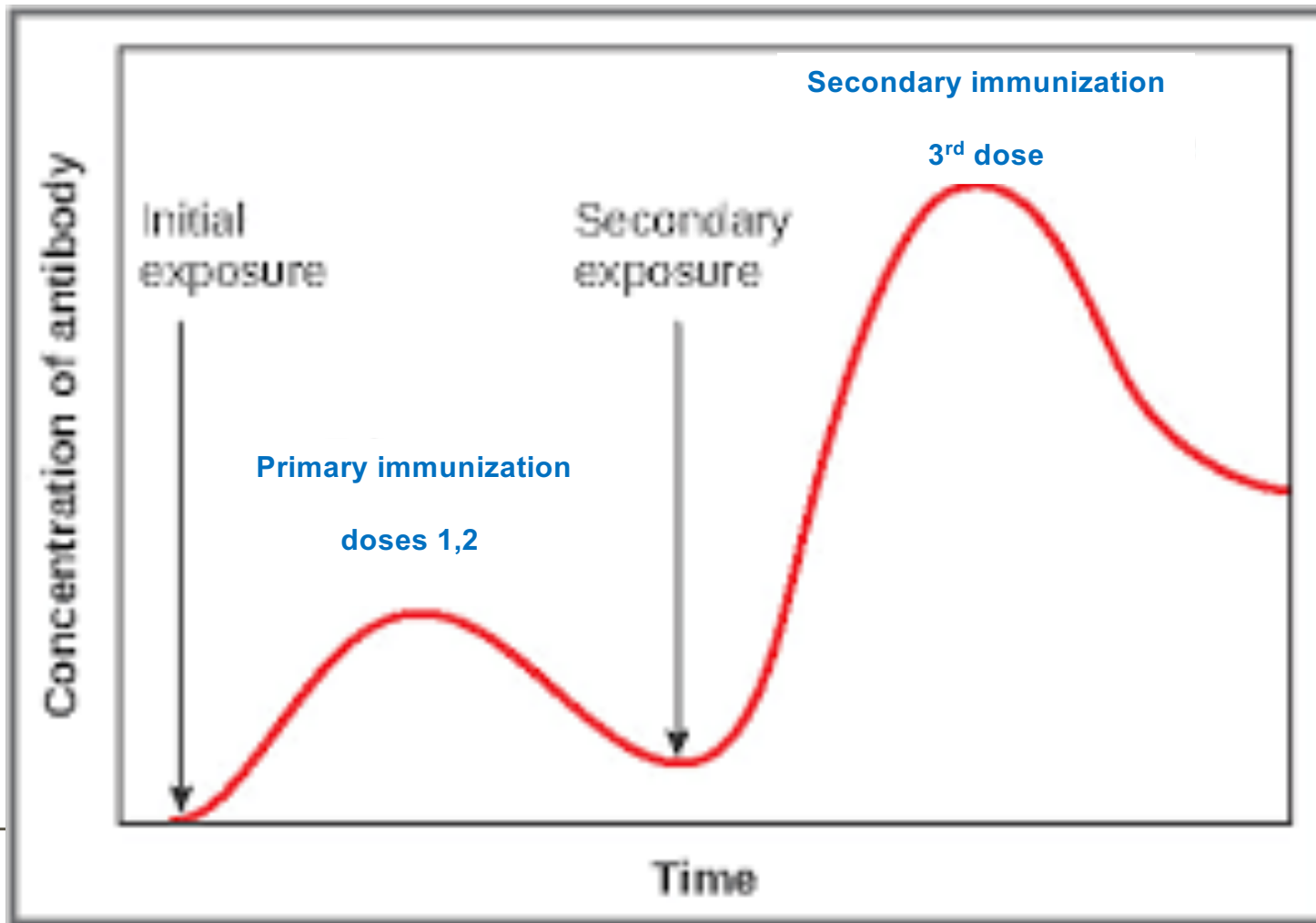


SARS-CoV-2 vaccine protection and deaths among US veterans during 2021

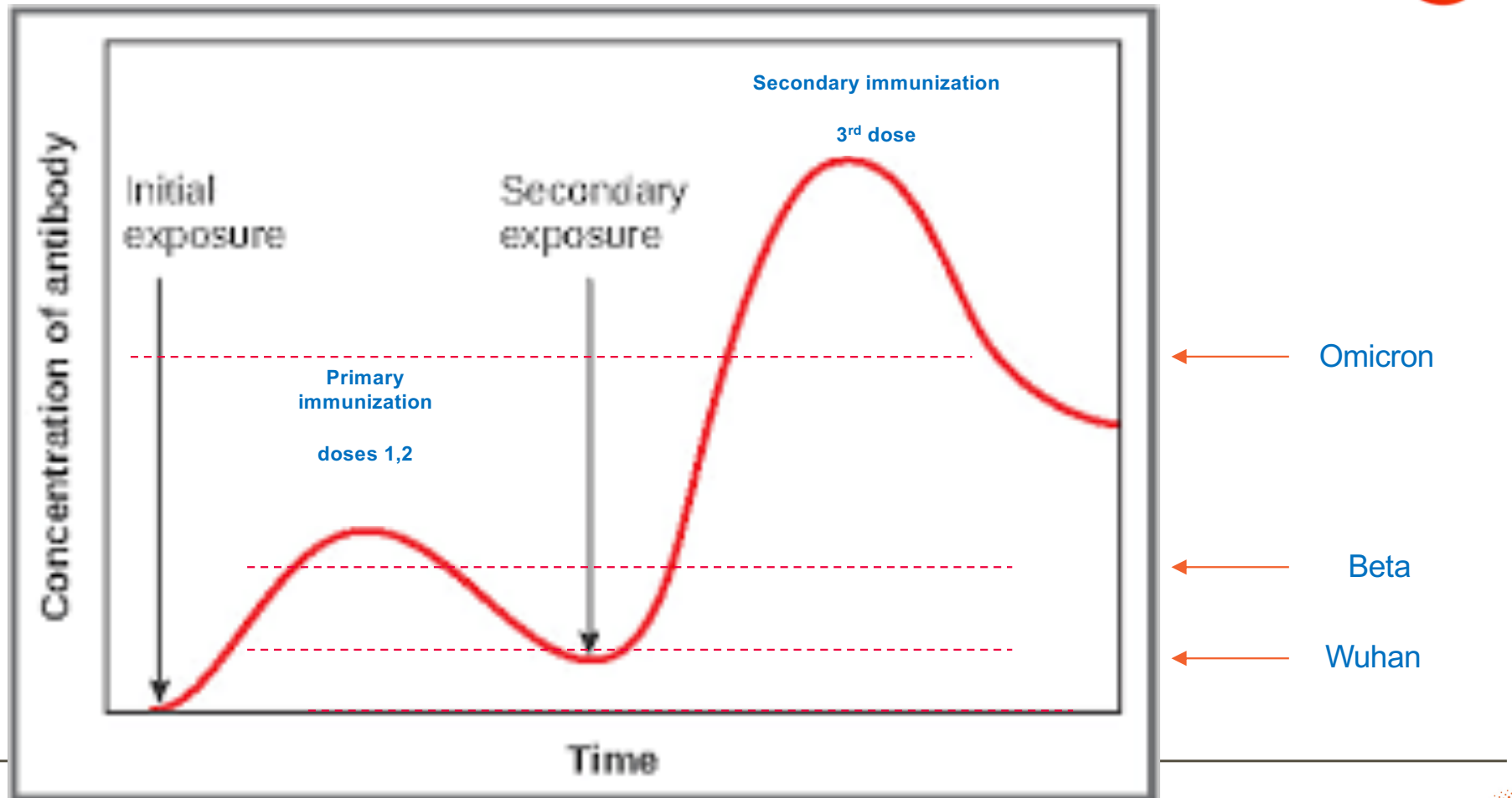
Barbara A. Cohn^{1†}, Piera M. Cirillo^{1,2†}, Caitlin C. Murphy^{3†}, Nickilou Y. Krigbaum^{1,2}, Arthur W. Wallace^{2,4*}



From basic Immunology textbooks



From basic Immunology textbooks





Thank you

