Vaccines for COVID-19: An Update

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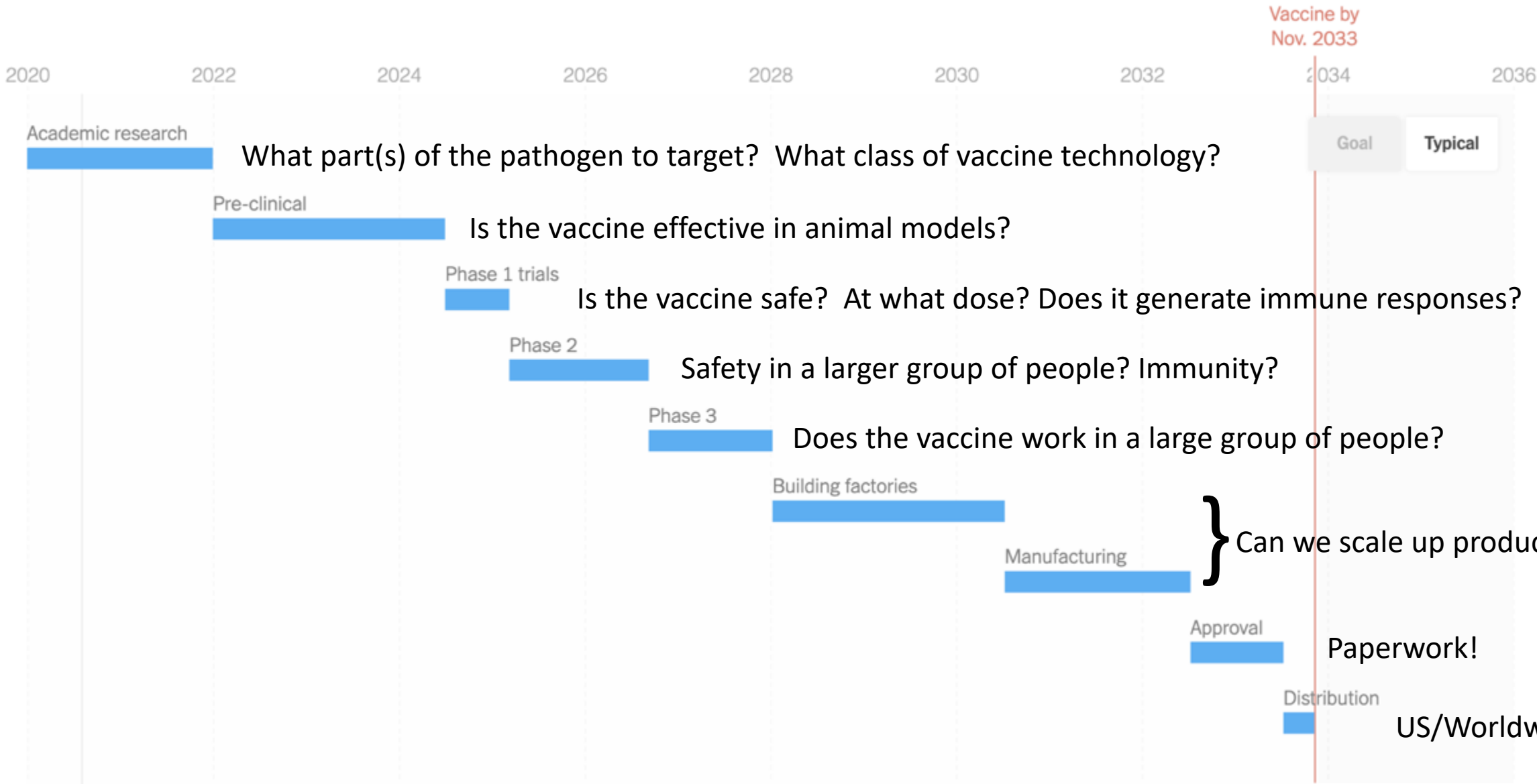
What are vaccines & how do they work?

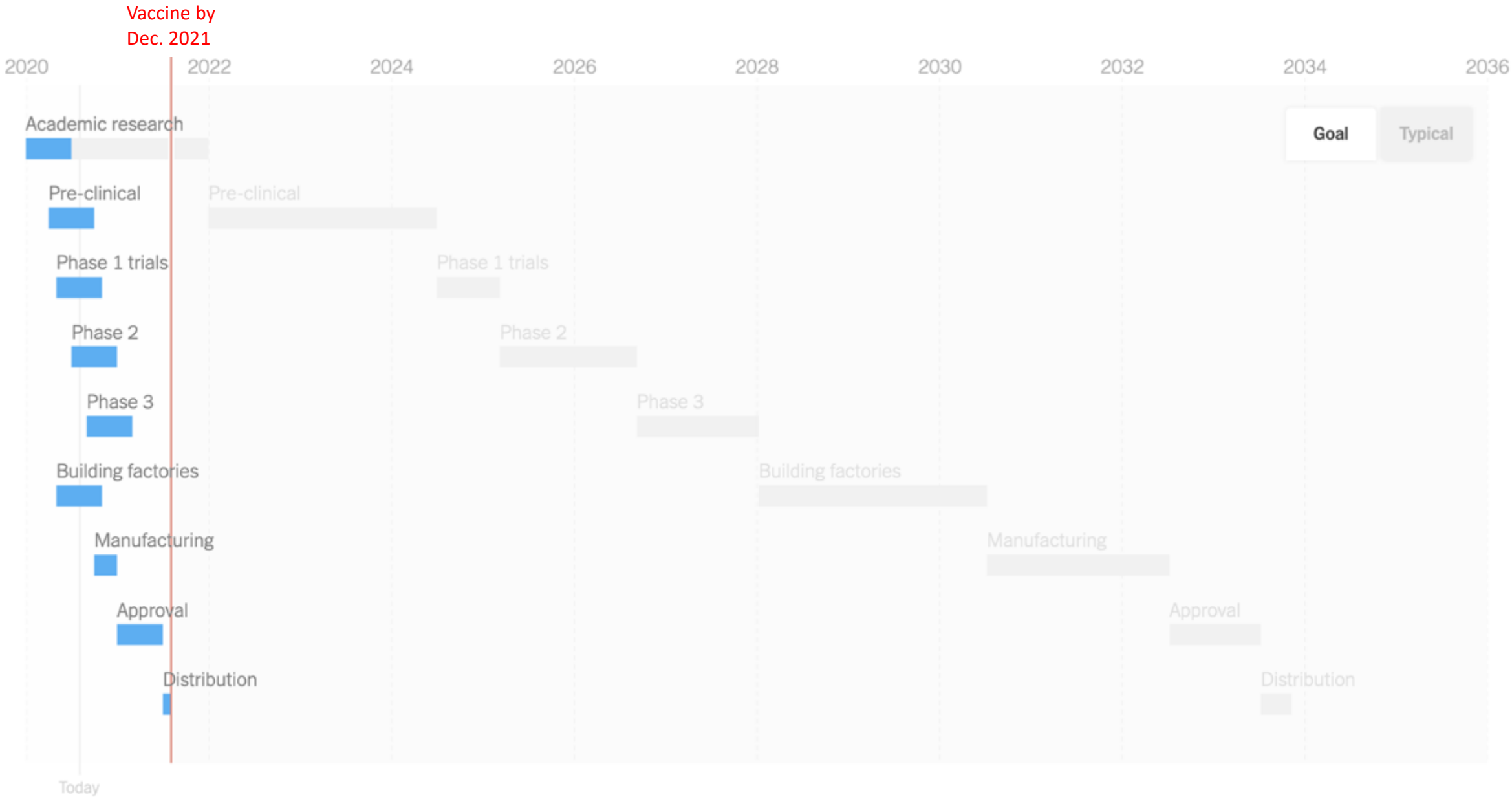
- Vaccines are harmless agents that elicit immune responses.
- The consequences of immunization are (typically):
  - Antibodies (the longer they last, the better)
  - Immune memory, (special cells that provide a more rapid response to infection).
- These immune responses can **prevent** infection or lead to more **rapid clearance**
- If enough people are vaccinated, herd immunity can reduce the spread of disease

Typical Vaccine Timetable

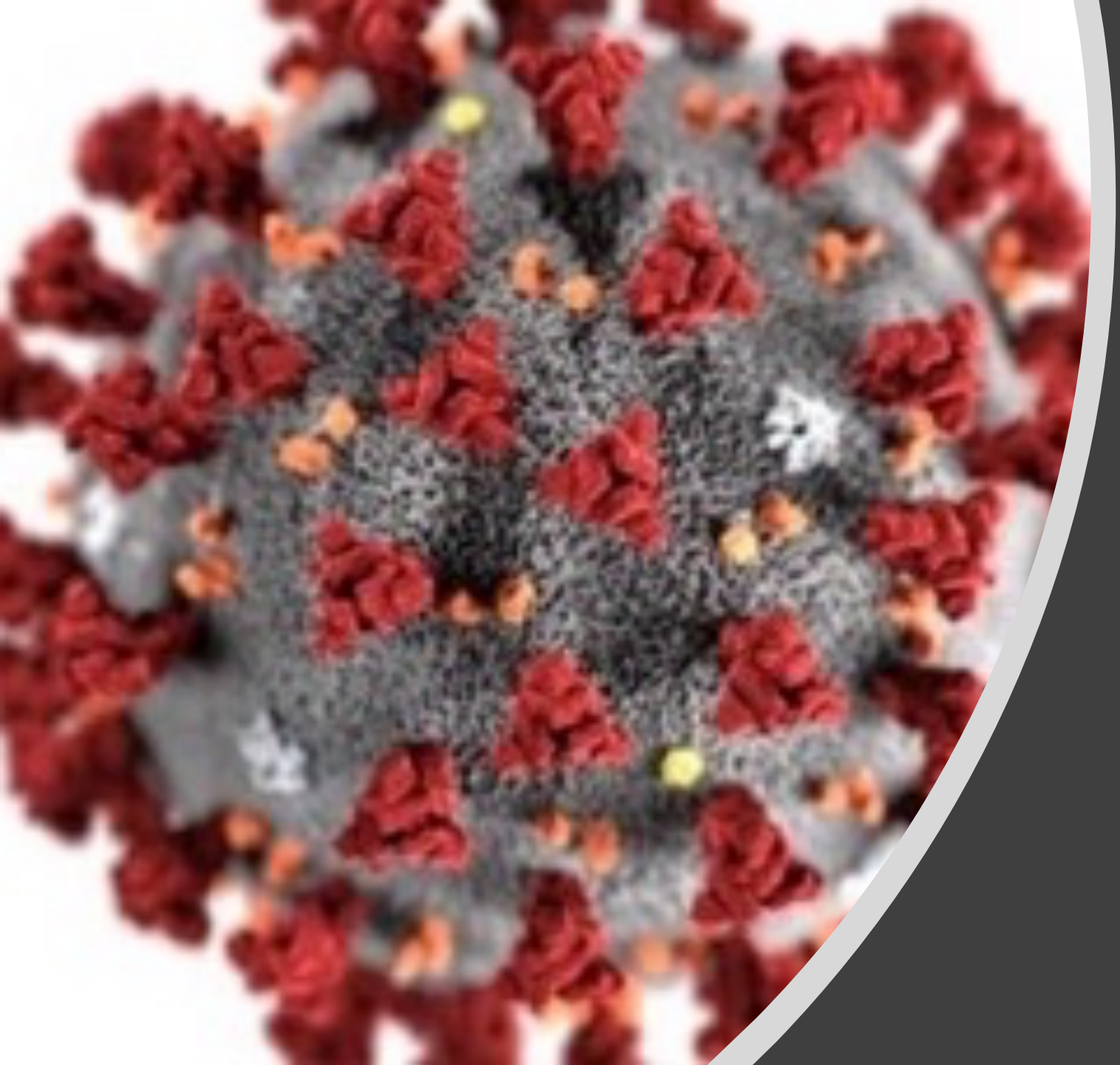


Source: NY Times

Accelerated Vaccine Timetable for COVID-19



Source: NY Times



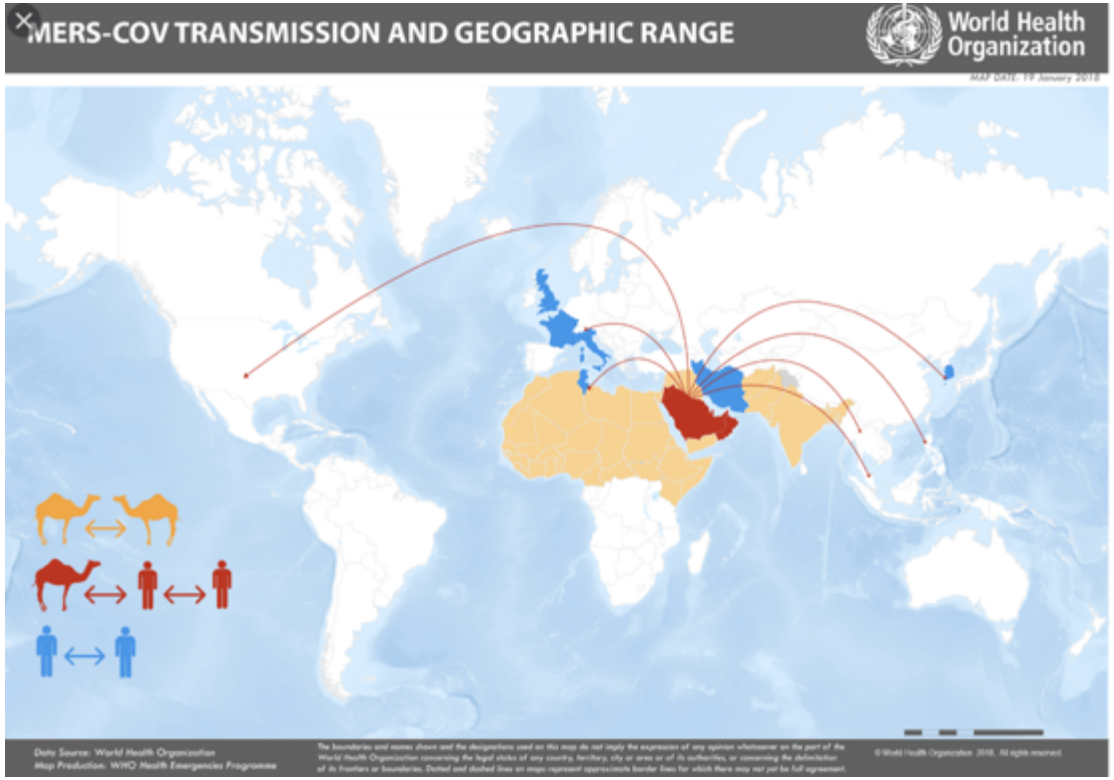
How did we move faster with COVID-19?

How did we move faster with COVID-19?

- We know a lot about other Coronaviruses
- Advances in Vaccine Technology that allowed candidates to be produce more rapidly (mRNA vaccines)
- Major investments in Vaccine development
- The magnitude of the COVID pandemic allowed efficacy data to be generated more rapidly

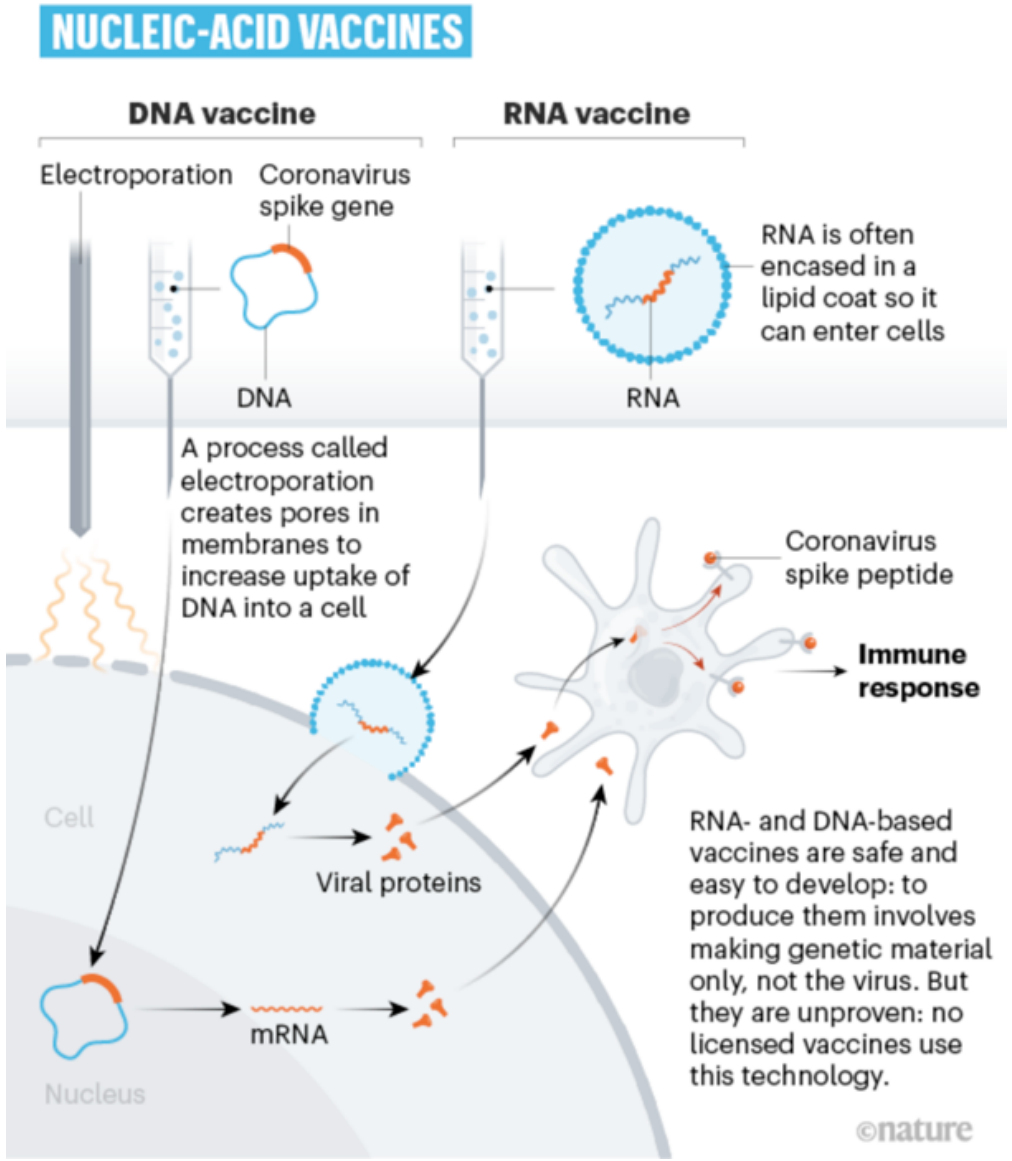
We know a lot about Coronaviruses

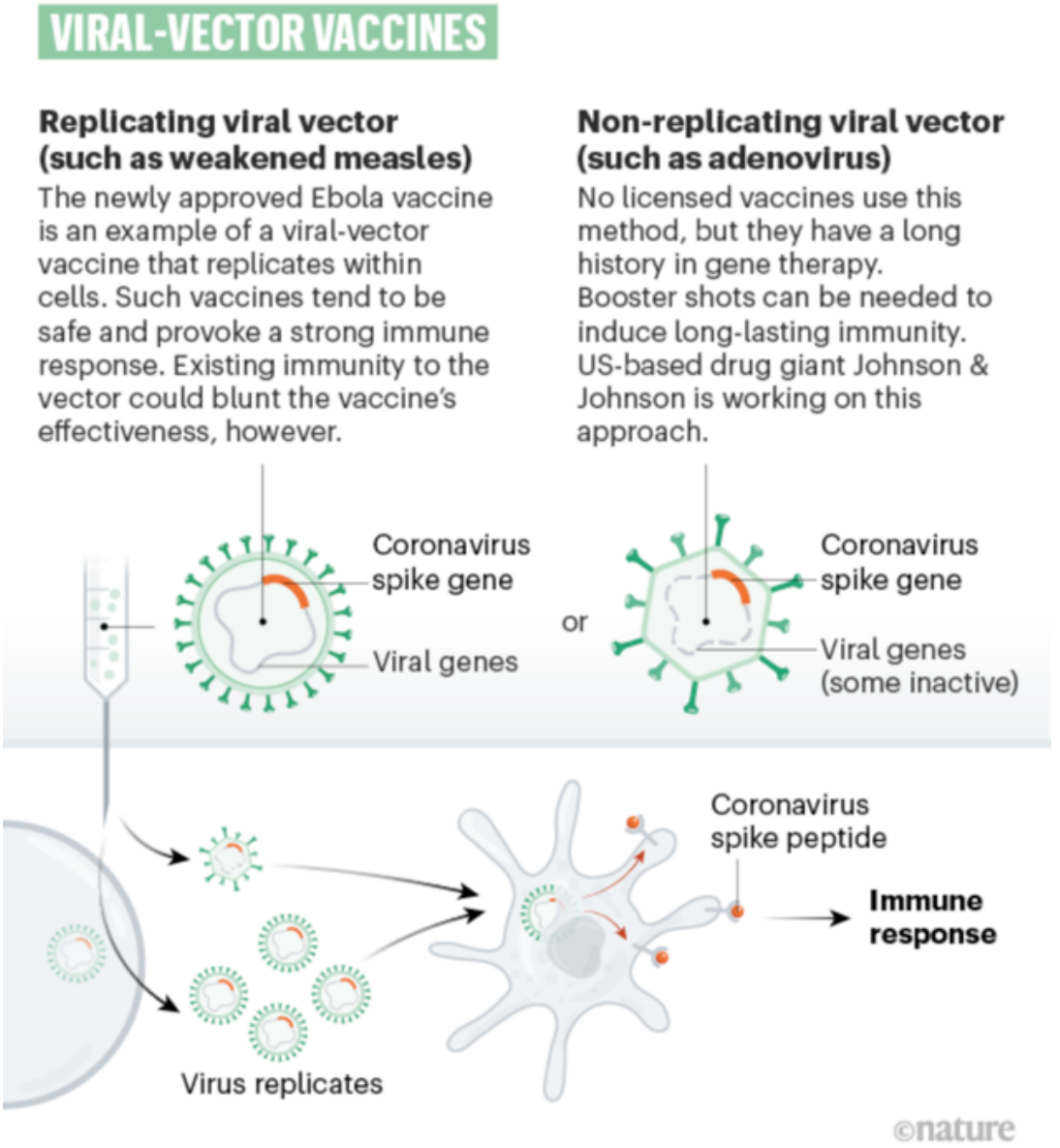
SARS-CoV1, 2003



MERS-CoV, 2013

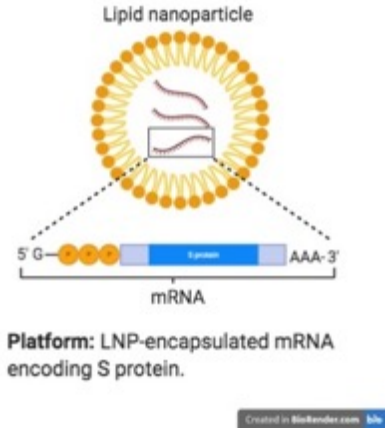
Advances in Vaccine Technology



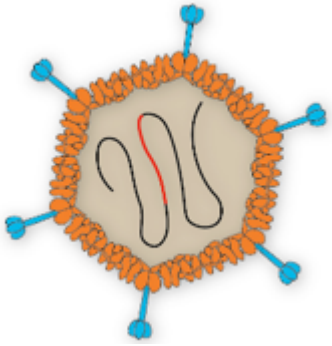


Leading SARS-CoV-2 Vaccines

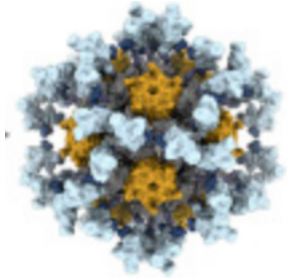
mRNA 1273 (Moderna)
BNT162b2 (Pfizer)
Authorized for use
90-95% Efficacy*
Two immunizations



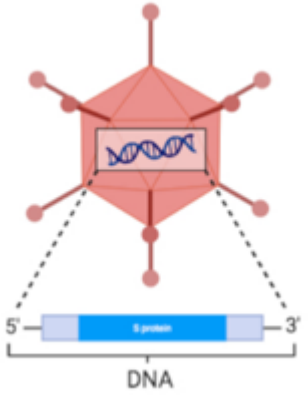
AZD1222 (ChAdOx1 nCoV-19)
(Oxford/AstraZeneca)
Phase 3 (March 2021?)
Two immunizations



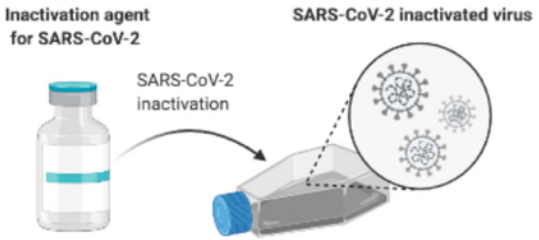
GBP510
(CEPI/SK Bioscience)
Phase 1



Ad26.COV2.S (Jansen/J&J)
Phase 3 (Feb. 26, 2021)
~70% Efficacy*
One immunization



CoronaVac (Sinovac)
Approved in China



SARS CoV-2 rS +
Matrix M (Novavax)
Phase 3

* Efficacy at preventing moderate to severe COVID