

COVID 19, VACCINATION AND KIDNEY TRANSPLANTATION

IRFAN AGHA, MD; MRCP (UK)

PRESIDENT, DALLAS RENAL GROUP
MEDICAL DIRECTOR, LIVING DONOR PROGRAM,
MEDICAL CITY DALLAS TRANSPLANT CENTER.

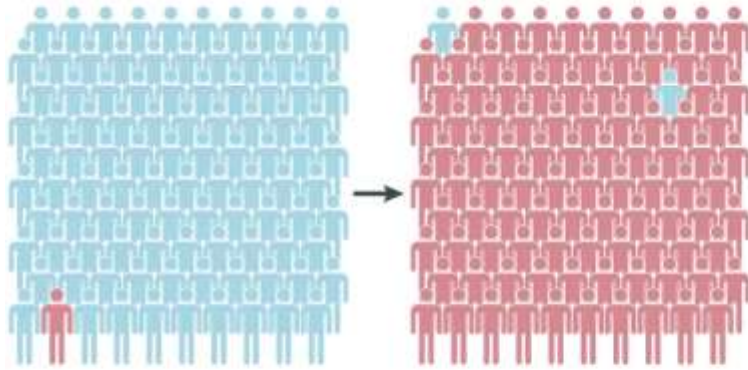
Disclosures

Speaking Engagements / Consulting

- CareDx
- AstraZenica
- GSK

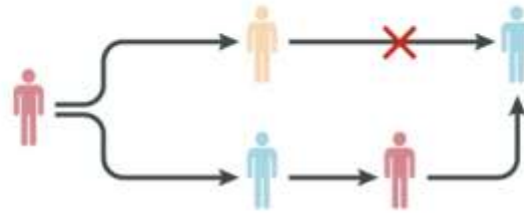
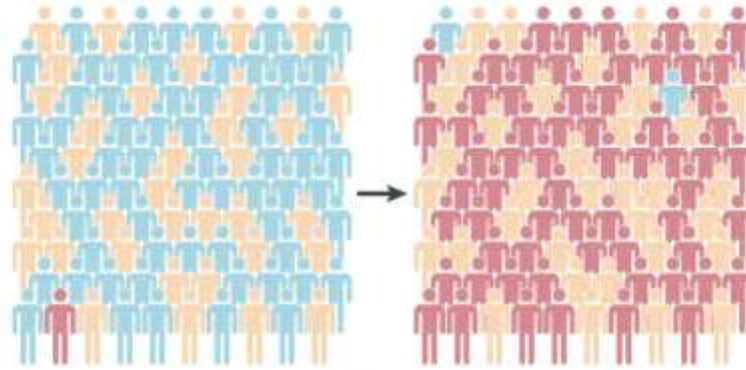
None Relevant

No vaccination



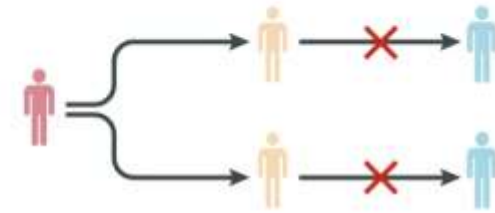
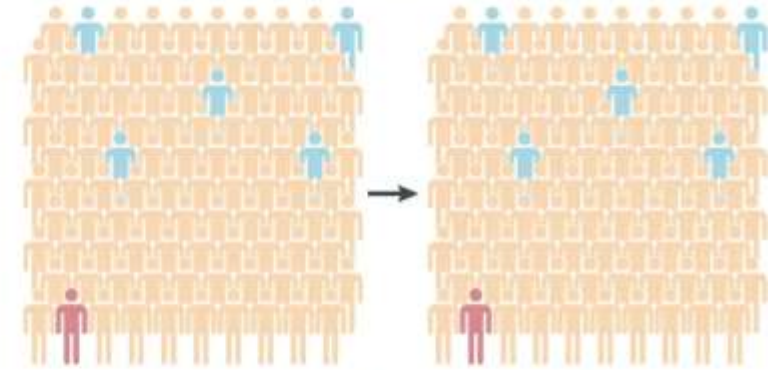
Infection passes from individuals with disease to susceptible individuals and spreads throughout the population

Vaccine coverage below threshold for herd protection

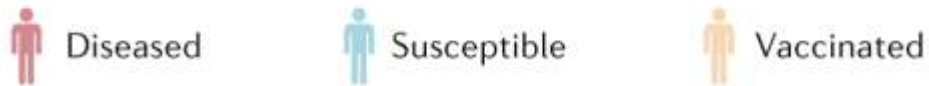


Infection can still pass to susceptible individuals and spread throughout the population except to those who are vaccinated

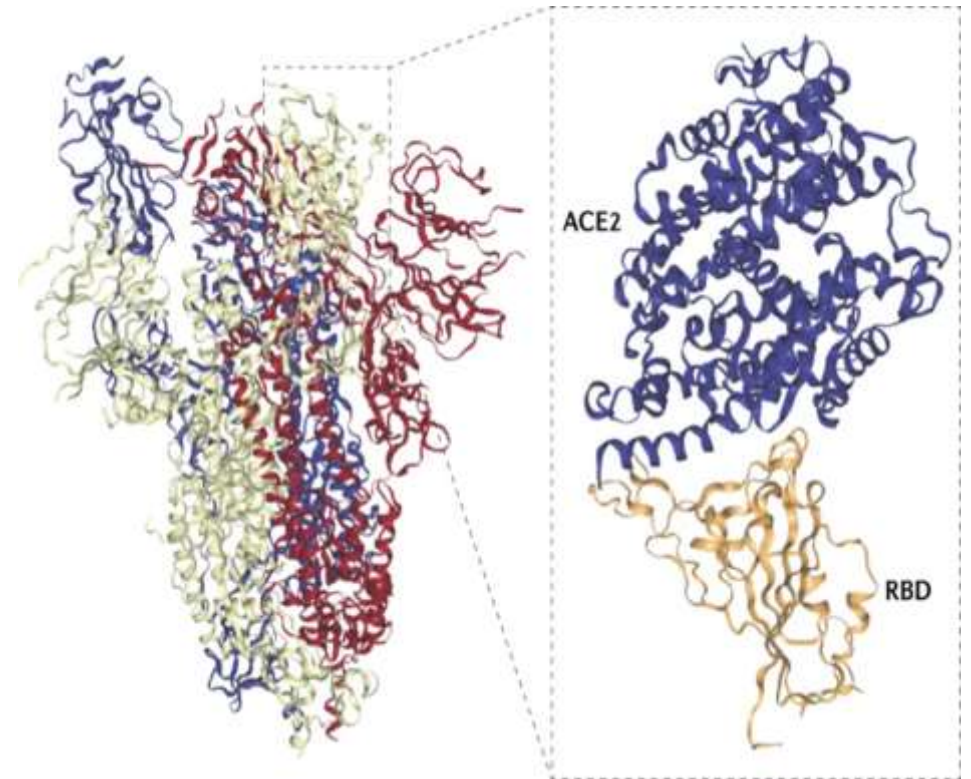
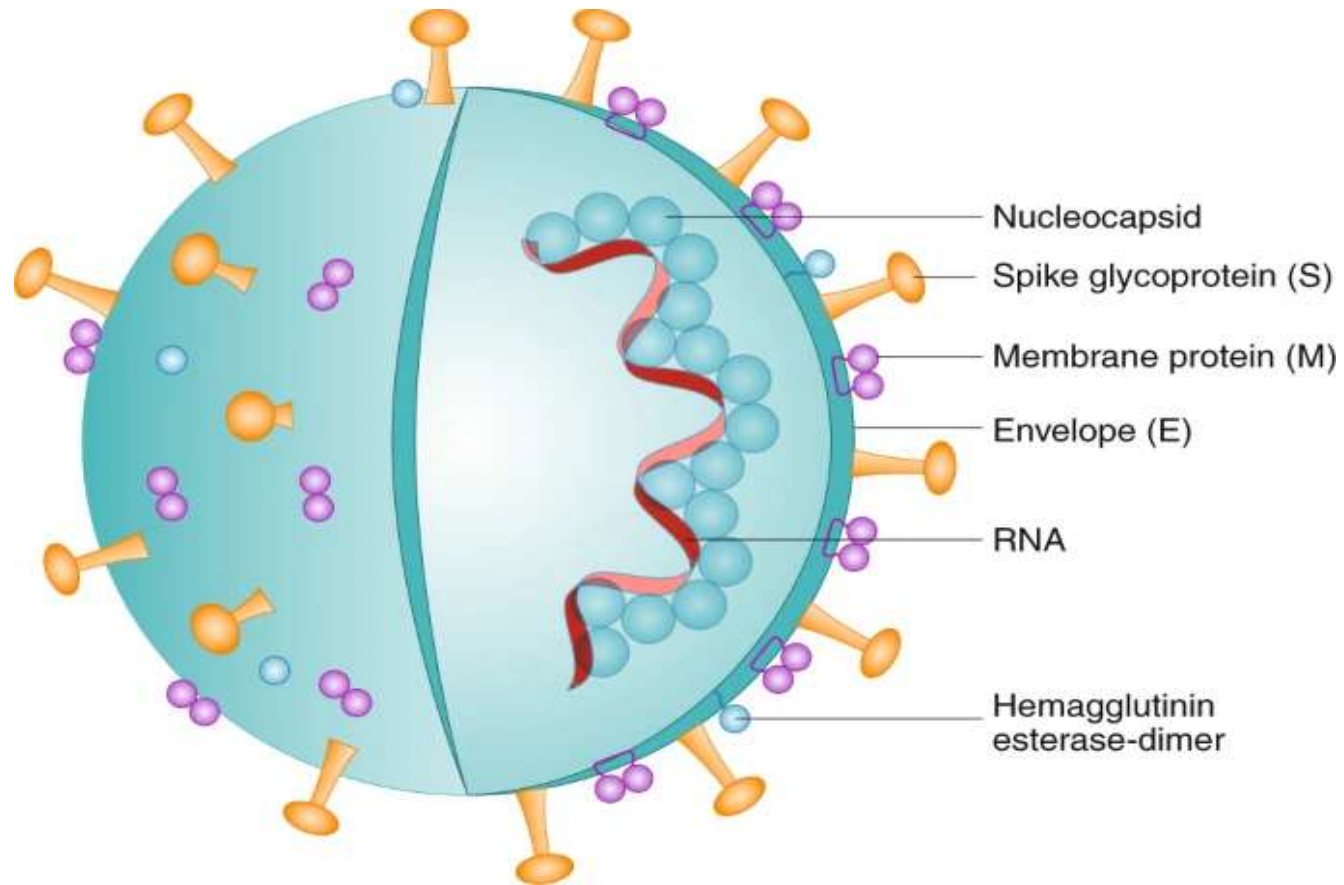
Vaccine coverage above threshold for herd protection

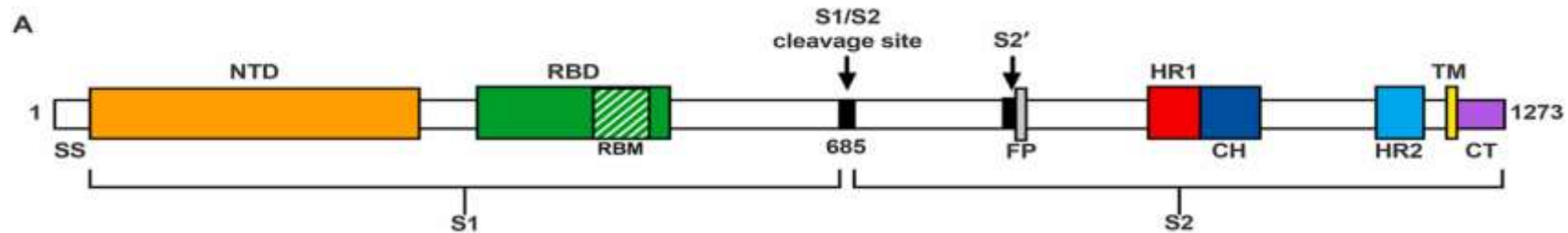
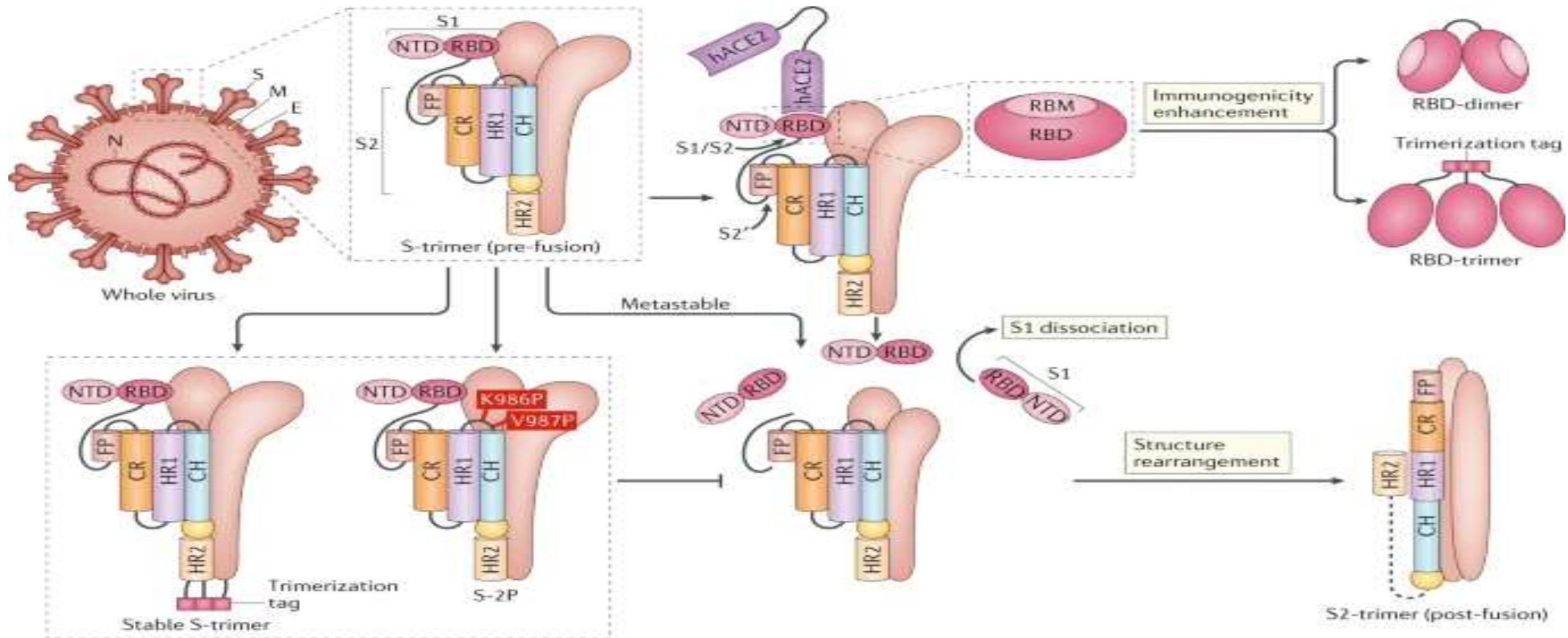


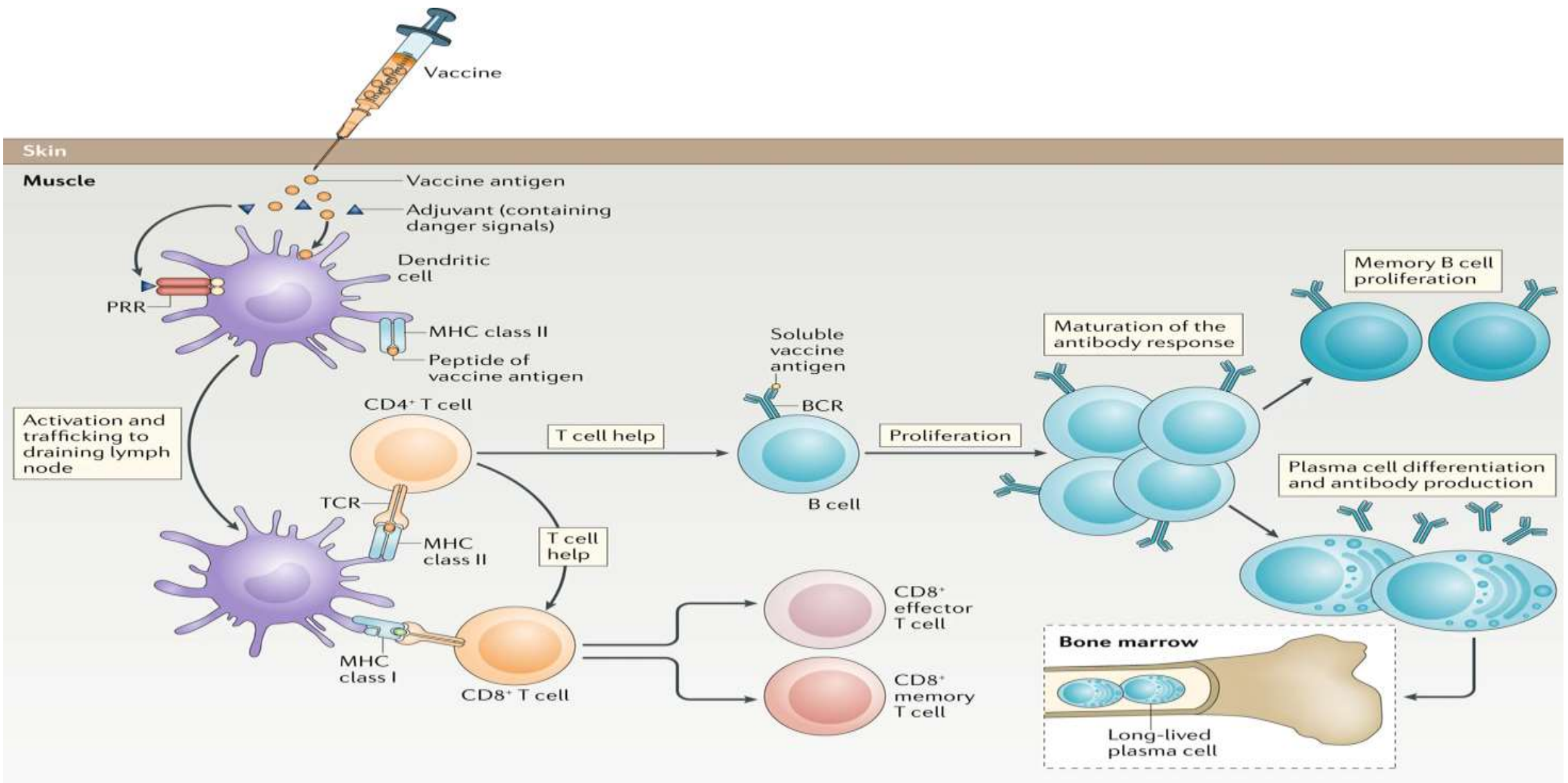
Infection cannot spread in the population and susceptible individuals are indirectly protected by vaccinated individuals

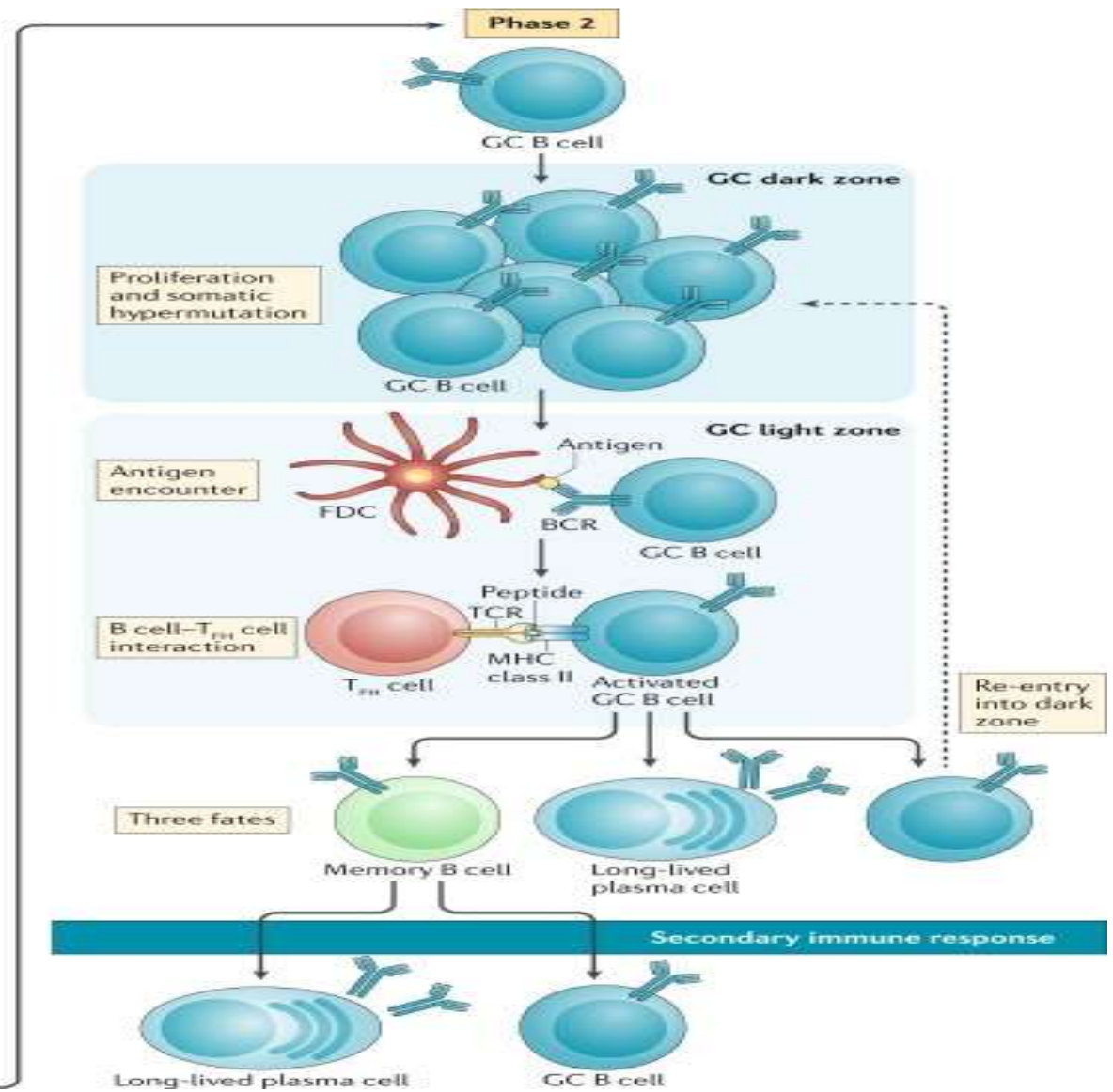
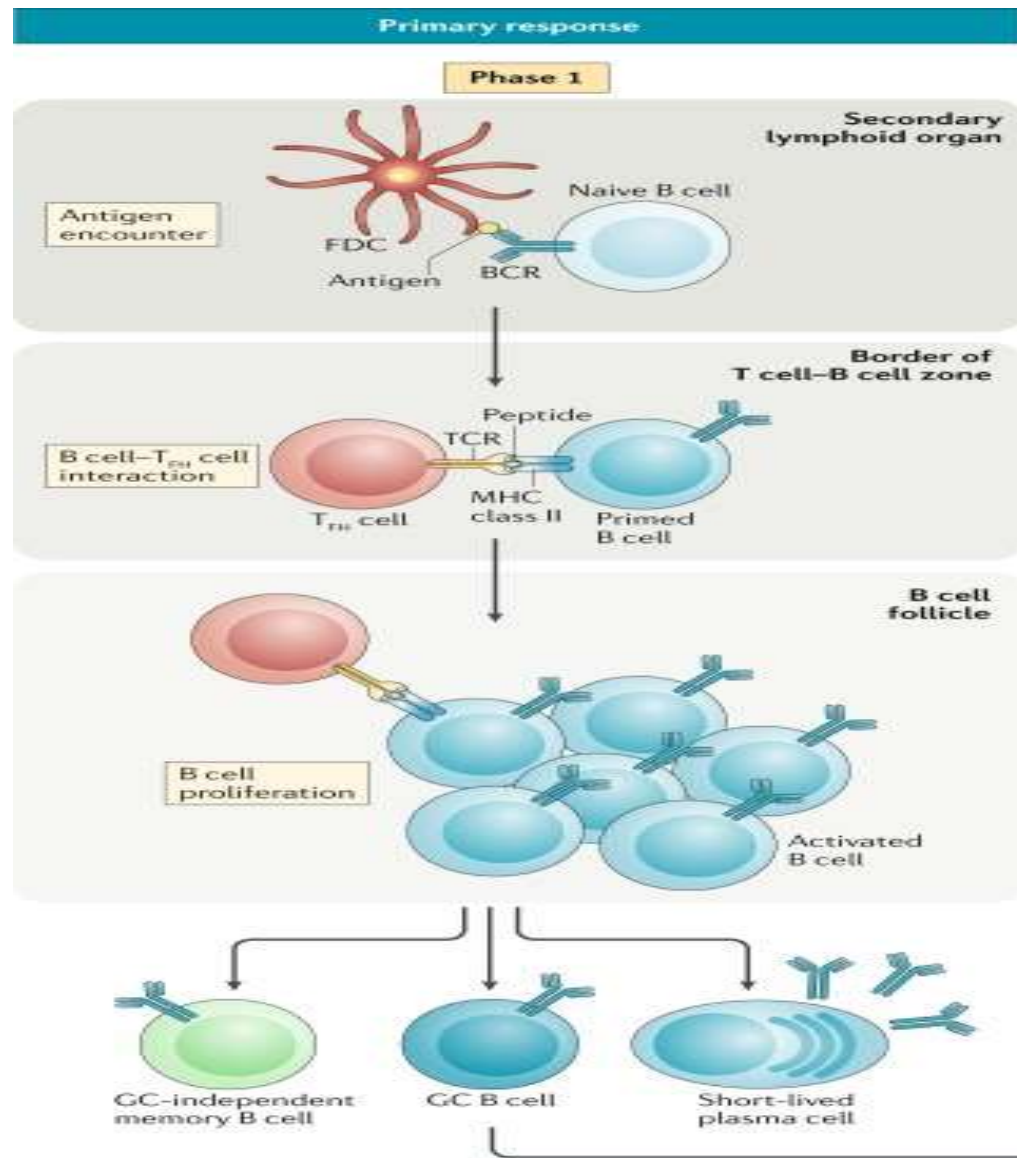


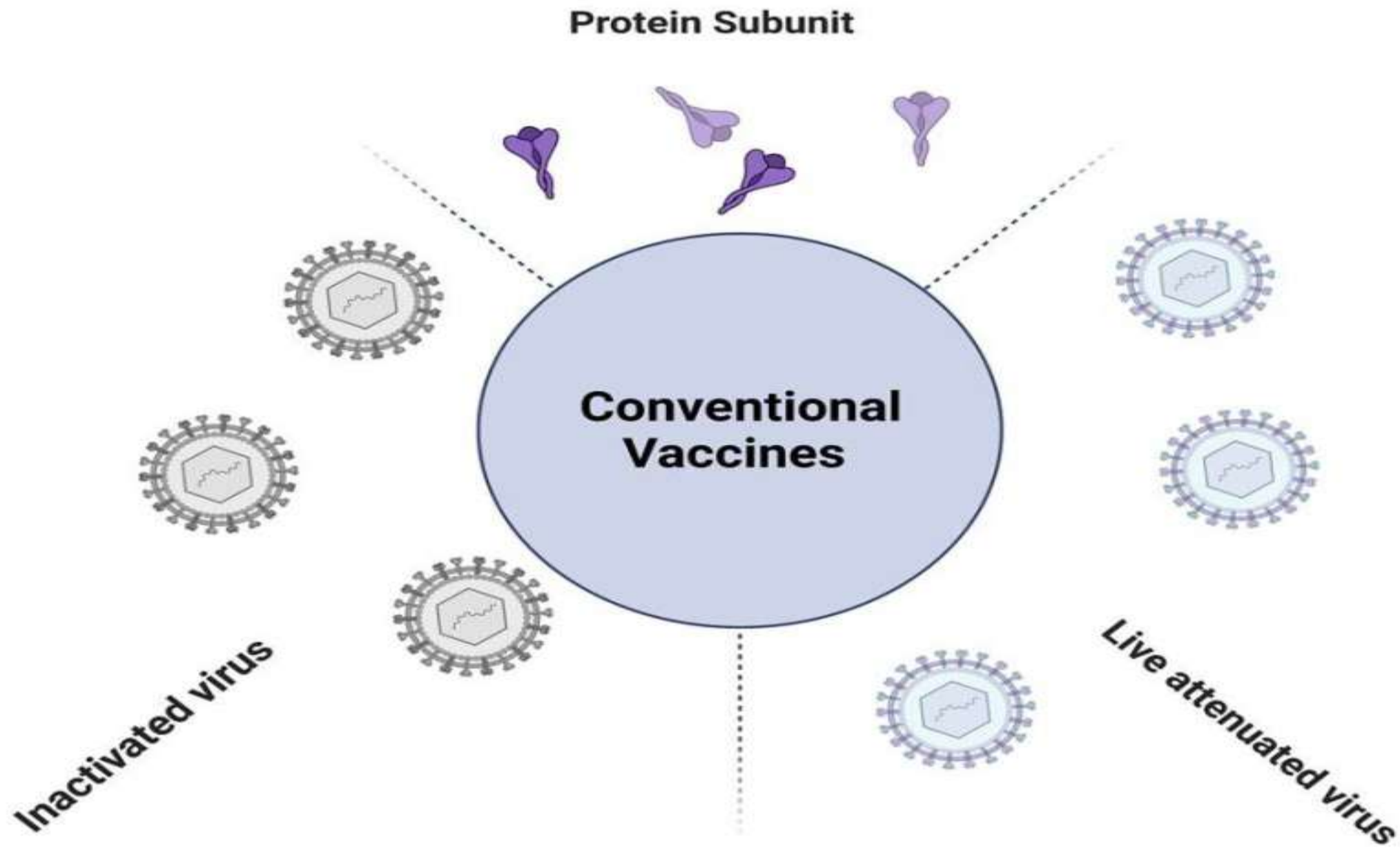
The SARS-Cov-2



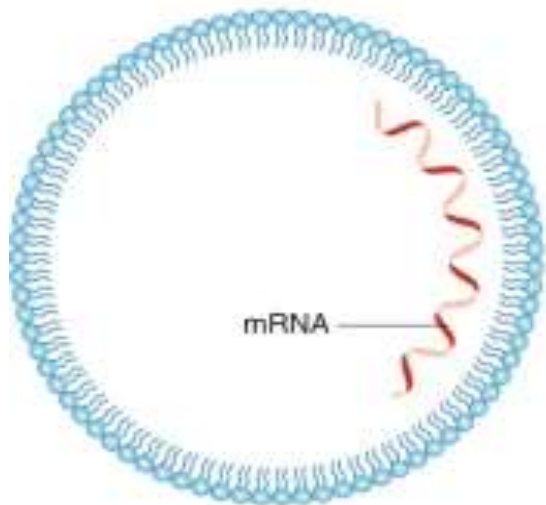




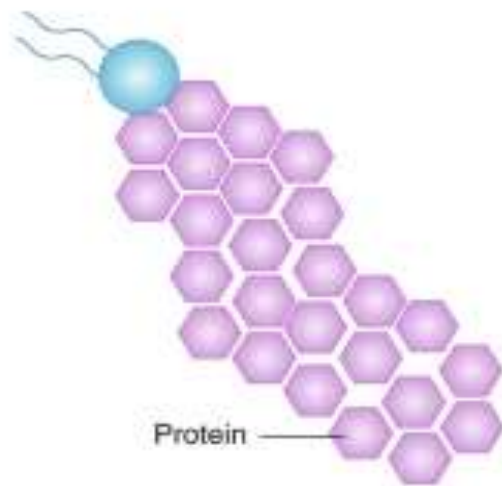




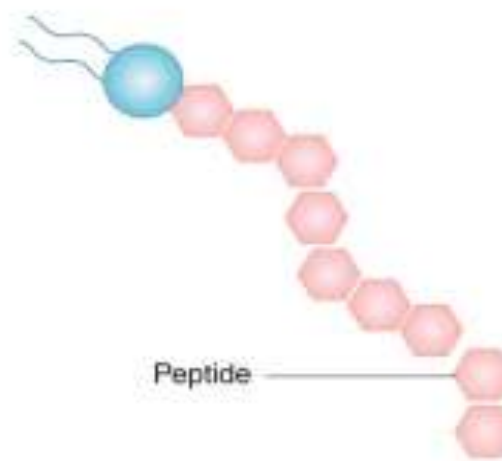
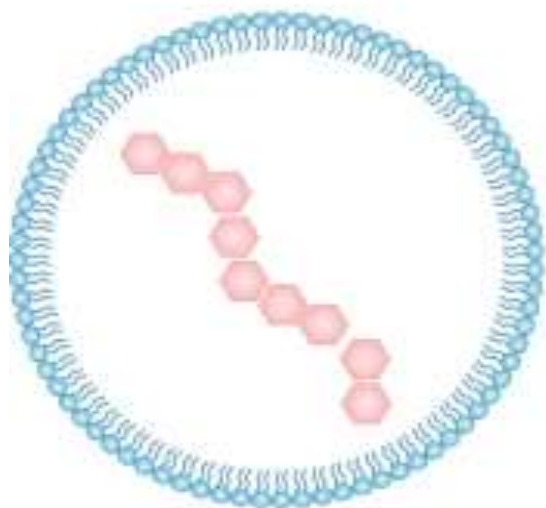
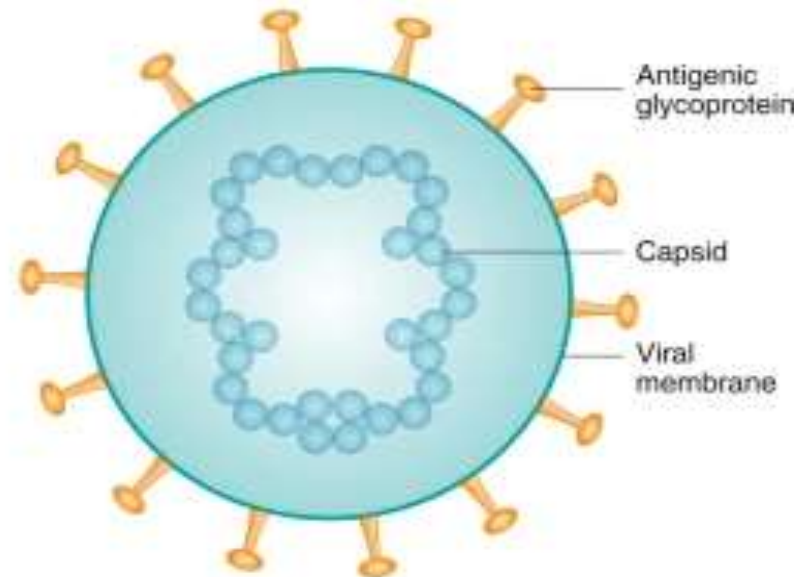
Lipid nanoparticles



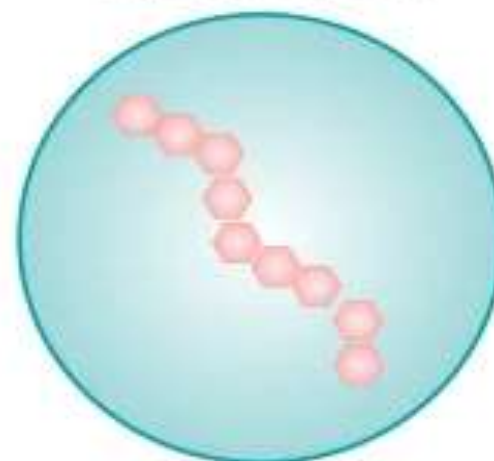
Lipid conjugates

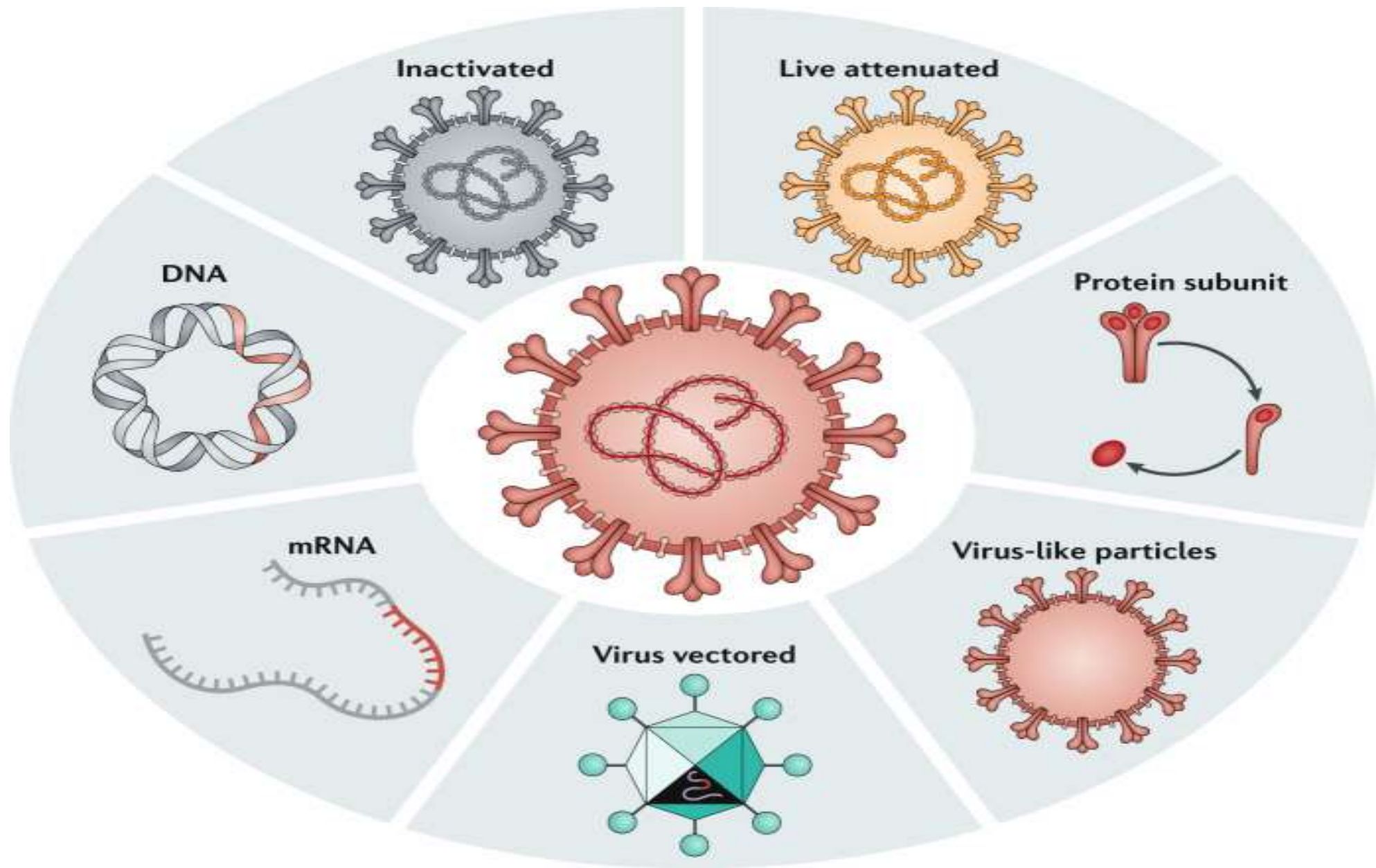


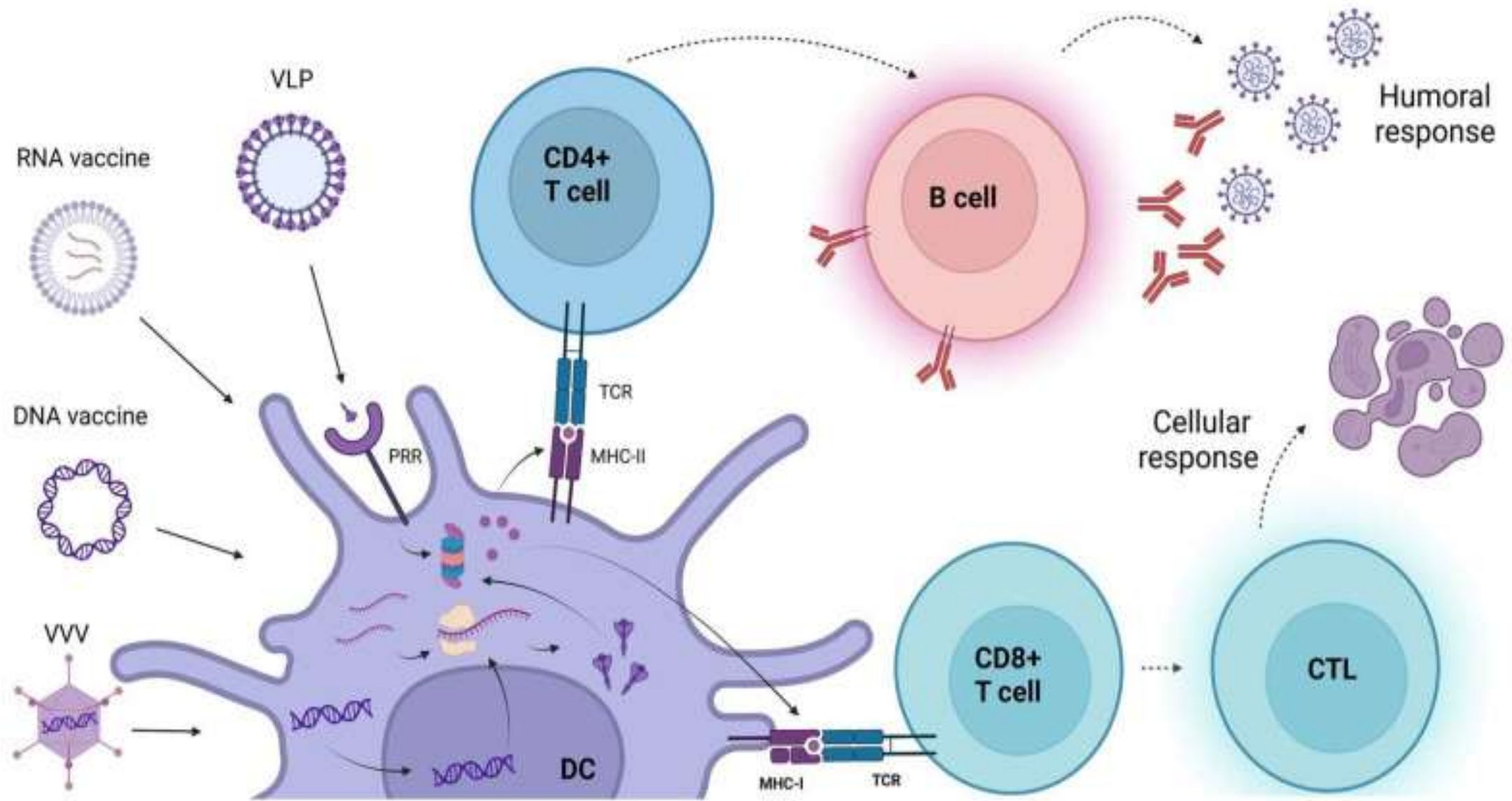
Virus-like particles

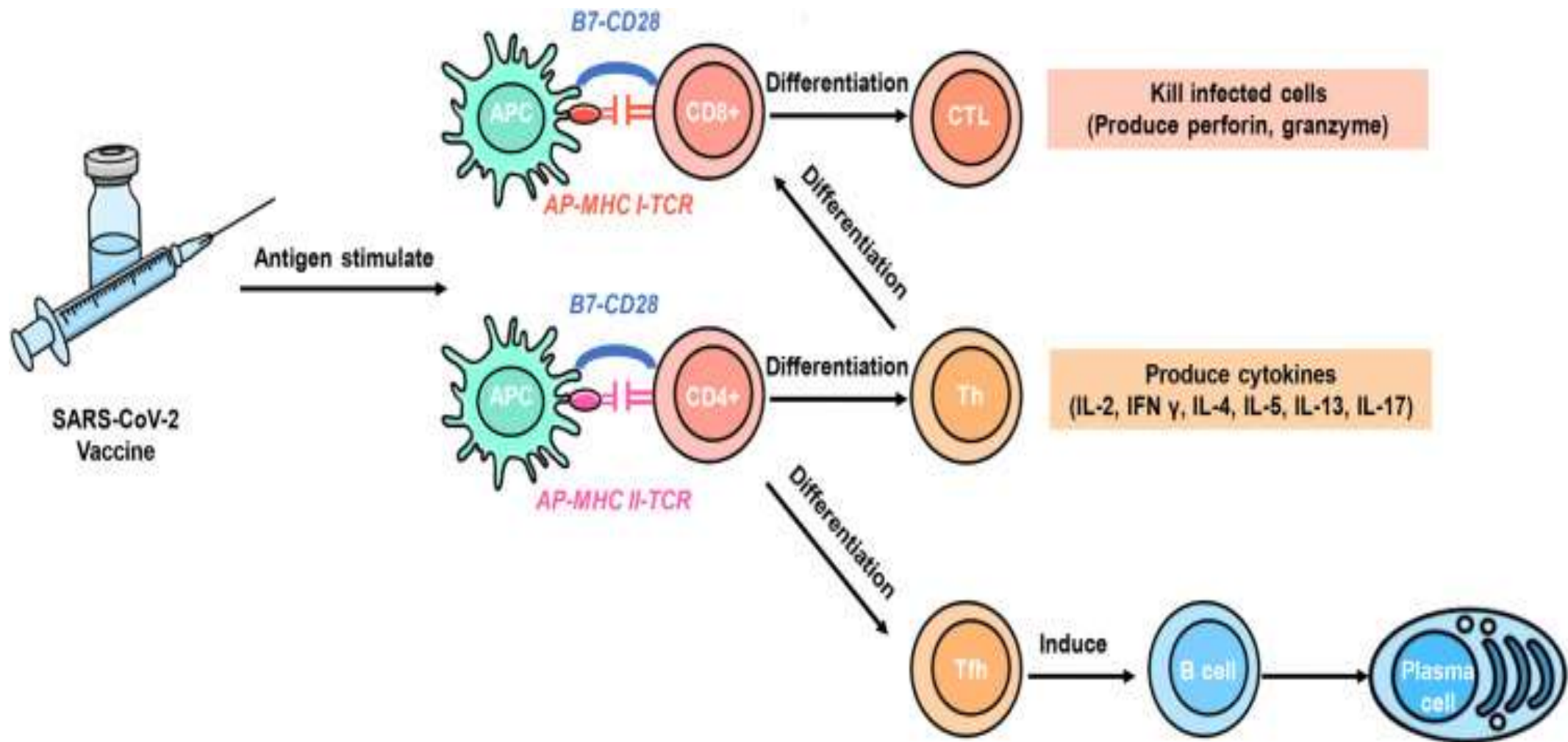


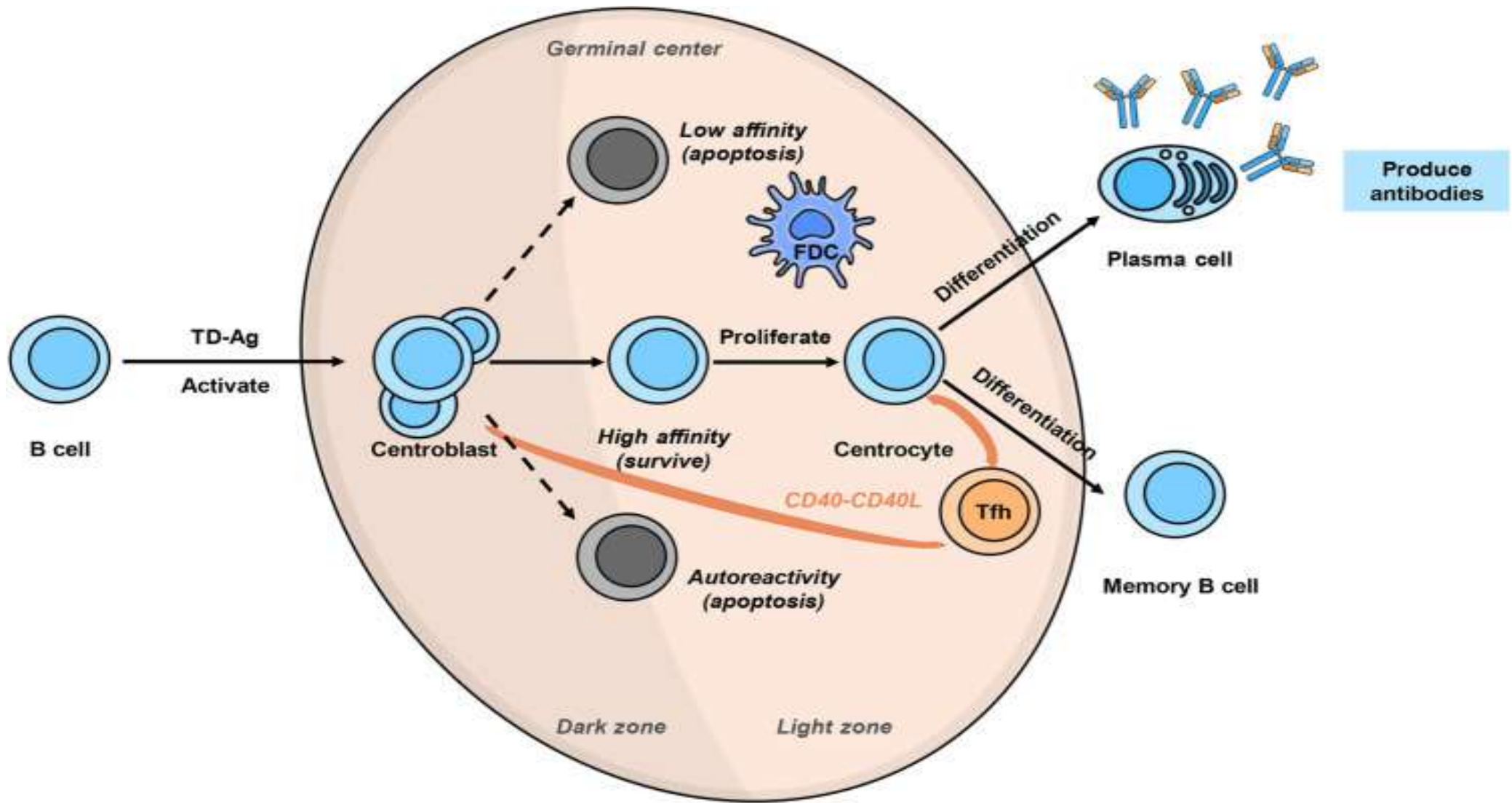
Polymeric nanoparticles

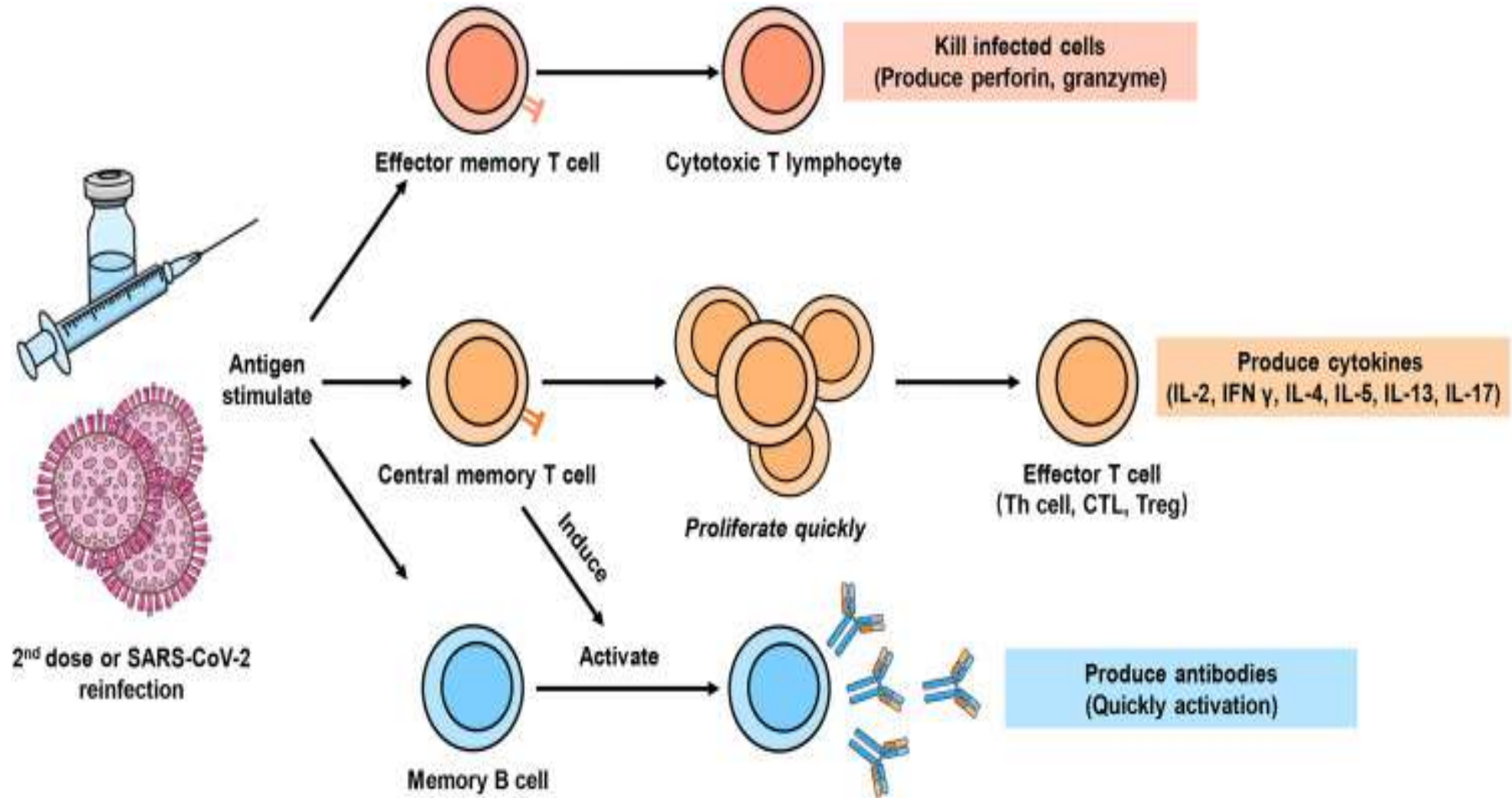






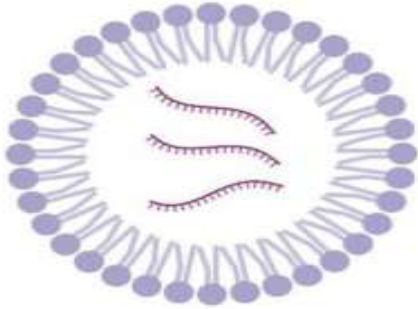






BNT162b2 (Comirnaty)
by Pfizer/BioNTech and Fosun Pharma

Lipid nanoparticle

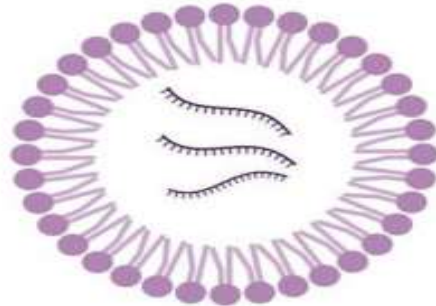


mRNA



mRNA-1273 (Spikevax)
by Moderna and NIAD

Lipid nanoparticle

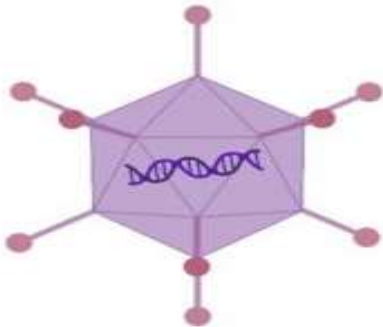


mRNA



Vaxzevria (ChAdOx1-S; AZD1222)
by AstraZeneca + University of Oxford

Chimpanzee Adenovirus Y25



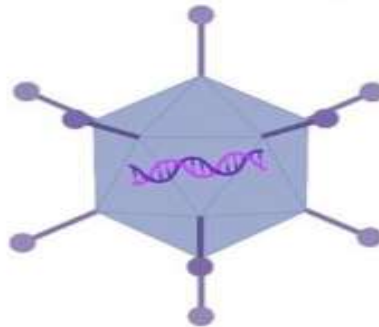
DNA



Ad26.COVS.S

by Janssen Pharmaceutical

Human Adenovirus type 26

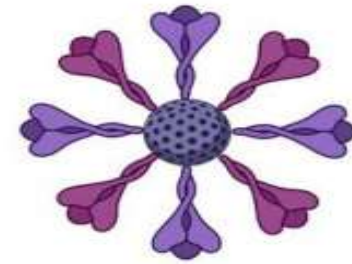


DNA



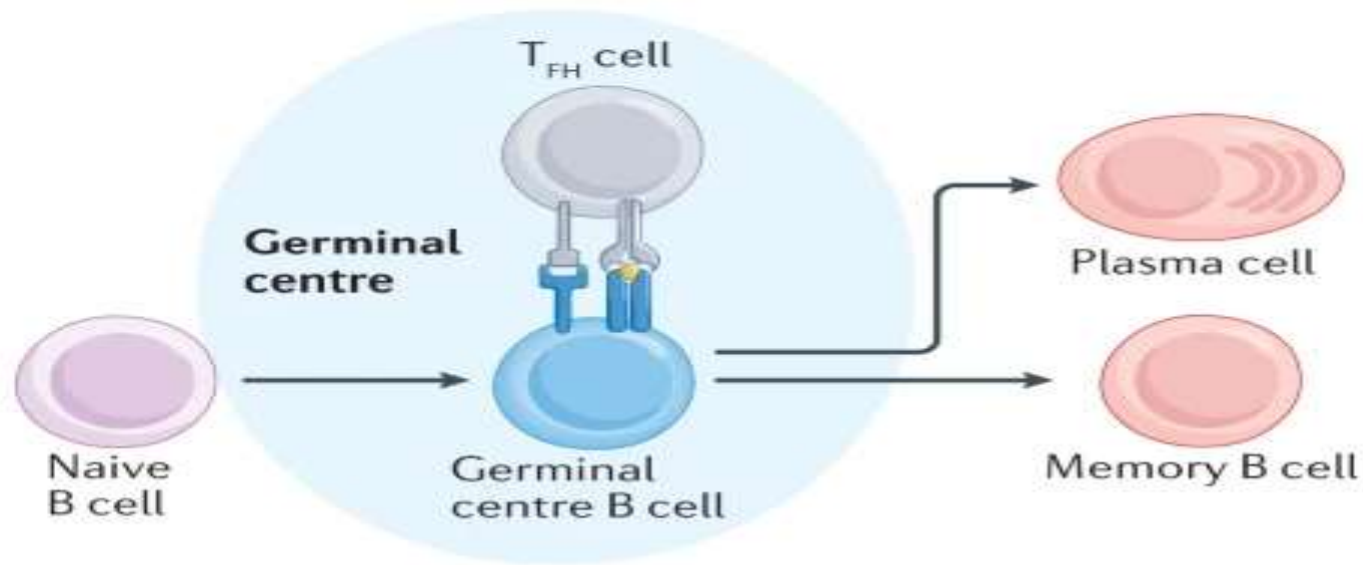
Nuvaxoid (NVX-CoV2373)
by Novavax

Proteic Nanoparticle with Spike protein



Matrix M

a Uninfected individual dose 1

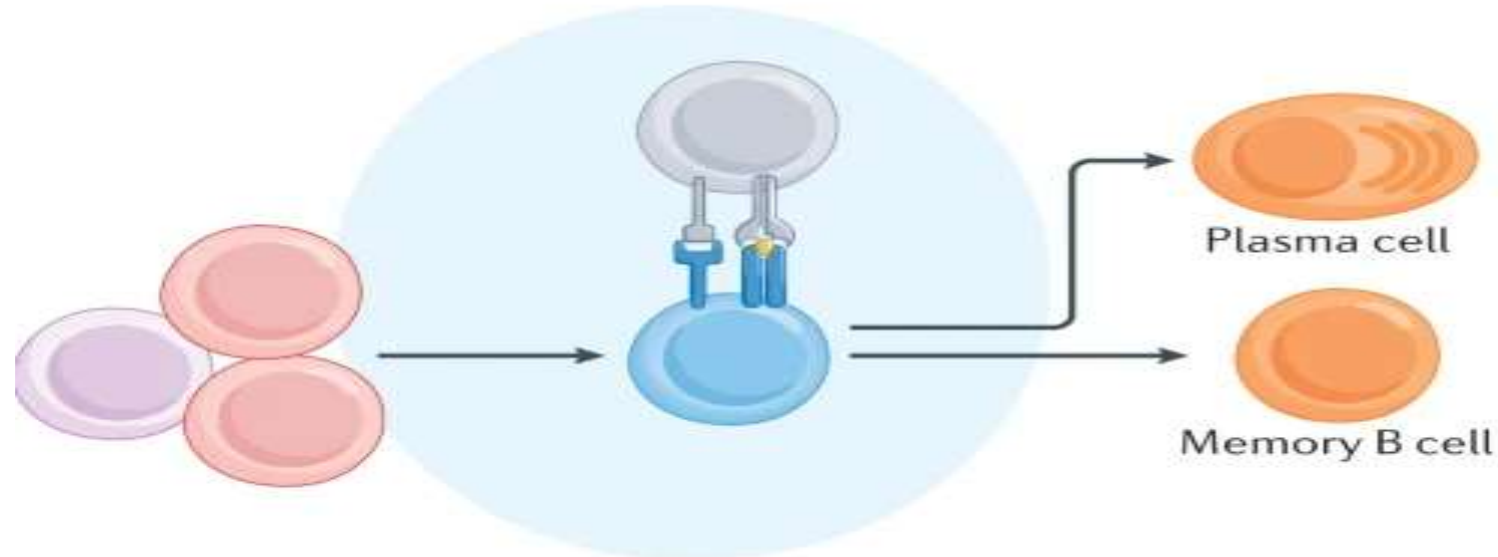


Response magnitude	++
--------------------	----

Neutralizing activity	++
-----------------------	----

Neutralizing breadth	+
----------------------	---

b Uninfected individual dose 2

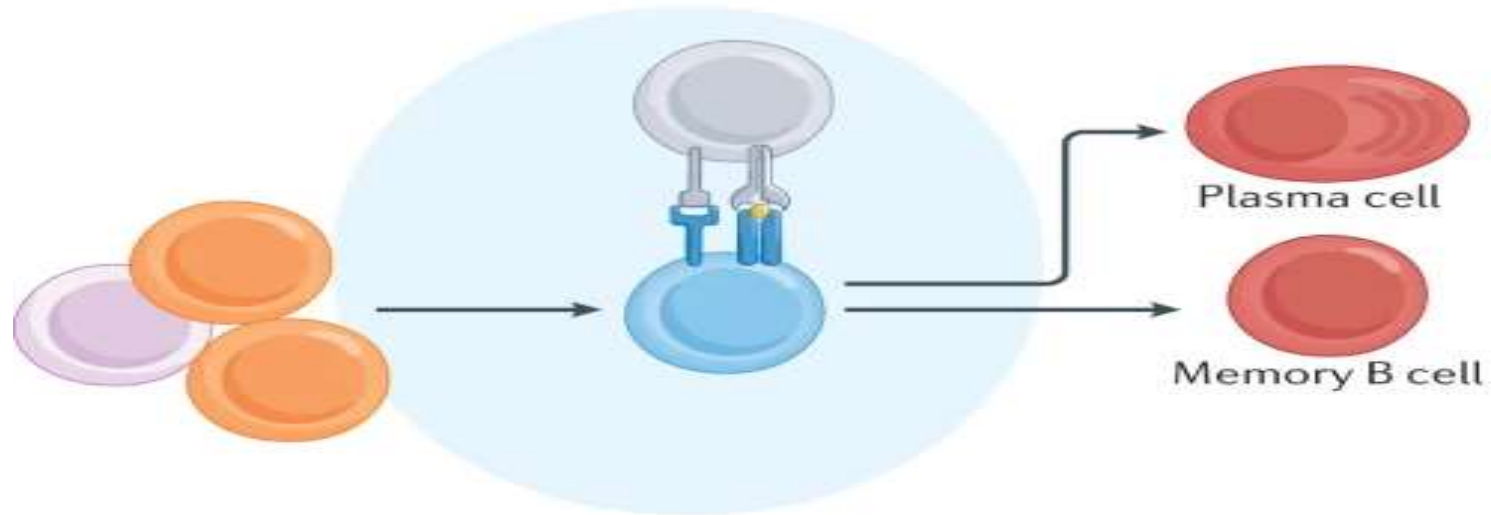


Response magnitude	+++
--------------------	-----

Neutralizing activity	+++
-----------------------	-----

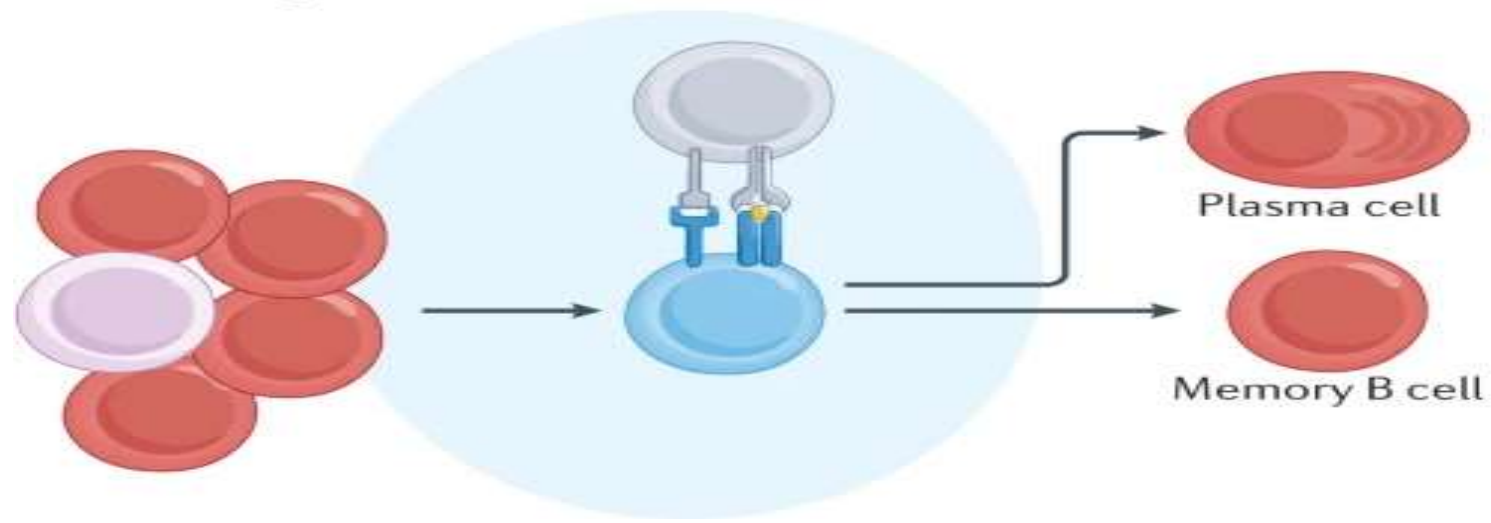
Neutralizing breadth	++
----------------------	----

c Previously infected individual dose 1

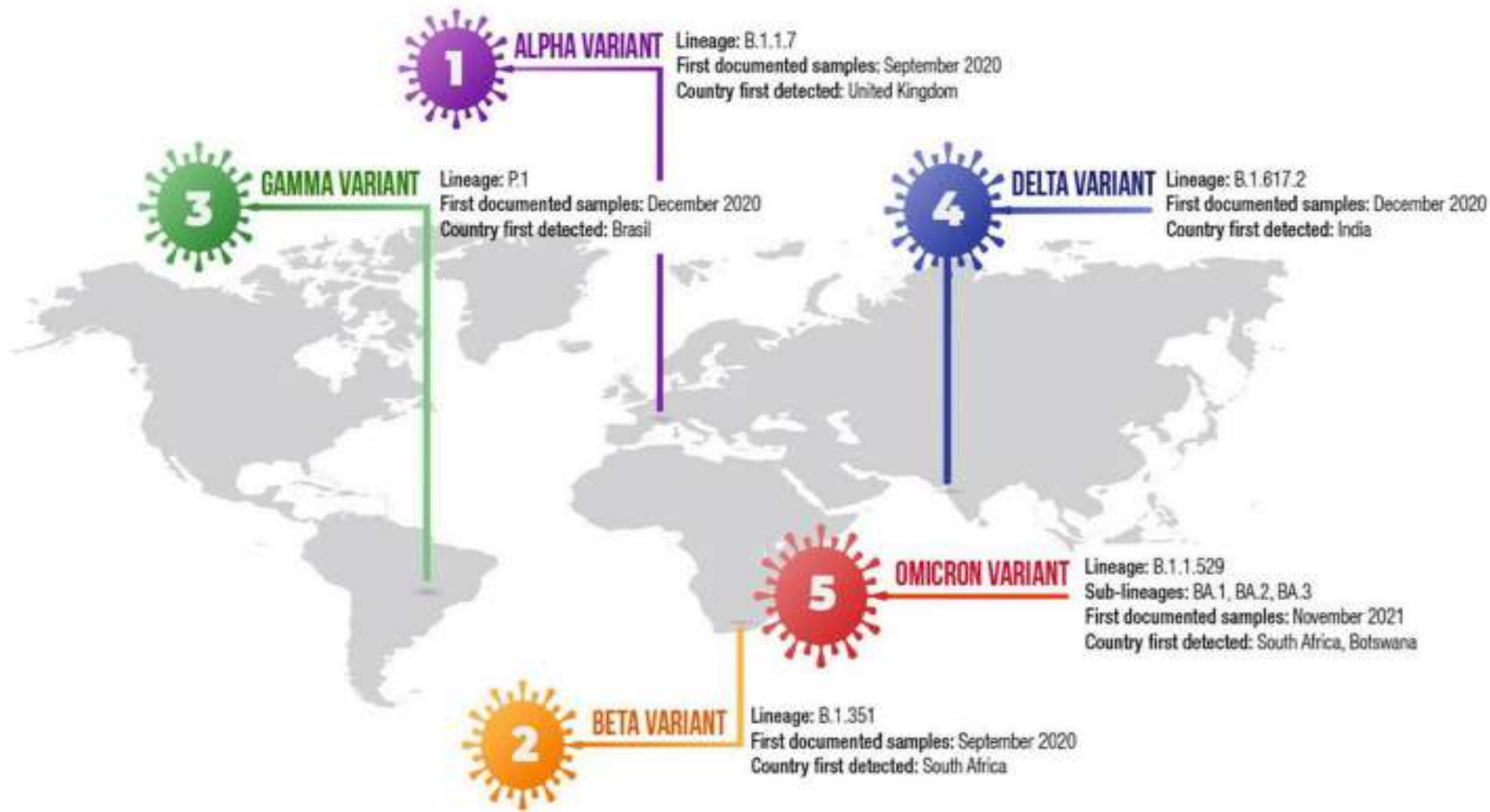


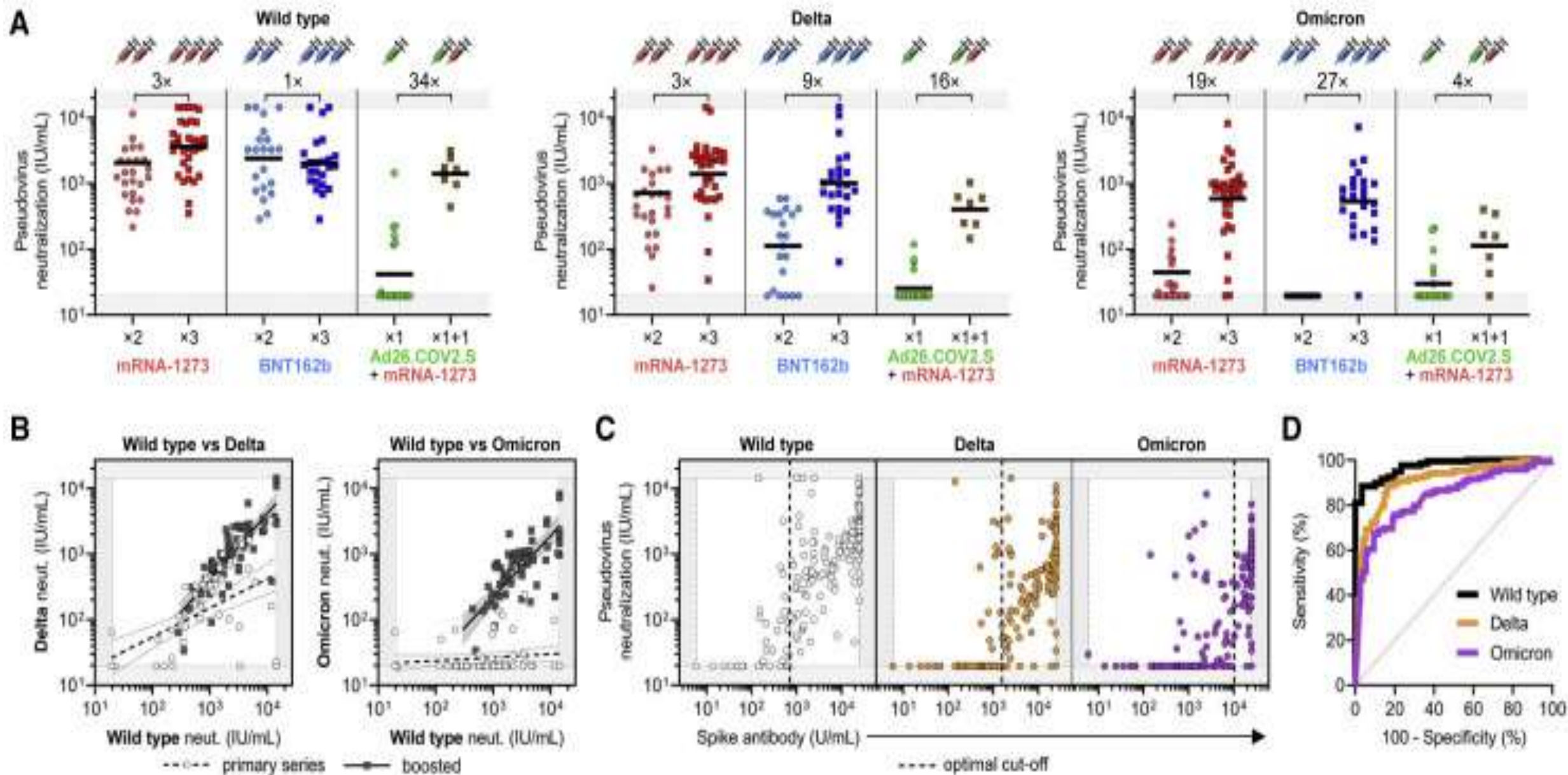
Response magnitude	+++
Neutralizing activity	+++
Neutralizing breadth	+++

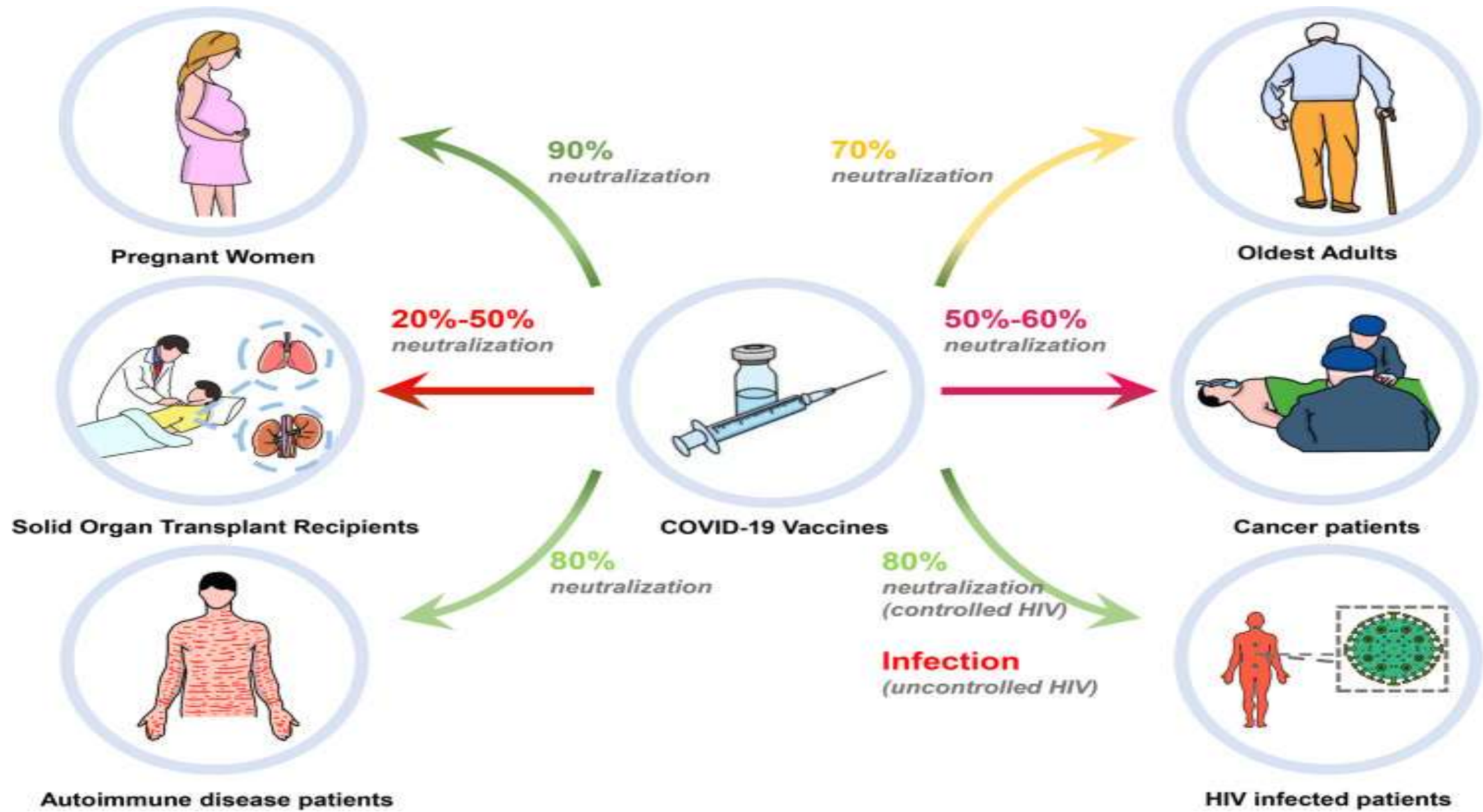
d Previously infected individual dose 2

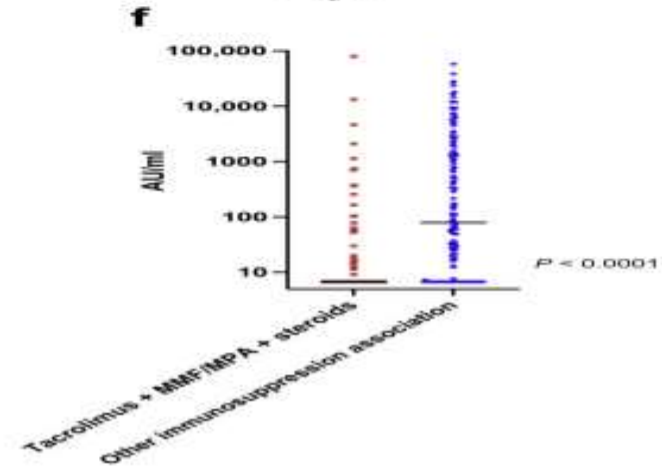
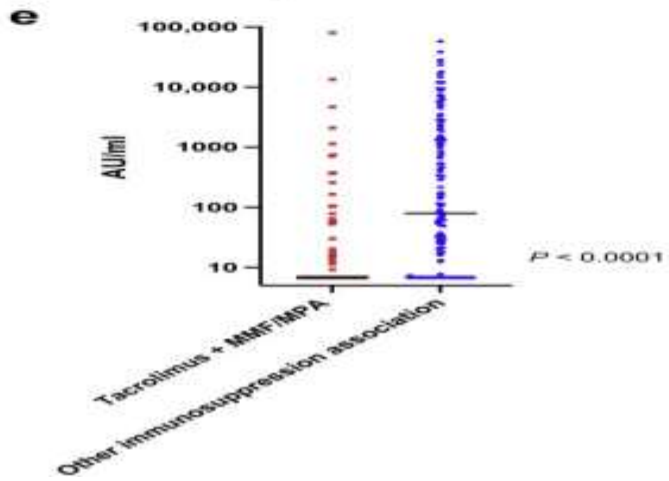
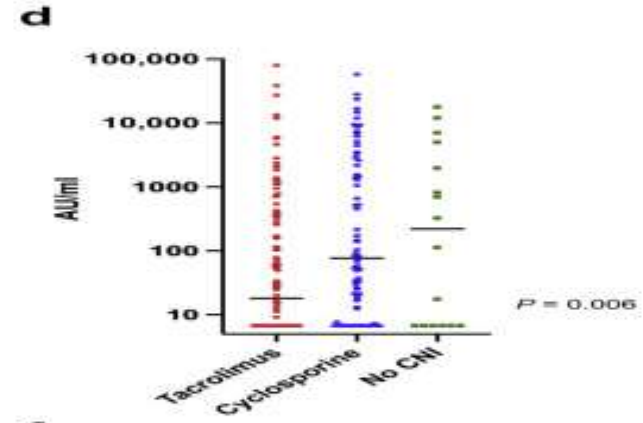
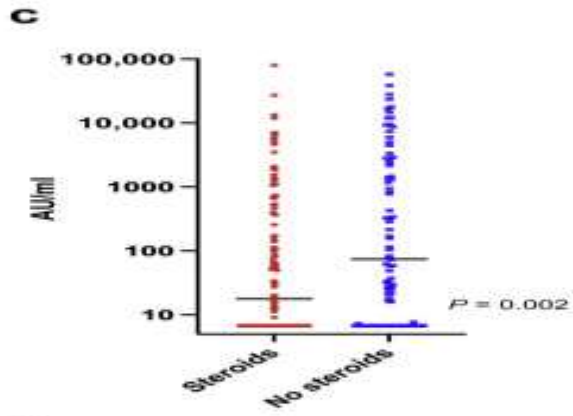
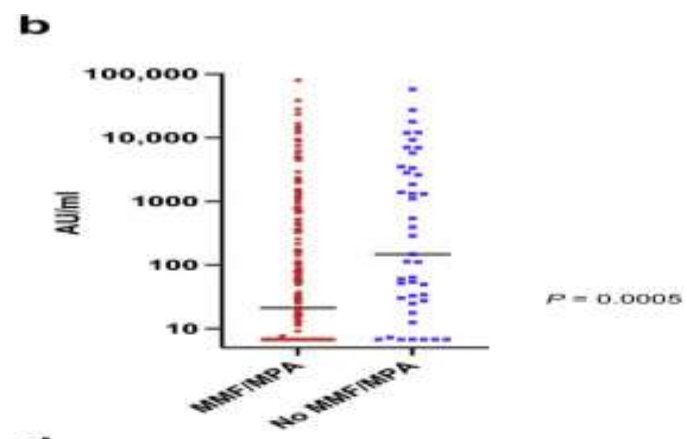
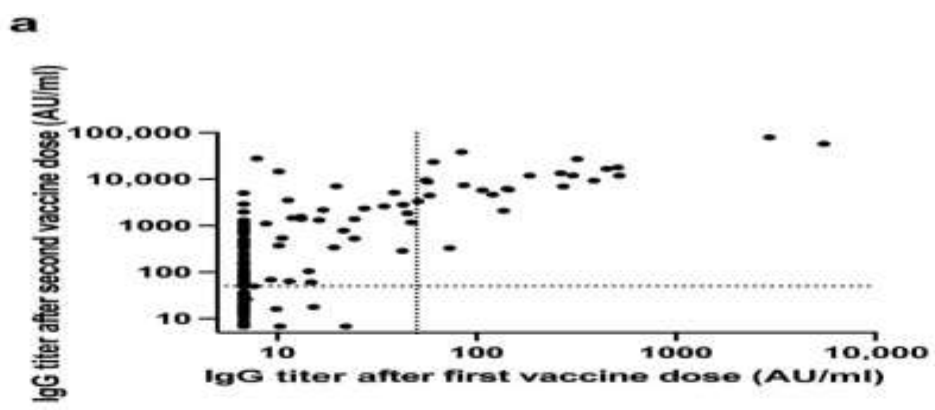


Response magnitude	+++
Neutralizing activity	+++
Neutralizing breadth	+++

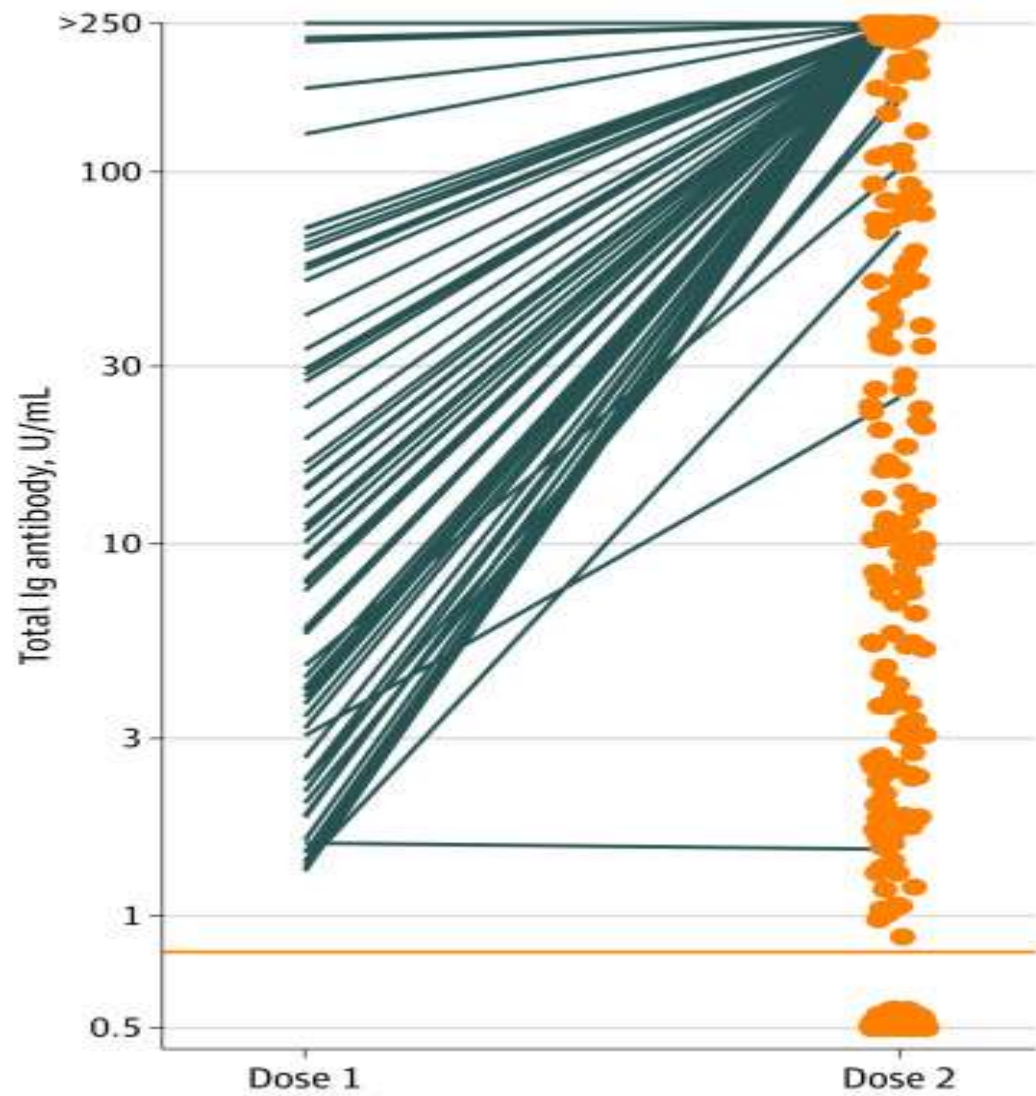




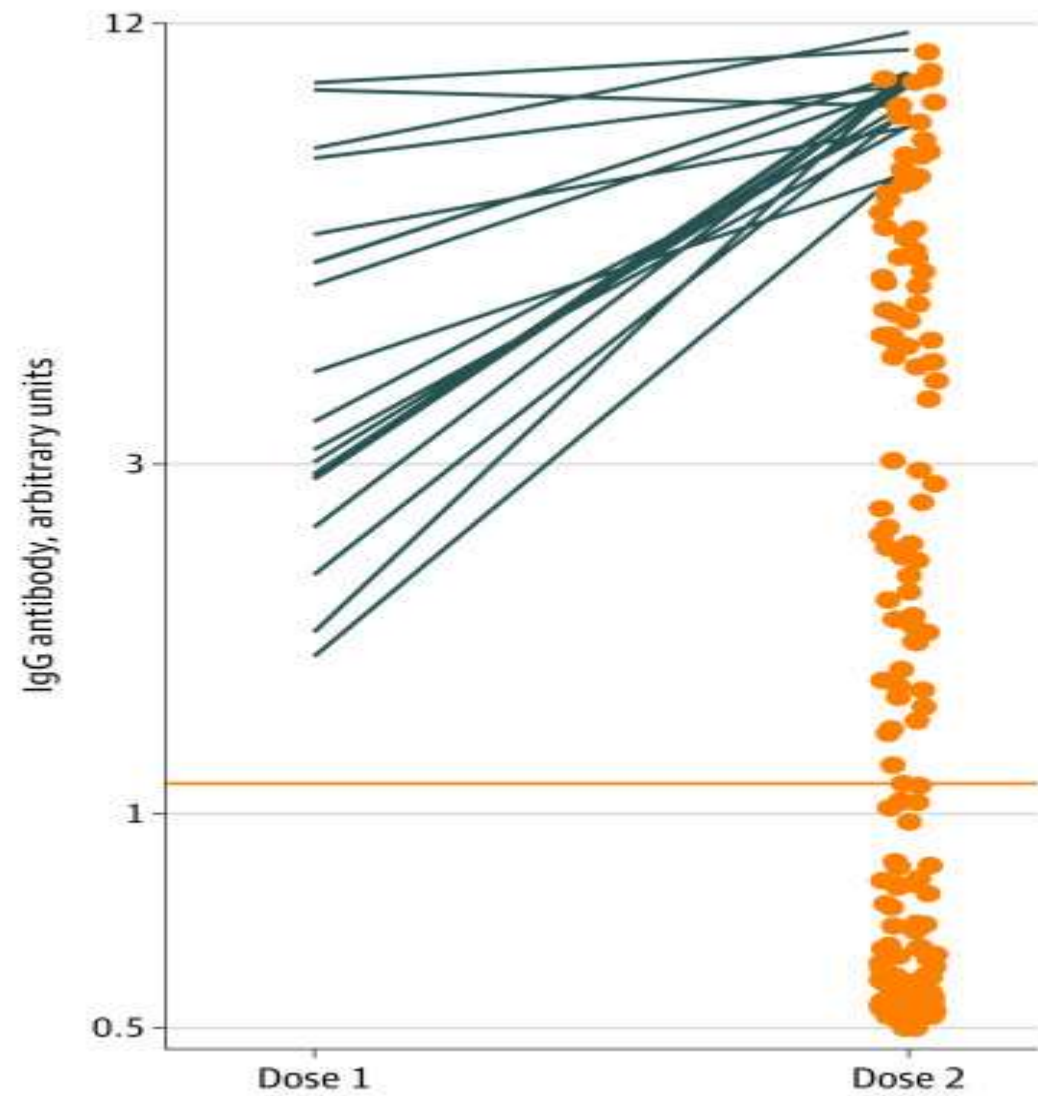


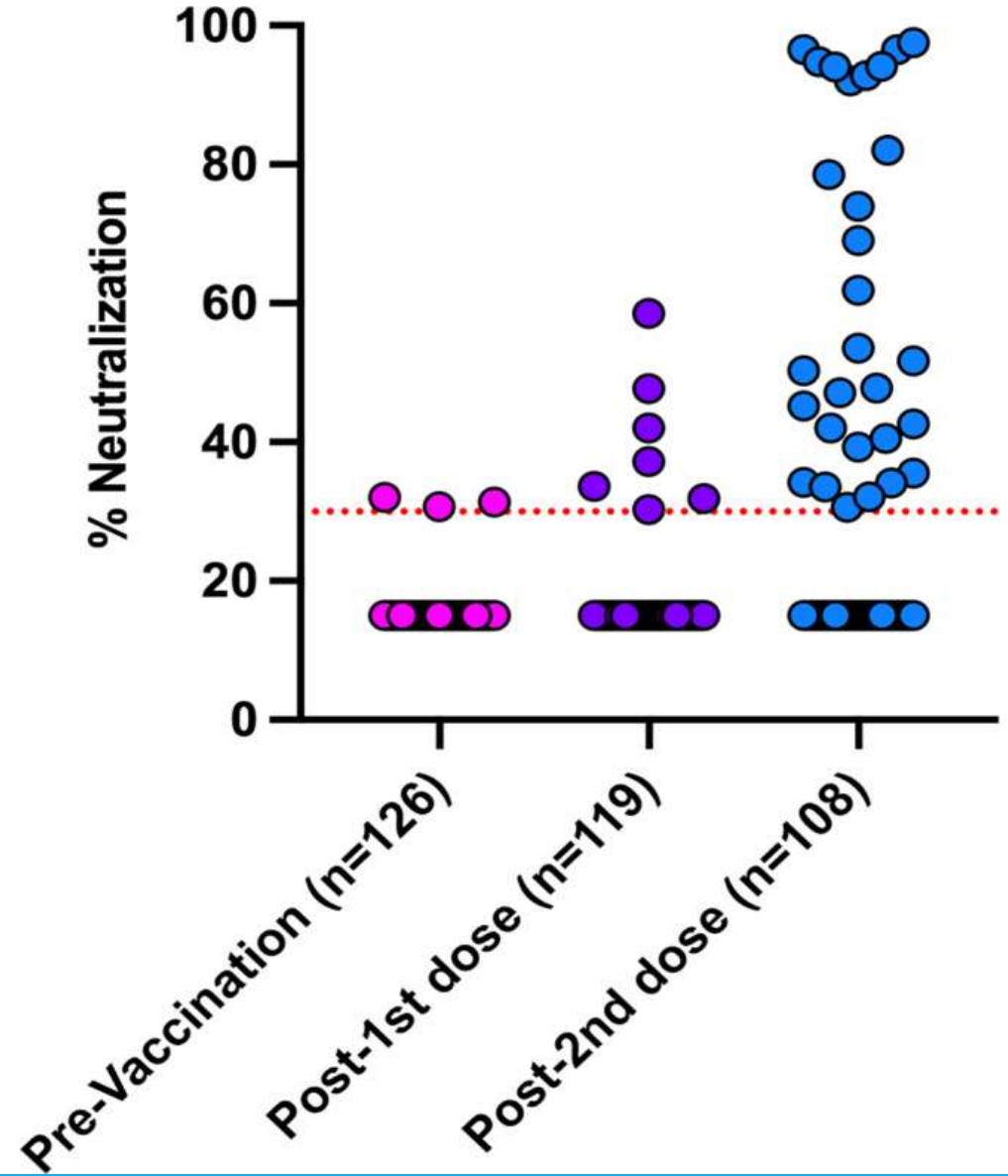
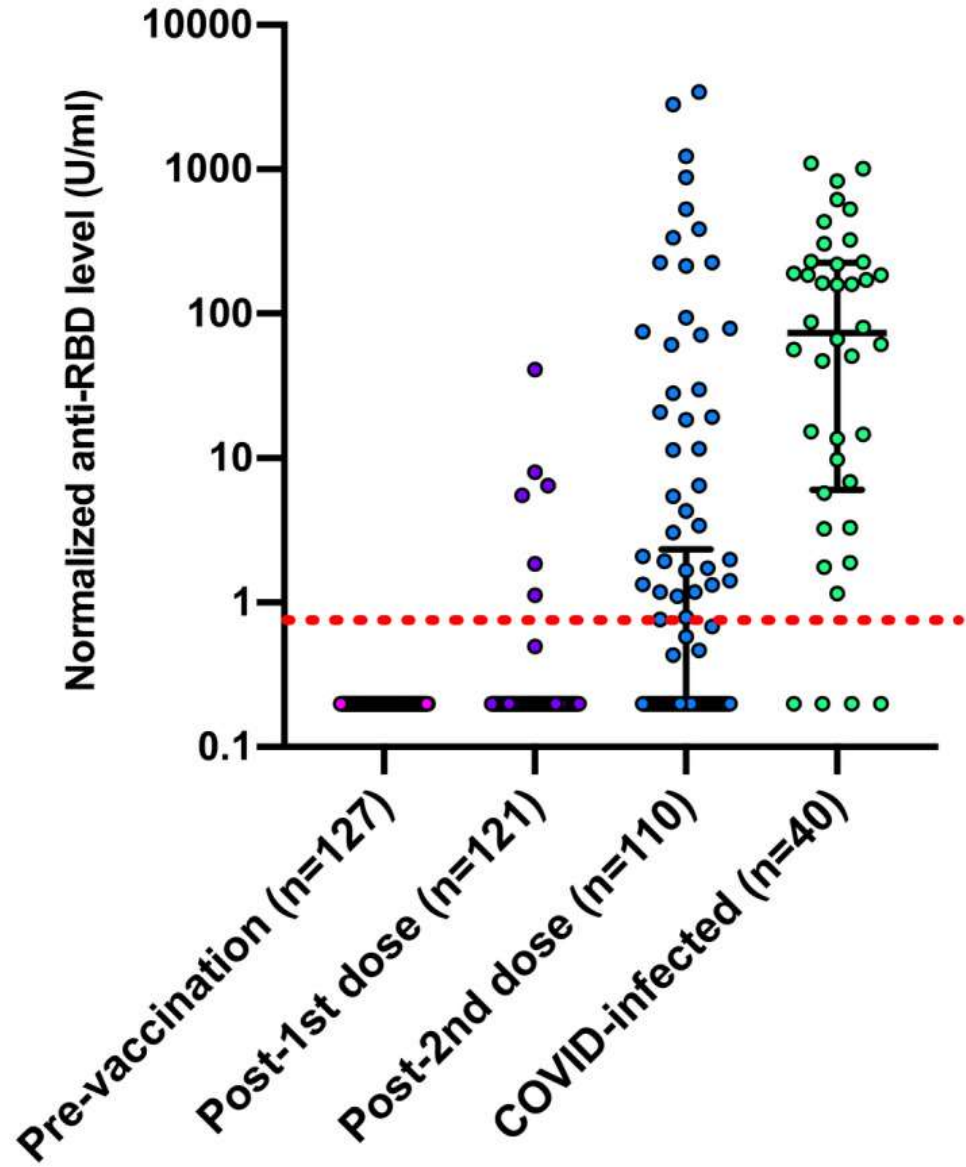


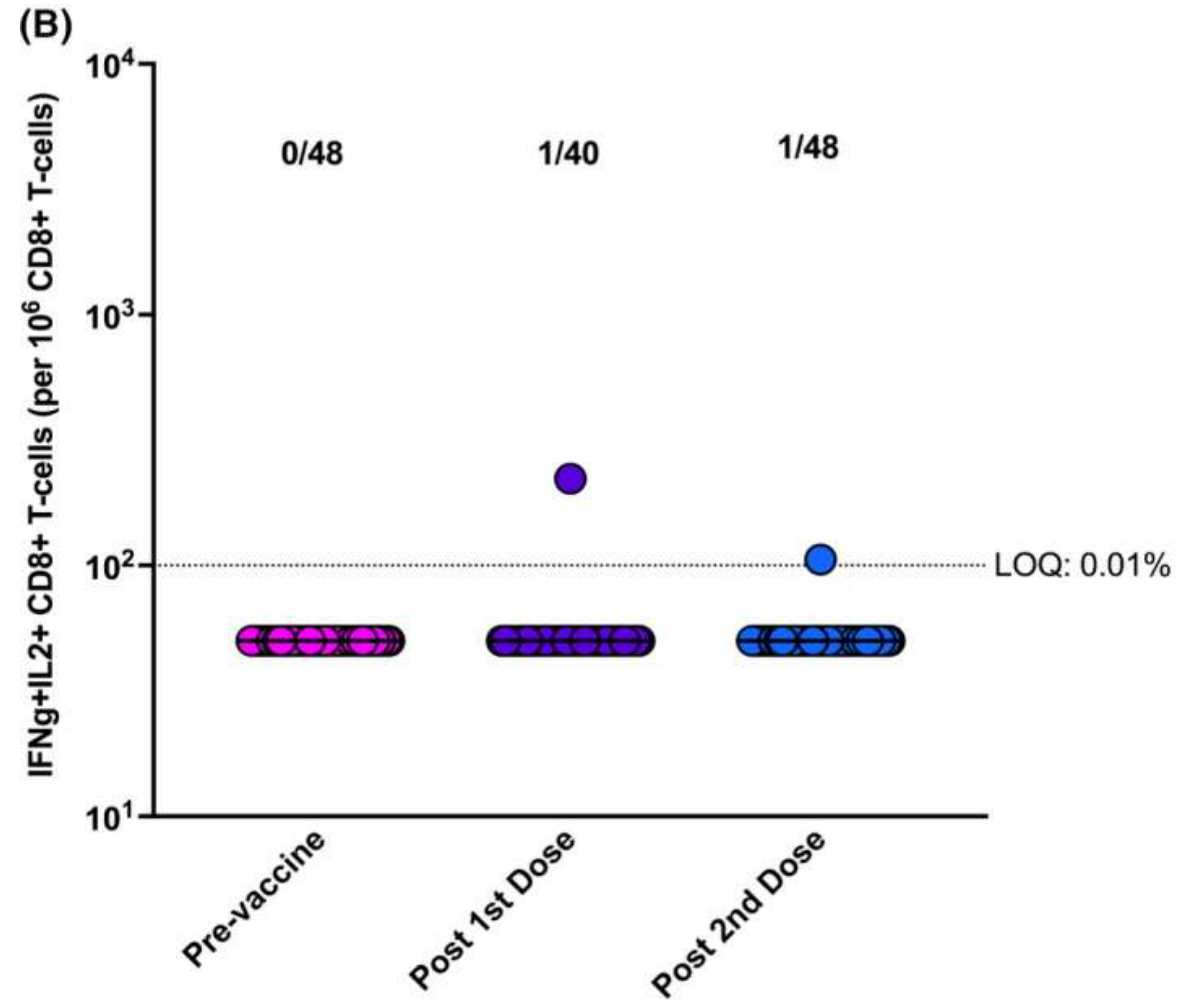
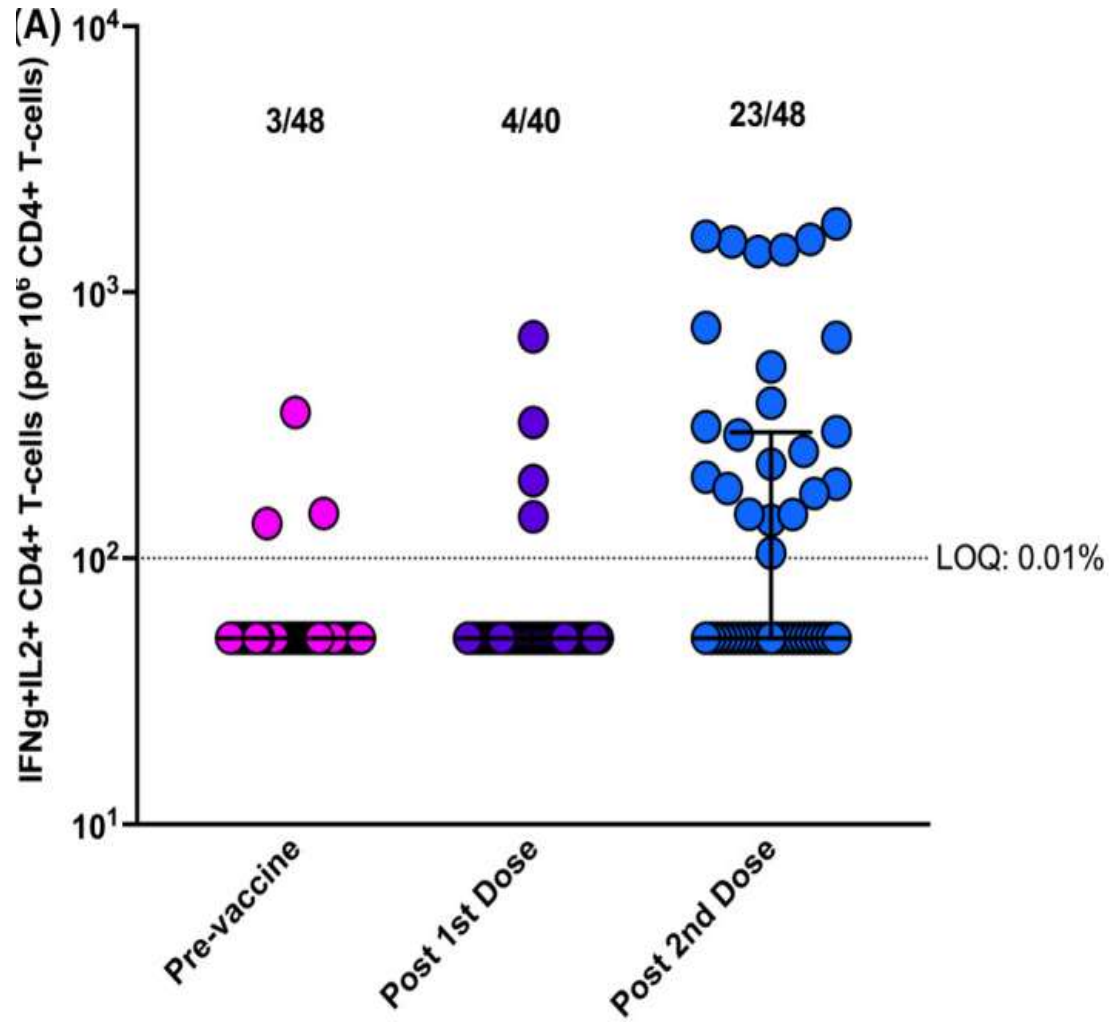
A Anti-receptor-binding domain of SARS-CoV-2 spike protein

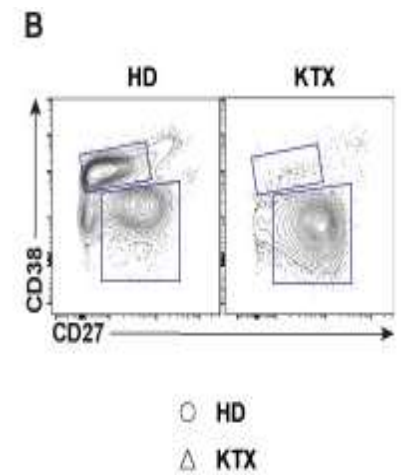
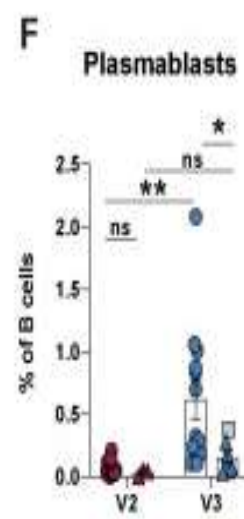
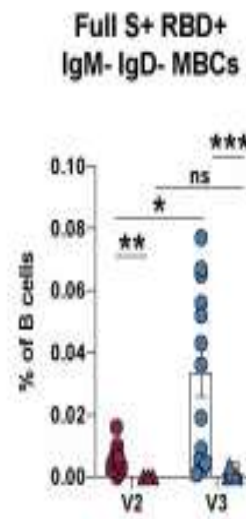
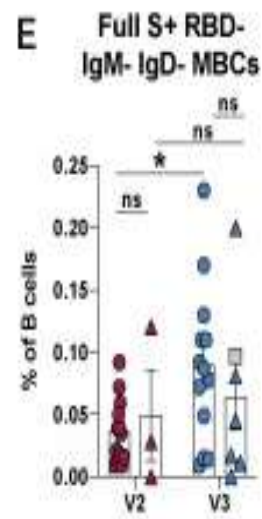
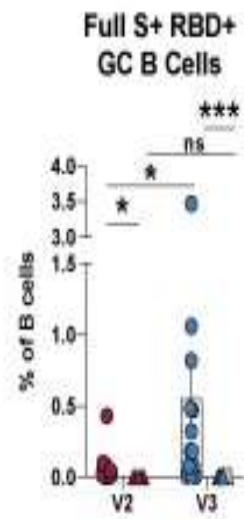
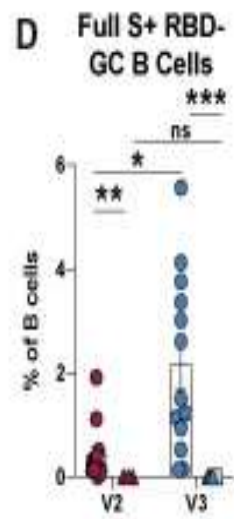
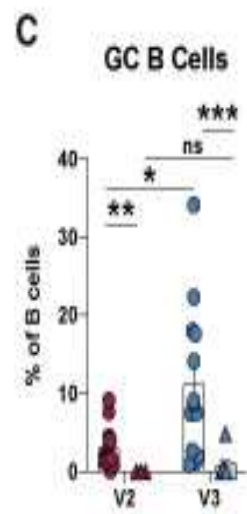
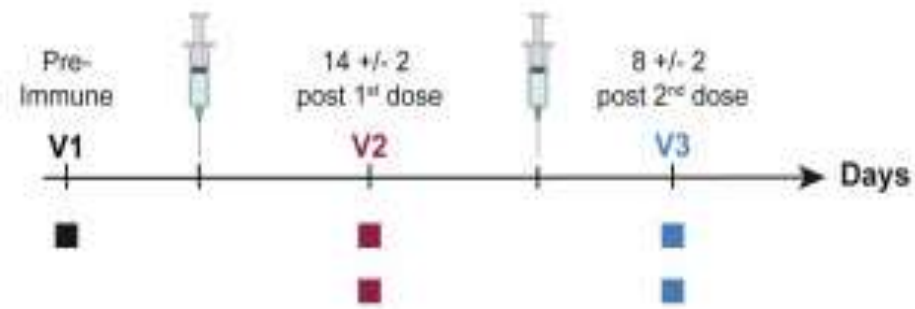


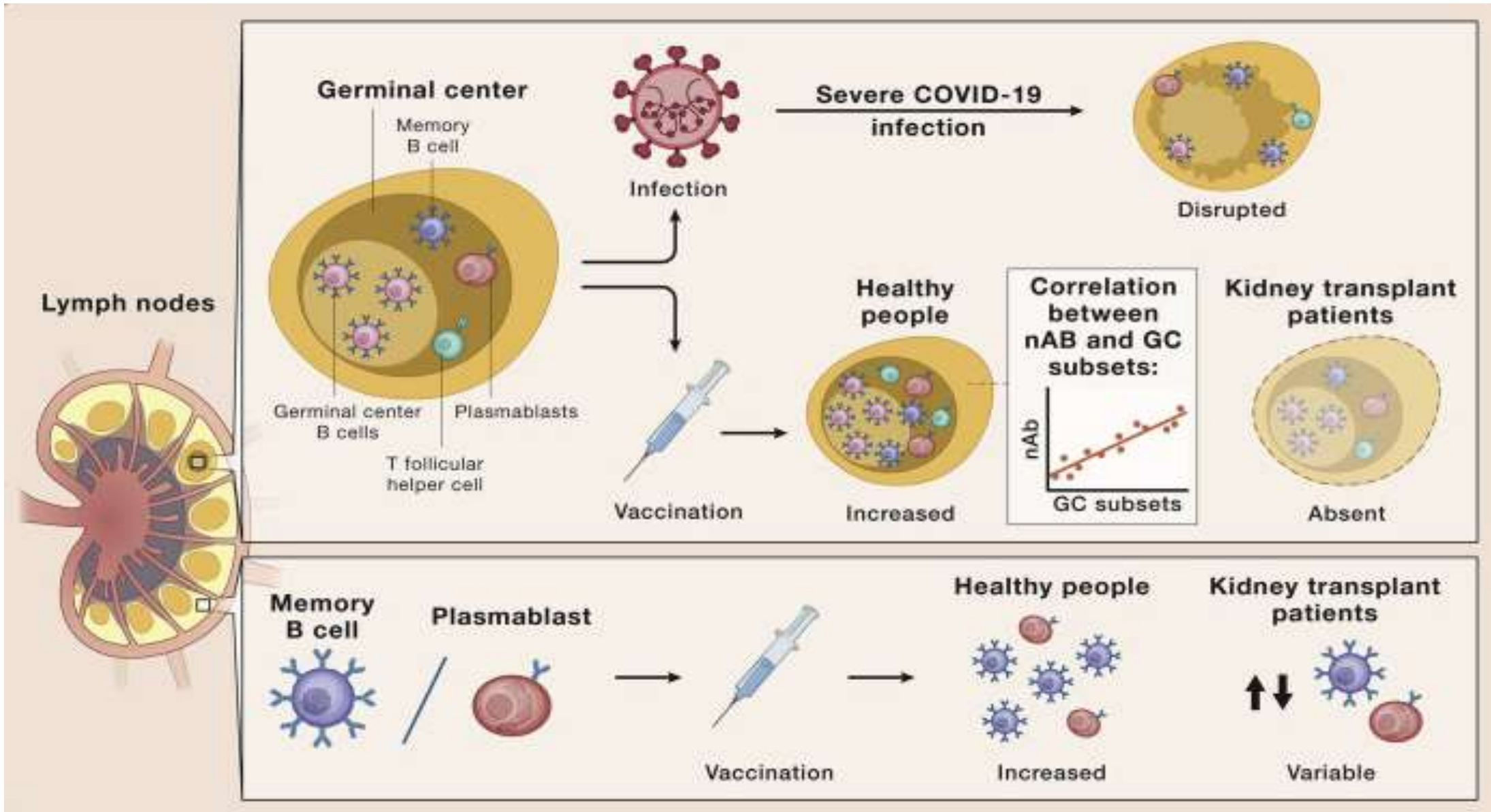
B Anti-S1 domain of SARS-CoV-2 spike protein









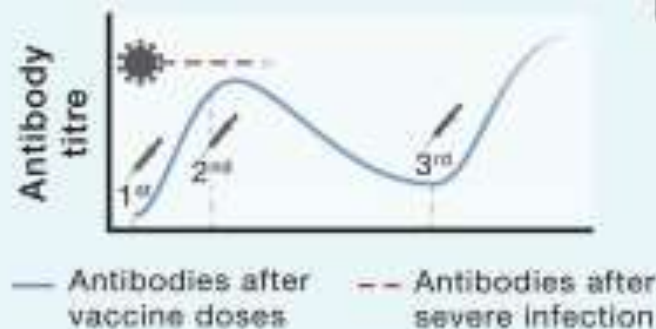


Serum antibodies



Magnitude

Similar antibody levels after vaccination versus severe COVID-19 infection:



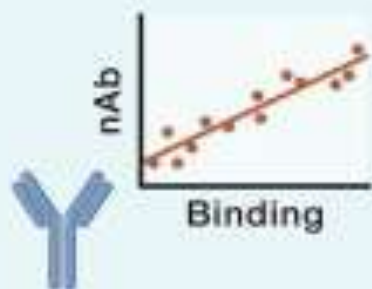
Kidney transplant patients



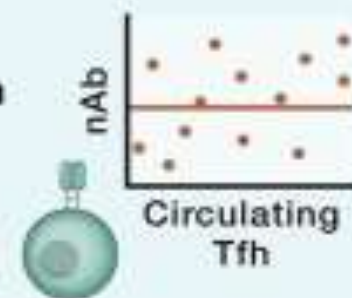
Variable

Correlations

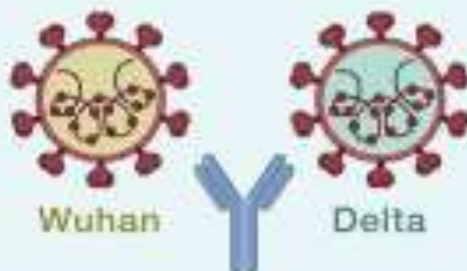
Correlation between Spike/RBD binding IgG and nAb:



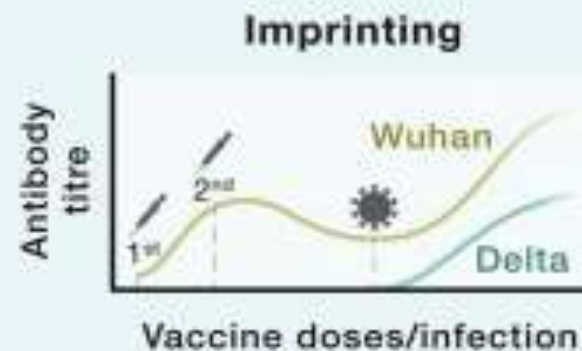
No correlation between circulating Tfh and nAb:

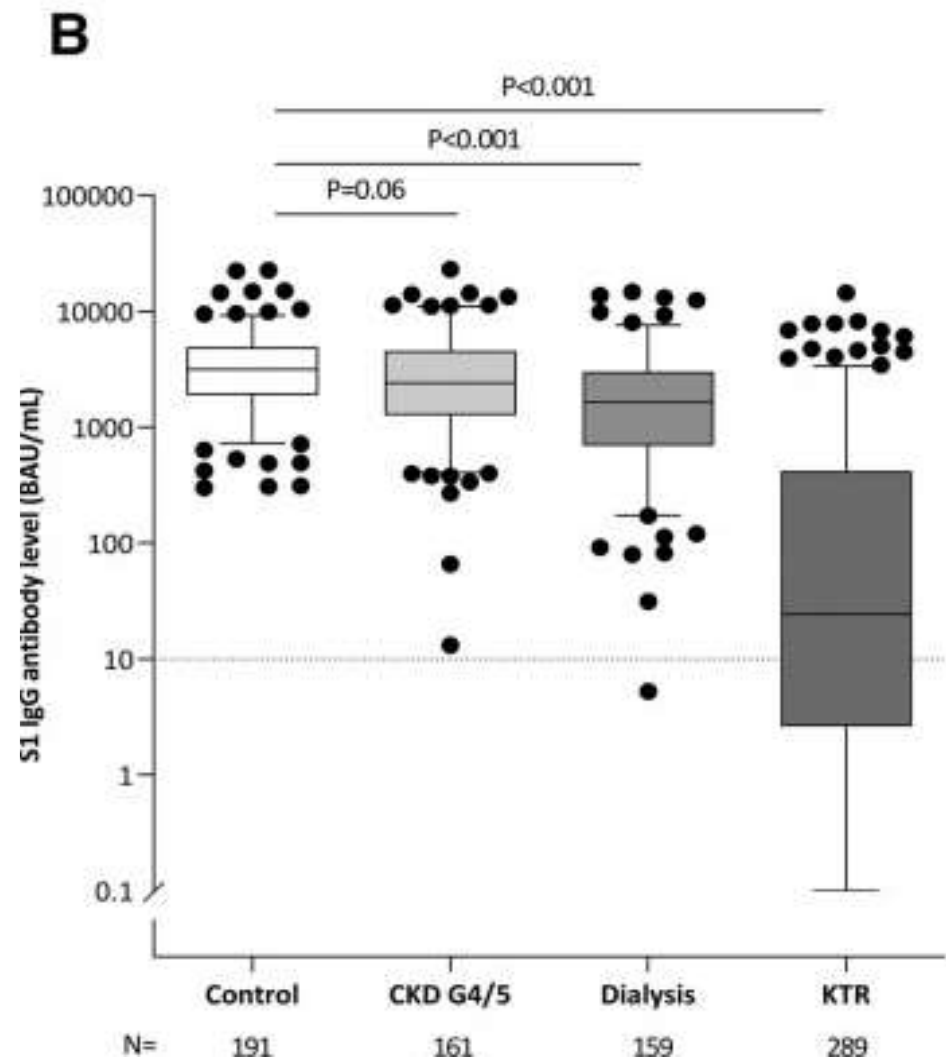
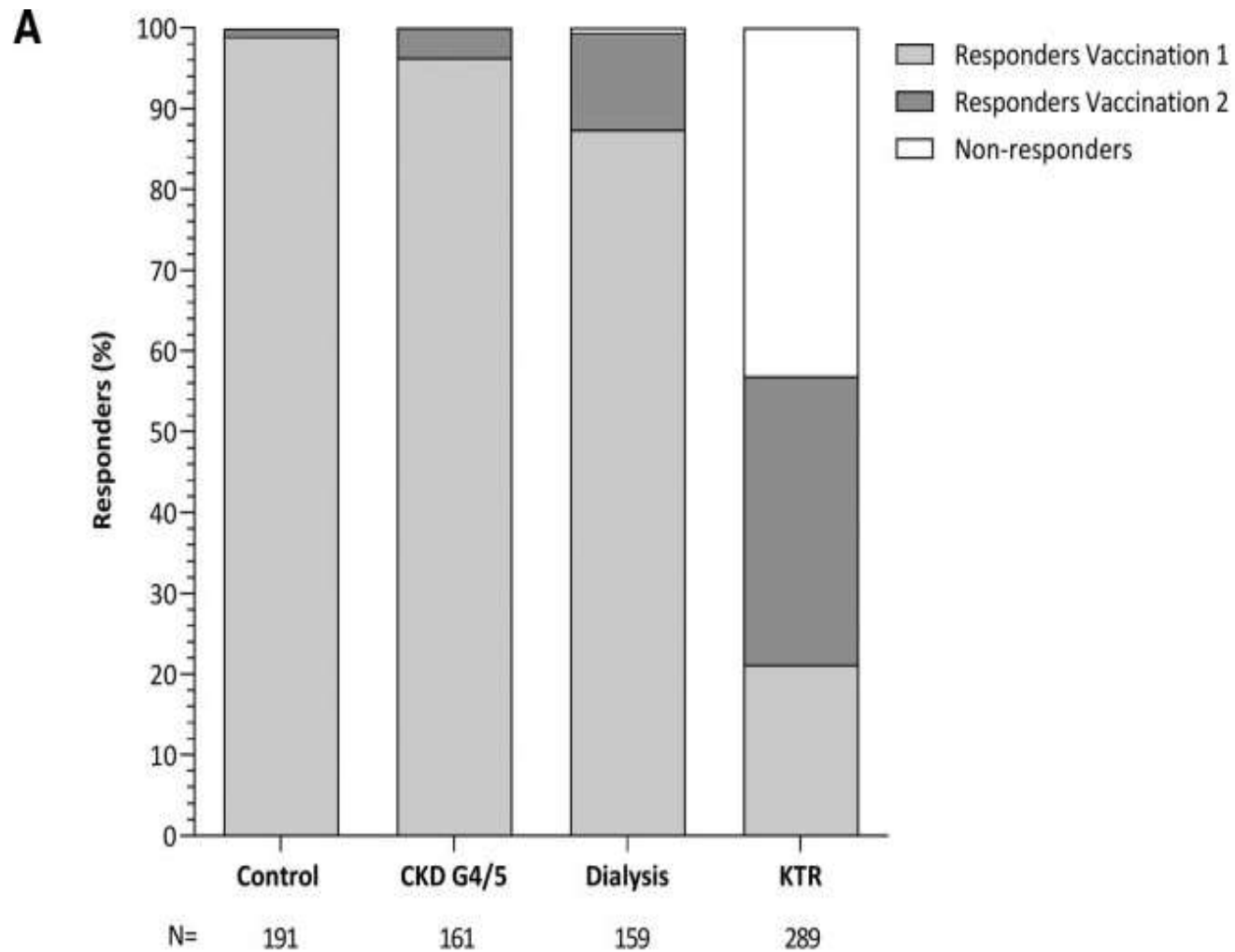


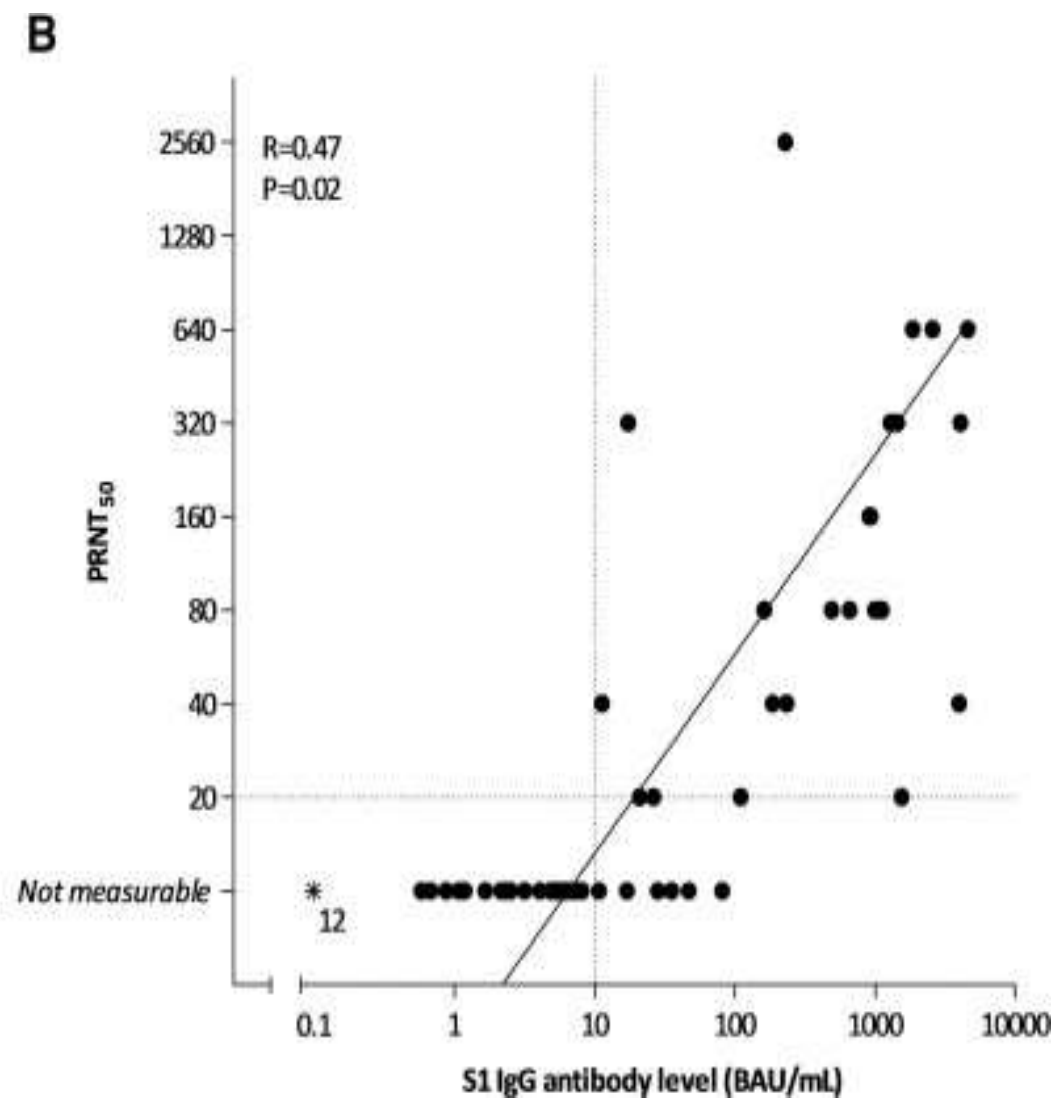
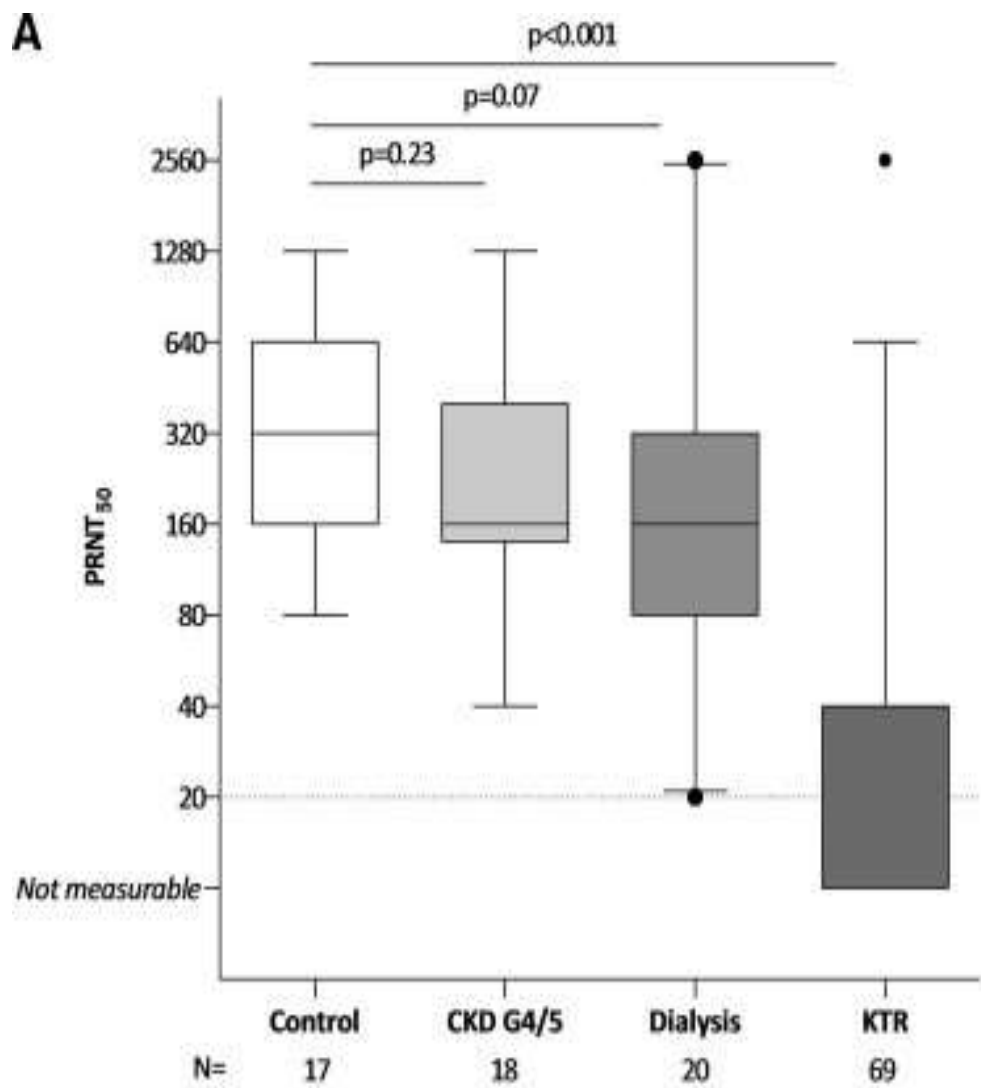
Breadth

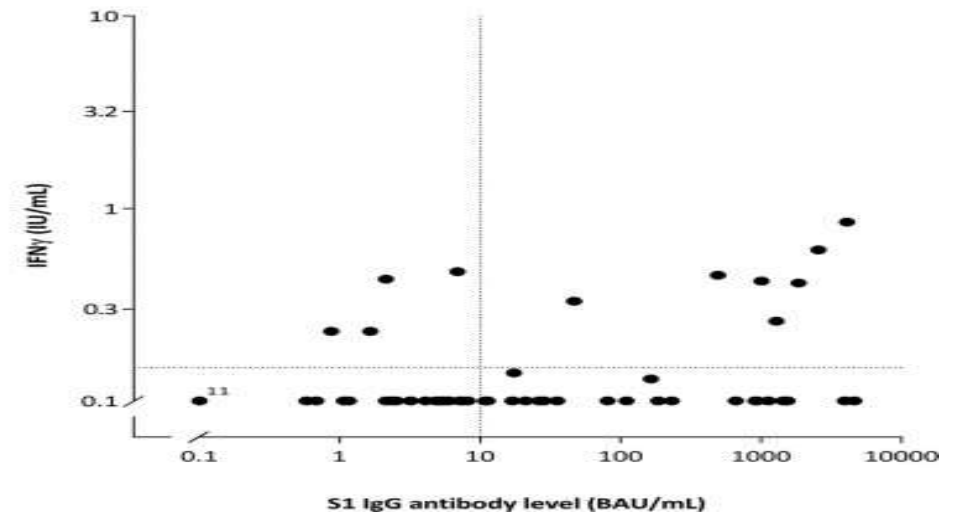
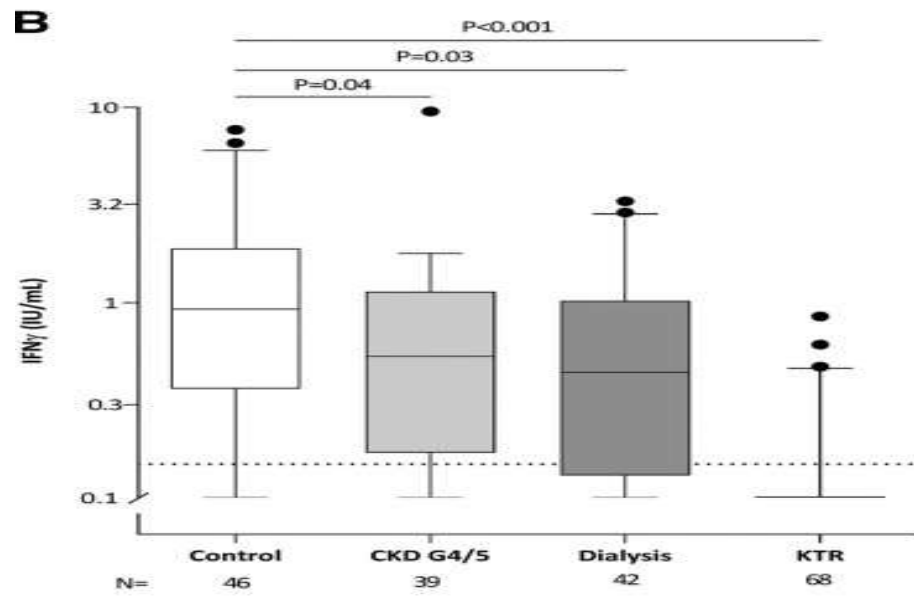
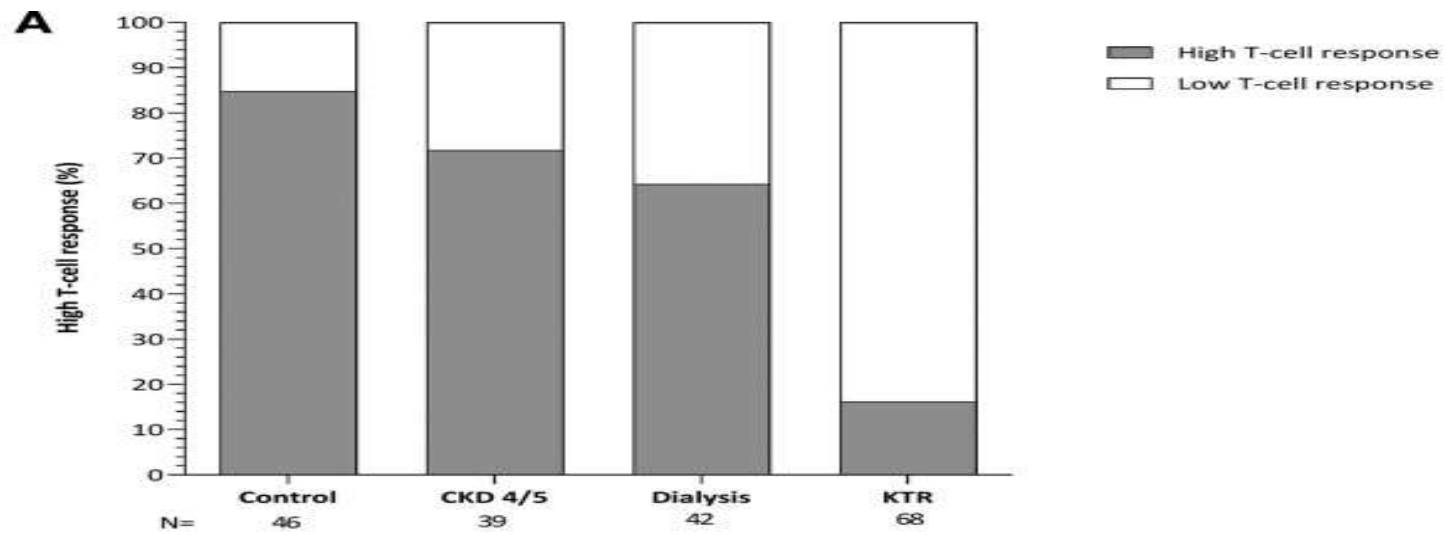


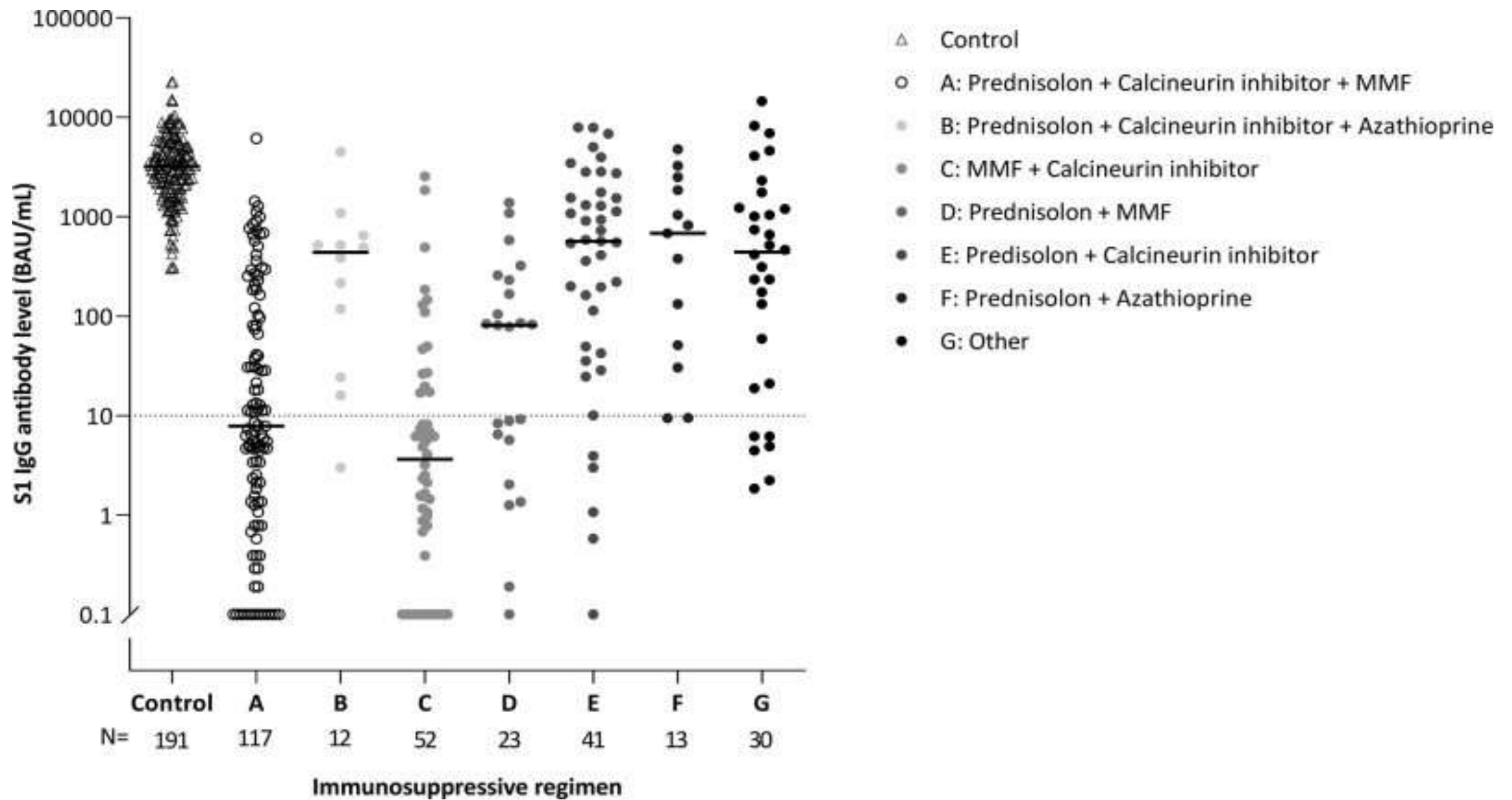
Vaccination induces greater breadth of binding than natural infection



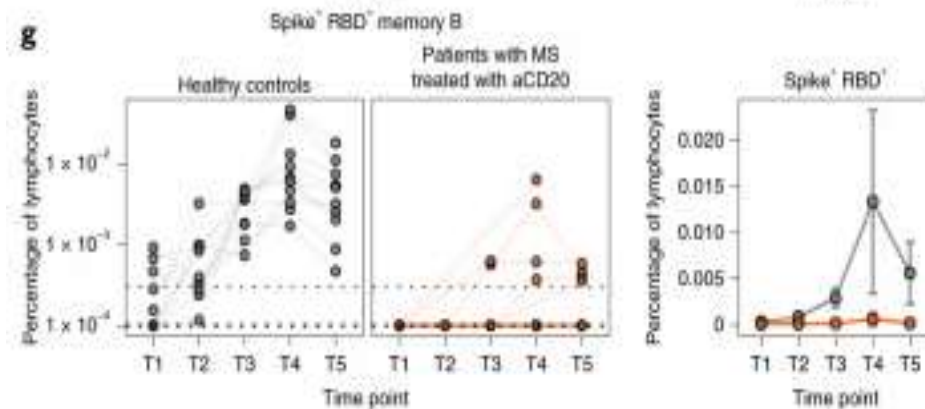
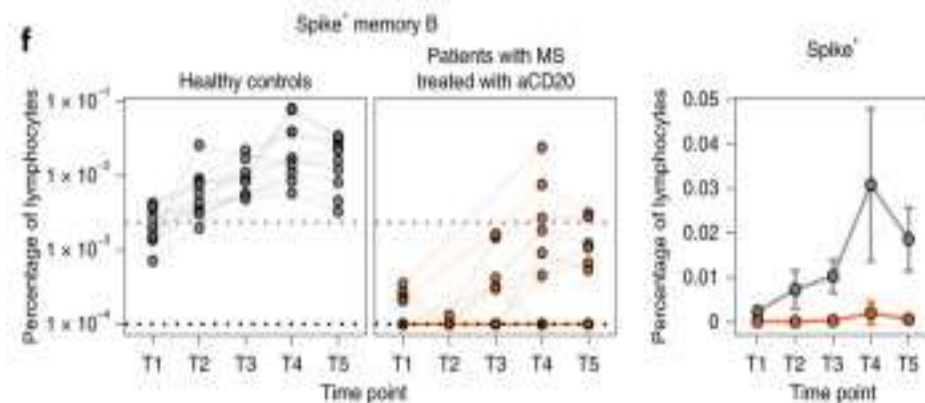
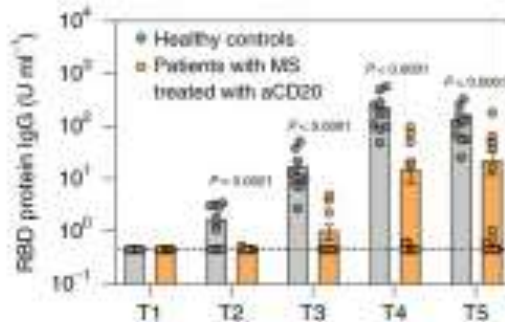
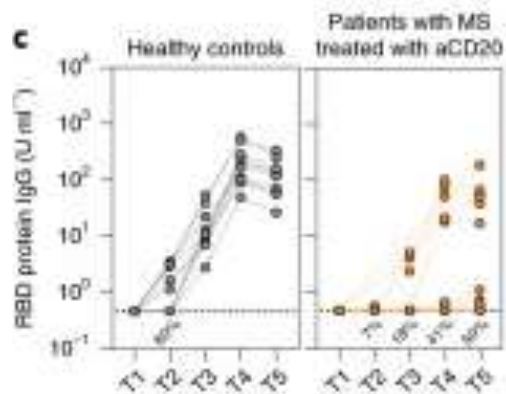
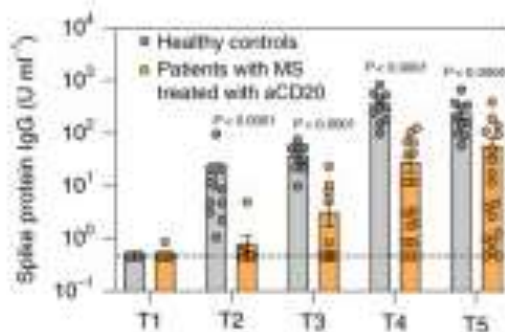
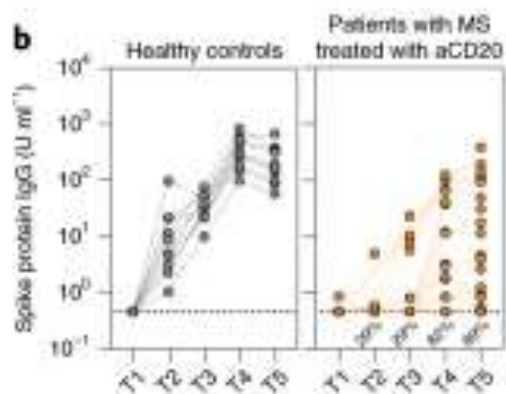




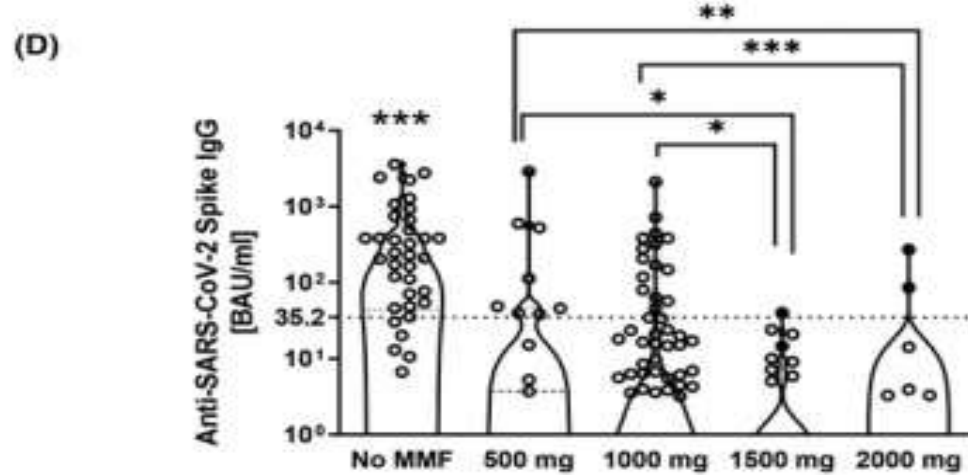
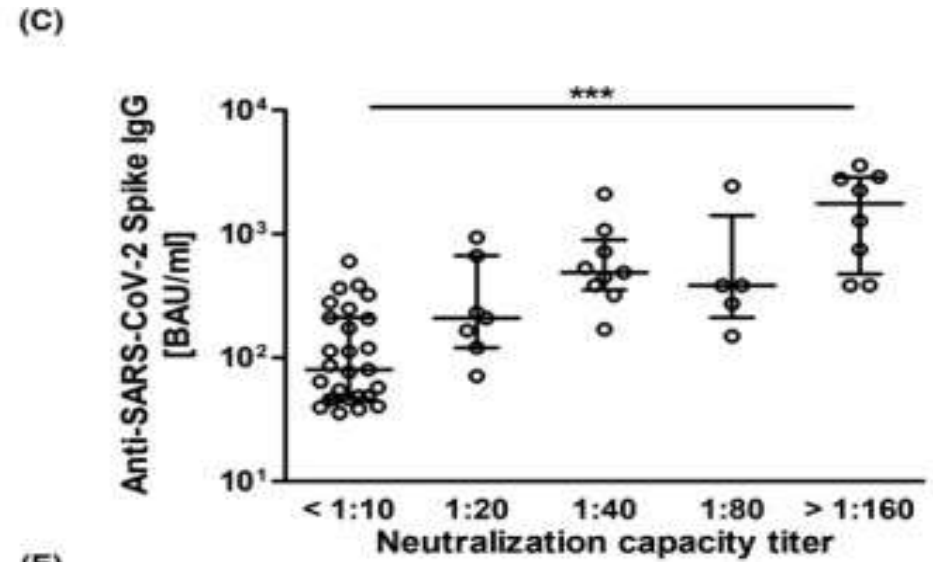
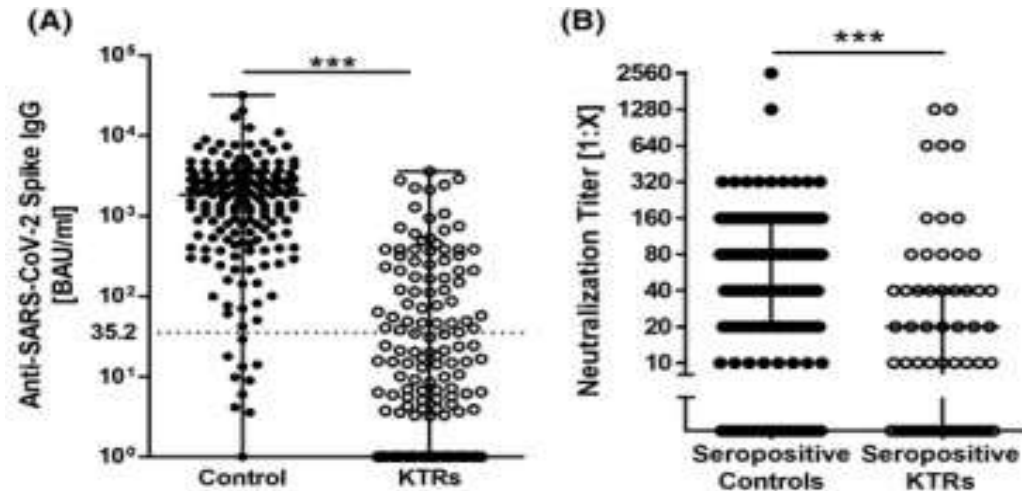




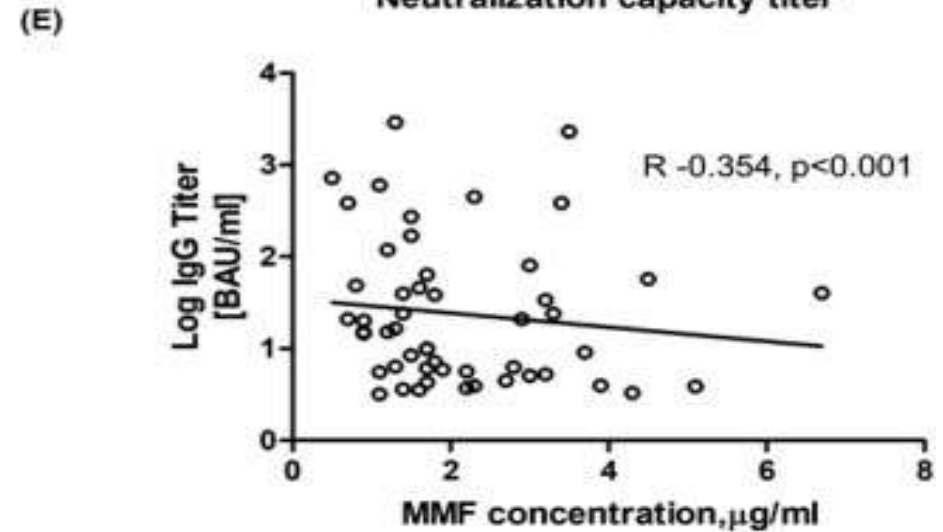
CD 20 depletion

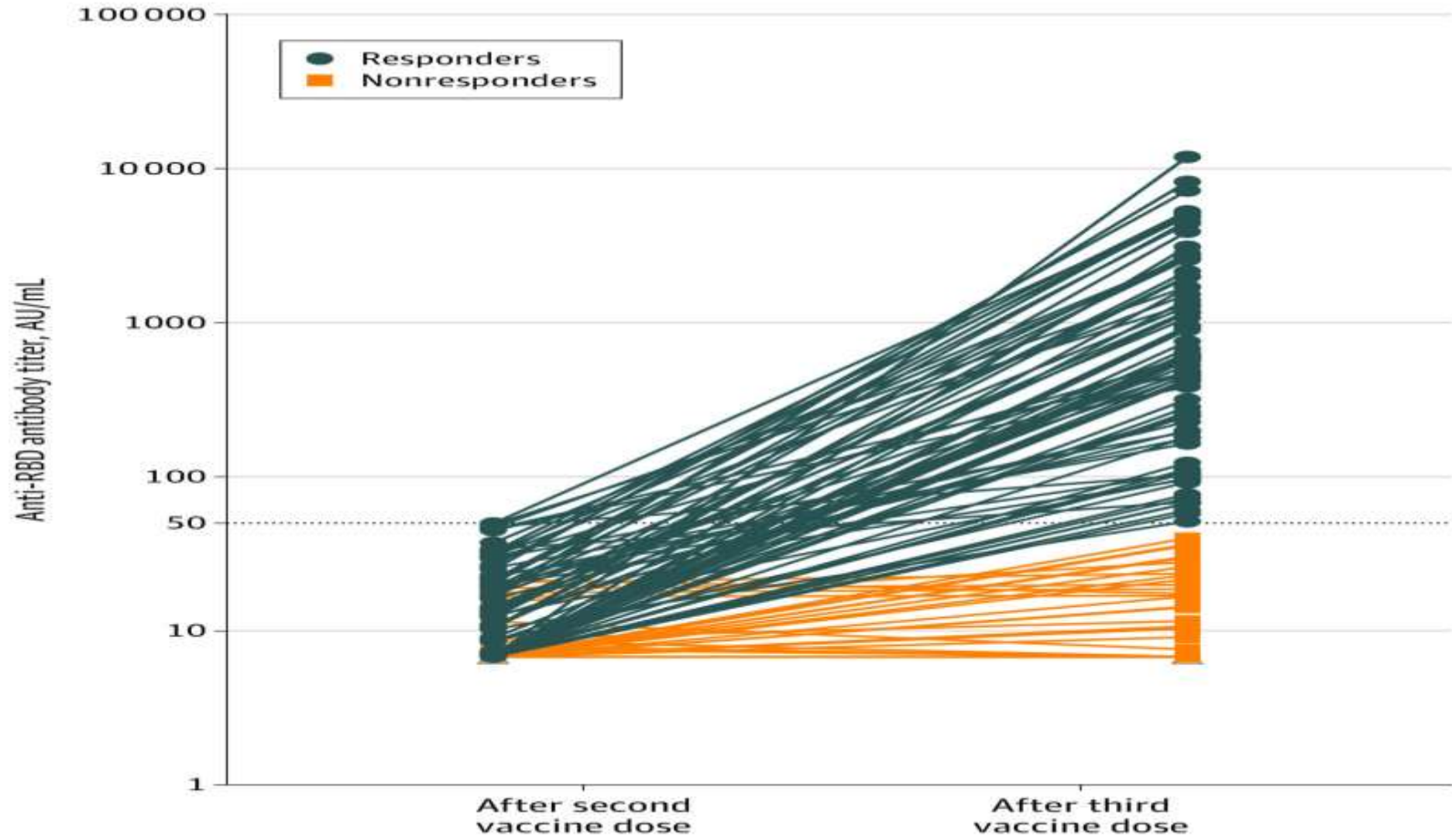


Mycophenolic Acid

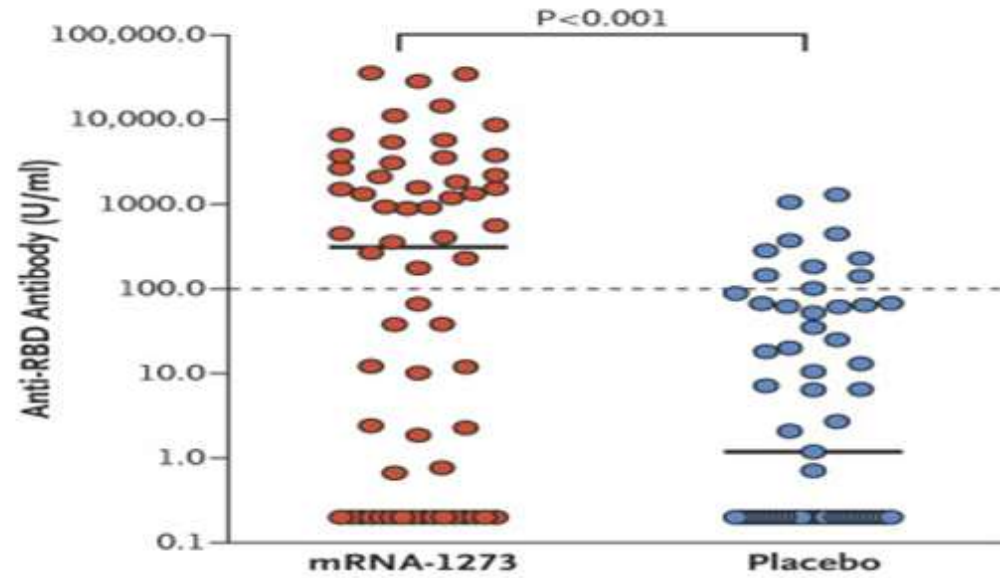


	No MMF	500 mg	1000 mg	1500 mg	2000 mg
Seropositive patients, N	30	8	15	1	2
Low antibody response, N	5	3	28	8	4
No antibody response, N	3	10	55	24	29

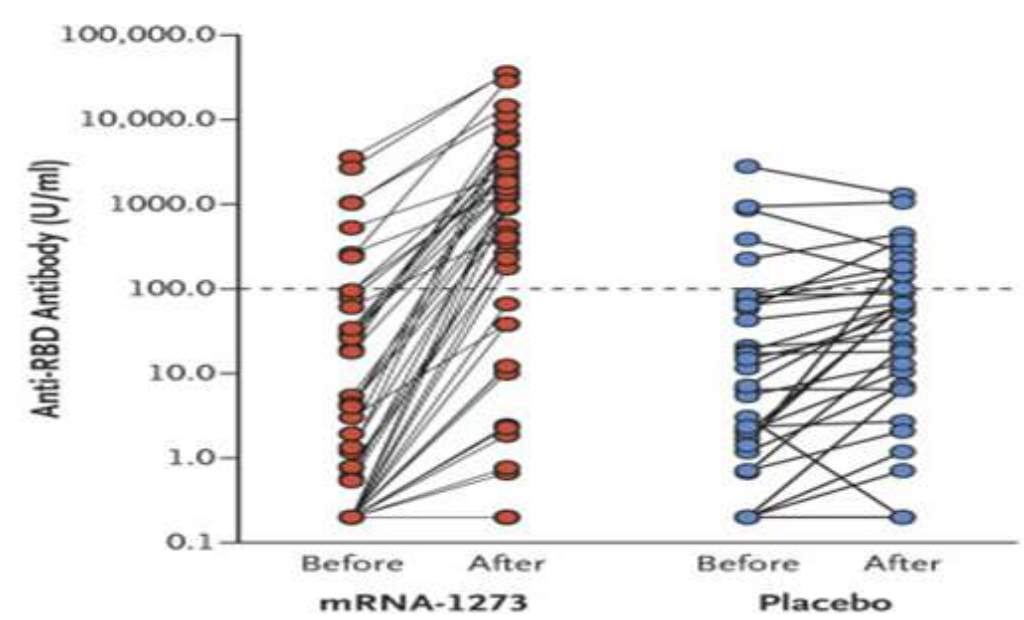




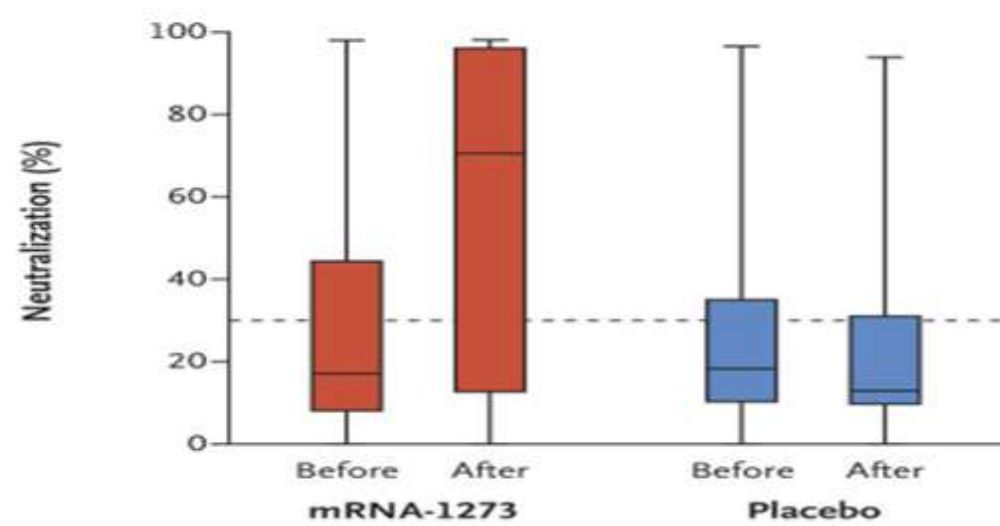
A Anti-RBD Antibodies after Third Dose



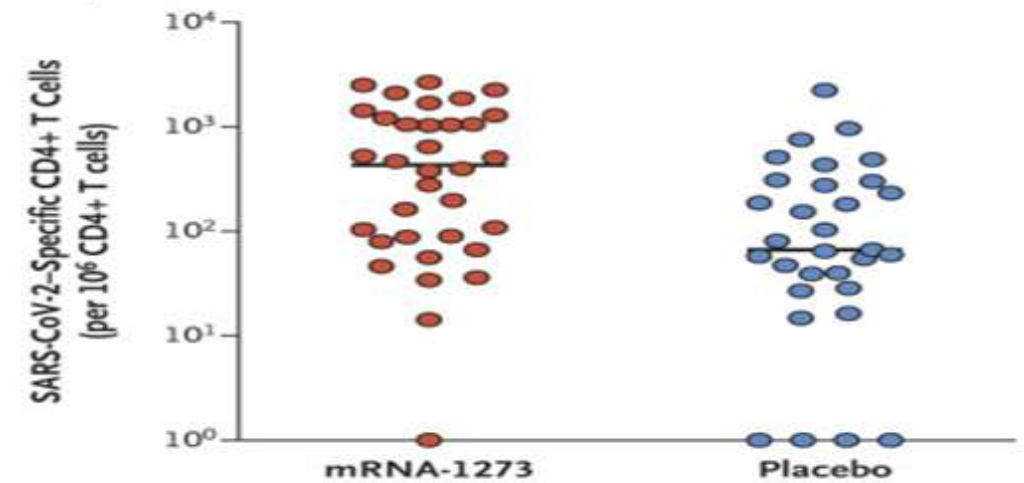
B Anti-RBD Antibodies before and after Third Dose



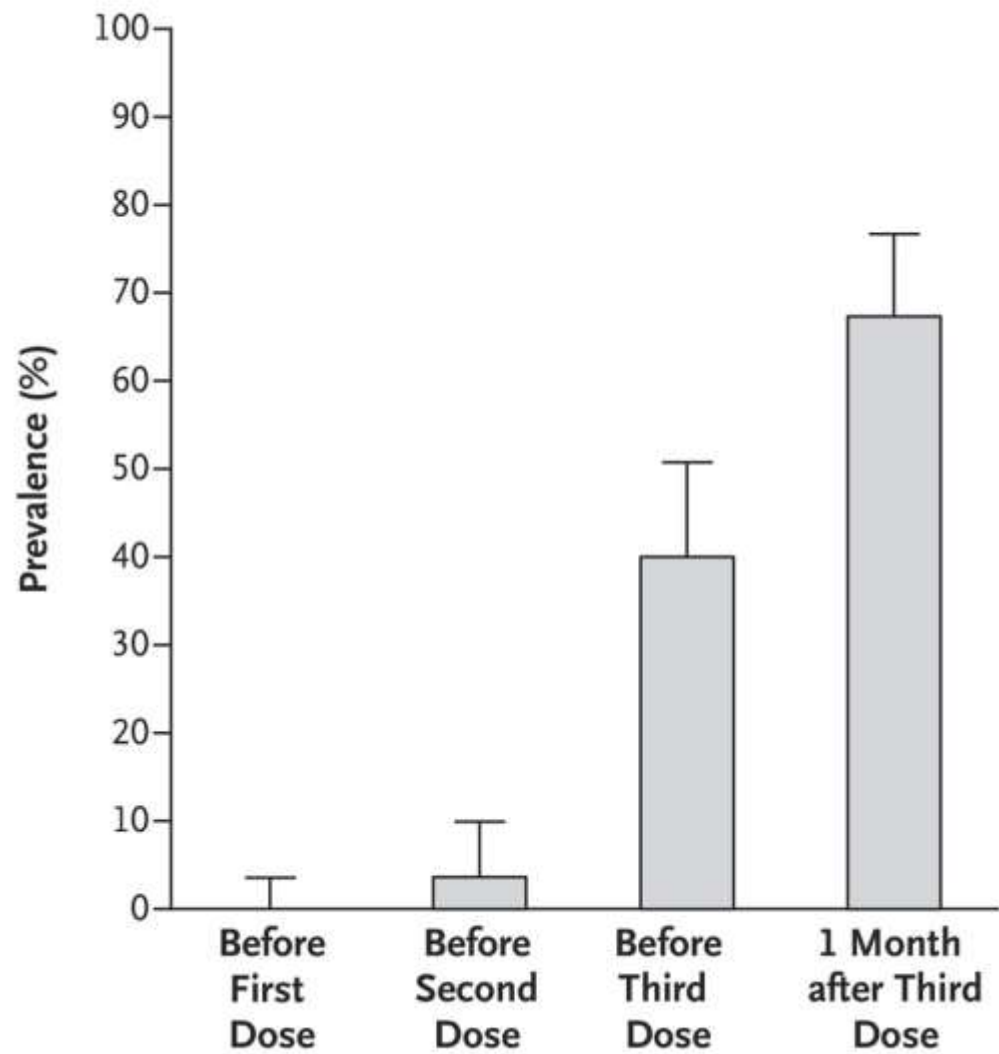
C Neutralization before and after Third Dose



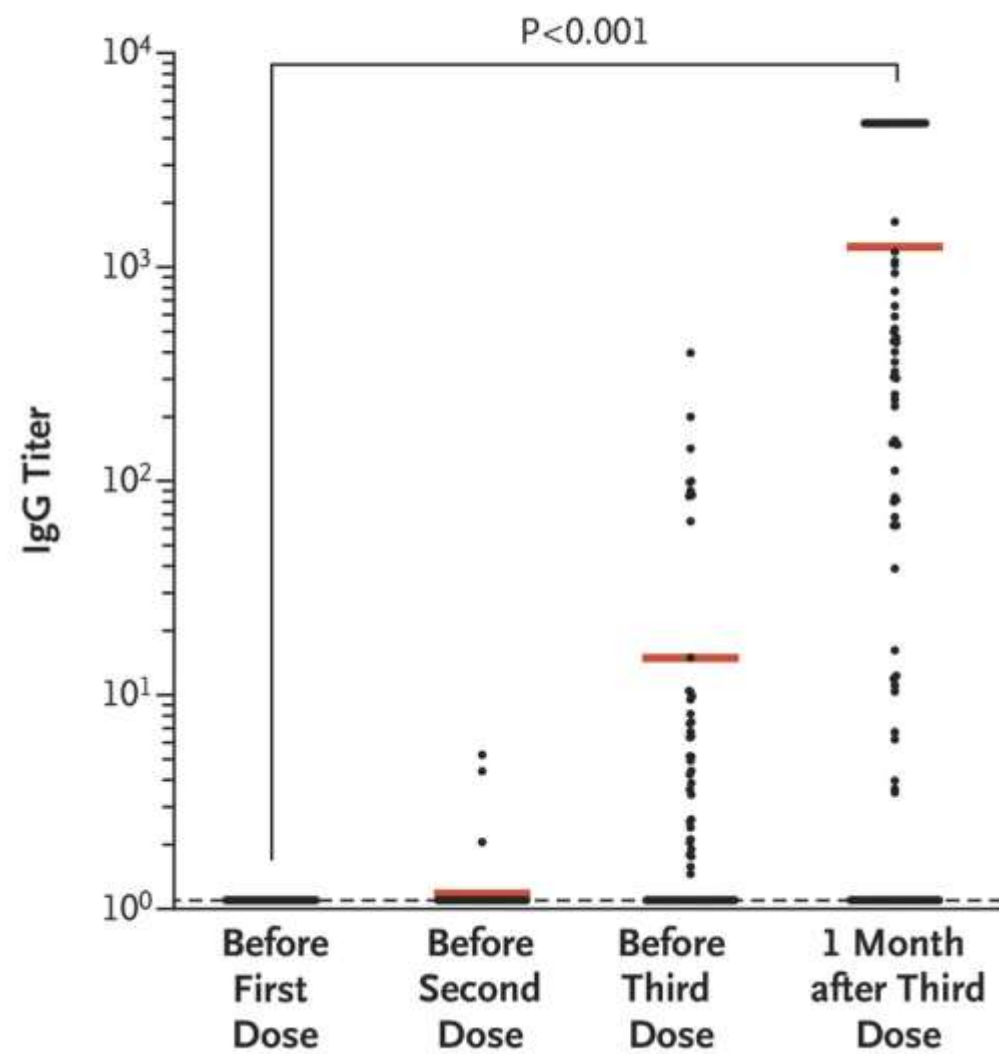
D Polyfunctional CD4+ T Cells after Third Dose



A Prevalence of Anti-SARS-CoV-2 Antibodies



B Anti-SARS-CoV-2 Antibody Titers



Moderna (ages 18 years and older)



Pfizer-BioNTech (ages 12 years and older)



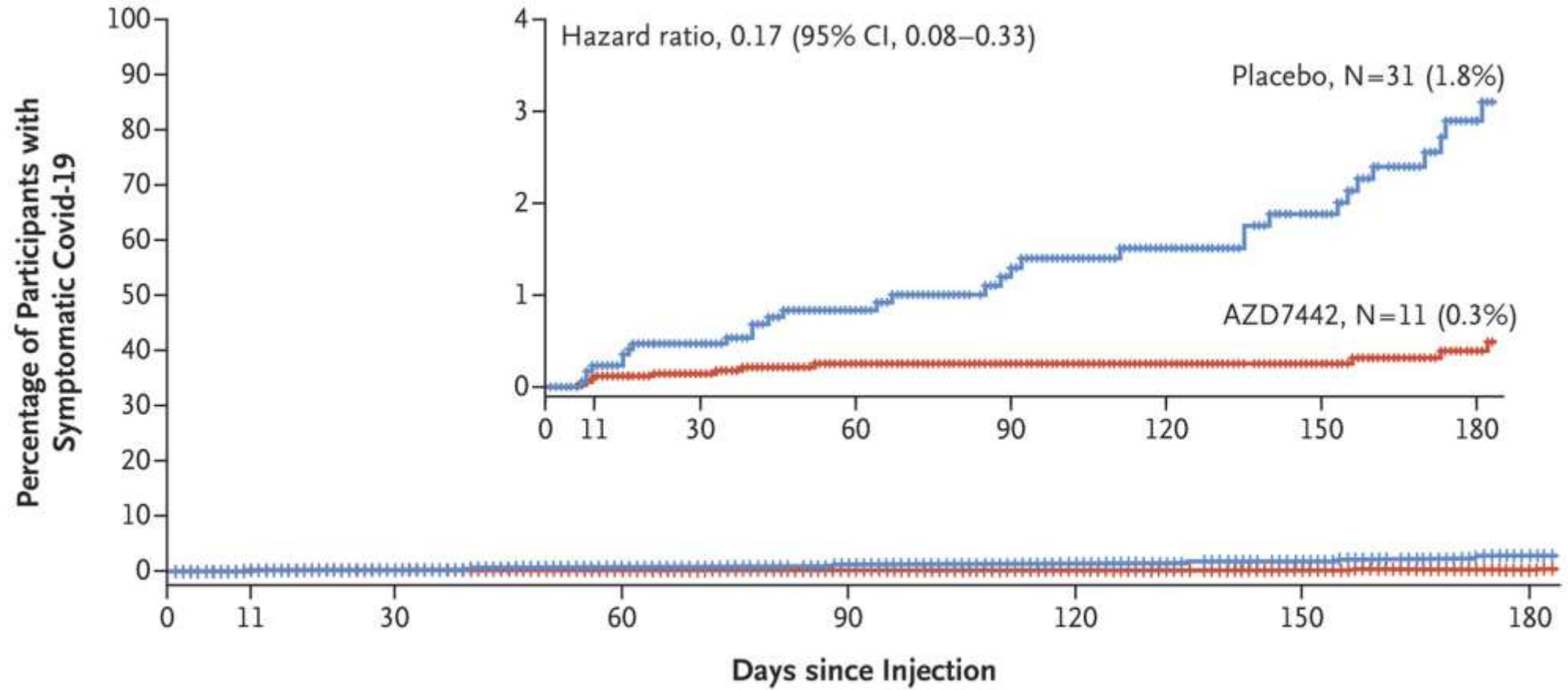
Janssen (J&J) (ages 18 years and older)*



Novavax (ages 18 years and older)

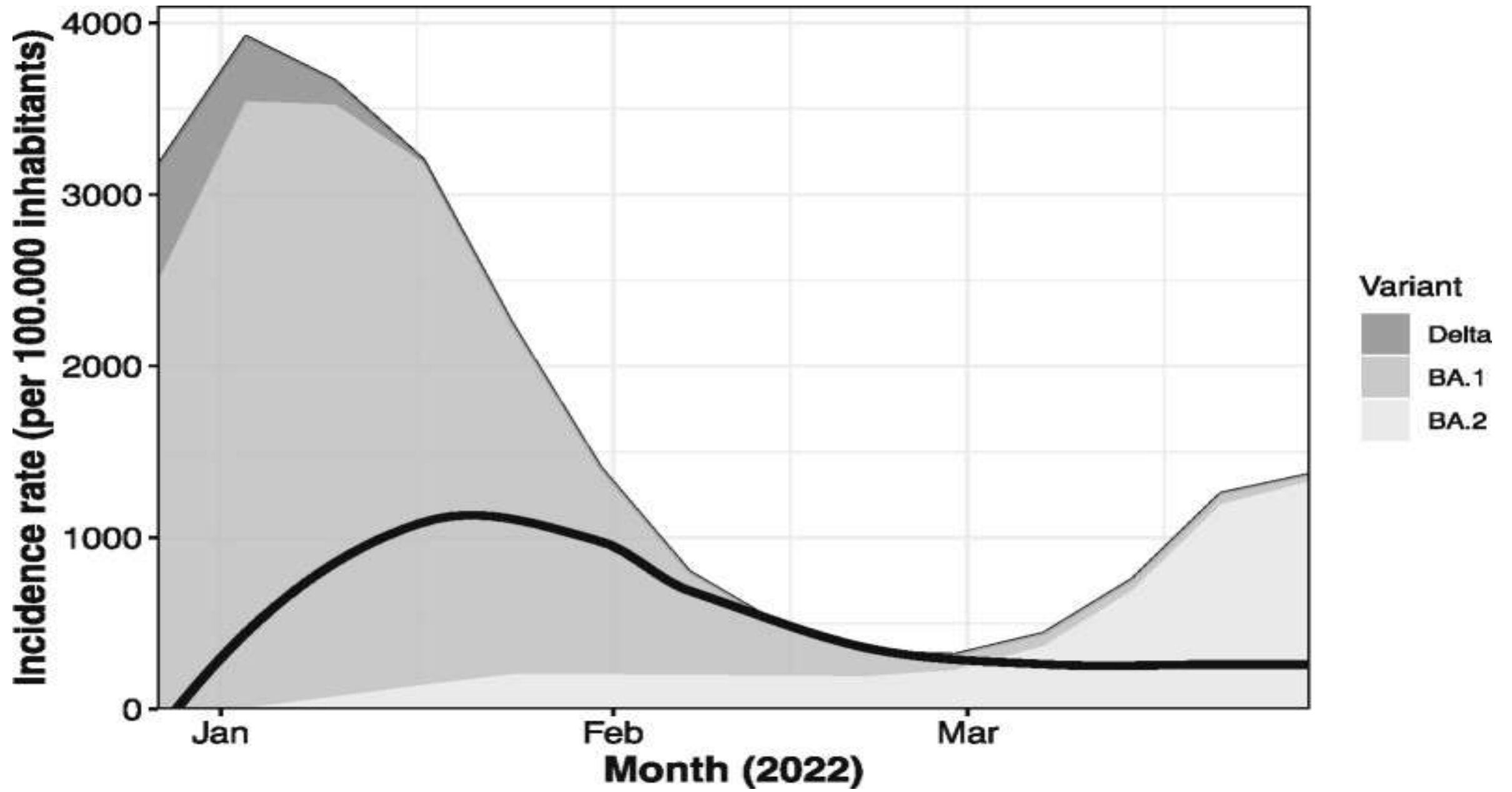


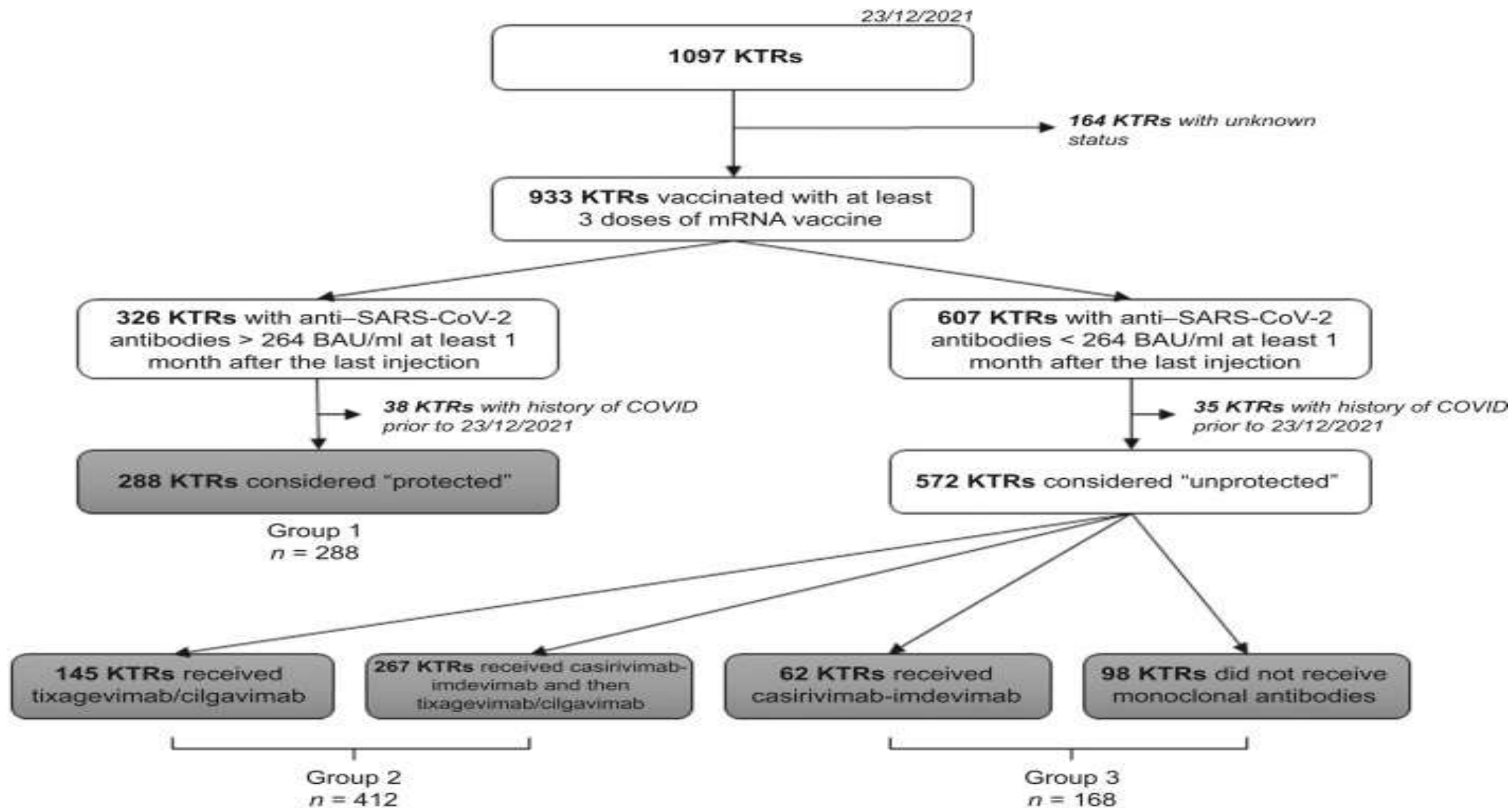
PROVENT TRIAL



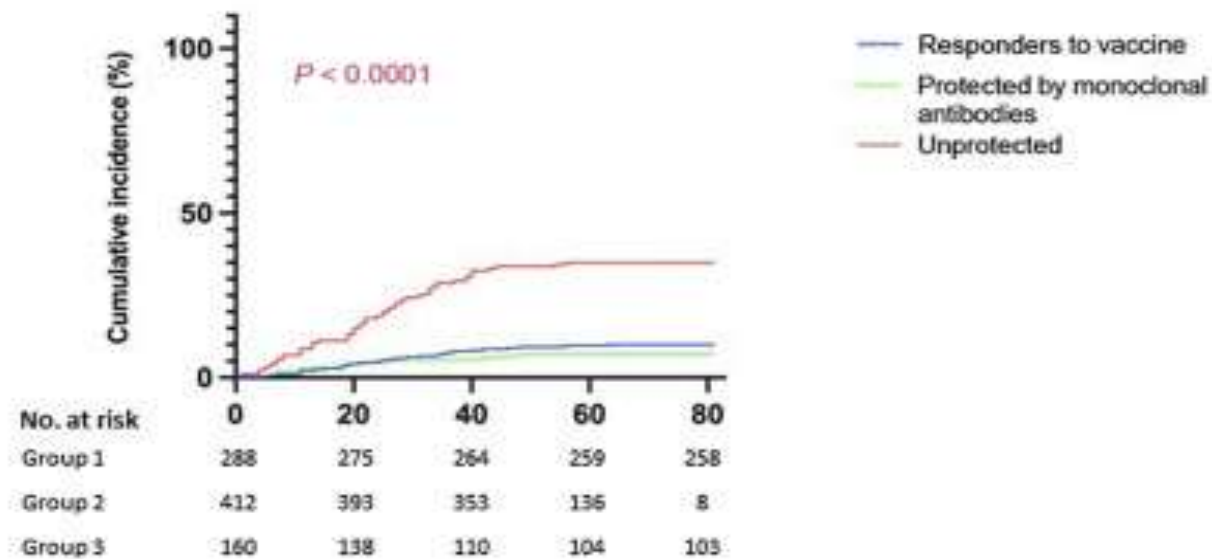
No. at Risk

Placebo	1731	1680	1483	1177	991	856	774	472
AZD7442	3441	3323	2957	2393	2054	1815	1667	1044

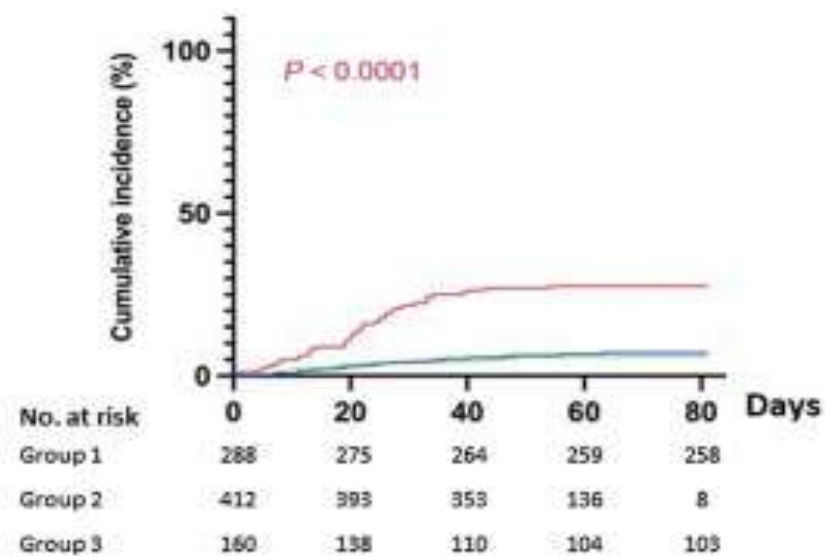




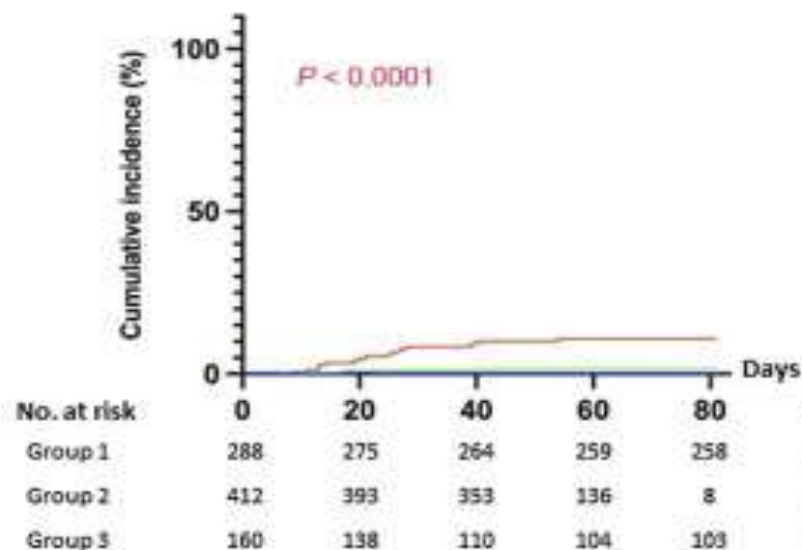
Symptomatic or asymptomatic Omicron infection



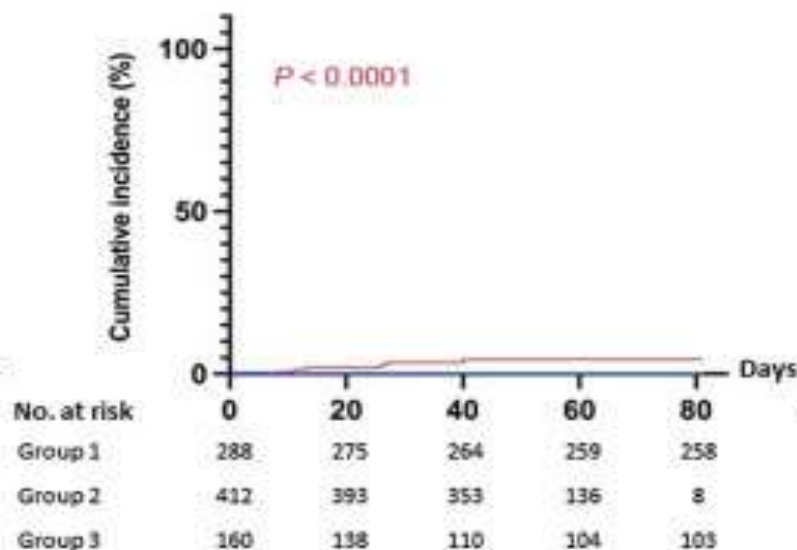
Symptomatic Omicron infection



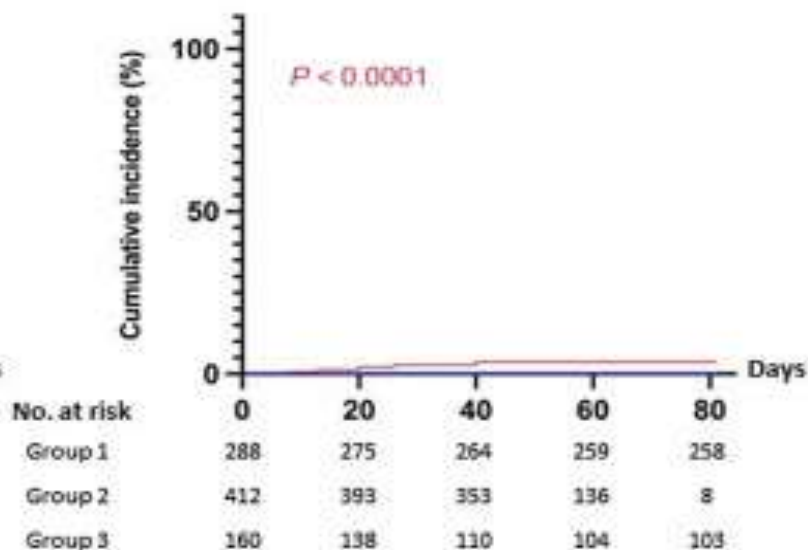
Hospitalization for Omicron infection

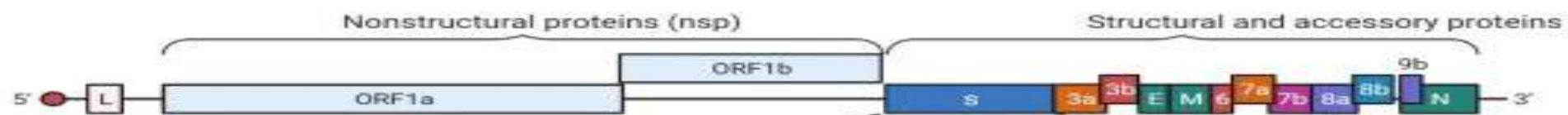


ICU hospitalization for Omicron infection

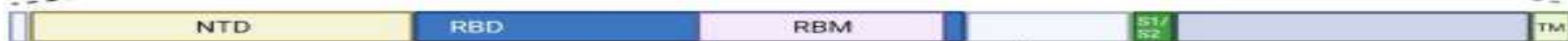


Death from Omicron infection

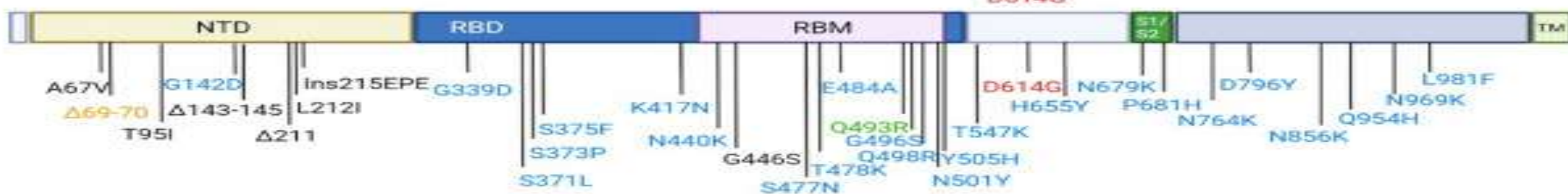




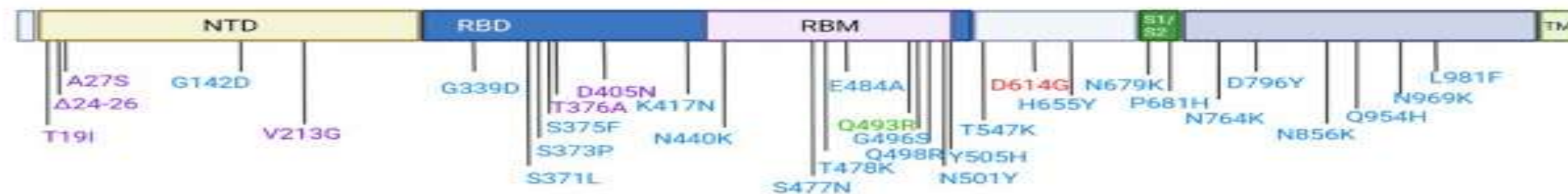
B.1



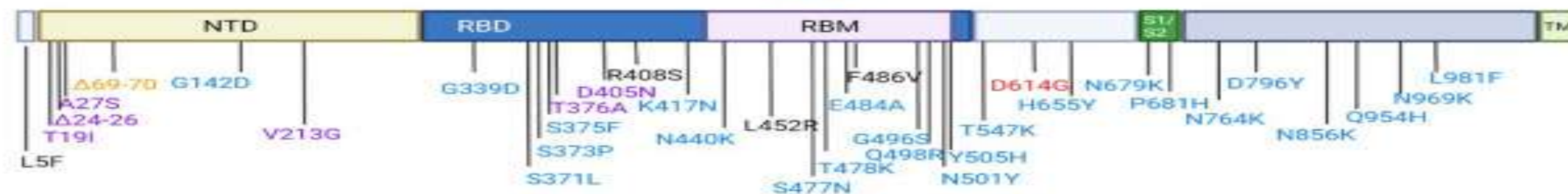
BA.1

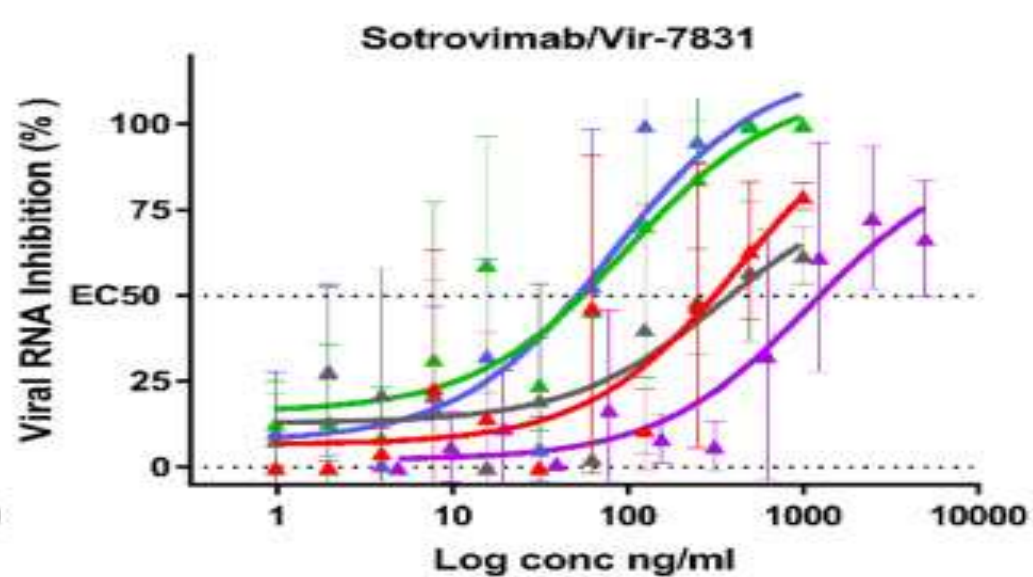
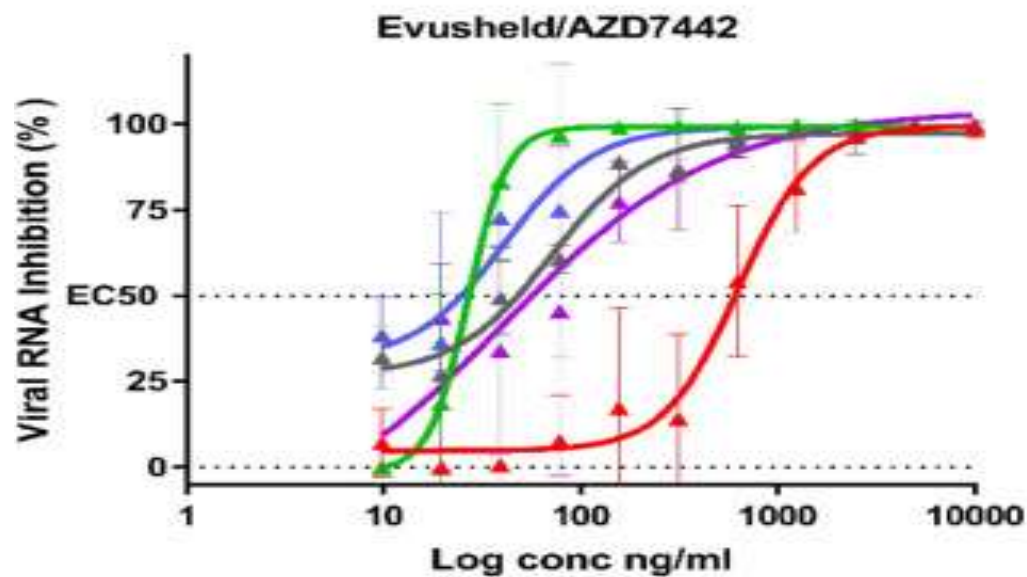
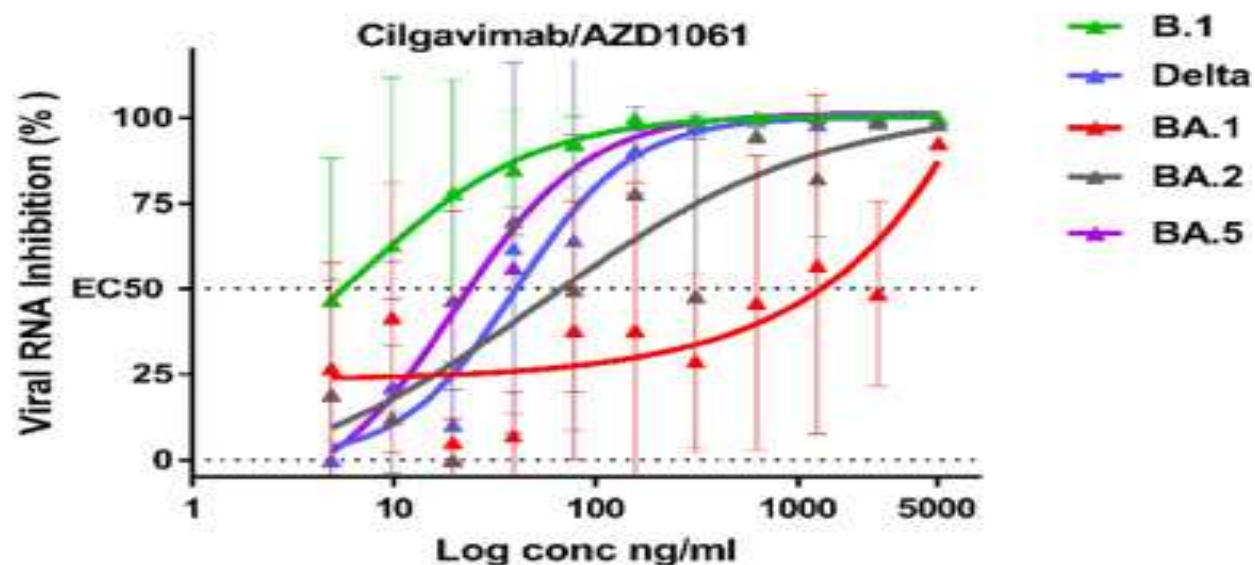
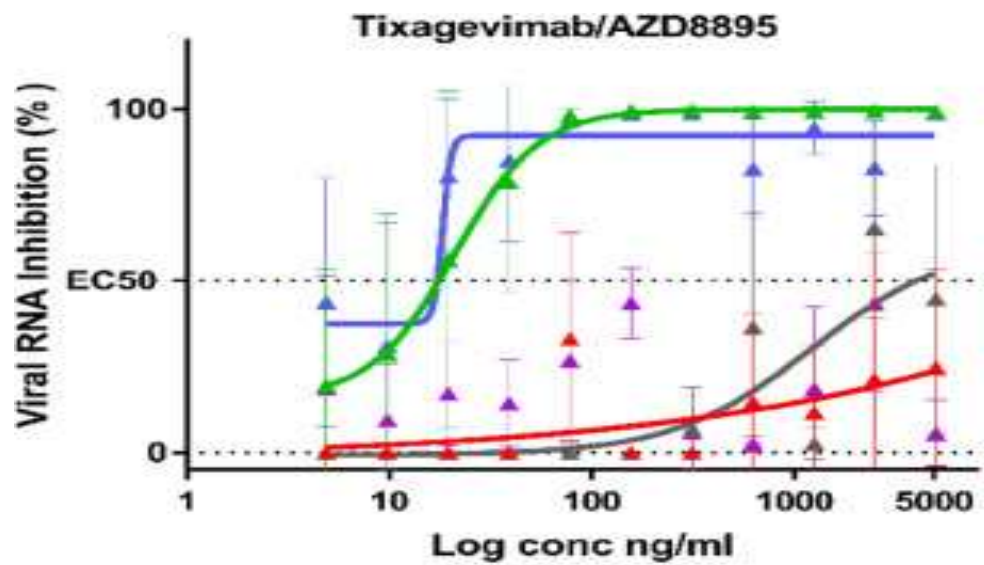


BA.2



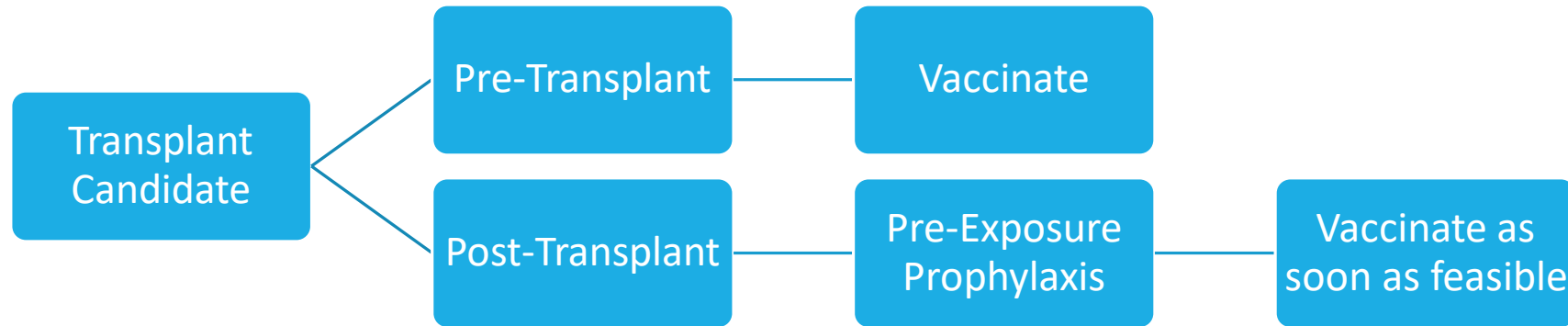
BA.5





- ▲ B.1
- ▲ Delta
- ▲ BA.1
- ▲ BA.2
- ▲ BA.5

Prophylaxis Of COVID 19 Infection In Kidney Transplant Patients



Timeline of COVID-19 Pandemic and Therapeutics

