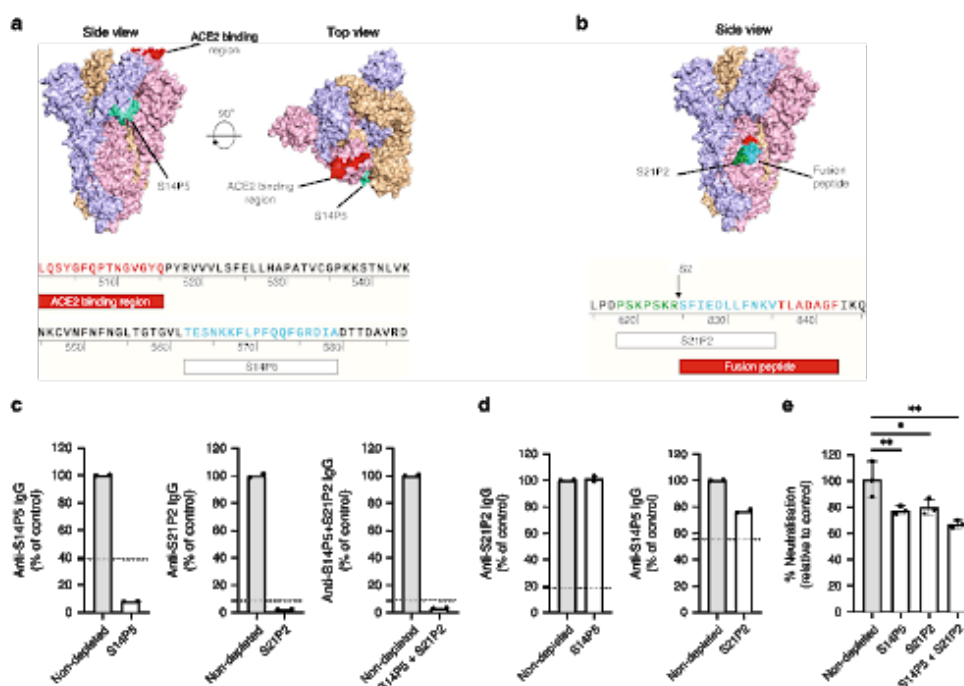
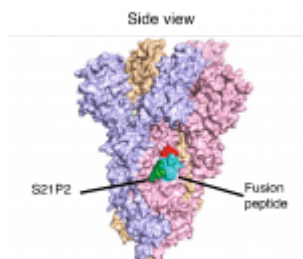


Identification of two B cell epitopes that induce neutralising Ab in COVID-19 patients



Localisation and sequences of a SARS-CoV-2 specific S14P5 and b pan-CoV S21P2 epitopes on spike (S) protein (PDB: 6VSB) are shown. Each S monomer is denoted as either pink, blue or orange. c–e Pooled sera of COVID-19 patients (n = 6) were added to plates coated with the corresponding peptides to deplete specific antibodies. (Source: Poh et al., 2020).

Identification of immunogenic SARS-CoV-2 epitopes and peptides are critical to the design of new diagnostics and potential vaccines. Researchers from A*Star and other Singaporean research institutions aimed to identify potential B cell epitopes recognised by Abs from convalescent COVID-19 patients.

Using neutralisation assays researchers identified two immunodominant epitopes S14P5 and S21P that were recognised by Abs from convalescent patients. Both epitopes are part of the SARS-CoV-2 S glycoproteins, *“S14P5 was shown to localise in close proximity to the receptor binding domain (RBD), whereas S21P2 covers part of the fusion peptide.”* Researchers hypothesise that Ab binding to S14P5 epitope *“may sterically hinder binding to the ACE2 receptor, thereby abolishing virus infection”*, while binding to S21P2 could directly affect viral fusion. They acknowledge that two linear epitopes represent a small proportion of total anti-S-specific Ab responses, however, they showed that depletion of Abs specific to S14P5 and S21P2 resulted in a > 20% reduction of neutralisation capacity of convalescent sera.

[Watch IUIS Webinar by Lisa Ng that describes identification of S145P5 and S21P2 epitopes](#)

Journal Article: Poh et al., 2020. [Two linear epitopes on the SARS-CoV-2 spike protein that elicit neutralising antibodies in COVID-19 patients. Nature Communications](#)

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