Long-lasting SARS-CoV-2-specific T cell memories
Memory T cells may provide long-term protection against SARS-CoV-2 even if antibodies wane. Screening 26 convalescent patients and 25 healthy donors, the authors of this preprint identified immunodominant SARS-CoV-2 epitopes that elicit pre-existing and newly induced CD8+ T cell responses and measured the frequency, immunophenotype and function of these T cells. Notably, SARS-CoV-2-specific T cells were present even in seronegative convalescent patients. Longitudinal analyses in one patient showed in vivo priming and rapid expansion of SARS-CoV-2-specific CD8+ T cells, followed by a long contraction phase, with T cells but not antibodies still detectable 109 days post infection. Therefore, T cells might help to control SARS-CoV-2 infection and serve as correlates of protective immunity. Further studies are needed to evaluate T cell-mediated protection from reinfection.

Immune correlates of SARS-CoV-2 protection
The protective potential of SARS-CoV-2 neutralizing antibodies (nAbs) has not been validated in humans. This preprint study analysed an outbreak on a fishing vessel (n = 122) with an infection rate of 85%. Before departure, all individuals with available data (n = 120) were negative for SARS-CoV-2 infection by RT-PCR but 6 were positive for IgG against viral nucleoprotein. Of the 6 seropositive individuals, 3 had antibodies to SARS-CoV-2 spike protein and its receptor-binding domain (RBD) that could both neutralize pseudotyped lentiviruses and block the interaction between the RBD and the virus entry receptor ACE2. These 3 individuals did not get infected, unlike the 103 individuals who lacked pre-existing nAbs, suggesting that nAb titres are a correlate of viral immunity and, potentially, vaccine efficacy.

Inhaled nanobodies against COVID-19
Nanobodies (Nb) are naturally occurring single-domain antibody fragments from cameld heavy-chain antibodies. They have unique biophysical properties, including small size and thermostability, that allow aerosolized administration. In this preprint, Gai et al. describe Nb phage display libraries from camels immunized with the SARS-CoV-2 spike receptor-binding domain (RBD). Out of 381 Nbs identified, 7 blocked the receptor-binding domain (RBD) that could both neutralize pseudotyped lentiviruses and block the interaction between the RBD and the virus entry receptor ACE2. These 3 individuals did not get infected, unlike the 103 individuals who lacked pre-existing nAbs, suggesting that nAb titres are a correlate of viral immunity and, potentially, vaccine efficacy.

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RESEARCH HIGHLIGHTS

COVID-19

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ORIGINAL ARTICLE Schuijlen, I. et al. Ex vivo detection of SARS-CoV-2-specific CD8+ T cells: rapid induction, prolonged contraction, and formation of functional memory. Preprint at bioRxiv https://doi.org/10.1101/2020.08.13.249443 (2020)

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ORIGINAL ARTICLE Addetta, A. et al. Neutralizing antibodies correlate with protection from SARS-CoV-2 in humans during a fishery vessel outbreak with high attack rate. Preprint at medRxiv https://doi.org/10.1101/2020.08.13.20173161 (2020)

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ORIGINAL ARTICLE Gai, J. et al. A potent neutralizing nanobody against SARS-CoV-2 with inhaled delivery potential. Preprint at bioRxiv https://doi.org/10.1101/2020.08.09.243687 (2020)

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The authors declare no competing interests.