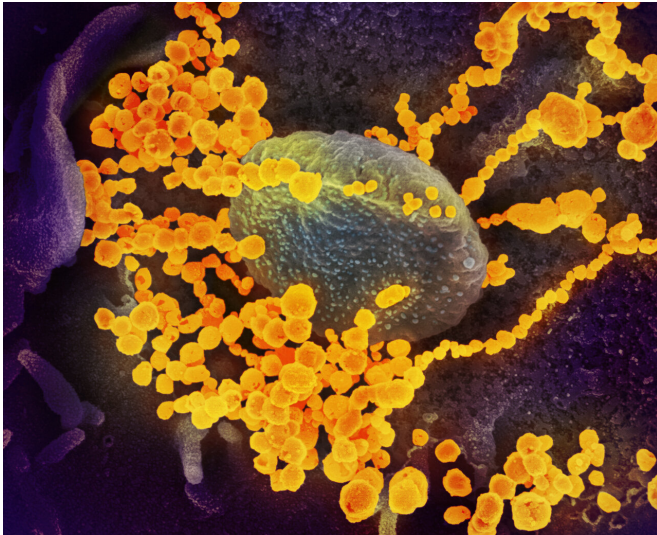


T-cell immune response can control SARS-CoV-2 virus replication in immunocompromised patients

14 July 2022, by Nicola Wittekindt



Scanning electron microscope image showing SARS-CoV-2 particles (round gold objects) emerging from the surface of lab-cultured cells. Credit: NIAID

In a case study, scientists of the German Center for Infection Research (DZIF) and the University Medical Center Hamburg-Eppendorf investigated the T-cell response of a cancer patient, who was suffering from prolonged COVID-19. No B cells were detectable in the patient's peripheral blood, revealing that she had no possibility of forming anti-SARS-CoV-2 antibodies. SARS-CoV-2 virus particles were detectable in the patient for nearly three months after infection with the virus.

The adaptive immune system, which allows the [human body](#) to adapt to new pathogens, consists mainly of two types of white blood cells—B- and T-lymphocytes. While B-cells produce specific antibodies against viruses, bacteria and other invaders, T-cells perform various important tasks in fighting and eliminating pathogens and other

foreign substances from the body.

In the case study, the team investigated whether so-called T-helper cells—isolated from an immunosuppressed cancer patient who was persistently SARS-CoV-2 positive for nearly three months—differed from those of immunocompetent patient. Surprisingly, an increased frequency of T-helper cells responding to the virus was detected in the patient, though these cells exhibited a somewhat altered phenotype.

"The results suggest that even in the absence of a B-cell response, a robust virus-specific T-cell immune response can be triggered. This response helps to control [viral replication](#) but is often insufficient to completely suppress infection," says study lead Prof. Julian Schulze zur Wiesch.

"Our case study provides clues as to how the development of a specific [immune response](#) in patients might be influenced by therapies for cancer or autoimmune diseases. Overall, such a case study can serve as a basis for further research aimed at better treating certain high-risk patients," he adds.

The results of the [case study](#), conducted in collaboration with the Benaroya Research Institute in the United States, have now been published in the journal *Viruses*.

More information: Leon Cords et al, High and Sustained Ex Vivo Frequency but Altered Phenotype of SARS-CoV-2-Specific CD4+ T-Cells in an Anti-CD20-Treated Patient with Prolonged COVID-19, *Viruses* (2022). [DOI: 10.3390/v14061265](#)

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