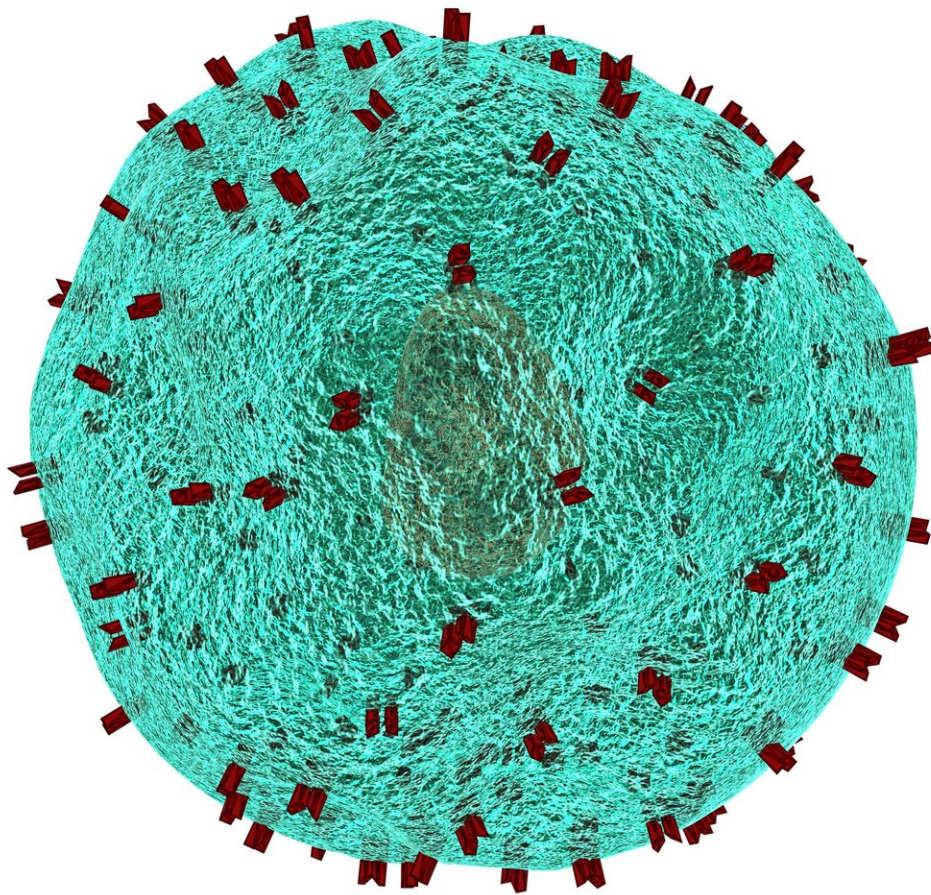


Most people with prior SARS-CoV-2 infection or vaccination have T cell immune responses against Omicron variant: study

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When an individual is infected with the COVID-19–causing virus SARS-CoV-2, the immune system is called into action to produce antibodies and T cells that target viral proteins and clear the infection. It has become clear that the recent Omicron variant of SARS-CoV-2 can unfortunately escape antibody responses even in many people who have been vaccinated against COVID-19; however, new research published in *Cell* and led by investigators at Massachusetts General Hospital (MGH) indicates that T cell responses are still robust against the variant in most individuals with prior SARS-CoV-2 infection or vaccination, thereby providing protection against severe disease.

For the study, the team obtained blood samples from 76 vaccinated and unvaccinated adults with and without prior SARS-CoV-2 infection in Chelsea, Massachusetts. The investigators found that T cell responses in individuals with prior infection, vaccination, both prior infection and vaccination, and booster vaccination were largely preserved against the Omicron spike protein. Individuals with prior infection also had responses against other proteins in the virus.

"We found that T cells from most individuals retained their recognition of Omicron even when antibodies did not. This is good news," says co–lead author Anusha Nathan, a medical student working at the Ragon Institute of MGH, MIT and Harvard.

Approximately 20% of individuals had significantly reduced T cell responses despite prior infection or vaccination, however, and certain genetic characteristics were linked with this poor response. Fortunately,

booster vaccination appeared to enhance T cell responses by twentyfold.

"Our findings should provide some reassurance to the general population that the vast majority of prior infected and vaccinated individuals should have a T cell response to Omicron that gives protection against severe COVID-19," says senior author Gaurav D. Gaiha, MD, DPhil, a gastroenterologist at MGH and principal investigator at the Ragon Institute. "However, similar to antibody studies, our study also provides further impetus for people to get booster vaccines to help protect against Omicron by substantially increasing their T cell immunity."

The scientists noted that their discovery that some people have lower responses to Omicron may indicate that the virus can evolve to escape even T [cells](#). "So, we have to continue to work on vaccines that may be resistant to future variants and keep taking sensible precautions like keeping up to date on vaccination, mask-wearing and testing appropriately to protect ourselves and our communities," says co-lead author Vivek Naranbhai, MBChB, Ph.D., DPhil, a hematology/oncology fellow at MGH and Dana-Farber Cancer Institute.

More information: Vivek Naranbhai et al, T-cell reactivity to the SARS-CoV-2 Omicron variant is preserved in most but not all individuals, *Cell* (2022). [DOI: 10.1016/j.cell.2022.01.029](https://doi.org/10.1016/j.cell.2022.01.029)

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