

# What happens to immunity levels post COVID-19 infection?

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Australian scientists have described the evolution of immunity levels up to four months following COVID-19 infection, finding that while antibody levels drop dramatically in the first one to two months, the

decrease then slows down substantially.

The findings suggest that protective COVID-19 vaccines should ideally generate stronger antibody responses than natural infection.

The research team, including University of Melbourne Dr. Jennifer Juno, a Senior Research Fellow at the Peter Doherty Institute for Infection and Immunity (Doherty Institute), have been investigating how the [immune system](#), particularly B and T cells, responds to the COVID-19 spike protein.

The spike protein enables SARS-CoV-2 to attach and enter cells in humans and is crucial in inducing neutralizing antibodies to protect from re-infection.

B cells are responsible for producing the antibodies that recognize SARS-CoV-2, while T cells play an important role in supporting the development of the B cell response.

Dr. Juno said one of their striking observations was that over the four months they were tracking the patients, the number of B cells recognizing the spike protein actually increased in almost all of them, regardless how severe their disease was.

"This is interesting because our work and other recent studies suggest these B cells are continuing to accumulate and potentially evolve over time. That should be useful for protection in the event of another exposure in the sense that those 'memory' [cells](#) should be able to be activated again," Dr. Juno said.

"While we still don't know how much antibody you actually need to be protected, either through a vaccine or through natural infections, the recent results from phase 3 vaccine trials should soon allow us to

understand how long natural immunity should last.

"In addition, what remains to be understood is whether these changes in B cell memory can help the immune system to recognize and be protected against new SARS-CoV-2 variants that are currently emerging."

Dr. Juno said recent data on the leading vaccines show they are eliciting at least double the [antibody levels](#) as natural infection, which is very encouraging.

**More information:** Adam K. Wheatley et al. Evolution of immune responses to SARS-CoV-2 in mild-moderate COVID-19, *Nature Communications* (2021). [DOI: 10.1038/s41467-021-21444-5](https://doi.org/10.1038/s41467-021-21444-5)

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