

A third COVID-19 booster is crucial to identifying and fighting new variants

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Twenty different COVID-19 variants were effectively identified and neutralized after a third booster, according to the new study for which the University of Surrey provided the crucial antigenic map of variants

of concern.

While the study's results suggested that immunity decreases 20 weeks after vaccination, a third booster (of the Pfizer-BioNTech vaccine, in the case of this study) helped the [immune system](#) to identify and neutralize the 20 different variants.

The antigenic map allowed the team to identify and measure how each [variant](#) impacted the immune system.

Dr. Daniel Horton, co-author of the study and Reader in Veterinary Virology at the University of Surrey, said: "The emergence of this disease and its disruptive and deadly impact on our day-to-day lives demonstrates how crucial it is for the [scientific community](#) to work together to identify and characterize [infectious diseases](#) quickly.

"The University of Surrey's contribution to this study through the mapping of the various variants is itself part of a landmark €90 million [collaborative effort](#) to tackle [zoonotic diseases](#) in Europe, reflecting our focus on understanding the inextricable links between the health of animals, humans and, indeed, the planet we all share."

The Pirbright Institute led this collaborative study with scientists from the University of Surrey, Imperial College in London and the U.K. Health Security Agency (UKHSA) to understand the [immune response](#) of individuals aged 70–89 who had received the Pfizer-BioNTech vaccine.

This vaccine works by triggering the immune system to create Y-shaped proteins, known as antibodies, that can stick to the spike proteins which are found on the surface of the coronavirus. If a person is infected with SARS-CoV-2, the antibodies bind the spike proteins preventing the virus from attaching to and entering the human cell, therefore helping to

protect from severe disease. Antibodies also act as a beacon to alert the immune system to help fight the infection.

Dr. Dalan Bailey, Head of the Viral Glycoproteins group at Pirbright, said: "Understanding how the levels of neutralizing antibodies relate to a well-defined immune response will be an important step in understanding how the immune system responds to SARS-CoV-2 and could also help in the management of COVID-19.

"This information could help us to understand whether the risk of breakthrough infections, hospitalization and death is increased by waning immunity or new variants. Research comparing immune responses to different SARS-CoV-2 variants and understanding the role of different mutations is vital in the management of the COVID-19 pandemic and in predicting the outcome of new variants."

The research was published in *Nature Microbiology*.

More information: Joseph Newman et al, Neutralizing antibody activity against 21 SARS-CoV-2 variants in older adults vaccinated with BNT162b2, *Nature Microbiology* (2022). [DOI: 10.1038/s41564-022-01163-3](https://doi.org/10.1038/s41564-022-01163-3)

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