

SARS-CoV-2 reacts to antibodies of virus from 2003 SARS outbreak, new study reveals

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A new study demonstrates that antibodies generated by the novel coronavirus react to other strains of coronavirus and vice versa, according to research published today by scientists from Oregon Health & Science University.

However, antibodies generated by the SARS outbreak of 2003 had only limited effectiveness in neutralizing the SARS-CoV-2 [virus](#). Antibodies are blood proteins that are made by the [immune system](#) to protect against infection, in this case by a coronavirus.

The study published today in the journal *Cell Reports*.

"Our finding has some important implications concerning immunity toward different strains of coronavirus infections, especially as these viruses continue to mutate," said senior author Fikadu Tafesse, Ph.D., assistant professor of molecular microbiology and immunology in the OHSU School

of Medicine.

Given the speed of mutations—estimated at one to two per month—it's not surprising that an antibody generated from a virus 18 years ago provides a meager defense against the new coronavirus. Nonetheless, Tafesse said the findings suggest more work needs to be done to determine the lasting effectiveness of COVID-19 vaccines.

"I don't think there is any one size-fits-all vaccine," he said. "Although the vaccines coming out now may break the momentum of the virus and end the pandemic, they may not be the end game."

Tafesse noted that researchers used individual antibody clones to test cross-reactivity, and that a body's normal immune system will generate many antibodies that are more likely to neutralize a wider series of targets on the mutating virus.

"I'm not personally terribly concerned," said lead author Timothy Bates, a fourth-year molecular microbiology and immunology graduate student in the OHSU School of Medicine. "Emerging mutant viruses may have some propensity to escape certain antibodies raised by previous infection or vaccine.

"Every individual has a different immune system that will make a unique repertoire of different antibodies that bind to [different places](#) on the virus, so the chance of any one SARS-CoV-2 variant escaping from all of them is quite low."

The study also suggests that efforts to accurately discern a previous COVID-19 [infection](#), by analyzing antibodies in blood, may be confounded by the presence of antibodies reacting to other strains of coronavirus including the common cold. Although this complicates diagnosis of older

infections, researchers say the finding actually expands scientists' ability to study the biology and disease-causing effects of the SARS-CoV-2 virus since they know it reacts to [antibodies](#) of multiple strains of coronaviruses.

"It provides more tools to study the biology of this virus because we have very limited reagents available right now for SARS-CoV-2," Tafesse said.

More information: *Cell Reports* (2021). [DOI: 10.1016/j.celrep.2021.108737](#)

Provided by Oregon Health & Science University

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