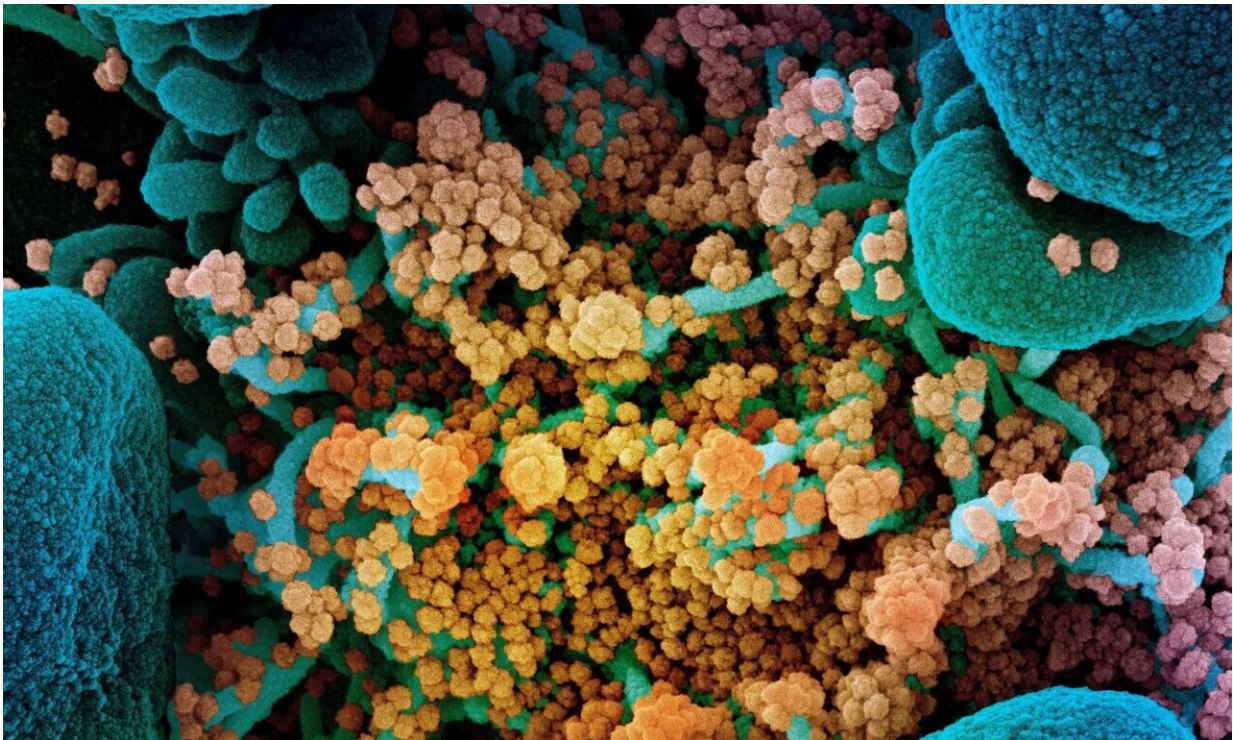


# SARS-CoV-2 antibodies detectable up to seven months post COVID-19 onset

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Colorized scanning electron micrograph of a dying cell (blue) heavily infected with SARS-CoV-2 (yellow), the virus that causes COVID-19. Credit: NIAID Integrated Research Facility, Fort Detrick, Maryland.

A new study led by Marc Veldhoen, principal investigator at Instituto de Medicina Molecular João Lobo Antunes (iMM; Portugal) with an interdisciplinary team of clinicians and researchers from Faculdade de

Medicina da Universidade de Lisboa (FMUL) and Centro Hospitalar Lisboa Norte (CHLN) and collaborators at Instituto Português do Sangue e Transplantação (IPST), shows that 90% of subjects have detectable antibodies 40 days up to 7 months post contracting COVID-19. These results, now published in the scientific journal *European Journal of Immunology*, also show that age is not a confounding factor in levels of antibodies produced, but disease severity is.

This comprehensive and cross-sectional study was thought off in the early days of the pandemic, back in March 2020. The researchers Patrícia Figueiredo-Campos and Birte Blankenhaus, first authors of this study, setup an in-house, sensitive, specific and versatile COVID-19 serology test. The optimization and validation of the assay was performed as part of Serology4COVID, a consortium of 5 research institutes of Lisbon and Oeiras. Collaborating with physicians in the campus of the Santa Maria Hospital, the research team started to monitor the antibody levels of over 300 COVID-19 hospital patients and healthcare workers, and over 200 post-COVID-19 volunteers.

"Our [immune system](#) recognizes the virus SARS-CoV-2 as harmful and produces antibodies in response to it, which helps to fight the virus."  
"The results of this 6 months cross-sectional study show a classic pattern with a rapid increase of antibody levels within the first three weeks after COVID-19 symptoms and, as expected, a reduction to intermediate levels thereafter," explains Marc Veldhoen, adding that "in this early response phase, on average men produce more antibodies than women, but levels equilibrate during the resolution phase and are similar between the sexes in the months after SARS-CoV-2 infection." In the acute phase of the immune response, the team observed higher [antibody levels](#) in subjects with more severe disease. Also, the results show that age is not a confounding factor for the production of antibodies, as no significant differences were observed between age groups. Globally, 90% of subjects have detectable antibodies up to 7 months post contracting

## COVID-19.

Next, the research team, evaluated the function of these antibodies, i.e. their neutralizing activity against the virus SARS-CoV-2. In collaboration with Instituto Português do Sangue e Transplantação (IPST), the research team analyzed the neutralizing capacity of the antibodies produced by the patients and volunteers. "Although we observed a reduction in the levels of antibodies over time, the results of our neutralizing assays have shown a robust neutralization activity for up to the seventh month post-infection in a large proportion of previously virus-positive screened subjects," explains Marc Veldhoen.

On the importance of this study, Marc Veldhoen states: "Our work provides detailed information for the assays used, facilitating further and longitudinal analysis of protective immunity to SARS-CoV-2. Importantly, it highlights a continued level of circulating neutralizing antibodies in most people with confirmed SARS-CoV-2. The next months will be critical to evaluate the robustness of the immune response to SARS-CoV-2 infection, and to find clues for some open questions, such as the duration of circulating [antibodies](#) and the impact of reinfection."

**More information:** Patrícia Figueiredo-Campos et al, Seroprevalence of anti-SARS-CoV-2 antibodies in COVID-19 patients and healthy volunteers up to six months post disease onset, *European Journal of Immunology* (2020). [DOI: 10.1002/eji.202048970](https://doi.org/10.1002/eji.202048970)

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