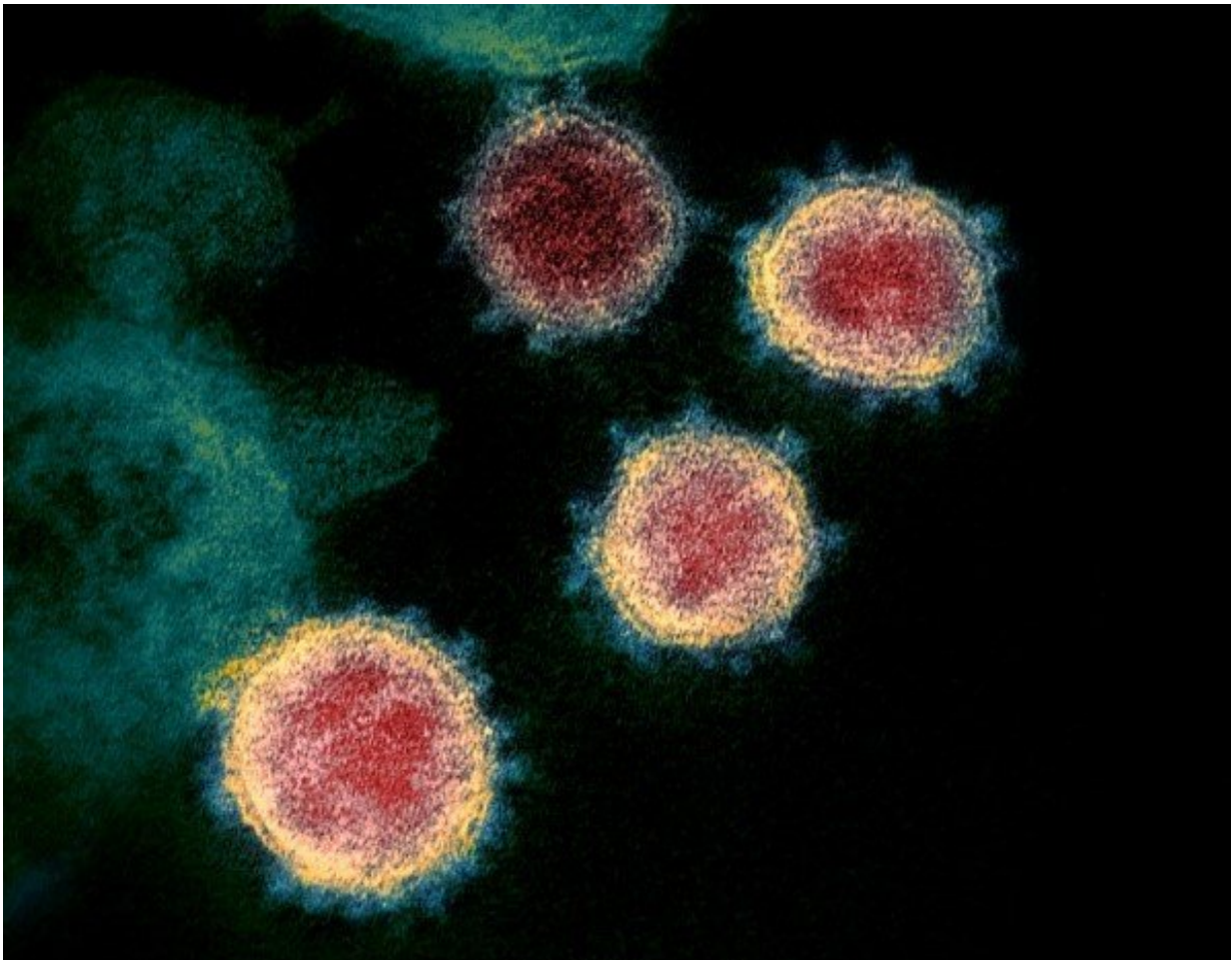


Antibody responses in COVID-19 patients could guide vaccine design

September 10 2020



A comprehensive analysis of antibody responses in coronavirus disease 2019 (COVID-19) patients could inform the development of an effective vaccine, according to a study published September 10 in the open-access journal PLOS Pathogens by Chao Wu and Rui Huang of Nanjing University Medical School, and colleagues. The results show that the neutralizing activity of antibodies from

recovered patients is typically not strong, and declines sharply within one month after hospital discharge. Credit: NIAID, 2020

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The world is facing an unprecedented challenge with communities and economies affected by the growing COVID-19 pandemic. Currently, there is no [vaccine](#) or effective drugs approved to treat or prevent the disease. A better understanding of antibody responses against SARS-CoV-2—the virus that causes COVID-19—will provide fundamental information for developing effective treatments and a preventive vaccine. In the new study, researchers continuously monitored SARS-CoV-2-specific antibody responses in 19 non-severe and seven severe COVID-19 patients for seven weeks from disease onset.

Most patients generated antibody responses against SARS-CoV-2, including the viral nucleoprotein and three parts of the spike protein: the receptor-binding domain, S1 protein, and ectodomain. Although 80.7% of recovered COVID-19 patients had varying levels of antibody neutralization activity against SARS-CoV-2, only a small portion of patients elicited a potent level of neutralization activity. This result highlights the importance of carefully selecting [blood samples](#) from recovered patients using antibody neutralization assays prior to transfusion into other COVID-19 patients. Three to four weeks after

hospital discharge, the neutralizing activity of antibodies from recovered patients declined significantly, suggesting that recovered COVID-19 patients might be susceptible to reinfection with SARS-CoV-2. In addition, severe COVID-19 [patients](#) had a large amount of non-neutralizing [antibodies](#), which may contribute to antibody-dependent enhancement of infection. According to the authors, the study provides important insights for serological testing, antibody-based intervention, and vaccine design.

More information: Chen Y, Tong X, Li Y, Gu B, Yan J, Liu Y, et al. (2020) A comprehensive, longitudinal analysis of humoral responses specific to four recombinant antigens of SARS-CoV-2 in severe and non-severe COVID-19 patients. *PLoS Pathog* 16(9): e1008796. doi.org/10.1371/journal.ppat.1008796

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