

Identification of the SARS-CoV-2 virus features that cause COVID-19

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Features of the SARS-CoV-2 virus causing COVID-19, which could be useful for developing vaccines and treatment strategies, were identified using a nonhuman primate model developed at the Korea Research Institute of Bioscience and Biotechnology (KRIBB).

The work was initiated in February this year by the research team led by Dr. Jung Joo Hong at the KRIBB National Primate Research Center, and resulted in successful development of a nonhuman [primate model](#) of COVID-19 infection, the fourth model reported worldwide, following China, the Netherlands and the US. The results of the study were part of a larger research project aiming to identify key features of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), the virus causing COVID-19, and to test for the efficacies of COVID-19 vaccines and treatments using the primate model.

In the primate study, vascular abnormalities due to

the infection, reasons underlying fatality of COVID-19 infection, particularly in immunocompromised patients, sites of SARS-CoV-2 multiplication inside [human body](#), and the time-course and were investigated.

The research team showed, for the first time, that SARS-CoV-2 caused vascular inflammation and that the endotheliitis persisted three days after the infection. Further, they confirmed immunosuppression, which is typically observed in patients with immunodeficiency, when the viral load increased precipitously during COVID-19 infection (first two days after infection).

This study was featured on the cover of the *Journal of Infectious Diseases*, a world-class [academic journal](#) in the field of infectious diseases. The issue's online edition became available on August 3, 2020, and the article will be printed the November 15 issue.

The research team observed that the virus multiplied rapidly in the upper and lower respiratory tracts of the experimental primates in first two days after the viral infection. Subsequently, the viral load decreased quickly, and the viral activity was not detected seven days after the [infection](#).

These findings are expected to provide novel insights regarding the diagnostic challenges associated with a false positive test, i.e., a positive result of the reverse transcriptase polymerase chain reaction (RT-PCR) test for an asymptomatic.

More information: Bon-Sang Koo et al, Transient Lymphopenia and Interstitial Pneumonia With Endotheliitis in SARS-CoV-2–Infected Macaques, *The Journal of Infectious Diseases* (2020). [DOI: 10.1093/infdis/jiaa486](https://doi.org/10.1093/infdis/jiaa486)

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