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**About the Author**

Dr. Suarez is the research leader for the Exotic and Emerging Avian Viral Disease Research Unit of the Agricultural Research Service, USDA. His primary research interests are in the understanding and control of avian influenza and Newcastle disease viruses in poultry and other emerging viral diseases that threaten the poultry industry.

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Address for correspondence: Erica Spackman, US National Poultry Research Center, USDA Agricultural Research Service, 934 Station Rd, Athens, GA 30605, USA; email: [erica.spackman@usda.gov](mailto:erica.spackman@usda.gov)

## Serologic Responses in Healthy Adult with SARS-CoV-2 Reinfection, Hong Kong, August 2020

Paul K.S. Chan, Grace Lui, Asmaa Hachim, Ronald L.W. Ko, Siaw S. Boon, Timothy Li, Niloufar Kaviani, Fion Luk, Zigui Chen, Emily M. Yau, Kin H. Chan, Chi-hang Tsang, Samuel M.S. Cheng, Daniel K.W. Chu, Ranawaka A.P.M. Perera, Wendy C.S. Ho, Apple C.M. Yeung, Chit Chow, Leo L.M. Poon, Sophie A. Valkenburg, David S.C. Hui, Malik Peiris

Author affiliations: The Chinese University of Hong Kong, Hong Kong, China (P.K.S. Chan, G. Lui, S.S. Boon, T. Li, F. Luk, Z. Chen, W.C.S. Ho, A.C.M. Yeung, C. Chow, D.S.C. Hui); The University of Hong Kong, Hong Kong (A. Hachim, R.L.W. Ko, N. Kaviani, E.M. Yau, K.H. Chan, C. Tsang, S.M.S. Cheng, D.K.W. Chu, R.A.P.M. Perera, L.L.M. Poon, S.A. Valkenburg, M. Peiris)

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In March 2020, mild signs and symptoms of coronavirus disease developed in a healthy 33-year-old man in Hong Kong. His first infection did not produce virus neutralizing antibodies. In August, he had asymptomatic reinfection, suggesting that persons without a robust neutralizing antibody response might be at risk for reinfection.



response suggests that antibody against SARS-CoV-2 developed on reinfection.

Levels of adaptive cytokine interleukin-2 were elevated on days 10 and 43 (Appendix Figure 3, panels A, B). Reinfection coincided with a stronger interleukin-21 memory type response on day 148 than on days 10 and 43.

Previous studies show that most patients with mild, severe, or asymptomatic SARS-CoV-2 infection produce neutralizing antibodies and antibodies against spike RBD and N proteins (3,4). This case was unusual because the patient had low or undetectable levels of neutralizing and binding antibodies against multiple viral proteins during his primary infection and acute stage of asymptomatic reinfection. He was not immunodeficient because he had IgG against measles and varicella zoster viruses and no history of recurrent infections. The virus from the first infection had a truncation in the 58AA open reading frame 8 gene, which mediates immune evasion through downregulation of major histocompatibility complex and interferon responses (Y. Zhang et al., unpub. data, <https://www.biorxiv.org/content/10.1101/2020.05.24.111823v1>) (8). However, it is unclear if this mutation contributed to the patient's lack of antibody production.

Reasons for this patient's unusual response need to be further investigated. He recovered from his primary infection within 3 weeks, and his secondary infection was asymptomatic. These findings indicate that, in the absence of primary neutralizing antibodies, T cells and mucosal immunity might have played a critical role in resolving the infection. Given the unusual antibody response in this patient to his first infection, researchers must be cautious about generalizing more widely from this patient's experience.

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### About the Author

Prof. Chan is a clinical virologist at the Chinese University of Hong Kong, Hong Kong. His research interests include diagnostics, epidemiology, and pathogenesis.

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Address for correspondence: Malik Peiris, School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong, No. 7 Sassoon Rd., Pokfulam, Hong Kong, China; email: malik@hku.hk; Grace Lui, Department of Medicine and Therapeutics, Faculty of Medicine, The Chinese University of Hong Kong, Prince of Wales Hospital, 30-32 Ngan Shing St., Shatin, New Territories, Hong Kong, China; email: gracelui@cuhk.edu.hk