

Recombination may frequently occur between 2019-nCoV and SARS-CoV clades

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Abstract

A novel bat coronavirus (2019-nCoV) caused an outbreak of infectious pneumonia termed COVID-19 in the world. This reminds us of another notorious bat coronavirus, SARS-CoV, which mysteriously broke out in China 17 years ago and killed nearly 800 people worldwide. A key to its efficient human attack is adopting angiotensin-converting enzyme 2 (ACE2) as the receptor. The relationship between 2019-nCoV and SARS-CoV has aroused much public concern. To our surprise, we found that the two CoV lineages may frequently exchange their genetic materials through homologous recombination. Particularly 2019-nCoV might thereby acquire the receptor-binding domain from the SARS-CoV clade, enabling it to make use of ACE2 as well and thus spread rapidly in humans. Our findings suggest the accomplice role of a virus of SARS-CoV clade in COVID-19 and warn of the possible emergence of more mosaic CoVs capable of launching severe epidemic.

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