An important host factor in SARS-CoV-2 infection identified using iPS cell and organoid technology

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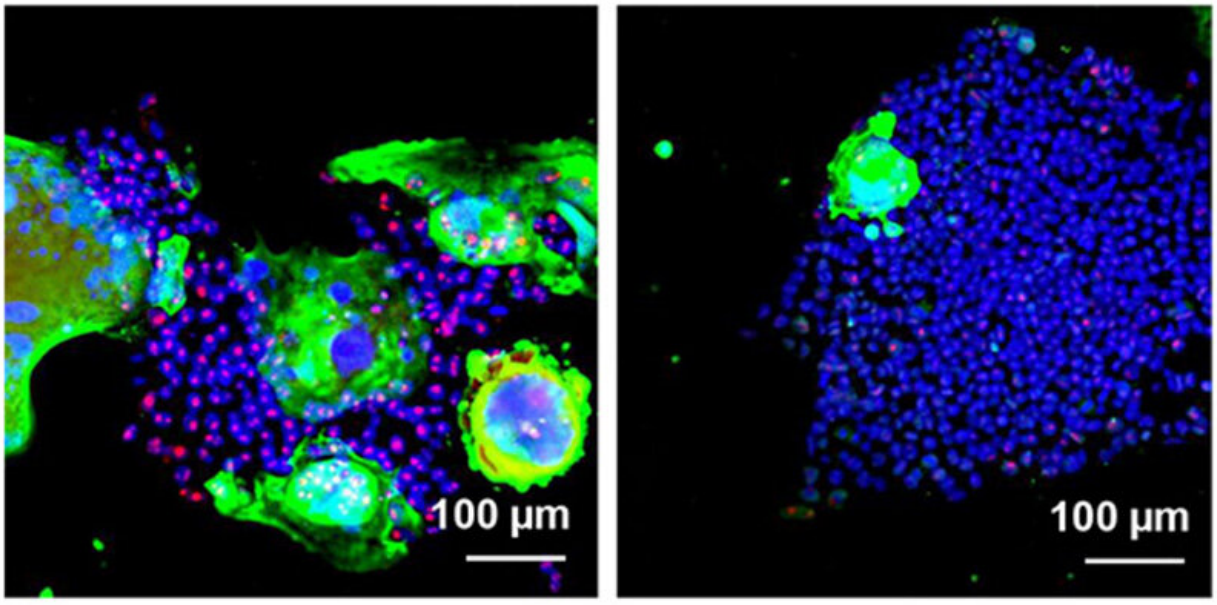

Immunofluorescence analysis of SARS-CoV-2 N protein (green) and EXOC2 (red) in EXOC2 knock down iPS cells. Nuclei were counterstained with DAPI (blue). Credit: Kyoto University

Most COVID-19 therapeutics target the SARS-CoV-2 proteins. Because the viral proteins acquire genetic sequence mutations, the emergence of

new variants has a risk to make the drugs ineffective.

The analyses of host factors essential for SARS-CoV-2 infection in previous studies have focused on receptors and proteases, such as ACE2 and TMPRSS2, while other host factors have not been investigated sufficiently.

In this study, Dr. Takayama and his colleagues first predicted that EXOC2 is particularly important for SARS-CoV-2 infection based on previously published data from genetic analyses (CRISPR screening and RNA-seq analysis). They confirmed that suppression of EXOC2 expression by the CRISPR interference system reduced the efficiency of SARS-CoV-2 infection, using ACE2-expressing iPS cells and airway organoids. The team also found that the decrease in SARS-CoV-2 infection efficiency by suppression of EXOC2 expression was mediated by increased expression of IFNW1.

These results indicate that EXOC2 is an essential host factor for SARS-CoV-2 infection and that regulation of EXOC2 and IFNW1 expression may lead to develop new treatments for COVID-19.

The results of this study were published online in *iScience* on October 22, 2022.

More information: Renxing Yi et al, Exocyst complex component 2 is a potential host factor for SARS-CoV-2 infection, *iScience* (2022). DOI: 10.1016/j.isci.2022.105427

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