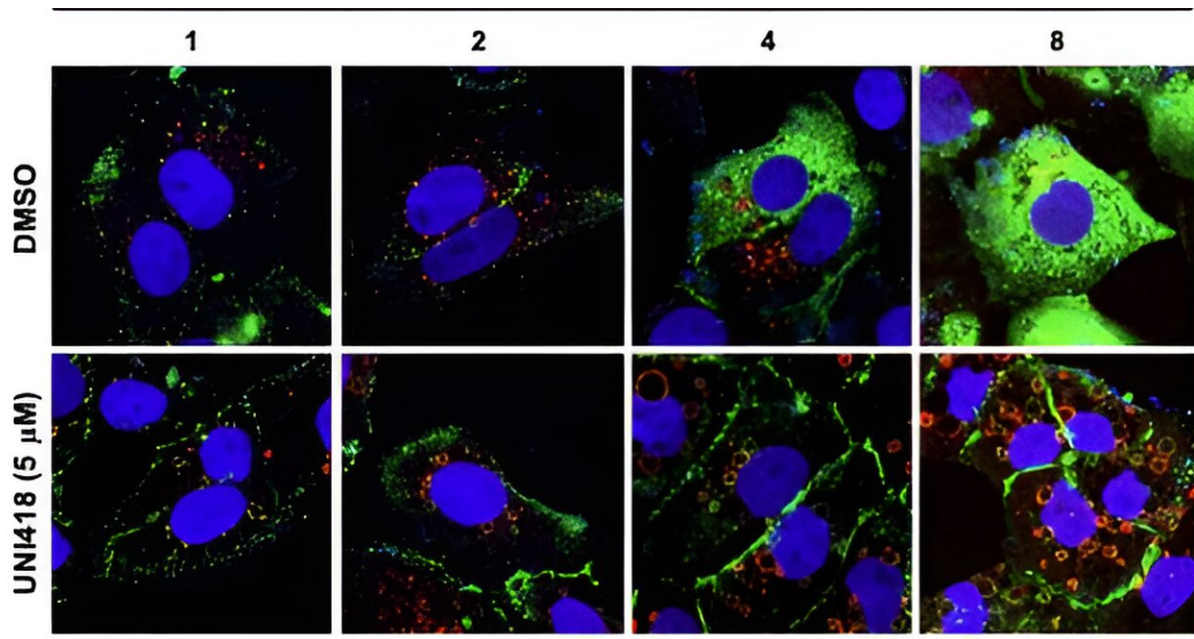


Study unveils novel treatment for blocking SARS-CoV-2 entry into cells

August 30 2024, by JooHyeon Heo

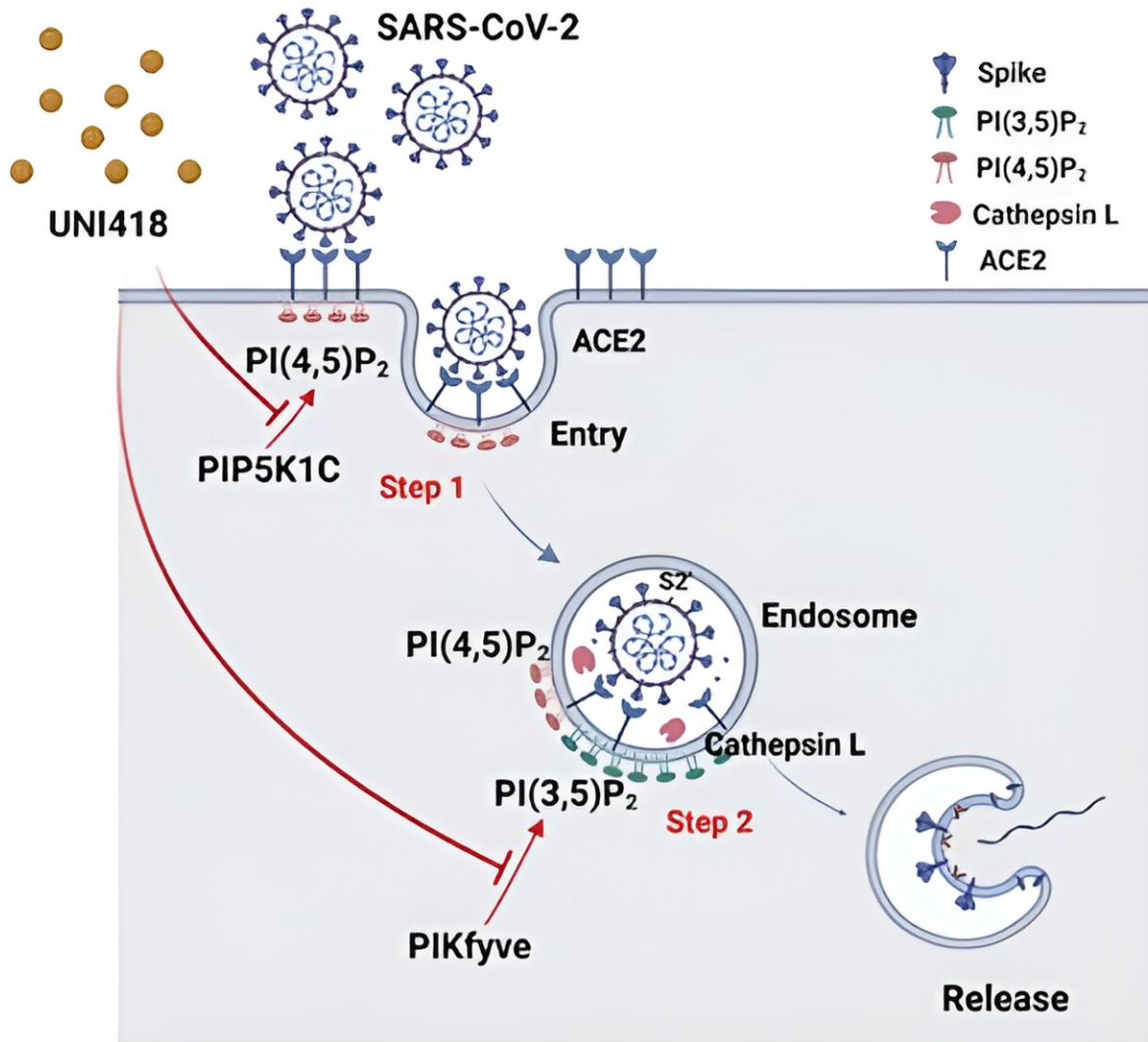


Schematic image, showing the blockade of the endocytic pathway by UNI418 in SARS-CoV-2-infected cells. Credit: *Experimental & Molecular Medicine* (2024). DOI: 10.1038/s12276-024-01283-2

In light of the ongoing threat posed by new viruses following the emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which led to the COVID-19 pandemic, new antiviral drugs continue to be developed to effectively block viral entry into the human body.

Professor Kyungjae Myung and his research team in the Department of Biomedical Engineering, affiliated with the IBS Center for Genomic Integrity, have discovered UNI418, a compound that effectively prevents the penetration of the coronavirus. This compound works by regulating dielectric homeostasis, thereby inhibiting the virus's entry into human cells. The paper is [published](#) in the journal *Experimental & Molecular Medicine*.

SARS-CoV-2, the virus that causes COVID-19, enters cells through endocytosis, a process whereby human cells absorb material from the outside by engulfing it with their cell membrane. The research team demonstrated that inhibiting specific proteins called, PIKfyve and PIP5K1C during this process can help maintain dielectric homeostasis and prevent viral invasion.



The graphical model shows how UNI418 inhibits SARS-CoV-2 entry into cells by targeting PIP5K1C and PIKfyve. Credit: *Experimental & Molecular Medicine* (2024). DOI: 10.1038/s12276-024-01283-2

Genomic homeostasis is the protective system that secures [genetic information](#) and allows it to be utilized when needed. The research team established that UNI418 supports genomic homeostasis while simultaneously preventing the infiltration and proliferation of

coronaviruses within cells.

Existing treatments generally work by inhibiting [viral proteins](#) to prevent proliferation, but they are often less effective against mutant strains of the virus. This study represents the first evidence that UNI418 can disrupt the virus's infection process, highlighting its potential as a treatment for mutant coronaviruses and other viral infections.

Co-researcher Joo-Yong Lee from Chungnam National University noted, "We proposed the potential of blocking the virus in the early stages of its entry into the human body."

Dr. Meheyein Kim from the Korea Research Institute of Chemical Technology (KRICT) added, "There is a high likelihood that UNI418 can develop into a new treatment paradigm that effectively blocks various viral infections."

More information: Yuri Seo et al, A dual inhibitor of PIP5K1C and PIKfyve prevents SARS-CoV-2 entry into cells, *Experimental & Molecular Medicine* (2024). [DOI: 10.1038/s12276-024-01283-2](https://doi.org/10.1038/s12276-024-01283-2)

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