

New therapy for flu may help in fight against COVID-19

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Philip S. Low, the Ralph C. Corley Distinguished Professor of Chemistry, is developing a new therapy for flu that may help in the fight against COVID-19. Credit: John Underwood/Purdue University

A new therapy for influenza virus infections that may also prove effective against many other pathogenic virus infections, including HIV and COVID-19, has been developed by Purdue University scientists.

In an average year, more than 2 million people in the United States are hospitalized with the flu, and 30,000 to 80,000 of them die from the flu or related complications.

The Purdue team's work is detailed in *Nature Communications* and uses a targeted therapy approach against the virus infections.

"We target all of the antiviral drugs we develop specifically to virus-infected cells," said Philip S. Low, the Purdue Ralph C. Corley Distinguished Professor of Chemistry. "That way, we treat the diseased cells without harming [healthy cells](#). We use this capability to deliver immune-activating drugs selectively into flu-infected cells. There is

also the potential that this therapy will prove efficacious in people infected with COVID-19."

The flu virus, like many other pathogenic viruses, exports its proteins into its host cell surface and then buds off nascent viruses in the process of spreading to adjacent host cells. Because these exported [viral proteins](#) are not present in the membranes of healthy host cells, the Purdue team has exploited the presence of viral proteins in infected cells by designing homing molecules that target drugs specifically to virus-infected cells, thereby avoiding the collateral toxicity that occurs when [antiviral drugs](#) are taken up by uninfected cells.

"We chose to start our tests with [influenza virus](#) because the results can often be applied to other enveloped viruses," Low said. "Our lab tests show that our process works in influenza infected mice that are inoculated with 100 times the lethal dose of virus."

Low said the [new therapy](#) may prove effective against other pathogenic virus infections such as hepatitis B, HIV and respiratory syncytial virus (RSV).

More information: Xin Liu et al, A universal dual mechanism immunotherapy for the treatment of influenza virus infections, *Nature Communications* (2020). [DOI: 10.1038/s41467-020-19386-5](https://doi.org/10.1038/s41467-020-19386-5)

Provided by Purdue University

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