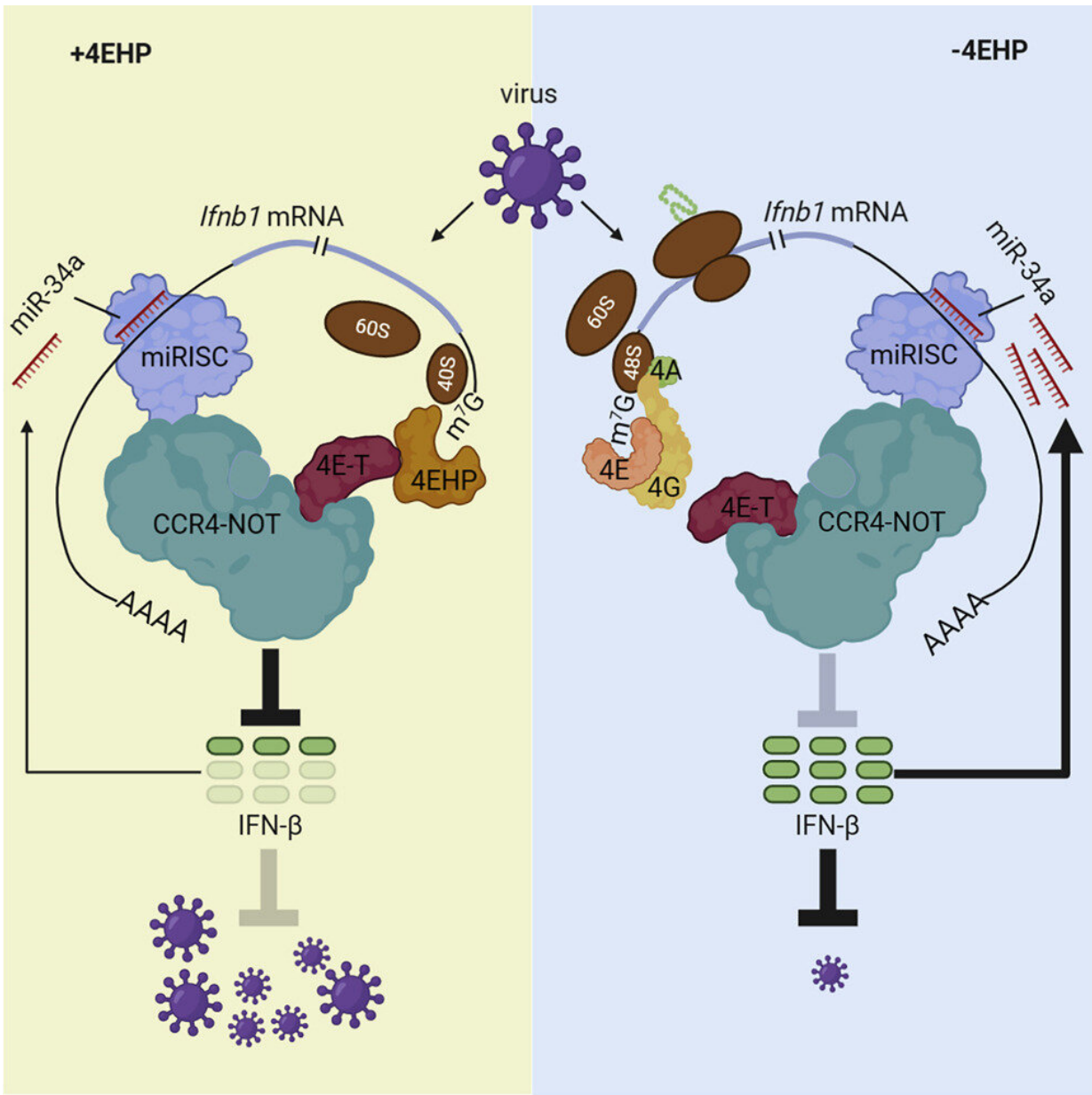


Viruses can 'hijack' cellular process to block immune response

February 18 2021



Graphical Abstract. Credit: *Molecular Cell* (2021). DOI: 10.1016/j.molcel.2021.01.030

Research led by McGill University and Queen's University Belfast has found that viruses can 'hijack' an existing molecular process in the cell in order to block the body's antiviral immune response to a viral infection.

The results of the study have been published in the journal *Molecular Cell*.

As the current COVID-19 pandemic has proven, viral infection is a significant threat to the health of humans as well as livestock, pets, and plants. Discovery of a potentially druggable process that is hijacked by the virus to facilitate viral infection could have significant health and financial benefits to society.

Molecular investigation unlocks discovery

To conduct their study the researchers looked at how [healthy cells](#) control the levels of the molecules known as "Interferon-β' or "Interferon beta." These molecules are used for communication between cells to trigger the protective defenses of the immune system that help eradicate pathogens, such as viral microbes. This communication between cells is essential for a functioning immune system.

The researchers discovered a [molecular process](#) used by the virus that blocks the synthesis of Interferon-β, therefore blocking the immune system.

Dr. Seyed Mehdi Jafarnejad, Principal Investigator from the Patrick G Johnston Centre for Cancer Research at Queen's University Belfast,

explains, "Our study has found that certain viruses 'hijack' this natural process in order to neutralize Interferon- β and block the immune system, resulting in unrestrained viral infection which can make people incredibly sick."

"My lab was fortunate to continue our collaboration with Mehdi Jafarnejad to discover how the mRNA translational repressor, 4EHP, on which we reported first in 1998, inhibits the production of the host defense protein, interferon," adds Professor Nahum Sonenberg, Gilman Cheney Chair in Biochemistry at McGill University. "This work is likely to have important implications for the understanding of how SARS-CoV-2 evades the human defense response to the virus."

While this discovery represents a breakthrough in the fields of immunobiology and [gene expression](#), further research will determine if targeting this cellular mechanism could be used to more effectively treat various types of [viral infections](#), including those such as SARS-CoV2, ultimately saving lives.

More information: Xu Zhang et al. microRNA-induced translational control of antiviral immunity by the cap-binding protein 4EHP, *Molecular Cell* (2021). [DOI: 10.1016/j.molcel.2021.01.030](https://doi.org/10.1016/j.molcel.2021.01.030)

Provided by McGill University

Citation: Viruses can 'hijack' cellular process to block immune response (2021, February 18) retrieved 26 April 2024 from <https://medicalxpress.com/news/2021-02-viruses-hijack-cellular-block-immune.html>

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