

The good, the bad, and the cleaved: 14-3-3 η in viral battles

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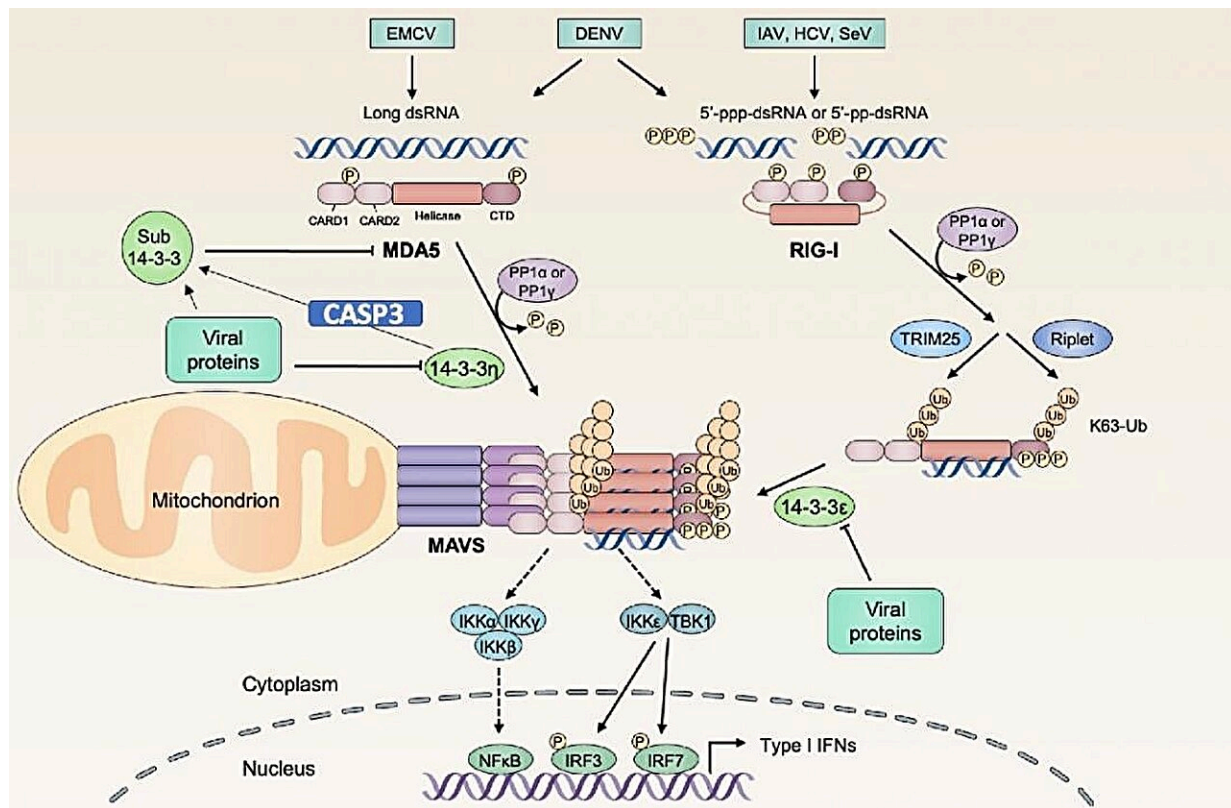


Illustration of the proposed model during viral infection. Credit: National Taiwan University

Scientists from NTU have made a discovery about a protein named 14-3-3 η , revealing its complex role in the host's defense against RNA viruses.

Initially, 14-3-3 η acts as a crucial ally in the [immune response](#). It works with another [protein](#) called MDA5 to detect and alert the immune system about the presence of RNA viruses. This [early warning system](#) is essential for mounting a swift and effective defense.

However, the story doesn't end there. Under certain circumstances, 14-3-3 η can be cleaved by an enzyme known as Caspase-3, transforming it into a new form that counteracts its original function. This newly generated version of 14-3-3 η can actually inhibit MDA5's activity, potentially limiting the immune response.

The paper is [published](#) in the journal *PLOS Pathogens*.

This dynamic interplay between 14-3-3 η 's dual roles is crucial for maintaining a delicate balance. The host needs to be able to effectively fight off infections, but it also needs to prevent excessive inflammation, which can be harmful. 14-3-3 η helps to regulate this process, ensuring that the immune response is appropriate and controlled.

Unfortunately, some RNA viruses have evolved strategies to exploit 14-3-3 η 's dual nature. They can manipulate the body's signaling pathways to favor the production of the inhibitory form of 14-3-3 η , allowing them to evade detection and potentially establish [infection](#).

This new understanding of 14-3-3 η 's role in [viral infections](#) opens up exciting possibilities for therapeutic intervention. In conclusion, the discovery of 14-3-3 η dual roles in the immune response against RNA viruses provides valuable insights into the complex interplay between the host and the pathogen.

By targeting the mechanisms that regulate 14-3-3 η , researchers may be able to develop novel strategies to enhance the immune response against RNA viruses. Additionally, understanding how viruses manipulate

14-3-3 η could lead to the development of antiviral agents that disrupt these viral tactics.

More information: Yun-Jui Chan et al, Temporal regulation of MDA5 inactivation by Caspase-3 dependent cleavage of 14-3-3 η , *PLOS Pathogens* (2024). [DOI: 10.1371/journal.ppat.1012287](https://doi.org/10.1371/journal.ppat.1012287)

Provided by National Taiwan University

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