

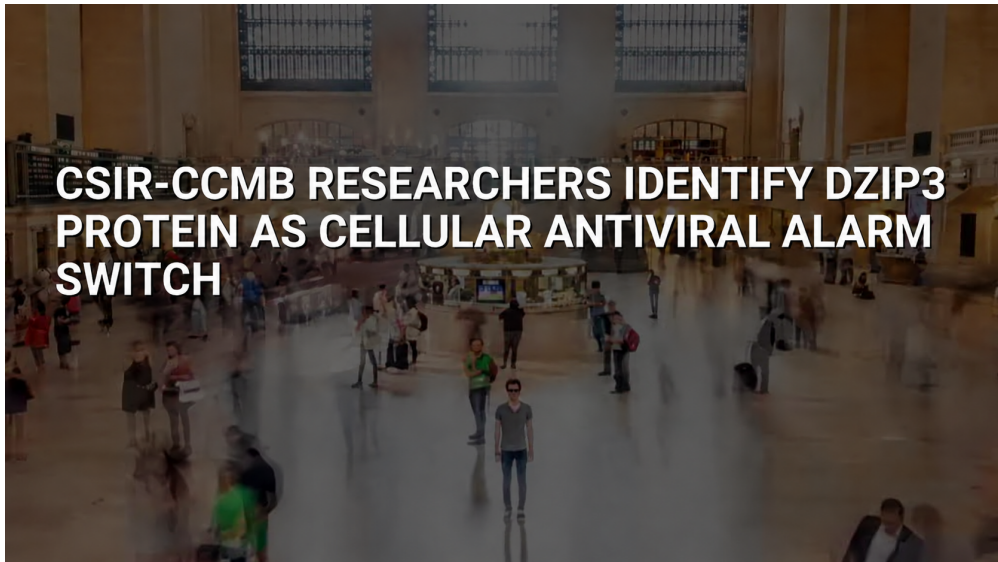
DZIP3 Antiviral Alarm Switch

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Why in news?

Scientists at the CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, have discovered how a human cell protein detects viral genetic material and activates the body's immune response.

- **DZIP3** - The protein acts as an *innate antiviral alarm switch*, which performs two crucial functions — detecting viral genetic material and activating the cellular machinery responsible for launching an immune response (acts as an early-warning sensor for viral infections).
- **Funding** - The research received funding from the Department of Biotechnology.
- **Working** - When a virus enters a human cell, the immune system must recognise its presence quickly to prevent replication.
- When it encounters viral RNA, the protein changes its shape and becomes activated.
- It then moves to the mitochondria, the cell's energy-producing structures, where it tags and activates key immune defence proteins.
- This process triggers the production of Type-I interferons, defensive molecules that help prevent viruses from multiplying.
- **Potential for antiviral drugs** - The discovery could pave the way for developing drugs that strengthen the body's natural ability to fight multiple viral infections, including Covid-19, chikungunya and Japanese encephalitis.
- Uncovering these natural cell defence mechanisms opens up exciting new possibilities, and targeting DZIP3 with small molecules could lead to broad-spectrum antiviral therapies against emerging viral threats.
- Discovering how DZIP3 senses viral RNA and directly triggers the cell's immune machinery gives us a deeper understanding of human immunity.
- **Future development** - The team is now developing small-molecule drug candidates aimed at boosting DZIP3 activity to enhance antiviral immunity.



Reference

[TOI | CCMB experts discover 'viral alarm switch' in human cells to fight infections](#)

