



# Researchers Discover New Enzyme For Better Treatment Of Cancers And Inflammatory Conditions

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Inflammatory cell death is a critical part of the body's immune response. When the cell death happens in controlled levels, then everything is normal but when it reaches uncontrollable levels, it can cause dangerous levels of inflammation in organs and tissues, which are otherwise very healthy.

Researchers from Walter and Eliza Hall Institute collaborated with researchers from Zürich University, the University of Melbourne, the Hudson Institute of Medical Research and Monash University and found an enzyme known as tankyrase-1 makes use of a 'sugar tag' to stop excessive cell death.

This discovery is important as it has many implications for patients having suffering chronic inflammatory diseases caused by unregulated cell death, like psoriasis and rheumatoid arthritis.

The discovery could also have serious implications for people suffering from inflammatory cancers, like bowel cancer, where there is too little cell death.

The research was published in Science Advances and it is hoped that these findings could lead to the opening up of better options for different infections, chronic inflammatory diseases and certain cancers.

The research, which was led by WEHI researchers Dr Lin Liu, Dr Najoua Lalaoui and Professor John Silke, focused on a protein called TNFR1, which exists on the cell surface and can induce a protein complex, which can cause cell death.

Cells have many mechanisms to fight pathogens, which viruses try to interfere with in order to stay alive. Our cells will trigger the TNFR1 death complex if they can detect pathogenic interference.

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Professor John Silke commented, "Like how the 'temple of doom' tries to trap Indiana Jones, the virus is the less fortunate treasure hunter in this scenario. Our cells have evolved to the point where they will kill themselves when they detect a pathogen, to protect the body. Since pathogens such as viruses need a living cell to replicate in, the 'temple of doom' created by our cells is a very effective way to stop a virus infection in its tracks."

Researchers said that excessive virus-induced cell death has also been linked to disease severity. By using a SARS-CoV-2 protein, the team was able to showcase how certain viruses can trigger off the death complex and cell death process. Dr Najoua Lalaoui said the findings could pave the way for ways to bring down the severity of some viruses in the future. Tankyrase-1 also plays a role in some cancers, with drugs that inhibit its function currently in pre-clinical trials.

Dr Lalaoui was of the opinion that discovering the enzyme's role in cell death could lead to better treatment options for patients suffering from some inflammatory cancers.

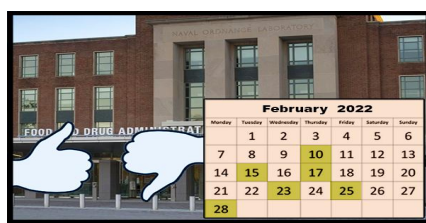
He added, "We're suggesting anti-tankyrase drugs might in future be specifically targeted to cancers that express TNF, as the drugs would then both stop cancer cells growing and trigger cell death to potentially make them more effective. Our findings are laying the scientific foundation that could lead to improved future treatments for not only some cancers, but also chronic inflammatory conditions."

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