

Turbocharging the body's natural killer cells to defeat cancer

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Dr. Jai Rautela and Professor Nicholas Huntington. Credit: Monash University

Natural Killer (NK) cells have long been the soldiers of the immune system that prevents the growth and spread of cancers, and subduing this army of cells is one of the key ways that tumours take hold.

Australian researchers have discovered a protein found in humans that

prevents NK [cells](#) from doing their job fighting cancer. Importantly the study, published today in the prestigious journal *Science Signaling*, reveals that blocking this protein—with a naturally occurring hormone currently commercially available—turbocharges the [immune system](#) to fight off the cancer cells.

The discovery, in preclinical models, means this hormone, called Follistatin, may be a new and highly potent immune-therapeutic drug for the eradication of cancers such as melanoma.

In the paper, the research team led by Dr. Fernando Guimaraes, from the University of Queensland's Diamantina Institute and Professor Nicholas Huntington, from the Monash Biomedicine Discovery Institute, together with researchers from the Walter and Eliza Hall Medical Research Institute, studied what are known as 'Natural Killer' cells in the immune system. These NK cells are crucial in protecting against the triggering of cancer and the spread or metastasizing of cancer cells.

One of the key reasons why cancer cells take hold and grow occurs when these NK cells are in some way suppressed. To date the signals that inhibit NK cells have remained largely a mystery.

The scientists found that a protein—called Activin-A—which is found naturally in both healthy human cells and [cancer cells](#), directly disables the NK cell's capacity to halt cancer growth.

Importantly, they were able to block Activin-A in [preclinical models](#), using human and mouse NK cell models, with the hormone Follistatin.

According to Professor Huntington, "these findings may open the door to novel immune-therapy drugs which provide a deeper and more durable way to overcome the immune suppression seen in [cancer](#), improving patient outcomes."

More information: [DOI: 10.1126/scisignal.aat7527](https://doi.org/10.1126/scisignal.aat7527) "Therapeutic blockade of activin-A improves NK cell function and antitumor immunity," *Science Signaling* (2019). [stke.sciencemag.org/lookup/doi ... 26/scisignal.aat7527](https://stke.sciencemag.org/lookup/doi/10.1126/scisignal.aat7527)

Provided by Monash University

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