

# Researchers unlock clues to improving cancer treatment

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A research project led by The University of Western Australia in collaboration with Telethon Kids Institute and 13 health research organizations has identified key differences between cancers that respond to immunotherapy and those that do not.

The breakthrough, which has the potential to improve [cancer treatment](#), is published in the journal *Science Translational Medicine*.

Immunotherapy treatment works by enhancing the body's immune response to help fight [cancer](#).

Scientist Dr. Rachael Zemek, who completed the work as part of her Ph.D. at UWA's National Centre for Asbestos Related Diseases and is now based at Telethon Kids Institute, said immunotherapy could result in the complete disappearance of cancer in a handful of patients, but why it worked for some people and not others was unknown.

"Through our research we found that by activating a particular immunological pathway before

treatment, we could dramatically boost the response to immunotherapy treatment in mice," Dr. Zemek said.

"We developed a unique way of analyzing cancer samples before treatment and then compared the genes between responding and non-responding cancers," she said.

After analyzing the genes found within cancer samples, the researchers were surprised to see that even before immunotherapy, they could tell which cancers were going to respond.

Dr. Joost Lesterhuis, from UWA's School of Biomedical Sciences and the Telethon Kids Institute, who led the research and supervised Dr. Zemek during the study, said the team then identified drugs that could increase expression of the genes to increase the response to immunotherapy treatment.

"By preparing the [immune system](#) before therapy, it can strengthen the response," Dr. Lesterhuis said.

"This has exciting future potential to help more cancer patients benefit from immunotherapy."

The method has not yet been tested on people with cancer who have received immunotherapy; however [clinical trials](#) could begin within the next few years.

**More information:** Rachael M. Zemek et al. Sensitization to immune checkpoint blockade through activation of a STAT1/NK axis in the tumor microenvironment, *Science Translational Medicine* (2019). [DOI: 10.1126/scitranslmed.aav7816](https://doi.org/10.1126/scitranslmed.aav7816)

Provided by University of Western Australia

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