

Study looks at using the immune system to reduce prostate cancer risk

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Immune therapies have been explored as a way to treat cancer after it develops. But a new study from the University of Michigan Comprehensive Cancer Center suggests that genetic risk of prostate cancer can be reduced by rescuing critical immune system cells.

The study was done in mice and would need further validation and extensive testing in the lab before being available for humans. But the results are promising for people with a strong family history of [cancer](#) or known cancer genes.

Typically, vaccines are based on specific antigens and trigger immunity for a specific pathogen. This is more challenging for cancer as the best lymphocytes that generate immunity to cancer are eliminated during development. In this new study, researchers sought to rescue these key lymphocytes - called high affinity cancer-reactive [T cells](#) - during their development.

The study appears online this week in the *Proceedings of the National Academy of Sciences*.

The researchers first showed that T cells involved in prostate cancer are deleted because of a gene called lymphotoxin alpha. When the mice lacked lymphotoxin, these T cells came back. These mice become more resistant to prostate cancer. This result suggests that lymphotoxin can be a good target for immune prevention.

Next, the researchers injected a protein targeting lymphotoxin into cancer-susceptible mice. Without treatment, all of these mice will develop prostate cancer, and typically by age 6 months half of them will have metastatic cancer that has spread to distant organs. Although the treated mice still developed tumors, none developed metastases after 30 weeks.

"It appears that the rescued T cells delay tumor formation. It may not be that this approach can prevent cancer altogether, but it can delay the process and slow the aggressive growth and spread of cancer," says study author Pan Zheng, M.D., Ph.D., associate professor of surgery and pathology at the U-M Medical School.

While this study looked specifically at [mice](#) with prostate cancer, the approach has potential for other types of cancer.

"There is a certain population with a high likelihood of getting cancer, and we need better strategies to minimize their risk. This approach may be translated into clinical care for those patients," Zheng says.

Prostate cancer statistics: 192,280 Americans will be diagnosed with [prostate cancer](#) this year and 27,360 will die from the disease, according to the American Cancer Society

More information: [Proceedings of the National Academy of Sciences, doi: 10.1073/pnas.0905707106](#)

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