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Surviving T cells may boost immunity in aging

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UA College of Medicine research on aging and immunity has been published in the *Proceedings of the National Academy of Sciences*.

The decline in immune function with age is viewed as the most important factor contributing to older adults' increased infections and decreased response to vaccination.

Aging brings about a selective decline in the number and function of T cells, a type of white blood cell critical in the immune system's response to infection.

But the few T cells that survive the longest may better protect against infections such as the flu, according to a study led by researchers from the University of Arizona College of Medicine-Tucson.

The researchers now are looking for ways to increase the number of these surviving T cells to improve protection against disease in older adults.

The study results are reported in the Aug. 1 Early Edition issue of the Proceedings of the National Academy of Sciences. The article, "Non-random attrition of the naïve CD8+ T-cell pool with aging governed by TCR:pMHC interactions."

"We have discovered that aging brings about selective attrition of those T cells that defend us against new infections that we have not

encountered before. Not all T cells age the same, and the ones that will survive the longest have special features that may allow them to best protect against infections such as flu," said study senior author Dr. Janko Nikolich-Žugich, chairman of the department of immunobiology, co-director of the Arizona Center on Aging, and Elizabeth Bowman Professor in Medical Research at the UA College of Medicine, and a member of the UA BIO5 Institute.

"We now know that there are a few good cells that can be targeted by vaccination to expand their numbers and achieve protection," he said. "Finding ways to expand them is our next and final challenge, and our team at the Arizona Center on Aging should be able to achieve that in the next few years."

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