

'Natural killer' cells keep immune system in balance

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Christine Biron is a professor of Medical Science Molecular Biology, Cell Biology and Biochemistry at Brown University.

Natural killer, or NK cells, are part of our innate immune system. A healthy body produces them to respond early during infection. They are activated and they kill cells infected with a given virus.

It turns out NK cells are even more important to the body than previously thought. Researchers from Brown University and McGill University now know that the cells also help keep T cells — major players in cell-mediated immunity — from over-responding. Such a balance helps T cells maintain their role in the body's adaptive immune response, rather than becoming too numerous and activated to cause

harm.

The discovery, published in the September issue of the [Journal of Experimental Medicine](#), could someday be used to help treat patients with compromised immune systems. Managing NK cell production might help stabilize the immune systems of people with HIV or keep patients from rejecting bone marrow or organ transplants.

The findings place an importance on understanding how to keep NK cells around, because they can be lost, said lead author Christine Biron, professor of medical science at Brown University.

"The work reveals two important aspects of NK cell biology, the first piece being understanding how to keep NK cells instead of losing them," said Biron, the Esther Elizabeth Brintzenhoff Professor in the Department of Molecular Biology, [Cell Biology](#) and Biochemistry. "The second is that if you can keep them around, they have an important regulatory function to limit adaptive immune response. If you don't have them during long challenges, your adaptive immune system response could go unregulated and lead to death."

Scientists have known that NK cells have antimicrobial effects. But the newer research focuses on factors that help keep NK cells around. Through studying mice, researchers determined that the ability to keep NK cells around depends on whether they have a particular kind of activating receptor that promotes their proliferations.

Once activated, the expanded NK cells help produce a cytokine known as interleukin-10, which effects immunoregulation and inflammation control. (Cytokines are protein molecules that help regulate the immune system) In turn, IL-10 helps dampen the T cell response. An overabundance of T cells in this case can harm the body and cause death.

Biron said it was important to learn that it is possible to help make NK cells proliferate, as an important milestone to help sustain them in the body when needed.

Such an understanding is crucial, she said, to help patients with compromised immune systems who may not be able to sustain NK cells on their own.

Biron said the research underscores the need for balance in the [immune system](#), with the right combination of NK and T [cells](#) to complement innate and adaptive immunity in the body.

"You want the right balance," she said. "This could help create the right balance."

Source: Brown University ([news](#) : [web](#))

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