Alexander Rudensky

A team of researchers led by Memorial Sloan Kettering immunologist Alexander Rudensky has gained new understanding about regulatory T cells — a subtype of immune cells that suppresses the immune system's reactivity. Their findings, published in *Science*, raise hope that these cells could be used as therapy in patients with immune-system-related conditions. [PubMed Abstract]

Regulatory T cells are critical for life, Dr. Rudensky explained. "In their absence, the immune system — instead of attacking foreign intruders — strikes against normal cells and tissues, causing inflammatory responses that can be fatal."

In recent years, he and other scientists have studied the cells closely, positing that regulatory T cells one day could be manipulated in the clinic — for example, to prevent dangerous immune reactions in patients with autoimmune disorders such as multiple sclerosis or rheumatoid arthritis, or in cancer patients who have received bone marrow transplants from donors.

But it remained to be established that regulatory T cells could be exploited safely. "Concerns have been raised that regulatory T cells under certain conditions — for example, in a disease setting — might be induced to transform into other T cell types of the immune system," explained Dr. Rudensky, "in effect changing the cells' function." If such change of function occurred in a patient whose immune system was already overactive, the cells could potentially boost that immune system even further, instead of calming it down.

By performing experiments in genetically engineered mice, the researchers were able to examine the lifespan of regulatory T cells in a mouse's body. The study showed that the cells are constantly being replenished as they divide to yield identical copies and so remain stable, their function unchanged — both under normal conditions and when a mouse's immune system had been challenged by infection or autoimmune reaction. "Our findings give reassurance that future therapies based on regulatory T cells could provide a durable and safe way to control a patient's immune system," Dr. Rudensky noted.

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