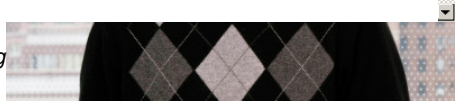
investigator, Alexander Rudensky is fascinated by how a specific type of white blood cells called regulatory T cells regulates our immune system. His scientific curiosity manifested itself early when, during his Moscow boyhood, Dr. Rudensky and a friend taught themselves how to manufacture explosives, a hobby that arose from their mutual interest in chemistry.



Alexander Rudensky

In the postwar Soviet Union, kids who wanted to go to university had to start preparing for it early. By the beginning of high school, my friend and I enrolled in an evening school in chemistry at the Moscow State University. Taught by professors and PhD students, it was a fantastic program that exposed us to both theoretical problem solving and laboratory work. The beauty of chemical reactions fascinated me — to the extent that I spent that whole summer reading textbooks in organic chemistry.

While doing my undergraduate studies in biochemistry, at the University of Moscow, I began working in an immunochemistry laboratory during my free time. In 1979, I joined the lab of Vitalij Yurin at the Gabrichevsky Institute of Epidemiology and Microbiology, in Moscow, which was one of the best molecular immunology labs in the country. By then I was finding biochemistry a bit dry, so I was thrilled when Vitalij asked me to study the biological function of white blood cells called T cells, which mediate the body's defense against pathogens.

After earning my PhD, I stayed in Vitalij's lab for a number of years working as a research scientist. In 1989, just before the fall of the Berlin Wall, I was able to travel to West Berlin and, for the first time, present my work at the International Immunology Congress. Excited at finding myself in the midst of an international group of outstanding scientists, hearing about the most recent developments in the field of immunology, I began looking for more exposure to research taking place outside of the Soviet Union.

I wrote a letter to the late Charles Janeway, a renowned American immunologist whose work I admired. He was a great thinker and — as I later found out — someone who conceived at least one new idea each day. I didn't really expect an answer, and was stunned when he asked me to join his lab at the Yale University School of Medicine, in New Haven.

By then, in late 1989, my wife and I were expecting our fourth child and had already talked about spending a couple of years abroad. As excited as we were about the rapid changes taking place in our country, we feared the political turmoil would end in violence and dictatorship. Getting permission to leave the country around that time was still somewhat complicated — as I recall explaining to Charlie one day on the phone from our kitchen in downtown Moscow. The English I spoke back then was barely understandable, yet Charlie caught on immediately, and was able to arrange all the paperwork I needed. A few months later, our family arrived in New Haven.

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> reduce it to a mechanism — clinicians are trained in treating the whole organism, and their perspective is needed to bring the scattered parts back together.

After finishing my postdoctoral work in Charlie's lab, I accepted a position at the University of Washington, in Seattle, which had an illustrious immunology department. In addition, I was very lucky to recruit a group of brilliant students and postdoctoral fellows. We stayed in Seattle for 16 years — until a year and a half ago, when my lab moved to New York and became part of Memorial Sloan Kettering.

Much of our research has lately been focused on a specific population of white blood cells called regulatory T cells, which can repress the immune system's reaction to infections or cancer. We've found that these cells are critical for keeping other white blood cells in check; in their absence, the immune system instead of attacking "intruders" — for example, a cell infected with virus or bacteria — strikes against normal cells and tissues, causing monstrous inflammatory responses that can be fatal.

The basic research our lab and others are doing to determine how regulatory T cells are formed and how they function is likely to have widespread clinical applications. Potential therapies that act by boosting or targeting these cells are now being explored for autoimmune diseases, such as diabetes and rheumatoid arthritis, as well as for cancer. Most types of tumors are infiltrated by regulatory T cells, which are believed to suppress the immune system's ability to fight the tumor.

My colleagues and I are hoping to explore the relevance of our findings for cancer biology, which is one of the reasons I joined the Sloan Kettering Institute. I'm excited to be part of SKI, which brings together a relatively small faculty of first-rate scientists working in different branches of biology. It also appealed to me that SKI has its own Computational Biology Program and great research facilities — and that it's situated right next to The Rockefeller University and Weill Cornell Medical College, where my lab has collaborators.

I'm equally excited about the prospect of working with the Center's clinicians, who will help us apply our understanding of the ways regulatory T cells control multiple body functions to practical use. While we biologists tend to study an organism by breaking it down into parts — essentially attempting to reduce it to a mechanism — clinicians are trained in treating the whole organism, and their perspective is needed to bring the scattered parts back together.

With its complicated language and strong traditions, the field of immunology may once have appeared a land of its own. But that's no longer the case, and further progress will rely on our ability to embrace different fields of biology and medicine in addition to developing new technologies. That's why I encourage my students not to feel locked into one particular discipline, but to get broad exposure to life sciences by engaging in interdisciplinary research.

To me, science remains a unique profession, which gives people the opportunity to earn support for and pursue their ideas — and having such intellectual freedom is a great privilege and responsibility.