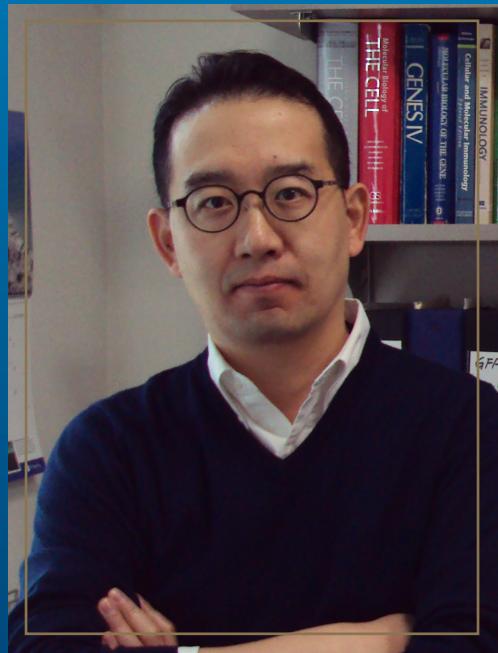


MEET THE SCIENTIST



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Immune Cells Team Up, Share Information to Stop Infection

The human body has many methods to combat infection, but until the announcement of groundbreaking work recently performed at the University of Rochester Medical Center, researchers were unaware of an amazing way some of these defenses work together to stop infection as quickly and effectively as possible.

"Immune cells team up and share information to get their job done, much like many types of animals take part in collective behaviors to benefit the group as a whole," said Dr. Minsoo Kim. Dr. Kim led a project that showed that one type of cell, the body's "first responder," lays down a type of breadcrumb trail to lead slower but tougher defenders directly to an infection.

The discovery, published in the journal, *Science*, may open the door to enhancing the speed of these interactions, or in the case of autoimmune diseases, slowing them.

Neutrophils are a type of white blood cell that move easily, but they don't pack much of a punch. They can get to the scene of an infection quickly, but they've essentially shed armament for speed, meaning that though they're the first to reach the infection, they aren't equipped to deal with many pathogens.

But the neutrophils have a trick up their sleeves.

Imagine a quick-footed caterer at a dinner party. She walks briskly through a room of hungry patrons with a steaming entrée, and the patrons, attracted by the delicious scent, slowly sweep in behind her to the dining room. The neutrophils act like the caterer, zeroing in on the task at hand while laying down a highly specialized chemical trail that the slower but more voracious cells, called T cells, find irresistible. The T cells follow the trail, discover the pathogens, and begin destroying them.

Kim hopes understanding this chemical trail will lead to ways to either boost its effects in order to recruit more T cells to battle an infection, or to inhibit the trail in patients with autoimmune disorders like multiple sclerosis and lupus where the immune system mistakenly attacks and destroys healthy body tissue.

The research is part of a \$9 million National Institutes of Health Research Program Project Grant that was awarded to scientists in the School of Medicine and Dentistry in 2014 with the goal of using cutting-edge imaging techniques to view the immune system while it is fighting infection and disease.

"Immune cells team up and share information to get their job done..."