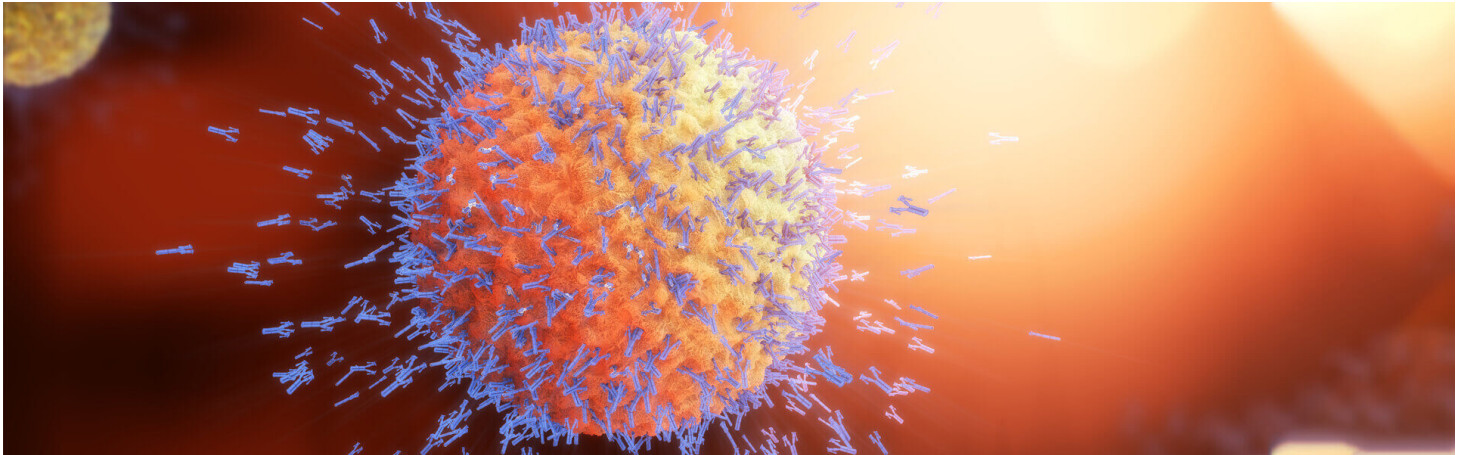




Unlocking the Secrets of the Immune System

Tuesday, November 5, 2019



The immune system consists of dozens of different cell types that are designed to protect and defend against infection. But sometimes, immune cells can respond in a way that can actually cause disease—for example, when certain cell types either over- or underact. In the field of immunology, scientists are studying how to disrupt or manage these different immune responses to improve health.

In cancer, for example, the immune system is turned off or muted, while in inflammatory disorders, the system is on overdrive, explains Trey Gieseck, Principal Scientist, Epithelial Biology in Pfizer's Inflammation and Immunology Research Unit. "In our research, we're trying to understand the pathways that are involved in moving the immune response up or down so that we can fine tune it in both directions."

Scientists like Trey and Kellie Kravarik, Principal Scientist, Systems Immunology are working to understand how immunity works as a system, while also zooming in on individual cells to analyze how they communicate with one another. For example, if a cell sends a message, can scientists intercept it and actually stop it from orchestrating an immune response?

“Understanding autoimmune diseases at the single cell level, we don’t actually know how powerful that will be yet,” says Kravarik.

Still, in this new field, the team of scientists knows there’s a lot to learn. “It’s a frontier,” says Kravarik. “We don’t know what we’re going to discover next.”

That includes in oncology research. “We didn’t used to know that the immune system was so involved in the fight against tumors,” says Natalija Budimir, Senior Scientist, Oncology at Pfizer’s La Jolla R&D site. Budimir’s work involves understanding how the tumor environment influences the function of immune cells—and then how to develop therapies based on that knowledge. She adds, “Something that may have looked like science fiction a decade ago is not anymore.”

Originally published, Tuesday, November 5, 2019