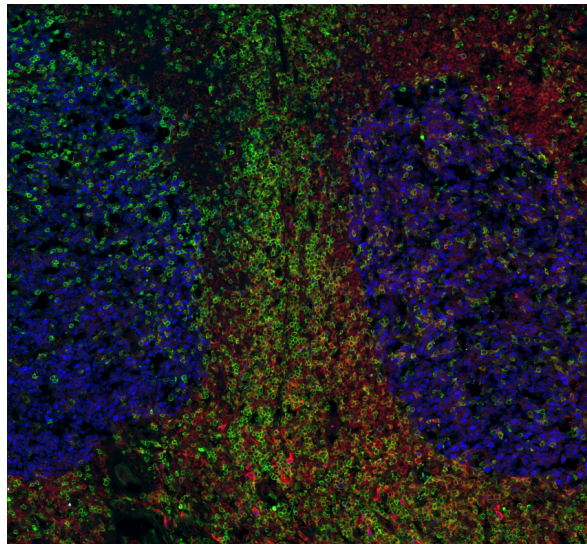


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Lab Chat: Boosting the immune system by giving T cells a push

By: Megan Thielking | Tuesday, July 5, 2016



A CLOSE-UP LOOK AT HUMAN TONSILS, WITH ACTIVIN A (IN RED) MORE PLENTIFUL IN AREAS WITH T LYMPHOCYTES (IN GREEN). (LA JOLLA INSTITUTE FOR ALLERGY AND IMMUNOLOGY)

Scientists have discovered a way to potentially create stronger, more robust vaccines by hijacking a newly discovered signaling protein that helps certain immune cells grow. Many vaccines work by getting the body's antibodies to respond, and immune cells called Tfh, or T follicular helper cells, are key to that process. Here's what Shane Crotty of the La Jolla Institute told me about the findings, published in *Nature Immunology*.

What role do T cells play in producing antibodies?

B cells make antibodies, but they don't do it on their own. For most antibody responses to infections, B cells require help every step of the way from T cells. Specifically CD4 T cells. And it turns out that the help has to come from a specialized type of CD4 T cell: a T follicular helper cell, Tfh. Since Tfh cells are required for most antibody responses, it is valuable to understand what triggers Tfh cell development.

This has been unknown. We tested 2,000 different human proteins and discovered that an unusual protein called Activin A can potently induce Tfh cells.

What's the application of that finding?

Since you need Tfh cells for protective antibody responses against almost all viruses and bacteria, it would be valuable to be able to better make Tfh cells for vaccines, to get better antibody responses against things like Zika virus or HIV. Triggering activin A may accomplish that. In contrast, there are also diseases where people make "bad" immune responses against their bodies, autoimmune diseases ... it would be very valuable to shut down those antibody responses. Blocking Tfh cells may do that, and therefore blocking activin A may do that.