

Mobilizing white blood cells to the lung: New discovery could lead to an improved influenza vaccine

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Findings just published in the scientific journal *Immunity* by researchers at the Trudeau Institute shed new light on how a previously-unknown messaging mechanism within the human immune system prompts specific influenza-fighting cells to the lung airways during an infection.

Infections from the influenza virus are responsible for hundreds of thousands of hospitalizations and as many as 40,000 deaths in the United States each year. Although researchers have known for some time that white blood cells congregating in the lung and directly attacking the virus play an important role in defending against influenza, it has never been clear how exactly these white blood cells know when they are required in the lung.

Now new research in the Trudeau Institute laboratory of Dr. David Woodland offers important insights into the navigational aids used by these cells as they maneuver through the human body. Trudeau investigators have shown that lungs which have been infected with the influenza virus produce a series of chemicals, or chemokines, which act as beacons for specific types of white blood cells. While circulating in the bloodstream, these white blood cells recognize the chemical messages signaling the presence of the virus and the need for them to move into lung tissues.

According to Dr. Woodland, director of the Trudeau Institute and lead

researcher on the project: “An important aspect of these findings is that this response occurs early in the disease process, typically within a couple of days of the initial infection. It also turns out that only a fraction of the available white blood cells are capable of recognizing these chemokine messages. Discovering that this response occurs rapidly, and that only a specific subset of white blood cells can recognize these messages, helps provide important new information for researchers working towards developing better a better influenza vaccine.”

The research paper, “The Chemokine Receptor CCR5 Plays a Key Role in the Early Memory CD8⁺ T Cell Response to Respiratory Virus Infections,” is available in its entirety in *Immunity*.

Source: Trudeau Institute

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