

## RHINOVIRUSES AND THE IMMUNE SYSTEM

Rhinoviruses infect the epithelial cells of the respiratory tract. The viruses can be grouped according to the epithelial cell receptors to which they bind. Major-group viruses bind to the cell surface receptor ICAM-1 for entry **1**; minor-group viruses bind to the unrelated low density lipoprotein (LDL) receptor **2**. This receptor difference turns out to be a key factor in how these viruses interact with the immune system.

Major-group viruses also bind the ICAM-1 molecule expressed on macrophages, dendritic cells, and other immune cells **3**. This attachment triggers a host of changes in the immune cells that effectively dampens the immune response. The immune cells produce anti-inflammatory signals **4**; they are slower to activate the T cells in the lymph nodes that attack the viruses **5**; and they reduce the production of antibodies and activation of memory B and T cells that protect the host against reinfection **6**.

Because the minor-group viruses cannot bind the ICAM-1 molecule on immune cells, they do not suppress the immune system.

