

# Eternal Vigilance: The Human Immune System

Twenty-four hours a day, seven days a week, 365 days a year, our hearts beat ceaselessly. Every few seconds we take a vital breathe with our lungs. Likewise, without us thinking about it, an army of cells constantly patrols our bodies to keep us healthy.

The army of cells is one part of our immune system, without which we could not survive. The heart and lungs are vital to keep our bodies functioning minute to minute. In turn, the immune system is vital to keep our bodies functioning day- to-day and year-to-year.

The immune system has two parts. The first is characterized by general, non-specific responses. The non-specific response is part of the innate immune system. Innate immune responses include sneezing, coughing and diarrhea. Physical barriers, such as the skin, also contribute to innate immune protection. The innate immune system also protects us with chemicals such as acids in the stomach and enzymes in tears. The innate immune response also alerts the second part of the immune system—the adaptive immune system. Unlike the innate immune system, the adaptive immune system responds specifically to an invading virus or bacteria.

Antibodies are the primary weapons of the immune system, since they are specifically designed to combat an invader. The adaptive immune response consists of B cells and T cells. B cells make antibodies, while T cells show B cells what kinds of antibodies to make. T cells also kill virus- infected cells, so that the virus can't spread. B and T cells respond specifically to an invading organism, and remember when they have encountered a particular pathogen before. That way, when the pathogen invades the body again, the adaptive immune system can respond quickly and efficiently, preventing an infection. These two parts of the immune system, innate and adaptive, do not work separately. They overlap and support one another through chemical signals sent out into the bloodstream and lymph nodes.

So, the next time you feel your heart beat or you breathe, remember that your immune system is working just as hard, if a bit more slowly—it's certainly helping to keep you healthy!