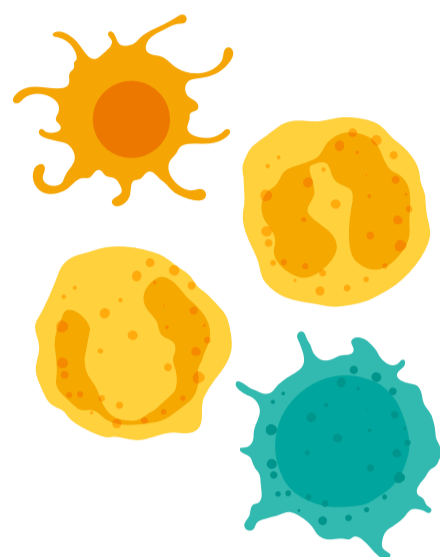


# Glossary of immune response terms

A brief list of the most common terms used when describing the human immune system

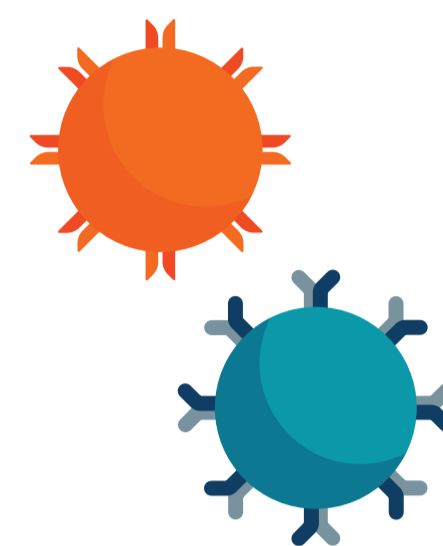
## Innate Immune System

Initial, non-specific immune response that tries to prevent infection while readying the adaptive immune response if necessary.<sup>1</sup>



## Adaptive Immune System

Secondary, more powerful immune response that mounts a targeted attack, specific to the disease antigens presented.<sup>1</sup>



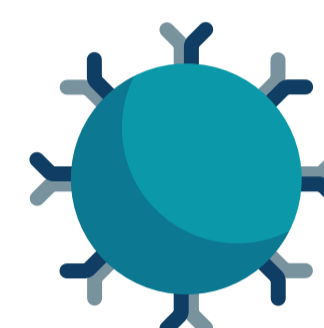
## T Cells

T cells are the first responders to any infection and signal to B cells to produce antibodies.<sup>2</sup>



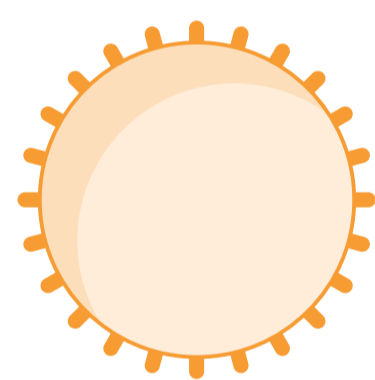
## B Cells

B cells can produce antibodies that attack the virus.<sup>3</sup>



## Antigens

A protein produced by an infectious agent, or pathogen, that acts as a signal of disease.<sup>4</sup>



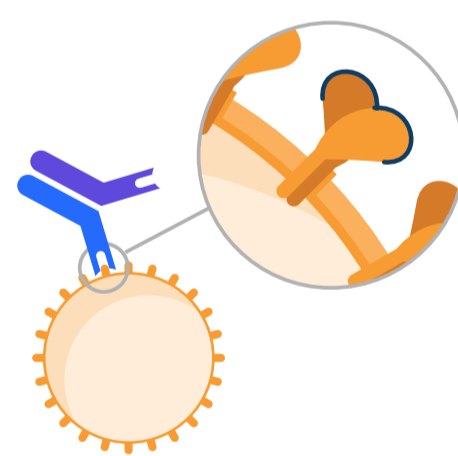
## Antibodies

Proteins designed to specifically bind to the disease antigen. Once bound they act as a marker to help other immune cells attack.<sup>5</sup>



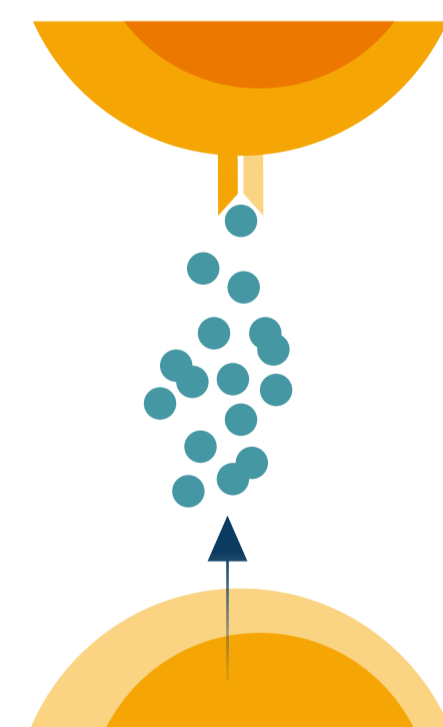
## Epitopes

The area of an antigen to which an antibody binds, typically a short protein sequence (of amino acid chains).<sup>6</sup>



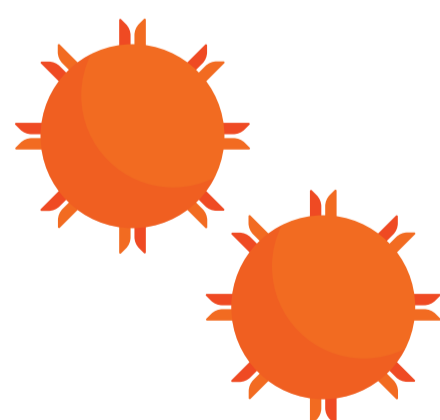
## Cytokines

Proteins that affect the behavior of immune cells. This includes the ability to trigger inflammation or healing, response against disease, or even dampen the immune response to prevent destruction of the body's own cells.<sup>7</sup>



## T-Cell Memory

T cells that remember specific aspects of a previous virus.<sup>8</sup>



<sup>1</sup>Iwasaki A, Medzhitov R, et al. Regulation of adaptive immunity by the innate immune system Science. doi: <https://doi.org/10.1126/science.1183021>.

<sup>2</sup>Crotty S, et al. A brief history of T cell help to B cells. Nat Rev Immunol. 2015 Mar;15(3):185-9. doi: <https://doi.org/10.1038/nri3803>.

<sup>3</sup>Yanaba K, et al. B-lymphocyte contributions to human autoimmune disease. Immunol Rev. 2008 Jun;223:284-99. doi: <https://doi.org/10.1111/j.1600-065X.2008.00646.x>.

<sup>4</sup>CDC - Antigen Characterization. <https://www.cdc.gov/flu/about/professionals/antigenic.htm>.

<sup>5</sup>Litman GW, et al. Phylogenetic diversification of immunoglobulin genes and the antibody repertoire. Molecular Biology and Evolution, Volume 10, Issue 1, January 1993, Pages 60-72. doi: <https://doi.org/10.1093/oxfordjournals.molbev.a040000>.

<sup>6</sup>Sanchez-Trincado JL, Gomez-Perosanz M, Reche PA, et al. Fundamentals and Methods for T- and B-Cell Epitope Prediction. J Immunol Res. 2017;2017:2680160. doi: <https://doi.org/10.1155/2017/2680160>.

<sup>7</sup>Lacy P, Stow JL, et al. Cytokine release from innate immune cells: association with diverse membrane trafficking pathways. Blood 2011; 118 (1): 9-18. doi: <https://doi.org/10.1182/blood-2010-08-265892>.

<sup>8</sup>Sekine T, et al. Robust T cell immunity in convalescent individuals with asymptomatic or mild COVID-19. Cell. 2020 Oct 1;183(1):158-168.e14. doi: <https://doi.org/10.1016/j.cell.2020.08.017>.