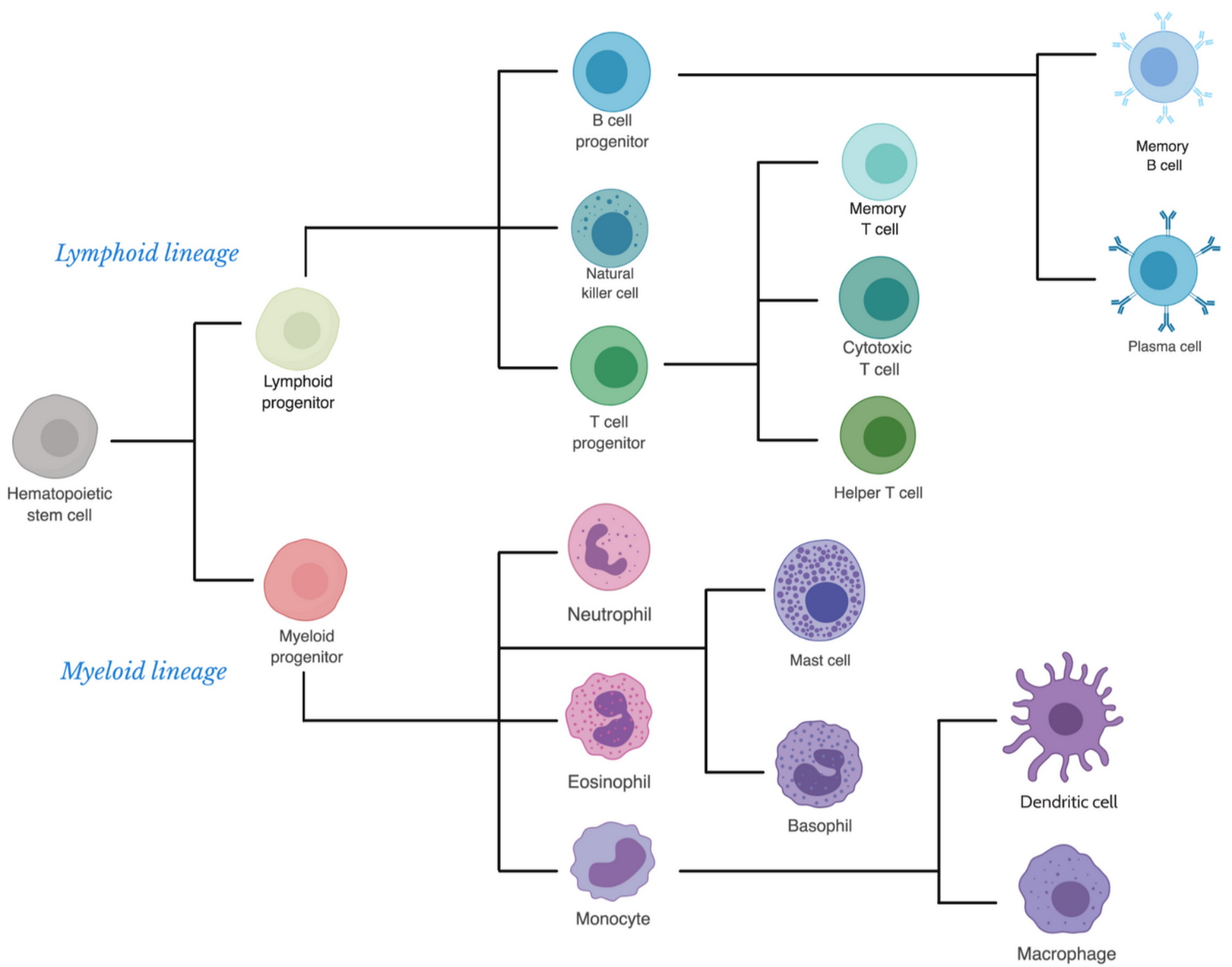


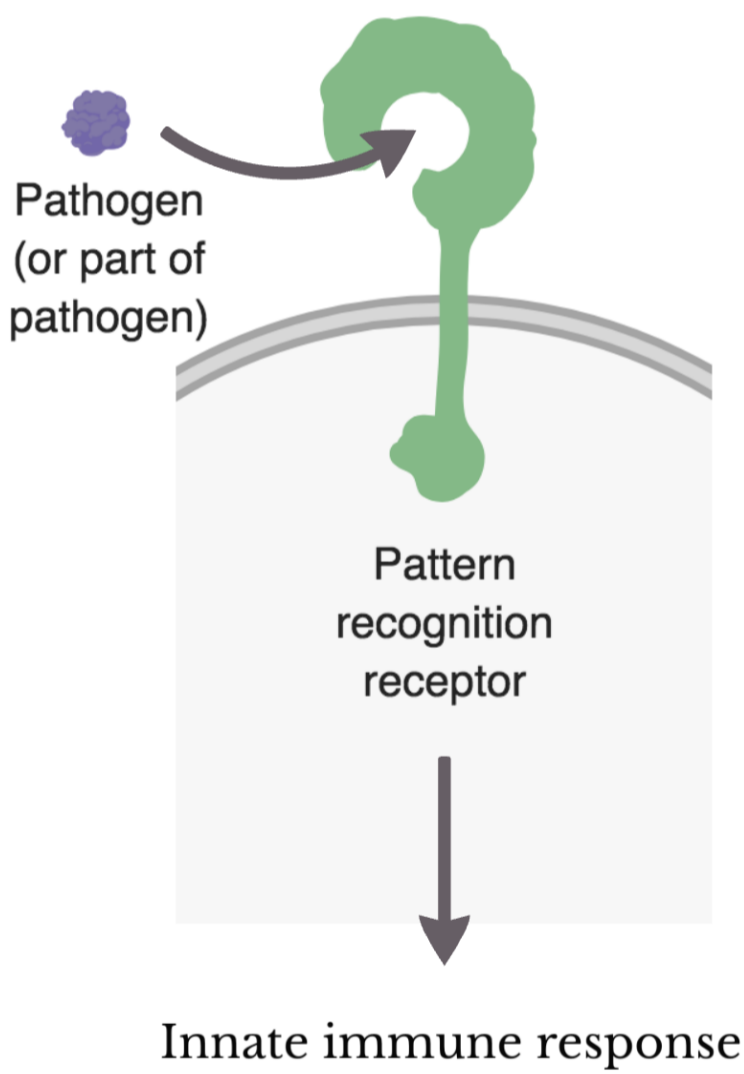
Introduction to the immune system

The immune system has many specialized cell types, all which work together to fight infection and disease. This infographic introduces the cellular players of the immune system and illustrates how they are activated against pathogens.



All immune cells are derived from a common progenitor known as the hematopoietic stem cell (HSC). The HSC develops into two progenitor types: lymphoid and myeloid. Most lymphoid cells contribute to adaptive immunity, while most myeloid cells contribute to innate immunity.

Innate immunity



Activation of innate immune cells

Cells of the innate immune system express molecules known as pattern recognition receptors at their surface. These receptors bind pathogens or parts of pathogens, which induce intracellular signals that activate an innate immune response. The particles recognized by these receptors are common among pathogens.

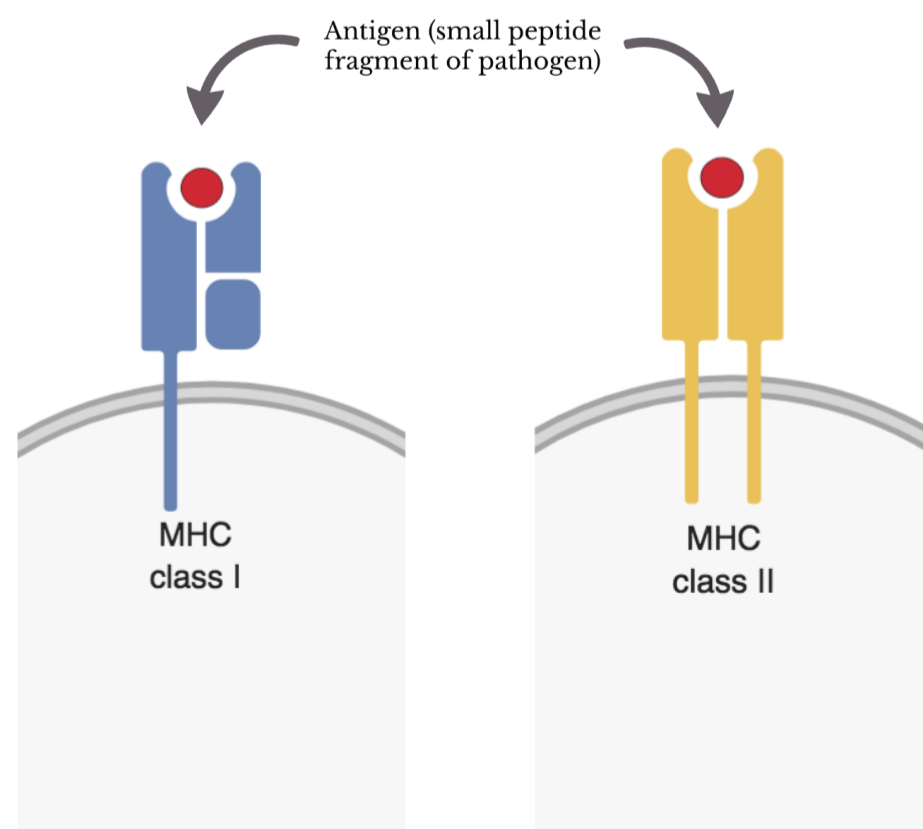
Activation of adaptive immune cells

To activate adaptive immunity, cells present antigen to T cells to inform a specific immune response. Antigen is presented by two types of surface molecules, MHC class I and MHC class II.

MHC class I molecules are expressed by all cells in the body and are used in defense against intracellular pathogens such as viruses. They present intracellular antigens to cytotoxic T cells.

MHC class II molecules are expressed by professional antigen presenting cells, which include dendritic cells, macrophages, and B cells. They present antigen found on pathogens outside of cells to helper T cells.

Adaptive immunity



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