

Immune system components and response

How does the immune system operate to recognize proteins?

The immune system protects the body from harmful invaders like bacteria and viruses. It has two major parts: the innate immune system, which responds quickly and broadly, and the adaptive immune system, which takes longer but targets specific invaders and builds memory for future protection. Both systems work together in a step-by-step process to recognize, respond to, and eliminate threats.

Part 1: In this activity, organize the immune response into two workflows—one for a bacterial infection and one for a viral infection. Trace how the body detects the invader, communicates danger using molecules like cytokines, and recruits specialized cells like T cells and B cells. The goal is to understand how each step builds on the previous one, and how the response differs depending on the type of pathogen.

Part 2: After sharing your organization and seeing how others have organized the components, the class will act out the immune system response to a virus and a bacteria.

Materials

- Cards that describe immune system components
- Craft paper (optional)
- Markers

Procedure

Part 1

1. Use the cards to learn about the relationships between components of the innate and adaptive immune system.
2. Create a flowchart or diagram using the cards by laying them out on your desk or a large sheet of craft paper.
3. Draw arrows to indicate which cells get messages from which other cells.
4. Share your infographic with others.

Part 2

Use your assigned role (and model) to follow the immune system response to a foreign invader as the scenario is presented.

Reflection

1. Which immune system component is the most important?
2. How do specialized receptors recognize foreign invaders?
3. How might we use this information to create more effective medications or therapies?