KEY CONCEPT

The immune systems consists of organs, cells, and molecules that fight infections.
Many body systems protect you from pathogens.

- The immune system is the body system that fights off infection and pathogens.
- Many other tissues and systems help the immune system.
  - Skin is a physical barrier to infection.
  - Mucous membranes trap pathogens entering the body.
  - The circulatory system transports immune cells.
31.2 Immune System

Cells and proteins fight the body’s infections.

- White blood cells attack infections inside the body.
  - Phagocytes engulf and destroy pathogens.
  - T cells destroy infected cells.
  - B cells produce antibodies.

<table>
<thead>
<tr>
<th>NAME</th>
<th>FUNCTION</th>
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<tbody>
<tr>
<td>Basophil</td>
<td>makes chemicals that cause inflammation in the bloodstream</td>
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<tr>
<td>Mast cell</td>
<td>makes chemicals that cause inflammation in other body tissues</td>
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<tr>
<td>Neutrophil</td>
<td>engulfs pathogens and foreign invaders; phagocyte</td>
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<tr>
<td>Macrophage</td>
<td>engulfs dead or damaged body cells and some bacteria; phagocyte</td>
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<tr>
<td>Lymphocyte</td>
<td>destroys infected body cells or produces proteins that inactivate pathogens</td>
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<tr>
<td>Eosinophil</td>
<td>injects poisonous packets into parasites, such as protozoa</td>
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</table>
• Three types of proteins fight off invading pathogens.
  – Complement proteins weaken pathogen membranes.
  – Antibodies make pathogens ineffective.
  – Interferons prevent viruses from infecting healthy cells.
Immunity prevents a person from getting sick from a pathogen.

- In all immunity, pathogens are destroyed before you get sick.
- Passive immunity occurs without an immune response.
  - mother’s milk
  - genetics
- Active immunity occurs after a specific immune response