31.5 Overreactions of the Immune System

**KEY CONCEPT**

An overactive immune system can make the body very unhealthy.
31.5 Overreactions of the Immune System

Allergies occur when the immune system responds to harmless antigens.

- An allergy is a response to a harmless antigen.
- Allergies are caused by allergens.
  - Allergens are antigens that cause an allergic reaction.
  - Allergens cause inflammation responses.
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- There are many different allergens.
  - food, e.g. peanuts, milk, wheat, etc.
  - airborne, e.g. pollen, dust mite feces, mold, etc.
  - chemical, e.g. nickel, medicine, bee stings, etc.
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- Allergens can cause anaphylaxis.
  - Anaphylaxis is an extreme inflammation response.
  - Blood vessels and airways become too porous.
  - If not treated immediately, anaphylaxis can cause death.
In autoimmune diseases, white blood cells attack the body’s healthy cells.

- Autoimmune diseases are failures of the immune system.
  - White blood cells cannot recognize healthy cells.
  - White blood cells attack healthy body cells.
  - Tissues fail because of attack.
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- There are over 60 autoimmune diseases.

<table>
<thead>
<tr>
<th>AUTOIMMUNE DISEASES</th>
<th>BODY SYSTEMS AFFECTED</th>
<th>THE IMMUNE SYSTEM . . .</th>
<th>HOW MANY AFFECTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatoid arthritis</td>
<td>integumentary</td>
<td>breaks down tissues that line joints, making movement difficult</td>
<td>70 in 10,000</td>
</tr>
<tr>
<td>Type 1 diabetes mellitus</td>
<td>endocrine, digestive</td>
<td>attacks the pancreas, stopping the digestion of sugars</td>
<td>60 in 10,000</td>
</tr>
<tr>
<td>Hashimoto’s thyroiditis</td>
<td>endocrine</td>
<td>attacks the thyroid gland, causing it to make fewer hormones</td>
<td>15 in 10,000</td>
</tr>
<tr>
<td>Multiple sclerosis (MS)</td>
<td>nervous</td>
<td>breaks down myelin sheaths, disrupting nerve communication</td>
<td>10 in 10,000</td>
</tr>
<tr>
<td>Graves’ disease</td>
<td>endocrine</td>
<td>stimulates the thyroid gland, causing it to make more hormones</td>
<td>5 in 10,000</td>
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</tbody>
</table>