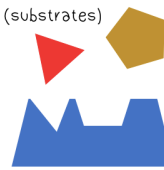

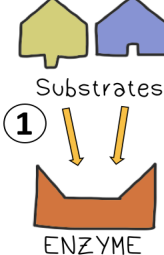
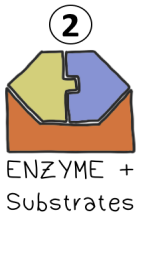
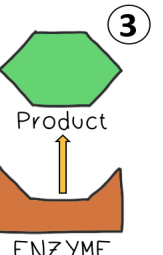
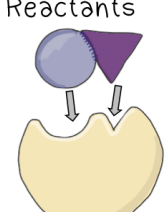
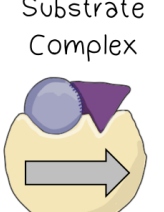
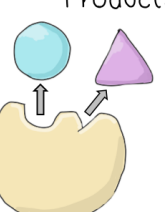
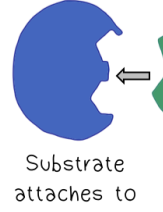
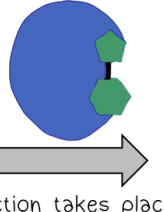
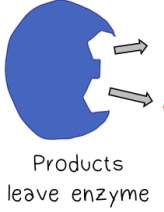

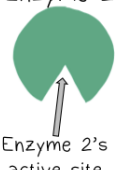
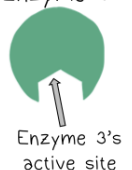



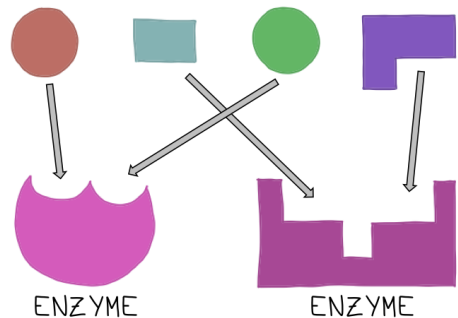
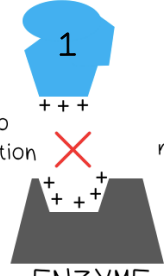
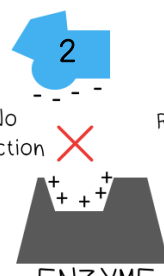
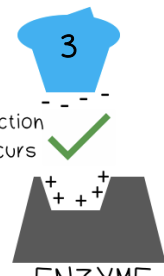
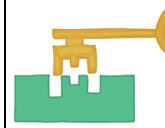
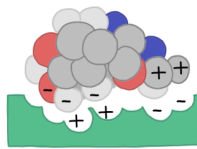


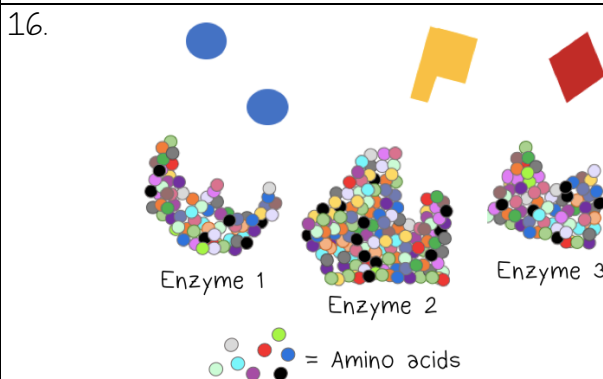
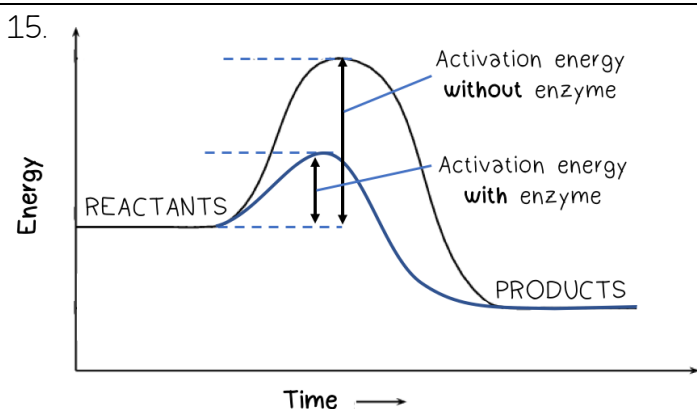
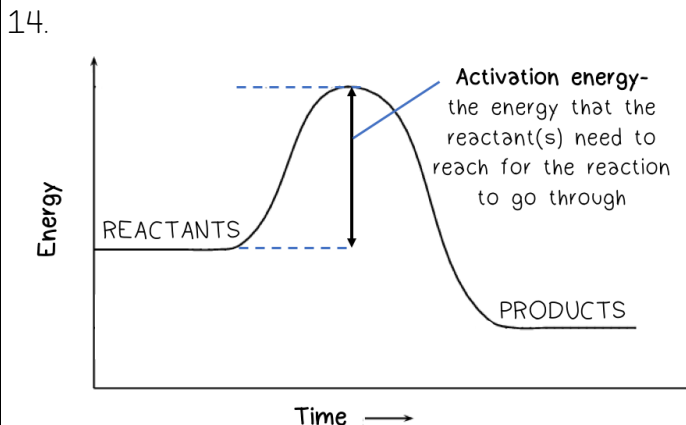
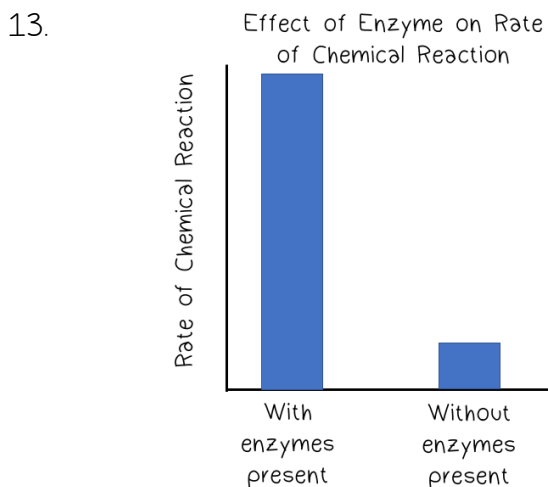
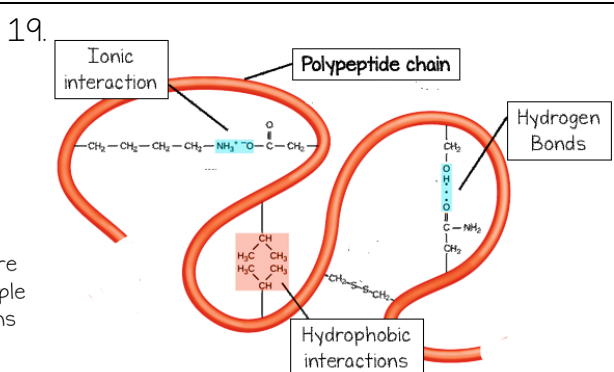
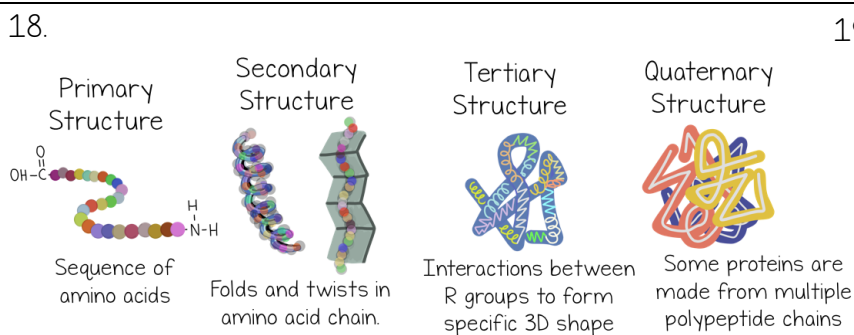
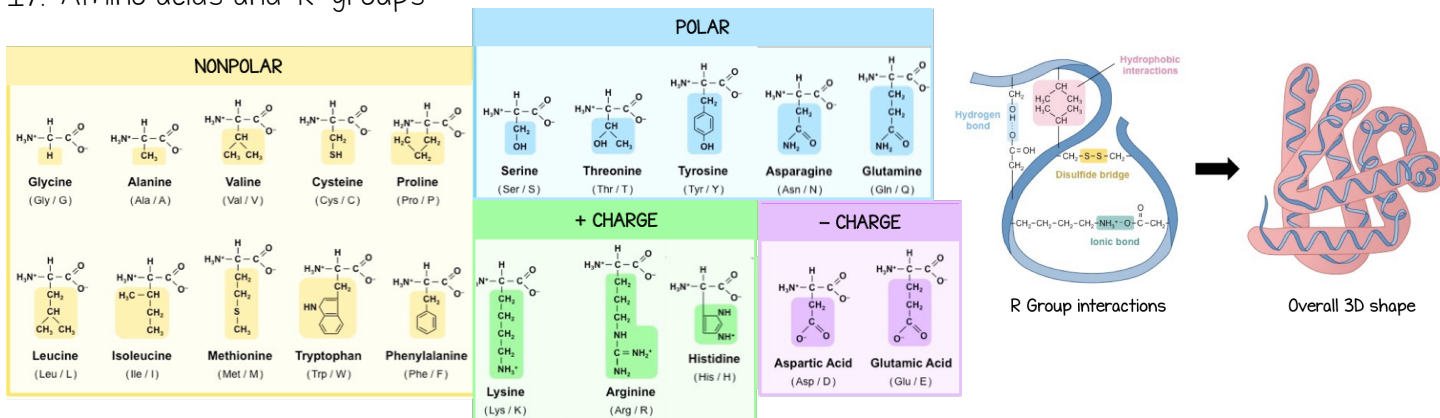


ENZYMES:

<p>1.</p> <p style="text-align: center;">CHEMICAL REACTION</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> reactants → products </div>	<p>2.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;">Reactants</div> <div style="border: 1px solid black; padding: 2px 5px;">Product</div> </div> <p style="text-align: center;">(left side of the arrow) (right side of the arrow)</p> <p style="text-align: center;">$\text{NH}_3 + \text{HCl} \xrightarrow{\hspace{1cm}} \text{NH}_4\text{Cl}$</p>
<p>3.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Reactants- the starting molecules</p> <div style="background-color: #d9ead3; padding: 5px; border: 1px solid black;"> $6\text{CO}_2 + 6\text{H}_2\text{O}$ </div> </div> <div style="text-align: center;"> <p>Products- the final molecules</p> <div style="background-color: #f4cccc; padding: 5px; border: 1px solid black;"> $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ </div> </div> </div> <p style="text-align: center; color: blue;">↑ chemical change</p>	<p>4.</p> <div style="display: flex; justify-content: center; align-items: center; gap: 20px;"> <div style="text-align: center;"> $2\text{H}_2 + \text{O}_2$ Reactants (Substrates) </div> <div style="font-size: 2em;">→</div> <div style="text-align: center;"> $2\text{H}_2\text{O}$ Products </div> </div>
<p>5.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Reactants (substrates)</p>  <p>ENZYME</p> </div> <div style="text-align: center;"> <p>→</p> </div> <div style="text-align: center;"> <p>Product</p>  <p>ENZYME</p> </div> </div>	<p>6.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1</p>  <p>Substrates ENZYME</p> </div> <div style="text-align: center;"> <p>2</p>  <p>ENZYME + Substrates</p> </div> <div style="text-align: center;"> <p>3</p>  <p>Product ENZYME</p> </div> </div>
<p>7.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Reactants</p>  </div> <div style="text-align: center;"> <p>Enzyme-Substrate Complex</p>  </div> <div style="text-align: center;"> <p>Products</p>  </div> </div>	<p>8.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Substrate attaches to enzyme</p> </div> <div style="text-align: center;"> <p>→</p> </div> <div style="text-align: center;">  <p>Reaction takes place</p> </div> <div style="text-align: center;">  <p>Products leave enzyme</p> </div> </div>
<p>9.</p> <div style="display: grid; grid-template-columns: repeat(3, 1fr); gap: 10px;"> <div style="text-align: center;"> <p>Enzyme 1</p>  <p>Enzyme 1's active site</p> </div> <div style="text-align: center;"> <p>Enzyme 2</p>  <p>Enzyme 2's active site</p> </div> <div style="text-align: center;"> <p>Enzyme 3</p>  <p>Enzyme 3's active site</p> </div> <div style="text-align: center;"> <p>Enzyme 1</p>  </div> <div style="text-align: center;"> <p>Enzyme 2</p>  </div> <div style="text-align: center;"> <p>Enzyme 3</p>  </div> </div>	<p>10.</p> <div style="text-align: center;"> <p>Reactant Molecules</p>  <p>ENZYME ENZYME</p> </div>
<p>11.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1</p>  <p>No reaction ✗</p> <p>ENZYME</p> </div> <div style="text-align: center;"> <p>2</p>  <p>No reaction ✗</p> <p>ENZYME</p> </div> <div style="text-align: center;"> <p>3</p>  <p>Reaction occurs ✓</p> <p>ENZYME</p> </div> </div>	<p>12.</p> <p>To interact with an enzyme, the substrate must be compatible...</p> <div style="display: flex; align-items: center;">     </div> <p style="text-align: right;">The active site is compatible with the yellow key</p>

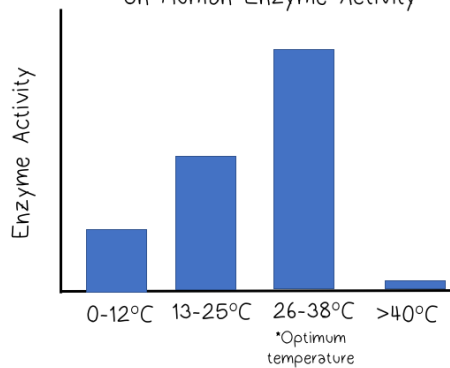


17. Amino acids and 'R' groups

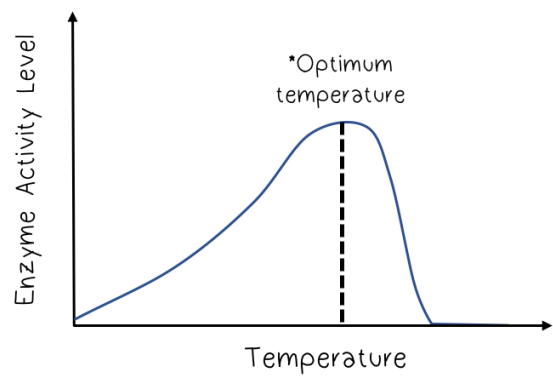


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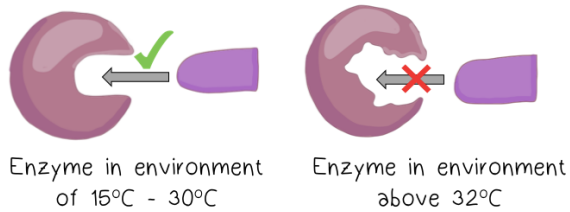
The Effect of Temperature on Human Enzyme Activity



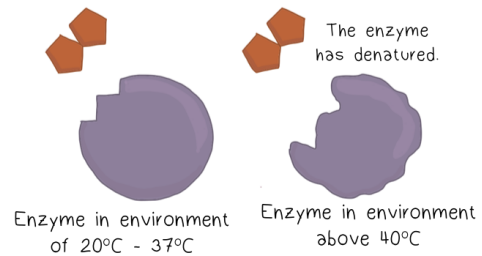
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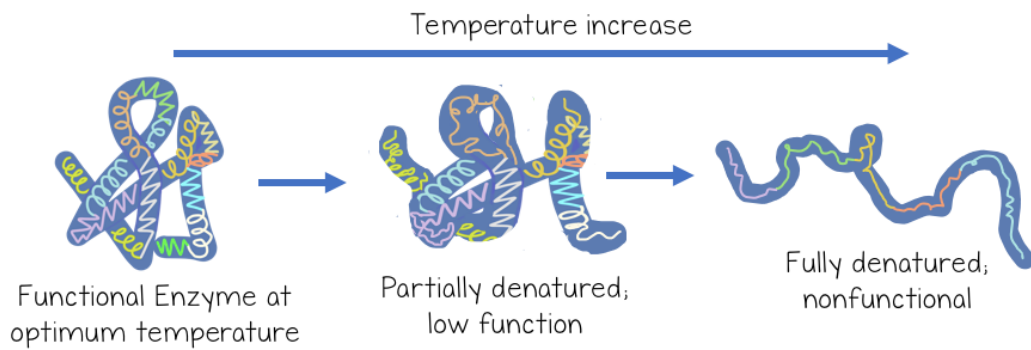
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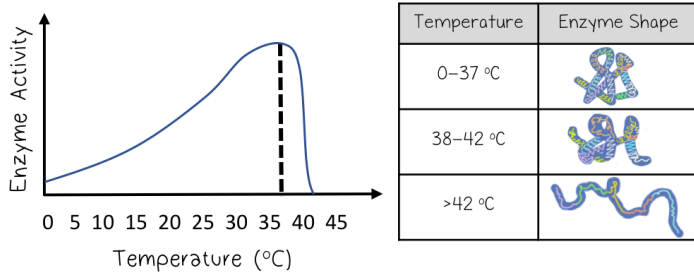
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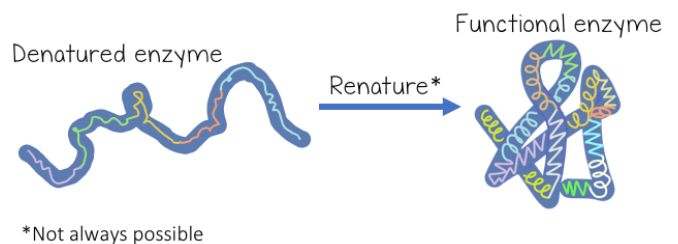
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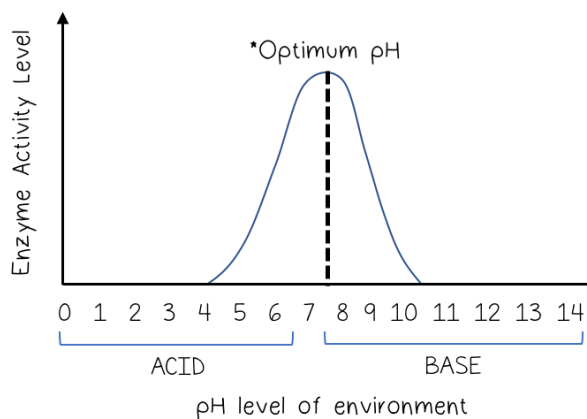


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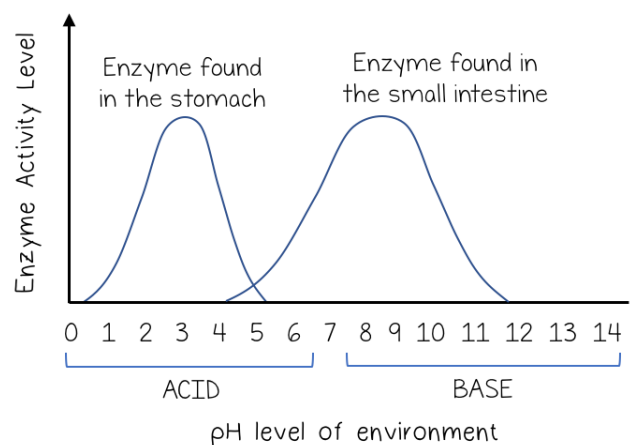


EXTENSION: Other factors that affect enzyme activity and rate of reaction.

27.



28.



29.

Competitive inhibitor molecule



Enzyme

Substrate



Chemical reaction occurs



Enzyme

No reactions take place



Enzyme

30.

Allosteric inhibitor molecule (noncompetitive)



Allosteric Site



Enzyme

Substrate



Chemical reaction occurs



Enzyme

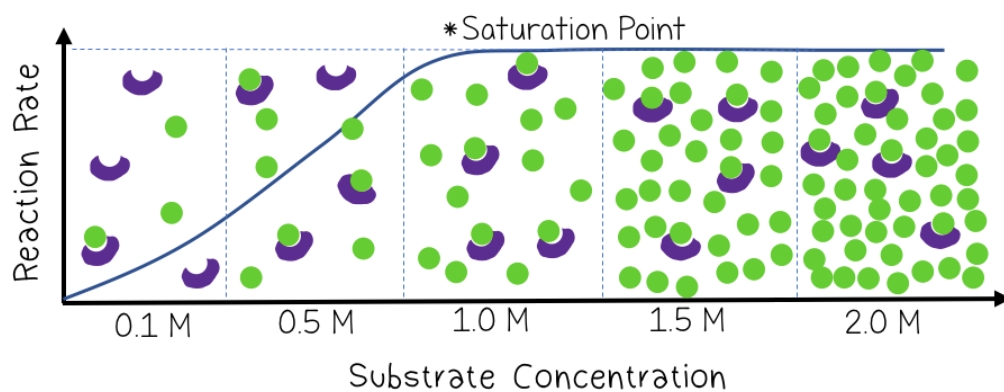
No reactions take place



Enzyme

31.

= enzyme
 = substrate



32.

= enzyme
 = substrate
 = product

