Biology 20

Unit D: Human body systems

Enzymes and food tests

The chain fits the cleft

- Starch is drawn as a chain heading into the enzyme cleft.
- Sugar pieces leave on the far side of that cleft.

Three foods, three enzyme families

- Carbohydrases cut carbohydrates such as starch.
- Lipases cut lipids, and proteases cut proteins.
- Temperature, pH, and the amount of substrate change the rate.

Key terms

enzyme

A protein that speeds a reaction because the substrate fits its shape.

competitive inhibition

A slowdown that happens when a different molecule occupies the enzyme's cleft.

carbohydrase

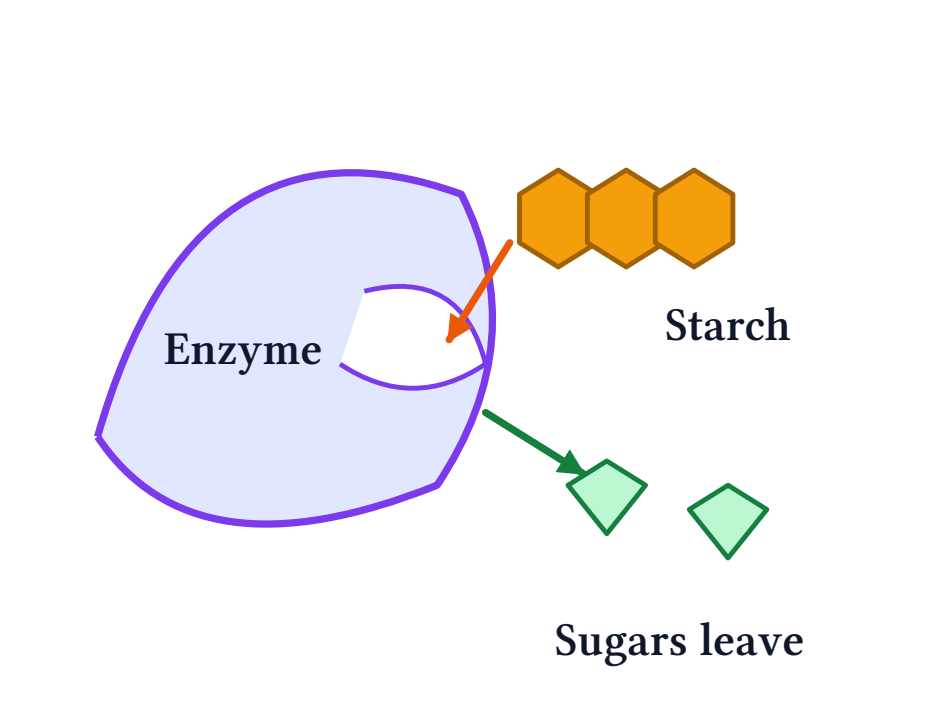
An enzyme that cuts carbohydrates such as starch into sugars.

protease

An enzyme that cuts proteins into smaller peptides and amino acids.

An enzyme at work

- The enzyme shape has a cleft that starch can enter.
- Sugars leave after the bond breaks.
- A molecule parked in the cleft blocks starch.



Pepsin at two pH values

- Pepsin in acid cuts egg-white protein.
- The same protease in a basic tube leaves the cube firmer.

A calorimetry change

- A larger water-temperature rise means more energy left the food.
- Matched mass and matched water make the comparison fair.

Fit and factors

- Match the three enzyme families to starch, fat, and protein.
- Say how pH and competitive inhibition change the cleft.

The airway moves the gases

- Digested food still needs oxygen for the tall ATP path.
- The alveolus is the next exchange surface.