

# Digestion (6.1)

## Why digestion occurs (6.1.1)

- Most food is in the form of large complex molecules which are insoluble and chemically inert
- Breaking food down (digestion):
  - Makes it soluble & able to be absorbed
  - Generates usable building blocks

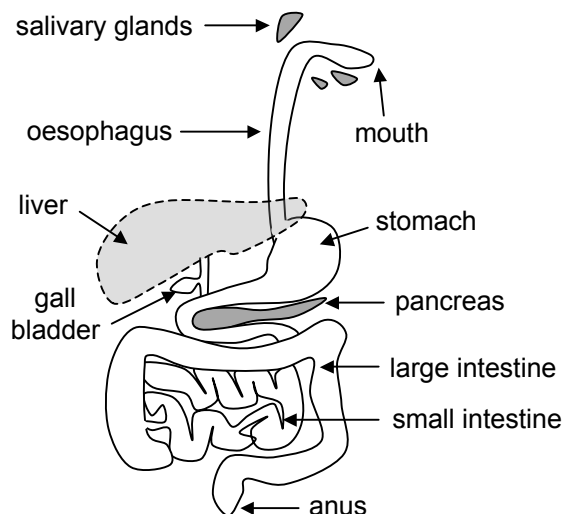
## Role of enzymes (6.1.2)

- Enzymes lower the activation energy for chemical reactions without being consumed as part of the reaction
- Allows digestion of food molecules to occur at body temperatures
- Increases rate at which food is digested

## Examples of enzymes (6.1.3)

Type	Example	Source	Substrate	Product	Optimal pH
Amylase	Salivary amylase	Salivary glands	Starch	Maltose	pH ~7 (neutral)
Protease	Pepsin	Stomach	Protein	Short polypeptides	pH ~2 (acidic)
Lipase	Pancreatic lipase	Pancreas	Triglycerides	Glycerol 3 x fatty acid	pH ~8 (alkaline)

## Diagram of digestive system (6.1.4)



## Role of stomach and the gut (6.1.5)

### Stomach

- Temporary storage tank
- Chemical digestion with acids & enzymes
- Makes a creamy paste called chyme

### Small Intestine

- Absorption of nutrients
- Lined with villi for ↑SA:Vol ratio
- Bile secreted into small intestine
- Intestinal crypts aid digestive process

### Large Intestine

- Absorbs water & dissolved minerals
- Semi-solid faeces eliminated via anus

## Distinguish between (6.1.6)

**Absorption:** The movement of fluids or dissolved substances (e.g. nutrients) across a cell membrane

**Assimilation:** The conversion of nutrients into fluid or solid parts of an organism

## Explain the role of the villus (6.1.7)

*Remember: MR SLIM*

**M**icrovilli (↑ SA:Vol ratio for absorption)

**R**ich capillary network (more efficient transport)

**S**ingle-layer epithelium (short diffusion distance)

**L**acteals (absorption of lipids)

**I**ntestinal crypts (secretes juice to aid absorption)

**M**embrane proteins (facilitated diffusion)