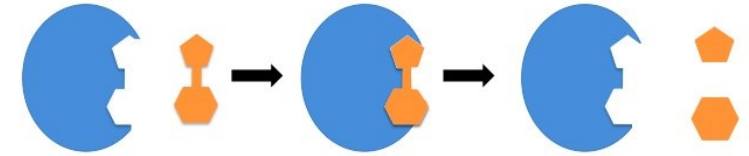




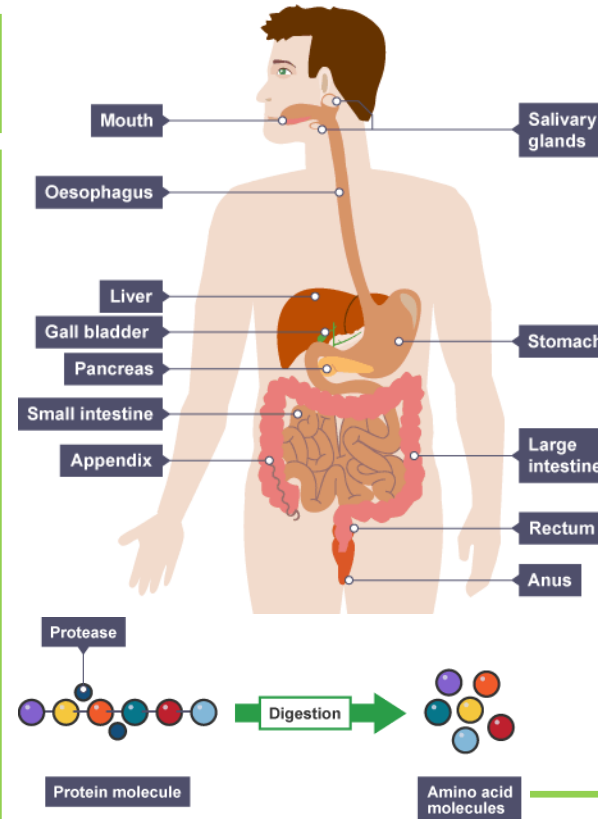
Digestion and Nutrition



LO: To be able to describe the components of a healthy diet and describe and explain the process of digestion and the uses of enzymes

Food groups: A balanced diet will contain the correct proportions of all these for the person's needs, e.g. An athlete will need a lot of carbohydrate and protein.

Food group	Examples	Function
Protein	Fish, meat, dairy	For growth and repair.
Fat	Butter, oils, nuts	To provide energy. Fat provides a long term store of energy. It also provides insulation.
Carbohydrate	Bread, pasta, sugar	To provide energy.
Fibre	Vegetables, Bran	To help food move through the gut.
Minerals	Dairy (calcium)	Required in trace amounts to remain healthy, ie calcium for strong teeth.
Vitamins	Oranges (vitamin C), Carrots (Vitamin A).	Required in trace amounts to remain healthy, eg. Vitamin D for strong bones.
Water	Water, fruit juice, milk	Needed to form the cytoplasm of the cells and other fluids.



Digestive system:

Mouth:

Mechanical (teeth) and chemical (amylase) digestion.

Stomach:

Mechanical (churning to mix food) and chemical (protease) digestion.

Intestine:

Stomach acid is neutralised with bile and lipase acts here. Small molecules are then absorbed into the blood.

Food tests:

Starch test: Add iodine, if starch is present the colour will change to blue/ black.

Sugar/glucose: Add benedict's solution and warm in a water bath. The colour will change to green/ orange/ red depending on the amount present.

Protein: Add biuret reagent ($\text{NaOH} + \text{CUSO}_4$), the colour will change to purple if protein is present.

Fat: Wipe substance on filter paper, if paper becomes translucent fat is present. Or add ethanol and water, a white emulsion present will indicate there is fat.

Enzymes:

Enzymes are not living things. They are special proteins that can break large molecules into small ones. Each enzyme is specific to a type of nutrient.

- ◆ **Amylase** and other **carbohydrase** enzymes break down **starch** into **sugar**
- ◆ **Protease** enzymes break down **proteins** into **amino acids**
- ◆ **Lipase** enzymes break down **lipids** (fats and oils) into **fatty acids** and **glycerol**