DIGESTION

Digestion is the breakdown of food from large, insoluble molecules into smaller, soluble ones.

Physical digestion occurs in the mouth and stomach; the mouth chews the food to form a bolus and the stomach churns the food. This increases the SA:V ratio for food to be chemically digested faster.

Chemical digestion occurs when enzymes chemically break down (hydrolyse) the food polymers. The main enzymes are listed above.

ADAPTATIONS OF THE DIGESTIVE SYSTEM

BILE

- Bile is produced in the liver and stored in the gall bladder before being released into the ileum.
- It is alkaline and neutralises the conditions in the ileum. This allows the enzymes in the ileum to work as they have a neutral pH optimum (i.e. pH 7).
- It emulsifies fat into small droplets. This increases the SA:V ratio and increases surface area for lipase hydrolysation, therefore increasing the overall reaction CO.UK rate.

Blood capilary

absorbs glucose and amino acids

ILEUM

- The ileum is lined with villi, which is in turn lined with microvilli. This gives the ileum aver surface area in assorptio bsorbs fatty acids food nolecules. - The villi have walls which are
- only one cell thick; this shortens diffusion distance and increases rate of transport.
- The villi have a good supply of capillaries linked directly to veins; this maintains a concentration gradient and maintains a fast diffusion rate.

(N.B. Glucose is transported via active transport.)

ESSENTIAL NUTRIENTS

Six essential nutrients are:

- 1. Carbohydrates; found in potatoes and pasta-needed for energy storage
- 2. Proteins; found in red meats and eggs- needed for growth and repair
- 3. Lipids; found in butter and cream- needed for insulation and assimilation of cell membranes*