LIFE PROCESSES

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- Nutrition
- Respiration
- Transportation / Circulation
- Excretion

Nutrition: Process of obtaining food from the surroundings and using it for various metabolic activities by an organism.

Mode of Nutrition

Autotrophic

Photosynthesis

$CO_2 + H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + O_2$

All green plants and blue-green algae

Heterotrophic

- **Parasitic** → Obtain food from living organisms. They live in or on the bodies of other organism. e.g. lice, leech
- **Saprophytic** → Obtain food from dead and decaying organisms e.g. fungi, bacteria
- **Holozoic** → Obtain food from complex organic substances. Eat solid food e.g. amoeba, frog, humans

Photosynthesis

- Light reaction: Photolysis of water to give out H_2 and O_2.
- Dark reaction: Formation of $C_6H_{12}O_6$. Also called Benson and Calvin Cycle.

(a) Steps of photosynthesis: During the process of photosynthesis, the following events occur :

- **Absorption** of light energy **by chlorophyll**.
- **Conversion** of light energy to chemical energy and splitting of **water molecules** into **Hydrogen** and **oxygen**.
  $H_2O \rightarrow 2H^+ + 2e^- + 1/2\ O_2$

The above processes are considered as **light reaction.**

- **Reduction** of **carbon-dioxide** to **carbohydrates**. This is also known as **dark reaction**.

(b) Conditions necessary for photosynthesis:

- Sunlight
- Chlorophyll
- Carbon-dioxide
- Water

These conditions are needed for **autotrophic mode of nutrition**.

(c) Site of photosynthesis: Chloroplast (chlorophyll) containing organelles (i.e. plastid) which are found in large numbers in plant and algal cells undergoing photosynthesis are called **chloroplast**.

PROCESS OF NUTRITION (HUMAN)

Ingestion | Digestion | Absorption | Assimilation | Egestion

Human Digestive System

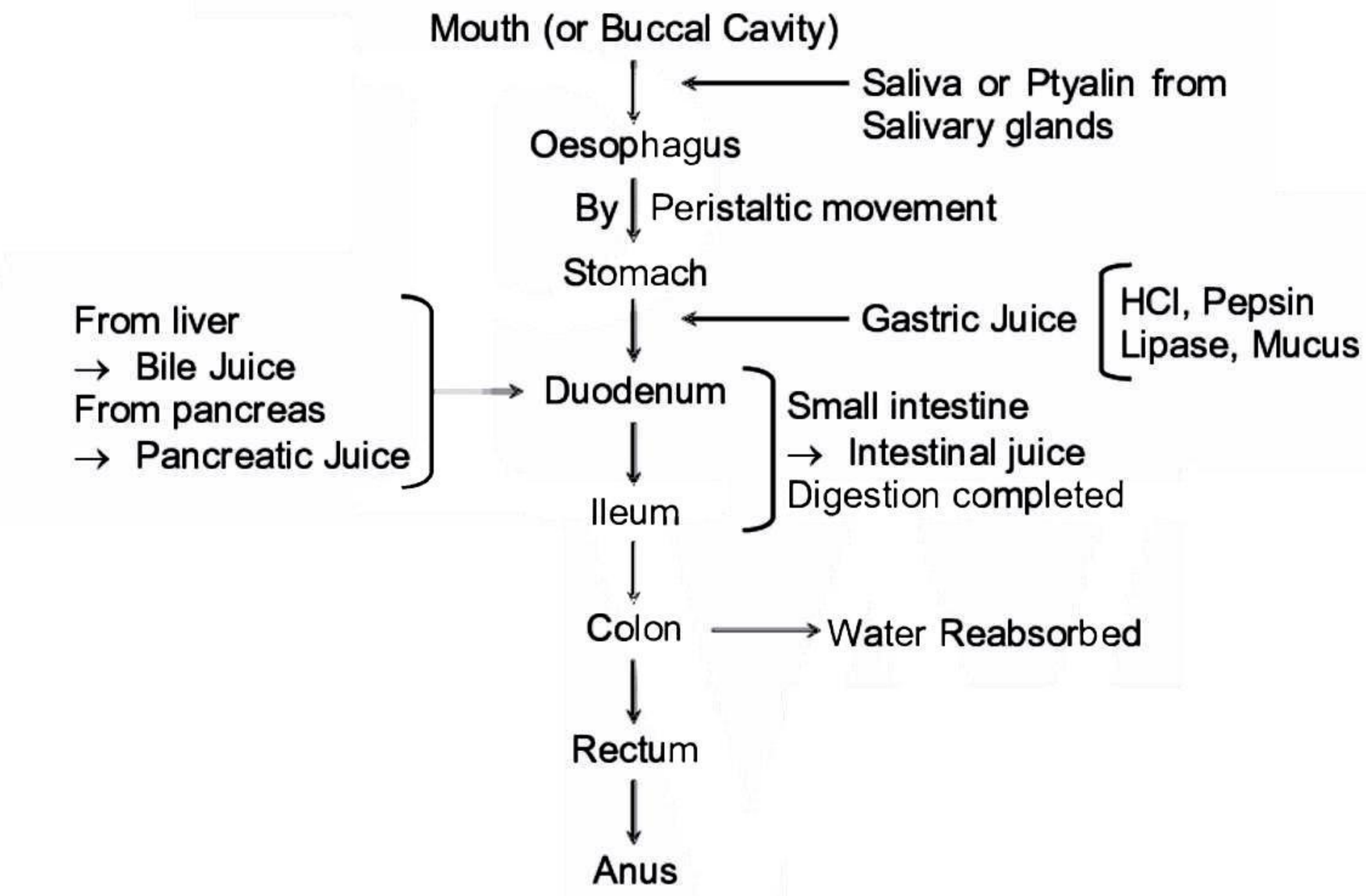
Alimentary canal

- ➜ Mouth or Buccal Cavity
- ➜ Pharynx
- ➜ Oesophagus
- ➜ Stomach
- ➜ Small Intestine
- ➜ Large Intestine
- ➜ Anus

Digestive Glands

- ➜ Salivary Glands
- ➜ Gastric Glands
- ➜ Intestinal Glands
- ➜ Liver
- ➜ Pancreas

Digestion in Human Beings



Summary of Digestive enzymes of various glands with their secretion and end products of Digestion in Man

Name of gland	Secretion	Site of action	Enzymes	Food acts upon	End product
1. Salivary glands	Saliva	Buccal cavity	Salivary amylase or Ptylin	Starch	Maltose
2. Gastic glands	Gastic Juice HCl	Stomach	Pepsin	Proteins	Peptones and proteoses
			Renin	Caesein of milk	Paracaesein
3. Liver	Bile	Duodenum	-	Fats	Emulsification of fats

4. Pancreas	Pancreatic juice	Duodenum	Amylase	Starch and Glycogen	Maltose and isomaltose
			Trypsin	Proteins	Peptones and peptides
			Lipase	Emulsified fats	Fatty acids and glycerol
5. Intestinal glands	Intestinal juice	Small intestine	Erepsin	Peptones and peptides	Amino acids
			Maltase	Maltose	Glucose
			Sucrase	Sucorose	Glucose and fructose
			Lactase	Lactose	Glucose and galactose
			Lipase	Triglycerides	Monoglycerides and fatty acids
	Mucous	Large intestine	-	Lubrication of faecal matter	-