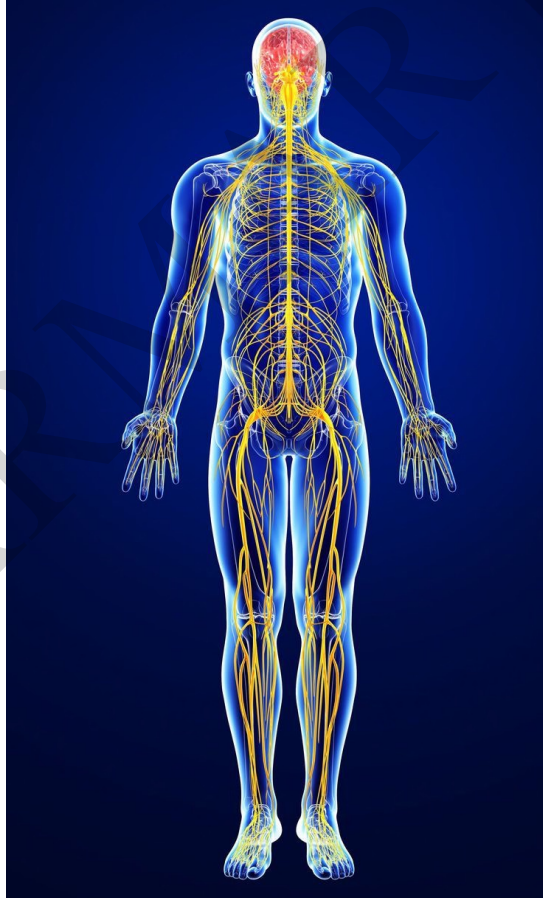


LIFE PROCESS

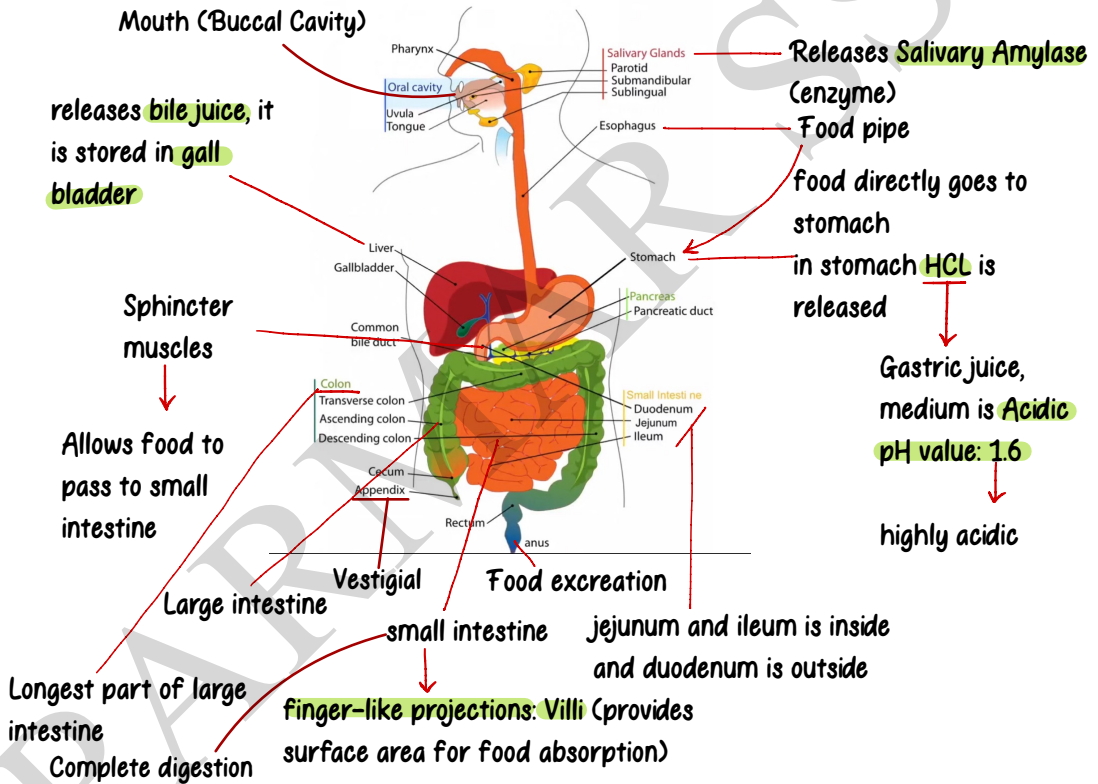
DIGESTION+RESPIRATION



4 components of Life Process:

- Digestion
- Respiration
- Circulation
- Excretion

DIGESTIVE SYSTEM



→ **Salivary Amylase:** breaks complex carbohydrates to simple carbohydrates

- Stomach
1. **HCl:** kills harmful bacteria; medium — Acidic
 2. **Pepsin:** breaks protein → Amino acids
- HCl is present in gastric juice → **pH: 1.6**

• **Mucus membrane:** protects inner delicate lining of stomach from gastric juice

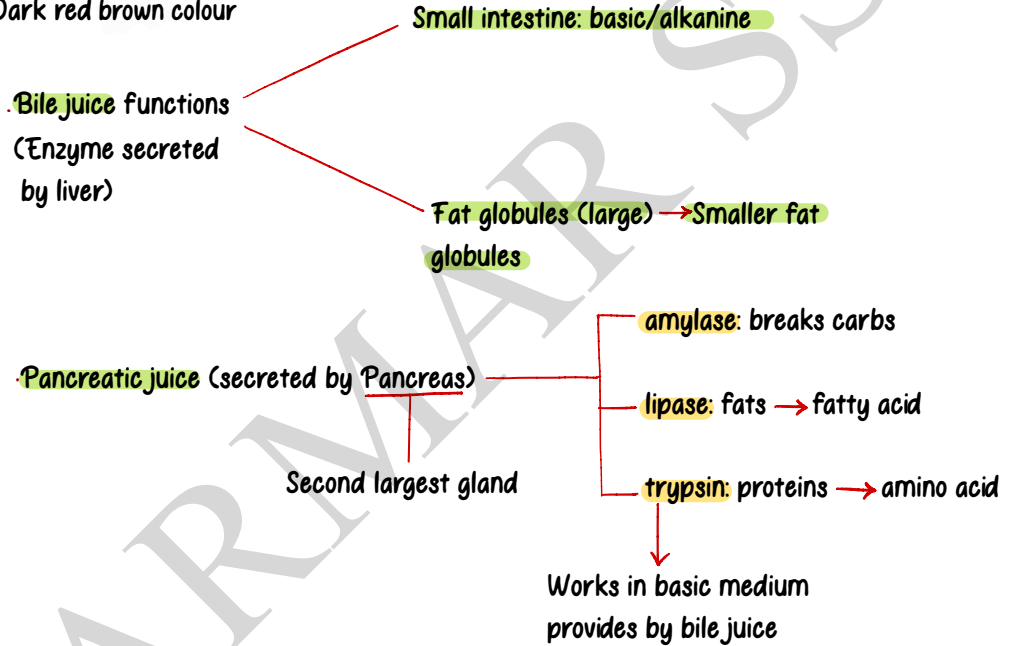
• **Sphincter muscle**: it allows food to pass from stomach to small intestine

• **Small intestine**: 7-8 m length, longest part of alimentary canal

↓
• **3 parts**: Duodenum, Jejunum, Ileum
Major part of digestion occur here

• **Liver**: largest gland located on right side of abdomen

↓
Dark red brown colour



• **Large Intestine**: 1.5 m length

↓
Absorption of water from food

• **Maltase**: in salivary gland and small intestine
Maltose → Glucose

Alimentary Canal: the whole passage along which food passes through

↓
Liver and pancreas are
not its part

Mouth
↓
Oesophagus
↓
Stomach
↓
Small intestine
↓
Large intestine
↓
Rectum
↓
Anus

Liver

- Liver converts **glucose into glycogen** and **amino acids into proteins**
- It is of dark red brown colour
- **Position:** right of abdomen side
- **Kupffer cells:** star shaped phagocytic cells in the lining of liver sinusoids (They are involved in breakdown of RBCs)
- It is the largest gland
- **Hepatocytes:** They are the major parenchymal cells of the liver responsible for various cellular functions

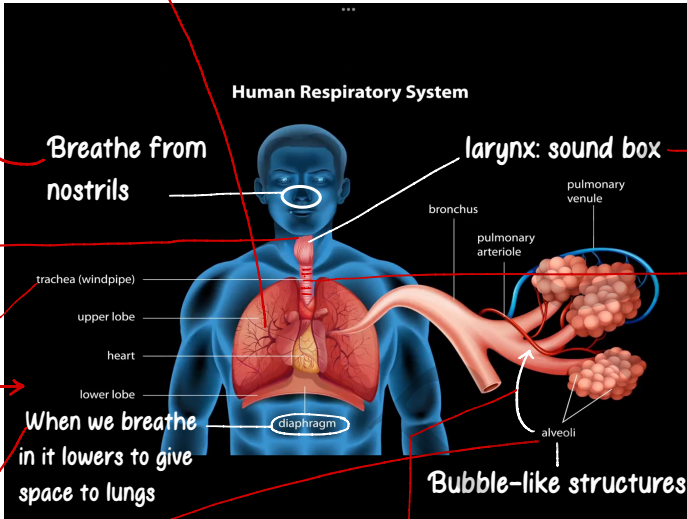
Villi

- The finger-like projections in small intestine
- They help in increase of surface area for food absorption

Breathe in: upper Exhale: down

Lungs surrounded by **rib cage**
(boney structure)

RESPIRATORY SYSTEM



hairs and mucus purifies the air in nose

Breathe from nostrils

larynx: sound box

Adam's apple

Pharynx: where both food and air enters

rings of cartilage (lines in trachea)

Prevents trachea from collapsing

Trachea → bronchus

Bronchi

When we breathe in it lowers to give space to lungs

Bubble-like structures

When we breathe out Lungs shrink and diaphragm (upper) comes to original position

Connected to capillaries

Sheet-like structure

Breathe in

$O_2 \rightarrow 21\%$
 $CO_2 \rightarrow 0.036\%$
 $N_2 \rightarrow 78\%$

Alveoli supplies this oxygen to blood capillaries

connected to arteries and supplies O_2 to every cell

O_2 rich blood: oxygenated blood (respiration)

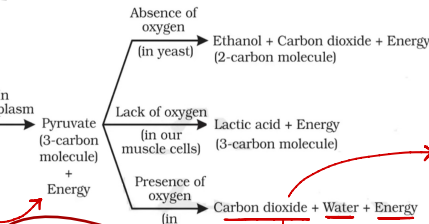
Breathe out

$CO_2 \rightarrow 4.4\%$
 $O_2 \rightarrow 16\%$
 $N_2 \rightarrow 78\%$

Cells



ATP: 38 molecules



Waste material (CO_2) reaches lungs

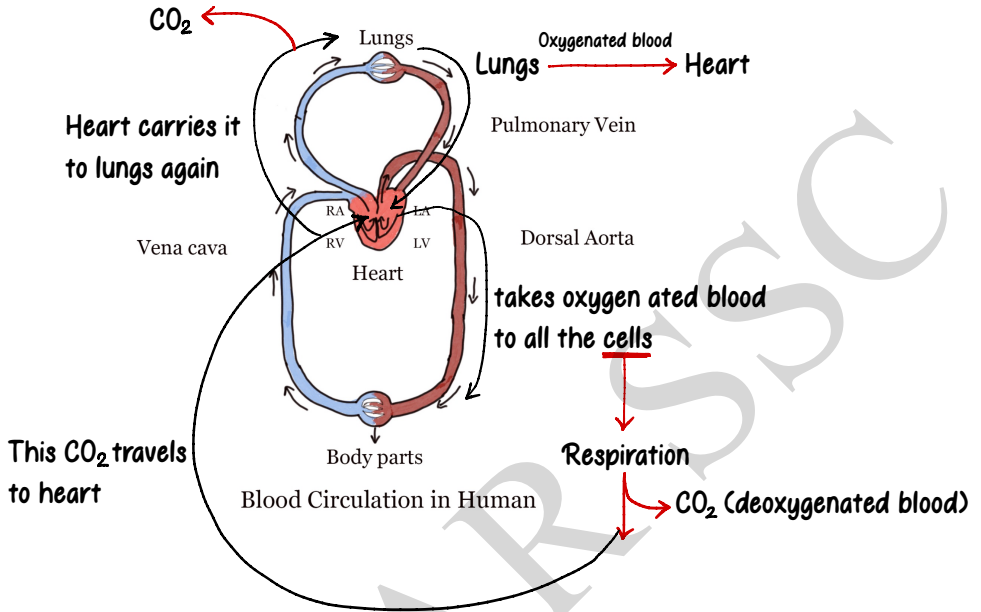
Diffusion from high conc. to low conc.

Carried by veins (carries deoxygenated blood)

Through exhalation to

Exhale ← high concentration of CO_2 ← alveoli

Food stored in form of Glycogen in Liver



- **lungs is covered by outer membrane called pleura**

Different forms of respiration:

- **Anaerobic respiration:** in absence of oxygen in yeast → Ethanol + CO₂ + Energy
- **Aerobic respiration:** in presence of oxygen in mitochondria → CO₂ + Water + Energy
- **Lack of oxygen:** oxygen in minute concentration in muscle cells → Lactic acid + Energy

↓
Develops cramps in muscle during athletic activities

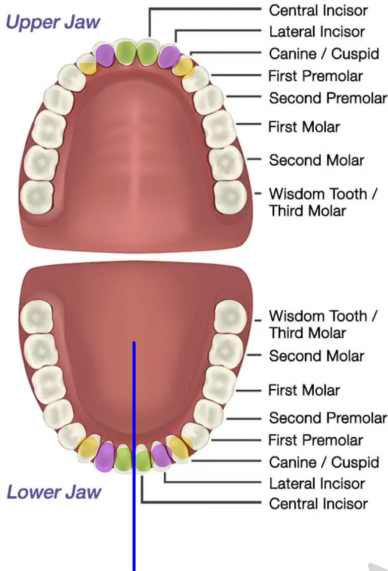


- Network of air tubes for gas exchange in insects: Tracheae
- Present between lungs: Thymus gland
- Upper part of the respiratory tract with small hair-like structure: Cilia
- Fibre cannot be broken down by the GI tract, does not provide energy but helps the body get rid of wastes and keeps the intestinal tract healthy
- Metabolic reactions are carried out by: Protein

Anabolism: synthesis

Catabolism: break down

- Fluid secreted by new mothers during initial days of lactation, that boosts baby's immune system: Colostrum
- Indigestible portion of our diet: Roughage
- Pouch connected to the junction of small intestine and large intestine: Caecum
- Bariatric surgery brings changes in: Digestive system
↓
Done in obese people
- Organ that can regrow after damage: Liver



Nose teeth: Incisors

- Central incisor
- Lateral incisor
- Uses: food biting

$$\text{incisors: } 4 \times 2 = 8$$

- Canine: $2 \times 2 = 4$
- Uses: tearing of food
- Larger in canine animals

- Premolars: $4 \times 2 = 8$
- Uses: chewing of food

- Molars: $6 \times 2 = 12$
- Uses: grinding of food

= 32

- Hardest part of human body: **Enamel**
(Outer covering of teeth) made of Calcium phosphate

- Inner covering: **Dentine**

- Strongest part of human body: **Jaw**

- Wisdom teeth: **3rd molar**

- Elephant's outer teeth is known as tusk (**incisors**)

- Bird's beak: **extended, modified form of teeth**

- **Dental formula:**
$$\frac{I \ C \ P \ M}{I \ C \ P \ M}$$

$$\frac{= 2 \ 1 \ 2 \ 3}{2 \ 1 \ 2 \ 3} \quad \left| \rightarrow \text{Adults} \right.$$

- **In children:** Premolar **absent**
3rd molar **absent**

$$\frac{2 \ 1 \ 0 \ 2}{2 \ 1 \ 0 \ 2}$$