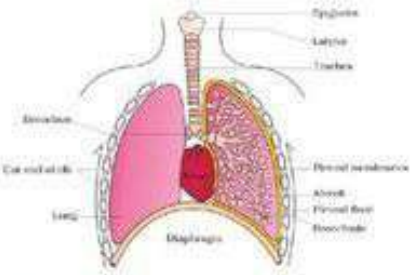
BREATHING AND EXCHANGE OF GASES

Respiration organs in animals

- Example- Insects, Centipede, Millipede, etc. (Tracheal Tube)
- Example- Sponges, Coelenterate, Flatworm (Body Surface)
- Example- Fishes, Tadpoles, Prawns, etc. (Gills)
- Example- Terrestrial animals like human being (Lungs)

Human Respiratory System



Mechanism of Breathing

- Inspiration (Breathing in)
- Expiration (Breathing Out)

Respiratory Disorder

- Occupational Respiratory Disorder
- Emphysema
- Asthma
- Bronchitis
- Pneumonia
- Lung cancer

Regulation of Respiration

- Neutral regulation- involves respiratory centres, afferent and efferent nerves.
- Chemical regulation- Through Chemoreceptors

Respiratory Volumes and Capacities

- Tidal Volume ⟶ 500 ml
- IRV ⟶ 2500 ml to 3000 ml
- EVR ⟶ 1000ml to 1100ml
- RV ⟶ 1100ml to 1200ml
- IC ⟶ TV + IRV
- EC ⟶ TV + ERV
- FRC ⟶ ERV + RV
- VC ⟶ ERV + TV + IRV
- Total lung capacity ⟶ RV + ERV + TV + IRV or V.C + TRV

Exchange of gases

- Between Alveoli and blood
- Between blood and tissues

Transport of gases

Transport of CO_2

- -As blood plasma (about 3%)
- -As Oxyhaemoglobin (about 97%)

Transport of O_2

Transport of CO_2

- -As Carbonic acid (About 7%)
- -As carbamino- haemoglobin (About 20-25%)
- -As bicarbonates (About 70%)

$$CO_2 + H_2O \xrightleftharpoons[\text{Anhydrase}]{\text{Carbonic}} H_2CO_3 \xrightleftharpoons[\text{Anhydrase}]{\text{Carbonic}} HCO_3^- + H^+$$