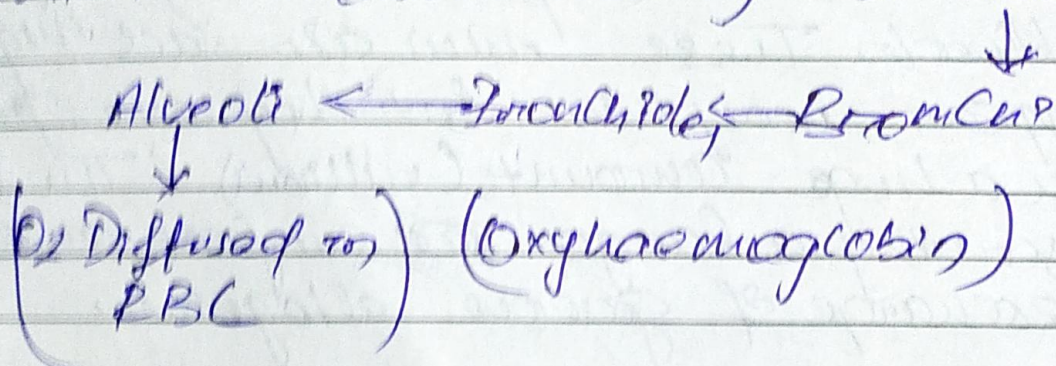


[HW-2]

① How O_2 & CO_2 are transported in Human Lungs?

Air comes sitting O_2 along with other gases enter the blood passing through

Nose \rightarrow Nasal cavity \rightarrow Trachea



Then the O_2 & further used as metabolic fuel: and the metabolic wastes CO_2 & H_2O vapour are further transported through RBCs (haemoglobin) (carboxyhaemoglobin) back to alveoli and diffused to enter into & further exhaled out

② How are trachea designed in human lungs to maximize the area for exchange of gases?

(a) Lungs have further divisions (i.e. tubes, tubules) to maximise the area of gaseous exchange

(b) Lungs are divided into two smaller tubes called bronchi and which further are divided into bronchioles (tubules)

(c) All the ends of bronchioles, sac like structure - are present. They are called as Alveoli. These mini air sacs might appear very thin but they are present in a huge amount (millions) - thus serving a large ~~and~~ surface area for exchange of gaseous altogether.

(3) How alveoli are designed for exchange of gases?

Alveoli are balloon like air sacs that are made up of simple squamous Epithelium. It has a thin cell wall to facilitate gaseous exchange. The presence of millions of alveoli in the lungs provided vast area for gaseous exchange between the air in the lungs and the blood in the surrounding capillaries

oxygen diffuses across the alveolar and capillary wall into the blood stream. capillary wall into the blood stream and while CO₂ diffuses from blood across mentioned wall into the alveoli.

(1) What are the different ways in which glucose is oxidised to give (provide) energy in various organisms?

Breaking down of glucose involves 2 processes. In the first step, it is broken into 3 pyruvate molecules. These pyruvates further breakdown to provide energy in the following different ways in various organisms.

(a) Aerobic Respiration

In this case, pyruvate is broken down into H₂O and CO₂ along with release of energy. It commonly occurs in mitochondria of cells. It takes place in the presence of O₂. ATO count (36-38)

Aerobic Respiration

In this break down of O_2 takes place in absence of O_2 . Where the pyruvate break down to provide energy along with ethanol/lactic acid and CO_2 . ATP count (2 ATP)

5) What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining O_2 from respiration?

Air (atmosphere) contains 21% of O_2 while H_2O has only 1% of O_2 in dissolved state. Thus a terrestrial organism is provided with much more amount of O_2 than the aquatic organism. This is the reason that terrestrial organisms have the advantage of getting more O_2 than aquatic organism.

6) Why are trachea provided with cartilaginous rings?

In the trachea (wind pipe) there are several cartilaginous rings called as tracheal rings or tracheal cartilage.

These cartilaginous structures press against the pericardium, thus preventing the normal pipe from collapsing while breathing in and out. It helps support the trachea, allowing it to move and flex during breathing and they keep the lumen of the trachea open while breathing.