



# The blood air barrier “alveolar capillary membrane”

Presented by:

- Kamla Awad (2696)
- Nozha Aljebali (2709)



# ILOS:

01

What is the  
blood air  
barrier?

02

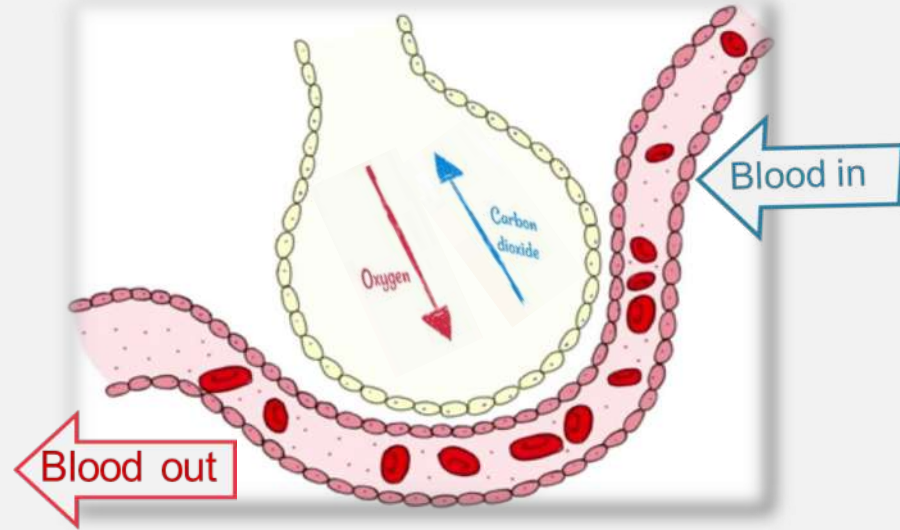
Discuss the  
important  
features of the  
gas exchange  
surface

03

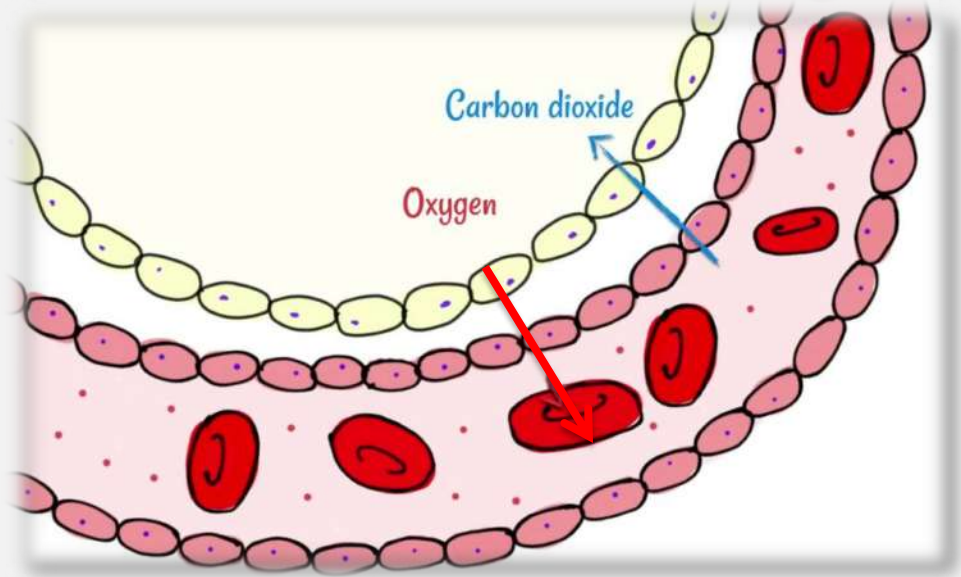
Identify the  
two types of  
the alveolar  
cells

# What is the blood air barrier?

- The blood air barrier exists in the gas exchanging region of the lungs.
- It exists to prevent air bubbles from forming in the blood, and from blood entering the alveoli.
- It is formed by the type I pneumocytes of the alveolar wall, the endothelial cells of the capillaries and the basement membrane between the two cells.



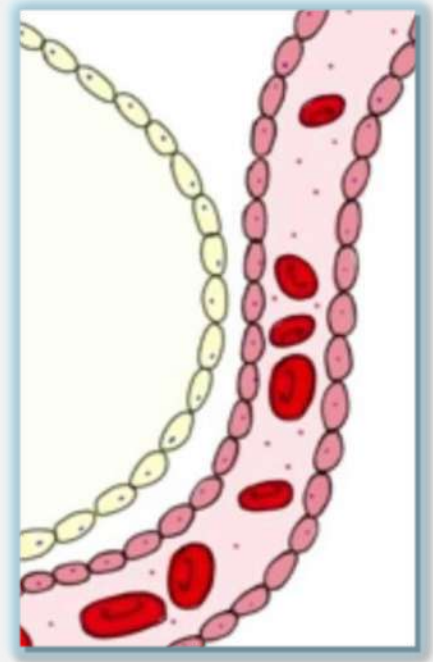
- The barrier is permeable to oxygen, carbon dioxide, carbon monoxide and many other gases.
- This blood-air barrier is extremely thin approximately  $2\mu\text{m}$ - $600\text{ nm}$ ; to allow sufficient



oxygen diffusion, also it is extremely strong; This strength comes from the collagen type **IV** which is between the endothelial and epithelial cells. Damage can occur to this barrier at a pressure more than 40 mm Hg.

# The important features of the gas exchange surface...

- Large surface area.
- Very thin .
- Moist lining “allows gases to dissolve and then diffuse”
- Good supply of blood.
- Good ventilation.



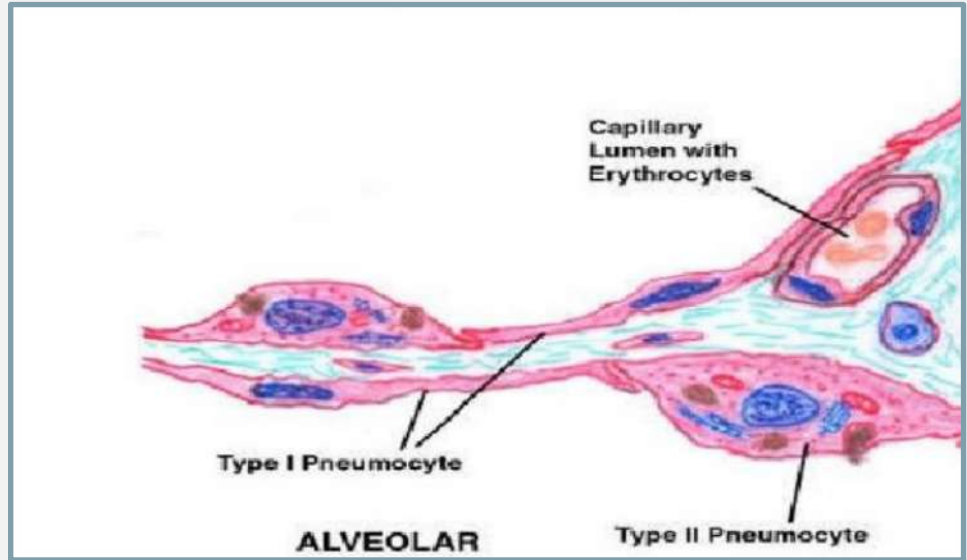
# Types of alveolar cells

01

Type I pneumocyte

02

Type II pneumocyte



# Types of alveolar cells

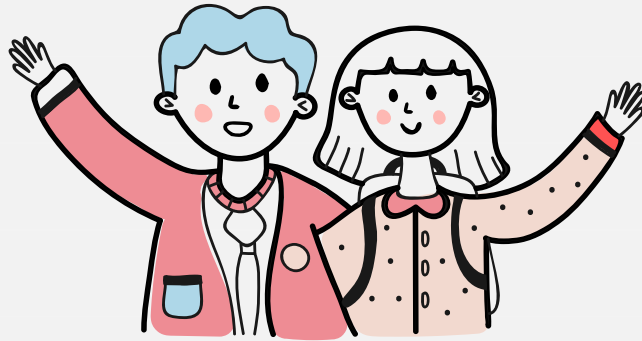
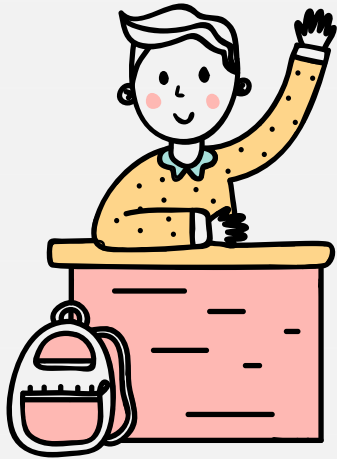
Type I alveolar cells	Type II alveolar cells
<ul style="list-style-type: none"><li>• covers 95% of the alveolar surface area</li></ul>	<ul style="list-style-type: none"><li>• Covers only 5% of the alveolar surface area</li></ul>
<ul style="list-style-type: none"><li>• thin and squamous</li></ul>	<ul style="list-style-type: none"><li>• Large and cuboidal</li></ul>
<ul style="list-style-type: none"><li>• responsible for gas exchange</li></ul>	<ul style="list-style-type: none"><li>• responsible for secretion of surfactant</li></ul>
<ul style="list-style-type: none"><li>• they cannot be divided</li></ul>	<ul style="list-style-type: none"><li>• they are able to divide</li></ul>

# Summary :

- The blood air barrier is a barrier which exist in the gas exchanging region of the lungs.
- The barrier is permeable to oxygen, carbon dioxide, carbon monoxide and many other gases.
- It exists to prevent air bubbles from forming in the blood, and from blood entering the alveoli.
- The gas exchange surface must have some important features.
- There are two different types of the alveolar cells which differ in their shape, number, function, and there ability to divide.



# Thanks!



# REFERENCES...

1. [https://en.m.wikipedia.org/wiki/Blood%E2%80%93air\\_barrier](https://en.m.wikipedia.org/wiki/Blood%E2%80%93air_barrier) .
2. <https://youtu.be/mZvzl8KH6il> .
3. <https://www.ncbi.nlm.nih.gov/books/NBK557542/>.