CIE Biology GCSE

11 - Gas Exchange in Humans

Flashcards

Describe the structure of the lungs

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- The trachea branches into two bronchi
- The bronchi branch into bronchioles
- These bronchioles end in alveoli which are lined with capillaries for exchange

What are the features of an efficient gas exchange surface?

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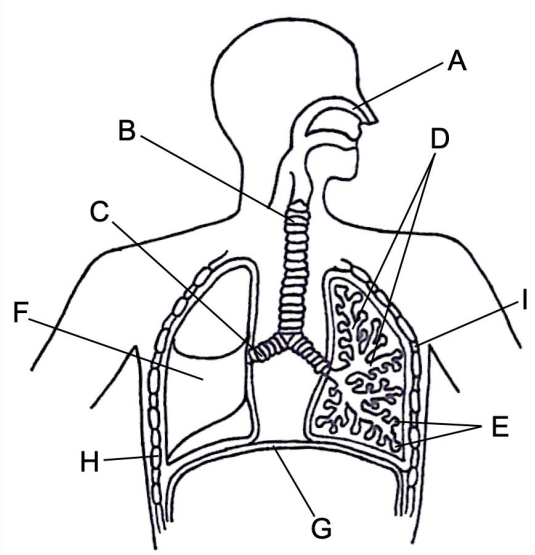
- Large surface area
- Thin (short diffusion distance)
- Good blood supply and good ventilation with air to ensure a steep concentration gradient

Identify the structures of the respiratory system labelled in the diagram below



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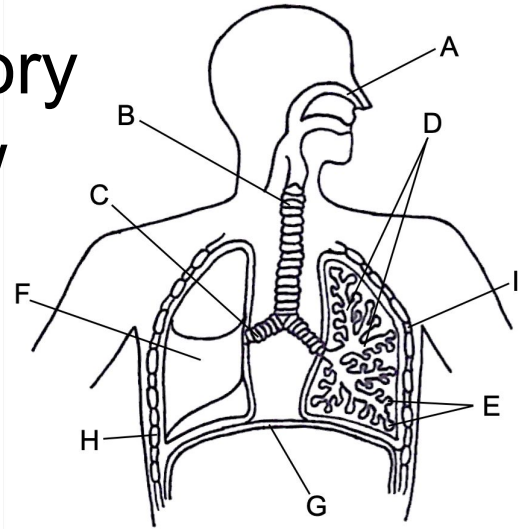
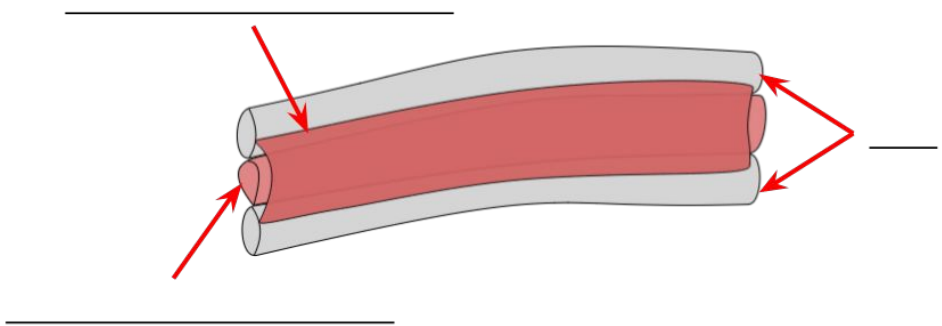
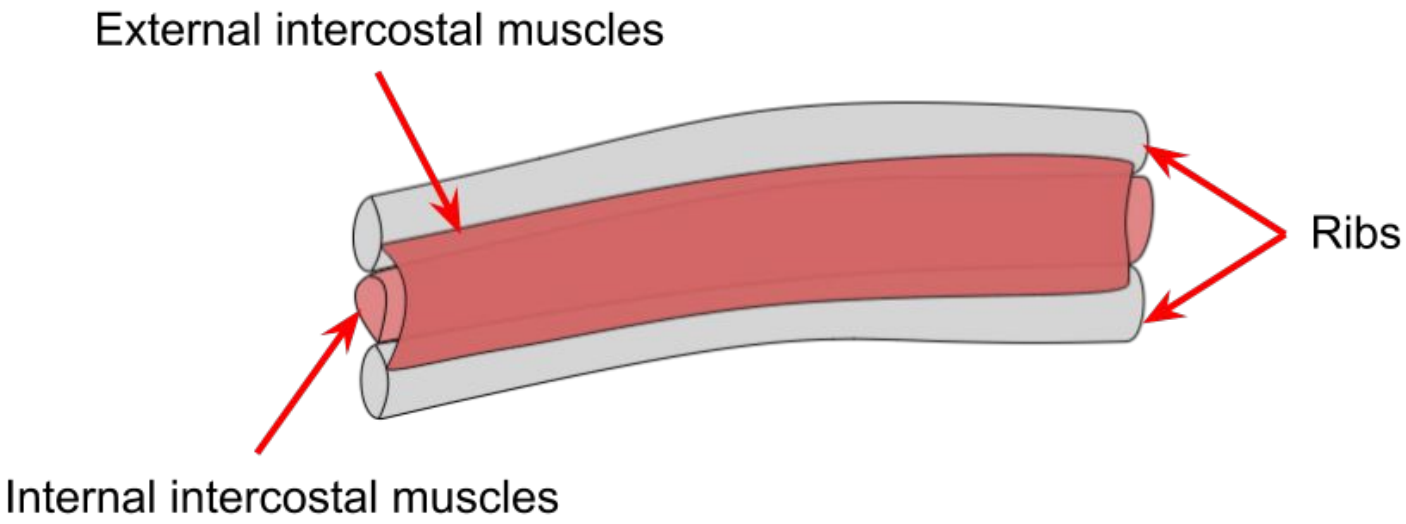


A	nasal cavity	**F**	lung
B	trachea	**G**	diaphragm
C	bronchus	**H**	rib
D	bronchioles	**I**	intercostal muscle
E	alveoli		

Label the ribs, internal intercostal muscles and external intercostal muscles (Higher/Supplement)



Label the ribs, internal intercostal muscles and external intercostal muscles (Higher/Supplement)



What is the purpose of the cartilage in the trachea?

(Higher/Supplement)

What is the purpose of the cartilage in the trachea? (Higher/Supplement)

The cartilage supports the trachea and prevents it from closing

What is the percentage composition of nitrogen, oxygen and carbon dioxide in inhaled air?

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Nitrogen	79%
Oxygen	21%
Carbon dioxide	0.04%

What is the percentage composition of nitrogen, oxygen and carbon dioxide in exhaled air?

What is the percentage composition of nitrogen, oxygen and carbon dioxide in exhaled air?

Nitrogen	79%
Oxygen	16%
Carbon dioxide	4%

State the difference in the amount of water vapour present in inhaled air vs exhaled air

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Exhaled air tends to contain more water vapour than inhaled air

Why is the percentage of nitrogen in the exhaled air the same as the inhaled air? (Higher/Supplement)

Why is the percentage of nitrogen in the exhaled air the same as the inhaled air? (Higher/Supplement)

The body does not absorb nitrogen from the air so all of the nitrogen that is taken in is released again

Describe the difference in the percentage of CO_2 and O_2 in inhaled air and exhaled air

(Higher/Supplement)

Describe the difference in the percentage of CO_2 and O_2 in inhaled air and exhaled air (Higher/Supplement)

- There is a lower percentage of oxygen in exhaled air as some of the oxygen is absorbed by the body
- There is a higher percentage of carbon dioxide in exhaled air as extra carbon dioxide from respiration is removed

What chemical can be used to test for carbon dioxide?

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Calcium hydroxide $Ca(OH)_2$ - commonly known as limewater

How can limewater be used to test for carbon dioxide?

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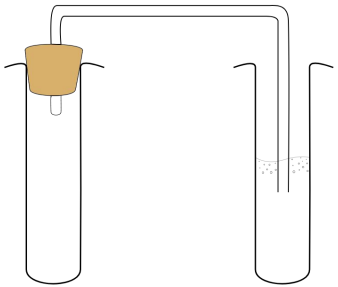
Bubble the gas you are testing for through the limewater



Describe the effects of physical activity on breathing rate and breathing depth

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As physical activity increases, the breathing rate increases and so does the breathing depth

Explain the effects of physical activity on breathing rate and breathing depth (Higher/Supplement)

Explain the effects of physical activity on breathing rate and breathing depth (Higher/Supplement)

- As physical activity increases, the rate of respiration also increases, producing more carbon dioxide
- The brain detects the increased carbon dioxide concentration in the blood and sends signals to trigger an increase in breathing rate and depth to remove the carbon dioxide more quickly

How do ciliated epithelial cells and goblet cells work together to remove debris and pathogens from the gas exchange system?

(Higher/Supplement)

How do ciliated epithelial cells and goblet cells work together to remove debris and pathogens from the gas exchange system? (Higher/Supplement)

Goblet cells produce mucus which traps particles and pathogens and ciliated epithelial cells waft the particles towards the throat to be swallowed