

Gas exchange in humans

Name the path of air from the trachea to the gas exchange surface.

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What do the pleural membranes do?

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What keeps the trachea open?

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What happens when you breathe in?

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What happens when you breathe out?

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How are alveoli adapted for gas exchange?

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Which direction do oxygen and carbon dioxide diffuse at the alveoli?

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What does tar do in the lungs?

They surround the lungs, and the fluid between them reduces friction when the lungs move.

Trachea, bronchi, bronchioles, alveoli.

Intercostal muscles and diaphragm contract, ribs move up and out, volume of thorax increases, pressure falls and air moves in.

Rings of cartilage.

Large surface area, walls one cell thick, good blood supply, moist lining, and ventilation to keep a steep concentration gradient.

Intercostal muscles and diaphragm relax, ribs move down and in, volume decreases, pressure rises and air moves out.

It destroys cilia, so mucus is not removed. It also contains carcinogens that cause lung cancer.

Oxygen diffuses from the alveoli into the blood. Carbon dioxide diffuses from the blood into the alveoli.

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How does carbon monoxide harm the body?

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How does smoking increase the risk of coronary heart disease?

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What is emphysema?

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How does limewater show that exhaled air contains carbon dioxide?

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What is the effect of exercise on breathing?

Smoke damages artery linings so fatty deposits build up in the coronary arteries.
Nicotine raises heart rate and blood pressure; carbon monoxide reduces oxygen carried.

It combines with haemoglobin, so red blood cells carry less oxygen and the heart works harder.

It turns cloudy (milky) when carbon dioxide is bubbled through it.

A lung disease in which alveoli walls break down, reducing the surface area for gas exchange.

Breathing rate and depth increase, because muscles respire faster and make more carbon dioxide.