

9. Gas exchange

Starter Quiz · 课前小测

A-Level Biology

Name: _____ Score: _____

1. The C-shaped rings of cartilage in the trachea and bronchi:
 - ☐ hold the airway open so it cannot collapse
 - ☐ make mucus
 - ☐ sweep mucus upward
 - ☐ narrow the airway
2. Alveoli have a large surface area and very thin walls for fast gas exchange.
 - ☐ True ☐ False
3. The squamous epithelium of the alveoli is very thin and flat because this:
 - ☐ gives a very short distance for gases to diffuse
 - ☐ makes more mucus
 - ☐ holds the airway open
 - ☐ narrows the airway
4. Which feature makes alveoli good for gas exchange?
 - ☐ a large total surface area with very thin walls
 - ☐ a small surface area and thick walls
 - ☐ a dry lining
 - ☐ no blood supply
5. Bronchioles have no cartilage; their walls contain smooth muscle instead.
 - ☐ True ☐ False
6. Oxygen diffuses:
 - ☐ from the alveolar air into the blood
 - ☐ from the blood into the air
 - ☐ from blood into the alveolus walls only
 - ☐ in no particular direction
7. The tiny hair-like structures that beat to sweep mucus up out of the lungs are called _____.

8. Carbon dioxide diffuses from the blood into the alveolar _____, to be breathed out.

9. Breathing and the flow of blood keep gas exchange fast because they:

- ☐ maintain steep concentration gradients
- ☐ reduce the surface area
- ☐ thicken the walls
- ☐ dry out the lining

A-Level Biology

1. **hold the airway open so it cannot collapse**

Cartilage supports the airway, keeping it open as air pressure changes during breathing.

2. **True**

A large surface area, thin walls, a rich blood supply and a moist lining all speed up gas exchange.

3. **gives a very short distance for gases to diffuse**

A thin, flat lining means a short diffusion distance, so gas exchange is fast.

4. **a large total surface area with very thin walls**

Large surface area, thin walls, a rich blood supply and a moist lining all speed up gas exchange.

5. **True**

The smallest airways lose the cartilage and have smooth muscle, which can narrow them.

6. **from the alveolar air into the blood**

Oxygen is higher in the alveolar air than in the blood, so it diffuses air → blood.

7. **cilia**

Cilia beat in a wave, moving the dirt-laden mucus up to the throat to be swallowed.

8. **air**

CO₂ is higher in the blood, so it diffuses blood → air and is then exhaled.

9. **maintain steep concentration gradients**

Fresh air and moving blood keep concentrations different on each side, so the gradients stay steep.