

# Gas Exchange

## Knowledge Organiser

### **Respiration and breathing are not the same!**

Respiration is a chemical reaction occurring in living cells, breathing brings air into and out of your lungs.

#### **Key words:**

**Breathing:** The movement of air in and out of the lungs.

**Trachea (windpipe):** Carries air from the mouth and nose to the lungs.

**Bronchi:** Two tubes which carry air to the lungs.

**Bronchioles:** Small tubes in the lung.

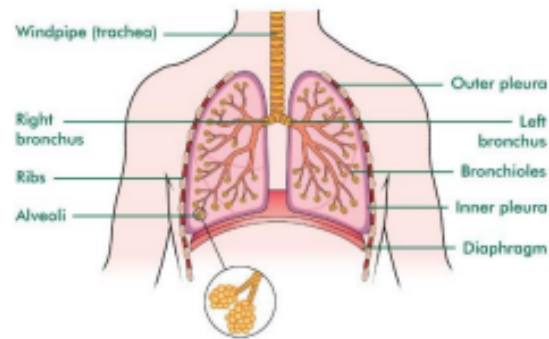
**Alveoli:** Small air sacs found at the end of each bronchiole.

**Ribs:** Bones which surround the lungs to form the ribcage.

**Diaphragm:** A sheet of muscle found underneath the lungs.

**Lung volume:** Measure of the amount of air breathed in or out.

#### **Lung Structure**



#### **How do the lungs work?**

Air containing oxygen enters the lungs. In the tiny alveoli, **oxygen diffuses** from the air sac into the blood.

**Carbon dioxide** diffuses in the opposite direction and is then breathed out.

#### **How does smoking damage the lungs?**

**Tar** in cigarettes causes cells to mutate and this causes **cancer**.

**Nicotine** is a very **addictive** drug. Other chemicals in cigarette smoke like carbon monoxide contribute to **heart disease**, **emphysema** and **bronchitis**.

#### **Exercise and breathing rate**

When you exercise, you require more oxygen for working muscles to **respire**. This means you have to breathe faster to supply this oxygen. Your heart rate also increases to send the blood round your body more quickly.

#### **How are the alveoli adapted to their function?**

Alveoli have a **huge surface area** to allow more diffusion

They have **thin walls** so that gases have a short distance to travel

They have a **good blood supply** to remove oxygenated blood quickly



**Asthma** reduces the diameter of the airways and prevents air from reaching the alveoli.



#### **Websites that might be useful:**

<https://www.bbc.com/bitesize/guides/zq349j6/revision/2>

#### **Extension ideas to research:**

How are fish gills similar to lungs? How are they different?

How do animals like worms and spiders breathe?