

Live Science Lesson WB 29.3.21

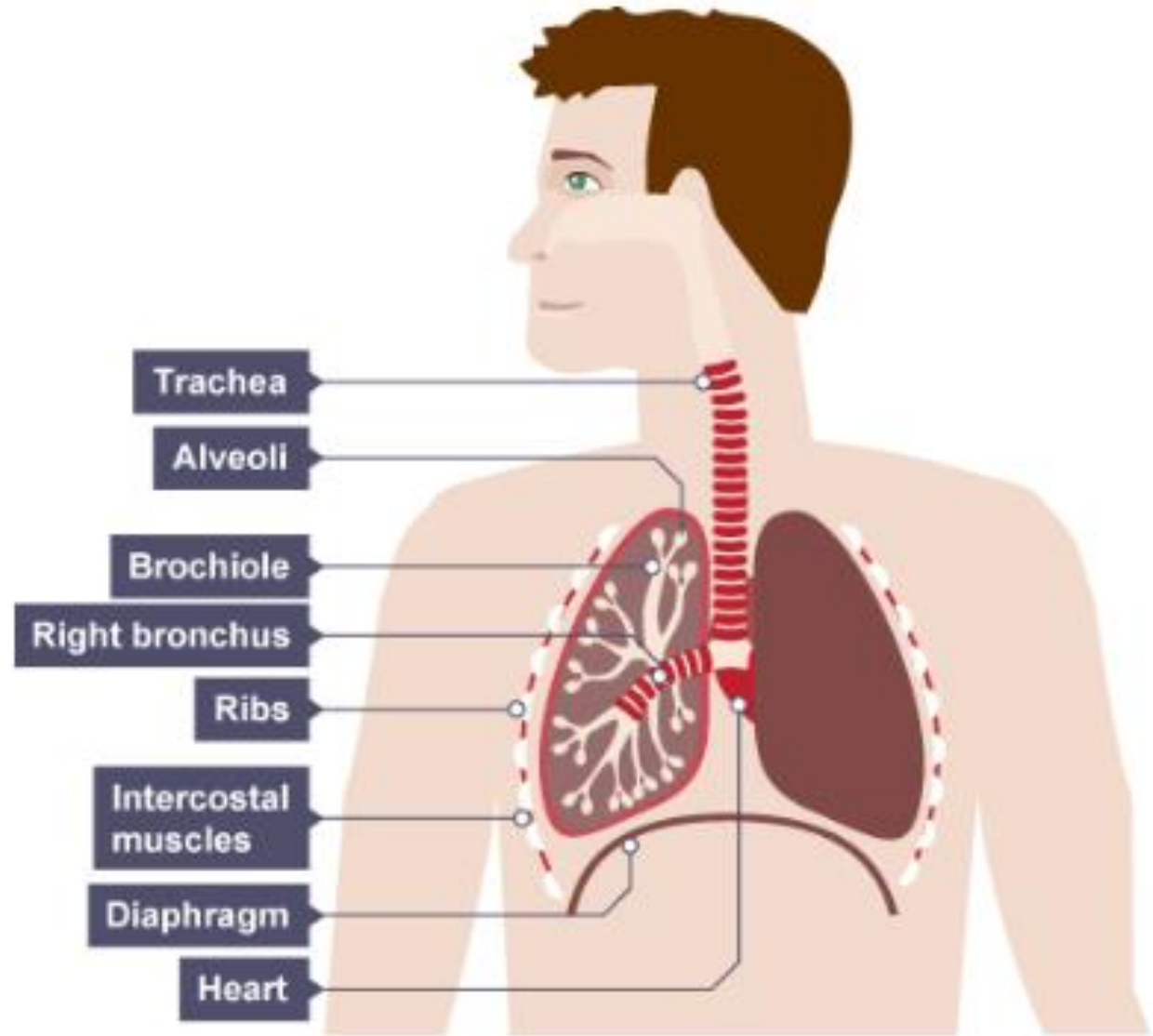
The Respiratory System

The Respiratory System



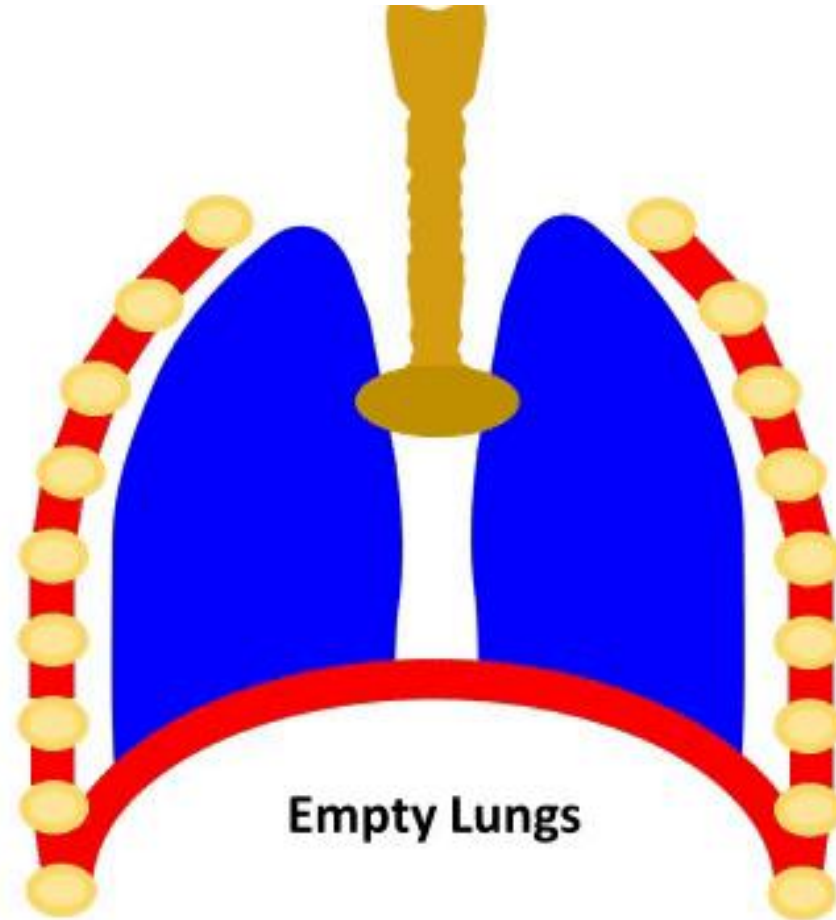
- The lungs are the organs of gas exchange.
- Air enters the breathing system by the nose or mouth.
- The air passes through the voice box, the windpipe (trachea), various branching tubes (bronchi and bronchioles) and into millions of tiny air sacs called alveoli.

The structure
of the
respiratory
system

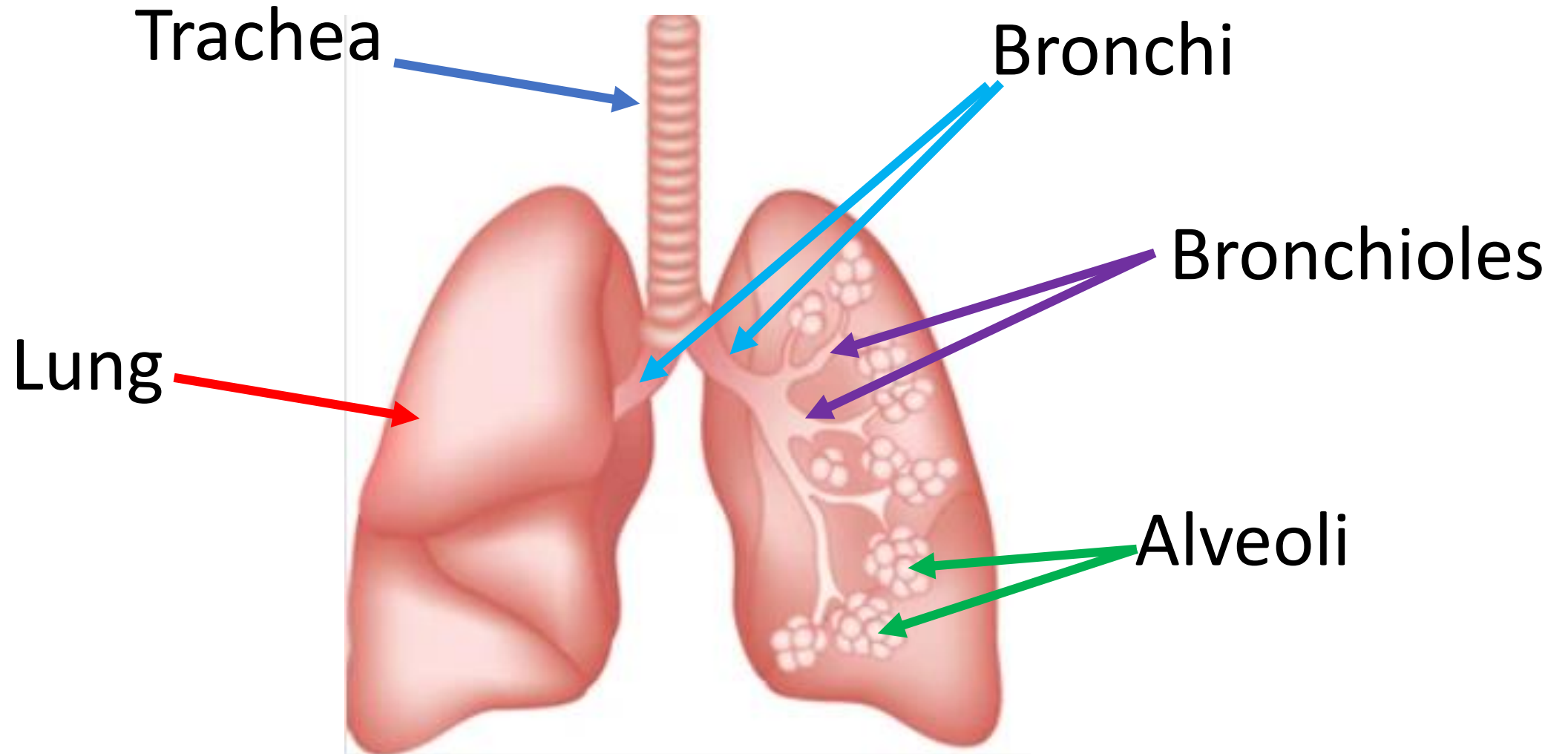


Mechanism of Inhaling and Exhaling

- The diaphragm contracts (flattens) and lung volume increases.
- Muscles between ribs contract pulling the ribcage up and out.
- Lung volume increases and air pressure inside the expanded lungs drops. Fresh air rushes in to inflate them.
- The intercostal muscles relax dropping the ribcage in and down and the diaphragm relaxes upwards. The volume of the lungs is reduced which increases air pressure and air is forced out of the lungs.



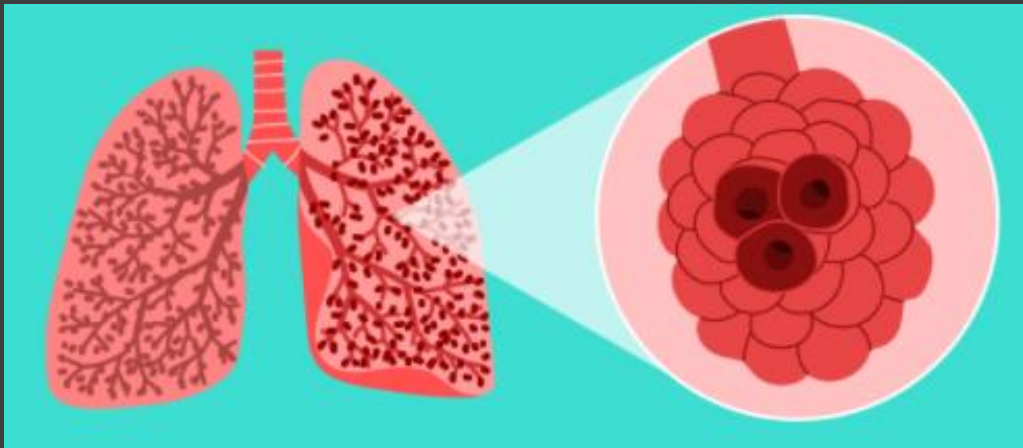
Structure of the Lung





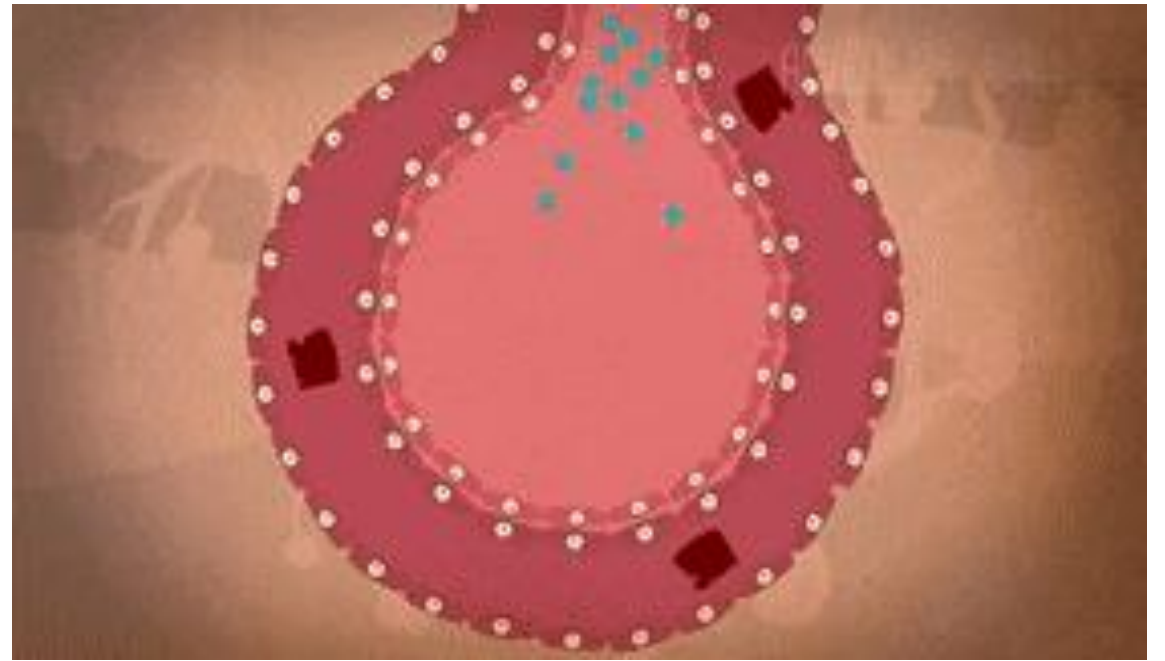
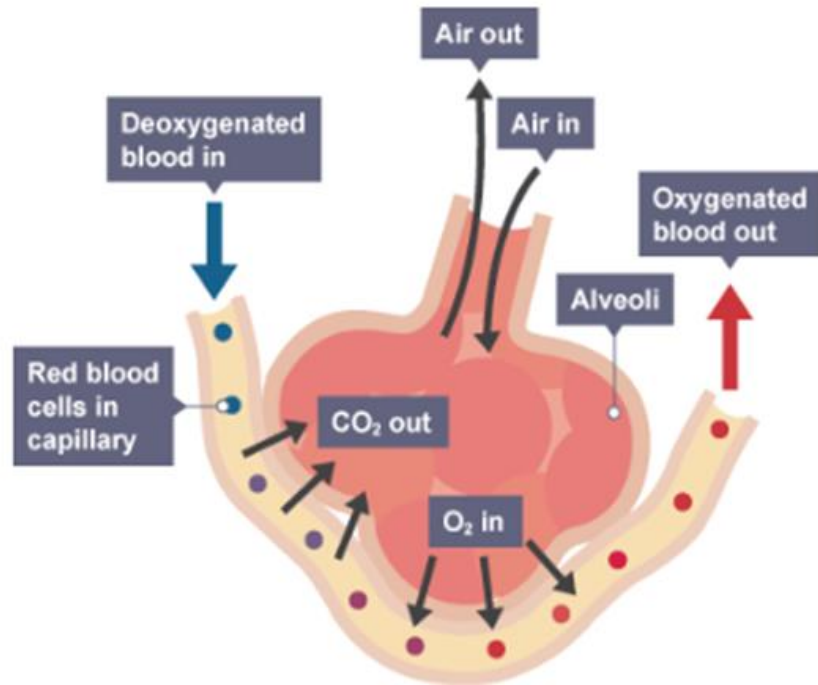
Alveoli

- Gas exchange happens in millions of tiny sacs in the lungs called alveoli.
- Alveoli have very thin walls (only one cell thick)
- They have a large surface area (altogether the same as a tennis court).
- They have a moist surface which helps gas exchange.
- The alveoli are surrounded by many capillaries.

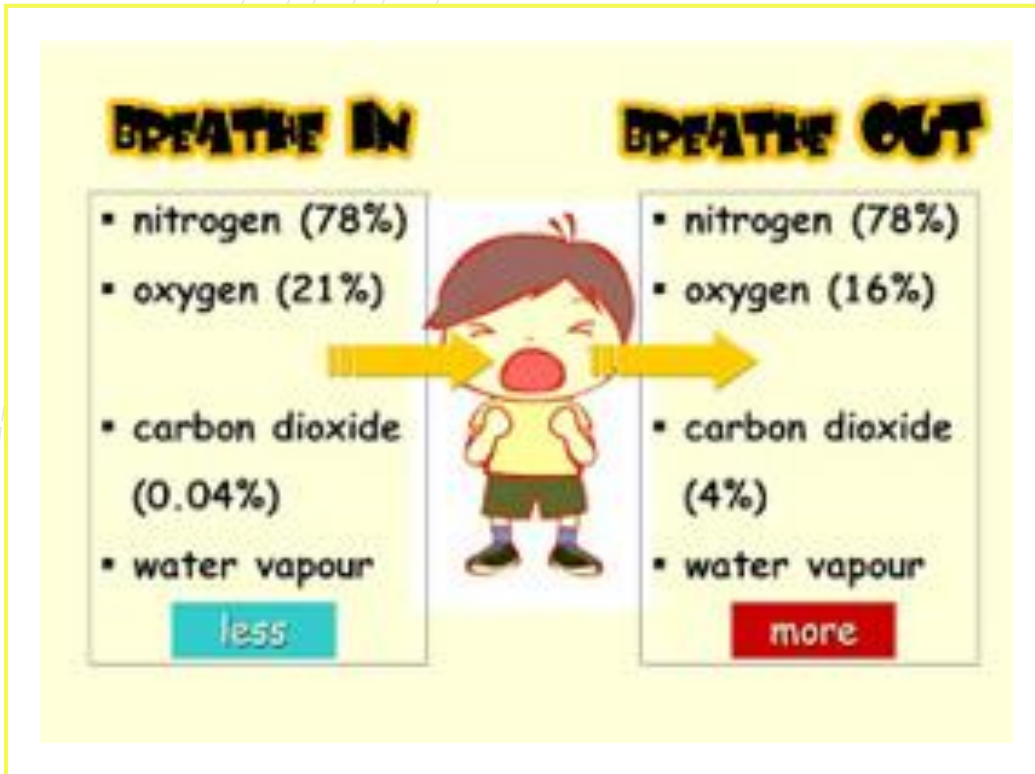


Gas Exchange

- Gas exchange happens in the alveoli.
- Oxygen is absorbed from inhaled air, across the wall of the alveolus and into the blood.
- Carbon dioxide passes from deoxygenated blood into the alveolus and is exhaled by the lungs.



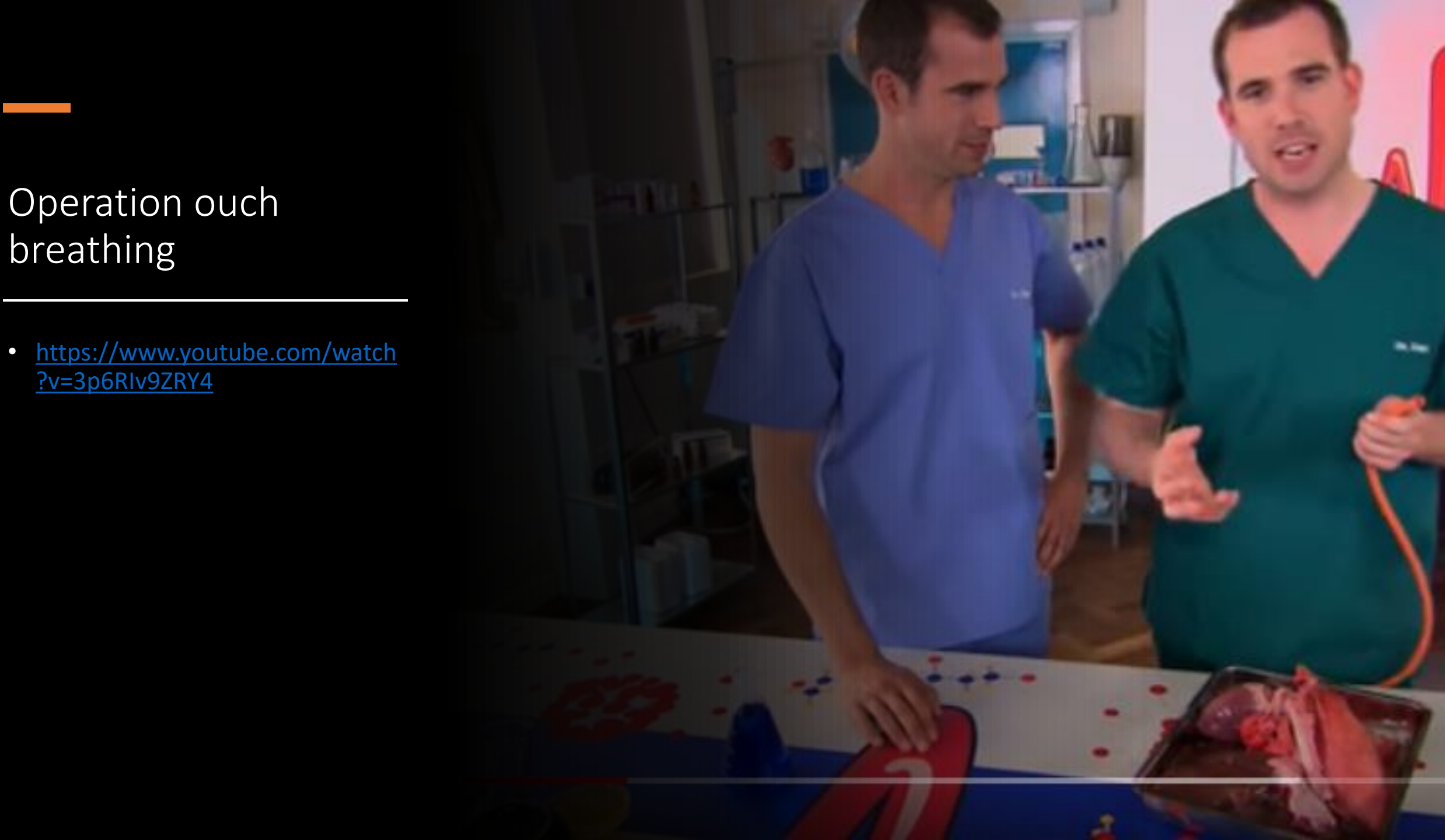
Composition of Inhaled and Exhaled Air



- Air is made up of a mixture of gases.
- The main component of air is nitrogen which our bodies do not use.
- Our bodies need oxygen. We inhale air containing 21% oxygen and absorb some through our lungs into our blood. We breathe out air containing only 16% O₂.
- Our bodies produce carbon dioxide as a waste product. We exhale air containing more CO₂ than the air we breathe in.

Operation ouch breathing

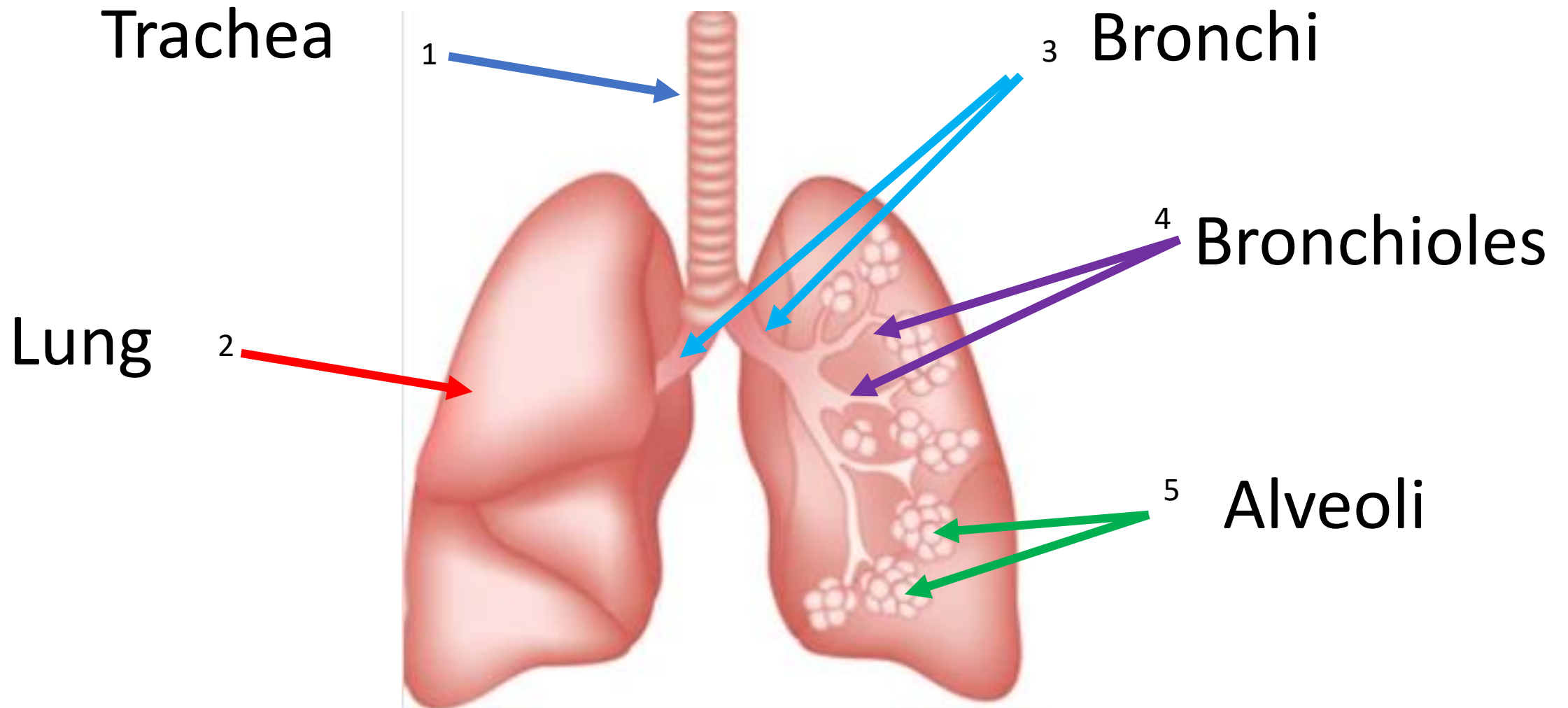
- <https://www.youtube.com/watch?v=3p6Rlv9ZRY4>



Recap questions

- What is the job of the respiratory system? **Gas exchange/oxygenate blood/remove carbon dioxide**
- What is the name of the large muscle under your lungs that controls breathing? **Diaphragm**
- We breathe out more carbon dioxide than we breathe in. True or False? **True.**
- Where does gas exchange take place in the lung? **Alveoli**

Can you name the parts of the lung?

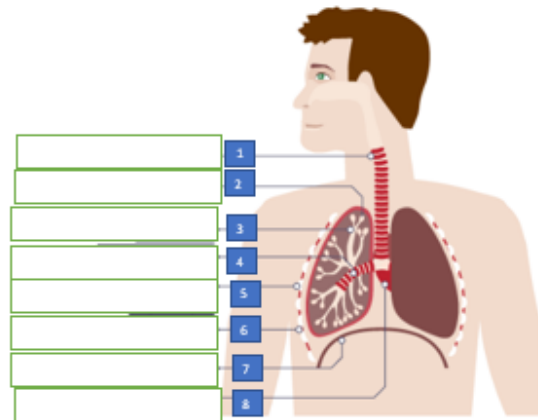


Independent task can be found on Teams page and WHEC home learning hub.

The Respiratory System

1. Label the diagram of the respiratory system using the word bank below.

Alveoli Bronchiole Ribs Intercostal muscles
Heart Right bronchus Diaphragm Trachea



2. Beside each description write whether this is a process involved in inhaling (breathing in) or exhaling (breathing out).

| Description | Inhaling or exhaling? |
|--|-----------------------|
| The diaphragm contracts, pulling downwards. | |
| Air rushes into the lungs. | |
| Lung volume increases and the air pressure inside decreases. | |
| The diaphragm relaxes, moving back upwards. | |

3. Label the diagram of gas exchange using the word bank below.

Air out Air in Alveoli
CO₂ out O₂ in Oxygenated blood out
Red blood cells in capillary Deoxygenated blood in

