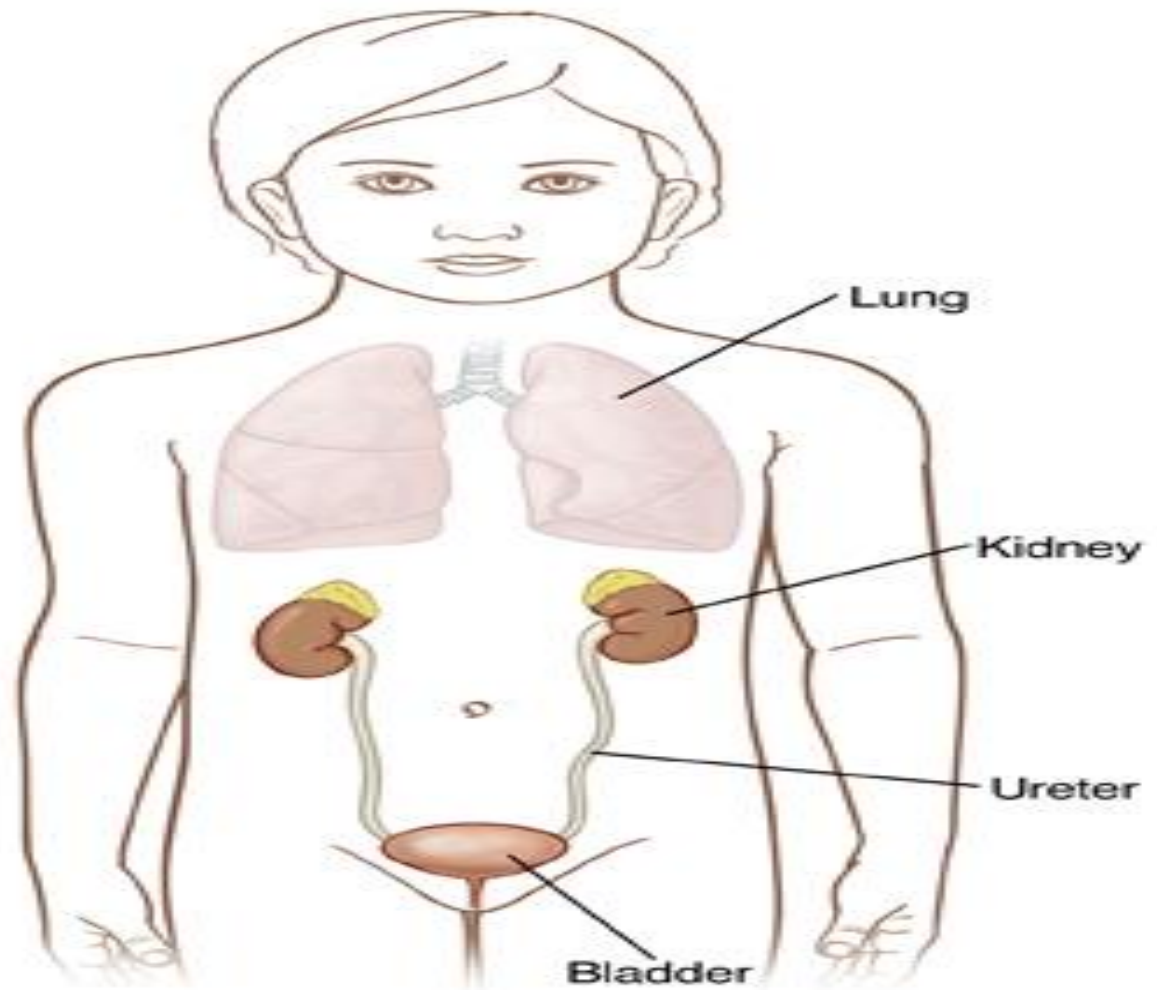


LUNGS & KIDNEYS

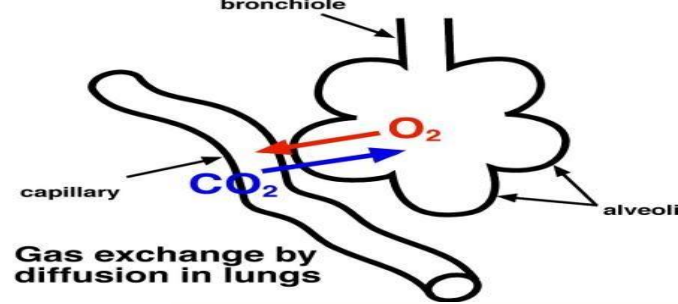


EXCHANGING the GASES

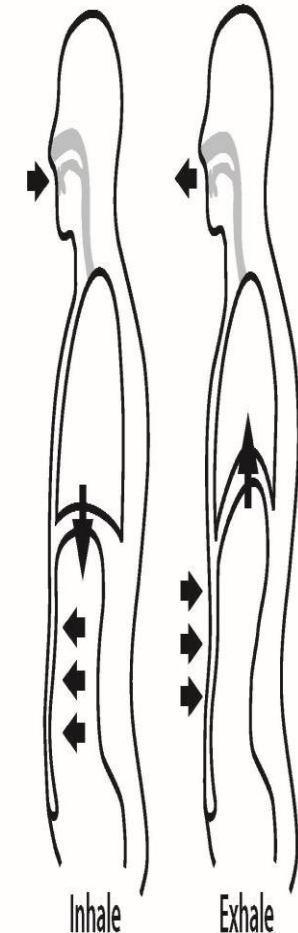
And then:

PREPARING the URINE

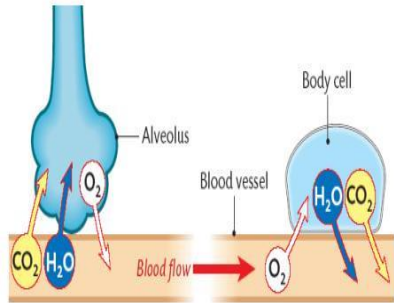
GASEOUS EXCHANGE



- We have seen how **Food*** is made, how it is **taken into** the body, how it is digested into **smaller** pieces. How it is then **sent to the cells** to react **chemically** with Oxygen (**RESPIRATION**) to release energy (*) and Carbon DiOxide.
- **BREATHING-in** brings this Oxygen into the lungs. **BREATHING-out** takes the CO_2 out of the lungs.
- These **GASES** are **EXCHANGED** in the blood at the **lungs**, and in the blood at the **cells**.



What a Gaseous Exchange System Needs, and how Humans Cope.

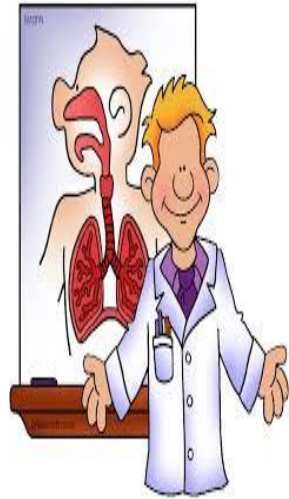


NEEDS

- Large surface area.
- Moist, for dissolving gases.
- Thin surface: gas diffusion.
- Transport available for gas.
- Ventilation = lots of gases.
- Protection of system.

In HUMANS

- Lots of Alveoli.
- Cells in Alveoli secrete H_2O .
- EpiThelium = 1 cell layer.
- Lots of blood capillaries.
- Breathing system does this.
- RibCage protects lungs.



Different Organisms, Different Systems

<u>ORGANISM</u>	<u>STRUCTURE</u>	<u>SYSTEM</u>
1. UniCell Amoeba	Thin EpiDermis	Diffusion across membrane.
2. DiCotyledon Plant	Stomata	Diffusion into cells.
3. Earthworm	Skin	Dissolves & diffuses.
4. Insect	Spiracles (holes) in body	Tubes take gases to cells & from cells.
5. Fish	Gills	Takes Oxygen, dissolved in water.
6. Mammals	Lungs	Alveoli dissolve & diffuse.