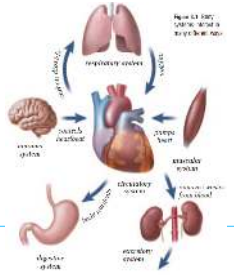
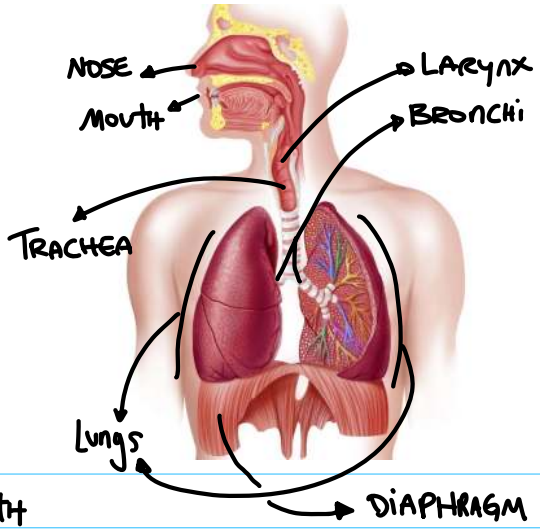
RESPIRATORY SYSTEM

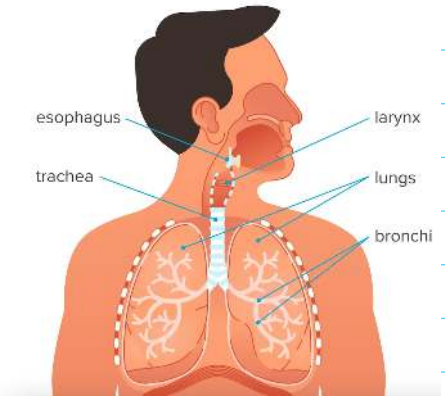


THE RESPIRATORY SYSTEM is RESPONSIBLE for SUPPLYING YOUR BLOOD WITH OXYGEN AND REMOVING CARBON DIOXIDE FROM YOUR BLOOD.



BREATHING...

① AIR ENTERS THROUGH NOSE OR MOUTH
② TRAVELS THROUGH LARYNX (VOICE BOX) TO TRACHEA (AKA WINDPIPE)
③ THEN into YOUR LUNGS.



BREATHING is YOU MOVING AIR in & THEN BACK OUT. (DUH!!)

↳ this HAPPENS WHEN YOUR DIAPHRAGM MUSCLES CONTRACT (INHALE) AND RELAX (EXHALE)

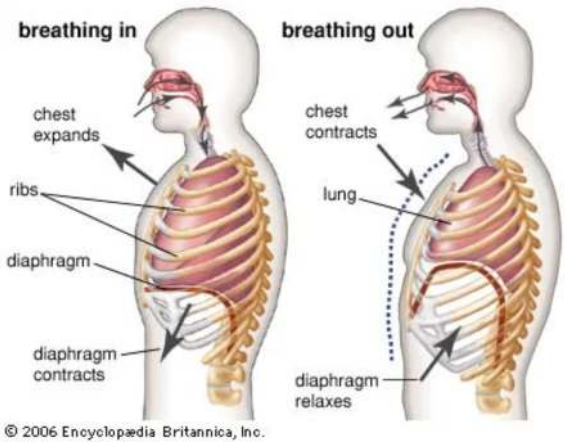
- CONTRACT → LOWERS PRESSURE in LUNGS
- RELAX → RAISES PRESSURE in LUNGS

WHEN YOU INHALE, YOU INCREASE CHEST & LUNG SIZE, pulling AIR in (LOW PRESSURE)

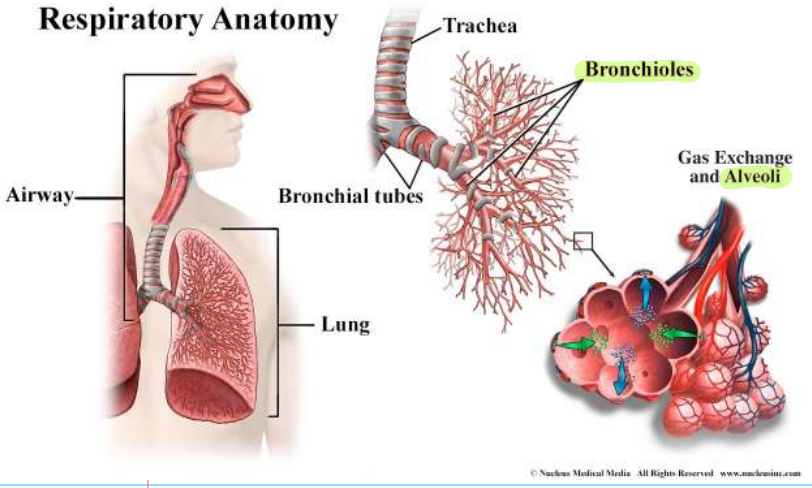
WHEN YOU EXHALE, YOUR CHEST & LUNGS SHRINK (MAKING HIGHER PRESSURE) FORCING AIR OUT.



YOUR DIAPHRAGM IN ACTION



https://drive.google.com/file/d/1hqlIt2EdzXoO5jAYwEUyDw1O5RU5Vxxi/view?usp=sharing



- CELLS NEED O_2 to PROVIDE BODY W/ ENERGY.
  - ALSO NEED to dispose of THEIR WASTE (CO_2)

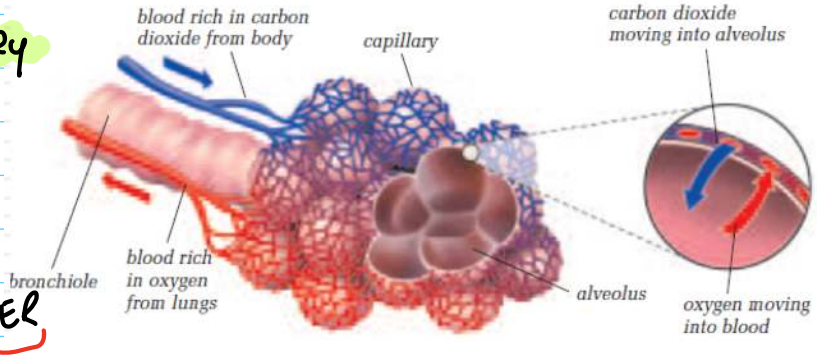
SO...

- YOU BREATHE in O_2 RICH AIR into LUNGS THROUGH TUBE-SHAPED BRONCHI

LINED W/ STRONG CONNECTIVE TISSUE to KEEP WALLS from COLLAPSING.

BRONCHI NARROW to BRONCHIOLES WHICH THEN NARROW to ±600,000,000 tiny, AIR filled SACS called ALVEOLI

ALVEOLI → COVERED in CAPILLARY
- A fine BRANCH of BLOOD VESSELS that CONNECT to BLOODSTREAM.
  - MADE of EPITHELIAL TISSUE → ONE CELL LAYER THICK

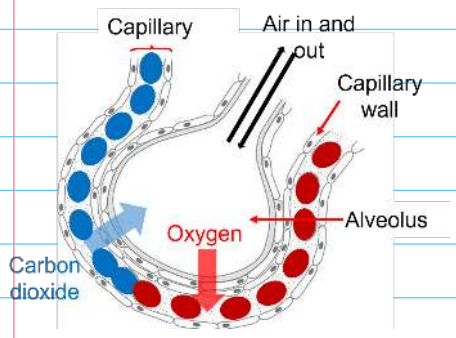


→ SHORTER DISTANCE BETWEEN O_2 RICH AIR & CO_2 RICH BLOOD
AKA → EASIER for DIFFUSION.

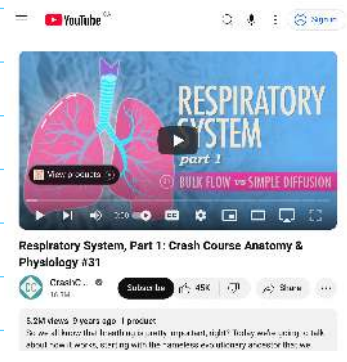
- THE AIR in THE ALVEOLI HAS A HIGH CONCENTRATION OF O_2 AND A LOW CONCENTRATION OF CO_2

- THE BLOOD in the Capillary (surrounding THE ALVEOLI) HAS A Low concentration OF O_2 AND A High concentration OF CO_2

SO... THE OXYGEN NATURALLY DIFFUSES into BLOOD & CARBON DIOXIDE does THE OPPOSITE



* ONLY TAKES A FEW SECONDS FOR BLOOD TO TRAVEL THROUGH LUNGS → PICKING UP AS MUCH O_2 AS POSSIBLE, WHILE DUMPING CO_2 AS WASTE. *



https://www.youtube.com/watch?v=bHZsvBdUC2I

WATCH: CRASH COURSE [BULK FLOW & SIMPLE DIFFUSION]



WATCH: CRASH COURSE [GAS EXCHANGE]

https://www.youtube.com/watch?v=Cqt4LjHnMEA

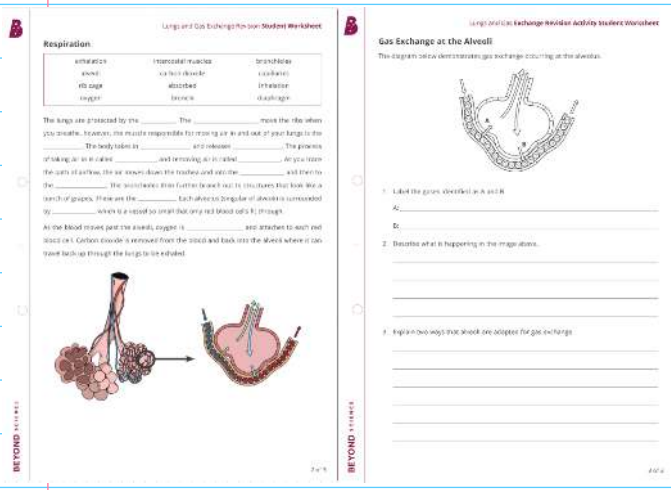
ISJ SET UP:

[LEFT SIDE]

- COMPLETE THIS TO DEMONSTRATE UNDERSTANDING of RESPIRATORY SYSTEM AND GAS EXCHANGE
- GLUE ON LEFT SIDE

[RIGHT SIDE]

- LABEL & COMPLETE
- GLUE ON RIGHT SIDE



Respiration

exhalation	intercostal muscles	bronchioles
alveoli	carbon dioxide	capillaries
rib cage	absorbed	inhalation
oxygen	trachea	diaphragm

The lungs are protected by the _____. The _____ move the ribs when you breathe. However, the muscle responsible for moving air in and out of your lungs is the _____. The body takes in _____ and releases _____. The process of taking air in is called _____ and removing air is called _____. As you trace the path of airflow, the air moves down the trachea and into the _____, and then to the _____. The bronchioles then further branch out to structures that look like a bunch of grapes. These are the _____. Each alveolus (singular of alveoli) is surrounded by _____ which is a vessel so small that only red blood cells fit through.

As the blood moves past the alveoli, oxygen is _____ and attaches to each red blood cell. Carbon dioxide is removed from the blood and back into the alveoli where it can travel back up through the lungs to be exhaled.

BEYOND SCIENCE

Gas Exchange at the Alveoli

This diagram below demonstrates gas exchange occurring at the alveolus.

1. Label the gases identified in A and B

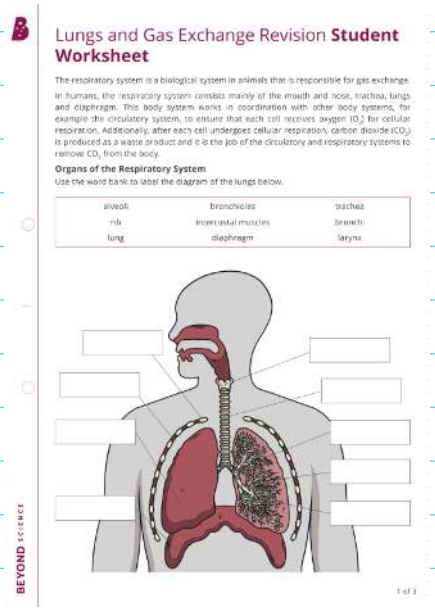
A: _____

B: _____

2. Describe what is happening in the image above.

3. Explain two ways that alveoli are adapted for gas exchange

BEYOND SCIENCE



Lungs and Gas Exchange Revision **Student Worksheet**

The respiratory system is a biological system in animals that is responsible for gas exchange. In humans, the respiratory system consists mainly of the mouth and nose, trachea, lungs and diaphragm. This body system works in coordination with other body systems, for example the circulatory system, to ensure that each cell receives oxygen (O_2) for cellular respiration. Additionally, after each cell undergoes cellular respiration, carbon dioxide (CO_2) is produced as a waste product and it is the job of the circulatory and respiratory systems to remove CO_2 from the body.

Organs of the Respiratory System

Use the word bank to label the diagram of the lungs below.

alveoli	bronchioles	trachea
rib	intercostal muscles	branch
lung	diaphragm	larynx

BEYOND SCIENCE