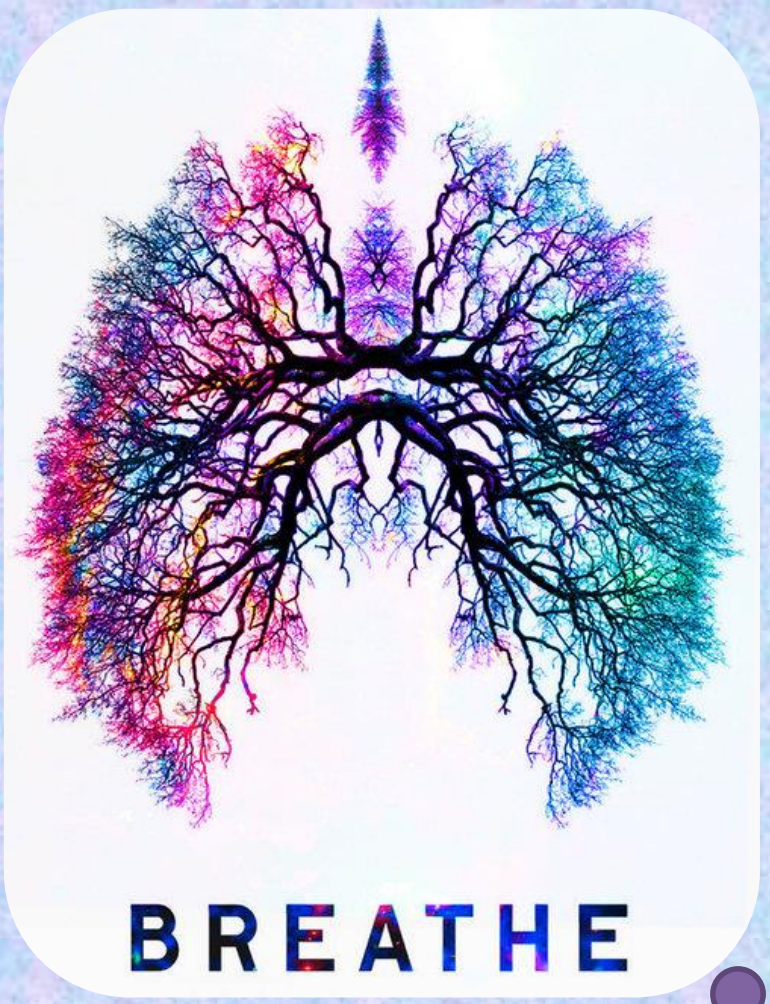
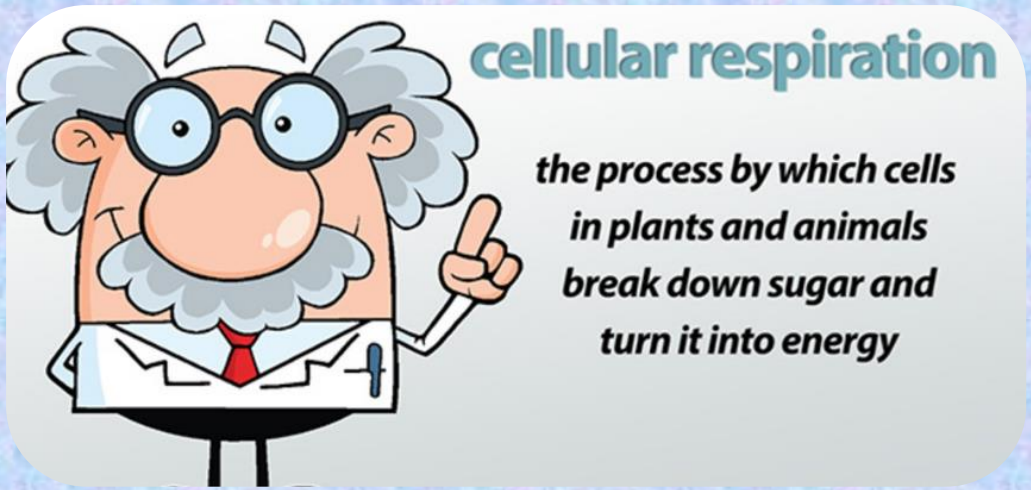
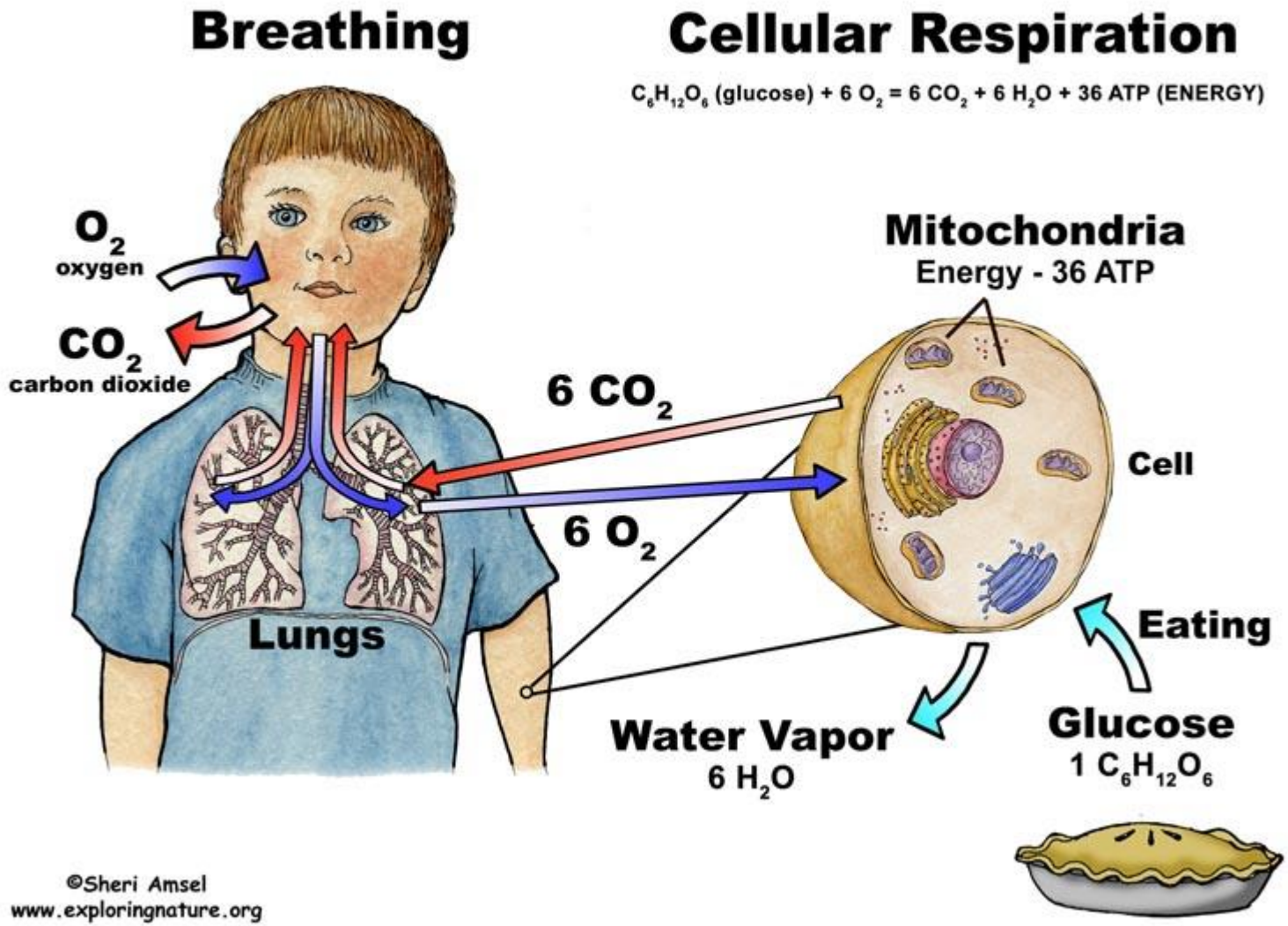
RESPIRATION

U3: L5





INHALING & EXHALING AIR


Breathing
Cellular Respiration
$C_6H_{12}O_6$ (glucose) + 6 O_2 = 6 CO_2 + 6 H_2O + 36 ATP (ENERGY)
O_2
oxygen
CO_2
carbon dioxide
Lungs
6 CO_2
6 O_2
Mitochondria
Energy - 36 ATP
Cell
Eating
Glucose
1 $C_6H_{12}O_6$
Water Vapor
6 H_2O
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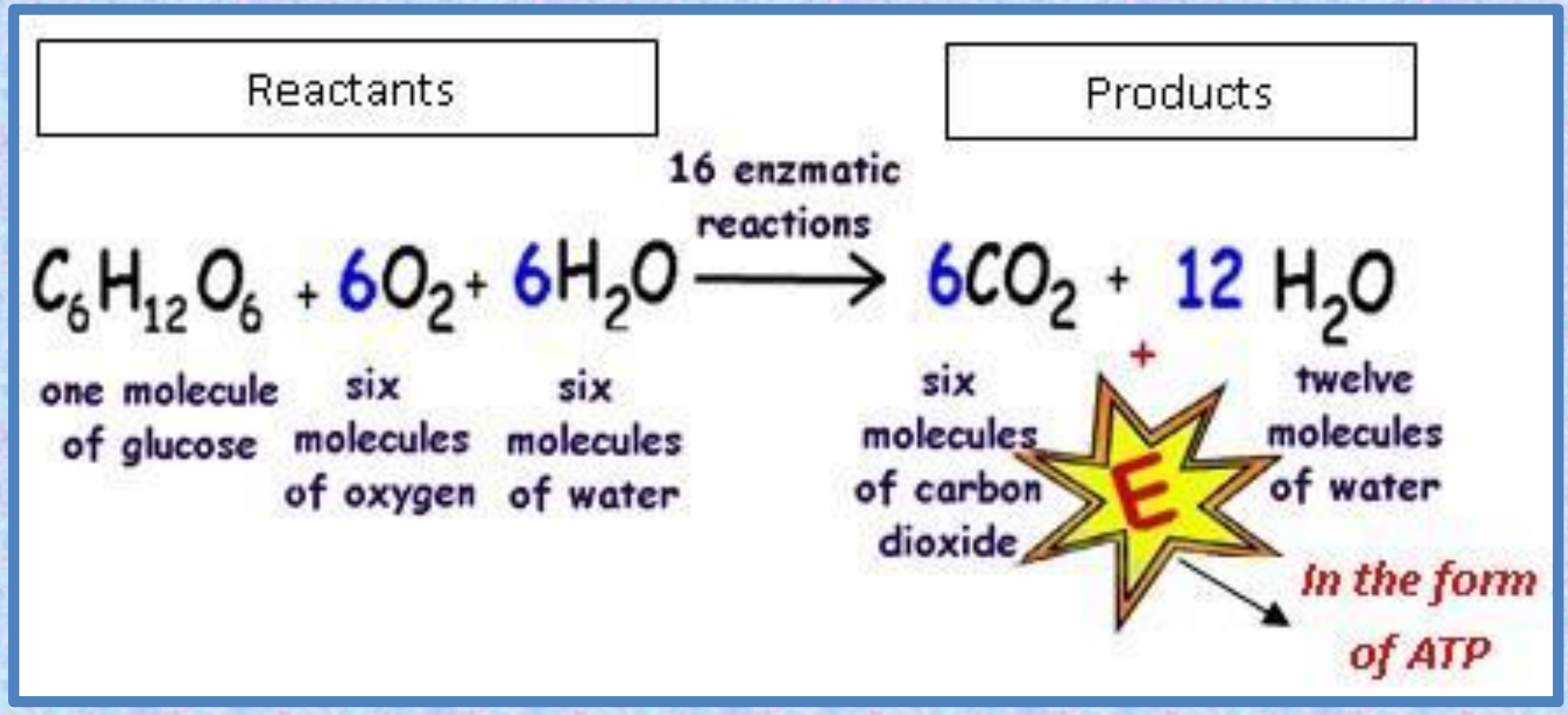
– Quick review –

Cellular Respiration



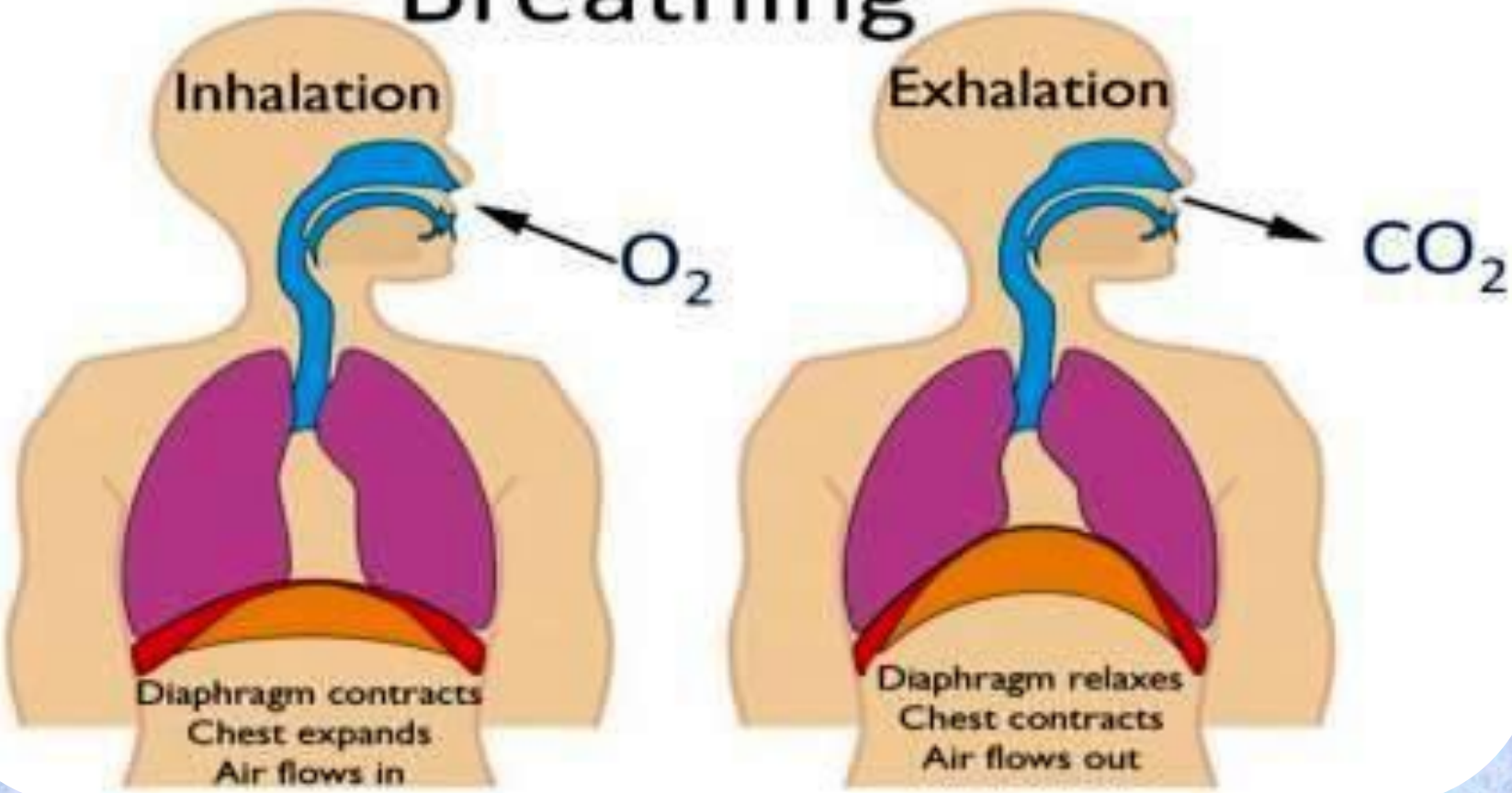
Why do we need to breathe?

WHY???

1. To bring O_2 into the body and transfer it to the blood stream
2. To remove CO_2

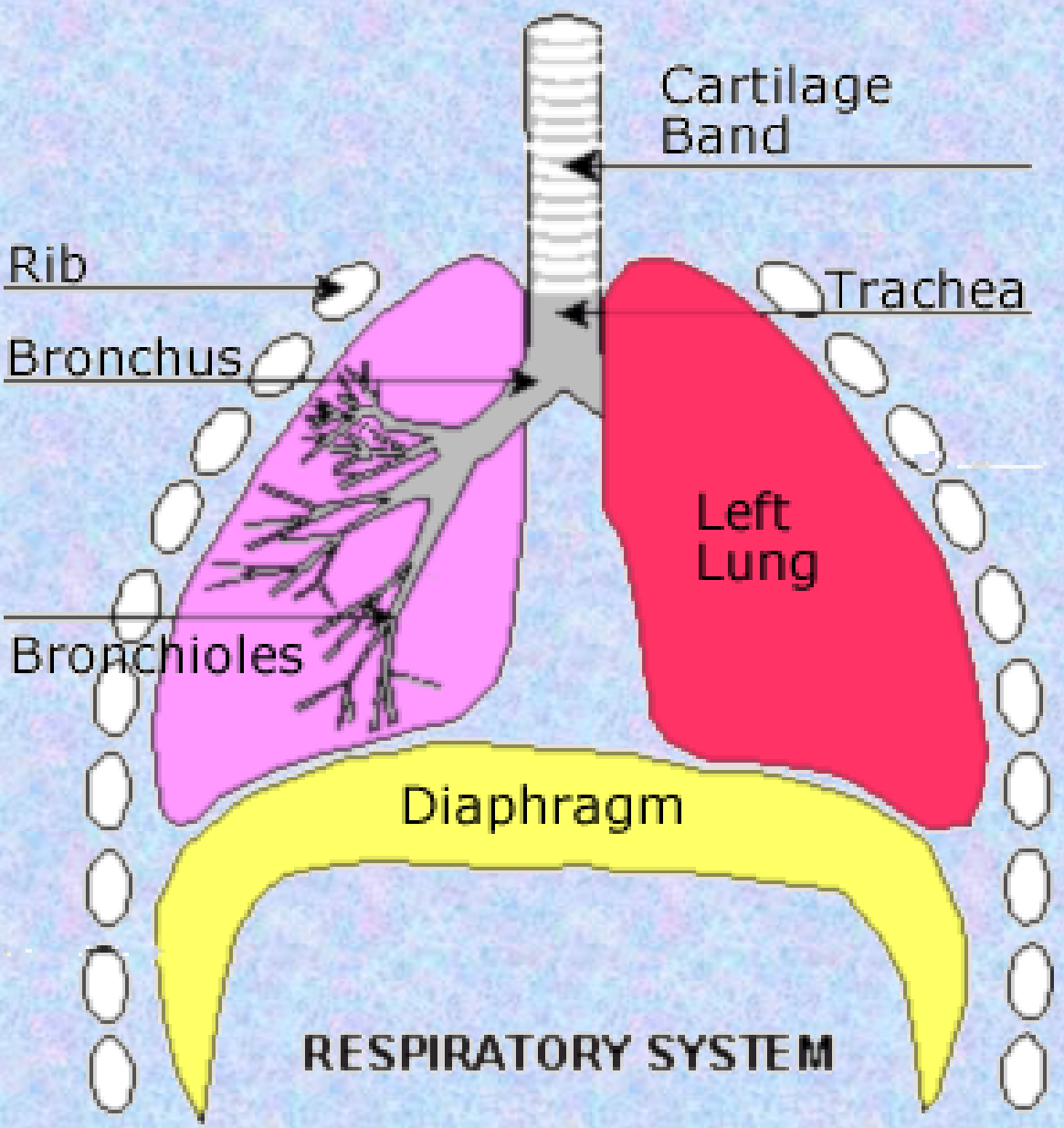
Circulation and respiration work together to achieve these functions

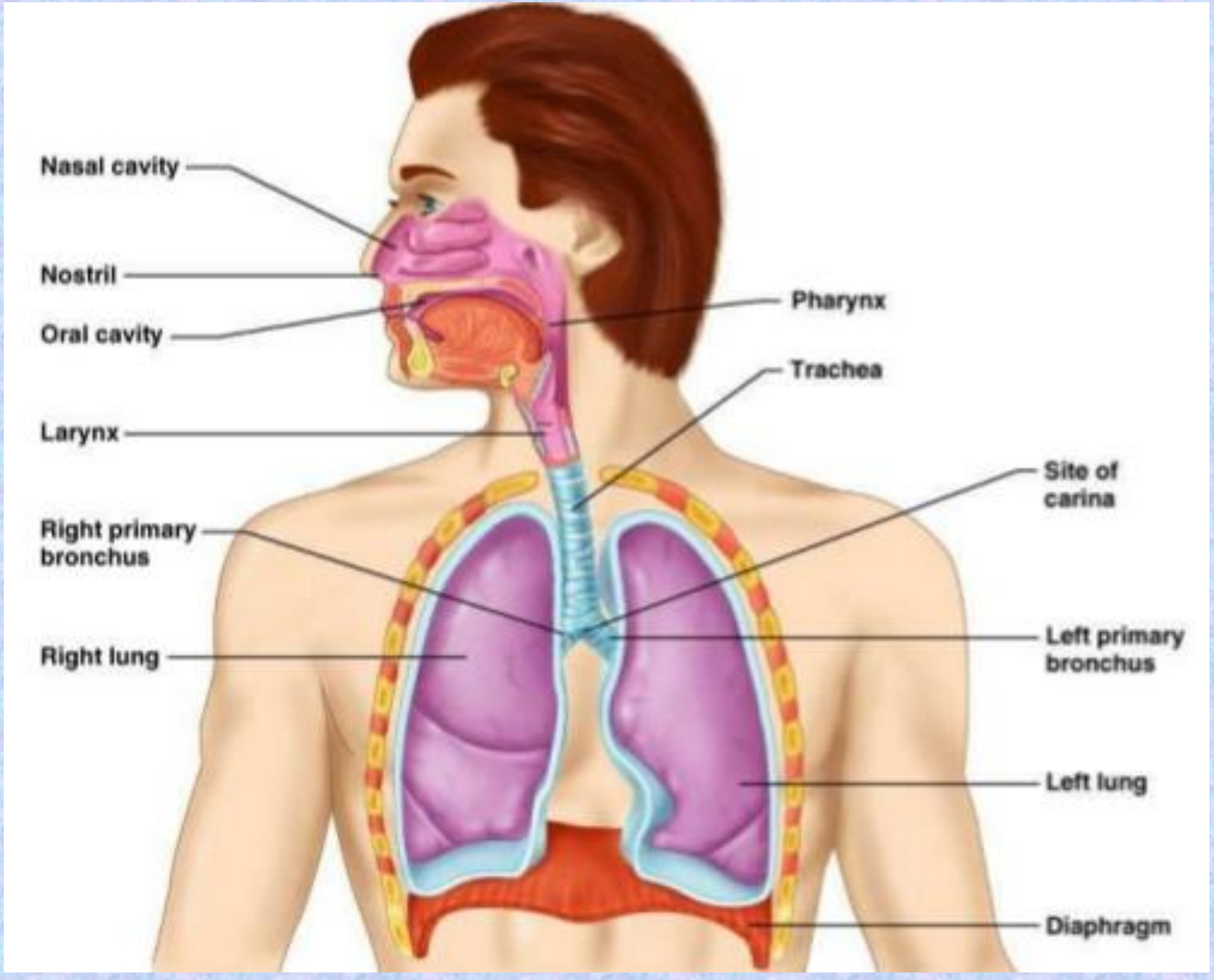
Breathing

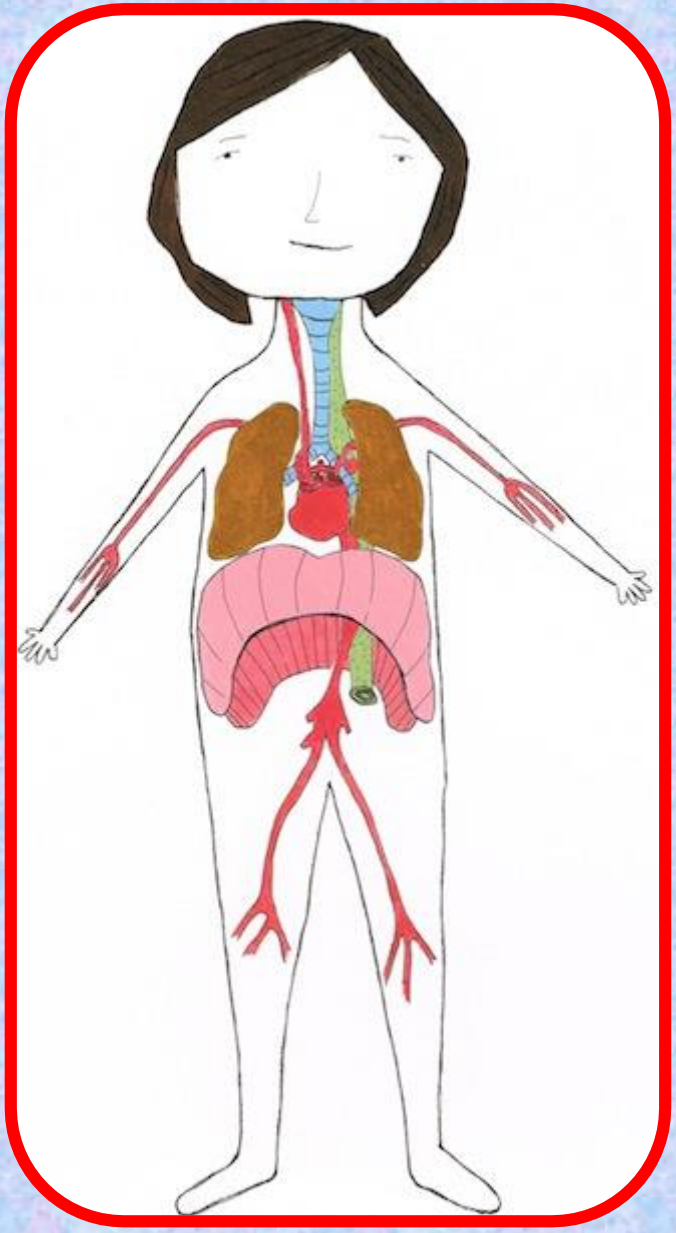

Inhalation
O_2
Diaphragm contracts
Chest expands
Air flows in
Exhalation
CO_2
Diaphragm relaxes
Chest contracts
Air flows out

DIAPHRAGM: Thin sheet of muscle that separates the chest cavity from the abdominal cavity

LUNGS: Situated within the **rib cage**, consisting of **elastic sacs** with branching passages into which air is drawn, so that **oxygen** can pass into the blood and **carbon dioxide** be removed.


Cartilage Band
Rib
Trachea
Bronchus
Left Lung
Bronchioles
Diaphragm
RESPIRATORY SYSTEM


Nasal cavity
Nostril
Oral cavity
Larynx
Right primary bronchus
Right lung
Pharynx
Trachea
Site of carina
Left primary bronchus
Left lung
Diaphragm



What do the parts of your respiratory system DO while you inhale and exhale?

- RIBS
- DIAPHRAGM
- VOLUME OF CHEST CAVITY
- PRESSURE
- AIR MOVEMENT

	INSPIRATION	EXPIRATION
RIBS	Move up and out	Down and in
DIAPHRAGM	Moves down and flattens	Moves up, regain shape
VOLUME OF CHEST CAVITY	Increases	Decreases
PRESSURE	Decreases	Increases
AIR MOVEMENT	Rushes in (to equalize pressure)	Forced out

To maximize gas exchange, athletes will often train themselves to inhale and exhale through the nose and the mouth at the same time…

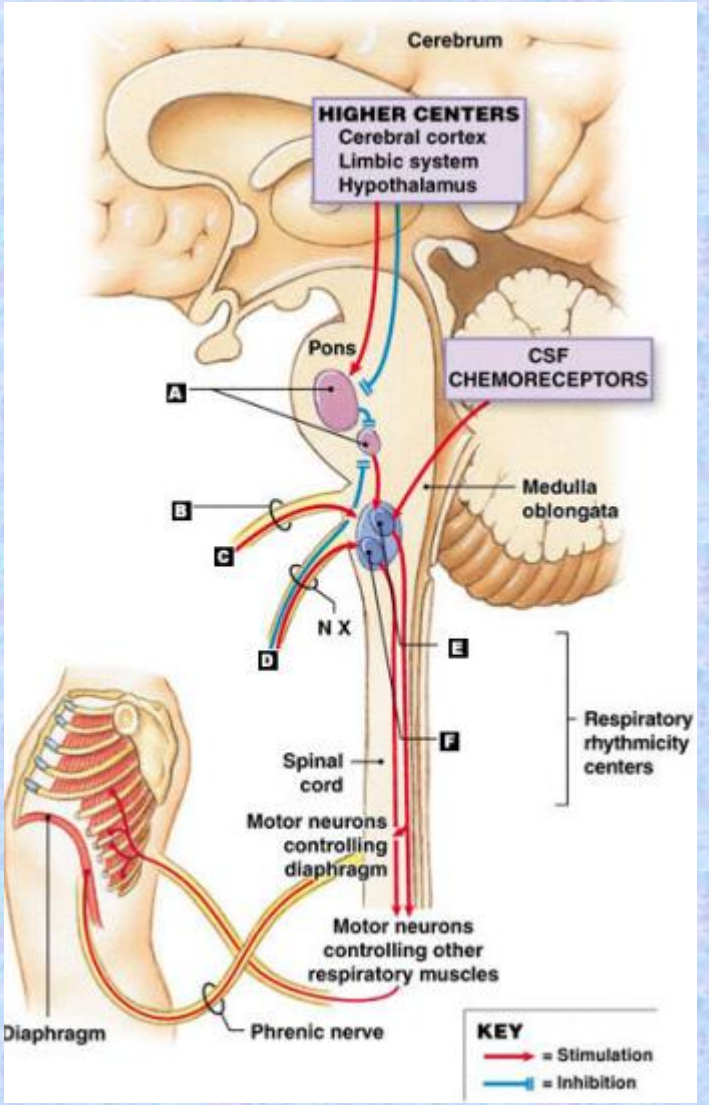
CAN YOU DO THIS?

CONSCIOUS CONTROL

- Yoga
- Swimming
- Cardio fitness
- Speech or vocal training

SUBCONSCIOUS CONTROL

- ❖Medulla Oblongata
  - Part of brain
- When it is activated, it increases respiration rate



2. Chemoreceptors

a. CO_2

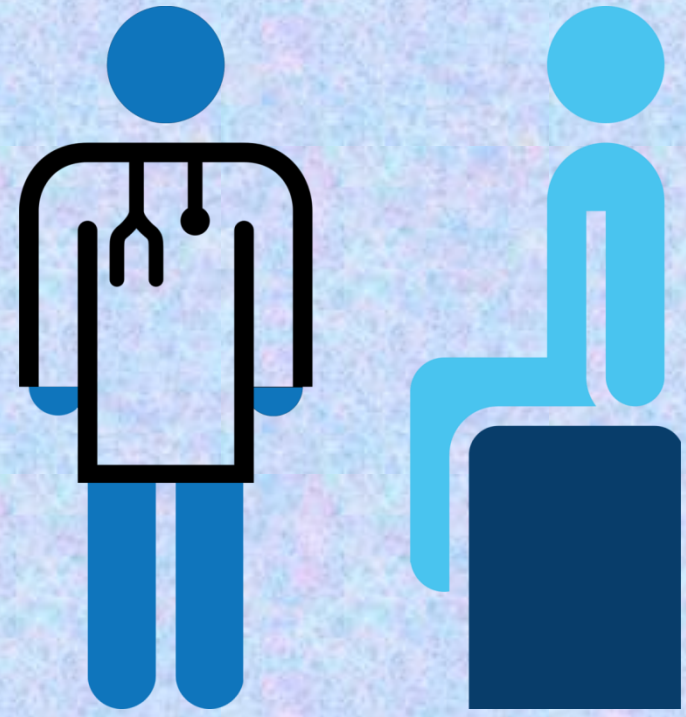
- High levels of CO_2 (exercise) will activate medulla (increase rate and depth of breath)
- When levels are normal, chemoreceptor is not active and breathing rate returns to normal
- Very sensitive

b. O_2

- Less sensitive (normal inhalation takes a lot of oxygen)
- At higher altitude, air is thinner, fewer molecules
- Chemoreceptors for oxygen will stimulate breathing movements

DOCTOR TRAINING

Working in your groups, prepare a small presentation about your given heart, blood or lung condition. This must include:



- **Definition**
- **Symptoms**
- **Causes**
- **Cure / Treatment**
- **Prognosis**
- **First Aid Procedures**