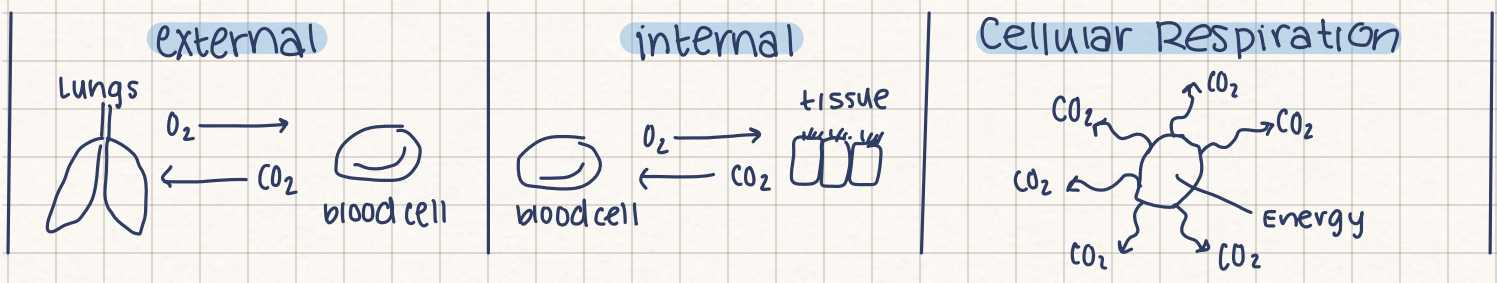


- myocardium → middle layer
cardiac muscle
 - endocardium → inner layer
 - epicardium → outer layer
- } layers of the heart wall
- Deoxygenated blood Returns to heart into Right atrium, flows to Right ventricle and then to Respiratory System (lungs)
 - Oxygenated blood Leaves the lungs to Left atrium, then Left ventricle, and pumped to all body parts.
 - Cardiac cycle → made up of diastole & systole
 - heart muscle relaxation
 - Heart muscle contraction
 - Heart rate → frequency of cardiac cycle expressed as BPM.
 - Cardiac Output → Amount of blood pumped out of the heart in 1 minute & determined by heart rate & stroke volume.
 - $CO = HR \times SV$
BPM ← Amount of blood pumped out of left ventricle
 - Pulmonary vein → returns oxygenated blood to the heart.
 - upper respiratory tract → nose, nasal cavity, sinuses, & pharynx
 - lower respiratory tract → larynx, trachea, trachea branches, main bronchi, bronchioles, alveolar ducts, alveoli.
 - Ventilation → movement of air into & out of lungs
 - inspiration
 - Phrenic nerve stimulates diaphragm down, intercostal nerve stimulate intercostal muscles to contract the ribs.
 - Chest cavity expands, pressure in lungs < pressure outside of lungs.
 - expiration
 - diaphragm relaxes, chest & lung tissues recoil, pressure increases.
 - Oxygenation → intake of air & gas exchange in the lung
 - external respiration → exchange of gas between lungs & blood.
 - internal respiration → exchange of gases between blood & tissues.



- iron deficiency
- sickle cell anemia
- blood loss
- gi bleed
- trauma

Hematological factors affecting oxygenation & perfusion