

BIOLOGY TEST 5: SYSTEMS OF THE HUMAN BODY (and making connections lab)

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PD. 5

DIGESTIVE SYSTEM:

- Function = breakdown of food and absorption of minerals
- Ingestion ----- digestion/absorption ----- egestion
- Mechanical digestion = large pieces of food break down into smaller ones by cutting/grinding/chewing. Chemical digestion = large and insoluble nutrients broken into smaller soluble nutrients w/ the help of enzymes (carbs=simple sugars, lipids=fats, proteins=amino acids)
- Mouth --- esophagus --- small intestine --- large intestine
- Accessory structures are salivary glands, pancreas, liver, gallbladder. Salivary glands secrete saliva (which has enzyme amylase that breaks down starches). Pancreas secretes digestive juices into the small intestine. They digest things. Also secretes insulin which regulates body's glucose level. Liver secretes bile (digestive fluid), gallbladder is a reservoir for bile.
- Small intestine absorbs nutrients; folded surfaces are covered with fingerlike projections called villi and microvilli. Villi increase surface area so nutrients can enter @ every point. Building blocks absorbed by capillaries (and lacteals).
- Amylase = mouth = breaks down starches into sugars
- Pepsin = stomach = breaks proteins into amino acids
- Trypsin = pancreas = also breaks down proteins
- Pancreatic lipase = pancreas = breaks apart fats (lipids)
- Deoxyribonuclease and ribonuclease, produced in the pancreas. They are enzymes that break bonds in nucleic acids like DNA and RNA.
- Disorders include ulcers (a sore that develops on the lining of the esophagus, stomach, or small intestine), diarrhea (loose stool, usually caused by virus), constipation (infrequent bowel movements).

CIRCULATORY SYSTEM:

- Function = Moves materials through the body to organs/cells that need it.
- -itis = inflammation
- Structures are heart, blood vessels (veins, arteries, capillaries), blood that flows through them
- Transports nutrients like oxygen, glucose, water (for cellular respiration).
- Nutrients and water = from intestines to all cells of the body
- Oxygen = from lungs to all cells of the body
- Wastes = from all cells to the excretory/respiratory system
- Hormones = from glands to target cells
- Left side of the heart pumps blood to the body, right side pumps to the lungs. Atria receive blood returning to heart from rest of the body, ventricles pump blood to the arteries. Arteries carry blood away from the heart
- Heart ===== made up of mostly muscle, 2 sides separated by septum, right=deoxygenated, left=oxygenated blood, septum keeps two types of blood from mixing, 4 chamber (atria and ventricles), ventricles = lower, pump blood out of heart
- Valves prevent backflow of blood between atria/ventricles
- Veins carry blood to the heart, arteries carry it away

- Blood contains plasma (fluid that's mostly water) which transports everything but oxygen and carbon dioxide, and also contains cells:
- Blood cells ===== red blood cells contain hemoglobin (a protein that transports oxygen and carbon dioxide), white blood cells fight infection, platelets are involved in blood clotting.
- Arteries=away from heart to body tissues (aorta is the biggest artery), capillaries=exchange of nutrients, oxygen, and wastes (very small, thin, breakable (bruising is broken capillaries)), veins=return blood to heart (vena cava is a vein).
- Things are transported via diffusion:
- Diffuse through capillaries cause they're the thinnest. Oxygen is high in the lungs to low in the blood, nutrients are high in the intestine and low in the blood, waste/CO₂ is high in the cells and low in the blood (carried to lungs/excretory).

RESPIRATORY SYSTEM:

- Function = Obtain oxygen for body cells and eliminate carbon dioxide
- PATHWAY= mouth/nose ----- pharynx (throat) ----- larynx ----- trachea ----- left and right bronchus ----- bronchioles ----- alveoli
- GAS EXCHANGE: Oxygen goes into the alveoli and diffuses into the capillaries, which carries it via the blood back to the heart and then to the body cells. Simultaneously, carbon dioxide diffuses out of the capillaries into the alveoli and is then exhaled.
- To or from lungs = pulmonary
- Respiratory stays moist at all times so gasses can diffuse across membrane. Also thin for diffusion.
- Lungs expand and retract due to volume and pressure changes in chest cavity and actions of rib cage/diaphragm.
- Breathing rate is sensitive to concentration of CO₂ in the blood. High = increase breathing (ex. exercise), low = decrease breathing (ex. sleeping)

MAKING CONNECTIONS LAB:

- See lab packet
- (procedures, results, pulse rate, etc).