

on the dead *Structure* Anatomy Review-INTRODUCTION

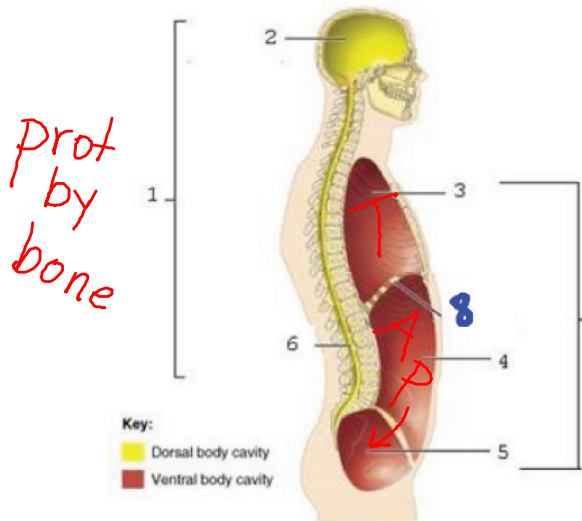
The study of the organs and parts of the body is called Anatomy Examples include:

Structure of the stomach mass of liver length of femur

The study of the function of the body parts is called Physiology.
Examples include:

Cancer muscle contraction, nerve impulse

* Metabolism'



Prot by bone

Kind of protected

Use the numbers from the diagram

- Diaphragm 8
- Thoracic Cavity 3
- Abdominal Cavity 4
- Cranial Cavity 2
- Spinal Cavity 6
- Pelvic Cavity 5

(a) Lateral view (b) Anterior view
BACK All DORSAL cavities 1
FRONT All VENTRAL cavities 7

4 and 5 together are sometimes called the Abdominopelvic

compl. surr. by bone

List some organs in each of the following body cavities:

- | | | | | |
|---------|------------|----------|---------|---------------|
| Pelvic | Abdominal | Thoracic | Cranial | <u>Spinal</u> |
| uterus | Stomach | heart | Brain | spinal cord |
| bladder | liver | lungs | | |
| | Intestines | | | |

Put the following in order from simple to complex.

- cell tissue organ system organelle organ molecule organism

molecule → organelle → cell → tissue → organ → Org. system → organism
you

Match the body system to its function

- | | |
|--|---|
| <u>E</u> Nervous System | a. Controls the body through hormones (in blood) |
| <u>G</u> Digestive System | b. Consists of muscles attached to <u>the skeletal system</u> |
| <u>A</u> Endocrine System | c. Takes in oxygen and releases carbon dioxide in lungs |
| <u>C</u> Respiratory System | d. Supports the body and protects internal organs
Composed of <u>bones</u> and <u>joints</u> |
| <u>H</u> Circulatory System | e. Responds to internal and external stimuli Responsiveness (Quick) |
| <u>B</u> Muscular System NOT heart + organs | f. Covers the body and produces vitamin D maintain blood |
| <u>D</u> Skeletal System | g. Breaks down complex materials into smaller/absorbable units digest |
| <u>F</u> Integumentary System | h. Transports materials and blood around the body, including to and from the cells. (move) |

Why is reproduction NOT a survival need for an individual?

It is NOT needed for life, unlike ~~digestion~~, excretion + metabolism

What is the difference between a receptor and an effector?

picks up signals from the outside
SKIN, eyes, ears

Responds to a stimulus. Includes muscles + glands

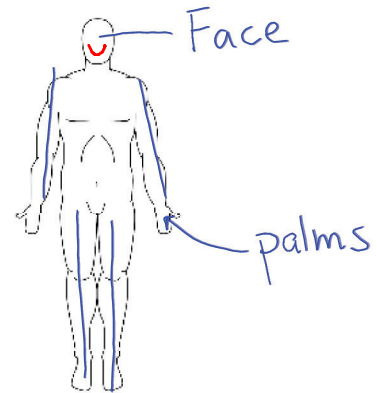
What is the difference between a positive feedback system and a negative feedback system?

↑↑
Positive - Enhance or increase the original stimulus
one ↑
Blood clot or labor another ↑

Negative - Reduce the original stimulus
potassium level ↑
Release hormone
Potassium level ↓
↑ ↓ eat BS ↑
release insulin BS ↓

Briefly describe anatomical position

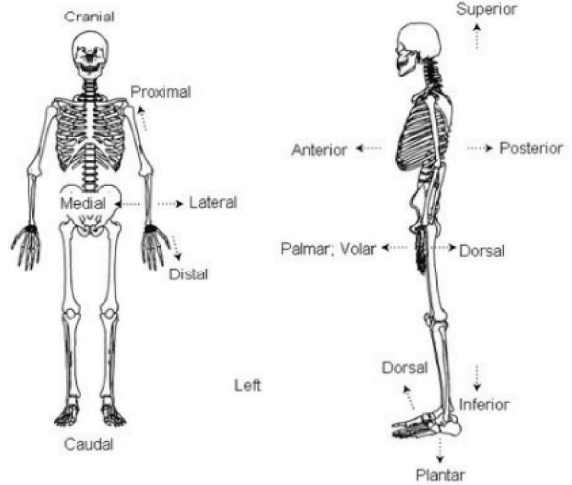
- Face forward
 - Palms face front
 - Thumbs out
 - Arms // Legs
- arms at your side**



Language of Anatomy

- Inferior below
- Superior above
- Lateral on the sides
- Medial middle - between
- Proximal close to body
- Distal Far/Away from body

- The heart is Medial to the lungs
- The head is Superior to the feet
- The hand is distal to the elbow
- The knee is proximal to the foot
- The lungs are lateral to the heart
- The pelvis is inferior to the ribs



CELLS and TISSUES

(Calcium or Iron) is the element that makes bones hard, while (Calcium or Iron) is needed for oxygen transport.

Calcium Iron

What are some functions of mitochondria?

cellular respiration - produce ATP

What happens at the ribosomes?

protein production

What is the function of each of the following tissues:

- | | | |
|---------|-----------------|---------------------------|
| Blood- | Transport | nutrients, O ₂ |
| ★ WBC's | fight infection | CO ₂ , salts |
| | platelets - | wastes |
| | clot blood | |

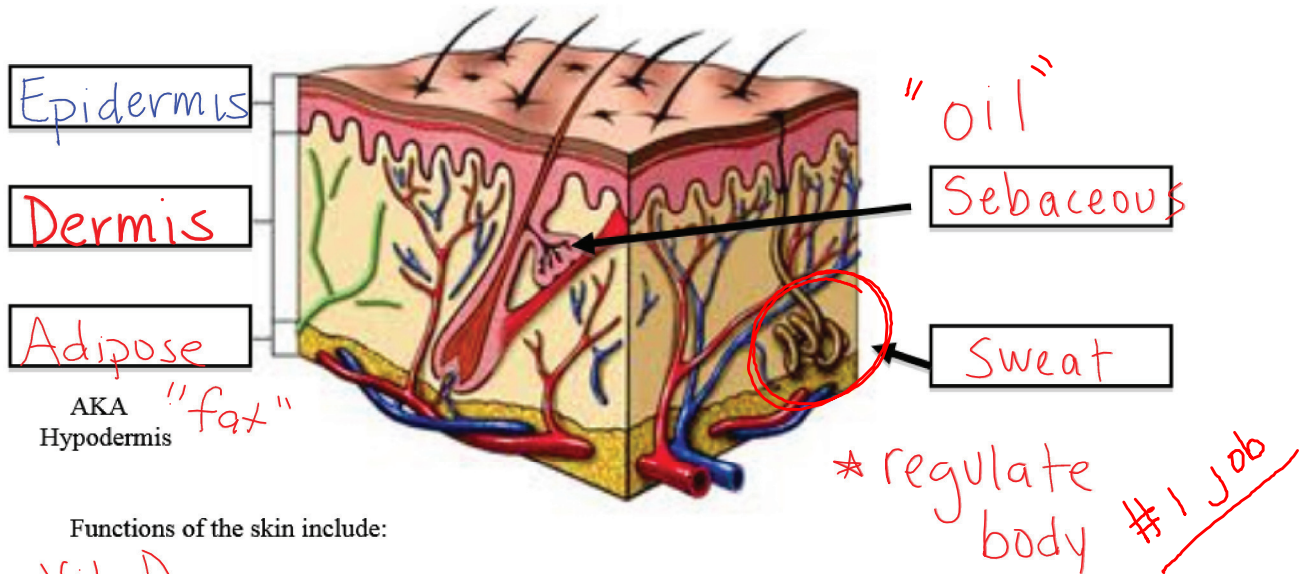
not on Test

Ligament- Tough- bone to bone @ joints

Tendons- Tough - muscle to bone

SKIN and BODY MEMBRANES

Label the following in this diagram of the skin with the following words: Sweat Gland, Adipose Tissue, Sebaceous/Oil Gland, Dermis and Epidermis.



Functions of the skin include:

prod. vit D
prot from UV, bacteria, drying out

Which vitamin is synthesized by this system?

Sweat + oil

^D
The skin has many appendages. These include hair ^{*receptor}, glands and nails. Of these appendages, the sebaceous "oil" glands are found throughout the body except for the palms of the hands and soles of the feet. Sweat (apocrine) glands become more active after puberty. Specific sweat glands called eccrine glands cover your entire body and help regulate body temperature. hair is composed of dead keratinized cells.

Sometimes the hairs on the back of your neck "stand up" What causes that?

arrector pili muscles contract

The skin is composed of two sections, the top layer epidermis and the lower layer dermis. The top layer is composed of 5 layers with a tough protein called keratin found throughout.

If you spend time in the sun you may see your skin "tan". What causes the temporary color change in your skin?

UV radiation causes a mutation
Skin pigment called melanin

What can the top layer of the skin do that the lower level cannot do?

Shed off and regenerate

Why does the skin turn red if the body becomes too warm?

Blood vessels near the surface dilate

What is the difference between a first, second and third degree burn?

1st painful red area - full regeration - no scar

2nd painful - blisters - probable regeneration/scar

3rd All layers of skin lost - Black - no pain in burn area
- no regeneration

Once skin is burned, how long can it remain sterile?

24 hrs

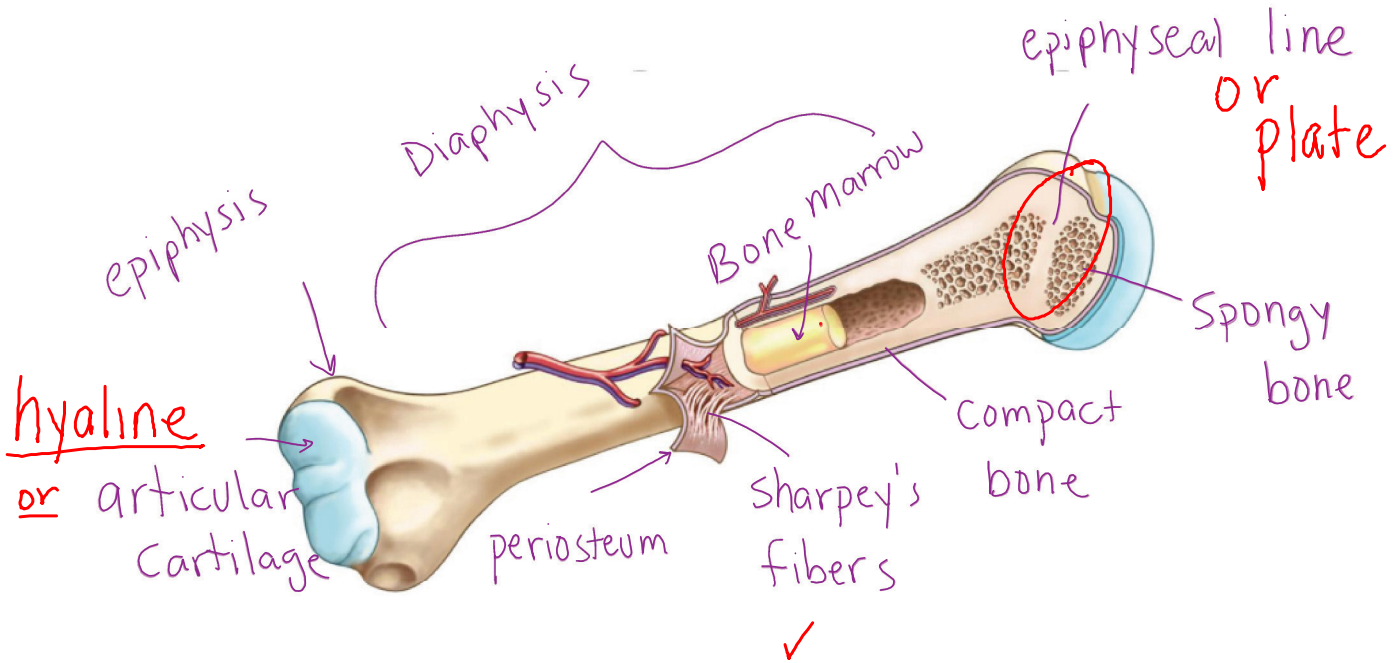
SKELETAL SYSTEM

What are the functions of the skeletal system?

Support body
muscle attachment, prod. blood cells
Store minerals

Label the following words on the diagram of the bone.

bone marrow, epiphysis, diaphysis, epiphyseal line, spongy bone, periosteum, Sharpey's fibers
articular cartilage and compact bone



How is the periosteum held to the bone?

Sharpey's fibers

Bone formation is otherwise known as?

Osteoblasts

Bone cell formation

Osteoclasts

Bone cell destruction

What type of cartilage is found at the end of bones and what is its function?

Articular or hyaline →

1. reduce friction
2. protect bone

Which two minerals are stored in the bones? Calcium and Phosphorus

What are some of the functions of red bone marrow? Produce blood cells

How do the blood vessels make their way through dense bone? Haversian Canals

How many bones are found in the axial skeletal system? 80

List some of the bones of the axial skeleton.

(*) Skull (cranium) vertebrae ribs sternum

How many bones make up the appendicular skeletal system? 126

List some bones of the appendicular skeleton.

(*) Arms (pectoral Girdle) Legs (Pelvic Girdle) Feet/hands

List the bones of the arm.

humerus radius ulna

List the bones of the leg.

Femur tibia fibula

What is the difference between the pelvic girdle and the pectoral (shoulder) girdle?

pelvic - sturdy w/ deep pockets pectoral - lighter w/ shallow pockets

List the bones that make up each girdle.

Pelvic - Pelvis/femur

Pectoral - humerus Clavicle Scapula

What is the name given to the bones of the fingers and toes?

phalanges

Correctly match the type of bone to the name of the bone.

- Vertebrae B a. Long Bones
- Skull/Cranium D b. Irregular
- Wrist/Ankle C c. Cubic Bones
- Arms/Legs A d. Flat Bones

* Ball + Socket joint offers the most flexibility

hyoid bone - only bone not connected to another bone

"growth plate"

young

What can be determined in an X-ray if the epiphyseal plate is present?

The long bones are STILL growing

What can be determined in an X-ray if the epiphyseal line is present?

long bones have STOPPED growing

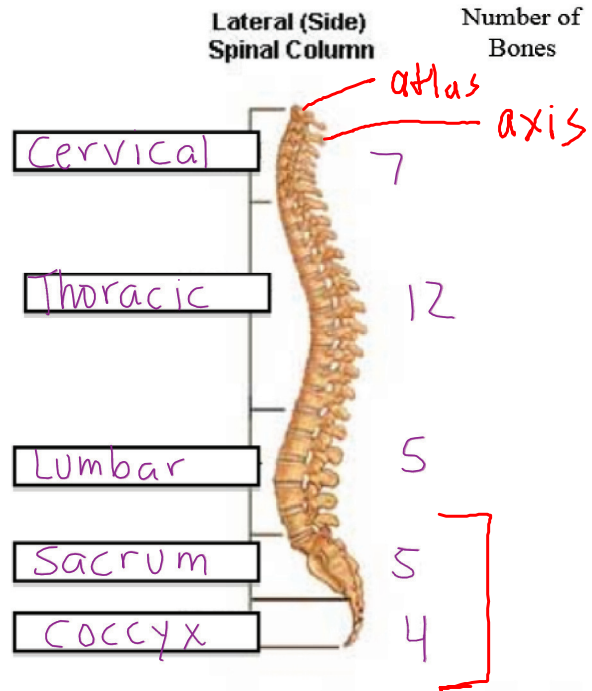
What is the function of yellow bone marrow?

Fat storage

What is protects the spinal cord?

vertebrae

Name each section and how many bones are in each.



What is another name for the tail bone?

Coccyx

Name the top two vertebrates

Top - Atlas
2nd - Axis } Cerv

What protects the brain?

Cranium

How are the bones of the cranium held together (what type of joints are they)?

Sutures

True ribs are the ribs that connect directly between the vertebrae and the sternum.

How many pairs of true ribs are there?

7 pair (14)

What does it mean to be a false rib? How many pairs of false ribs are there?

NOT directly connected to the sternum

5 pairs

What is a floating rib?

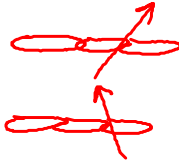
Are only connected to the vertebrae

What is the difference between a greenstick fracture and a compound fracture?

Green - not totally broken

compound - Broken and sticking out of the skin

kids



CARDIOVASCULAR SYSTEM

3 Arteries Distinct layers, one of which is thick + muscular - Carries blood AWAY

Veins Thinner walls carrying blood TOWARDS the heart. Valves prevent backflow

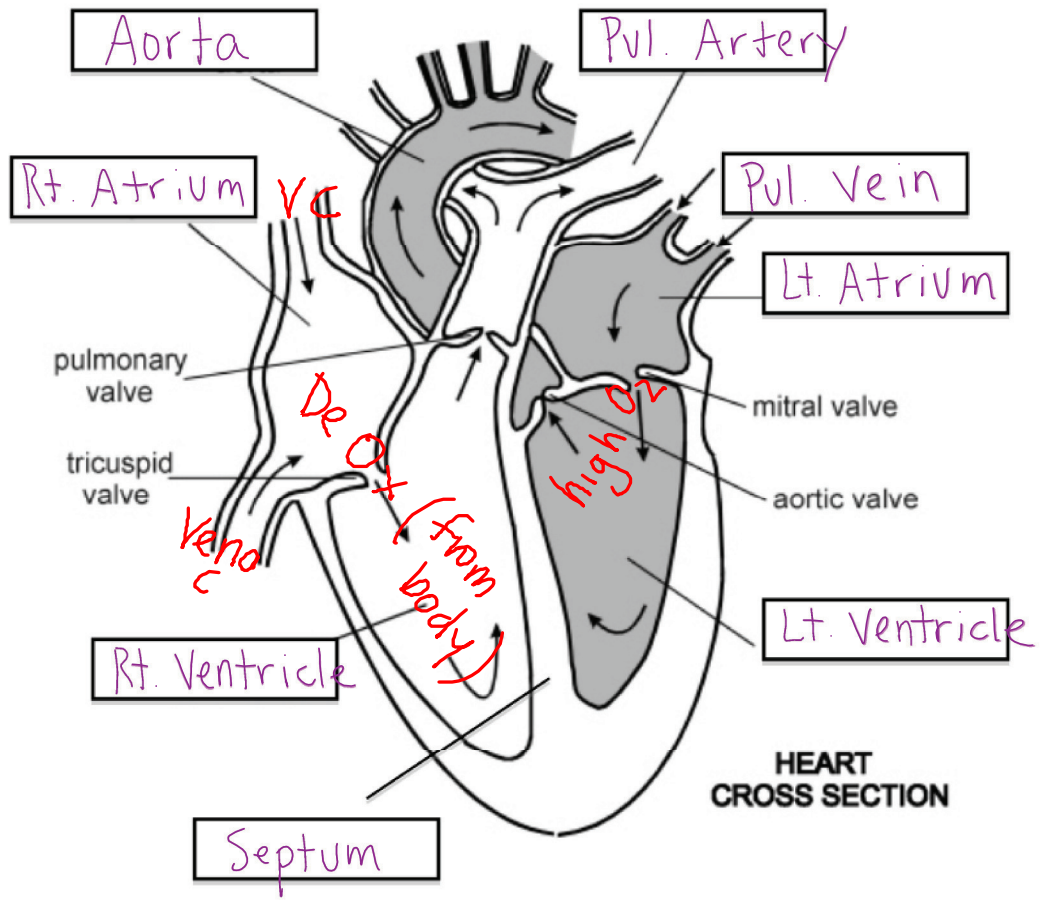
Capillaries Very thin walls that allow for nutrient/gas

EXCHANGE

one cell thick

Label the following terms on the diagram below:

- Right Ventricle
- Left Ventricle
- Aorta
- Pulmonary Veins
- Pulmonary Arteries
- Left Atrium
- Septum
- Right Atrium



De Ox = rich in CO₂

De Ox (from body)

high O₂

Cardiac muscle is found ^{only} on in the heart. These muscles have special connections called gap junctions that allow for electrical impulses to travel from one cardiac muscle cell to another.

The heart itself has an inner, middle and outer layer. The inner layer is called the endocardium is super smooth and allows for blood to flow without clotting. The middle layer called the myocardium is composed of cardiac muscle. The outer layer is called the epicardium and is tough and connective. The heart beats in a fluid filled sac called the pericardium. The fluid surrounding the heart allows it to beat in a nearly frictionless environment.

in
mid
out

What is the difference between systemic and pulmonary circulation?

Systemic → To the BODY Pul- between heart + lungs

What is the difference between a systemic artery and a coronary artery?

Systemic - Body Tissues Coronary - only to heart muscle

Where do coronary arteries originate?

base of the aorta

Which structure separates the left and right ventricle? ventricular septum

Why is the left ventricle thicker than the right ventricle?

must be strong enough to pump blood to whole BODY

What structure prevents back flow in the heart?

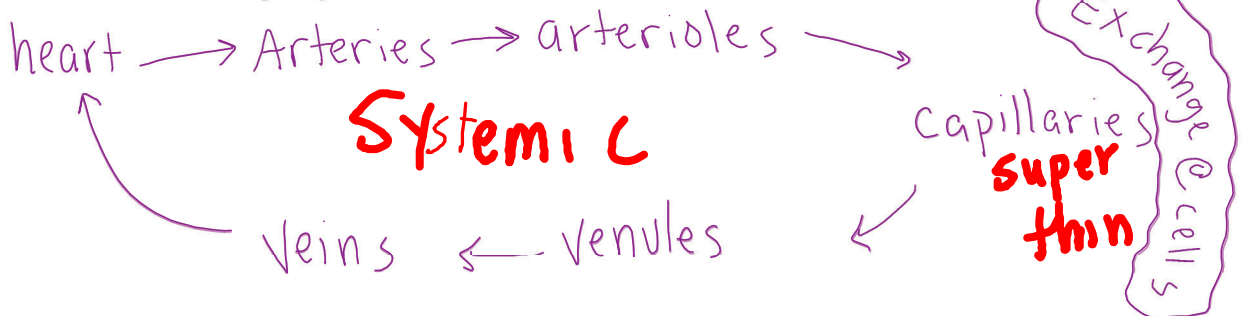
Valves

Describe the pulmonary vein. oxygenated blood to the heart FROM the lungs

Describe the pulmonary artery.

Deoxygenated blood from heart TO the lungs

Briefly describe the flow of blood around the body using words like heart, veins, arteries, arterioles, venules and capillary beds.



Use the list below and state where blood goes next. It comes from THE BODY →

Superior/Inferior Vena Cava → Rt Atrium →

Right Ventricle → pul. Artery →

Lungs → pul. vein → ~~_____~~ → left atrium

Left Ventricle → aorta → THE BODY

How can you increase heart rate? Excer, Epin.

How can you decrease heart rate? Rest

What is stroke volume? Amount of blood (volume) moved with every heart beat

How can you determine cardiac output?

Stroke volume x heart rate

Describe blood pressure in terms of systolic and diastolic pressure.

Syst / Dia Syst - max ventricular cont.
Dia - pressure w/o contraction

How can blood pressure be written?

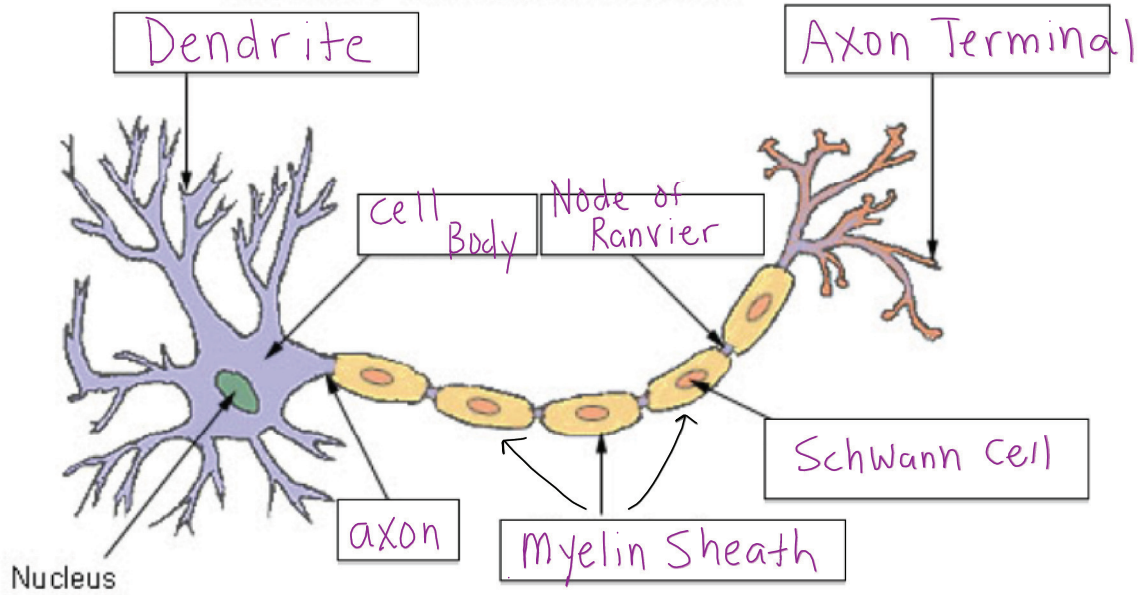
Syst / Diast.

NERVOUS SYSTEM

Label the following on the diagram:

- Dendrite
- Nodes of Ranvier
- Axon
- Axon Terminal
- Schwann Cell
- Myelin Sheath
- Cell Body

Structure of a Typical Neuron



What is the function of the Schwann Cells? What is another name for the covering of Schwann Cells? Be sure to include the word action potential in your answer.

Speed up nerve impulse - Myelin sheath
"action potential"

How does the signal in one nerve cell get to another nerve cell?

Signal → axon Term → release neurotransmitter → cross synapse → receptor on the next cell

Describe myelin and what its function is.

A waxy appearing "lipid" that surrounds the axon

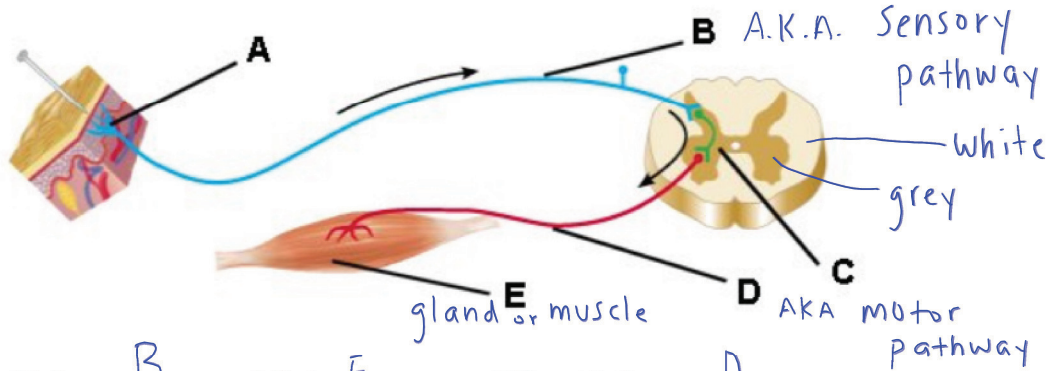
Describe cerebrospinal fluid and where it is produced.

Produced in the brain and offers the Brain/S.C. mechanical +

Describe Broca's area.

Section of the brain that sends motor control to speech muscles
immunological protection

What is the difference between the central nervous system and the peripheral nervous system?



Afferent Pathway B Effector E Efferent Pathway D
 Interneuron C Receptor A
 Temp, Pain or pressure

~~Label the grey matter and label the white matter.~~

MUSCULAR SYSTEM

What are the functions of the muscular system? Produce movement, Stabilize joints, generate heat, maintain posture

Describe a smooth muscle cell. Usually arranged in sheets, one nucleus, involuntary, not striated. Found in hollow organs + blood vessels

Describe a cardiac muscle cell. ONLY found in the heart, involuntary, striated, branched, may contain more than 1 nucleus and intercalated discs

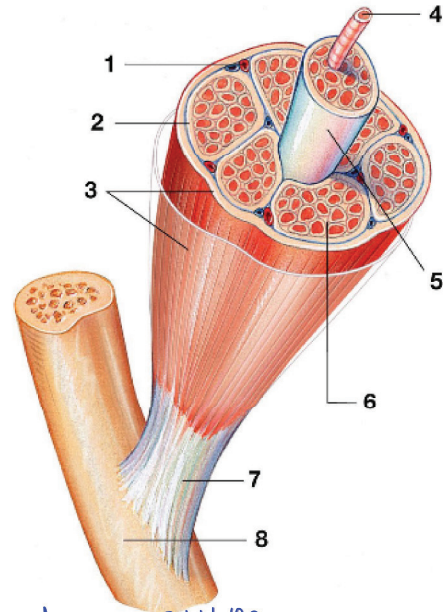
Describe a skeletal muscle cell. Long cylindrical cells. voluntary, striated, multi-nucleated. Attached to skeleton

- MUSCULAR SYSTEM -

What happens to your blood vessels when you exercise? Dilate

Use the diagram to the right

1. Blood Vessels
2. Perimysium
3. Epimysium
4. Muscle cell (fiber)
5. Fascicle
6. Endomysium
7. Tendon
8. Bone



What are individual muscle cells surrounded by? Endomysium

What is a group of muscle cells bound by the perimysium called? Fascicle

What is acetyl choline and how does it propagate the muscle contraction and where can it be found?

A neurotransmitter found in the axon terminal of a motor neuron. When it's released, the muscle contracts

What generates the mechanical force for a muscle contraction? HINT-These two filaments will form a cross-bridge.

Actin + myosin

Describe an isotonic contraction vs. an isometric contraction. Give an example of each.

isotonic - muscle shortens w/ contraction - Bend Arm

isometric - muscle DOES NOT shorten w/ contraction - pushing against a wall

Describe a motor unit and sketch one.

1 motor nerve and all of the muscle cells it interacts with



Muscle contractions can occur for hours if the mitochondria are supplied with enough glucose and oxygen to produce ATP. This process is called aerobic respiration. If your muscle are still working and no oxygen is present, they will move into anaerobic respiration and produce lactic Acid. This will cause pain and soreness tomorrow.

