What are the four primary tissue types?

1: Epithelial
2: Neural
3: Connective
4: Muscle
In epithelial tissue, is cellularity high or low?

High
What are the three characteristics of epithelial tissue?

1: Avascular
2: Regenerates quickly
3: High cellularity
What are the three functions of epithelial tissue?

1: Provide physical protection
2: Provide sensation
3: Control permeability
Simple epithelial tissue includes two types. Which has only one layer, and which has multiple layers?

Simple: one layer
Stratified: multiple layers
Squamous tissue is found in the _____ of organs, as well as the nose.
Thin epithelial tissue is involved in ________, while thick epithelial tissue is involved in ________.

**Thin:** Transporting fluids

**Thick:** Mechanical actions
Pseudostratified columnar epithelial tissue has ______ and is found in the ________.
What type of epithelial tissue stretches and changes shape, and is found in the bladder?

Transitional epithelial tissue
What three components make up the matrix?

1: Special cells
2: Protein fibers
3: Ground substance
What are the three types of connective tissue?

1: Supporting
2: Fluid
3: Connective
_____ tissue has to be covered by epithelial tissue
Adipocytes are also known as Fat cells.
Mesenchymal cells are also known as Stem cells
Melanocytes are involved in _______ production

Melanin (skin pigment)
_______ cells search for damaged tissue and pathogens

Wandering (Lymphocytes)
The three fibers of connective proper are:

1: Collagen fibers
2: Reticular fibers
3: Elastic fibers
Collagen fibers are made up of how many strands?

Three
What are the four types of membranes?

1: Mucous
2: Serous
3: Cutaneous
4: Synovial
Where are each of the four membrane types located?

- Mucous - line passageways that connect to exterior outlets
- Serous - line vertebral body cavities, with no connection to exterior
- Cutaneous - on the skin
- Synovial - inside of capsules (mainly in joints)
What is cornification?

The hardening of epithelial tissue into a tough layer. Also known as keratinization, or a callus.
What is keratohyalin?

A glossy substance that waterproofs the skin.
Which type of cells are sensory cells, and which type are immune system cells?

Sensory: Merkle cells
Immune: Langerhans cells
What are the two layers of the dermis?

1: Papillary layer
2: Reticular layer
What are the two layers of blood supply for the dermis?

1: Papillary plexus
2: Cutaneous plexus
What are three types of glands, where are they located, and what do they secrete?

1: Apocrine: sweat: nipples and groin
2: Merocrine: sweat: palms and soles
3: Sebaceous: oil: face, back, chest
What makes up 2/3 of the weight of the bone, and what makes up the other 1/3?

2/3: Calcium phosphate
1/3: Collagen fibers
What does PTH (parathyroid hormone) do to bones?

Sends signals to break bone and sends calcium to the bloodstream.
Please label the diagram of the bone
A bone in a healthy person or animal will adapt to the loads under which it is placed. This is known as ______ Wolff's law
Carcinoma is another term for Cancer.
More ground substance causes looser connective tissue.
How can you tell the difference between adult and prepubescent bones?

Through the appearance of growth plates
<table>
<thead>
<tr>
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<th>Type</th>
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<tbody>
<tr>
<td>1</td>
<td>Plane</td>
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<td>2</td>
<td>Hinge</td>
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<td>4</td>
<td>Condylar</td>
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<tr>
<td>5</td>
<td>Saddle</td>
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<tr>
<td>6</td>
<td>Ball and socket</td>
</tr>
</tbody>
</table>
What are the three classification of joints, and which is immovable?

1: Synthrosis
2: Amphiarthrosis
3: Diarthrosis

Immoveable: synthrosis (in the skull)
Tommy Johns surgery is a repair to the **ulnar collateral ligament**.
Hair is found everywhere on the body except the _____ and _______

Palms of hands, soles of feet
The three types of hair follicles are ______, and the most abundant is ______.

1: Vellus,
2: Intermediate
3: Terminal

Most abundant: Vellus
Which type of hair is found on the forehead, which is found on the limbs, and which makes up the eyebrows?

**Forehead:** Vellus

**Limbs:** Intermediate

**Eyebrows:** Terminal
ACL, PCL and MCL are all ligaments of the ________ Knee
The word ‘osteoarthritis’ can be broken apart into three pieces. What are these three pieces and what do they mean?

Osteo = Bone
Arthr = Joints
Itis = Inflammation
The three types of loose connective tissue are:

1: Areolar
2: Adipose
3: Reticular
The axial skeleton includes which bones?

Skull, vertebrae, sternum, ribs
The appendicular skeleton includes which bones?

Pelvic girdle, pectoral girdle, arms, legs
The ________ holds the pelvic bones together. 

*Pubic symphysis*
The sternum and scapular are both examples of Flat bones.
Where is the most common brachial dislocation?

Anterior - 95%
What are the three functions of sweat?

1: Thermoregulation
2: Excretion
3: Protection
The _____ is the most commonly broken wrist bone, usually due to a FOOSH injury.

Scaphoid

The Carpal Bones
Anatomy Lecture
Exam 2 Review
T/F: A muscle cell and a muscle fiber are the same

True
What are the names of the 6 extra ocular muscles?

1: Superior rectus
2: Inferior rectus
3: Medial rectus
4: Lateral rectus
5: Inferior oblique
6: Superior oblique
Please label the elements of the sarcomere.
T/F: The sternocleidomastoid and scalenes are anterior muscles and can cause tension headaches

True
What structure separates the abdominal muscles?

Linea alba
What are the three compartments of the forearm?

1: Superficial
2: Deep
3: Extensor
What are the three compartments of the lower limb?

1: Anterior
2: Posterior
3: Medial
What are the five compartments of the femur?

1: Anterior
2: Lateral
3: Superior
4: Posterior
5: Deep
Endocrine glands excrete ________, while exocrine glands excrete ________.

Endocrine glands excrete hormones.
Exocrine glands excrete sweat.
What is TMJ, and what are some probable causes?

TMJ is pain or dysfunction of the muscle of mastication and the temporo mandibular

Causes: bruxism, mal alignment of jaw, excessive gum chewing
The rectus abdominis is divided into 8 segments and these segments are divided by Bands of tendon.
What does HPA stand for?

Hypothalamus Pituitary Adrenal
What are the three hormones in HPA?

1: CRH
2: ACTH
3: Cortisol
What is another term for Graves Disease, and what causes it? 

Goiter
Caused by iodine deficiency
What are the names of the three layers of the Adrenal cortex, and what does each layer produce?

*Inner* = zona reticularis: mineralcorticoids (MC)

*Middle* = zona fasicula: ACTH, steroids

*Outer* = zona glomerolosa: androgens
The four pea sized glands in the thyroid are called ________ and produce _________
Parathyroid elevates blood Ca levels, and causes the kidneys to hold back Ca.
Order the size of capillary vessels from smallest to largest

Capillary
Superficial
Deep
Trunk
What are the three types of lymphocytes?

- T cells
- NK cells
- B cells
What are the functions of: troponin, myosin, and calcium?

Troponin holds tropomyosin strands in place
Calcium binds to troponin
Myosin Moves tropomyosin to expose active sites
What binds to troponin?

Calcium
The coracobrachialis is a ______ mover.

Scapular-humerus mover
Name the SITS muscles, and which is commonly mistaken for one, but is not:

- Supraspinatus
- Infraspinatus
- Teres minor
- Subscapularis

The teres major is NOT a SITS muscle.
These muscles: teres major, coracobrachialis, tri and biceps do what affect the brachium but are not considered part of the main rotator cuff muscles.
What is hypertrophy?

An increase in muscle mass.
Creatine phosphate is used for ________

Anaerobic activities or non endurance lifts
Creatine provides what in terms of performance?

Short bursts of energy
The thoracic lymphatic duct collects lymph from ________ and from the _____________.

Both sides of the body inferior to the diaphragm, and from the left side of the body superior to the diaphragm.
What are the three functions of lymphatic system?

1: Filter blood
2: Immunity
3: Maintain blood volume
What are the seven components of the lymphatic system?

1: Lymph
2: Lymph nodes
3: Vessels
4: Thymus
5: Nodules
6: Thoracic duct
7: Tonsils
What produces T, B, and NK cells?

Thymus
What’s the difference between afferent and efferent?

Afferent means coming in
Efferent means coming out
What does the posterior pituitary gland produce?

ADH and oxytocin
What does the anterior pituitary gland produce?

TSH, ACTH, FSH, LH, PRL, MSH, HGH
What does the thyroid produce, and what does it secrete?

*Produces calcitonin*

*Secretes thyroxin*
What type of cells produce calcitonin?

C cells
What does calcitonin do?

Lowers calcium ion concentrations
What do the teres major and posterior deltoids move?

Scapula and humerus
Insertions moves towards Origins
The lymph nodes filter and purify lymph before it reaches the venous system.
List all of the scapular movers

- Trapezius
- Rhomboids (major and minor)
- Levator scapulae
- Serratus anterior
List all of the gleno-humeral movers

- SITS muscles (remember these?)
- Teres major
- Latissimus dorsi
- Posterior deltoid
- Coracobrachialis
What is cortisol and which gland produces it?

Stress hormone

Adrenal gland
The hypothalamus is part of the ______ system, while the pituitary gland is part of the _____ system

Nervous
Endocrine
What does the term ‘glossius’ relate to?

The tongue
What muscles make up the erector spinae?

- Iliocostalis
- Longissimus
- Spinalis
What is a hiatal hernia?

When the top of stomach protrudes through diaphragm. This can mimic a heart attack.
Which of the following is a muscle, and which is a fascicle?

- **Epimysium**
  - Epimesium = muscle

- **Perimysium**
  - Perimesium = fascicle

- **Endomysium**
  - Endomesium = muscle
What is tennis elbow, and what is another term for it?

A condition that occurs when tendons in the elbow are overloaded, usually by repetitive motions of the wrist and arm.

Also known as lateral epicondylitis.
(T/F): A reflex is visceral

True
The floor of the diencephalon is the______, a visceral control center.

Hypothalamus
The ________ contains centers involved with emotions, autonomic function, and hormone production and is the primary link between the _____ and ______ systems.

Hypothalamus  Nervous  Endocrine
4 Ventricles (spaces) that are fluid-filled cavities within the brain. They are filled with **CSF** and lined by **Ependymal cells**.
Two lateral ventricles – each superior to the brain stem and lateral to each other. There is no direct connection between the two but each communicates with each other through an interventricular foramen called **Foramen of Monro**.
Third ventricle is a cavity within the ________ (deep brain). The aqueduct of the midbrain connects the third ventricle with the ________

Diencephalon

Fourth ventricle
Fourth ventricle - located in the ________. The fourth ventricle narrows to a single, midline Foramen of Magendie. These becomes continuous with the ____ of the spinal cord.
When there is a bursting of a vessel, or bleeding in brain, this is what type of stroke?

Hemorrhagic
When the blood supply to the brain is cut off, this is what type of stroke? *Ischemic*
What do the following acronyms stand for: PNS, CNS, ANS, SNS

Peripheral nervous system
Central nervous system
Autonomic nervous system
Sympathetic nervous system
(T/F): The myelin sheath surrounds the axon

True
What are the four types of neurons?

- Anaxonic
- Bipolar
- Pseudo
- Multipolar
Anaxonic neurons are **big** and there are **many** anatomical clues to distinguish dendrites from axons.
Anaxonic neurons are found only in the (PNS / CNS / ANS). Their functions are (creating new somas / building the myelin sheath / poorly understood).
Bipolar neurons have ___ projections off of the cell body. They are rare but play an important role in __________ concerning sight, smell, and hearing. Their axons are non-myelinated.

2
Relaying sensory information

________________________
Psuedo-unipolar neurons have ____ process off of the cell body, but off of that process it splits into _____ axonal processes. You will notice that the cell body lies off to one side. Sensory neurons of the (PNS / CNS / ANS) are usually of this type.
Multipolar neurons have _____ dendrites processes off of the cell body, and a single axon that may have one or more branches. Multipolar neurons are the (least / most) common type of neuron in the (PNS / CNS / ANS / SNS). Motor neurons are of this type.
Select all that are true about thoracic outlet syndrome:

- A) It is a compression of a neurovascular bundle
- B) It occurs between the anterior scalene and middle scalene.
- C) It affects the brachial plexus and/or subclavian artery.
- D) It is caused by the movement of the clavicle (collarbone) and shoulder girdle
- E) It is caused by static enlargement or spasm of muscles surrounding the neurovascular bundle
The four major nerve plexuses are the:

- Cervical
- Brachial
- Lumbar
- Sacral
(T/F): The Cervical Plexus innervates the muscles of the neck and extend into the thoracic cavity to control the diaphragm

True
The _____ nerve, the major nerve of this plexus, provides the entire nerve supply to the diaphragm.

Phrenic
Please label the diagram below.
A pinched nerve is also known as **Radiculopathy**.
(T/F): Autonomic NS consists of sensory and motor

False: Only motor
Which are true about the reflex arc?

- A) Occurs without conscious thought
- B) Begins at a receptor
- C) Ends at a peripheral receptor
- D) The patellar reflex is an example
- E) Is triggered by lack of cerebral spinal fluid
- F) Lacks receptors
In the (sympathetic / parasympathetic) division, widespread activation comes from the Sympathetic Adrenal medulla.
Cranial Nerves: which are which and are they sensory, motor or both?

I: Olfactory: S
II: Optic: S
III: Oculomotor: M
IV: Trochlear: M
V: Trigeminal: B
VI: Abducens: M
VII: Facial: B
VIII: Vestibular: S
IX: Glossopharyngeal: B
X: Valgus: B
XI: Accessory: M
XII: Hypoglossal: M
Match the type of neuron to the description:

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<tbody>
<tr>
<td>1</td>
<td>C) Can NOT distinguish axon from dendrites</td>
<td>1) Anaxonic</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A) Dendrite continuous with the axon and nucleus to one side</td>
<td>2) Pseudo-Unipolar</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>D) One axon and one dendrite with the soma between them</td>
<td>3) Bipolar</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>B) Several dendrites but a single axon which have many branches</td>
<td>4) Multipolar</td>
<td></td>
</tr>
</tbody>
</table>
Posterior Gray Horns are:
(Visceral OR Somatic)
(Sensory OR Motor)
(Nuclei OR Neurons OR Control)
Lateral Grey Horns are:
(Visceral OR Somatic)
(Sensory OR Motor)
(Nuclei OR Neurons OR Control)
Anterior Grey Horns are:
(Visceral OR Somatic)
(Sensory OR Motor)
(Nuclei OR Neurons OR Control)
Please label the diagram below.
White matter consists mainly of _______. Axons
Gray matter consists mainly of _______

Cell bodies
All the following are parts of a neuron EXCEPT:

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>A</td>
<td>Soma</td>
</tr>
<tr>
<td>B</td>
<td>Dendrite</td>
</tr>
<tr>
<td>C</td>
<td>Axon</td>
</tr>
</tbody>
</table>
| D | Satellite cell | ✗
| E | Synaptic terminal |
| F | Myelin |
(T/F) Ventricles are fluid filled cavities in the brain with CFS lined by ependymal cells

True
In ventricles, the Aqueduct of Sylvius connects the first and second ventricle.
(T/F) The fourth ventricle drains into the spinal cord through the Forman of Mangendle

True
In the (CNS / PNS) the Choroid Plexus produces 500 mL of CSF per day.
Circle all that the Thoracic Outlet controls:

- A) Anterior scalene
- B) Subclavian artery
- E) Brachial plexus
- F) Hepatic artery
A Radiculopathy is also known as ________, and is caused by ____________

A stinger or pinched nerve
Caused by a blow to the brachial plexus
What are the two cations that cause action potential / depolarization in a neuron?

Potassium
Sodium
(T/F): Ventricles are fluid filled cavities in the brain with CFS lined by ependymal cells

True
Lystedt law involves what?

RTP from concussions
What are the four segments of the nerve plexus?

Cervical
Brachial
Lumbar
Sacral
What are the five subdivisions of the brachial plexus?

- Roots
- Trunks
- Divisions
- Cords
- Branches
What is the nerve of the cervical plexus?

The phrenic nerve
Receptors may be classified as: (pick ONE set of terms most closely associated)

A) Autonomic and sensory
B) Somatic and visceral
C) Autonomic and peripheral
D) Sympathetic and autonomic
E) Visceral and autonomic

- A
- B
- C
- D
- E
(T/F): The lumbar plexus contains femoral nerve

True
Anatomy Lecture Exam 4 Review
Fissures divide the lungs into _______ Lobes
What are the three functions of the pancreas?

1: Digestive enzyme secretion
2: Insulin secretion
3: Digestive buffering secretion
Which of the following is not a part of the nasopharynx?

- External nerves
- Nasal septum
- Inferior turbinate
- Posterior turbinate
The trachea begins at C6 and ends at T5.
What are the three functions of the nephron?

1: Secretion
2: Filtration
3: Reabsorption
What are the three functions of the stomach?

1: Chemical breakdown of food
2: Mechanical breakdown of food
3: Bulk storage of food
What does benign prostatic hypertrophy secrete?

Alkaline fluid
Which bronchi dilate and constrict?
Which vein drains into the systemic venous system?

Hepatic vein
T/F: Only right primary bronchi are pulmonary

False
Lithiasis is another term for

The formation of kidney stones
What is the correct order of the biliary system?

Left and right hepatic vein, common hepatic duct, cystic, common bile duct
Which nervous system causes bronchial dilation?

Sympathetic
The major calyx dumps into the Renal pelvis.
What is divulsion apnea?

The absence of breathing during swallowing.
What is the configuration of the aortic valve?

Semi lunar
What fissure separates the lobes of the right and left lung?

Horizontal and oblique
T/F: The Loop of Henle is associated with the small intestine

False
Which structure shares the respiratory and digestive systems?

Pharynx
The area of the respiratory passageway extends from the _______ to the _______

- Nasal cavity
- Bronchioles
Gastric peptic ulcers are due to ________

Bacteria
What is an accessory organ to the digestive system?

Pancreas
Cleft palate effects the nasal pharynx.
Which body part does each term relate to?

- Kidney: Renal
- Lungs: Pulmonary
- Gallbladder: Biliary
- Liver: Hepatic
- Jejunum: Small intestine
- Heart: Cardiac
- Large intestine: Cecum
- Stomach: Gastric
The liver synthesizes _______ Bile
What are the three functions of bile?

1: Acts as a surfactant
2: Emulsifies fat
3: Separates fatty food into micelles
Hemoglobin is made up of ______ and ______

Iron and oxygen
What is the correct order of the urinary system?

<table>
<thead>
<tr>
<th>Urine Color</th>
<th>Description</th>
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<tbody>
<tr>
<td>Very good</td>
<td>Normal urine color</td>
</tr>
<tr>
<td>Good</td>
<td>Lightly colored urine</td>
</tr>
<tr>
<td>Fair</td>
<td>Moderately colored urine</td>
</tr>
<tr>
<td>Light Dehydrated</td>
<td>Dehydrated urine</td>
</tr>
<tr>
<td>Very Dehydrated</td>
<td>Severe dehydration</td>
</tr>
</tbody>
</table>

Kidneys, ureters, bladder, urethra
How does blood flow through the heart?

Through the right atrium to the right ventricle through the body to the left atrium to the left ventricle.
What are the two major classes of white blood cells?

1: Granular
2: Agranular
What are the four regions of the stomach?

1: Esophagus
2: Fundus
3: Body
4: Pylorus
What are the three regions of the small intestine?

1: Duodenum
2: Jejunum
3: Ileum
What are the four types of teeth?

1: Incisors
2: Cuspids
3: Bicuspids
4: Molars
What are the three salivary glands, and which is the biggest?

1: Parotid
2: Sublingual
3: Submandibular

Parotid is the biggest
What is the correct order of the respiratory system?

Trachea, primary bronchi, secondary bronchi, secondary, tertiary bronchi (bronchioles), terminal bronchi
What are the three layers of the blood vessels?

1: Tunica intima
2: Tunica media
3: Tunica externa
What are the two functions of the tunica media?

1: Vasconstriction
2: Vasodilation
Platelets are one participant in a vascular clotting system that also includes _____ and the cells and tissues of the circulatory network.
What are the three types of granular leukocytes?

1: Neutrophils
2: Eosinophils
3: Basophils
What are the two types of agranular cells?

1: Monocytes
2: Lymphocytes
What effects efferent arterioles?

An obstruction in the glomerulus.
T/F: Plasma proteins are important for blood clotting

True
The ________ nervous system controls the diameter change in arterioles

Sympathetic
What are the three regions of the large intestine?

1: Cecum
2: Colon
3: Rectum
Passive ventilation is also known as Exhaling.
What are the three major parts of the kidney?

1: The renal cortex
2: The renal medulla
3: The renal lobe
The renal corpuscular consists of _______ and _______.

Glomerulus
Bowman’s Capsule
What allows oxygenated blood from the placenta to bypass the liver by way of the umbilical vein?

The ductus venosus
What structure consists of 6–18 distinct conical or triangular structures, called renal pyramids, or medullary pyramids?

Renal medulla