University of Mosul
College of Nursing

Student Lab. Guide in

NURSING ANATOMY

Assistant Lecturer Abdulrahman Mazin Hashim

Lab. (1)

Skeletal System

The skeleton is the framework that provides structure to the rest of the body and facilitates movement.

When you look at the human skeleton the 206 bones and 32 teeth stand out.

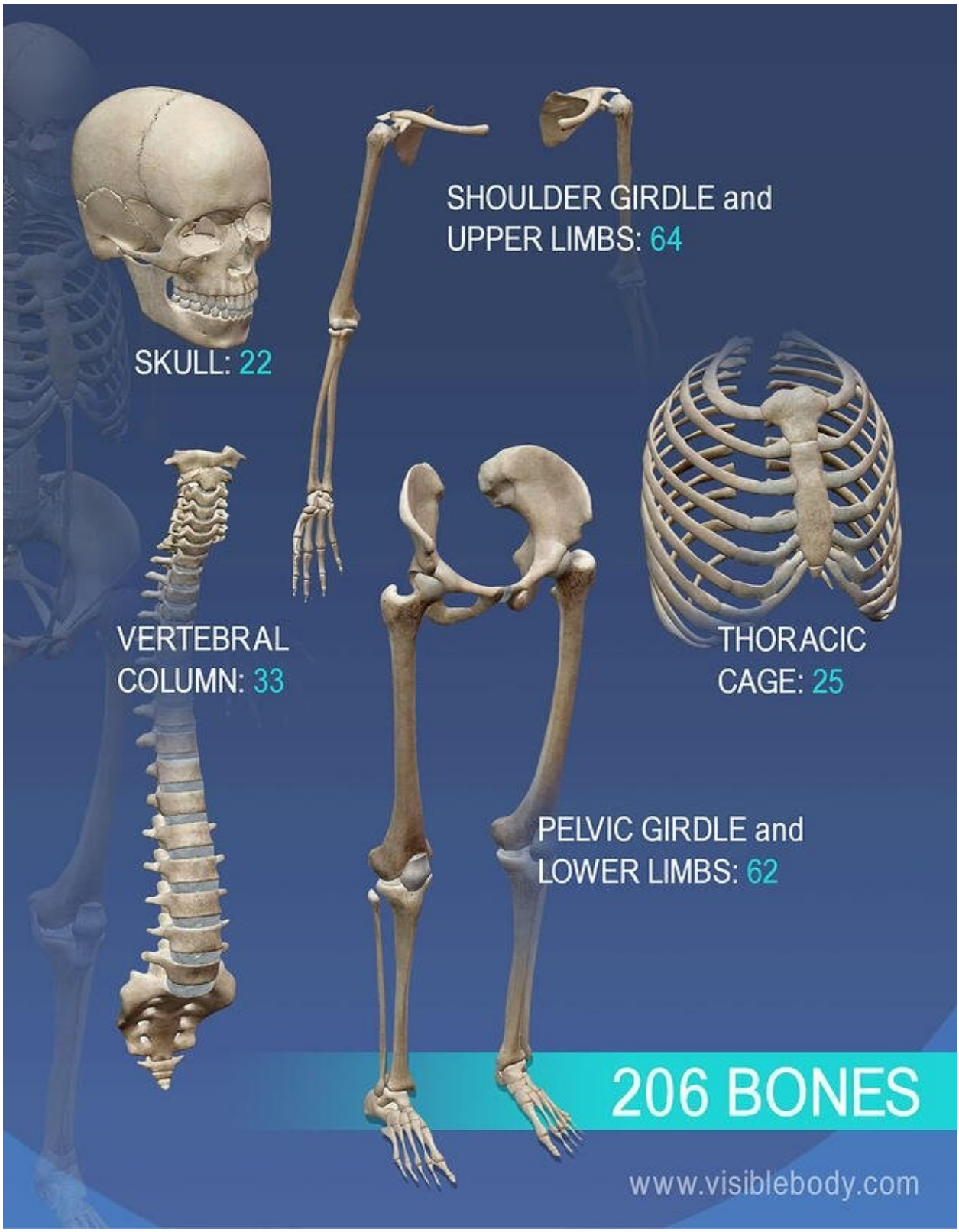
The human skeleton also includes ligaments and cartilage.

Ligaments are bands of dense and fibrous connective tissue that are key to the function of joints.

Cartilage is more flexible than bone but stiffer than muscle. Cartilage helps give structure to the larynx and nose. It is also found between the vertebrae and at the ends of bones like the femur.

Lab. (1)

Skeletal System



Lab. (1)

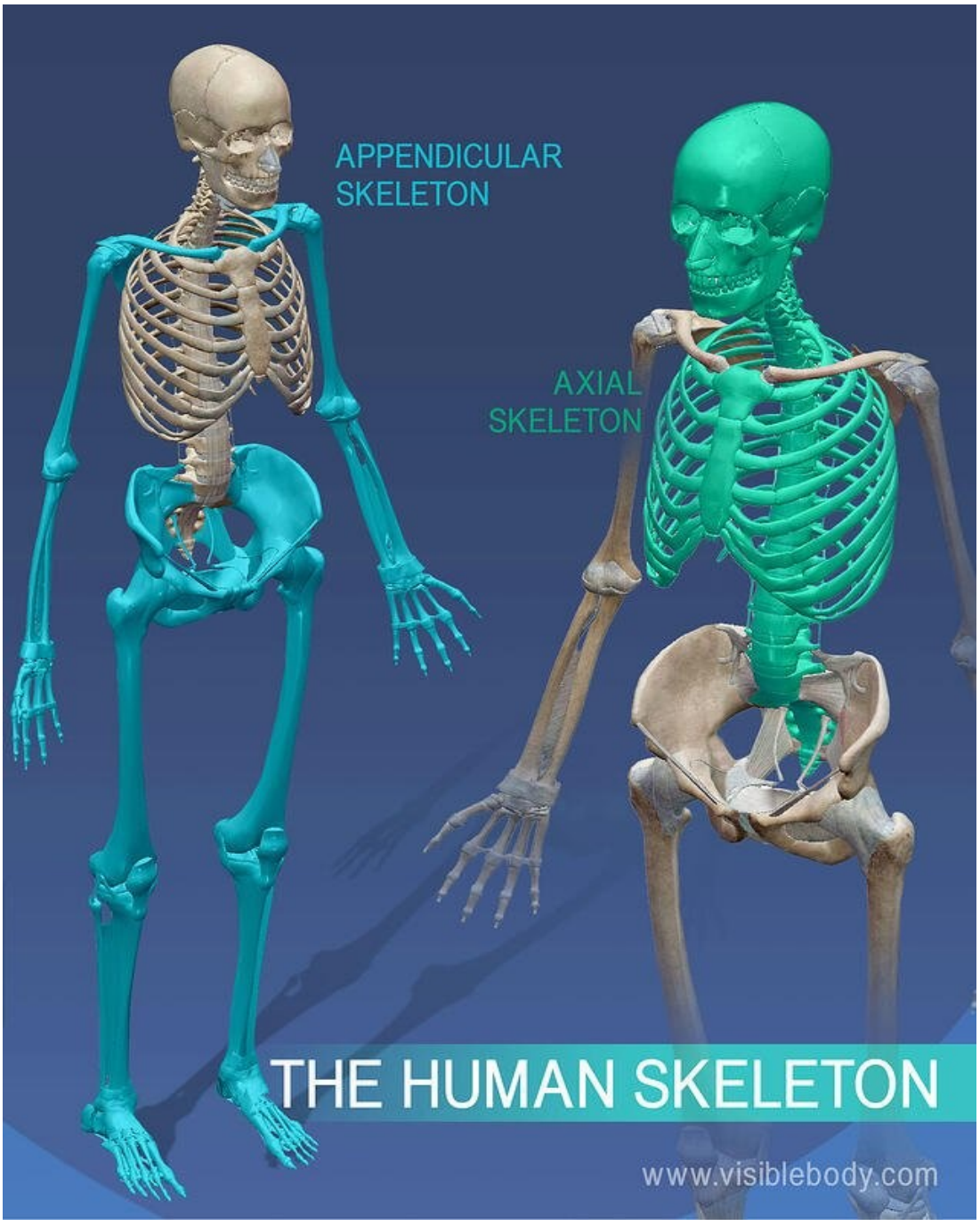
Skeletal System

Bones Are Grouped into:

- **The Axial Skeleton**
- **The Appendicular Skeleton**

Bones of the appendicular skeleton facilitate movement - girdles and limbs

Bones of the axial skeleton protect internal organs – skull, vertebral column and thoracic cage of the 206 bones, 80 are in the axial skeleton, with 64 in the upper appendicular and 62 in the lower appendicular skeleton.



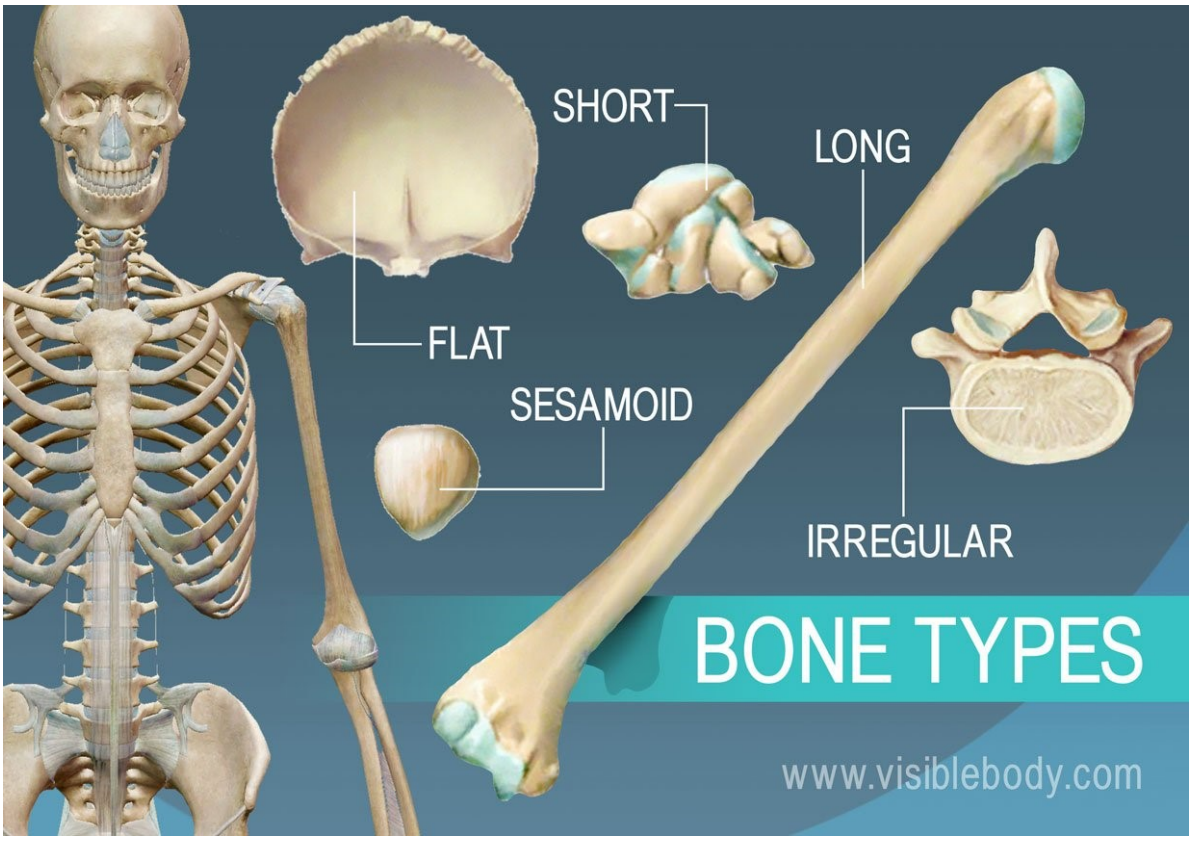
Lab. (1)

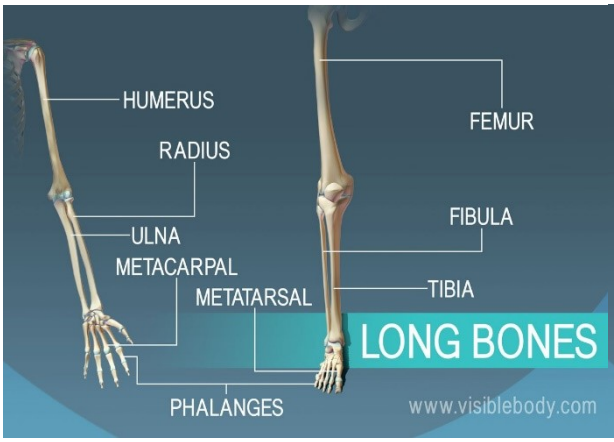
Skeletal System

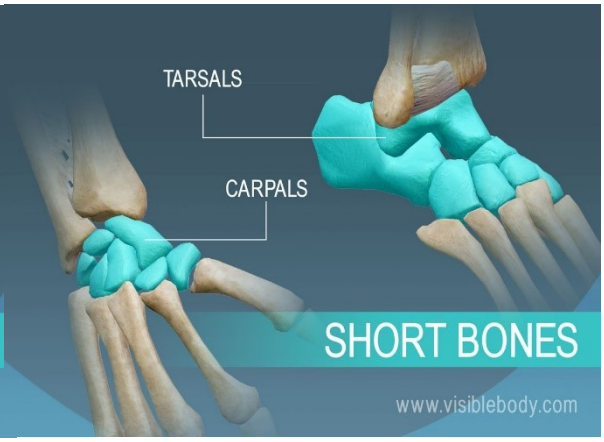
Bones can be classified into five types:

Bones of the human skeletal system are categorized by their shape and function into five types.

1. Long bones: Longer than they are wide (eg. femur, metacarpels)
2. Short bones: Cube-shaped bones (eg. wrist and ankle)
3. Sesamoid bones (within tendons – eg. patella)
4. Flat bones: Thin, flat, slightly curved (eg. sternum, skull)
5. Irregular bones: Complicated shapes (eg. vertebrae, hips)

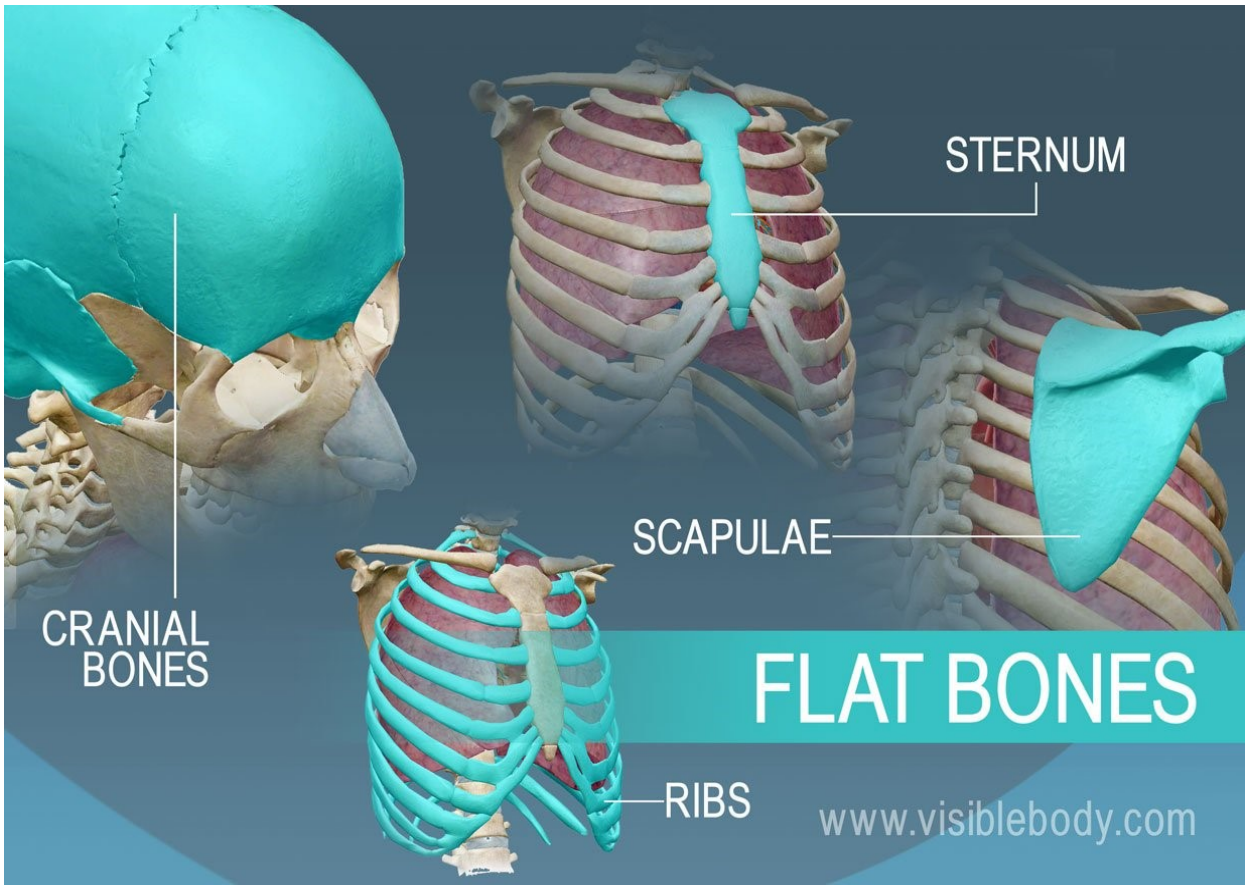


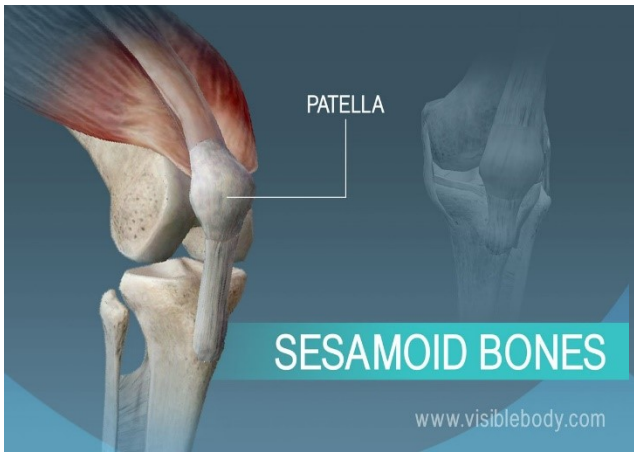


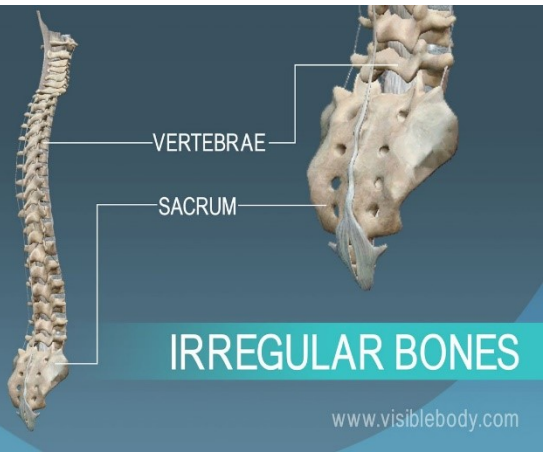


Lab. (1)

Skeletal System







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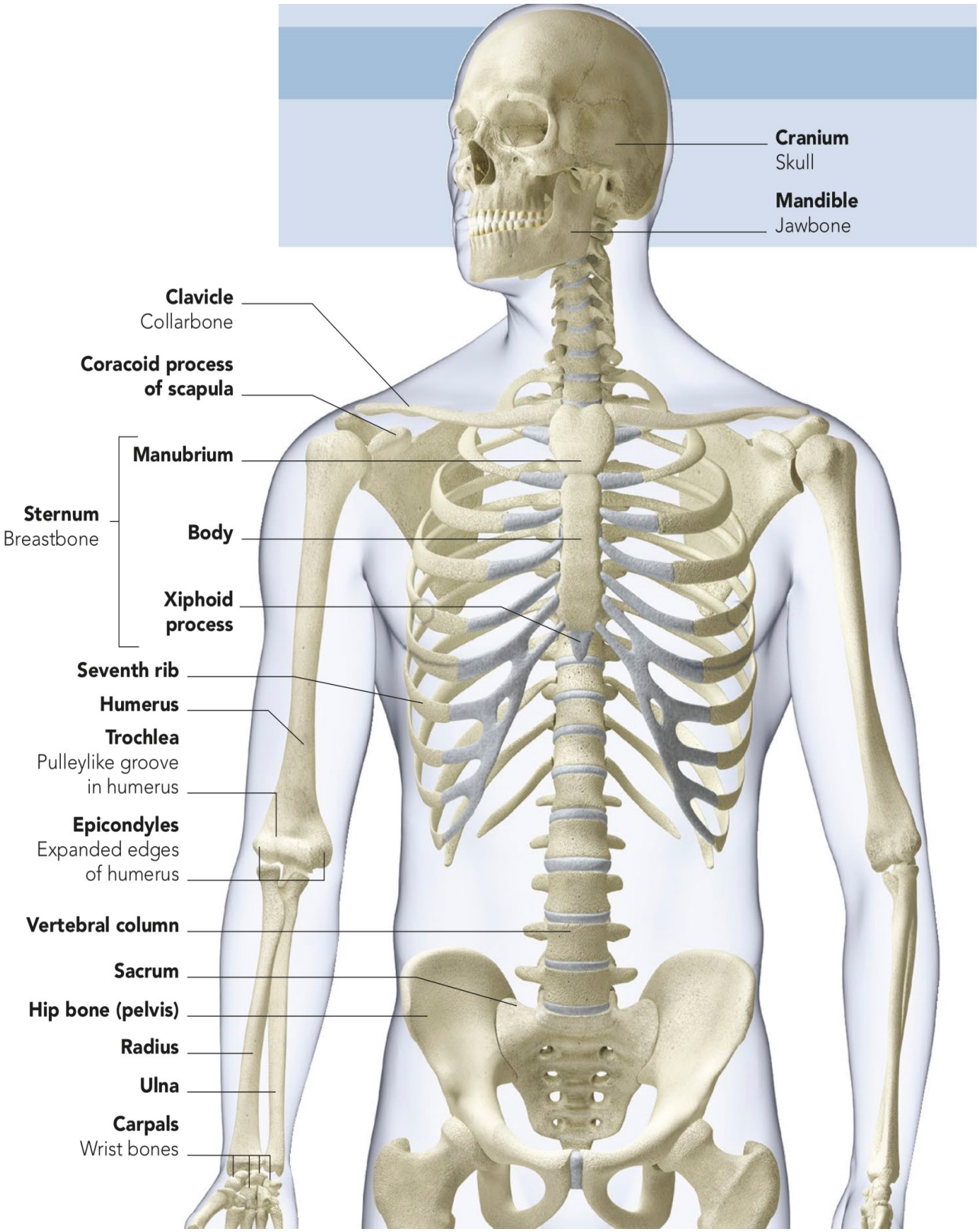
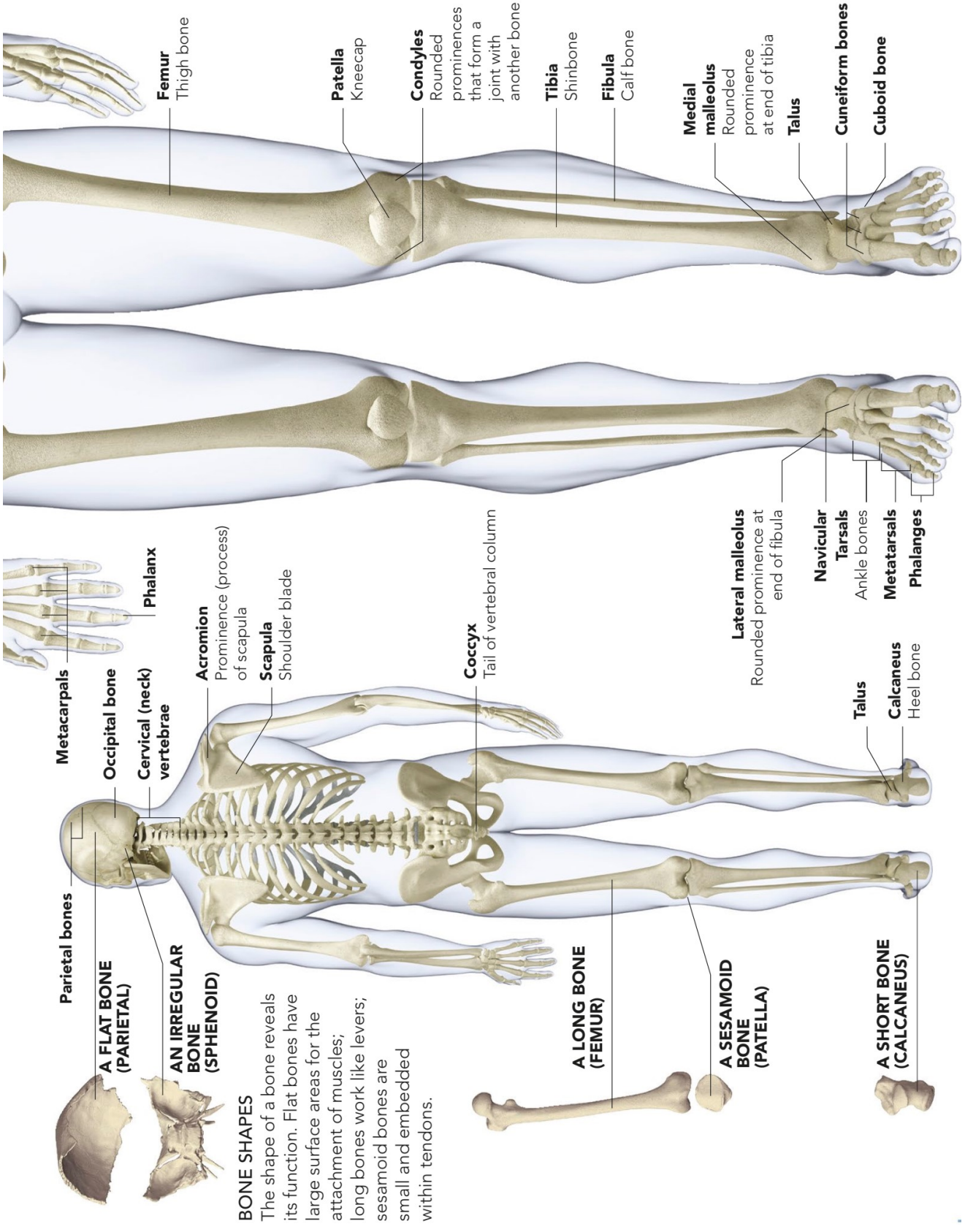
Skeletal System



Lab. (1)

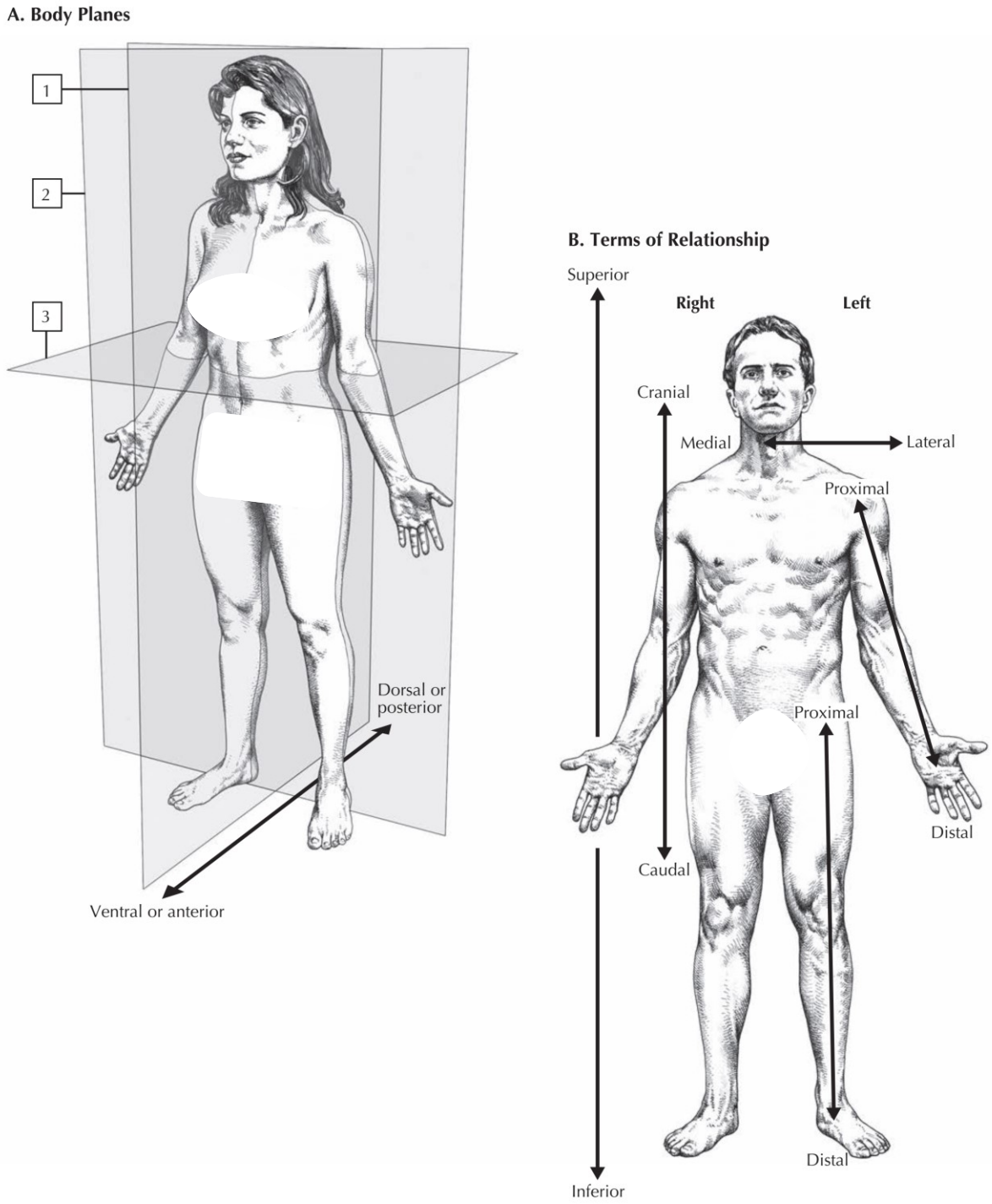
Skeletal System



Lab. (1)

Skeletal System

Body Planes and Terms of Relationship



1. Median plane (median sagittal)

2. Frontal plane

3. Transverse plane

Lab. (1)

Skeletal System

TERM	DESCRIPTION
Anterior (ventral)	Nearer the front
Posterior (dorsal)	Nearer the back
Superior (cranial)	Upward or nearer the head
Inferior (caudal)	Downward or nearer the feet
Medial	Toward the midline or median plane
Lateral	Farther from the midline or median plane
Proximal	Near to a reference point
Distal	Away from a reference point
Superficial	Closer to the surface
Deep	Farther from the surface
Median plane	Divides body into equal right and left halves
Midsagittal plane	Median plane
Sagittal plane	Divides body into unequal right and left halves
Frontal (coronal) plane	Divides body into equal or unequal anterior and posterior parts
Transverse plane	Divides body into equal or unequal superior and inferior parts (cross sections or axial sections)

References:

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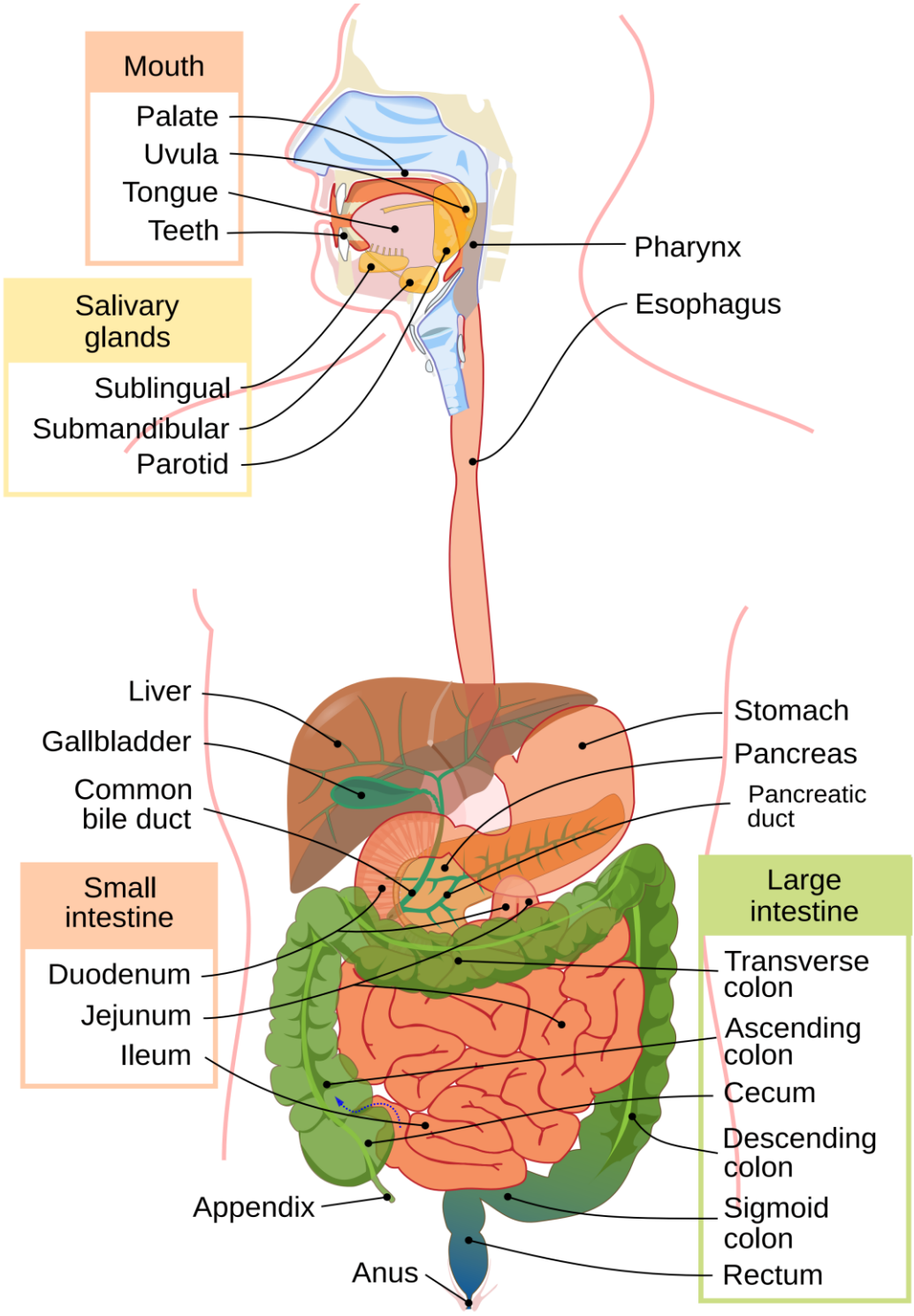
Lab. (2)

Digestive System

The digestive system is **made up of the digestive tract and other organs** that help the body break down and absorb food.

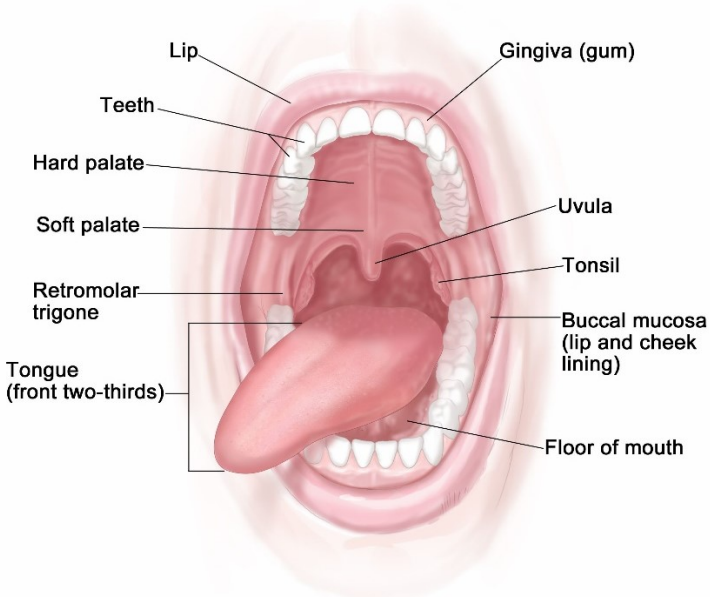
The organs of the digestive system are **the mouth, esophagus, stomach, pancreas, liver, gallbladder, small intestine, large intestine and anus**.



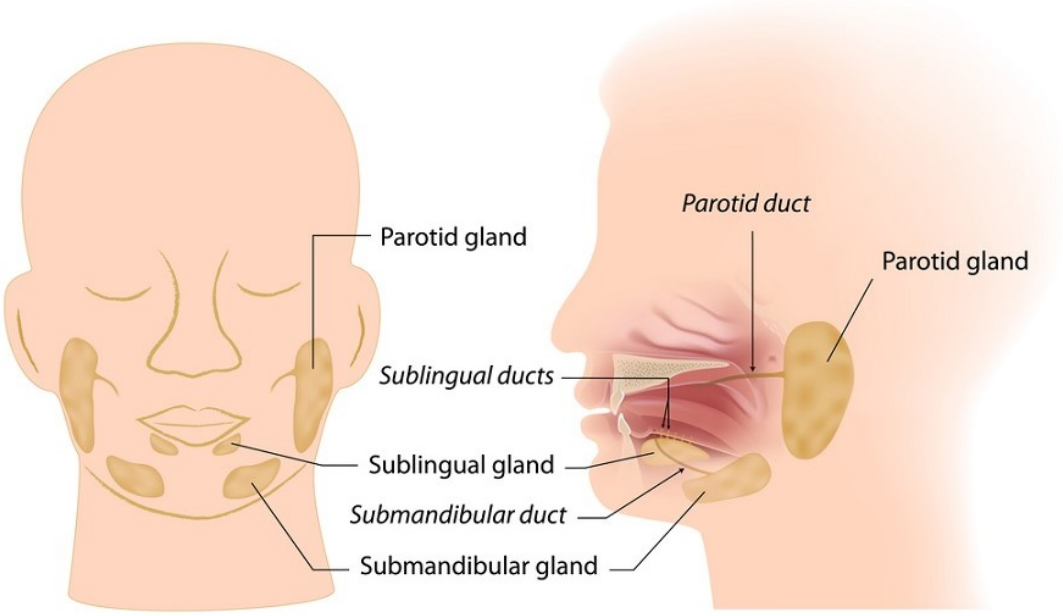
Lab. (2)

Digestive System

Oral Cavity refers to the mouth. It includes the lips, the lining inside the cheeks and lips, the front two thirds of the tongue, the upper and lower gums, the floor of the mouth under the tongue, the bony roof of the mouth, and the small area behind the wisdom teeth.



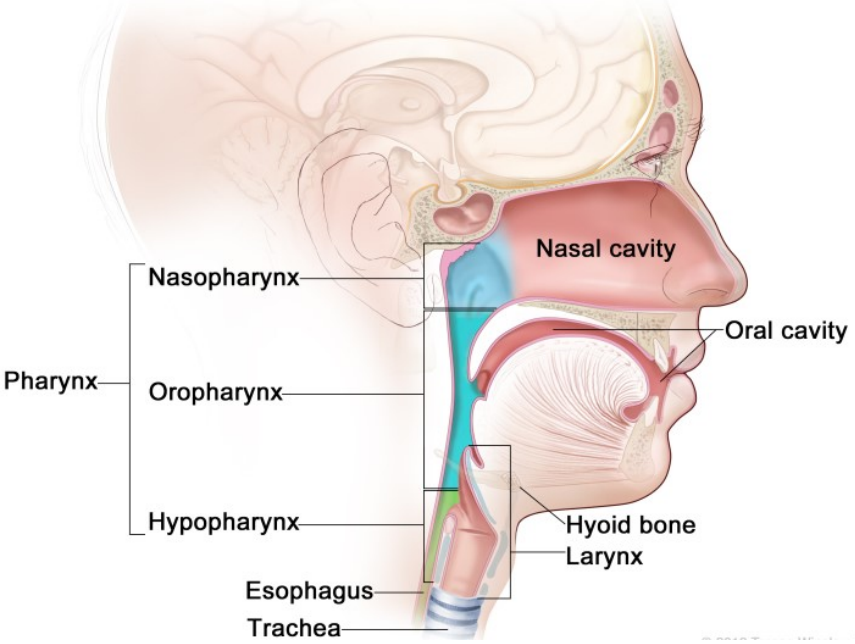
The salivary glands in mammals are exocrine glands that produce saliva through a system of ducts. Humans have three paired major salivary glands **(parotid, submandibular, and sublingual),** as well as hundreds of minor salivary glands. Salivary glands can be classified as serous, mucous, or seromucous (mixed).



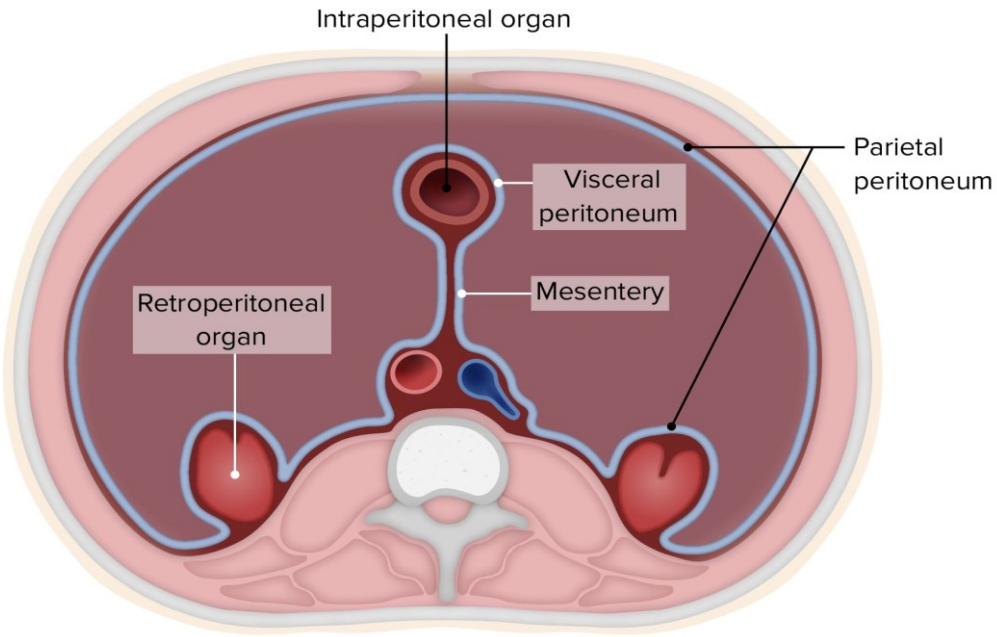
Lab. (2)

Digestive System

The Pharynx, commonly called the throat, is a muscular, funnel-shaped passageway inside the body. It connects the mouth and nose to the esophagus (leading to the stomach) and larynx (leading to the trachea and then lungs)



The Peritoneum is the serous membrane that lines the abdominal cavity, two types of the peritoneum are referenced: Parietal and Visceral peritoneum covers the external surfaces of most abdominal organs, including the intestinal tract. As well as (Peritoneum, Mesentery, and Omentum)



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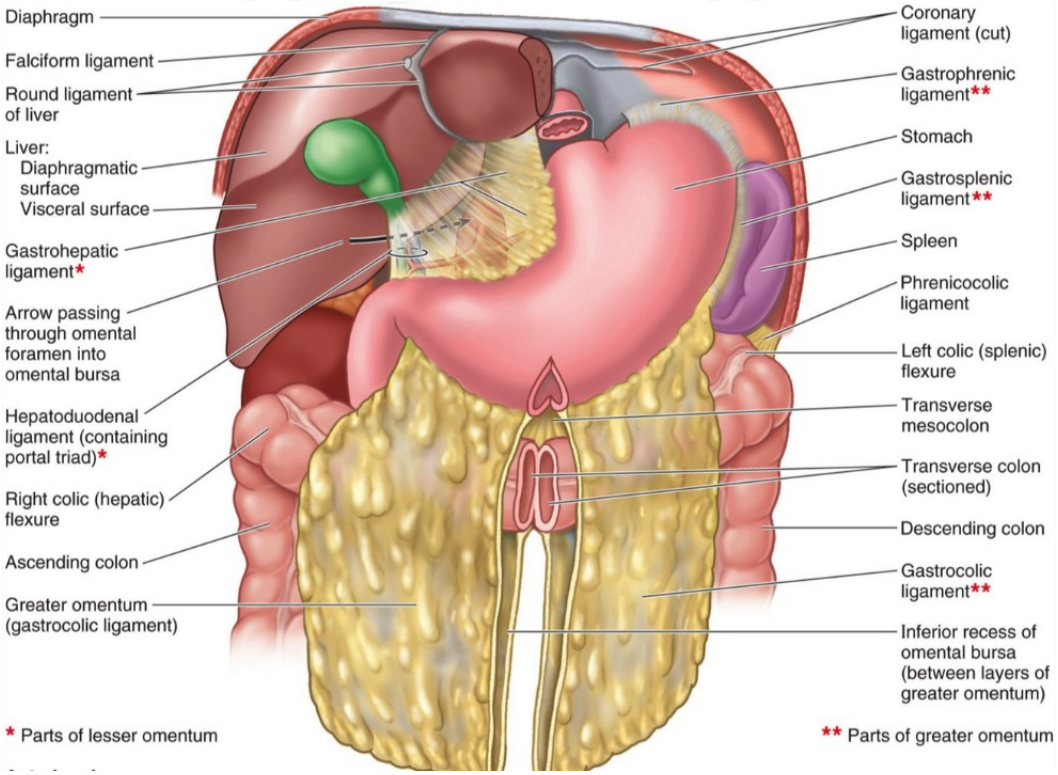
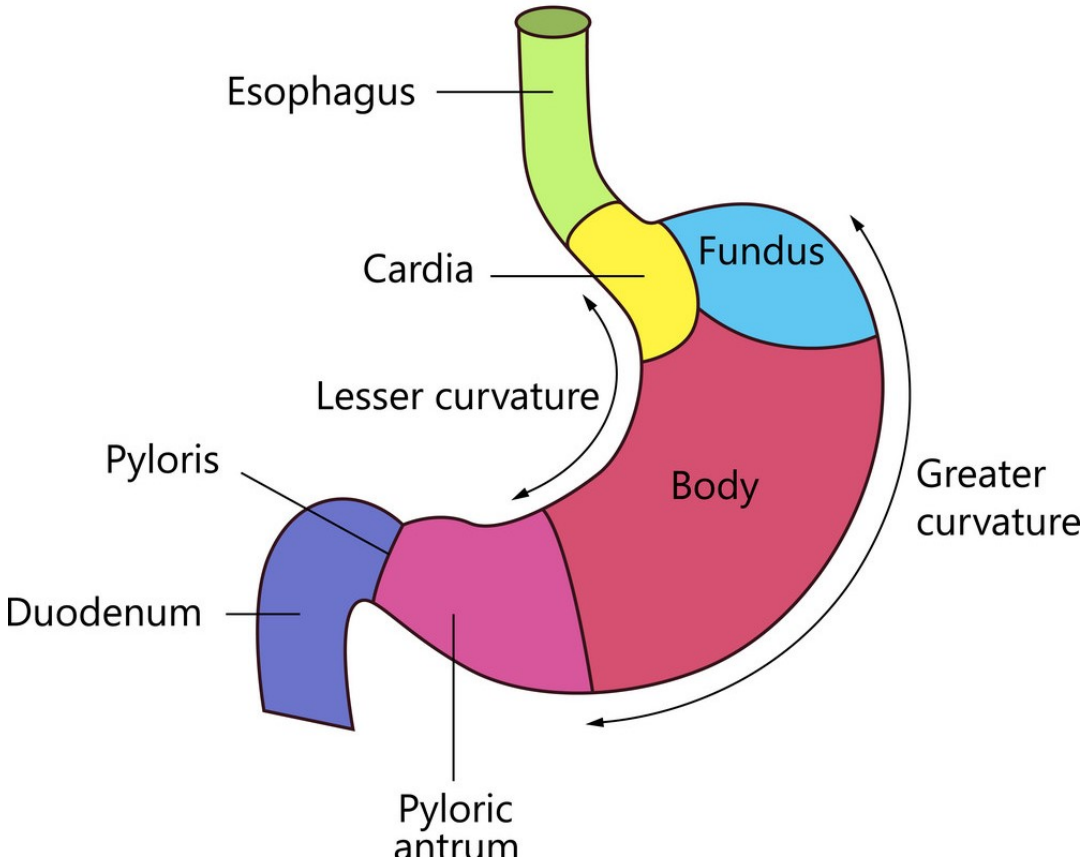
Lab. (2)

Digestive System



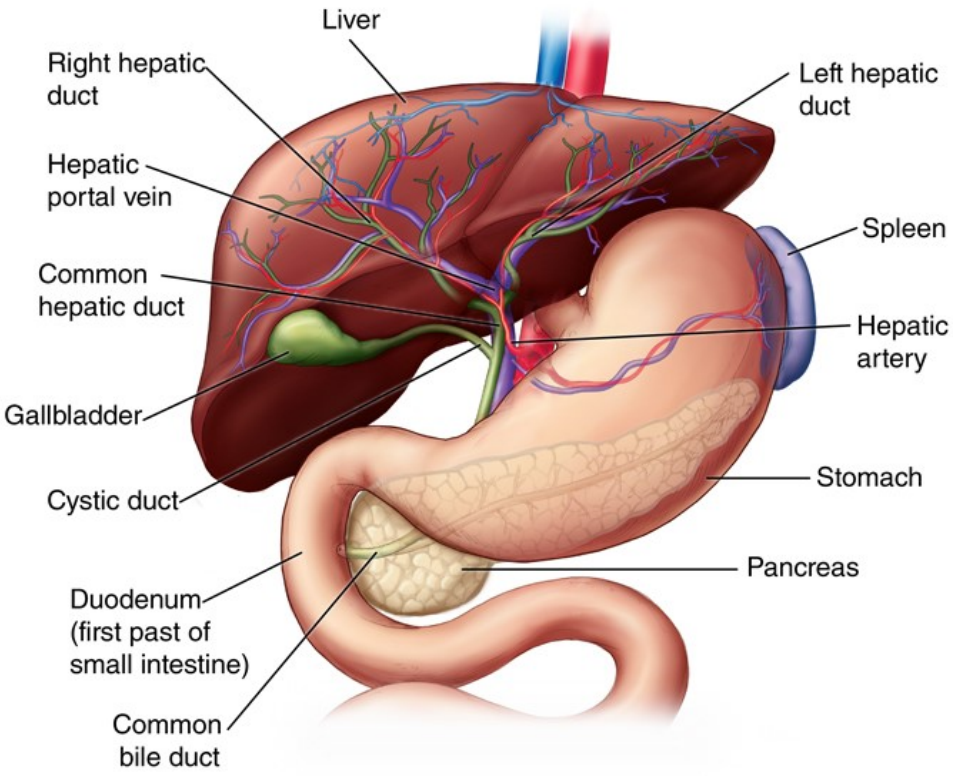
The Stomach is a muscular organ located on the left side of the upper abdomen.



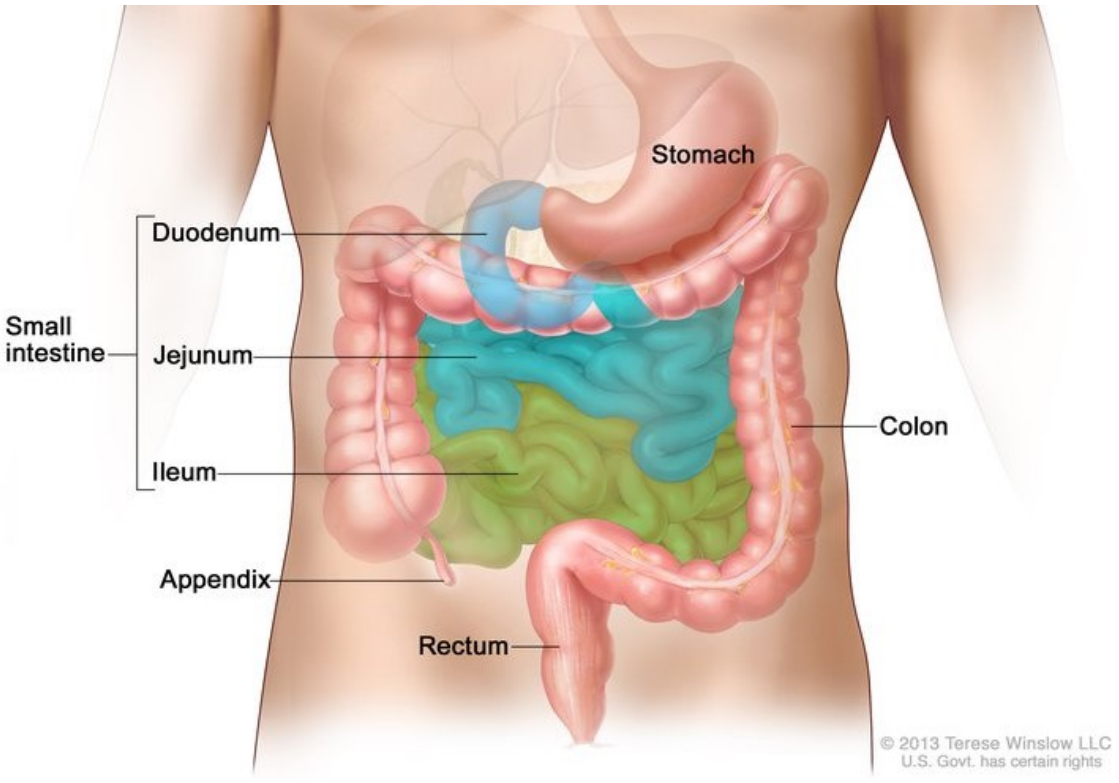
Lab. (2)

Digestive System

Liver, Pancreas, Spleen and Gallbladder



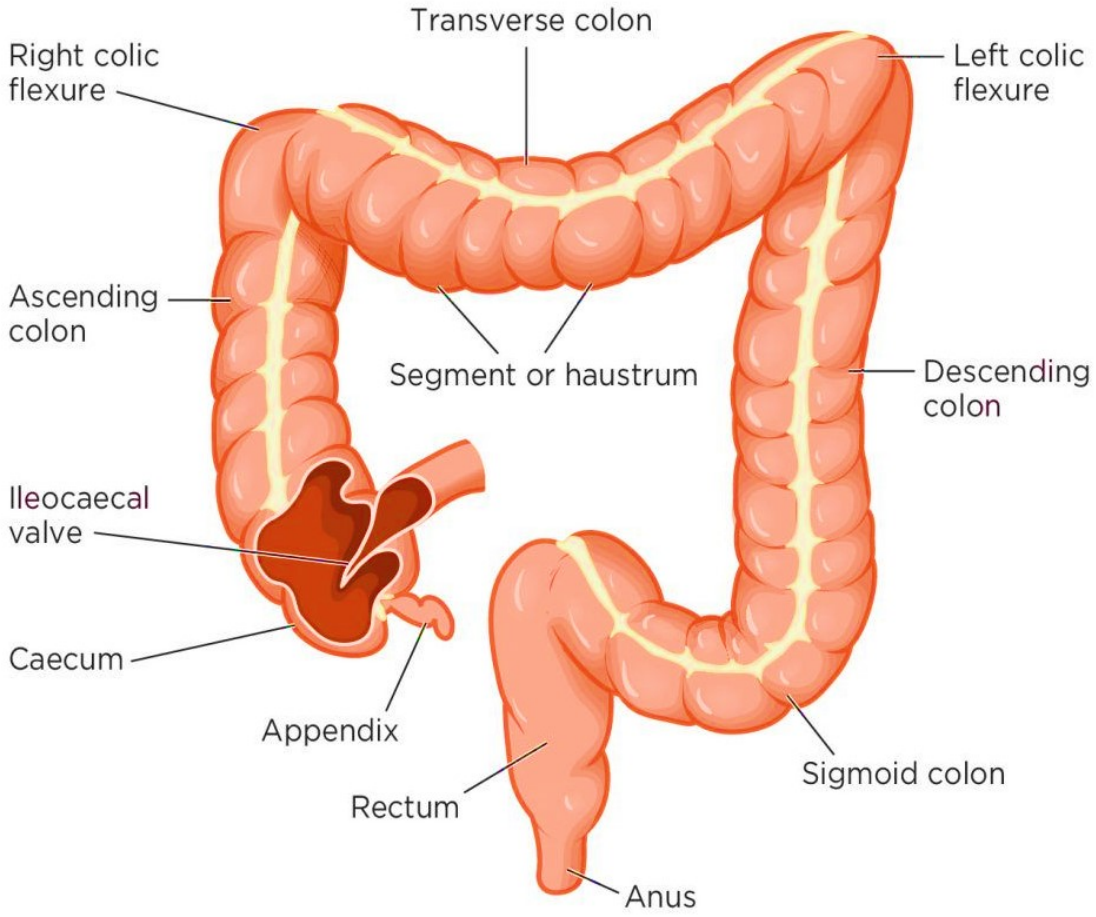
The Small Intestine is divided into the duodenum, jejunum, and ileum.

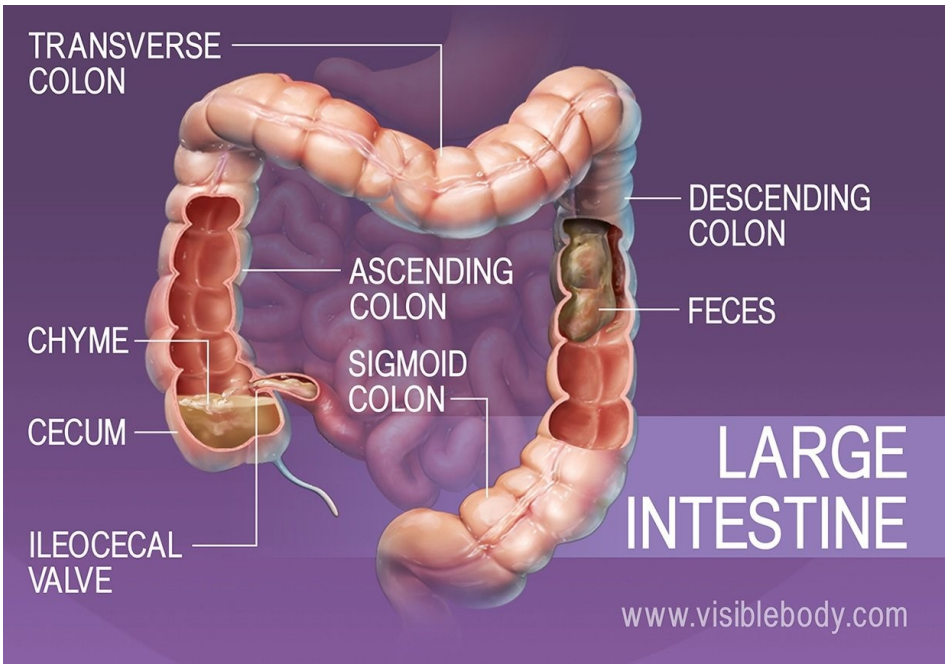


Lab. (2)

Digestive System

The Large Intestine consists of eight parts; the cecum, appendix, ascending colon, transverse colon, descending colon, sigmoid colon, rectum, and anal canal.





Lab. (2)

Digestive System

Review the System by Colouring the structures

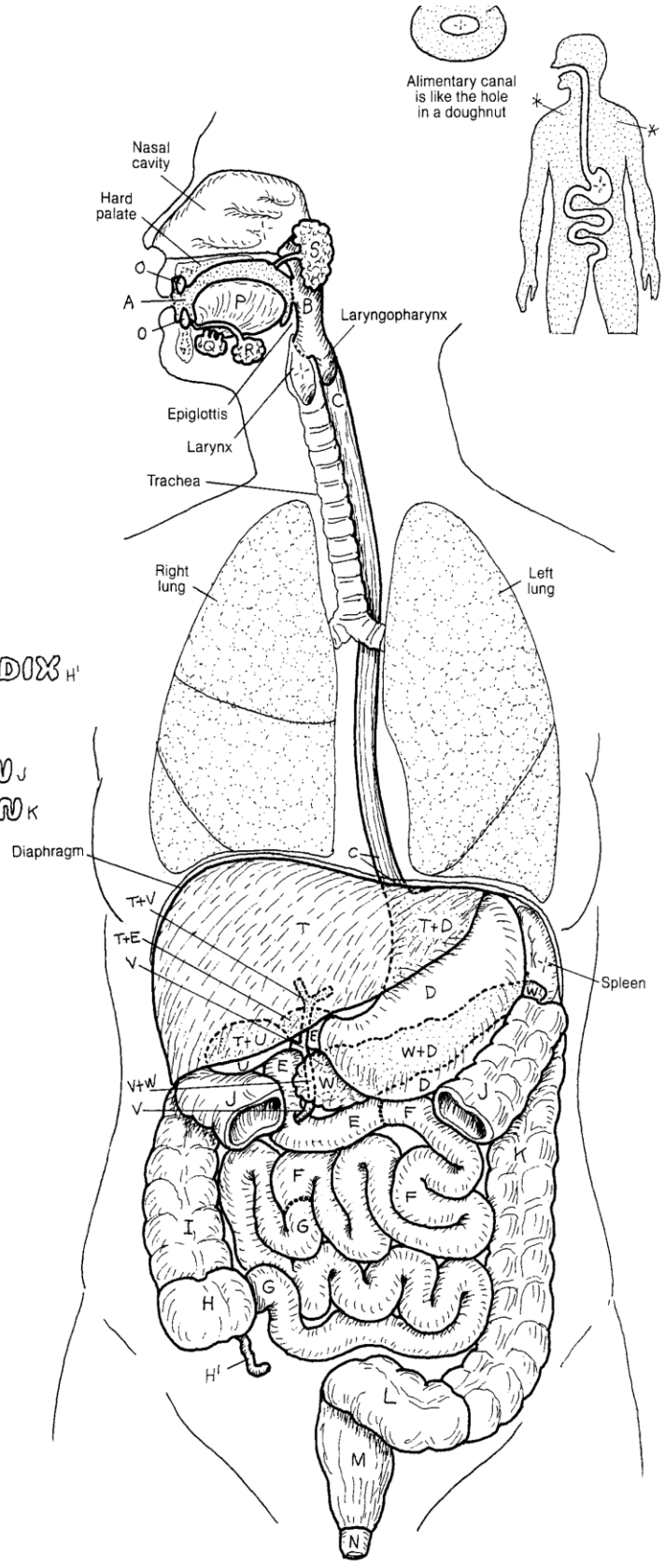
CN: Use your lightest colors for D, E, T, V, and W. When organs or structures overlap each other, each overlapping portion receives the color of both. (1) After coloring the alimentary canal, review the structures before completing the accessory organs. The central section of the transverse colon, J, has been removed to show deeper structures. (2) Color gray the diagrammatic depiction of the alimentary canal in relation to the body in the upper right corner.

ALIMENTARY CANAL

- ORAL CAVITY A
- PHARYNX B
- ESOPHAGUS C
- STOMACH D
- **SMALL INTESTINE**
  - DUODENUM E
  - JEJUNUM F
  - ILEUM G
- **LARGE INTESTINE**
  - CECUM H
    - VERMIFORM APPENDIX H'
  - **COLON**
    - ASCENDING COLON I
    - TRANSVERSE COLON J
    - DESCENDING COLON K
    - SIGMOID COLON L
  - RECTUM M
  - ANAL CANAL N

ACCESSORY ORGANS

- TEETH O
- TONGUE P
- **SALIVARY GLANDS**
  - SUBLINGUAL Q
  - SUBMANDIBULAR R
  - PAROTID S
- LIVER T
- GALLBLADDER U
- BILE DUCTS V
- PANCREAS W



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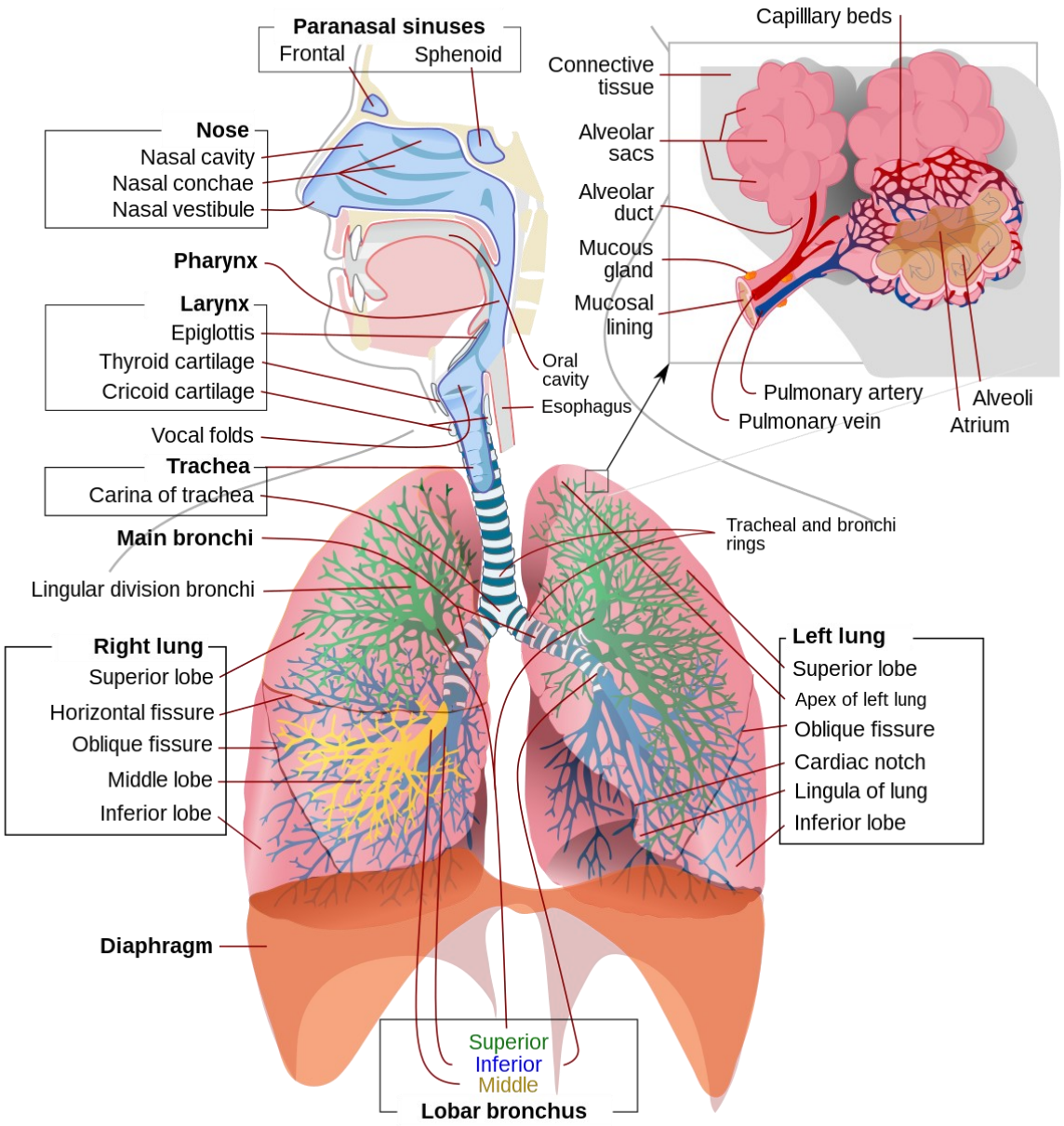
Lab. (3)

Respiratory System

The Respiratory System is the network of organs and tissues that help you breathe. It includes your airways, lungs and blood vessels.

It is concerned with ventilation (breathing), which is the movement of air into and out of the lungs so that the blood can obtain oxygen and lose carbon dioxide.

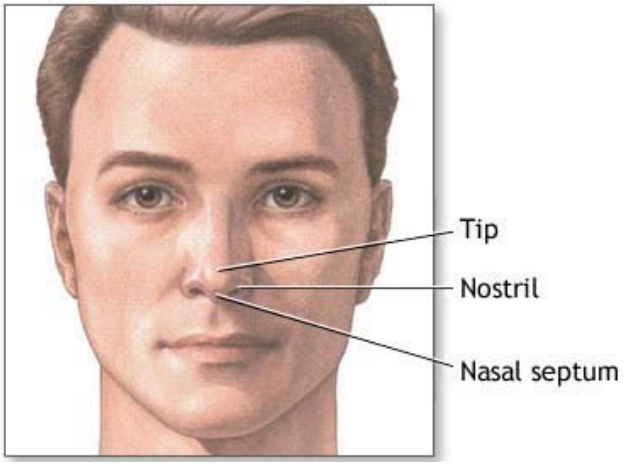


Lab. (3)

Respiratory System

The respiratory system includes the following parts:

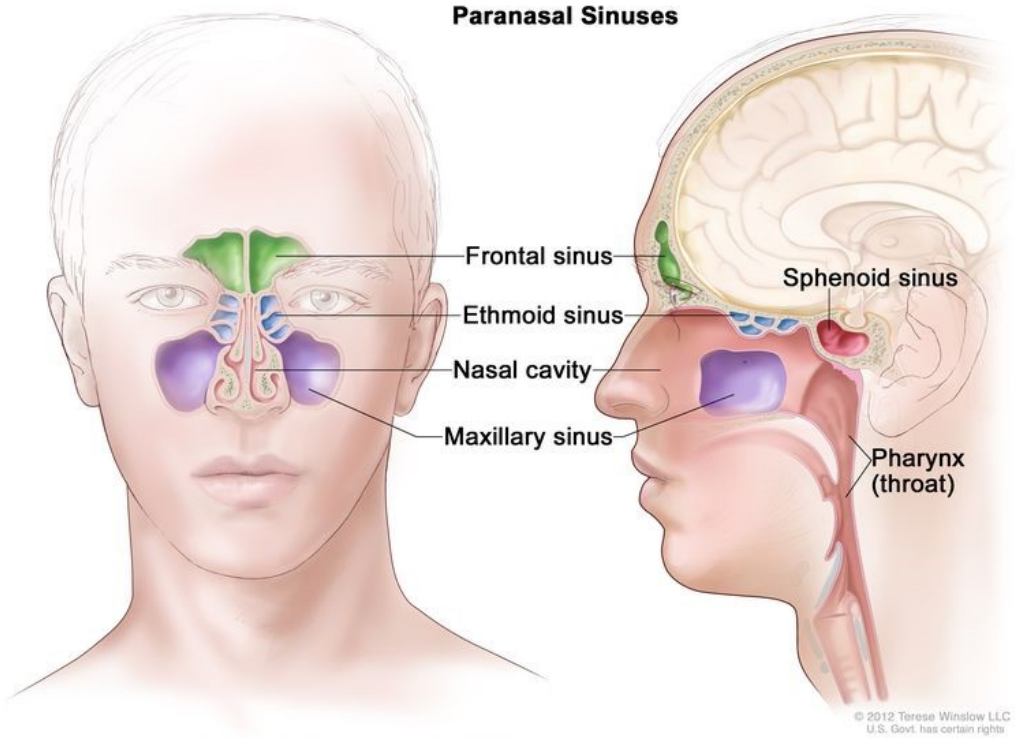
1. Nose.
2. Mouth.
3. Throat (pharynx).
4. Voice box (larynx).
5. Windpipe (trachea).
6. Large airways (bronchi).
7. Small airways (bronchioles).
8. Lungs.



The nose is the space inside the nose is divided by a **septum** into two nasal cavities with each half having an opening – **nostril** – on the face and another into the pharynx (throat).

Sinuses near the nose and eyes include:

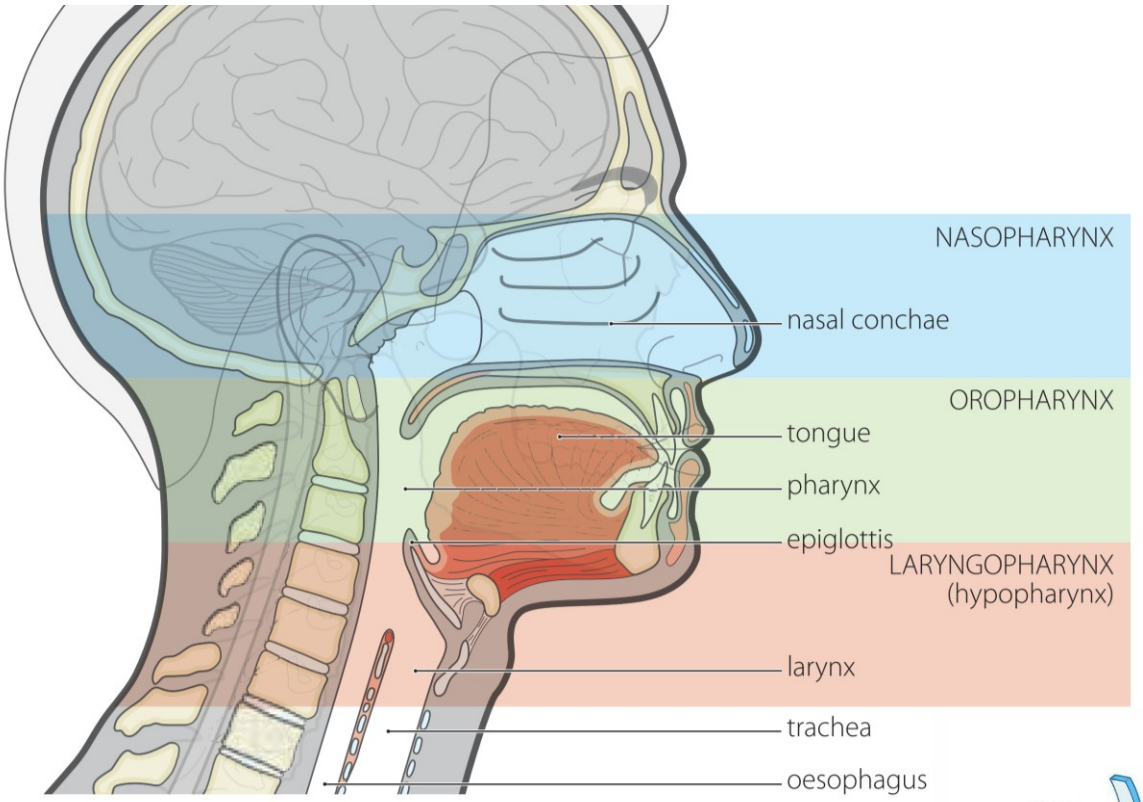
The frontal sinuses are located above your eyes.
The ethmoidal sinuses are located between your eyes.
The maxillary sinuses are located below your eyes.
The sphenoidal sinuses are located behind your eyes.

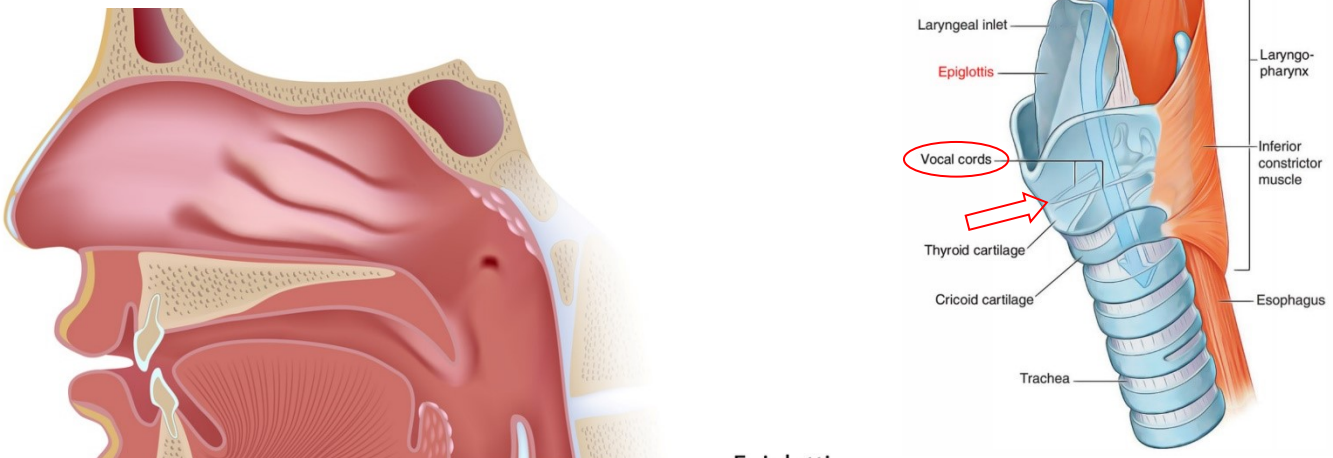


Lab. (3)

Respiratory System

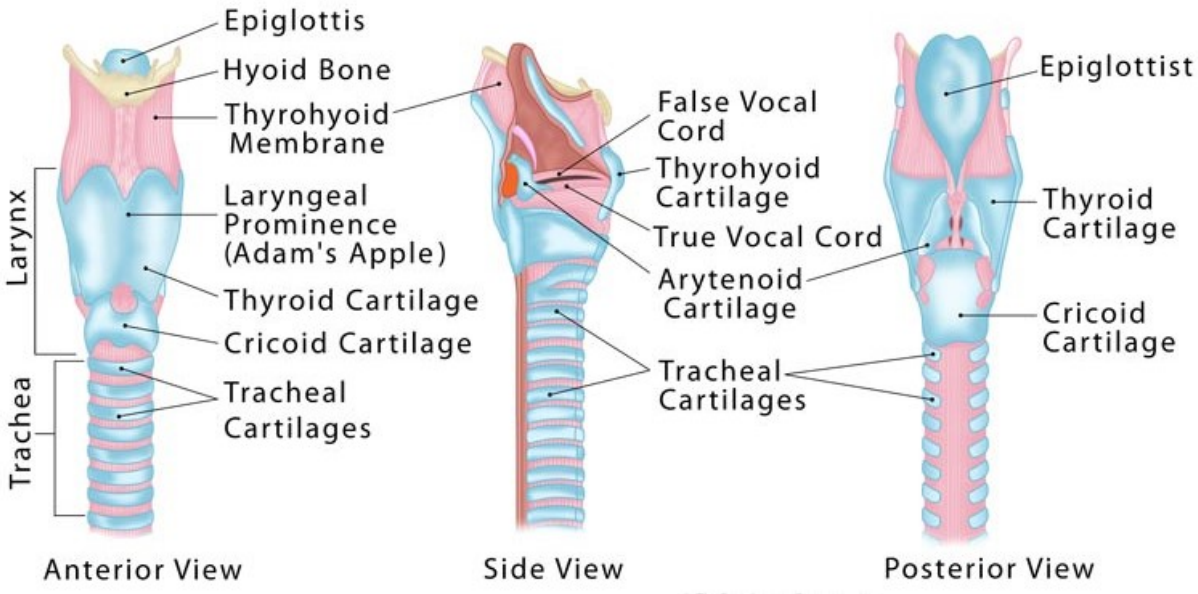
Pharynx, epiglottis, and larynx



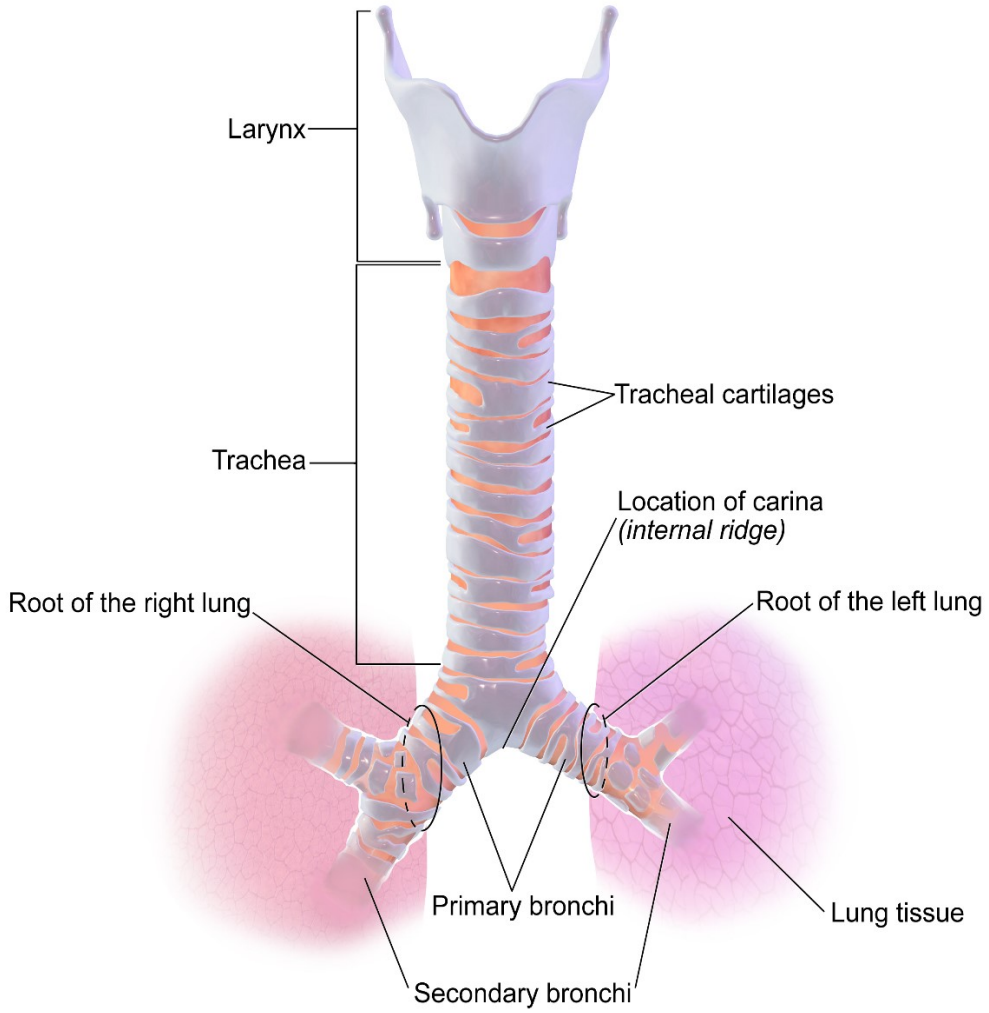


Lab. (3)

Respiratory System

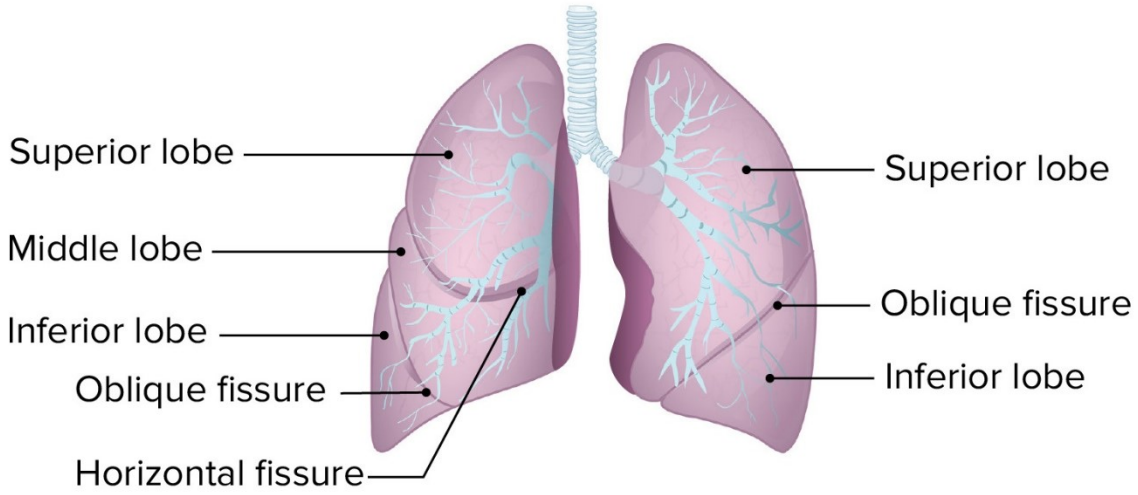


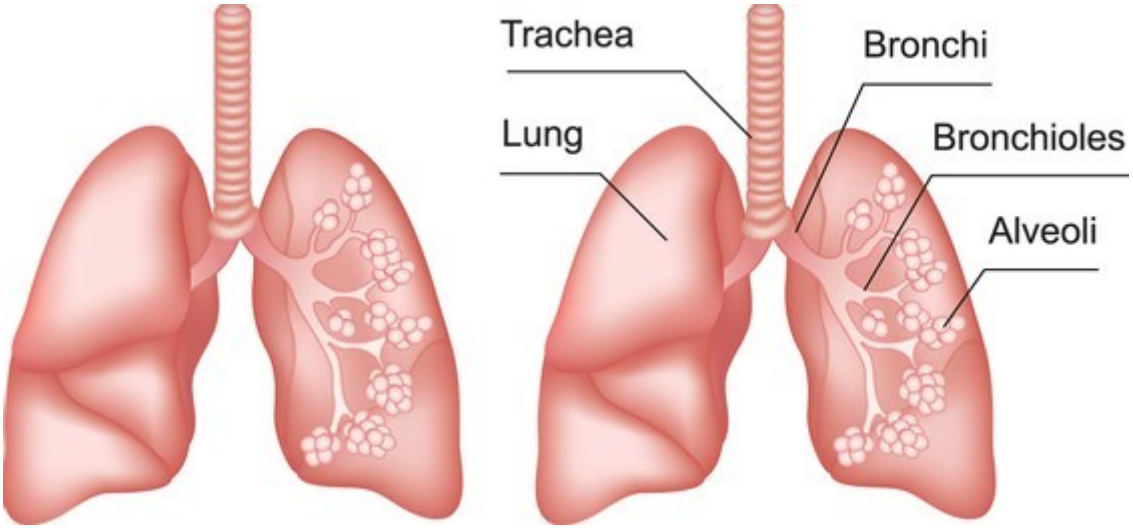
The Trachea (windpipe) is the airway that extends from the larynx to the lungs.

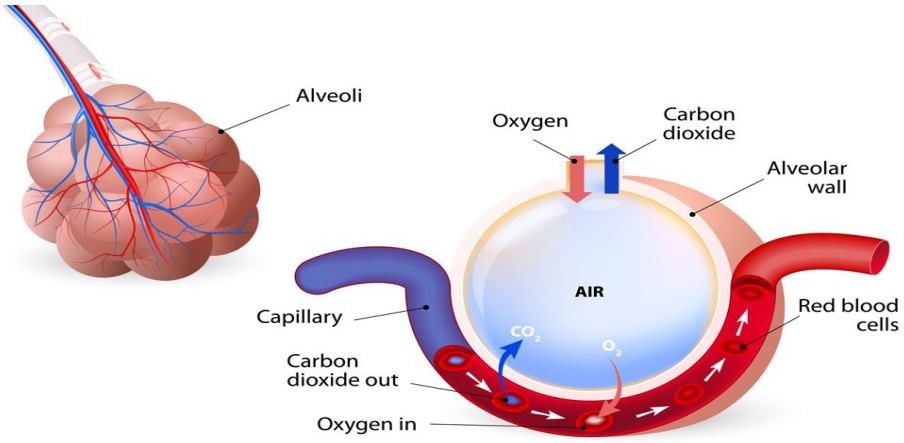


Respiratory System

In the Lungs, the right lung is divided into three lobes and the left lung into two lobes. Lung tissue is composed of a mass of **airways (bronchi and bronchioles)** and millions of **alveolar sacs** which enable them to carry out their function of gaseous exchange.

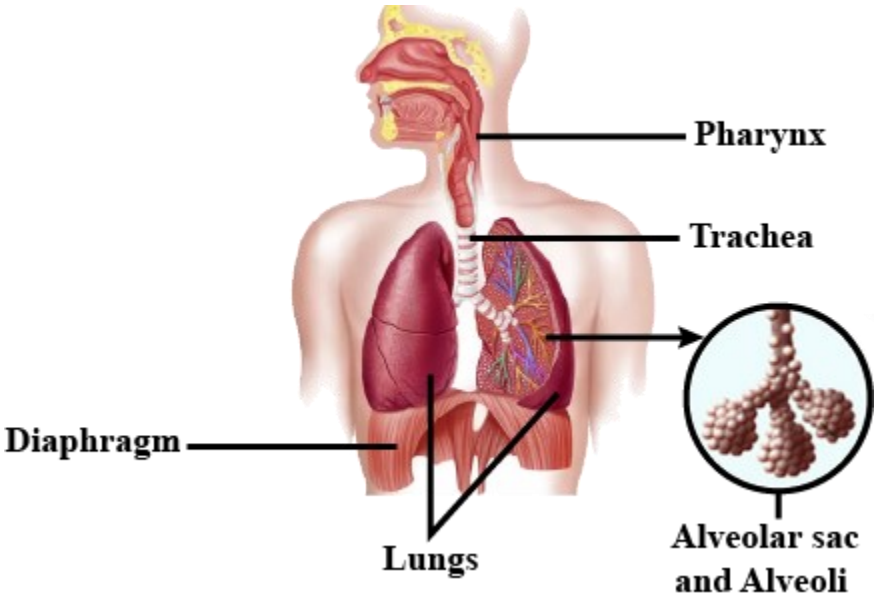


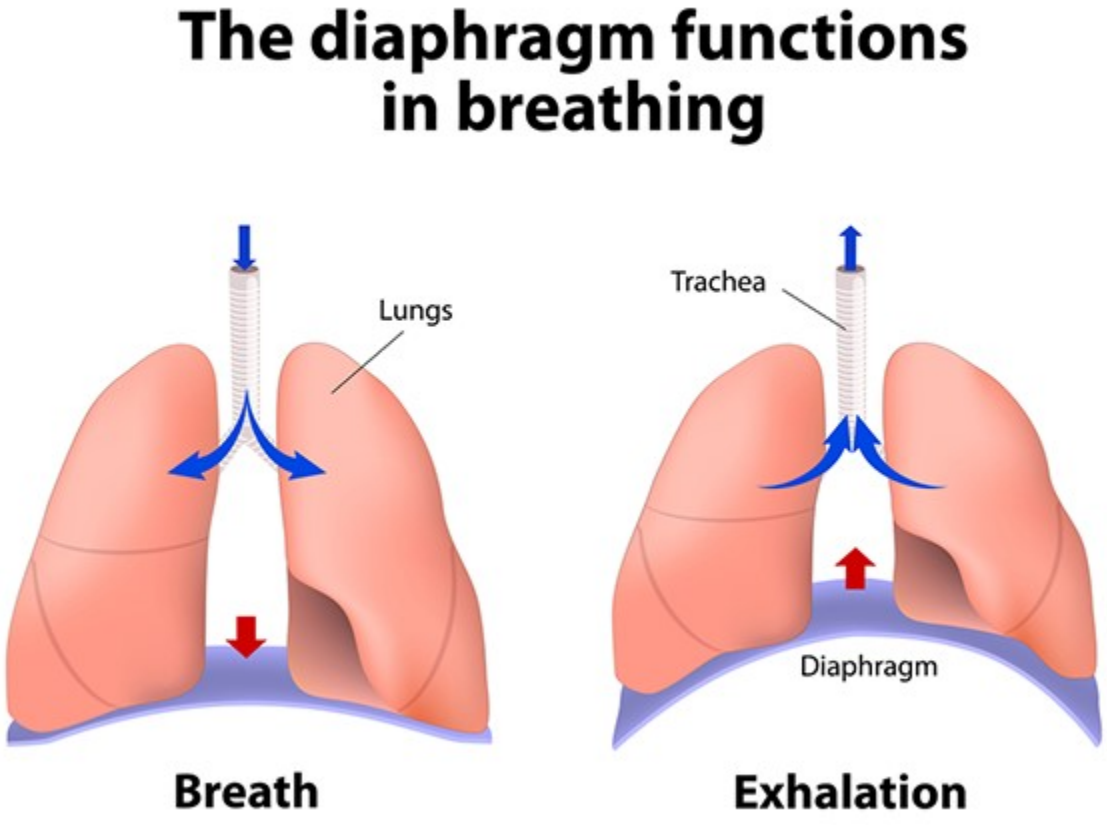




Respiratory System

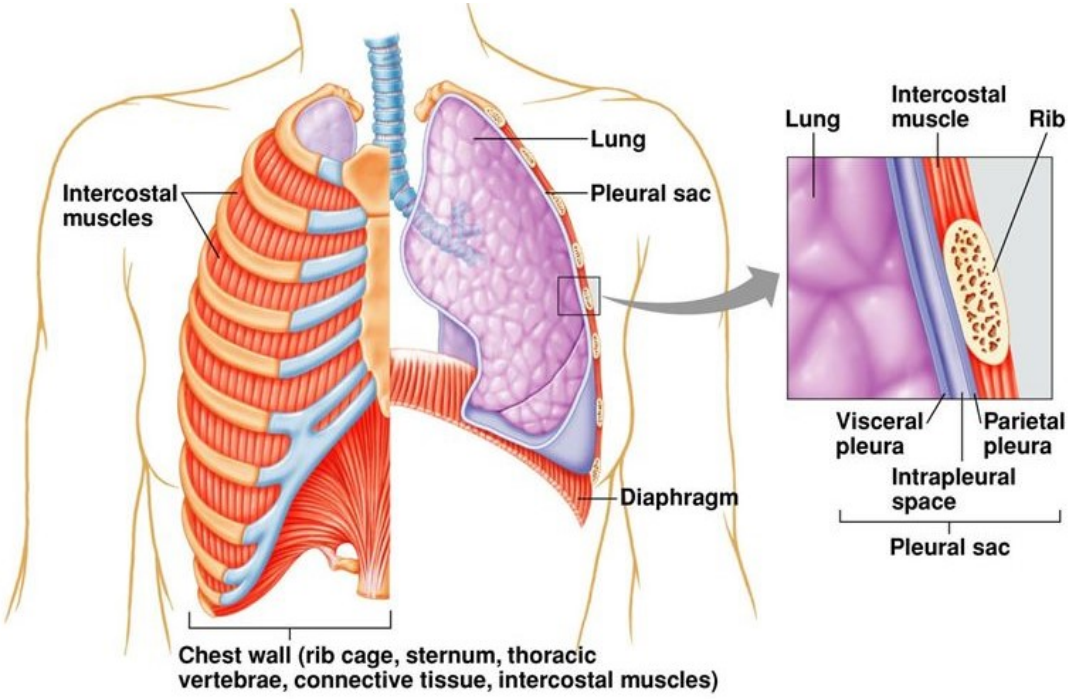
The Diaphragm, dome-shaped, muscular, and membranous structure that separates the thoracic (chest) and abdominal cavities; it is the principal muscle of respiration.

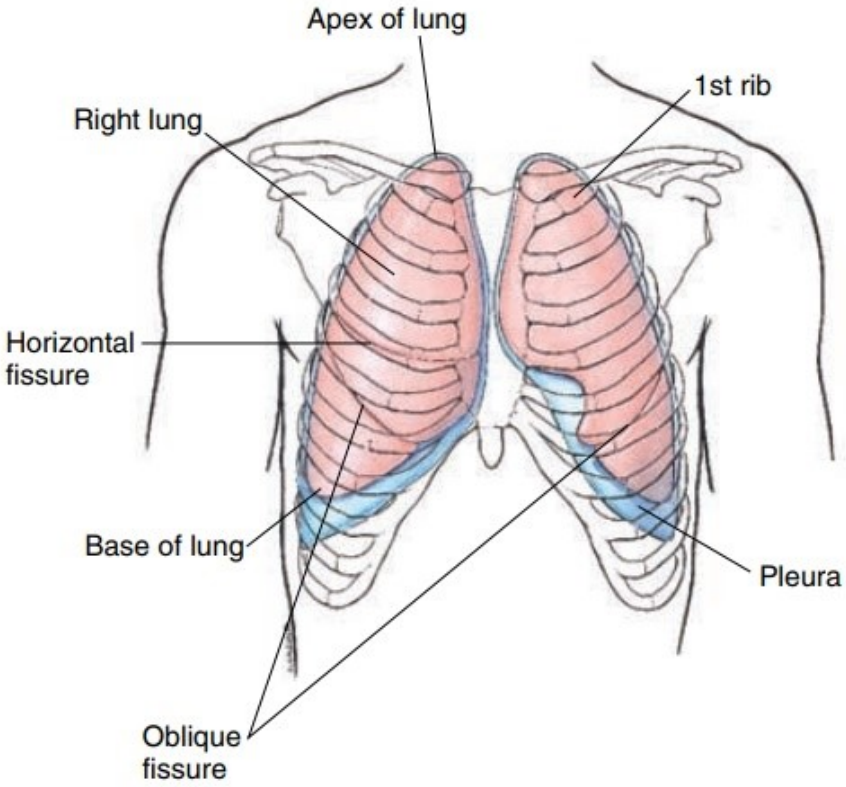




Respiratory System

The Pleurae refer to the serous membranes that line the lungs and thoracic cavity. They permit efficient and effortless respiration.





Lab. (3)

Respiratory System

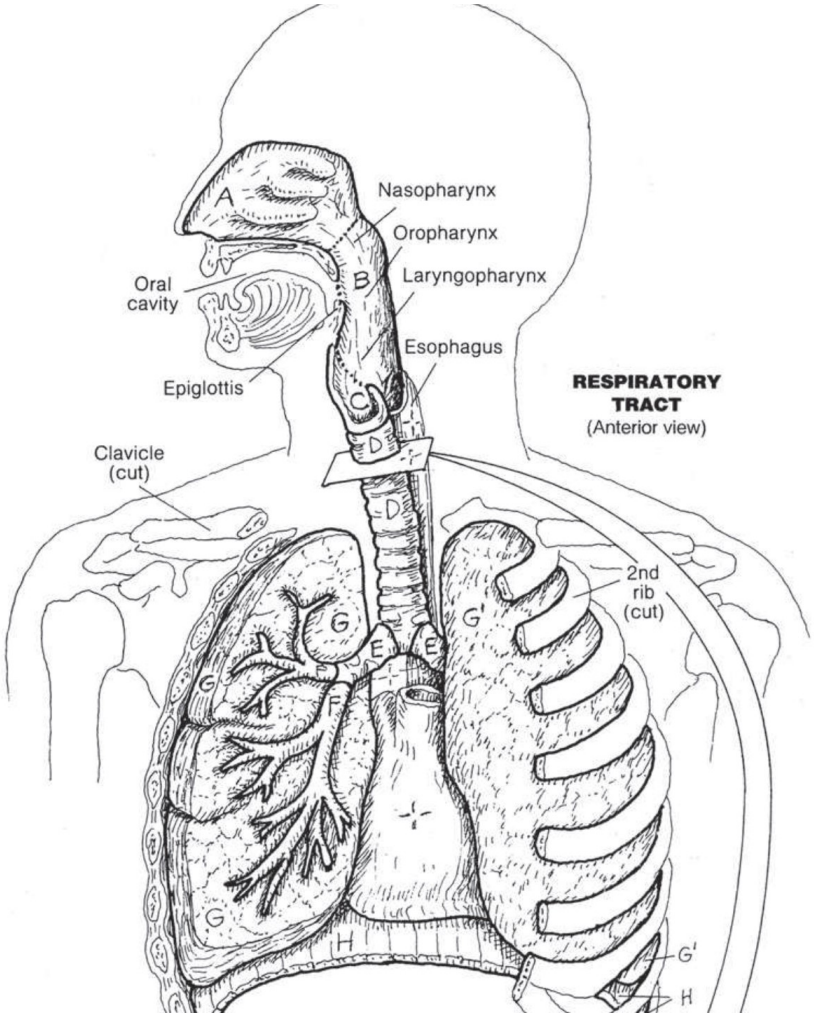
Review the System by Colouring the structures

RESPIRATORY SYSTEM
OVERVIEW

CN: Use red for L and light colors throughout. (1) Begin with the structures of the respiratory tract. (2) Finish up with the cross section of the trachea, D, and the microscopic section of respiratory mucosa.

RESPIRATORY TRACT

NASAL CAVITY A
PHARYNX B
LARYNX C
TRACHEA D
PRIMARY BRONCHI E
BRONCHIAL TREE F
RIGHT LUNG G
LEFT LUNG G'
DIAPHRAGM H



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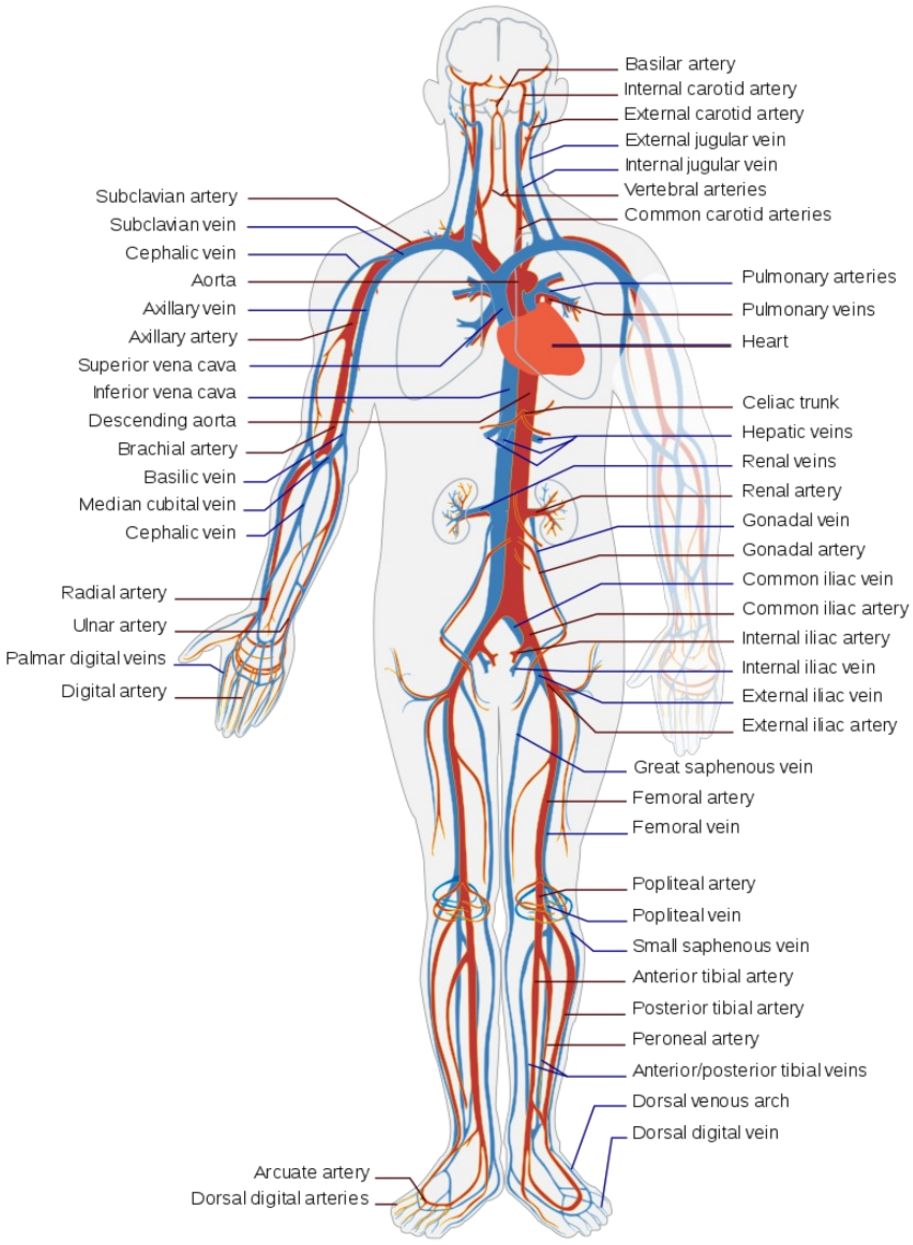
Lab. (4)

Circulatory System

The Circulatory System (cardiovascular system) pumps blood from the heart to the lungs to get oxygen. The heart then sends oxygenated blood through arteries to the rest of the body. The veins carry oxygen-poor blood back to the heart to start the circulation process over.

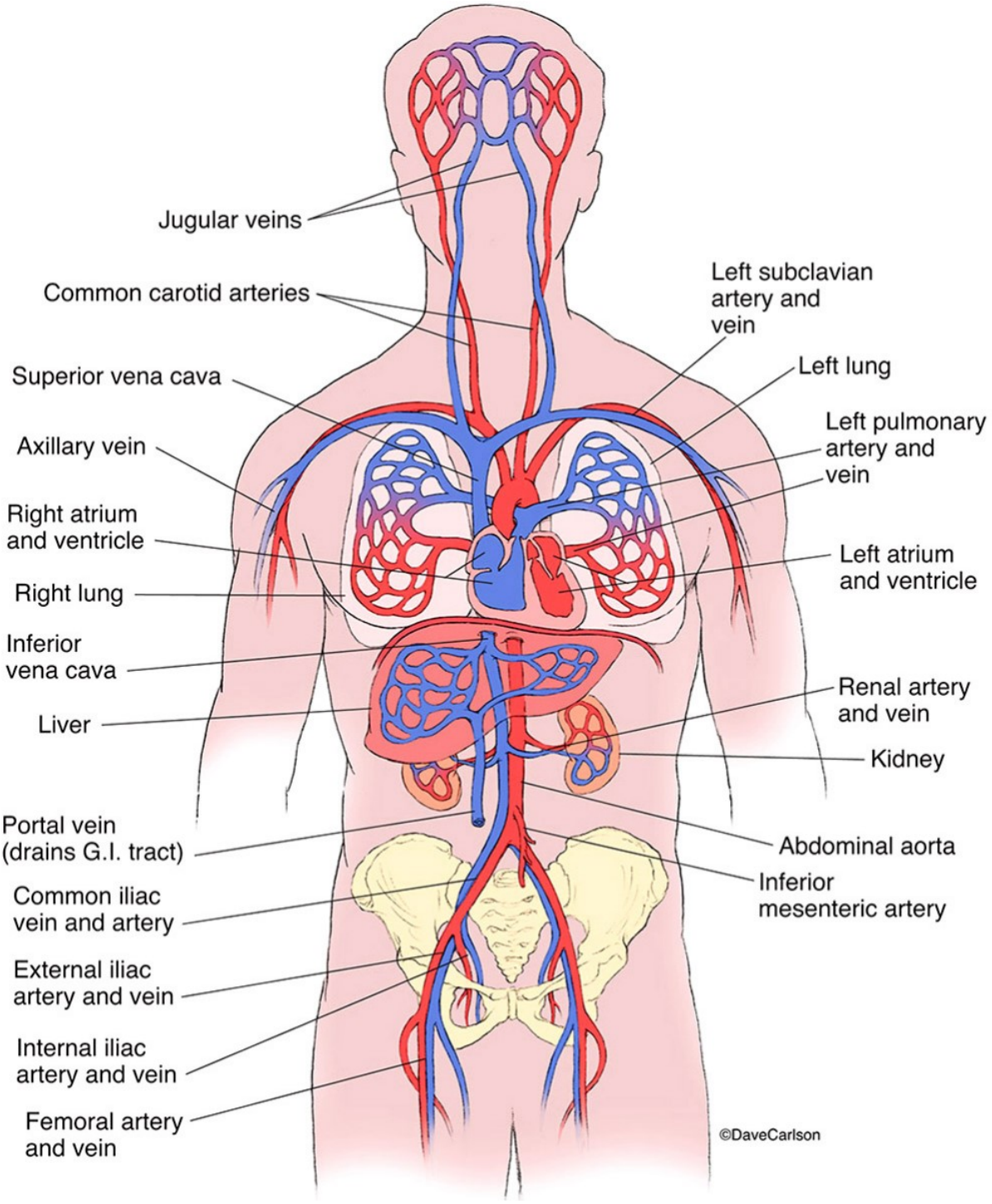
The parts of your circulatory system are your:

1. **Heart,** a muscular organ that pumps blood throughout your body.
2. **Blood vessels,** which include your arteries, veins and capillaries.
3. **Blood,** made up of red and white blood cells, plasma and platelets.



Lab. (4)

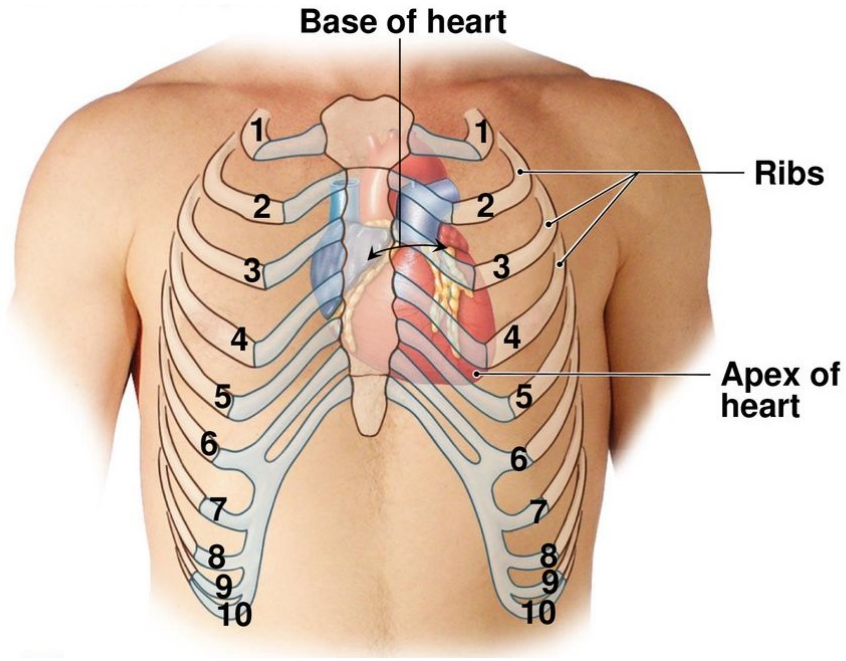
Circulatory System

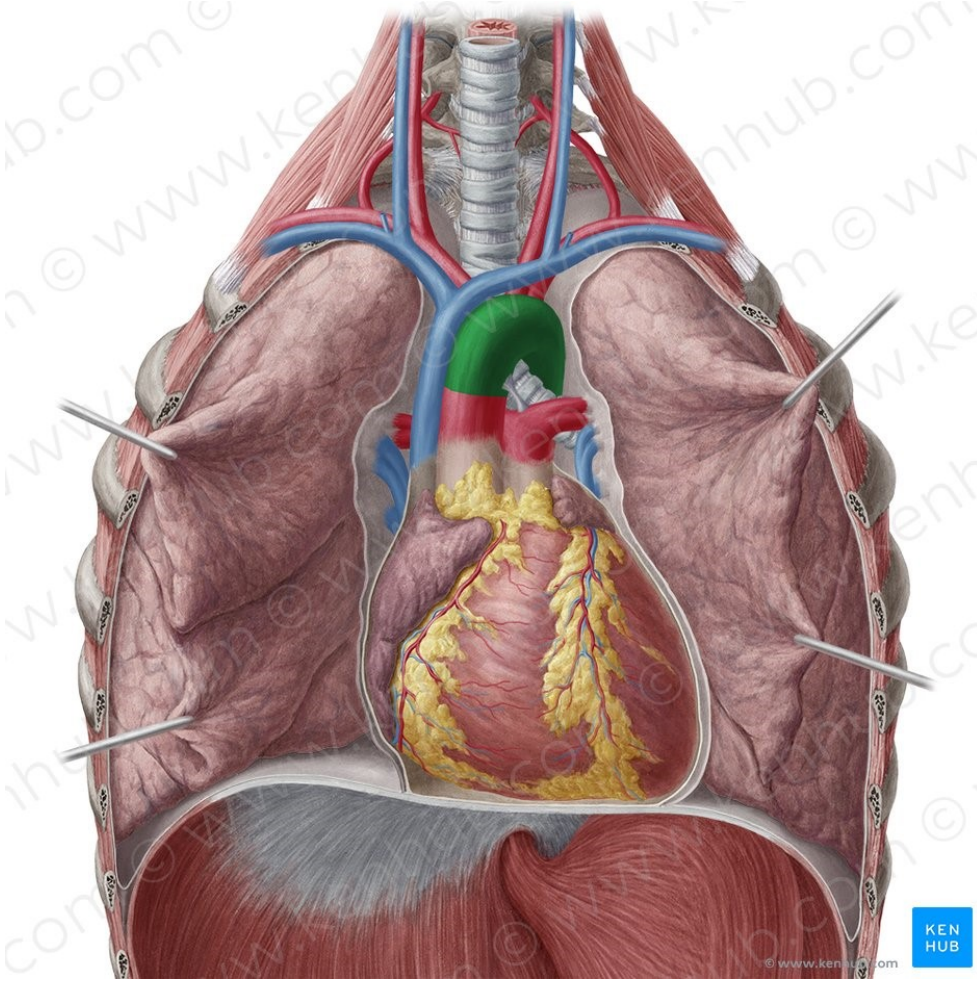


Lab. (4)

Circulatory System

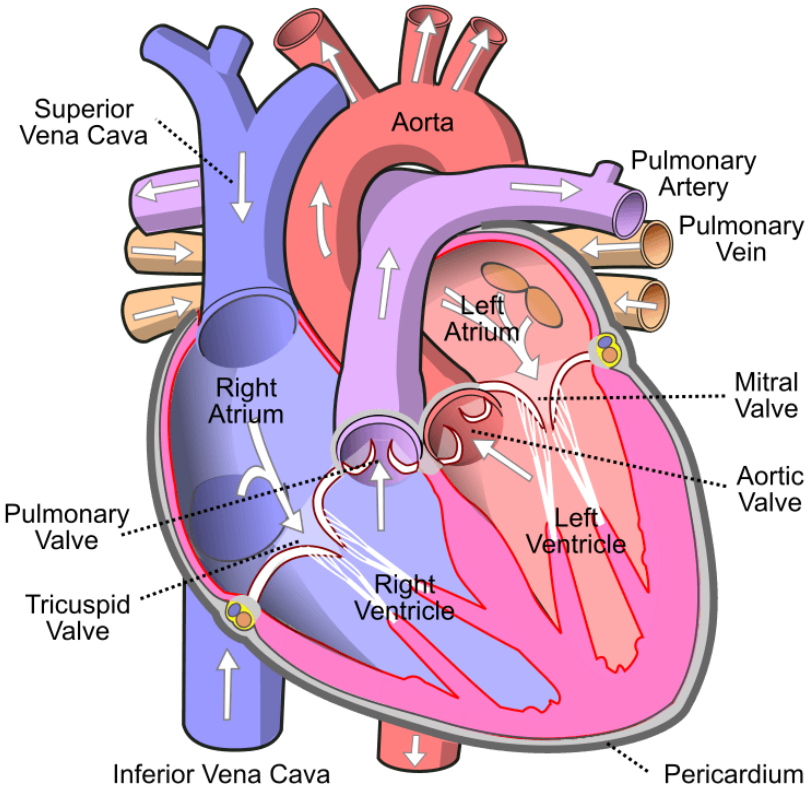
The Heart is a muscular organ about the size of a fist, located between the lungs in the middle of the chest, behind and slightly to the left of the sternum.

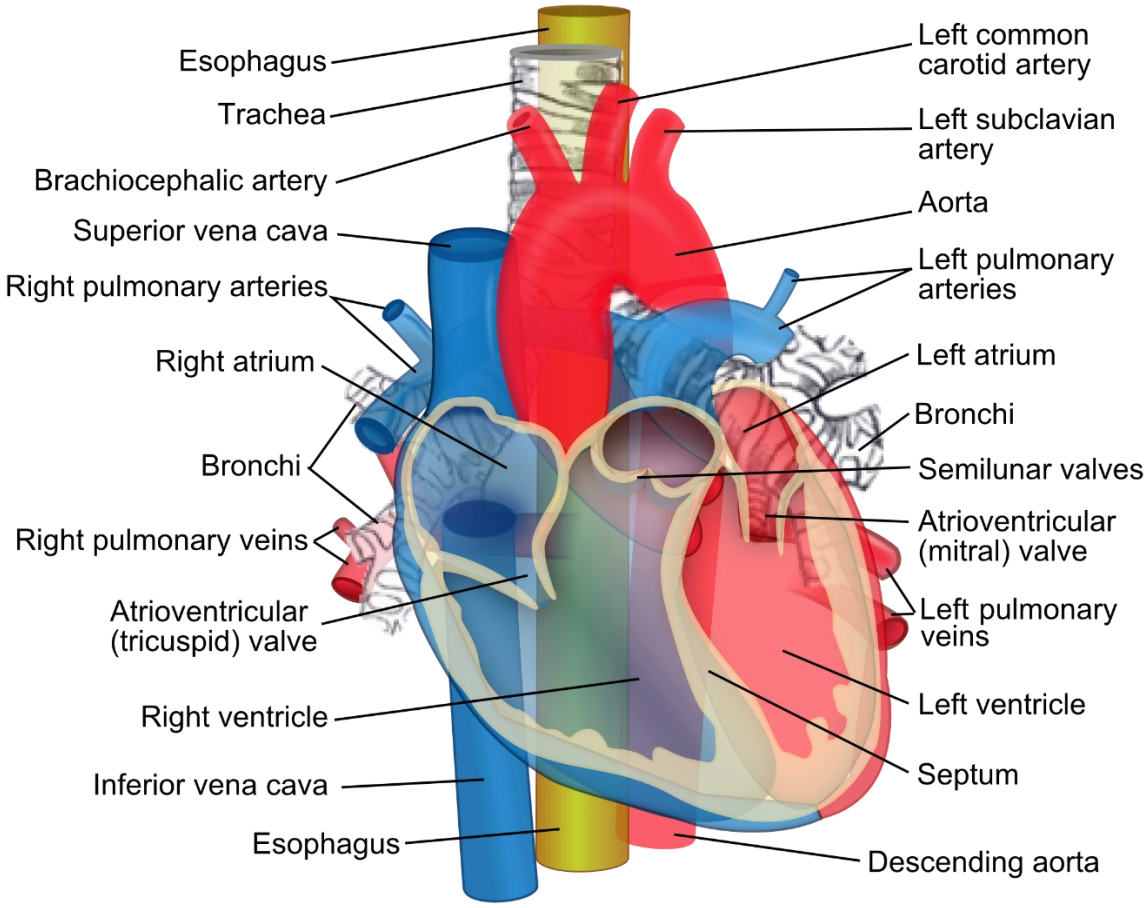




Lab. (4)

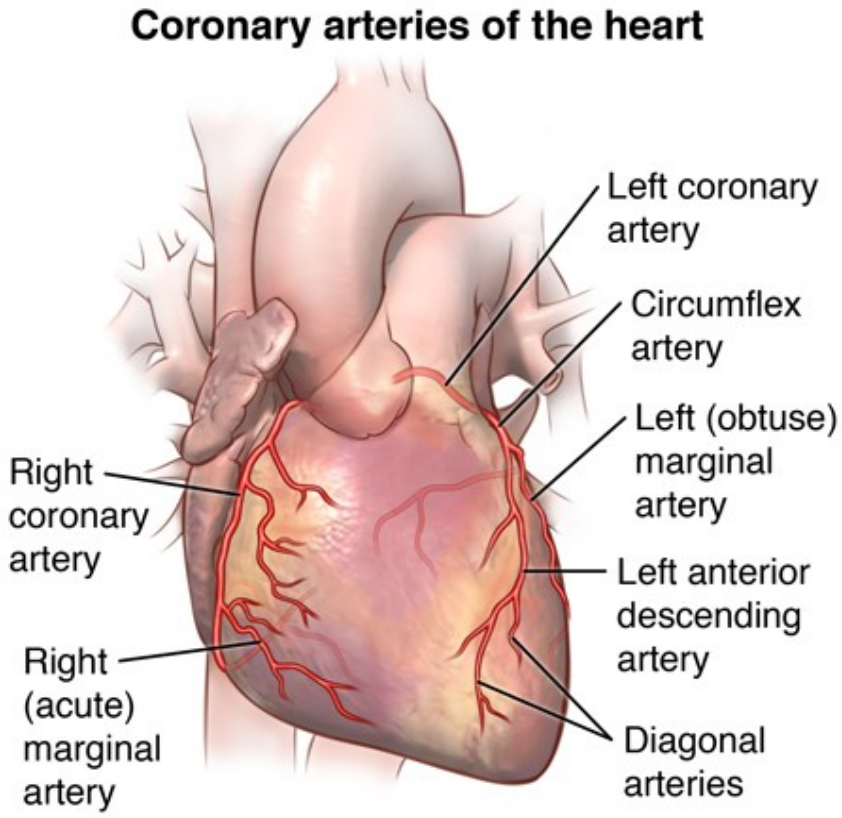
Circulatory System

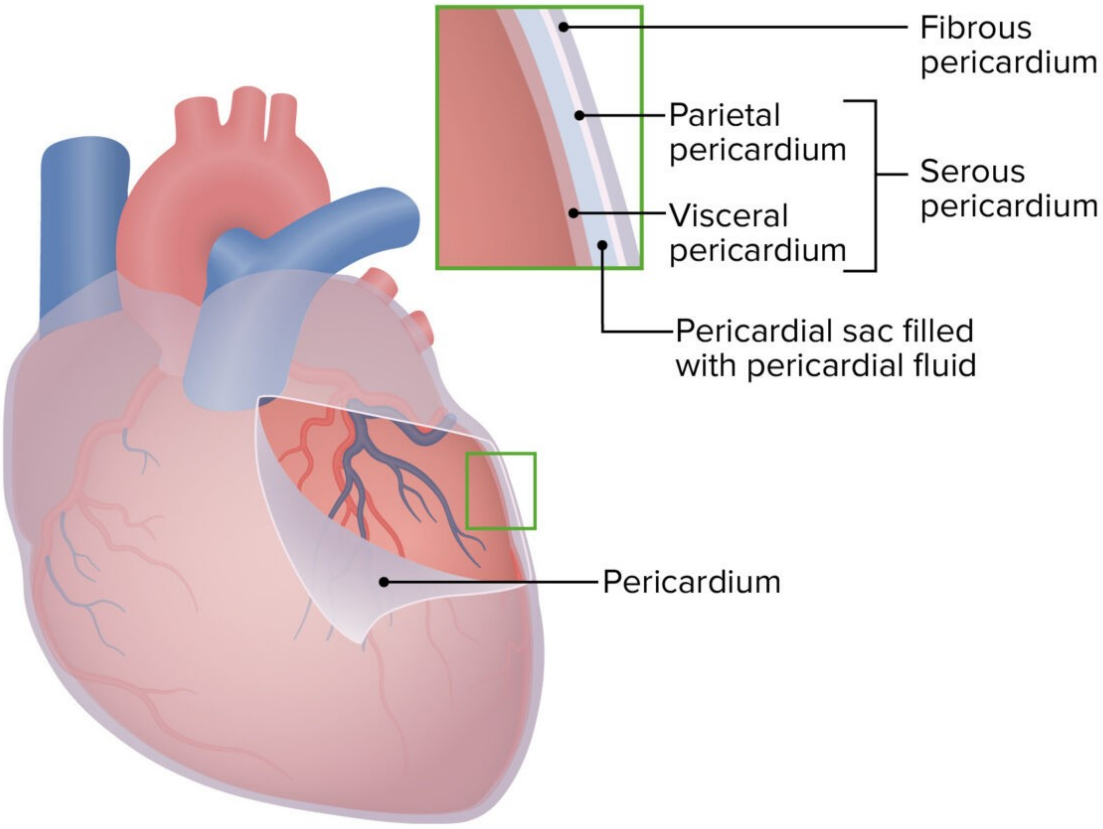




Lab. (4)

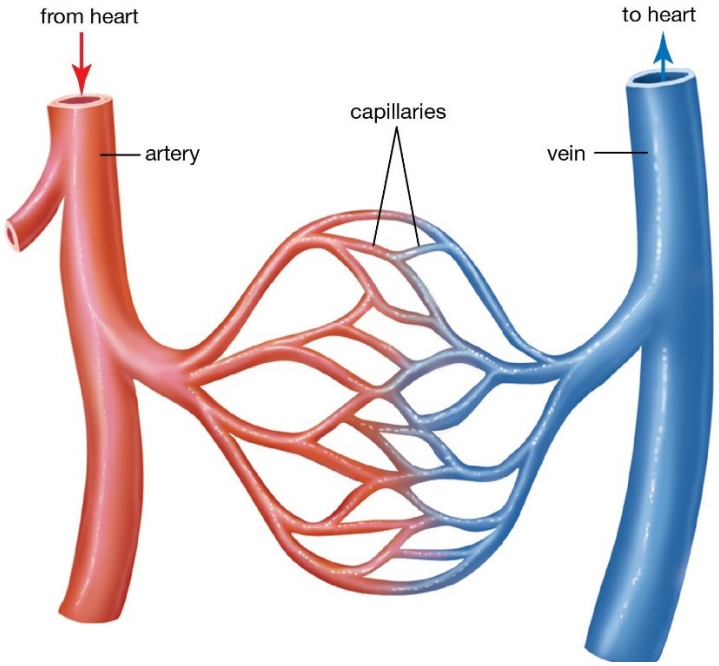
Circulatory System

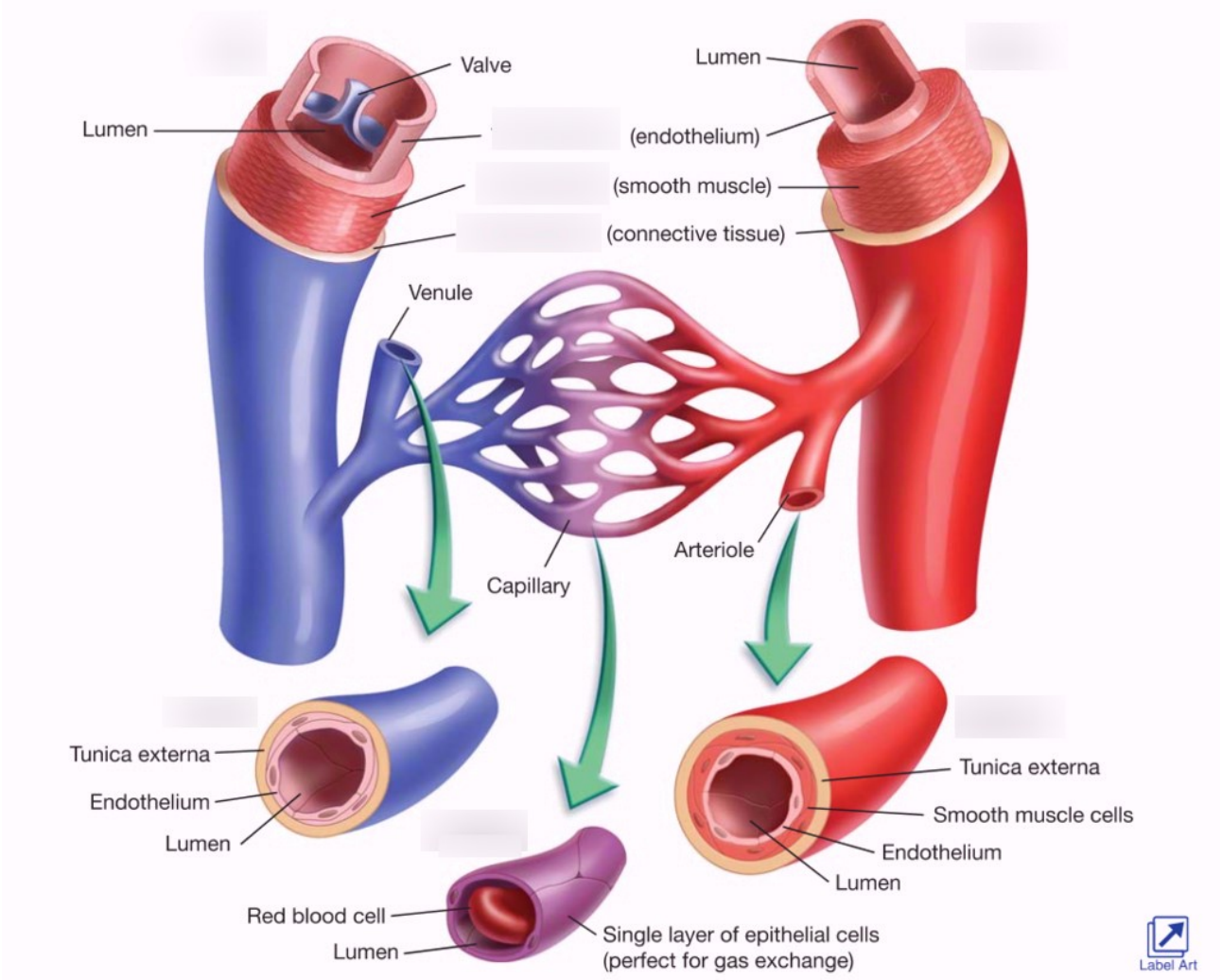




Lab. (4)

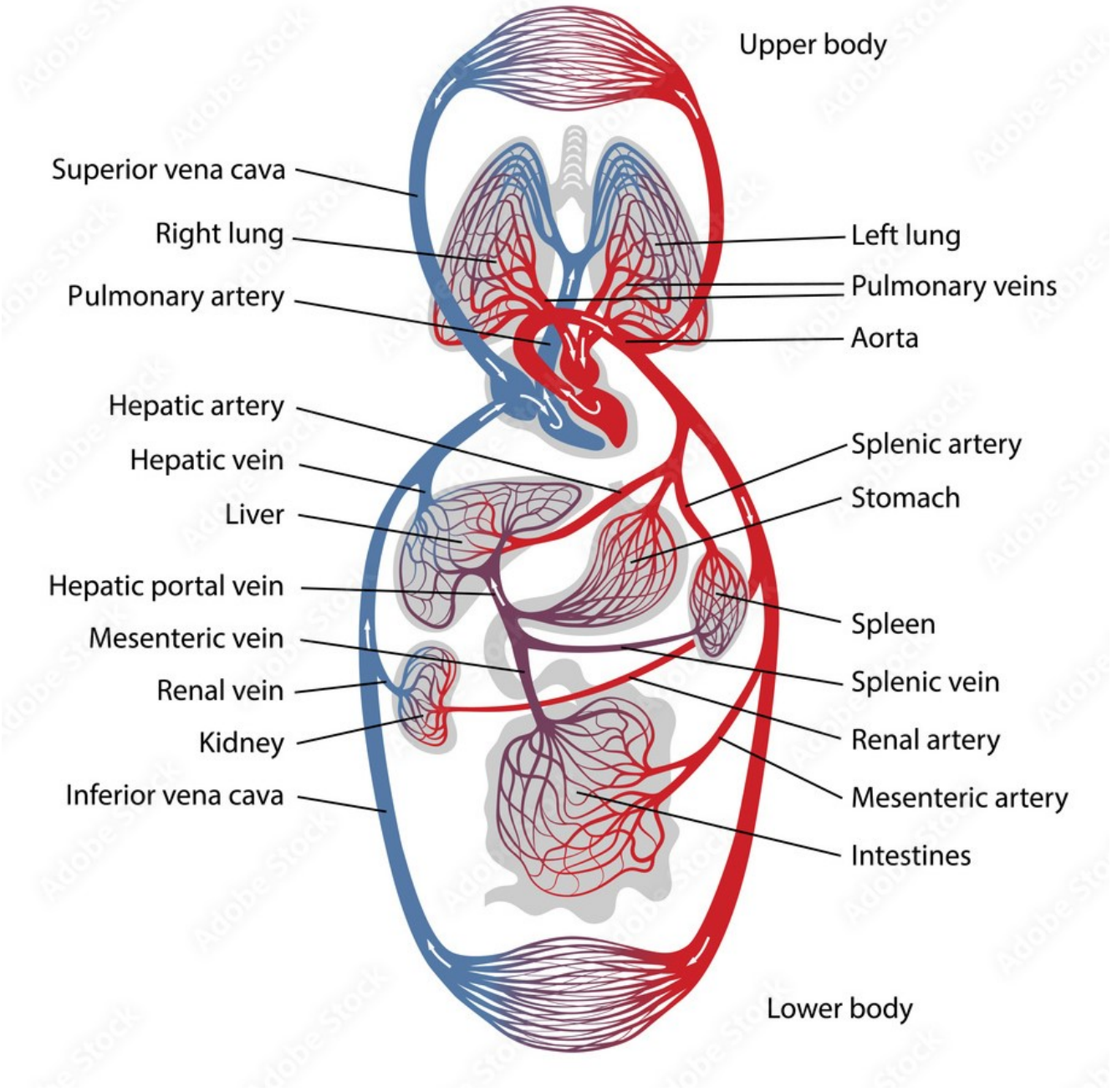
Circulatory System





Lab. (4)

Circulatory System



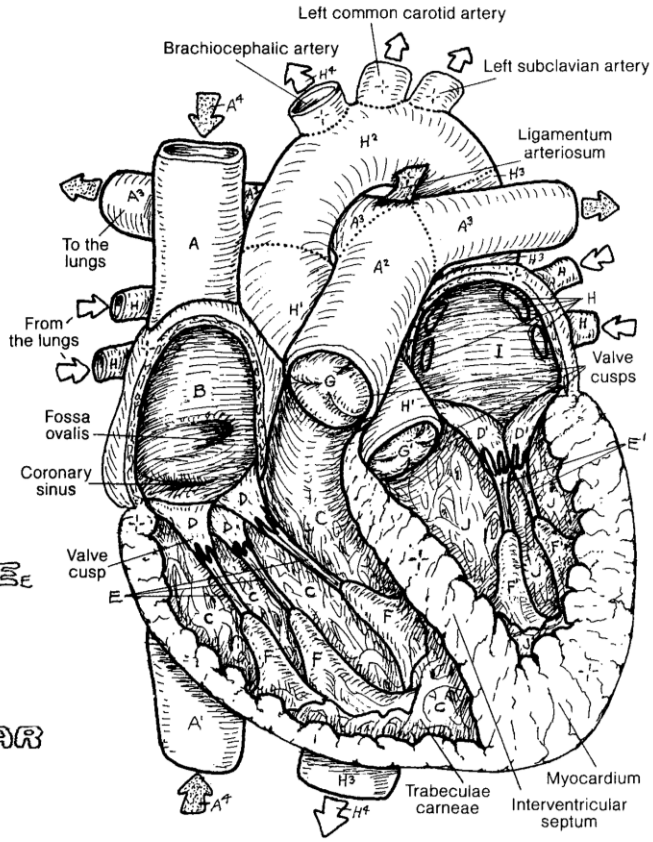
Lab. (4)

Circulatory System

Review the System by Colouring the structures

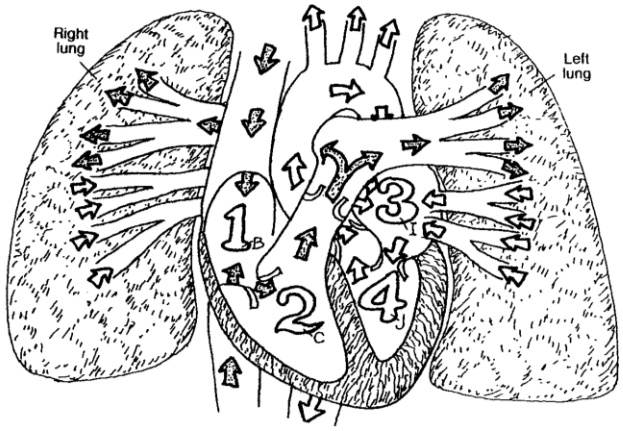
CN: Use blue for A–A^4; dotted arrows represent venous blood flow in both illustrations. Use red for H–H^4; clear arrows represent arterial blood flow in both illustrations. Use light colors for heart cavities B, C, I, and J. (1) Begin with arrows A^4 in the left side of upper drawing above and below the right atrium, B; color A and A^1 In the list of names. Color the structures in the order of the list, A–H^3. (2) Color the circulation chart below, beginning with the arrow A^4 leading into the right atrium (numeral 1). Color the numerals, and their related arrows, in order from 1 to 4. Do not color the chambers or the vessels in the drawing at lower right.

SUPERIOR VENA CAVA A
INFERIOR VENA CAVA A'
↓ A⁴
RIGHT ATRIUM B
↓
RIGHT VENTRICLE C
A-V TRICUSPID VALVE D
CHORDAE TENDINEAE E
PAPILLARY MUSCLE F
↓
PULMONARY TRUNK A²
PULMONARY SEMILUNAR VALVE G
PULMONARY ARTERY A³
↓ H⁴
PULMONARY VEIN H
LEFT ATRIUM I
↓
LEFT VENTRICLE J
A-V BICUSPID (MITRAL) VALVE D'
CHORDAE TENDINEAE E'
PAPILLARY MUSCLE F'
↓
ASCENDING AORTA H'
AORTIC SEMILUNAR VALVE G'
AORTIC ARCH H²
THORACIC AORTA H³



HEART CHAMBERS & GREAT VESSELS
(Anterior view)

OXYGENATED BLOOD ⇨ H⁴
DEOXYGENATED BLOOD ⇨ A⁴

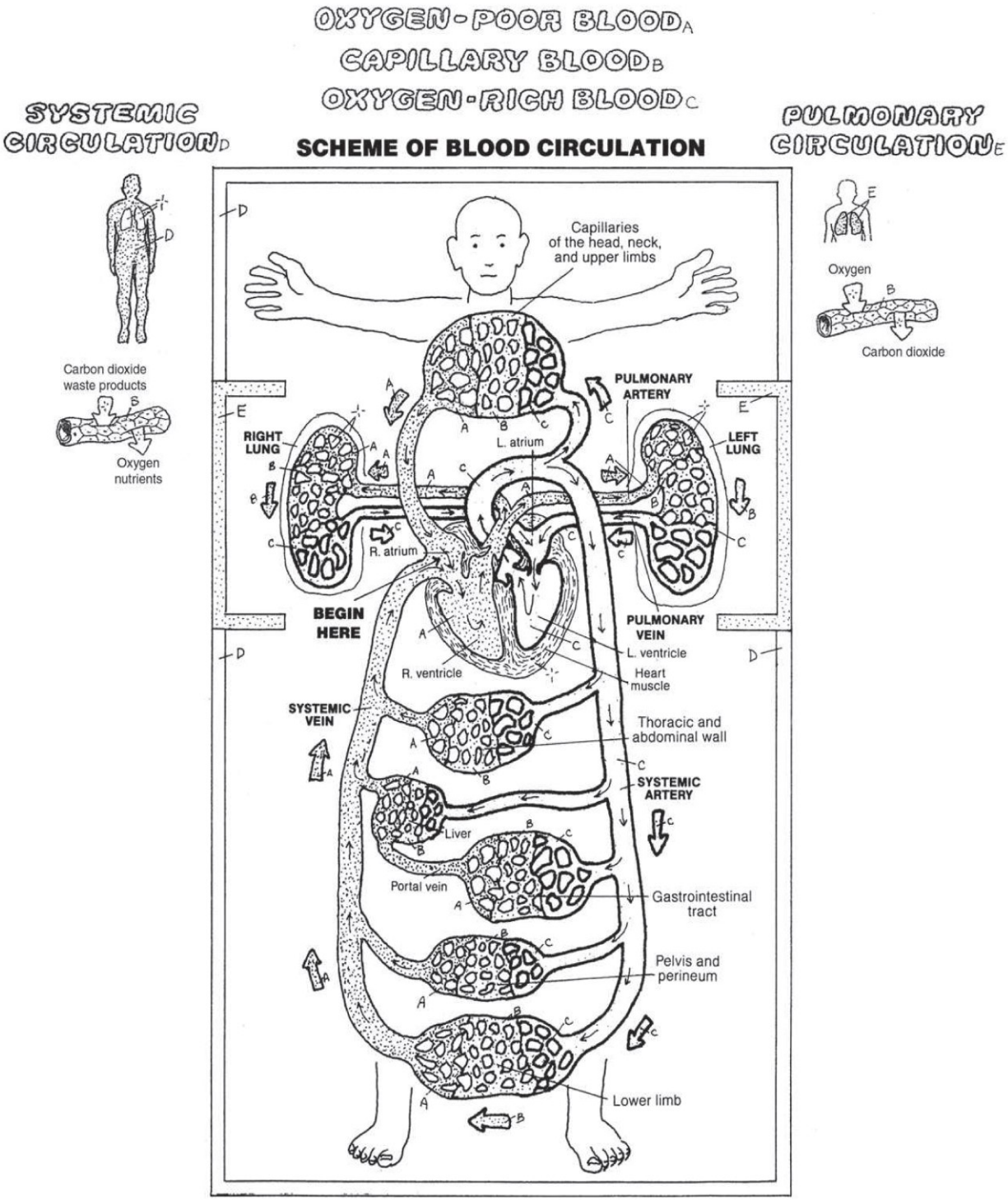


CIRCULATION THROUGH THE HEART
(Diagrammatic)

Lab. (4)

Circulatory System

CN: (1) Color the upper central terms A-C first; use blue for A, purple for B, and red for C. Use colors for D and E that do not distract from A, B, and C. (1) Color the terms "Systemic Circulation," D, and "Pulmonary Circulation," E, the two figures, and the two capillaries, B, purple. (2) Color the brackets (D, E) of the circulatory scheme. Begin in the right atrium of the heart (BEGIN HERE) and color the flow of oxygen-poor blood, A, into the lungs. The blood is oxygenated in the lungs, B to C. (3) The oxygenated blood, C, returns to the left side of the heart, and is pumped out into the systemic circulation to capillary networks throughout the body. Deoxygenated blood, A, is returned to the heart, to repeat the cycle.



University of Mosul
College of Nursing

Student Lab. Guide in

NURSING ANATOMY

Assistant Lecturer Abdulrahman Mazin Hashim

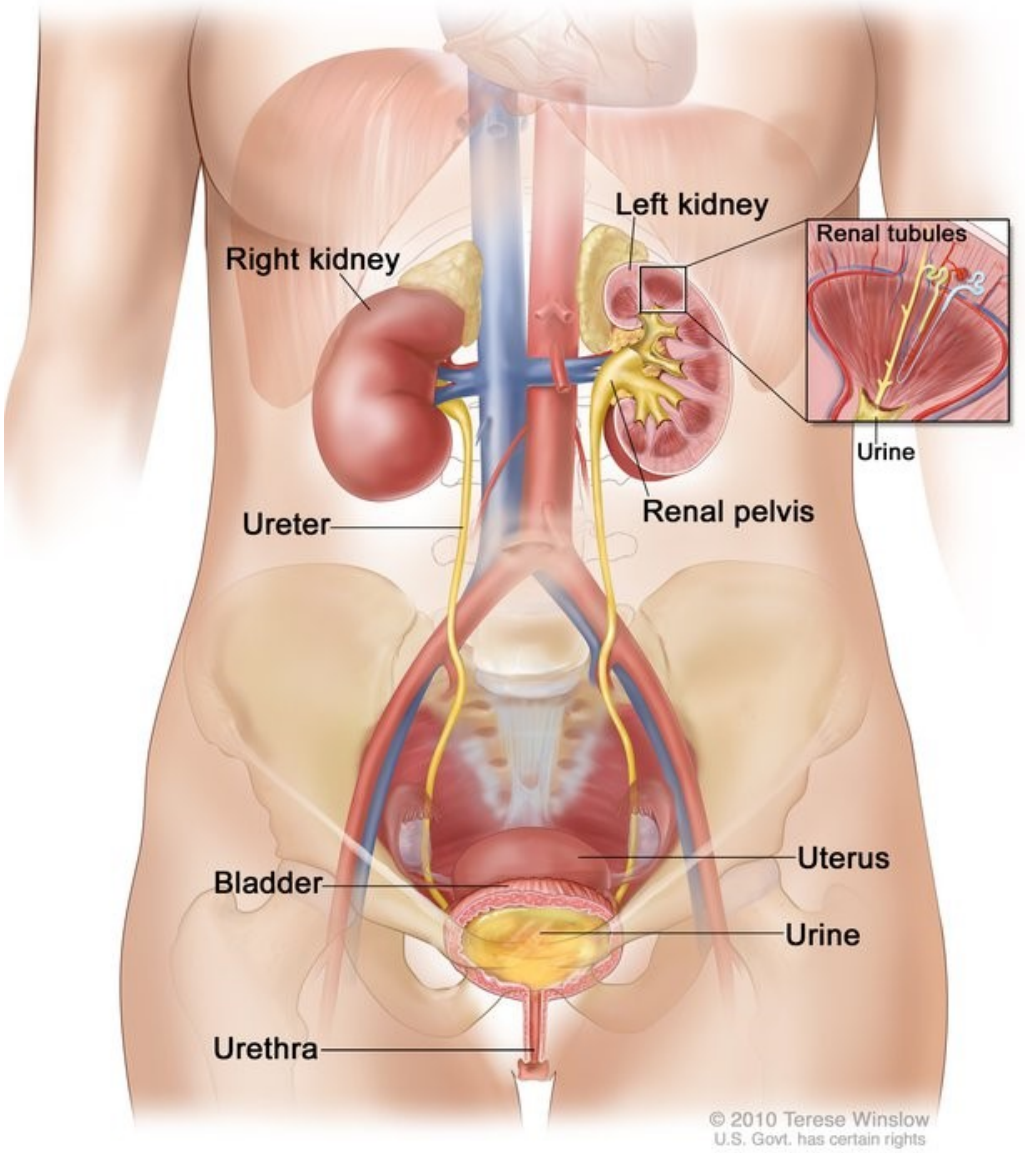
Lab. (5)

Urinary System

The Urinary System The urinary system's function is to filter blood and create urine as a waste by-product.

The urinary system consists of:

1. **The kidneys:** form the urine and account for the other functions attributed to the urinary system.
2. **Ureters:** carry the urine away from the kidneys to the urinary bladder.
3. **Urinary bladder:** which is a temporary reservoir for the urine.
4. **The urethra:** a tubular structure that carries the urine from the urinary bladder to the outside.

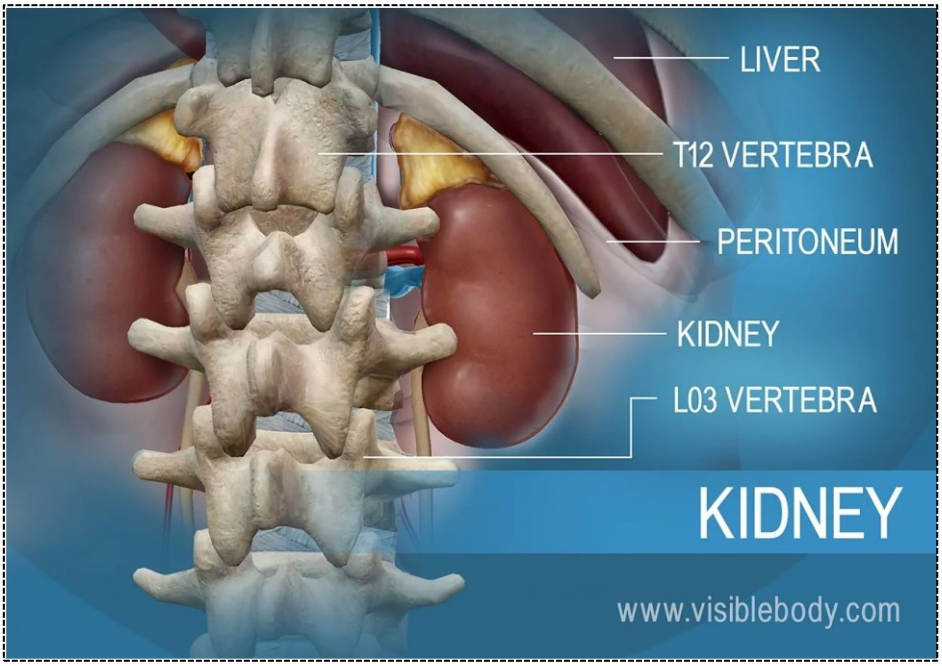


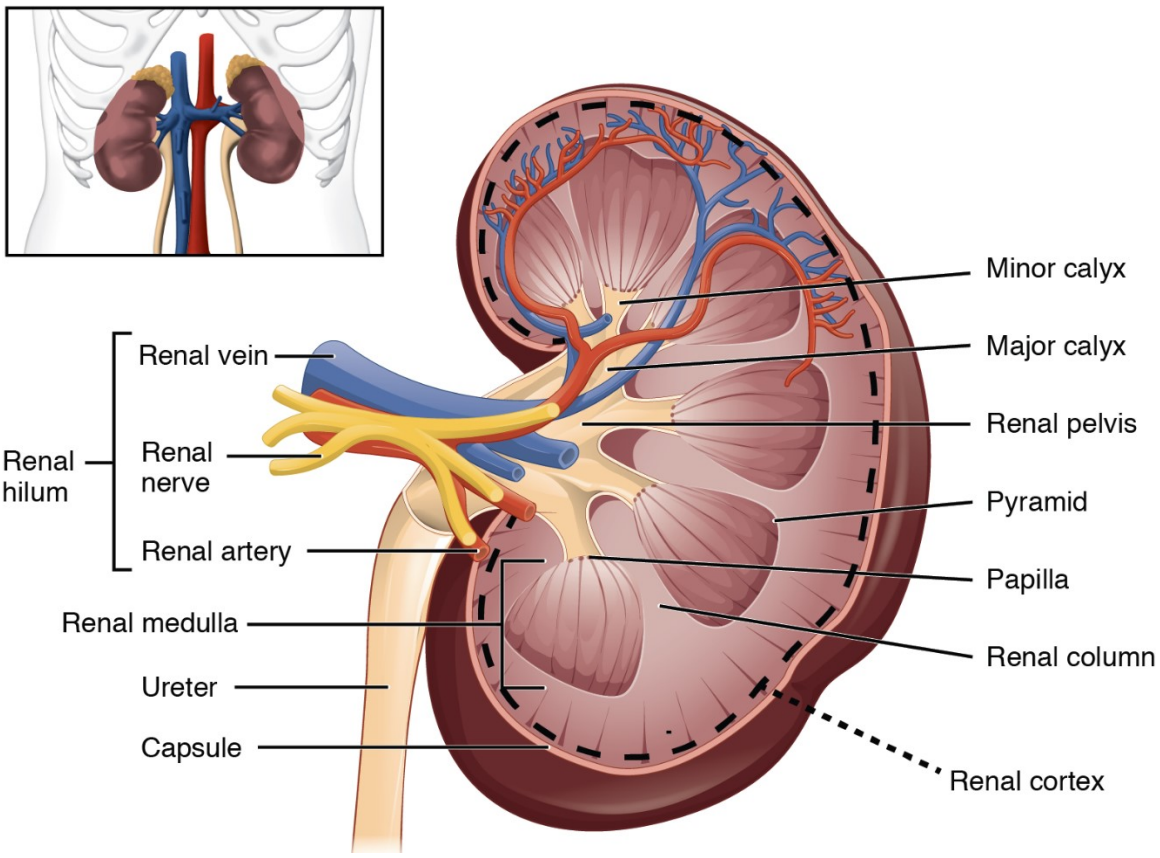
Lab. (5)

Urinary System

The kidneys

The kidneys are located behind the peritoneum, and so are called retroperitoneal organs. They sit in the back of the abdomen between the levels of the T12 and L03 vertebrae.





Lab. (5)

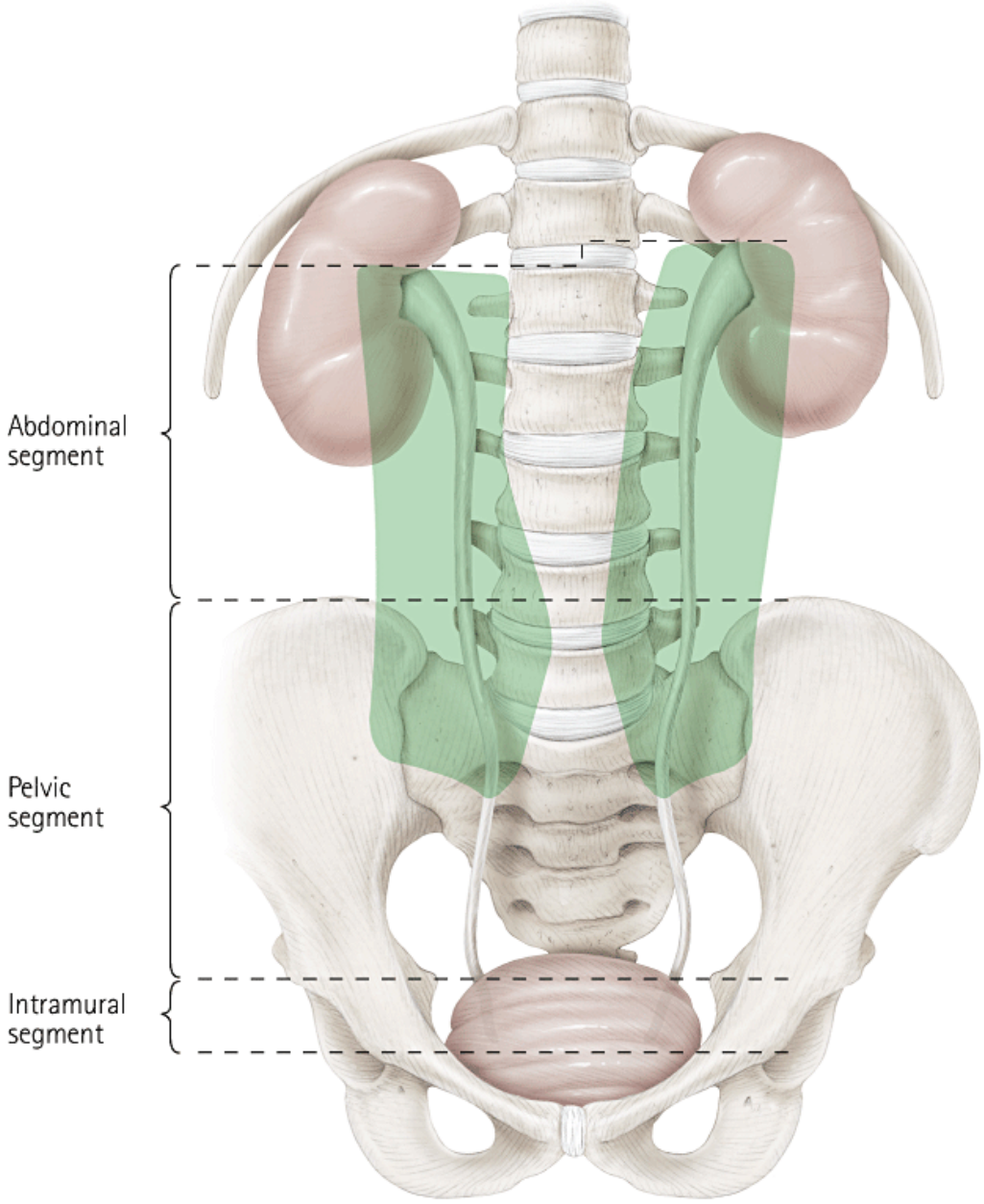
Urinary System

The Ureters

Each ureter is a small tube, about 25 -30 cm long, that carries urine from the renal pelvis to the urinary bladder. It descends from the renal pelvis, along the posterior abdominal wall, which is behind the parietal peritoneum, and enters the urinary bladder on the posterior inferior surface.

The Ureter has three parts:

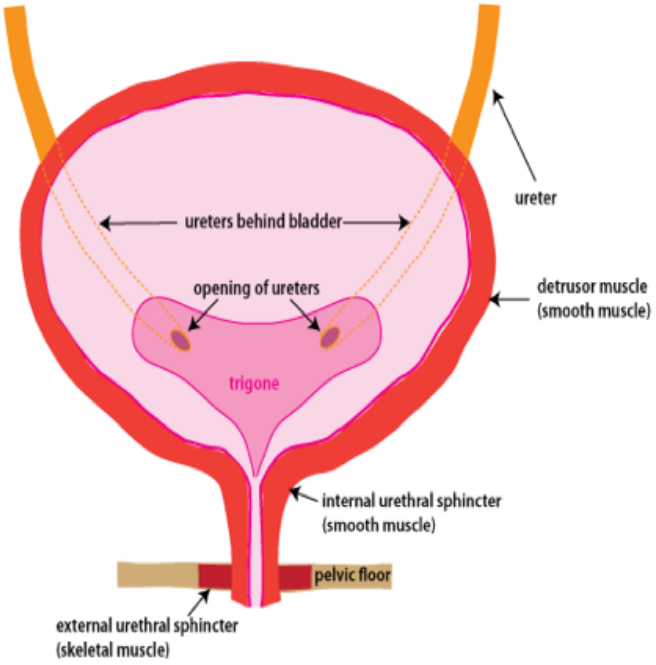
1. **Abdominal ureter:** from the renal pelvis to the pelvic brim.
2. **Pelvic ureter:** from the pelvic brim to the bladder.
3. **Intravesical or intramural ureter:** within the bladder wall.

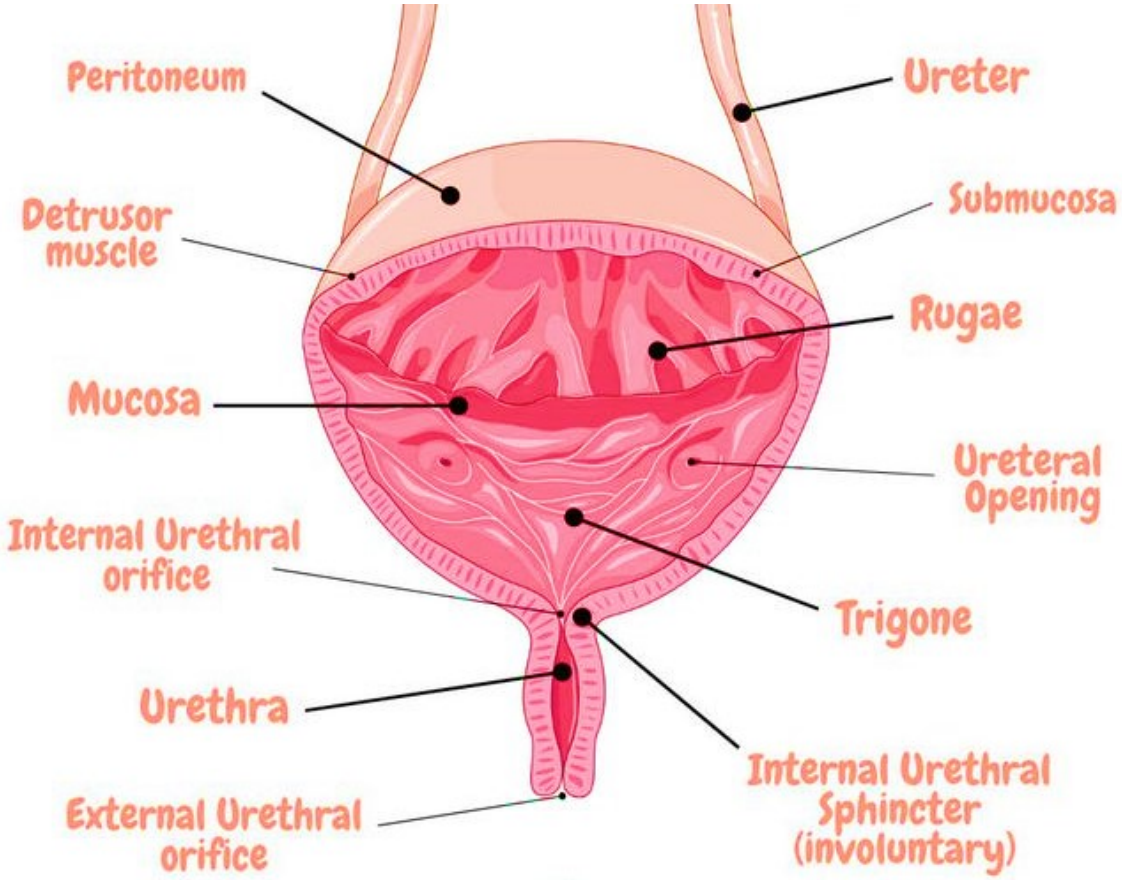


Lab. (5)

Urinary System

The urinary bladder is a temporary storage reservoir for urine. It is located in the pelvic cavity, posterior to the symphysis pubis, and below the parietal peritoneum.



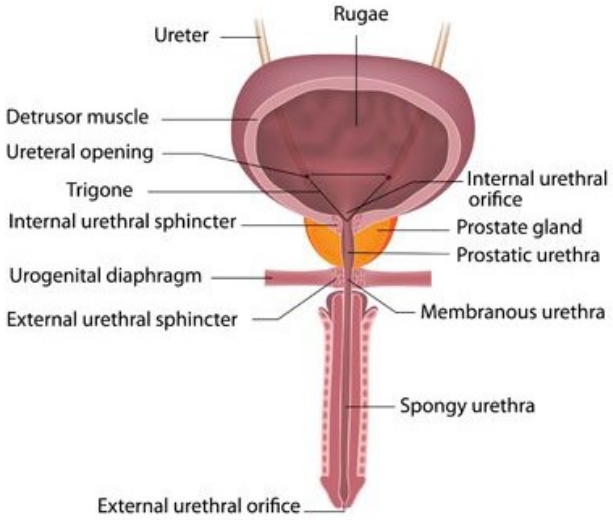


Lab. (5)

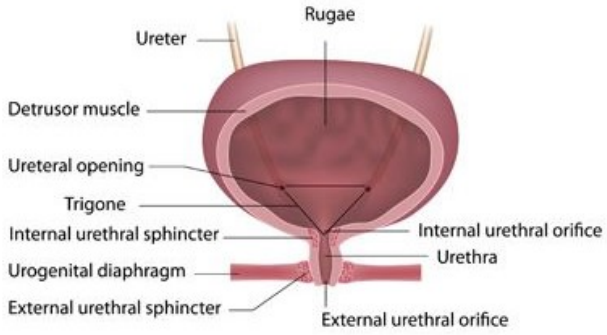
Urinary System

The urethra a final passageway for the flow of urine is the urethra, a thin-walled tube that conveys urine from the floor of the urinary bladder to the outside. The opening to the outside is the external urethral orifice.

Male

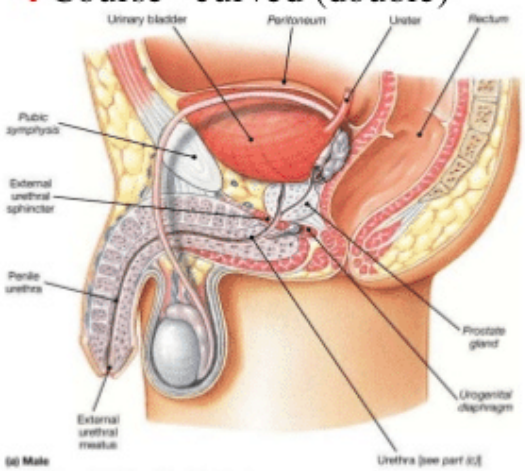


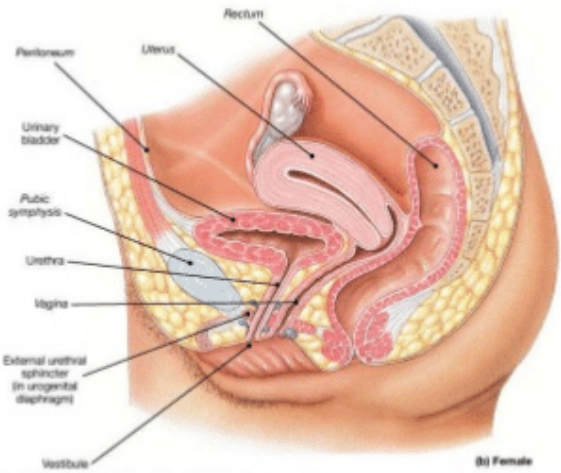
Female



difference

Male urethra	Female urethra
1 Long	1 Short,,
2 Length= 18- 20 cm	2 Length= 4 cm
3 Function—	3 Function—only urination
i) urination	4 Course– nearly straight
ii) ejaculation of semen	5 Foley cathetarisation is easy
4 Course– curved (double)	





Lab. (5)

Urinary System

Review the System by Colouring the structures

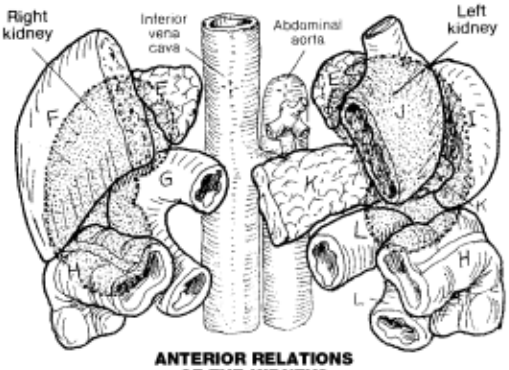
URINARY TRACT

KIDNEY A
URETER B
URINARY BLADDER C
URETHRA D
PROSTATIC U. (MALE) D'
MEMBRANOUS U. (MALE) D²
SPONGY U. (MALE) D³

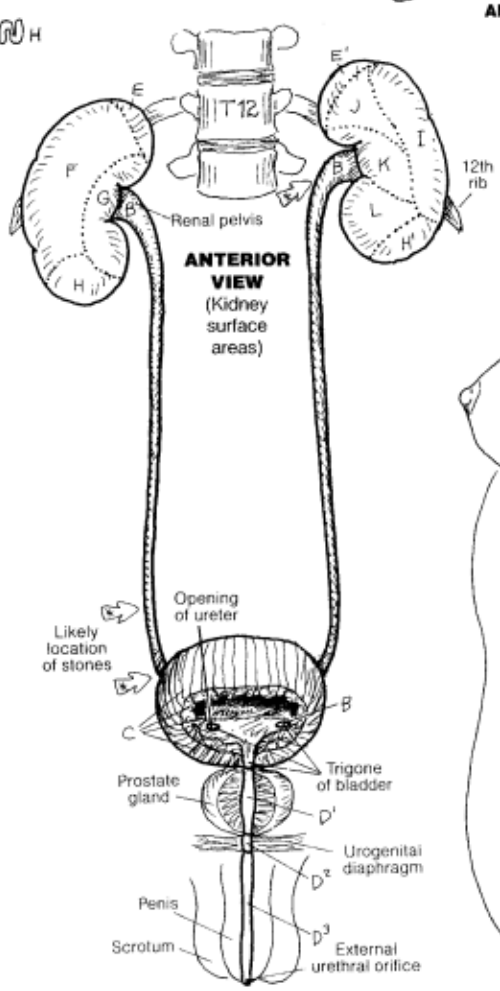
KIDNEY RELATIONS

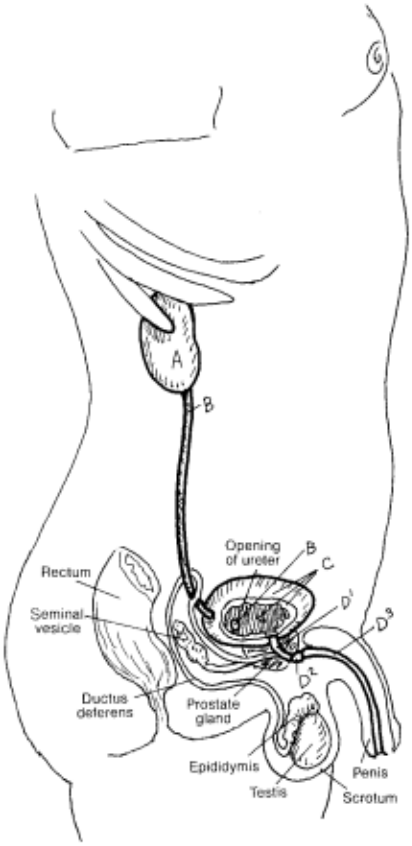
SUPRARENAL GLAND E
LIVER F
DUODENUM G
TRANSVERSE COLON H
SPLEEN I
STOMACH J
PANCREAS K
JEJUNUM L

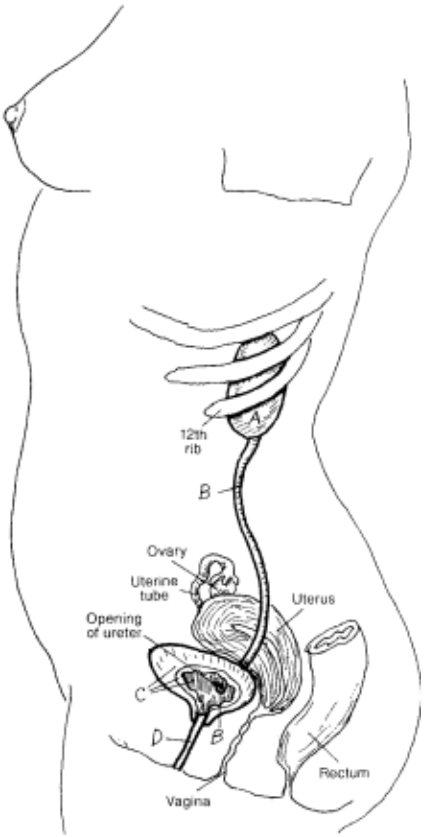
CN: Use very light colors on this page. (1) Color the three views of the urinary tract together. Color the kidneys in the anterior view in relation to the organ contact areas shown above. The kidneys in that upper view are shown as underlying, shaded silhouettes and receive no color. (2) Note and color the openings of the ureters, B, into the bladder in the anterior view. (3) Color gray the three arrows marking sites of potential ureteric obstruction by "stones."



ANTERIOR RELATIONS OF THE KIDNEYS







Lab. (5)

Urinary System

CN: Color this and the next page together. Use red for J, blue for K, yellow for P, and very light colors for B, F, G, H, and I. (1) Begin with the kidneys in situ. (2) In the kidney illustratio thickness of the renal capsule is exaggerated for coloring. Color the cut edges of bloo K^1, in renal cortex, B. Color the amounts and arrows of blood and urine flow, as well a row, E, pointing to the renal hilum. (3) Color the cross section of the ureter at lower left.

KIDNEY STRUCTURE

KIDNEY A
- RENAL CAPSULE A'

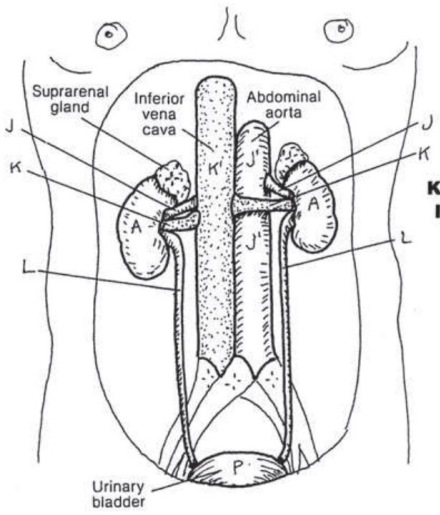
RENAL CORTEX B

RENAL MEDULLA (PYRAMID) C
- RENAL PAPILLA D

RENAL HILUM E
- MINOR CALYX F
- MAJOR CALYX G
- RENAL PELVIS H
- RENAL SINUS I

RENAL ARTERY J
- OXYGEN-RICH BLOOD J'

RENAL VEIN K
- OXYGEN-POOR BLOOD K'



URETER STRUCTURE

URETER L

MUCOSA
- TRANSITIONAL EPITHELIA M
- LAMINA PROPIA N

MUSCULARIS
- INNER LONGITUDINAL O
- MIDDLE CIRCULAR O'
- OUTER LONGITUDINAL O^2

COVERING
- SEROSA L'

URINE P

1300 mL/min J' (Into both kidneys)

1299 mL/min K' (Out of both kidneys)