Name:_____ Period: _____

Cat Dissection

Safety Protocols

- Wear safety goggles, the fluid used to preserve cats is toxic and can injure the eyes.
- Always clean your station and store cats in marked containers
- Wash hands, even if you did wear gloves.

Gloves are expensive! Do not wear unless you plan on touching the cat

1. Remove your cat from the blue container marked with your hour.

2. Cut open one end of the bag and drain the excess fluid. – Save the bag, you will store your cats in it.

3. Take this time to label the bag with a permanent marker. Place at least ONE name from your group on the bag. This will ensure your cat will be reunited with your group should it become lost.

4. Cover a tray with paper towels and place the cat on the tray. This will make clean up easier

5. You are now ready to begin trying to locate and identifying the structures. Read instructions carefully, do not remove structures unless you are told to do so.

   Use the colored pins to mark structures as you find them Your group will be checked periodically.

6. When there are about 7-8 minutes left in the period, you should begin cleaning up and putting your cats away. Put a rubber band around the end of the bag (we don't want to "let the cat out of the bag") and put the cats back in your hour's blue container.

7. CLEAN everything. Wipe off dissecting trays and countertops, put equipment back where you got it.

8. If you miss any days, plan to make up in the morning. The lab will be open in the morning at 7:30 am.

9. Assessment for the cat dissection includes:

- Completion of the lab guide 15 pts (based on thoroughness, accuracy)
- Attendance and make-up (in the morning) 10-16 pts (x2 based on days present/makeup)
- Uploaded photos with labels
- Final Lab Test 30-40 pts

Resources for Cat Dissection

Cat Internal Anatomy Dissection
Cat Dissection Photos

Muscles of the Cat

When you remove your cat from the bag, note that the skin has been removed and the superficial muscles are exposed. Your job will be to use the manuals provided to locate each of the muscles listed below. Check the box when you have located and pinned each of the structures.

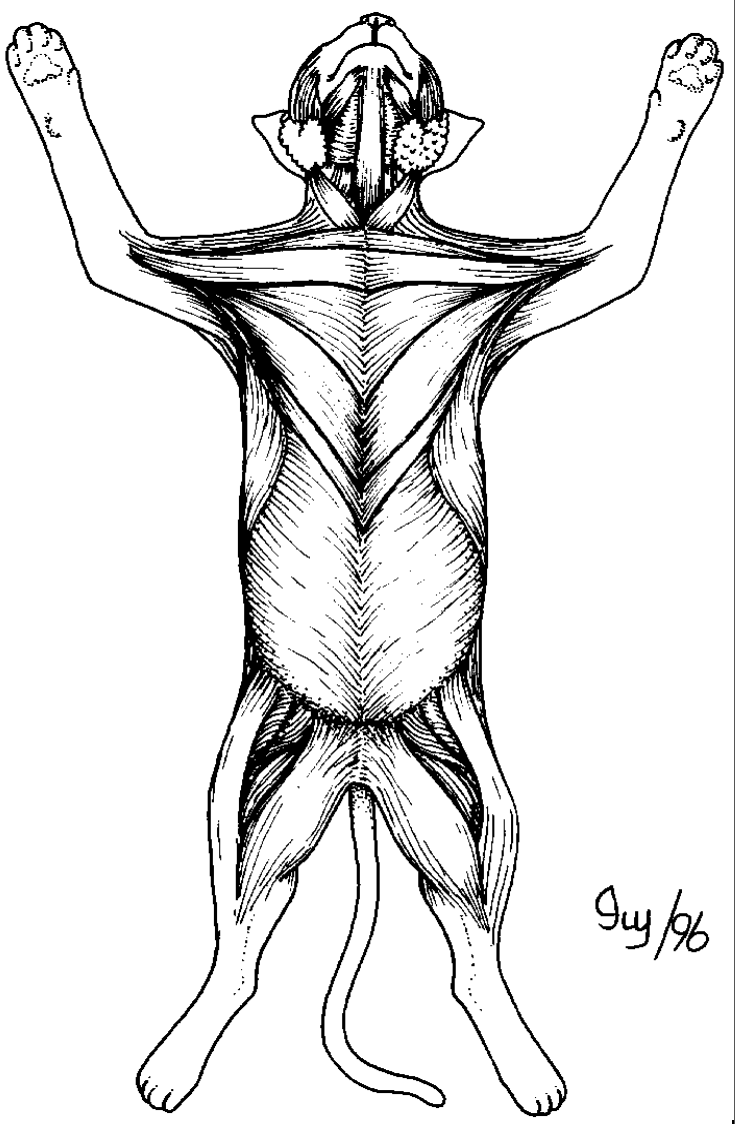
Ventral Muscles

1. Sartorius ❑
2. Gracilis ❑
3. External Oblique ❑
4. Latissimus Dorsi (can be seen partially) ❑
5. Xiphihumeralis ❑
6. Pectoralis minor ❑
7. Pectoralis major ❑
8. Pectoantebrachialis ❑
9. Sternomastoid ❑
10. Clavobrachialis ❑

See page 18 (chest and abdomen) and page 32 (legs)

→ Label the muscles on the cat diagram:

📷 Upload a photo of your cat with the ventral muscles labeled.



Dorsal Muscles

1. Clavotrapezius ❑
2. Acromiotrapezius ❑
3. Spinotrapezius ❑
4. Latissimus Dorsi ❑
5. External Oblique (partial) ❑

Arm Muscles -

6. Triceps Brachii (long head)❑
7. Triceps Brachii (lateral head)❑
8. Levator Scapula (a) ❑
9. Spinodeltoid (b) ❑
10. Brachioradialis (c) ❑

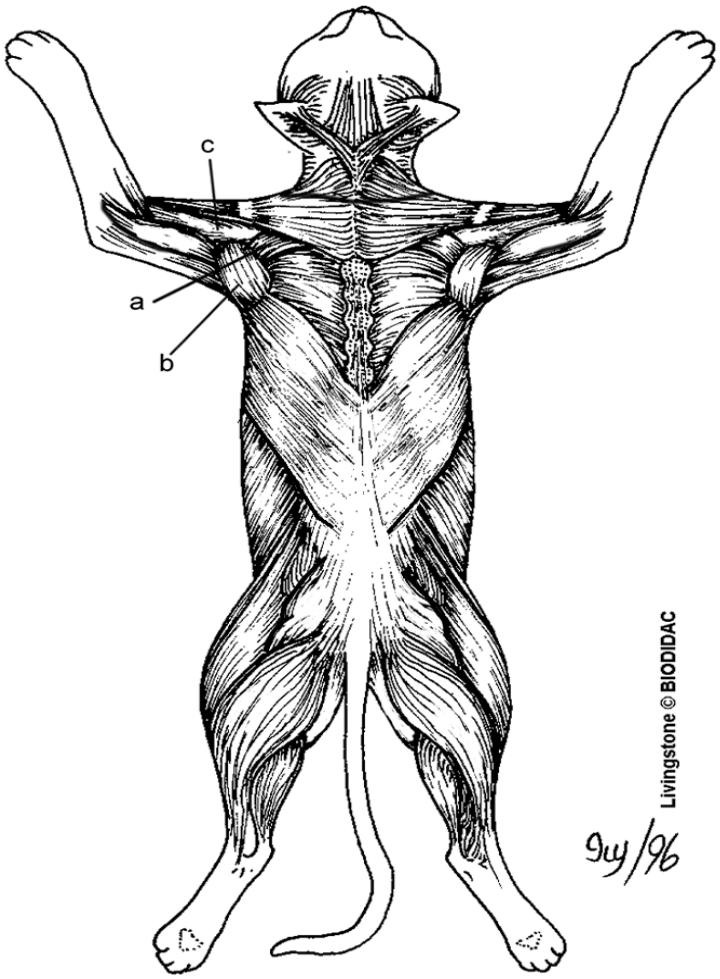
Leg Muscles

11. Sartorius❑
12. Biceps Femoris ❑
13. Gastrocnemius ❑
14. Semitendinosus ❑

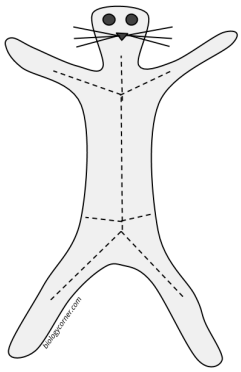
15. Achilles tendon ❑

→ Label the muscles on the cat diagram:

📷Upload a photo of your cat with the dorsal muscles labeled.



Investigation: Blood Vessels above the Diaphragm



Double-injected cats are usually used to identify blood vessels. Arteries are injected with red latex, and veins are injected with blue latex. Blood vessels differ slightly in location from cat to cat. **Carefully remove the fascia with blunt instruments to separate blood vessels from other structures**.

❑ 1. Place your cat in a dissecting tray with the ventral surface facing upward. Use a scalpel to make a **Y incision** in the thoracic cavity, then continue to the abdominal cavity as shown in the diagram. You may need to use pins to hold the skin open for viewing.

❑ 2. Identify the following major organs: heart, trachea, lungs, diaphragm, stomach, spleen, liver, small intestine, and large intestine. Use a lab manual to assist you in locating these structures. You do not need to pin them at this point and take care that you do not damage or remove them until you are instructed to (later in the lab.)

❑ 3. Using your scissors, cut open the pericardial sac surrounding the **heart** to expose the heart and the attached vessels. Identify the **atria** and **ventricle** of the heart.

❑ 4. Refer to your lab manual to identify the following arteries that are located above the diaphragm. Use colored pins to mark the locations as you find them.

❑ 5. Identify the **pulmonary trunk** exiting from the right ventricle. Locate its branches, the right pulmonary artery and the left pulmonary artery, and follow them to the lungs. Pin this structure.

❑ 6. Identify the **ascending aorta** as it exits the left ventricle, follow it to the **aortic arch** and trace its path into the abdominal cavity where it is referred to as the **abdominal aort**a.

❑ 7. In cats, there are only two branches off the aortic arch, the **brachiocephalic artery** (first branch) and the left **subclavian artery**. Locate and pin those structures.

❑ 8. The **brachiocephalic artery** divides into the **right subclavian artery**, the **right common carotid**, and the **left common carotid**. Locate and pin these structures.

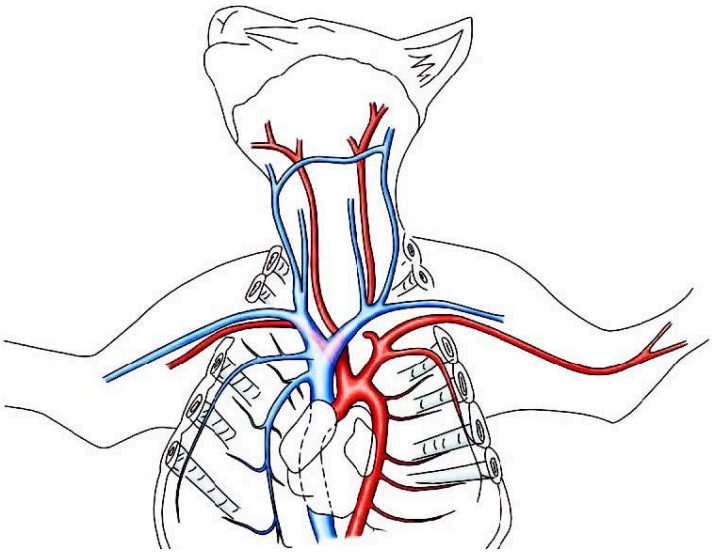
❑ 9. The **superior vena cava** can be seen on the top surface of the heart near the aorta.

❑ 10. Lift the heart aside to look behind it and find the **inferior vena cava**. Both of these veins return blood to the heart. Pin both the superior and inferior vena cava.

❑ 11. The superior vena cava splits into the **left and right brachiocephalic veins**. Pin both.

❑ 12. The **jugular veins** will join the brachiocephalic veins and drain blood from the head region. Pin the external jugular vein.

📷 Upload a photo of your cat with the vessels labeled.



Color code the image (red for arteries. blue for veins, and **label each of the vessels**.

Investigation: Vessels below the Diaphragm

Note: many of these vessels will be found by locating the organ they are attached to. Do not remove organs, instead, gently push them aside and tease away tissue that might be obscuring your view.

☐1. Lift the heart and follow the aorta until it goes through the diaphragm and becomes the **abdominal aorta**. All vessels you will locate will be directly attached to it, it is the largest artery in the body.

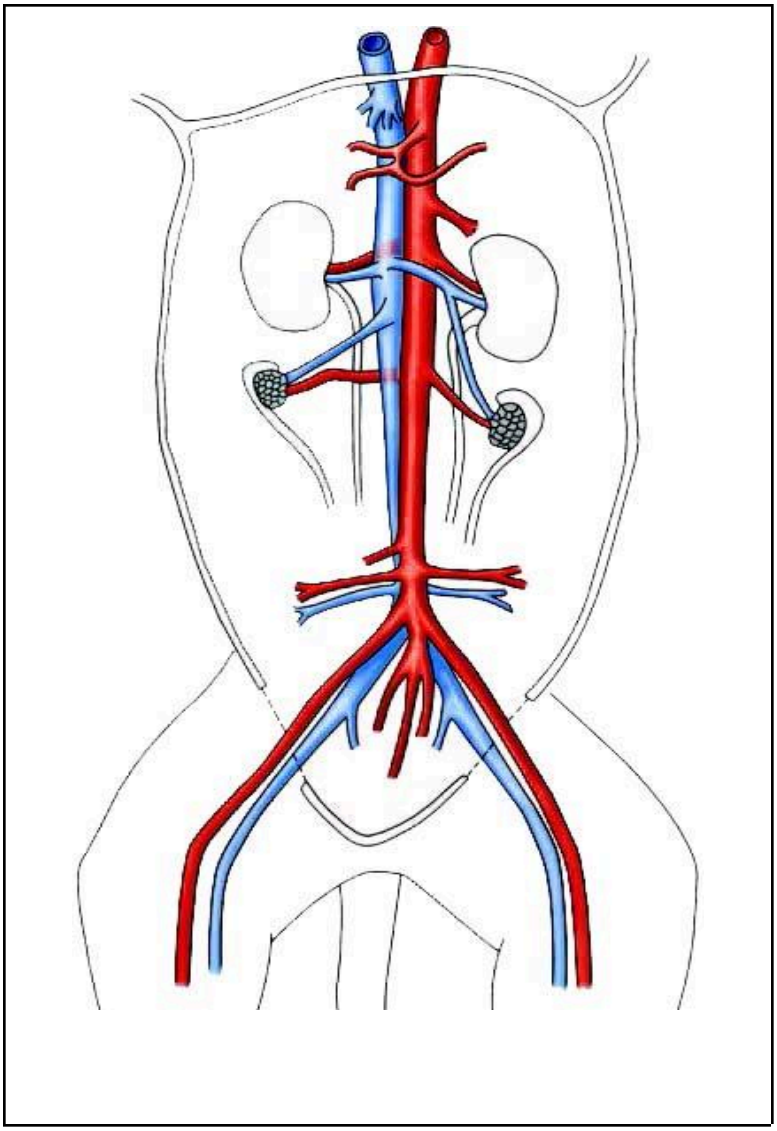
☐2. The **inferior vena cava** runs parallels to the abdominal aorta. Pin the inferior vena cava and the aorta.

☐3. The first branch (below the diaphragm) is the **celiac trunk**. This small artery then splits into three smaller branches: the hepatic artery which goes to the liver, the gastric artery that goes to the stomach, and the splenic artery that goes to the spleen. Pin the celiac artery and find its branches.

☐4. Just below the celiac trunk is the **superior mesenteric artery** which supplies blood to the mesentery of the small intestine. This artery is small and easily broken if you are too rough with the intestines. Pin it.

☐5. Tracing the aorta downward, you will find the **renal arteries** which are attached to the kidneys. The veins are near them and distinguished by a blue color. Pin the renal arteries/veins.

☐6. You may also be able to locate the **gonadal arteries** near the renal arteries. They supply the testes in males and the ovaries in females.



☐7. Farther down the aorta, you can find the **inferior mesenteric artery**. It is also small and fragile and may broken due to moving the intestines around. Place a pin in it.

☐8. Continue to trace the aorta toward the legs. It will split and form a Y, with the **left external iliac** going to the left leg and the **right external iliac** going toward the right leg. The **internal iliac artery** will go straight toward the tail. Pin each of these arteries.

☐9. In this area, you will also see the **external iliac veins**, it will run parallel to the external iliac artery. Pin one.

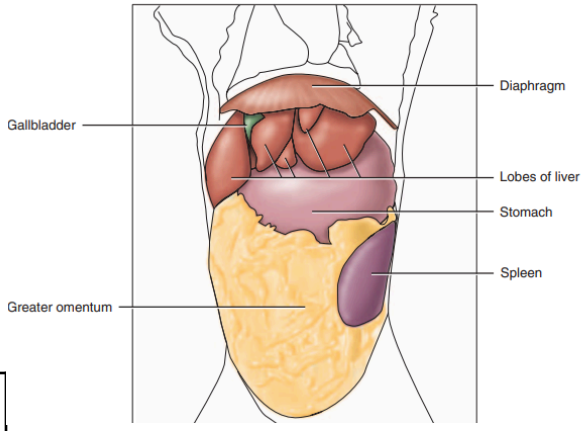
☐10. Trace the external iliac artery into the leg where it will become the **femoral artery**. Next to it will be the **femoral vein**. Pin both.

☐11. **Color code the diagram** (the aorta is the large vessel on the right) with red for artery and blue for vein. **Label each of the bold structures you found above**.

Upload a photo of your cat with the vessels labeled.

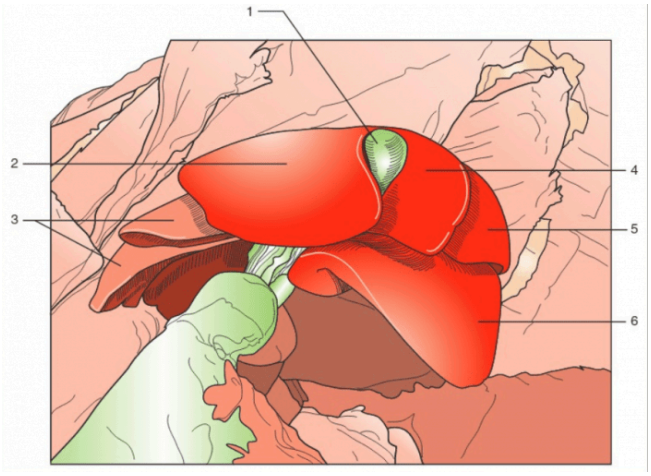
Investigation: Gross Anatomy of the Cat

In this investigation you will explore the abdominal and thoracic cavity of the cat. A careful dissection will reveal structures we have learned in class. Follow the directions step-by-step and answer or sketch where asked. Return any organs you remove to the cat, you need them for the final lab test.



☐ 1. A curtain of fat lies over most of the organs of the abdominal cavity, this is called the **greater omentum**. It can be removed so that organs are visible. Describe this structure.

☐ 2. The liver is the largest organ in the abdominal cavity, and it is divided into lobes. Identify each lobe by number and locate it on the cat. The gallbladder is located between the right medial lobe and the quadrate lobe.



____ Right medial lobe

____ Right lateral lobe

____ Left medial lobe

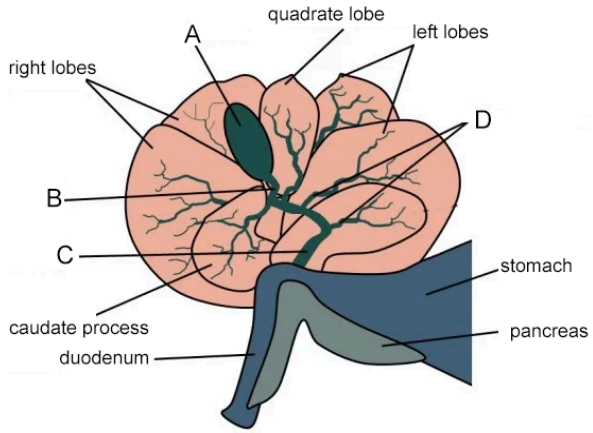
____ Left lateral lobe

____ Quadrate lobe

____ Gallbladder

* 📷 Pin each lobe of the cat and upload identifications.

☐ 3. Push the liver upward to locate the **gallbladder** that lies underneath. The cystic duct leads out from the gallbladder and branches toward the liver with hepatic ducts. Both empty into the **common bile duct**, which connects to the **duodenum** of the small intestine. Identify each by letter on the diagram



____ Gallbladder

____ Hepatic duct

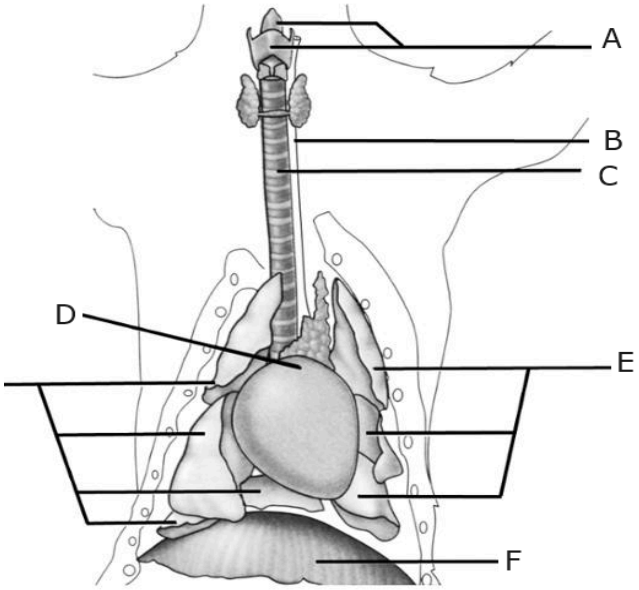
____ Cystic duct

____ Common bile duct

☐ 4. Locate the **diaphragm** which lies above the liver and separates the abdominal cavity from the thoracic cavity. Locate the **lungs**, which are located on either side of the **heart** in the thoracic cavity.

☐ 5. The lungs connect to the **trachea** , or the airway. It has cartilage rings that give it a ridged appearance and keep it from collapsing. Locate the trachea and follow it toward the mouth. You will eventually find a widened muscular area, the **larynx**, which is the cat's voice box (or "meow box"). What do you think will happen to the lungs if air is blown into the trachea? (Your instructor may demonstrate this for you.)

☐ 6. Just to the side (or slightly behind) the trachea, you will find the **esophagus**. It is softer tissue and is the tube that connects the mouth to the stomach. (Wiggling the stomach may help you find the esophagus.)



Identify each letter on the diagram and locate each structure on the cat.

A. _____

B. _____

C. _____

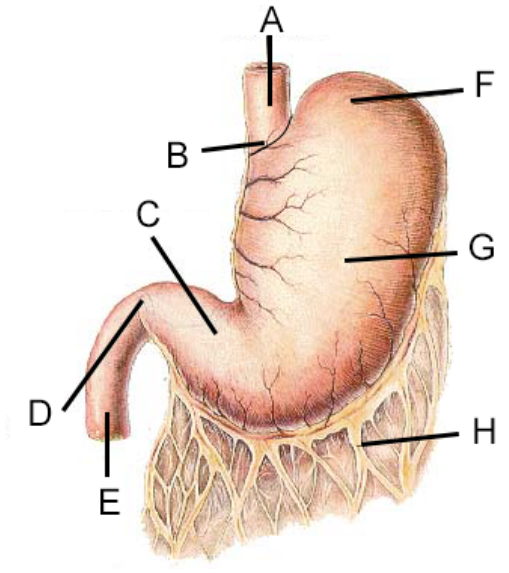
D. _____

E. _____

F. _____

* Pin each lobe of the structures and upload identifications.

☐ 7. Locate the point at which the **esophagus** pierces the diaphragm (the **hiatus**) and trace the esophagus to the **stomach**. Remove the stomach by cutting it from the esophagus and from the small intestine. Lay it flat to identify the structures and take a photo for upload.



____ The **cardiac sphincter** valve is located between the stomach and the esophagus.

____ The upper part of the stomach is the **fundus**.
____ The middle area of the stomach is the **body**.
____ The lower area of the stomach is the **pylorus**.

____ In pyloric sphincter valve is located at the bottom of the stomach.

____ The first section of the small intestine is the **duodenum**.

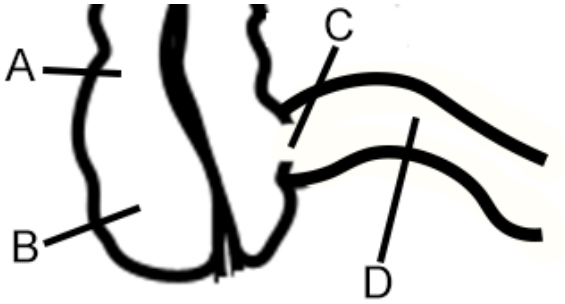
____ The **omentum** is the fat hanging from the stomach.

Pin each structure and upload photo.

☐ 8. Push the stomach aside to locate a bumpy structure underneath it, the **pancreas**. You can also find the **spleen** laying over the top of the stomach in this area. Compare the appearance of the spleen to the pancreas.

☐ 9. Locate the duodenum of the **small intestine**, it will be a straight section of just after the stomach. Locate the **jejunum** and the **ileum** and note where the ileum joins the large intestine at the **ileocecal valve**.

You should also be able to find the **cecum** in this area as a pouch attached to the large intestine. Unlike humans, cats do not have an appendix.



Identify each of the structures on the diagram:

A. _____

B. _____

C. _____

D. _____

Pin each structure and upload photo.

☐ 10. Examine the large intestine closely. In cats, the **ascending, transverse, and descending colon** are present, but much shorter than what is seen in humans. Avoid cutting the **rectum** of the cat, this will likely contain feces. Sketch and label these structures:

☐ 11. Stretch the jejunum out so that the membrane holding it together is visible. The **mesentery** should have small vessels visible within it, these mesenteric vessels connect to the **superior and inferior mesenteric arteries**.

☐ 12. Compare the **mesentery** to the **omentum**. Imagine you are describing these two membranes to a person not familiar with the cat; how would you explain how they are different?

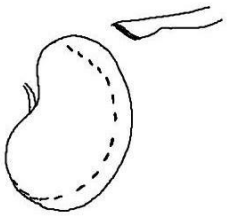
☐ 13. At this point, you can remove the small intestine, cutting it at the duodenum and the ileocecal valve. Cut the mesentery so that it can be measured. What is the length of the small intestine? _____ cm

What is the length of the large intestine (does not need to be removed) _____ cm

☐ 14. Trace the **ureters** from each **kidney**. Wiggling the kidneys will help you locate this tube.

Do ureters enter the bladder at the same spot? _____ Remove the bladder and fill with water. Is it waterproof? _____

☐15. Describe the location of the kidneys. Kidneys are said to sit “retroperitoneally”, which means they lay beneath a layer of peritoneum.



Remove one of the kidneys by cutting the ureter and renal vessels.

Make a longitudinal cut in the kidney and view the **cortex** and **medulla**.

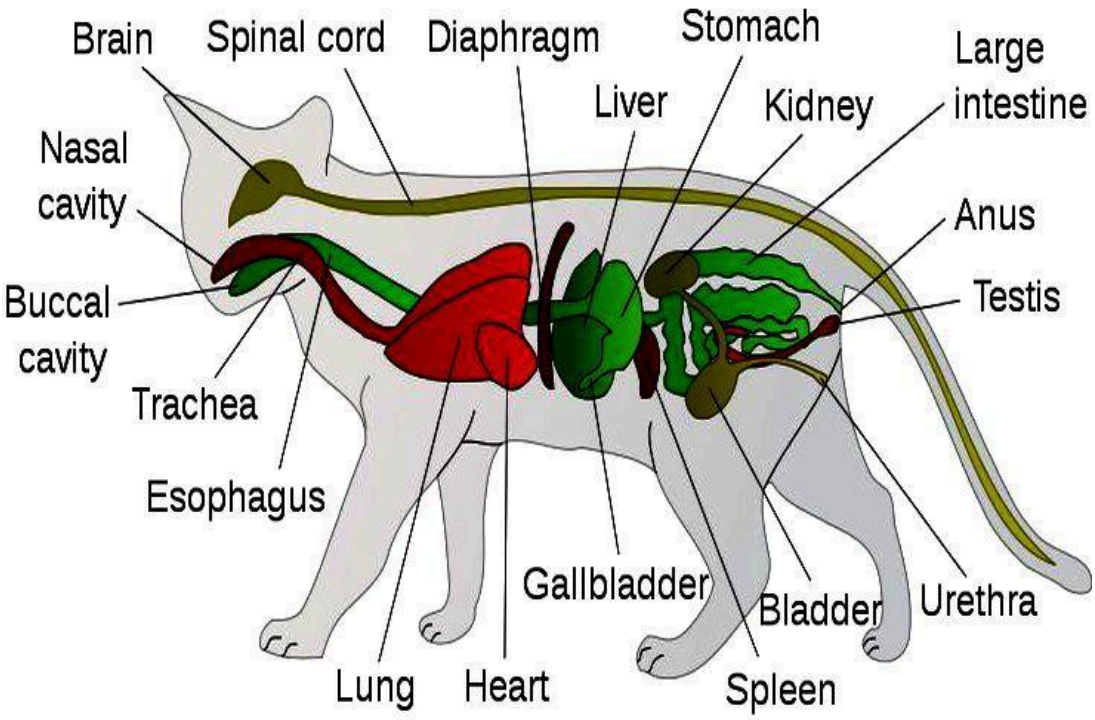
Find the **renal pyramids** . How many are there? _____

Upload a photo of the kidney showing the renal pyramids.

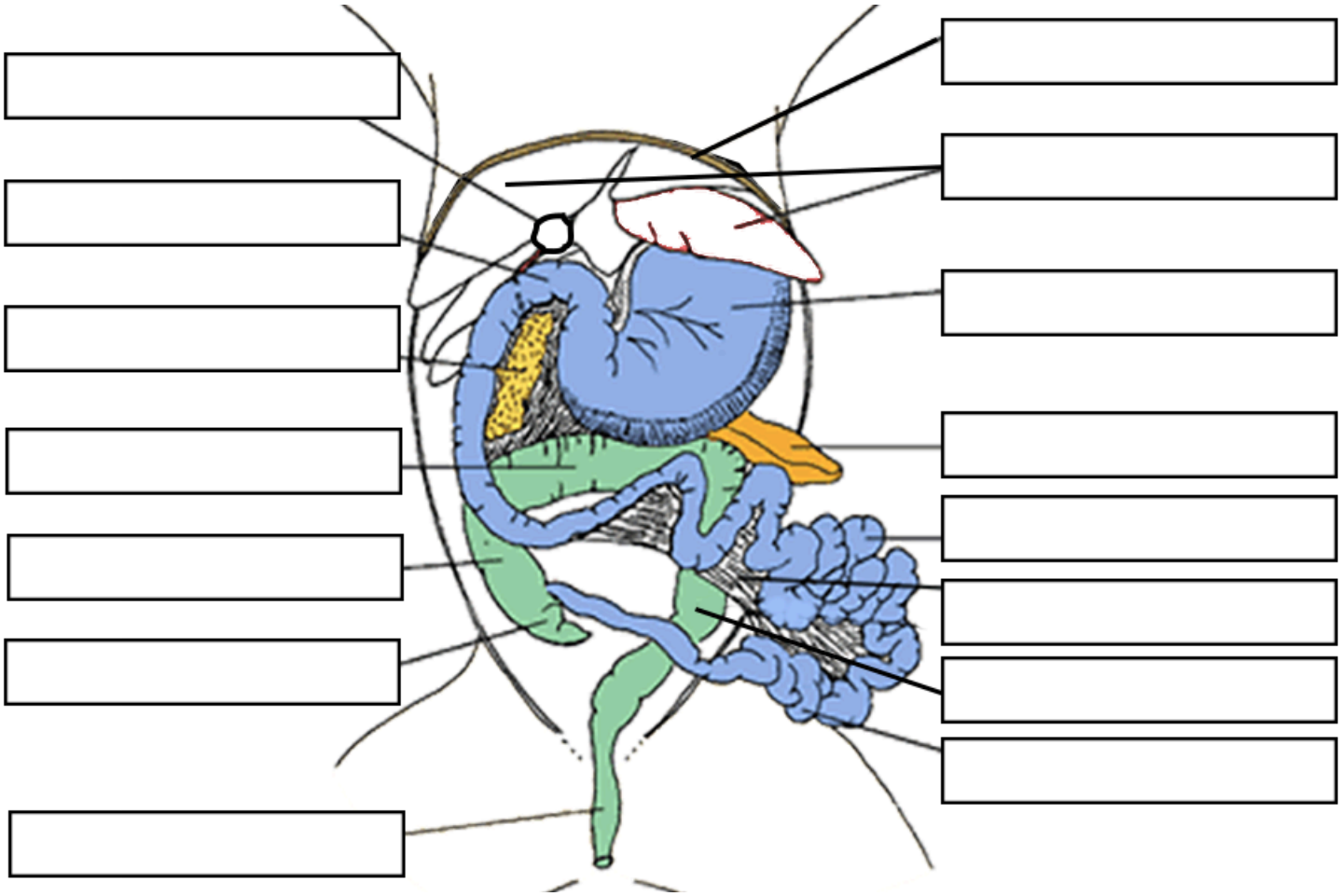
☐16. If your cat is a female, locate the uterine horns, the ovaries and the vagina.

If your cat is a male, locate the testes (if present) and the penis. Find a cat of the opposite sex to see structures your cat doesn't have.

Where does the **urethra** exit the body in the male compared to that of a female cat?



☐18. Label the image.



Respiratory System
- ☐Trachea
- ☐Left and Right Lung
- ☐Larynx ☐Diaphragm

Circulatory System
- ☐ Heart (atrium/ventricle)
- ☐ Pulmonary Artery ☐ Aorta
- ☐ Common carotid ☐ Jugular veins
- ☐ Superior Vena Cava ☐ Inferior vena cava
- ☐ Brachiocephalic artery and vein
- ☐ Celiac trunk
- ☐ Renal arteries and veins
- ☐ Superior and inferior mesenteric
- ☐ External and internal iliac
- ☐ Femoral artery

Reproductive / Urinary System
- ☐Testes
- ☐Ovary ☐ Uterine Horn ☐Vagina
- ☐Urinary Bladder ☐Ureter ☐Kidney

Digestive System (and accessories)
- ☐Greater Omentum
- ☐Esophagus
- ☐Stomach
- ☐Liver ☐Gallbladder ☐ Bile Duct
- ☐ Pancreas
- ☐ Spleen
- ☐ Small intestine (duodenum, jejunum, ileum)
- ☐Mesentery
- ☐ Cecum ☐ Colon ☐ Rectum