Dissection Lab Manuals: Required Content

1. Introduction
    a. Basic terminology (directions)
    b. External features of the cat
    c. Adaptations to predatory niche
    d. How to skin a cat
    e. How to make the incisions into the body cavity

2. Muscular system
    a. Required muscles identified by location and function (in the cat)
    pectoantebrachalis, pectoralis major, pectoralis minor, xiphihumeralis, latissimus dorsi, external obliques, internal obliques, rectus abdominis, transverse abdominis
    b. Similarities and differences with human musculature
    c. Section-specific questions addressed
        i. Why do you think it is relatively difficult to identify the muscles in a cat when compared to, for example, a mink?
        ii. How do the human pectoral muscles differ from the cat? Explain these differences in terms of function.

3. Circulatory System
    a. Required structures identified by location and function (in the cat)
    heart, pericardium, auricles, atria, ventricles, aortic trunk, coronary arteries, precava, postcava, pulmonary trunk, pulmonary arteries, pulmonary veins, ascending aorta, descending aorta
    b. Similarities and differences with human circulatory system
    c. Section-specific questions addressed
        i. How many branches does the aortic arch give off in the cat??
        ii. Trace the general path of circulation throughout the cat.

4. Respiratory System
    a. Required structures identified by location and function (in the cat)
    trachea, epiglottis, esophagus, bronchi, lungs, diaphragm
    b. Similarities and differences with human respiratory system
    c. Section-specific questions addressed
        i. Describe the actions that take place in breathing.
        ii. Compare the number of lobes in each half of the lung. How does this compare to a human? Why do you think that this difference may exist?

5. Digestive System
    a. Required structures identified by location and function (in the cat)
    *greater & lesser omentum, liver, gall bladder, common bile duct, stomach, rugae, pancreas*s, spleen, mesentery, small intestine (duodenum, jejunum, ileum), cecum, large intestine (ascending colon, transverse colon, descending colon), rectum*
    b. Similarities and differences with the human digestive system
    c. Section-specific questions addressed
        i. How many lobes can you observe in the liver? How does this compare to a human?
        ii. Trace the path of food through a cat, starting with the mouth and ending at the rectum.

6. Excretory System
    a. Required structures identified by location and function (in the cat)
    kidneys, renal artery, renal vein, ureters, bladder
    b. Similarities and differences with human excretory system
    c. Section-specific questions addressed
        i. How does the position of the kidneys in the cat differ from their position in humans? How is it similar?
        ii. Once you have observed the excretory system of your cat, compare it to the system in a cat of the opposite sex. What are the similarities and differences?

7. Endocrine organs popping up in other systems: *thyroid, thymus, adrenal*
    a. Required structures identified by location and function (in the cat)
    thyroid, thymus, adrenal, pancreas**
    b. Similarities and differences with human endocrine glands
    c. Section-specific questions addressed
        i. How do the locations of these organs compare with those in humans?
        ii. The structures marked * in the sections above are also considered part of the endocrine system, but those are organs, as opposed to glands. What is the difference between an organ and a gland?

Grading

Because of the scope and comprehensive nature of this project, it will be your final exam grade. Your final exam is worth 15% of your final semester grade.

Content Points

- Identify in words (1 pt), visually (1 pt)
- Function (1 pt)
- Section specific questions: 0-4
    - 0: not addressed
    - 2: adequately addressed but does not use appropriate terminology, or answer is only partially present
    - 4: answer is complete and uses appropriate terminology

Content	Worth
Introduction (20 points)	
Basic terminology (directions)	4
External features of the cat	4
Adaptations to predatory niche	4
How to skin a cat	4
How to make the incisions into the body cavity	4
Muscular system (39 points)	
Required muscles identified by location and function (in the cat) *pectoantebrachalis, pectoralis major, pectoralis minor, xiphihumeralis, latissimus dorsi, external obliques, internal obliques, rectus abdominis, transverse abdominis*	27
Similarities and differences with human musculature	4
Why do you think it is relatively difficult to identify the muscles in a cat when compared to, for example, a mink?	4
How do the human pectoral muscles differ from the cat? Explain these differences in terms of function.	4
Circulatory System (54 points)	
Required structures identified by location and function (in the cat) *heart, pericardium, auricles, atria, ventricles, aortic trunk, coronary arteries, precava, postcava, pulmonary trunk, pulmonary arteries, pulmonary veins, ascending aorta, descending aorta*	42
Similarities and differences with human circulatory system	4
How many branches does the aortic arch give off in the cat?	4
Trace the general path of circulation throughout the cat.	4
Respiratory System (30 points)	
Required structures identified by location and function (in the cat) *trachea, epiglottis, esophagus, bronchi, lungs, diaphragm*	18
Similarities and differences with human respiratory system	4
Describe the actions that take place in breathing.	4
Compare the number of lobes in each half of the lung. How does this compare to a human? Why do you think that this difference may exist?	4

Digestive System (72 points)	
Required structures identified by location and function (in the cat) *greater & lesser omentum, liver, gall bladder, common bile duct, stomach, rugae, pancreas*, spleen, mesentery, small intestine (duodenum, jejunum, ileum), cecum, large intestine (ascending colon, transverse colon, descending colon), rectum*	60
Similarities and differences with the human digestive system	4
How many lobes can you observe in the liver? How does this compare to a human?	4
Trace the path of food through a cat, starting with the mouth and ending at the rectum.	4
Excretory System (27 points)	
Required structures identified by location and function (in the cat) *kidneys, renal artery, renal vein, ureters, bladder*	15
Similarities and differences with human excretory system	4
How does the position of the kidneys in the cat differ from their position in humans? How is it similar?	4
Once you have observed the excretory system of your cat, compare it to the system in a cat of the opposite sex. What are the similarities and differences?	4
Endocrine organs popping up in other systems (18 points)	
Required structures identified by location and function (in the cat) *thyroid, thymus, (adrenal*, pancreas*)*	6
Similarities and differences with human endocrine glands	4
How do the locations of these organs compare with those in humans?	4
What is the difference between an organ and a gland?	4
General Effect (40 points)	
"English teacher effect": good grammar, spelling, punctuation, ease of readability, etc.	10
Pictures/diagrams are clear and easy to read and add value to the manual	10
Cohesion: manual does not seem to have been written by three different people	10
References cited (including any additional photos or diagrams)	10

Total: 300 points

ALL LAB MANUALS ARE DUE AT THE BEGINNING OF CLASS ON THE DAY OF YOUR FINAL EXAM.
NO EXCUSES.
NO EXCEPTIONS.

Your Guide to the Rest of the Cat

Muscular System

You have already theoretically identified (or at least faked your way through):

- Pectoantebrachalis
- Pectoralis major
- Pectoralis minor
- Xiphihumeralis
- Latissimus dorsi
- External obliques
- Internal obliques
- Rectus abdominis
- Transverse abdominis

Open the ventral body cavity cavity as directed. Locate and identify the following organs. If it's listed in a bullet or bolded, I expect to see it in your lab manual.

Thoracic Cavity Organs

- **Trachea**: the windpipe; runs down the midline of the throat.
    - Idenfity the **thyroid,** dark lobes straddling either side of the trachea. Regulates metabolic rate. If you can't find them, there's a good chance you trashed them while opening the throat.
    - Identify the flap-like **epiglottis**.
    - Follow the trachea as it divides into the **primary bronchi.**
- **Thymus**: gland superior to and partly covering the heart. Helps "program" the immune system. The older the cat, the smaller the thymus and therefore possibly the harder to find.
- **Heart**: after locating the thymus, remove it and the **pericardial sac**.
    - Slit the **pericardium** and reflect superiorly.
    - Identify the **auricles, atria** and **ventricles**. The atria may appear darker than the ventricles.
    - Identify the **aorta**, which arises out of the left ventricle. Follow the aorta as it branches. How many branches does the arch give off in the cat?
    - Identify the **coronary arteries** lying on the ventral surface of the heart.
    - Identify the two large vena cavae entering the right atrium. The superior vena cava (**precava** in the cat) is the largest dark-colored vessel entering the base of the cat. Also identify the **postcava** (inferior vena cava).
    - Identify the **pulmonary trunk** (probably blue), which extends anterior from the right ventricle.
    - Trace the **pulmonary arteries** until they enter the lungs.
    - Trace the **pulmonary veins** entering the left atrium and the **ascending aorta** arising from the left ventricle.
- **Lungs**: kind of obvious.
    - Identify the number of lobes in each half of the lung. How does this compare to a human?
    - Lift one lung and find the **esophagus** beneath the pleura.
    - Lift the left lung and follow the course of the **descending aorta** through the thoracic cavity. The esophagus will lie over it at some points. Follow the descending aorta through the diaphragm and into the abdominal cavity. It ends posteriorly when it divides into three iliac arteries.

Abdominal Cavity Organs

- **Diaphragm:** large, flattened muscle superior to diaphragm
- **Greater omentum**: fat-filled, web-like structure draped over the internal organs. Lift out of the way to expose the following organs.
- **Liver**: large, multi-lobed. Lies under the diaphragm. Very big, hard to miss! How many lobes can you observe in the liver?
- Lift the liver and examine its inferior surface to find the **gall bladder**. It will likely look green and embedded into the surface.
    - Locate the **bile duct**, which drains bile from the gall bladder to the large intestine..
- Move the left lobes of the liver to find the **stomach** (dorsally to the left side of the liver).
    - The anterior, concave surface is the *lesser curvature* and the posterior, convex surface is the *greater curvature*.
    - The anterior portion of the stomach connects to the **esophagus** at the *cardiac region*.
    - Locate the **lesser omentum**, the membrane attaching the lesser curve of the stomach to the liver.
    - Make an incision through the stomach wall to expose the inner surface of the stomach. The large folds you see are the **rugae**.
    - The small intestine begins at the pyloric end of the stomach.
- Lift the stomach to find the **pancreas (**lies deep to and between the small intestine and stomach). Helps regulate blood sugar levels.
- **Spleen:** flat, brown; curves around stomach**.**
- **Small intestine**: tube extending posteriorly from the stomach.
    - Lift it to see how it is attached to the posterior body wall by the **mesentery**. You may also be able to identify lymph nodes in the mesentery.
    - The small intestine attaches to the *pyloric end* of the stomach.
    - The first part of the small intestine is the **duodenum**, which curves to the right and posteriorly. It then curves to the left and turns posteriorly again.
    - The second posterior turn marks the beginning of the **jejunum**, which terminates with the…
    - **Ileum**, the third part of the small intestine. There is no clear mark between the two.
    - The small, blind sac off of the large intestine is the **cecum**. This extends past the junction of the ileum and large intestine and is the homolog of the human appendix.
- **Large intestine:** inferior to small intestine.
    - The ileum of the small intestine attaches to the **ascending colon** of the large intestine. The ascending colon, which runs anteriorly along the right, connects to the…
    - **Transverse colon**, which passes to the left, and the
    - **Descending colon**, which runs posteriorly. And…
    - Terminates in the **rectum**.

Push the intestines to one side with a probe to reveal the deeper organs….

- **Kidneys**: bean-shaped organs located towards dorsal body wall surface, behind peritoneum.
    - Identify the **renal artery** , **renal vein** and **ureter**.
- Trace the ureters to the **bladder**, a smooth muscular sac lying superior to the small intestine.
- **Adrenal glands**: above and medial to each kidney.