Lab 10: Urinary System Anatomy and Physiology, Reproductive System Anatomy

KIDNEY

Locate the following structures on the sheep kidney and human kidney models:

<u>Sheep Kidney</u>

renal capsule cortex medulla pelvis ureter pyramids <u>Kidney Models</u> renal artery and vein adipose capsule cortex medulla hilum pyramids minor calyces major calyces pelvis Nephron Model nephron glomerular capsule (Bowman's capsule) convoluted tubules PCT DCT loop of Henle collecting ducts

UROGENITAL SYSTEM

Locate the following structures on the cat and on models and charts of the human:

Kidneys (right & left) Adrenal glands Renal arteries Renal veins Ureters Urinary bladder Urethra

FemaleMaleOvariesScrotUterine tubeTesteUterusEpidia*Uterine hornsVas dUterine bodySperrCervixInguinVaginaUrethBroad LigamentProst*Urogenital sinusPenisVulvaVulva

*Found in cat only, not in the human.

Male Scrotum Testes Epididymis Vas deferens Spermatic cord Inguinal canal Urethra Prostate gland Penis Urinalysis

I. Terminology	
Urochrome	Hematuria
Glucosuria	Crystals
Ketonuria	Casts
Pyuria	Renal Calculi

II. Analysis of Unknowns ("fake" urine)

A. **Appearance** – check color and transparency

Normal color: _____ Urochrome Abnormal colors: Reddish amber – urobilinogen (produced by action of intestinal bacteria on bile pigment) Red to smoky brown: blood and blood pigments

Normal transparency: _____ Abnormal transparency: Cloudy – bacterial infection, pus, fat

- B. Specific Gravity use urinometer [read at meniscus to 3 decimal places] Normal range: 1.003 to 1.030 Abnormal: low – chronic nephritis, diabetes insipidus high – diabetes mellitus, acute nephritis
- C. **Multistix (urine test strips)** know what is considered normal for each test and know one abnormal situation for each urine component.

	Normal	Abnormal
Glucose:		
Ketones:		
Specific Gravity:		
Blood:		
pH:		
Protein:		

D. **Sediments** - examine sediment slide. You are responsible for naming 2 sediments, not for identifying them on the slide.

Urinalysis Questions:

- 1. What is a typical volume of urine that would be excreted in a day?
- 2. What substance is responsible for the normal "yellow" color of urine?
- 3. Which has a greater specific gravity: 1 ml of dH₂O or 1 ml of urine? Why?
- 4. Glucosuria is indicative of what clinical situation?

Urogenital System Questions:

- 1. Name the following structures:
 - a. Cup-shaped structure that surrounds the glomerulus:
 - b. Cone-shaped areas in the medulla of the kidney:
 - c. Fibrous outer covering of kidney:
 - d. Functional unit of kidney:
 - e. Tubes that drain the kidneys:
- 2. Describe the function:
 - a. Vas deferens:
 - b. Prostate gland:
 - c. Uterine tubes:
 - d. Uterine horns:

Lab 11: Respiratory Anatomy & Physiology

Locate these structures on the models and chart for the human: *Locate these structures on the cat.

Diaphragm	*Larynx
Pleura	*Vocal Cords
Visceral	*Epiglottis
Parietal	*Glottis
Pleural Cavity	Thyroid Cartilage
*Lungs	Cricoid Cartilage
Lobes	*Tracheal Cartilage
Mediastinum	Primary Bronchi
*Phrenic Nerves	Secondary Bronchi

Respiratory Physiology:

Define these lung volumes and know the number of milliliters for each:

Tidal Volume Inspiratory Reserve Volume Expiratory Reserve Volume Vital Capacity Residual Volume

Bell Jar Model:

Identify the parts of the Bell Jar Model that represent the following:

- A. lungs -
- B. pleural cavity -
- C. diaphragm -
- D. thoracic cavity wall -

Respiratory Slides:

Normal lung Emphysema Pneumonia

Respiratory System Questions:

1. How does the number of lung lobes in the human compare to the cat?

Human: Cat:

2. The trachea bifurcates in to two primary______.

3. The cartilaginous flap that deflects food and liquid into the esophagus and away from the respiratory tree is the _____.

4. The phrenic nerve innervates the _____.

5. How many pleural cavities are there?_____.

- 6. What pressure change occurs in the Bell Jar when the "diaphragm" is pulled down_____.
- 7. What pressure change occurs in the Bell Jar when the "diaphragm" is released_____.



RV

VC





Identify the following structures on the Respiratory System diagram:

Alveoli Apex Base Diaphragm (contracted) Diaphragm (relaxed) Epiglottis Esophagus Trachea Primary bronchus Secondary bronchus Tertiary bronchi and bronchioles Visceral pleura Pleural cavity Parietal pleura Larynx



Urinary / Reproductive / Respiratory Systems

- 1. Trace the flow of urine from the minor calyx to the outside of the body.
- 2. What is another name for "uterine tube"?
- 3. What is the superior rounded portion of the uterus called?
- 4. Describe the major differences observed between the female cat and the human regarding the urinary and reproductive systems.
- 5. Identify the specific location of spermatogenesis.
- 6. For the human lungs, identify the number of lobes and their names.
- 7. What happens to the thoracic cavity volume during inspiration?
- 8. During diaphragm contraction, does the volume of the thoracic cavity increase or decrease?
- 9. During expiration, what causes air to flow out of the lungs?