Lab 2: Thoracic & Abdominal Organs ; Digestion & Respiration

I. Fetal Pig Dissection: Thoracic & Abdominal Cavities

GOALS:	
You should be able to	
★ Locate <u>and</u> explain the functions of the structures listed below:	
Neck Region:	Abdominal Cavity:
$\overline{\checkmark}$ thymus gland	✓ umbilical vein
✓ thyroid gland	✓ liver
✓ larynx	✓ stomach
✓ trachea	✓ spleen
✓ esophagus	✓ small intestine (locate duodenum)
	✓ gall bladder
Thoracic Cavity:	✓ pancreas
✓ right & left lungs	✓ large intestine
✓ heart	✓ cecum
	✓ colon
Thoracic/Abdominal Division:	
✓ diaphragm	

Thoracic and Abdominal Incisions

pp. 164-165 Watch demonstration on how to make incisions.

Neck Region, Thoracic Cavity, and Abdominal Cavity

pp. 166-170 Read all introductions, follow procedures to locate organs listed above <u>and</u> know their functions.

D p. 172 Answer all questions.

*Put the following organs in order by the way food travels through them: stomach, esophagus, large intestine, mouth, small intestine, anus, rectum.

*Trace the movement of an inhaled breath of air by putting the following in order: pharynx, bronchi, alveoli, nasal passages, trachea, bronchioles, larynx

II. Respiration and Digestion Stations

GOALS:

You should be able to.....

- ★ Describe the appearance of villi in the small intestine. Explain how the structure of villi support their function.
- ★ Describe the internal structure of the lungs and explain the process of gas exchange.
- \star Explain the difference in appearance and function between healthy alveoli and diseased alveoli.
- \star Demonstrate how lung capacities can be determined with a spirometer.
- ★ Compare and contrast the respiratory surfaces/ ventilation methods of fish, frogs, and humans.

Key Terms & Concepts:

- ✓ bronchi
- ✓ bronchioles
- ✓ alveoli
- ✓ gas exchange by diffusion
- ✓ negative pressure breathing
- ✓ positive pressure breathing
- ✓ methods of ventilating (fish/frog/human)
- ✓ villi
- ✓ spirometer
- \checkmark vital capacity
- ✓ residual volume
- ✓ surface area (of lungs & small intestine)

Station 1: Small Intestine Cross Section

□ View villi of small intestine under dissecting microscope. How does the structure of the small intestine villi support their function? (Think surface area!)

Station 2: Respiratory Organs

- **pp. 216-217** Read about the structure & function of the lungs/ view diagram.
- **Dissected pig** (heart removed): Find respiratory organs: trachea, multiple lobes of lung, bronchi, diaphragm.
- Dissecting microscope: observe lung tissue. Find bronchioles and alveoli. Think about how alveoli increase the surface area of the lungs. Why is surface area important?
- □ **Compound microscopes**: View slides of healthy vs. diseased lungs. Which slide has the greater surface area exposed in the alveoli? How does the amount of surface area affect gas exchange?
- **Spirometer:** Use p. C45-C46 to help you determine your lung capacities. Define vital capacity & residual volume.

Station 3: Aerobic Respiration

- **D** p. C47: Read thoroughly, then make observations to help you fill out the table at the bottom of the page.
- □ **Preserved Carp & Live Goldfish:** Find respiratory organs: operculum, mouth, & gills. Observe movement of water for respiration (in mouth→through gills→out operculum). Is there a diaphragm?
- □ Dissected & Live Frogs: Locate respiratory organs: lungs, nares, & skin. Is there a diaphragm? Observe gulping of air (positive pressure breathing). Frogs use bottom of oral cavity/throat to actively push air into glottis. Adults also use skin to assist gas exchange. Tadpoles (baby frogs) respire with gills, which disappear as they mature.
- □ Lung model: Use model to demonstrate negative pressure breathing. Think about what is happening here!