Lab 2: Thoracic & Abdominal Organs ; Digestion & Respiration

I. Fetal Pig Dissection: Thoracic & Abdominal Cavities

GOALS:
You should be able to.....
★ **Locate and explain the functions of the structures listed below:**

Neck Region:
- ✓ **thymus gland**
- ✓ **thyroid gland**
- ✓ **larynx**
- ✓ **trachea**
- ✓ **esophagus**

Thoracic Cavity:
- ✓ **right & left pleural cavities**
- ✓ **right & left lungs**
- ✓ **pericardial cavity**
- ✓ **heart**

Thoracic/Abdominal Division:
- ✓ **diaphragm**

Abdominal Cavity:
- ✓ **umbilical vein**
- ✓ **peritoneum**
- ✓ **mesenteries**
- ✓ **liver**
- ✓ **stomach**
- ✓ **spleen**
- ✓ **small intestine (locate duodenum)**
- ✓ **gall bladder**
- ✓ **pancreas**
- ✓ **large intestine**
- ✓ **cecum**
- ✓ **colon**

Thoracic and Abdominal Incisions
- ❑ pp. 148-149 Make incisions together with class.

Neck Region, Thoracic Cavity, and Abdominal Cavity
- ❑ pp. 150-154 Read all introductions, follow procedures to locate organs, and answer all questions.
- ❑ p. 156 Answer #6-8, 11-17, 19

*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.**
- ★ **Explain the difference in appearance and function between healthy alveoli and diseased alveoli.**
- ★ **Explain 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**
- ✓ **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. 200-201** 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. C-43 to help you determine your lung capacities.

Station 3: Aerobic Respiration

- ❑ p. C-45 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!
- ❑ Complete table on p. C-45: Ask questions if you need help!