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 (2 tan glands on each half of larynx)
- thyroid (circular gland btwn. thymus halves)
- larynx (smooth cartilage like a box)
- trachea (ribbed cartilage)
- esophagus

Thoracic Cavity:

- right and left lungs
- heart

Thoracic/Abdominal Division:

- diaphragm

Abdominal Cavity:

- umbilical vein
- liver
- stomach
- spleen
- small intestine
- gall bladder
- pancreas
- large intestine
- duodenum
- cecum
- rectum
- anus

Thoracic and Abdominal Incisions

□ pp. 164-165 Disregard directions for incisions. I will demonstrate how to make the incisions.

Neck Region, Thoracic Cavity, and Abdominal Cavity

□ pp. 166 -170 Read all introductions, follow procedures to locate organs listed above and know their functions. Compare with demo pig and manual images.
□ Trace the path of food from mouth to anus.
□ p. 172 Answer questions 6, 7, 11-13, 16, 17, 19.

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.
- 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
- vital capacity
- residual volume
- surface area (of lungs & small intestine)

Station 1: Small Intestine Cross Section

□ View villi of small intestine on dissecting scope. 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. Answer questions 1 & 2.

□ **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. C49-C50 to help you determine your lung capacities. Define vital capacity & residual volume.

Station 3: Aerobic Respiration

□ **p. C51:** Read thoroughly, then make observations to help you fill out the table at the bottom of the page.

□ **Preserved Carp:** Find respiratory organs: operculum, mouth, & gills. Observe movement of water for respiration (in mouth⇨through gills⇨out operculum). Is there a diaphragm?

□ **Dissected 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.

Human anatomy review can be found on p. 171.