

# 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 lungs
- heart

#### Thoracic/Abdominal Division:

- diaphragm
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#### Abdominal Cavity:

- umbilical vein
- liver
- stomach
- spleen
- small intestine (locate duodenum)
- gall bladder
- pancreas
- large intestine
- cecum
- colon

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### 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 and know their functions.

- 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.
- 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 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. 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 & 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!