

Fetal Pig Respiratory System Dissection

Protocol:

1. Locate the **larynx**, the enlarged structure at the top of the throat. Note the tube descending from the larynx, which has a ringed appearance. This is the **trachea**.
2. Immediately above the larynx, locate the horseshoe-shaped **hyoid bone**.
3. Make a medial incision through the larynx so that you can observe its internal anatomy. Locate the **vocal folds**, which appear as small slits on each side of the larynx (note: the vocal folds are not well developed because the fetal pig does not vocalize).
4. Locate the thin, thread-like **inferior laryngeal nerves** that run along each side of the trachea.
5. The much larger **vagus nerves** also run down the throat and are located next to the carotid arteries.
6. The single **phrenic nerve** extends through the thoracic cavity and connects with the **diaphragm** (it signals the diaphragm to contract). The phrenic nerve is located on the right of the thoracic cavity and is usually easiest to find where it runs along the length of the inferior vena cava from the heart to the diaphragm.
7. Trace the trachea down to where it reaches the lungs. In order to see things clearly, remove the heart and its associated blood vessels from the thoracic cavity. Because some of the nerves lie adjacent to these blood vessels, **be careful** that you are only removing the vessels and not the nerves. In addition, use your scissors to trim away the top half of the rib cage on each side.
8. In the fetal pig, the lungs are divided into 7 lobes: the uppermost ones are the right and left **apical lobes**, the middle ones are the right and left **cardiac lobes**, and the lower ones are the right and left **diaphragmatic lobes**. The last lobe sits in the middle of the thoracic cavity and wraps partly around the inferior vena cava. This is the **intermediate lobe**.
9. The trachea branches into the lobes of the lung as follows: the **apical bronchus** branches off the trachea to enter the right apical lobe of the lung. The trachea terminates in the left and right **main bronchi** which go into the other lobes. The **root of the lung** consists of the main bronchi and the associated blood vessels (pulmonary arteries and veins) that all enter the lung tissue together.
10. Scrape away some of the lung tissue from a bronchus to see the branching extending out into the lung.

11. The pleural membrane is the covering of the lungs and the thoracic cavity. The **parietal pleura** is the lining of the thoracic cavity. The **visceral pleura** is the membranous covering over the lung tissue.

12. The remaining structures you need to locate are in the oral cavity.

a. Make a longitudinal incision through the soft palate. The space underneath the soft palate is the **nasopharynx**. Within the nasopharynx are two structures: the **internal nares** are the openings from the nasal passageways (the **external nares** are the two external openings of the nose); the **eustachian tubes** are located on each side of the nasopharynx and are visible as two small slits or holes. If you place your probe in one of these openings, it should extend back toward the ear.

b. Locate the **epiglottis**, the flap of tissue at the back of the oral cavity. The **oropharynx** is the space between the soft palate and the epiglottis.

c. Look inside the epiglottis. You should see two openings, one above the other. Put your probe inside each opening to see where it goes. The upper (i.e., ventral) opening is the **laryngopharynx**, which extends from the epiglottis to the larynx. The bottom, dorsal, opening is the esophagus.