BIO 4432 – Human Anatomy
Week 13 – Week of 04/11/2022

Happy week 13! Easter break is this weekend which means y’all don’t have a quiz this Friday! Woohoo! But don’t get behind on the material because you are so so close to the end!! Keep it up!

Remember: The tutoring center offers free individual and group tutoring for this course. Our group tutoring session will be Thursdays from 6:45-7:45 PM in the basement of Sid Rich, room 74. You can reserve your spot at https://baylor.edu/tutoring. Hope to see you there!

Keywords: Respiratory system, Anatomy of the lungs, Innervation of the lungs, Larynx, Vagus nerve

**Topic of the Week: Respiratory System**

The Pharynx
- **Nasopharynx**: from nasal cavity down to soft palate
- **Oropharynx**: from soft palate to epiglottis
- **Laryngopharynx**: below the epiglottis

Nasal Conchae

![Nasal Conchae Image](teachmeanatomy.com)

Nasolacrimal duct drains into the inferior meatus. Maxillary, ethmoidal, and frontal sinuses drain into the middle meatus. Posterior ethmoidal air cells drain into the superior meatus.

Anatomy of the Lungs

The **right lung** has 3 lobes and 2 fissures. The **left lung** has 2 lobes, 1 fissure, and the cardiac notch.

![Lungs Image](courses.lumenlearning.com)
How do we tell the right lung from the left lung? Look at the positioning of the pulmonary artery in comparison to the bronchus.

**RALS:**
- For the right lung: pulmonary artery is **anterior** to the bronchus.
- For the left lung: pulmonary artery is **superior** to the bronchus.

Pleura of the lungs:
- **Parietal pleura** – innervated by phrenic and intercostal nerves; external pleura
  - Costal parietal pleura – intercostal n.
  - Diaphragmatic parietal pleura – phrenic n.
  - Cervical parietal pleura – phrenic n.
  - Mediastinal parietal pleura – intercostal n.
- **Visceral pleura** – innervated by **autonomics**; internal pleura

**Innervation of the Lungs**

Parasympathetics: branches of CN X → bronchoconstriction

Sympathetics: post-ganglionic fibers from cardiopulmonary nerves (T1-T4) → bronchodilation

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**Highlight #1: The Larynx**

Watch Acland’s video on the laryngeal cartilages and this Anatomy of the Larynx video: [https://www.youtube.com/watch?v=Lifn9L2ILWE](https://www.youtube.com/watch?v=Lifn9L2ILWE)

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**Muscles of the Larynx**

*Watch Acland’s video on these too for a good visual!*

**Respiratory muscles** – move the vocal cords apart
- **Posterior cricoarytenoid** (only abductor of the vocal folds!)

**Phonatory muscles** – move the vocal cords together
- **Lateral cricoarytenoid, arytenoids, cricothyroid, and thyroarytenoid**
**Vessels of the Larynx** (the bold blue arteries are the ones you need to focus on; I just included their origins for completeness!)

- **External carotid artery** → **superior thyroid artery** → **superior laryngeal artery:**
  - Supplies above the vocal folds
  - Runs with internal laryngeal nerve

- **Thyrocerical trunk** → **inferior thyroid artery** → **inferior laryngeal artery:**
  - Supplies below the vocal folds
  - Runs with recurrent laryngeal nerve

**Highlight #2: Vagus Nerve and Innervation of the Larynx**

The vagus nerve has a branch called the **recurrent laryngeal nerve:**
- On the **right** it loops around the **right subclavian artery**
- On the **left** loops around the **arch of aorta** behind the root of the lung.

**Innervation of the larynx**

- **Recurrent laryngeal n.**
  - Motor innervation to all intrinsic muscles of the larynx except for the cricothyroid muscle
  - Sensory innervation to below the vocal folds

- **Superior laryngeal n.** divides into internal and external laryngeal nerves.
  - **Internal laryngeal n.** supplies sensation to above the vocal folds
    - Runs with superior laryngeal artery
  - **External laryngeal n.** innervates the cricothyroid
I created this flow chart on miro.com.

**Week 13 Knowledge Checkpoint:**

1. Paralysis of which nerve would result in asphyxiation and why?
2. If the pulmonary artery is superior to the bronchus, which lung are you looking at?
3. Which nerve runs with the inferior laryngeal artery?
4. Which of the following laryngeal cartilage(s) in/are unpaired?
   a. Corniculate
   b. Thyroid
   c. Arytenoid
   d. Cricoid

**THINGS YOU MAY STRUGGLE WITH!**

1. **Laryngeal cartilages and muscles:** For this I highly recommend watching Acland’s videos on the larynx. These structures can be difficult to understand without watching these videos.
2. **Vessels and nerves:** I made a flow chart to help with this but looking at images such as the one I provided and the ones in Dr. Parizi’s lectures can help you grasp these better. It could also help to make your own flow chart and write out the muscles/structures each nerve innervates.
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Answers
1. Recurrent laryngeal nerve: it innervates the posterior cricoarytenoid which abducts the vocal folds
2. Left (RALS)
3. Recurrent laryngeal nerve
4. b, d