

VIRTUAL HISTOLOGY LABORATORY

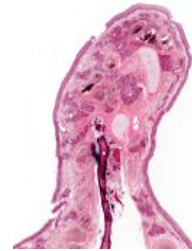
RESPIRATORY SYSTEM

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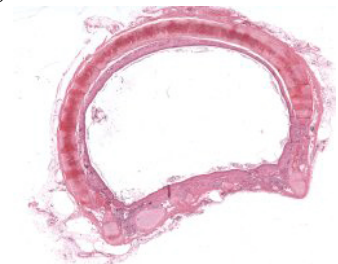
Using the “Atlas”, Respiratory chapter, note the salient features of the conducting and respiratory portions of the respiratory system.

Scan the virtual slides an attempt to identify the items appearing in bold. Not all of the items necessarily appear on these slides.

Olfactory Epithelium (Slide RE 1): Locate the **mucosa**. Note the **ciliated, pseudostratified epithelium**. Locate the **olfactory (sensory) cells** within this epithelium. They are more numerous on the left side of the slide. Identify the **Bowman’s glands** located in the lamina propria.



Trachea (Slides RE 2,3, 4 & 5): Distinguish the **mucosa, submucosa, and adventitia**. In the **mucosa**, note that the **ciliated, pseudostratified epithelium**, containing **goblet cells**, rests on a **lamina propria** composed of loose connective tissue. Note the basal lamina (light pink) that is located between the epithelial layer and the lamina propria. This is one of the few places in the body where the basal lamina is visible at the light microscopic level. The **submucosa (Slides RE 3 & 5)** contains small mixed glands in some areas. The **adventitia** is the outer connective tissue coat that contains fat, blood vessels and nerves. Between the submucosa and the adventitia lie the C-shaped hyaline cartilage **tracheal ring** and the **trachealis muscle**.



Lung (Slide RE 6 & 7): Notice that there are a number of large ducts whose walls are supported by cartilage plates. These are examples of **intrapulmonary bronchi** of varying grades. The **epithelium** is ciliated, pseudostratified columnar with numerous goblet cells. The **lamina propria** separates the epithelium from an almost complete **muscularis mucosae** of smooth muscle. The **submucosa** contains seromucous **bronchial glands** and the **adventitia** contains irregularly spaced **cartilage plates**. Look for branches of the **pulmonary artery** in association with the bronchi. The next grade of airway is the **bronchiole**. These lack cartilage and glands and contain a thicker muscularis mucosae. The **bronchiolar epithelium** is simple columnar to cuboidal. Identify the **ciliated** and **non-ciliated bronchiolar (Clara) cells** of the epithelium. The following division is the **respiratory bronchiole**. This structure is similar to the bronchiole; however, the wall is interrupted by **alveolar outpocketings**. **Alveolar ducts** are lined by alveolar epithelium with some smooth muscle remaining in the wall. In the interalveolar septum, identify the vacuolated **type II pneumocyte** and the **capillary endothelium**. The squamous **type I pneumocyte** is below the resolution of the light microscope (you should be able to see the nuclei of these cells). At the margin of the lung, identify the **mesothelium** of the **visceral pleura** (if present) and the underlying connective tissue carrying small blood and lymph vessels.

