http://www.biology.iastate.edu/Courses/Leon/212L%20Docs/Gas%20Exchange/29-Gas%20Exchange.html

**Lab Topic 29**   
**Investigating Gas Exchange Systems**

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| **Student Prep** |

**Key Words [note: this may not be a complete list]**

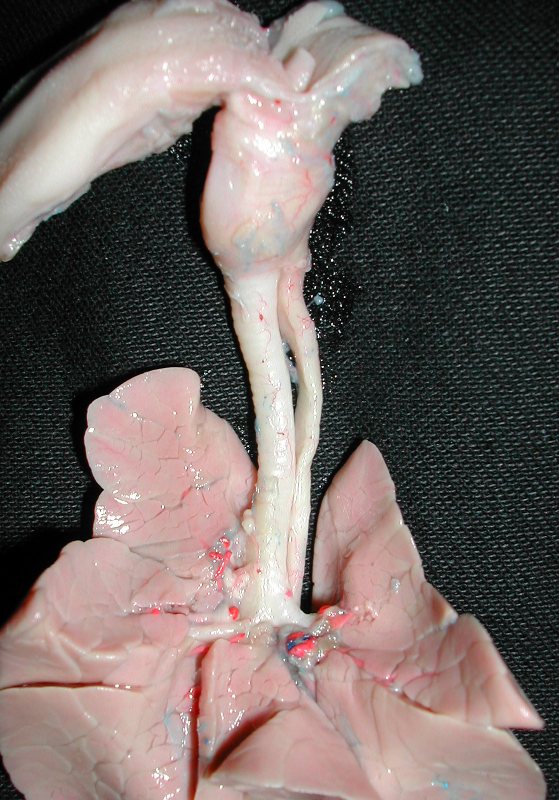
**Abdominal Cavity  
Alveoli  
Bronchi  
Bronchioles  
Dead Space  
Diaphragm  
Expiratory/Inspiratory Reserve  
Gills  
Glottis  
Hemoglobin  
Inhalation/Exhalation  
Inspiratory Capacity**

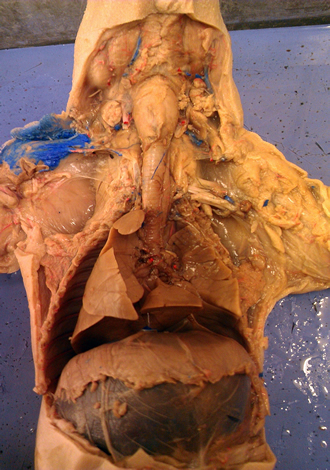
**Larynx  
Lung  
Nasopharynx  
Operculum  
Pharynx  
Residual Volume  
Spiracles  
Thymus  
Thyroid glands  
Tidal Volume  
Total Lung Capacity    
Trachea   
Tracheole  
Vital Capacity**

***Be familiar with:***

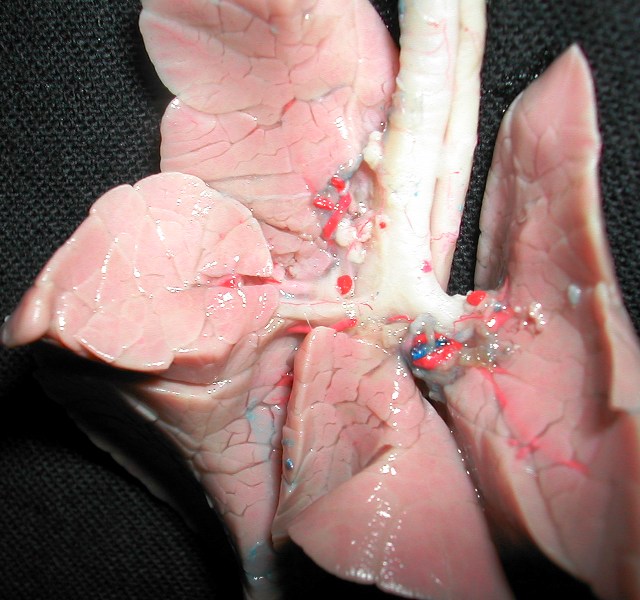
* ***Fetal pig respiratory system***
* ***Mammal lung histology***
* ***Insect and fish respiratory system***
* ***Describe pathway of air flow in mammalian lungs***
* ***Mechanics of breathing***
* ***Respiratory function***
* ***How exchange of gases occurs***

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| **Pig Anatomy** |

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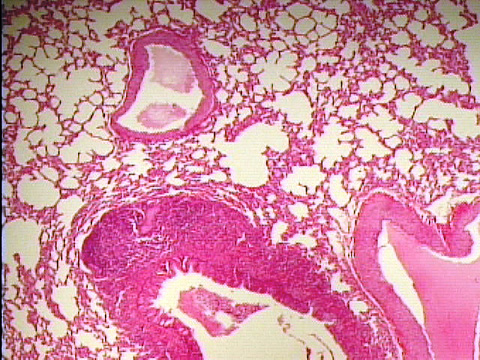
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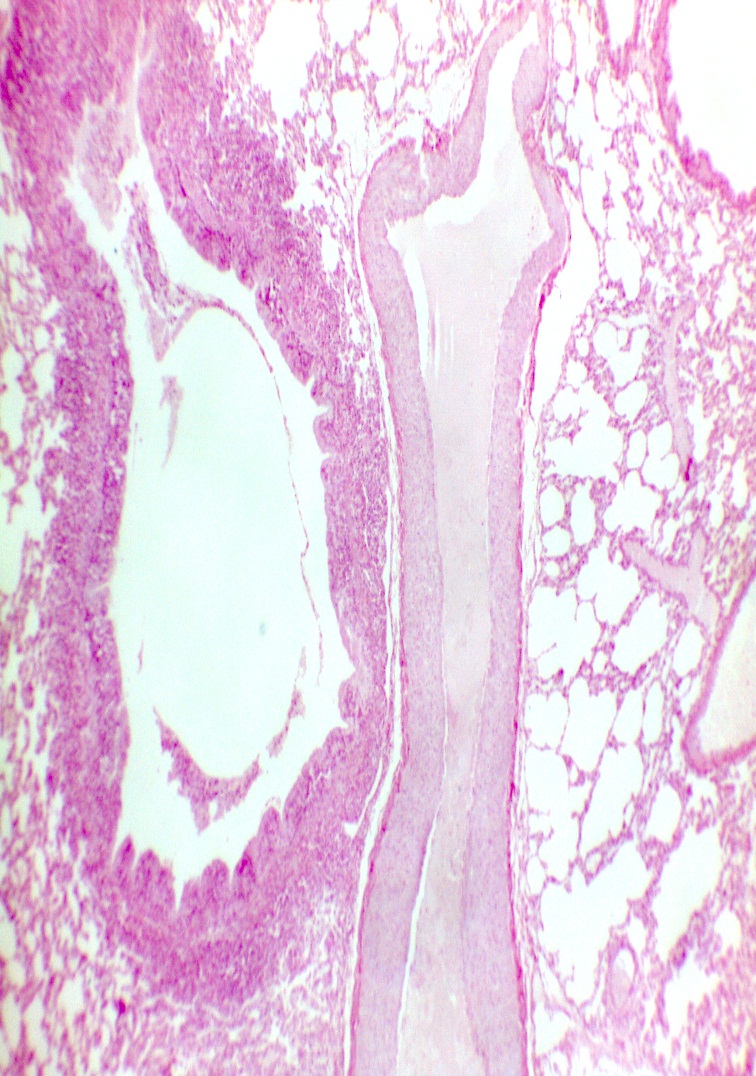
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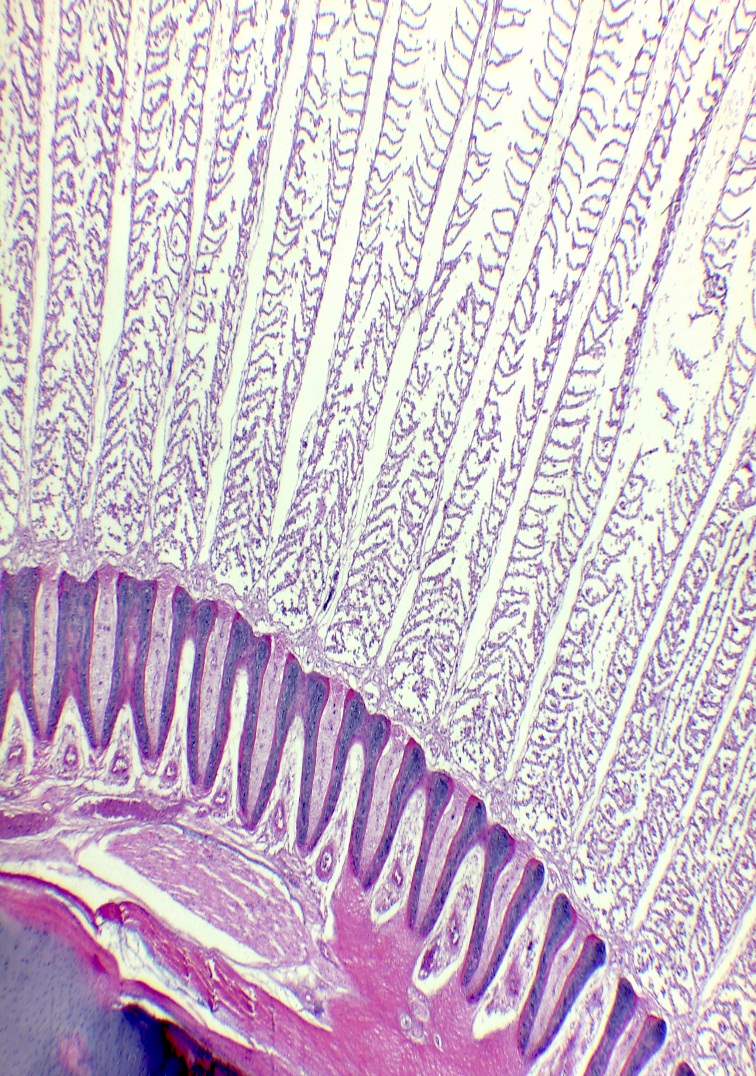
* **How do we get air and food/water through the same space?**
* **What are the structures of the pharynx and the respiratory tree?**
* **What muscles power breathing in mammals?**
* **Why does the trachea but not the esophagus have cartilaginous rings on its walls?**
* **Where does gas exchange occur in mammals?**

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| **Mammal Lung Histology** |

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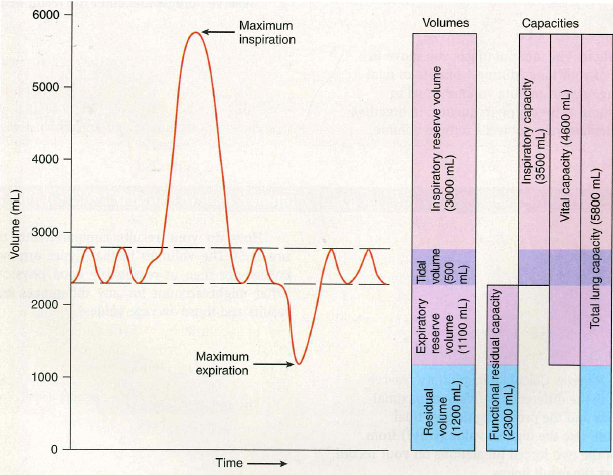
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| **Insect/Fish Respiratory System** |

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* **Compare fish gills, insect tracheal system, and mammal lungs.** 
  + **How do structures compare?**
  + **What muscles are used for ventilation?**
  + **How do ventilation patterns (air or water flow) differ?**
  + **Why don't fish gills work well in air?**
  + **Why don't lungs work well in water?**

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| **Mechanics of Breathing** |

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**Table from Biological Investigations Lab Manual by Warren D. Dolphin**

* **What is tidal volume?**
* **What are inspiratory and expiratory reserve volumes?**
* **What is meant by vital capacity?**
* **What is respiratory dead space and how does it affect ventilation and gas exchange?**
* **What is residual volume?**

[***Lab Topic Page***](http://www.biology.iastate.edu/Courses/Leon/index%20lab%20topics.htm)

[***Biology Home Page***](http://www.biology.iastate.edu/Courses/Leon/Bio212L_index.html)