Histology of the Normal Mouse Trachea

Rachel
Chemistry Undergraduate Student, GRU-Augusta
Tracheal Anatomy

- Conduit for airflow into the lungs
- 15-18 C shaped cartilaginous rings which are surrounded by connective tissue
- Weakening or narrowing of the trachea compromises its airflow to the lungs
Tissue Engineered Tracheal Transplantation

- Treatment for those with narrowing or weakening of the trachea
- First transplant was performed in 2008
- Outcomes poorly documented

**Girl Dies After Groundbreaking Trachea Transplant**

July 8, 2013

By KATIE MOISSE via WORLD NEWS
Mouse as a Model Organism

- Mouse model is a promising model for tracheal transplantation
- Similarity in anatomy to humans
- Low cost, short gestation period, reproducible
- Little literature describing the anatomy of normal murine trachea
Hypothesis

• Histologic studies of normal murine trachea will contain artifactual findings that could be misinterpreted as pathologic changes.
Methods

• C57/BL-6 mice

• Euthanized for other experiments

• Masson’s Trichrome, H&E

• Brightfield microscopy
Results

- 11 murine tracheas
- Cross sections
- Histologic appearance
Results

• Unanticipated artifacts seen due to processing and sectioning
• Artifacts not due to pathological changes
Mouse Trachea

Adventitia
Cartilage
Annular ligament
Mucosa
Lamina Propria
Pseudostratified Epithelium
Smooth Muscle
Annular ligament
Epithelium Dissociation
Cartilage Disruption
Cartilage Disruption
• Unanticipated artifacts seen due to processing and sectioning
  – Asymmetric lumen
  – Disruption of cartilage
  – Dissociation of the epithelium
  – Lacunae that appear to be empty
Conclusion and Future

• Provide helpful, detailed descriptions of the normal mouse trachea
• Jumpstart interest in using mouse as a model organism for tracheal transplantation research