

# Current Important Mouse Diseases

- Pneumocystosis – discussed above
- Helicobacter infection
  - Hepatic necrosis and inflammation
  - Enteritis and especially proliferative enteritis
  - Diagnosis by PCR
  - Role in hepatic carcinogenesis
- Mouse hepatitis virus

# The Laboratory Rat

- Obligate nasal breathers
- Prominent vomeronasal organs
- Single left pulmonary lobe, four right lobes
- No intrapulmonary bronchi
- Cardiac muscle extends around large pulmonary vessels
- Serous cells in respiratory epithelium (unique to rat)

# Spontaneous Noninfectious Disease

- Alveolar histiocytosis
- Inhalation pneumonia - bedding, food
- Neoplasia
  - Large granular cell leukemia: NK cells. F344, WAG strains. Splenomegaly with infiltration of lung, liver, lymph nodes
  - Primary pulmonary neoplasms rare -bronchiolo-alveolar adenoma/carcinoma

# Spontaneous Noninfectious Disease of Old Rats

- Rhinitis
- Mineralization of tracheal cartilage- focal or multifocal.
- Eosinophilic perivascular infiltrates
- Mineralization of pulmonary arteries
- Hair shaft emboli in intravenous injection studies

# Viral Diseases

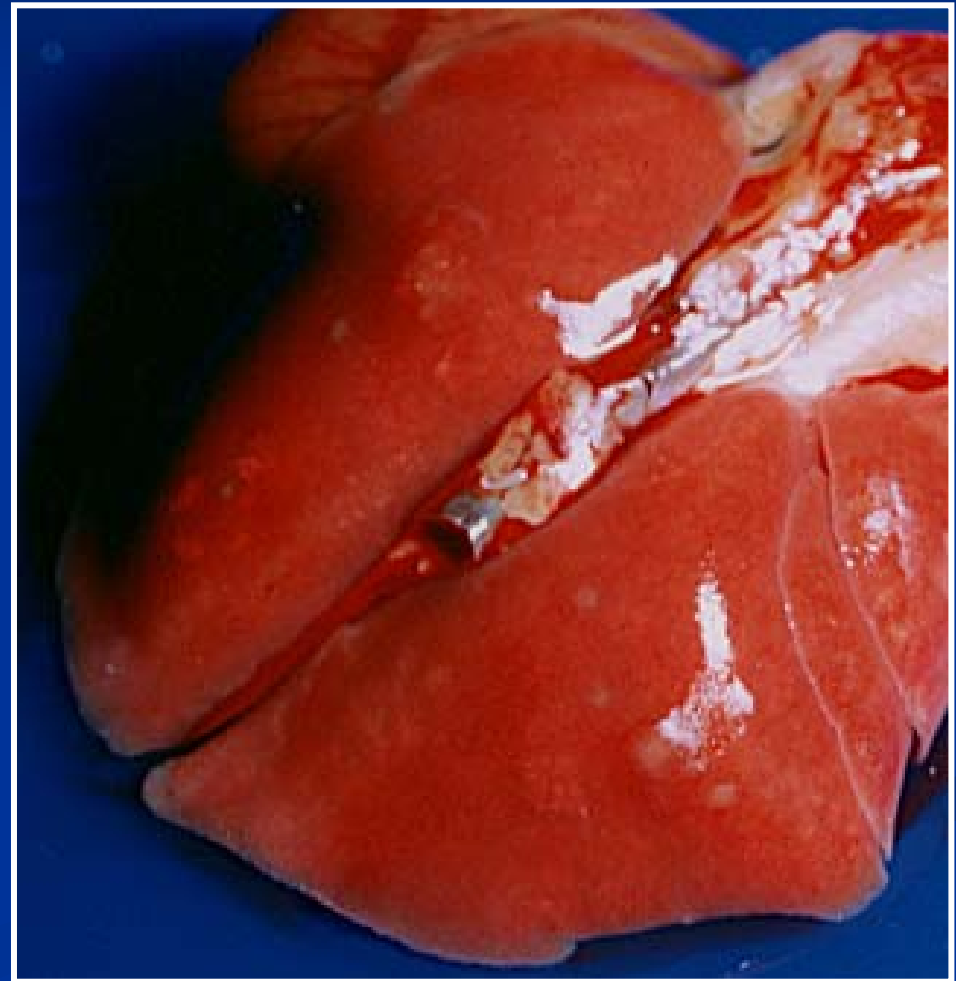
- Mainly similar to mice
  - Sendai virus
  - Murine pneumonia virus (MPV) - more apt to produce lung lesions in naturally infected rats than mice.
- Additional viral agents
  - Rat corona viruses – similar to MPV – but necrotizing upper and lower respiratory lesions with interstitial pneumonia and sialodacryoadenitis.
  - Hantavirus

# Hanta virus

- Prevalence: rare in laboratory rats, common in Norway rats
- Diagnosis: serology
- Disease: none reported in rats, but infection chronic
- Transmission: urine, saliva, respiratory
- Comment: zoonotic
  - Asian isolates - hemorrhage fever with renal syndrome in humans.
  - American strains - acute pulmonary disease in humans.  
*Peromyscus spp.* (white footed mouse) major reservoir host in U.S.

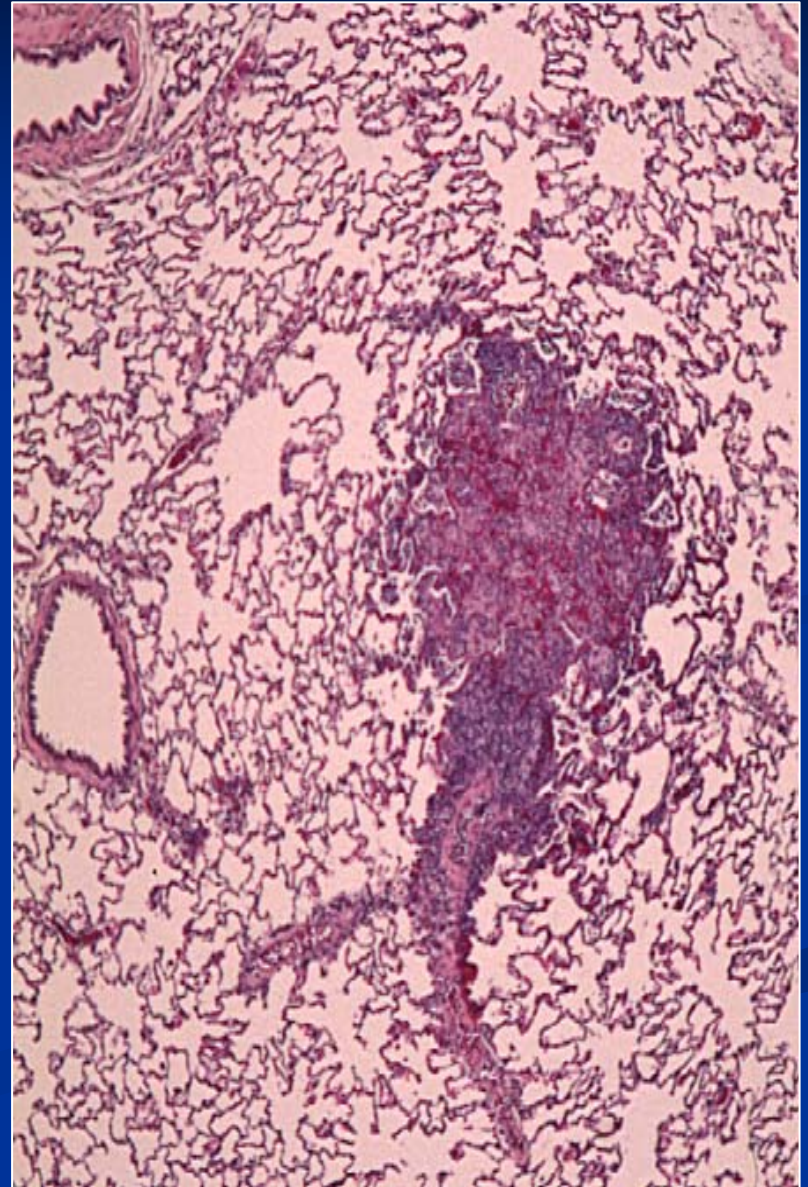
# Example of Emerging Pathogen

- Gross lesions
  - Small, raised, focal, grey white lesions
- 6-8 week old
- Sporadic
- Asymptomatic
- Not previously recognized



# Rat Respiratory Virus

- Perivascular and parenchymal lesions
- Bronchioles not involved
- ? Hantavirus??
- Complicates respiratory models





# Bacteria

*Mycoplasma spp. (as mice)*

*Bordetella bronchiseptica*

Cilia-Associated Respiratory (CAR) Bacillus (as mice)

*Corynebacterium kutscheri (as mice)*

*Hemophilus spp.*

*Klebsiella pneumoniae*

*Pasteurella pneumotropica (as mice)*

*Pseudomonas aeruginosa*

*Staphylococcus spp.*

*Streptobacillus moniliformis*

*Streptococcus pneumoniae*

*Streptococcus spp.*

# Chronic Respiratory Disease

- Similar to mice
- Usually involvement of multiple bacterial agents
- *Mycoplasma pulmonis* usually involved
- Predisposition by viruses, ammonia