

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

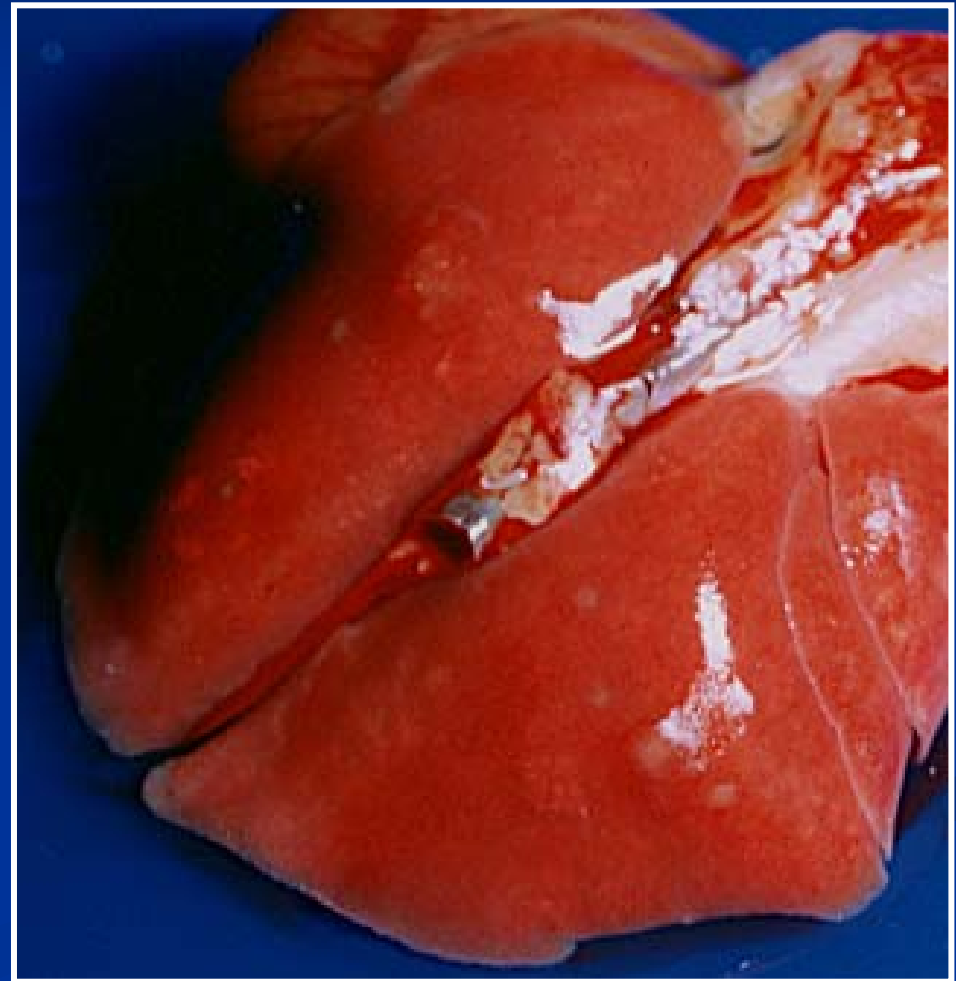
- Mainly similar to mice
 - Sendai virus
 - Murine pneumonia virus (MPV) - more apt to produce lung lesions in naturally infected rats than mice.
- Additional viral agents
 - Rat corona viruses – similar to MPV – but necrotizing upper and lower respiratory lesions with interstitial pneumonia and sialodacryoadenitis.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

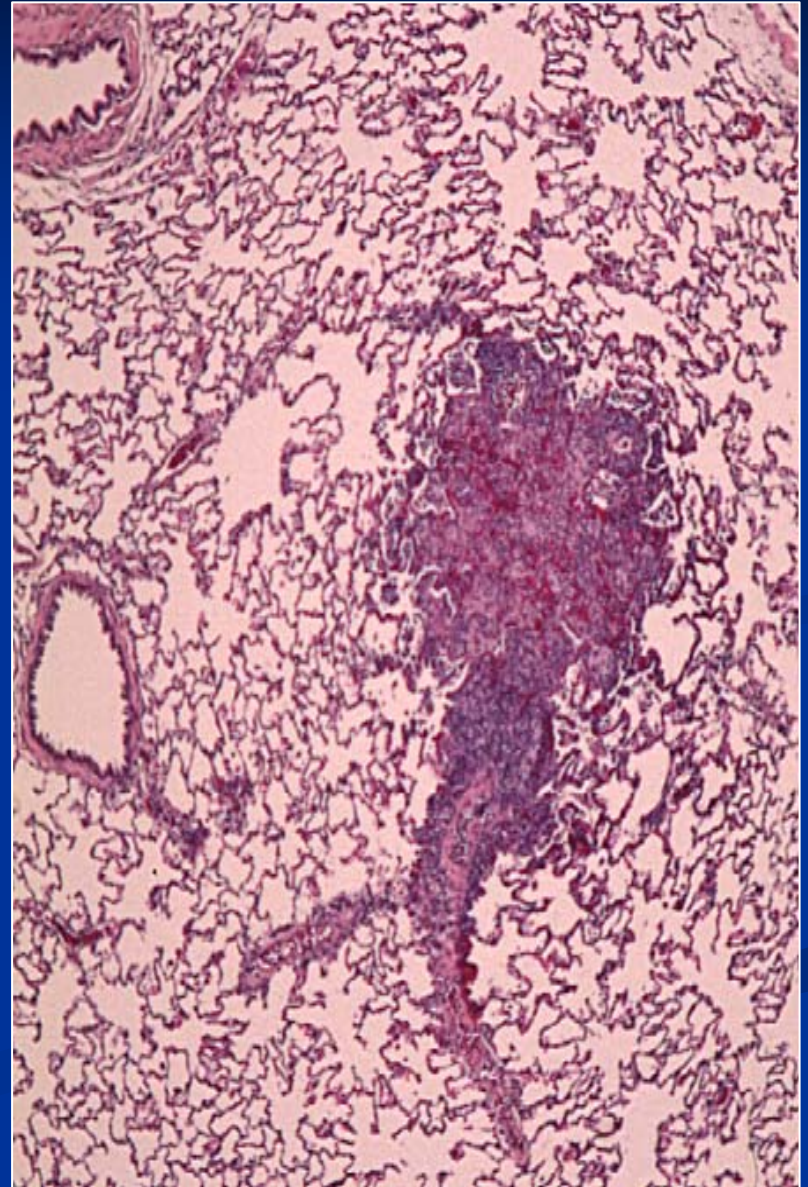
Example of Emerging Pathogen

- 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