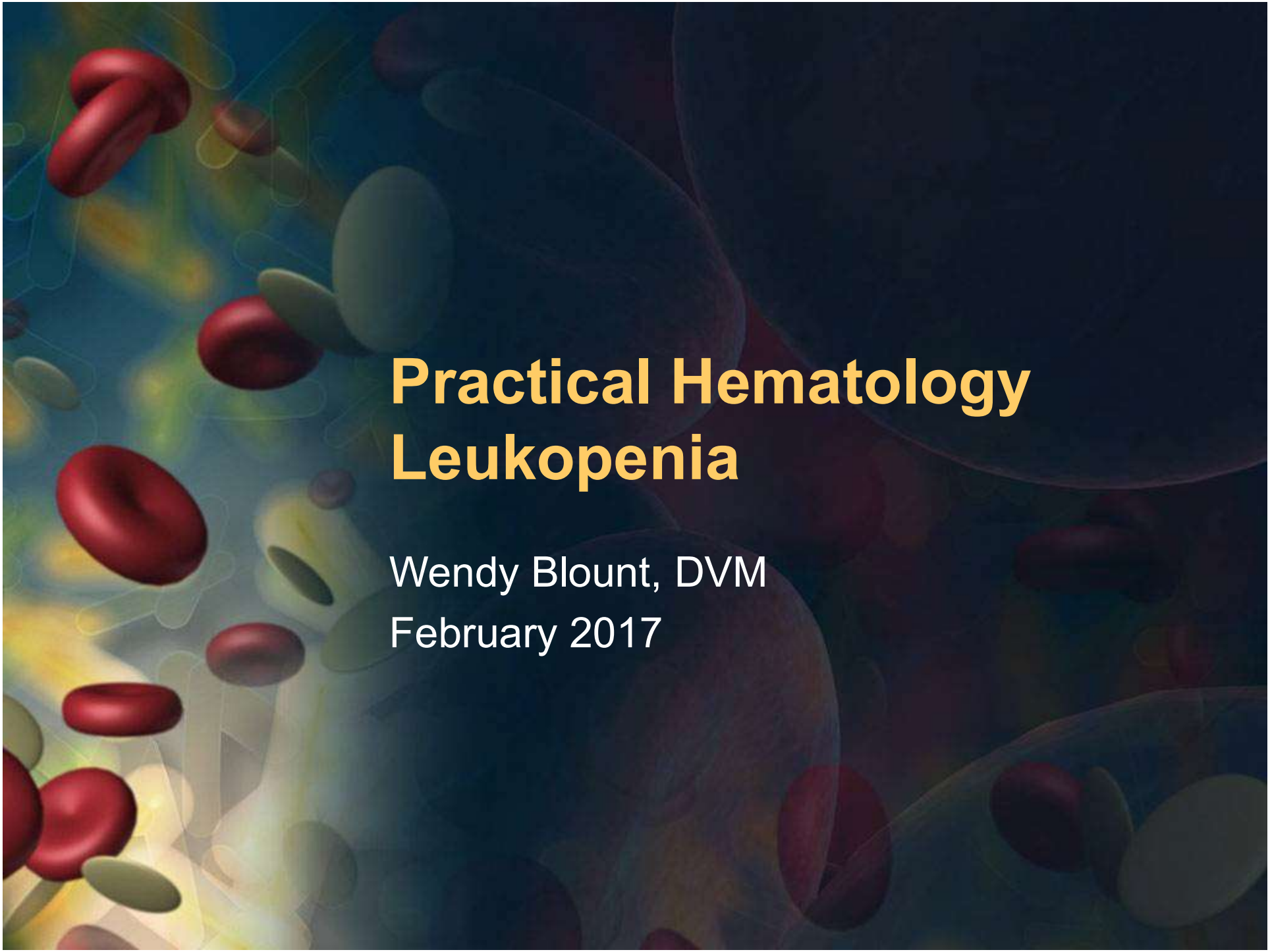
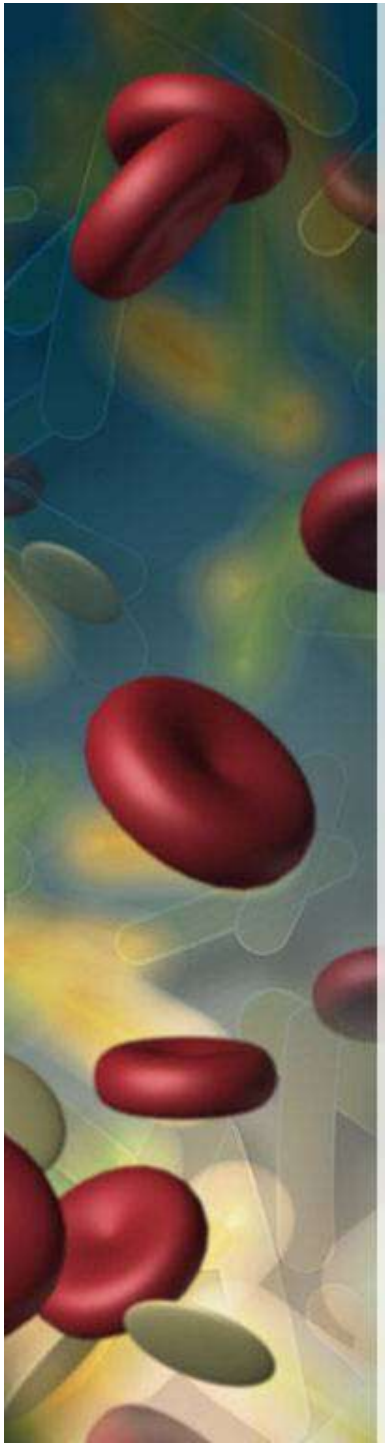


Practical Hematology
Leukopenia

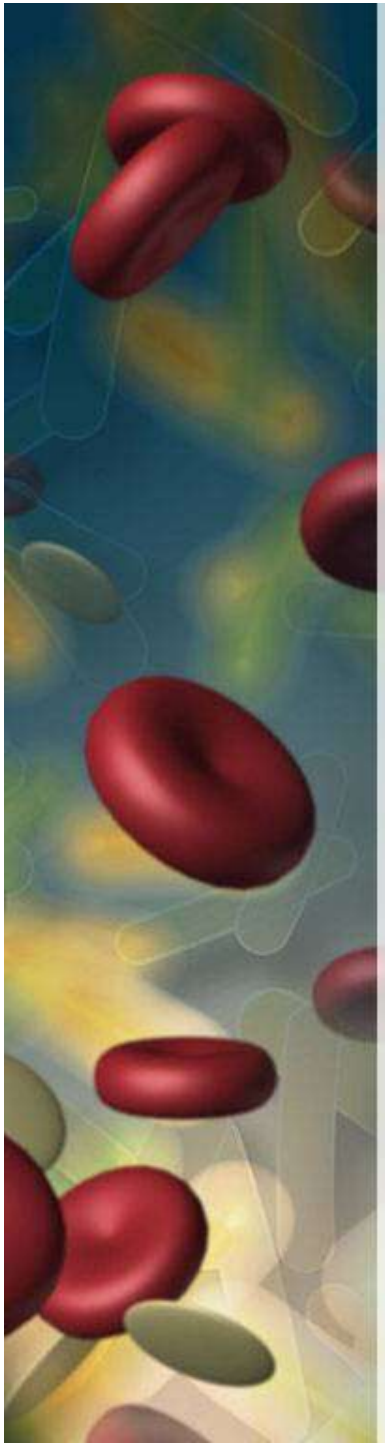
Wendy Blount, DVM

February 2017



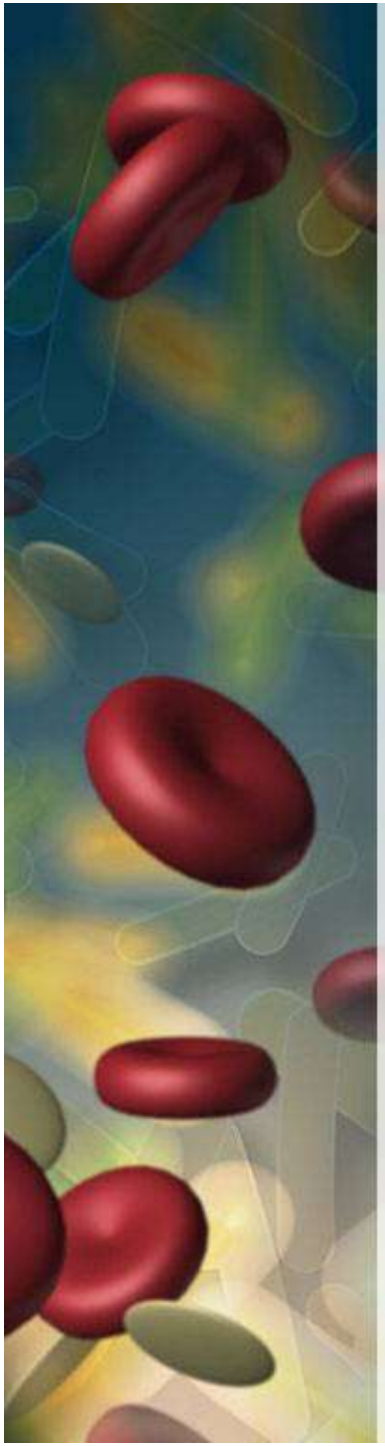
Practical Hematology

1. **Blood Loss Anemia**
2. **Hemolysis**
3. **Bone Marrow Disease**
4. **Transfusion Medicine**
5. **Polycythemia**
6. **Coagulopathy**
7. **Central IV Lines**
8. **Leukophilia**
9. Leukopenia
10. Splenic Disease



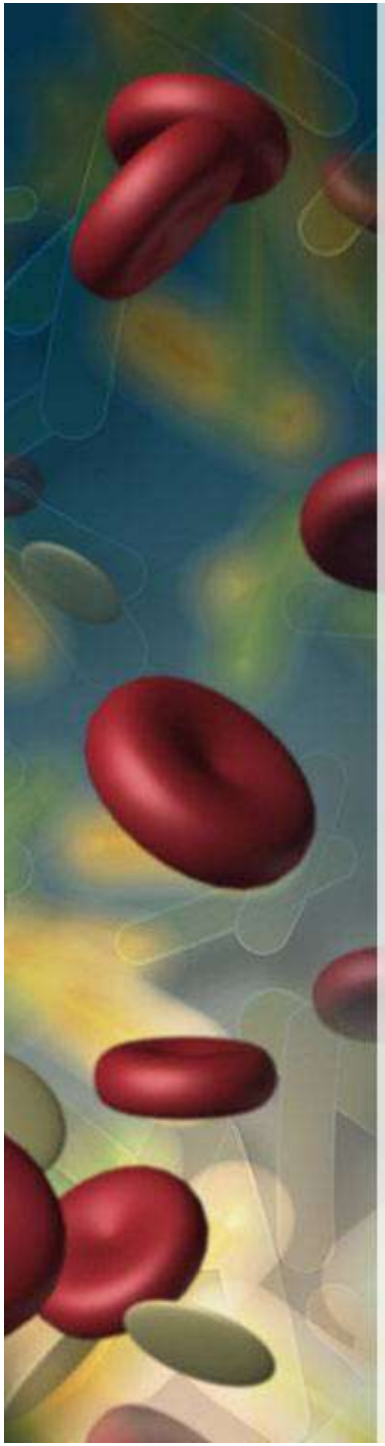
Neutropenia

- DDx:
  - Excessive peripheral consumption
    - Infection
    - Necrosis
    - IM neutropenia
  - Bone marrow disease
    - See non-regenerative anemia
  - Test for parvovirus
    - Diarrhea
    - < 2 years of age
    - Immunosuppressed
    - Swab tonsils then rectum



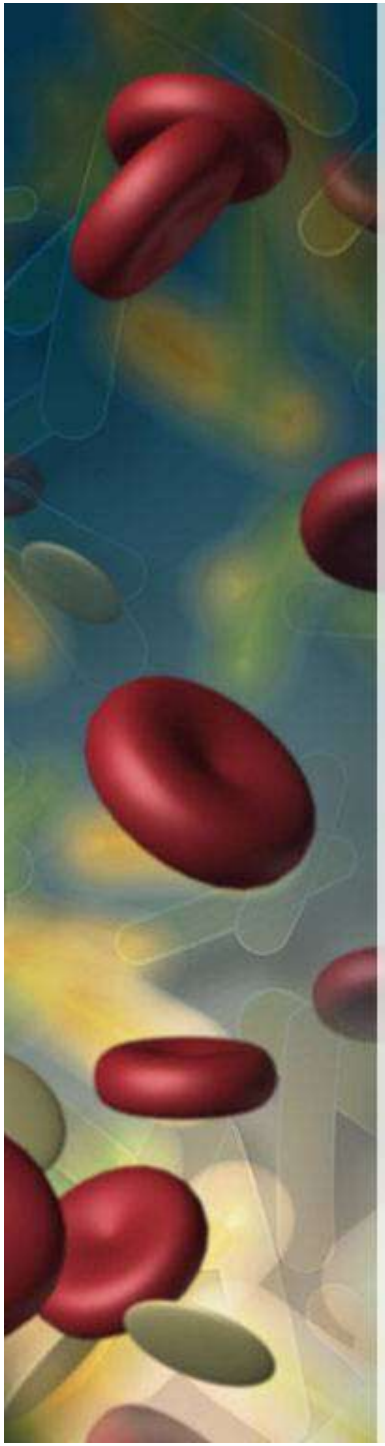
Neutropenia

- Treatment
  - Treat obvious causes of infection, necrosis or inflammation
  - If no obvious causes, work up for occult infection
  - Discontinue myelosuppressive drugs
  - Prophylactic antibiotics
    - 1500-2000/ul - amoxicillin
    - <1500/ul – amoxicillin and quinolone
      - Clindamycin and quinolone
      - Metronidazole and quinolone
    - If septic, IV antibiotics



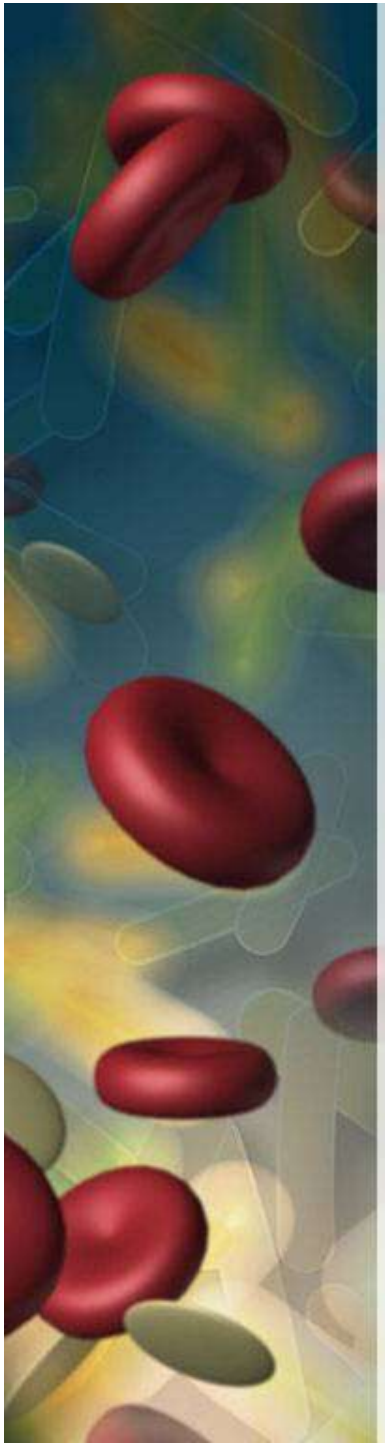
Neutropenia

- Treatment
  - Recheck CBC weekly
  - Bone marrow sampling of no response
    - Sooner if bicytopenia or pancytopenia
    - FeLV IFA in cats
  - Neupogen if maturation arrest
    - GCSF - Granulocyte colony stimulation factor
  - Doxycycline then Immunosuppressive therapy for IM neutropenia



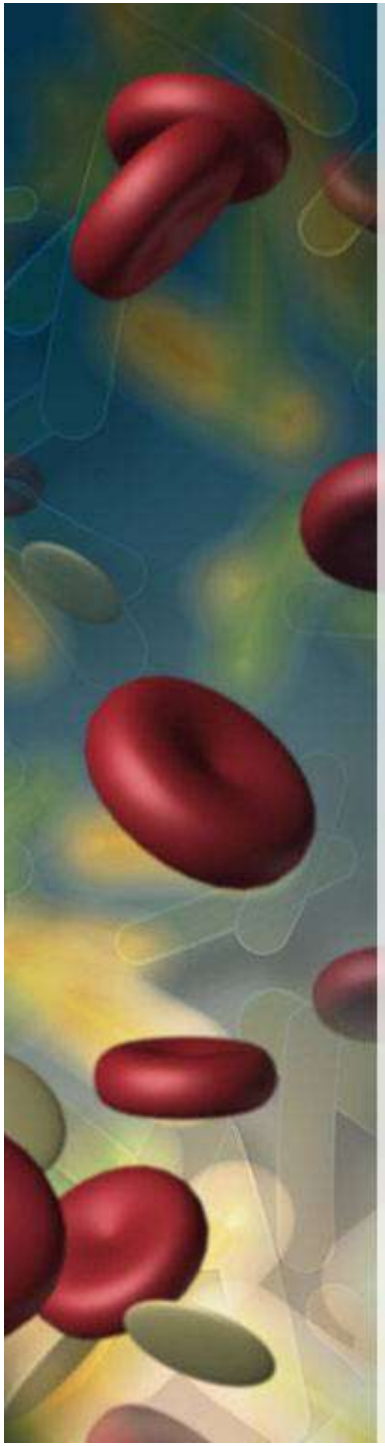
Degenerative Left Shift

- Due to overwhelming inflammation
  - Normal pyramid of maturation is interrupted
  - So there are more young cells than mature
  - Usually, the more mature forms are more plentiful
    - Most Segs
    - Then bands
    - Then metamyelocytes
    - Then myelocytes
    - Then promyelocytes
    - Fewest myeloblasts



Lymphopenia (& Eosinopenia)

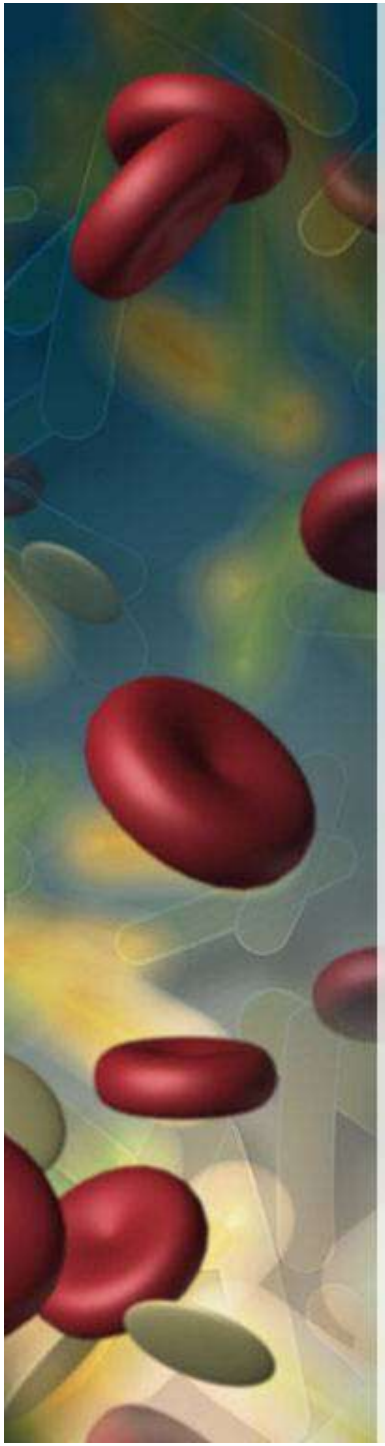
- Severe stress
- corticosteroid administration
- Hyperadrenocorticism
- Some viral infections
  - FIP
  - Infectious canine hepatitis
  - Canine distemper virus
  - Parvovirus
  - Coronavirus
- Acute inflammation
- Loss of lymphocyte rich lymph
  - Chylothorax
  - Protein losing enteropathy, lymphangiectasia
  - Lymphatic disruption by infection, inflammation, neoplasia



Leukocyte Function Defects

- Canine CD11/CD187 Adhesion Protein Deficiency (CLAD)
- Chronic granulomatous Disease in Doberman Pinschers
- Myeloperoxidase deficiency
- Recurring infections in Weimeraners
- Congenital myelodyplasias
- **Pups die at a young age**

- Acquired neutrophil dysfunctions
  - FeLV, FIV and other immunosuppressive diseases



Acknowledgements

Chapter 2: The Complete Blood Count, Bone Marrow Examination, and Blood Banking

- Douglass Weiss and Harold Tvedten
- Small Animal Clinical Diagnosis by Laboratory Methods, eds Michael D Willard and Harold Tvedten, 5th Ed 2012

Chapter 4: Leukocyte Disorders

- Harold Tvedten and Rose Raskin
- Small Animal Clinical Diagnosis by Laboratory Methods, eds Michael D Willard and Harold Tvedten, 5th Ed 2012