

Diseases of



**PROSIMIANS (BEFORE APES),  
NEW AND OLD WORLD  
MONKEYS,  
APES**

# Prosimians



- The mammalian order **Primates** is divided informally into three main groupings: prosimians, monkeys of the New World, and monkeys and apes of the Old World.
- The prosimians are species whose bodies most closely resemble that of the early proto-primates.



- **Blue-eyed-black lemurs** are the only primate other than humans to have blue eyes.
- Nocturnal prosimians have large, occasionally enormous with large pupils and rod-rich retinas.
- All, with the exception of the tarsiers, have retinal fovea and a reflective, choroidal tapetum lucidum (further characterized as being of tapetum cellulosum type) deep to the retinal photoreceptor layer



- All prosimians have opposable first digits on their fore and hind limbs and all, including the aye-aye, which has functional claws instead of nails on all toes but the hallux, have a toilet-claw.
- Toilet-claws, are long, laterally compressed, and longitudinally curved like typical claws, but differ from them by having a blunt end and steeper angle relative to the digit.

# Hemosiderosis



- **Hemosiderosis**, or iron overload, is the intracellular accumulation of iron in the absence of other tissue damage.
- It is a common finding in a number of lemur species in captive settings.

# Hemosiderosis



- In prosimians, iron accumulation usually occurs first in the small intestine (particularly duodenum) and is followed by storage in the **liver, spleen, and bone marrow**.
- With routine hematoxylin and eosin staining, it appears as intracytoplasmic, **Brown granular** to globular material that stains **blue with Prussian blue** staining.
- Intestinal accumulation often starts in *macrophages*.

# Hemosiderosis



- In severe cases, accumulation may result in grossly apparent brown discoloration of the intestinal mucosa.
- In severe cases, excessive iron accumulation can result in **hemochromatosis** characterized by fibrosis, hepatocyte necrosis, hepatocyte fatty degeneration, bile duct hyperplasia, and/or nodular regeneration.

# Cataract



- As in other species, causes vary and can include metabolic, traumatic, heritable, or degenerative processes; they can also develop secondary to other ocular infectious, inflammatory, or neoplastic diseases.
- Blindness can result in animals with severe, complete cataracts.



# Cataract



- Histologic cataractous lesions in prosimians are similar to those in other species and include:
  - ❖ **subcapsular epithelial cell hyperplasia** with or without *fibrous metaplasia*;
  - ❖ disorganization, separation, and **swelling of lens fibers**
  - ❖ lens **fiber degeneration with the formation of globular protein aggregates** (Morgagnian globules); and
  - ❖ fragmentation of lens fibers with the formation of clefts or vacuoles.

# Gastric Pneumatosis



- It is characterized by focal or regionally extensive expansion of the gastric submucosa by large, multifocal to coalescing, cyst-like spaces.

# Gastric Pneumatosis



- The cause of this condition has not been identified.
- Infectious agents, including gas-forming bacteria, fungi, or parasites, are not found in affected tissue.
- Some have suggested that diets high in carbohydrates and sugars may be a contributing factor in lesion development, but this remains to be proven.

# Gastric Pneumatosis



- Clinical signs that are nonspecific and may be absent or include
  - lethargy,
  - weakness,
  - inappetence,
  - vomiting, and
  - weight loss or sudden death with no premonitory signs.

# Gastric Pneumatosis



- Histologically, affected tissue may contain mild multifocal inflammation that varies from primarily eosinophilic to histiocytic, lymphoplasmacytic or mixed with occasional multinucleated giant cells.