GERBILS

*Meriones unguiculatus* – Mongolian Gerbil; outbred; limited number of inbred strains are available.

**ANATOMIC FEATURES**

**Hematopoietic** – high proportion of red cells with polychromasia, basophilic stippling, reticulocytosis; 10-day short half-life of erythrocytes; lymphocytes predominate; normally lipemic, hypercholesterolemic, (used in studies of cholesterol metabolism).

**Incomplete Circle of Willis** – stroke research, cerebral ischemia on ipsilateral side following common carotid artery ligation.

**Behavior** – desert-dwelling, burrowing, resistant to heat stress and dehydration; monogamous pairs.

**Urinary** – long renal papillae, long loops of Henle; myofibroblasts comprise the lamina muscularis of Bowman’s capsule, comprised of cells intermediate between fibroblasts and smooth myocytes; unique to *Meriones*.

**Reproductive** – 4-6 day estrous cycle; gestation 24-26 days; permanent pairings of male and female; if one mate dies, survivor will reject others; 4 teats; no prepucial gland.

**Ventral Marking Gland** – midventral sebaceous gland with specialized hairs, prominent in males.

Adrenal Gland – very large/body weight.

Very large auditory bullae.

Epileptiform Seizures – common especially in black gerbils.

**VIRAL DISEASES**

(No reported naturally occurring viral infections, perhaps due to ignorance.)

**BACTERIAL DISEASES**

**TYZZER’S DISEASE**

**Etiology:** *Clostridium piliforme*

**Transmission:** common, highly susceptible; environmental sentinel.

**Clinical:** diarrhea; mortality in 5-7 days with multifocal hepatic necrosis; pale hepatic foci, ecchymoses on small intestine and cecum.

**Pathology:** pinpoint pale foci of hepatic coagulative to caseous necrosis concentrated in periportal regions, intracytoplasmic bacilli in adjacent hepatocytes (Warthin-Starry silver, Giemsa stains); necrosis and sloughing of enterocytes, blunting of villi, transmural edema, polymorphonuclear leukocytic infiltrates; focal necrosis of Peyer’s patches, mesenteric lymph nodes; focal myocardial coagulative necrosis; suppurative encephalitis.

**Ddx:** *Salmonella*.

**Significance:** particularly susceptible, fatal; interspecies spread.

**SALMONELLOSIS**

**Etiology:** *Salmonella typhimurium*.

**Transmission:** cockroaches?

**Clinical:** diarrhea, dehydration, neutrophilia; mortality rate among 3-10 week old >90%.

**Pathology:** multifocal hepatitis, crypt abscesses.

**Ddx:** Tyzzer’s.

**Significance:** adolescents very susceptible; interspecies transmission.

**STAPHYLOCOCCUS**

**Etiology:** *Staphylococcus aureus*, beta-hemolytic.

**Clinical:** alopecia, erythema, moist brown exudates.

**Pathology:** diffuse moist suppurative dermatitis of face, nose, feet, legs, ventrum; acanthosis, hyperkeratosis, ulceration; occasionally with associated focal suppurative hepatitis.

**Significance:** high morbidity and mortality possible among young.

**NASAL DERMATITIS**

**Etiology:** also referred to as sore nose; perhaps associated with *Staphylococcus xylosus* (*saprophyticus*) and *S. aures*; temporally related to stress, trauma, excessive attempts to burrow and accumulations of porphyrin-containing Harderian lacrimal gland secretions (Harderian secretions are mixed with saliva during normal thermoregulatory grooming); absence of sand.

**Transmission:** incidence 5% in juveniles, adults.
Clinical: dermatitis, alopecia around external nares and upper labia.
Pathology: ulcerative dermatitis with exudation, excoriation, crusting of around nares, upper lip, around eyes, forepaws.
Significance: remove stressors, provide sandy bedding, clean and treat lesions.

*Bordetella bronchiseptica* – susceptible; not natural infection; contact with guinea pigs, rabbits.

**CAR bacillus** – susceptible.

**Leptospira** – susceptible, not natural infection, persists, zoonotic.

**PARASITIC DISEASES**

**Demodex meriones** – perhaps *D. aurati* or *D.criceti* (hamster mites), localized to tailhead alopecia, scaling, ulceration.

**Giardia** – highly susceptible to experimental infection; not natural disease.

**Oxyuriasis** – potentially become asymptotically infected with several pinworms, interspecies transmission of *S. obvelata, S. muris*; none as clinical problems.

**Hymenolepis nana** – diarrhea, possible zoonosis.

**OTHER DISORDERS**

**Epilepsy** – common, spontaneous, audiogenic, incidence 40-80% within 6-10 months age; single autosomal locus with at least one dominant allele with variable penetrance; myoclonic, clonic-tonic seizures, vestibular aberrations, no apparent histopathological lesions; do not treat with diphenylhydantoin, fatal.

**Periodontal disease, Dental Carries** – prone, common by 1 year age.

**Focal Myocardial Degeneration** – with interstitial fibrosis, >50% male breeders

**Aural Cholesteatoma** – accumulations of keratinized epithelium on tympanic membrane and external auditory canal; incidence >50% at 2 years age; (otitis media/interna are rare in gerbils).

**Cystic ovaries** – incidence 50% females over 400 days age.

**NEOPLASMS**

Relatively low incidence of mammary, pituitary, lung neoplasms. **Ovarian granulosa cell** tumors, **adrenocortical**, and **cutaneous** tumors most commonly described.