

The Laboratory Guinea Pig

Stephen B. Harvey, DVM, MS, DACLAM
University of Georgia
May 2009

Many thanks to these individuals for their extensive previous work in compiling this material:

Dr. Diane Forsythe
Dr. Mary Grant
Dr. Marti Hanes

Disclaimer

- Not ACLAM-sanctioned
- No specific knowledge of material on the 2009 ACLAM exam



- Name two inbred strains of guinea pigs:
- Order:
- Suborder:
- Family:
- Genus/Species:



Abyssinian



Two outbred stocks: Dunkin-Hartley & Hartley

Guinea pigs have precocious offspring.

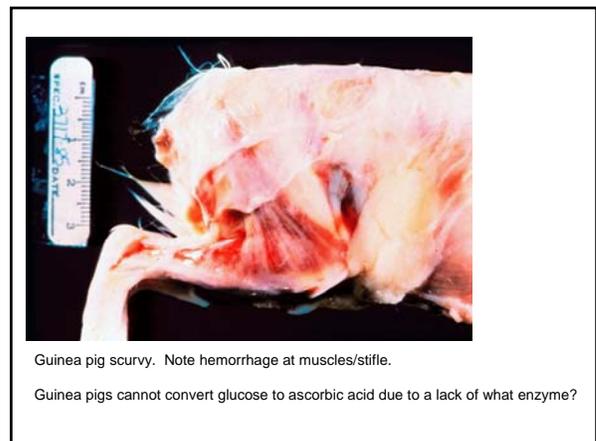
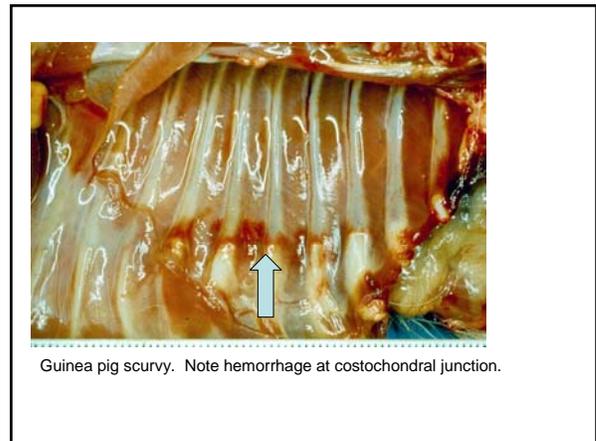
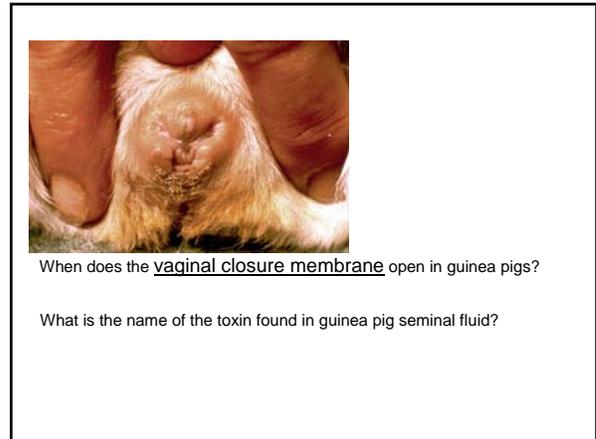
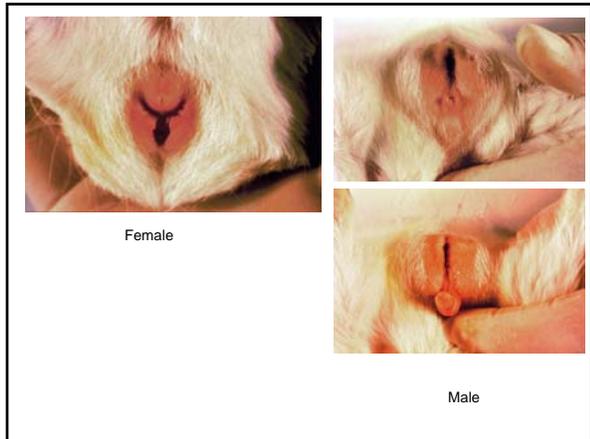
Name other laboratory animal species with precocious offspring:



True/False: The hairless guinea pig is euthymic.

Have been used as a model for studying chemical warfare vesicants such as mustard gas.

Crit: IAF (HA) BR

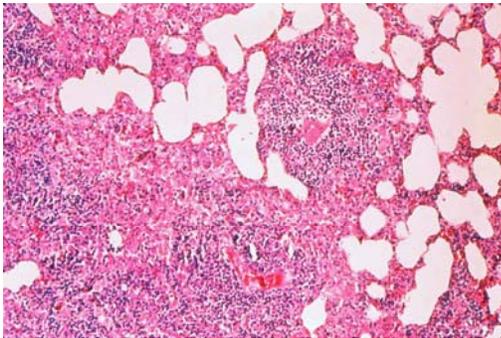




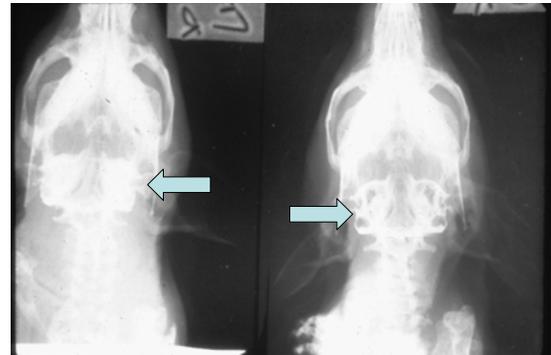
Guinea pig scurvy



Bronchopneumonia in a guinea pig.



Suppurative bronchopneumonia. Likely etiologic agent?



What's your diagnosis?

Differential etiologic diagnoses?

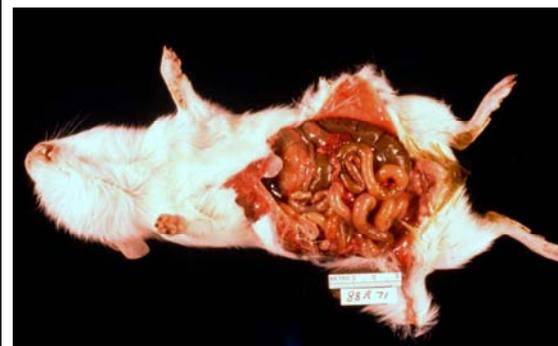


What's your diagnosis?

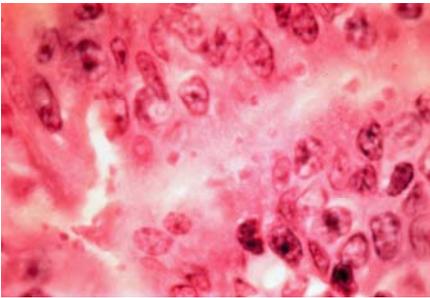
List some additional species which are susceptible to this (or a similar) problem.



Slide 1 of 3: Diarrhea in guinea pigs. What are some differential diagnoses?



Slide 2 of 3: Gas-filled intestine.



Acid-fast

Cryptosporidiosis



Ascarid ovum

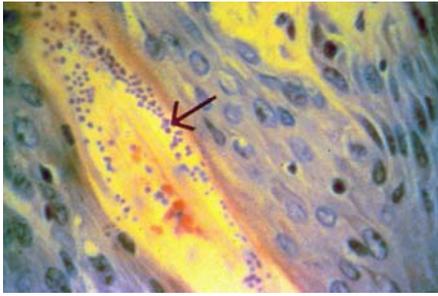


Diagnosis (genus and species):

Direct life cycle; complete in 65 days
No migration beyond the intestinal mucosa
Infections usually asymptomatic



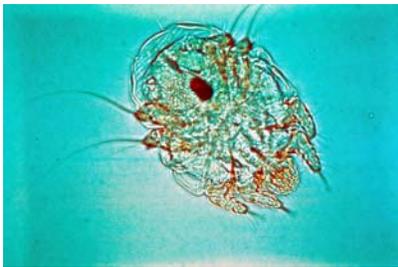
Gross slide from a guinea pig.



Trichophyton mentagrophytes. Spores can be demonstrated in hair follicles on H&E. PAS or silver staining may aid visualizing the fungi.



Focal alopecia and pruritus in a guinea pig.



What's your diagnosis?

Etiologic agent?



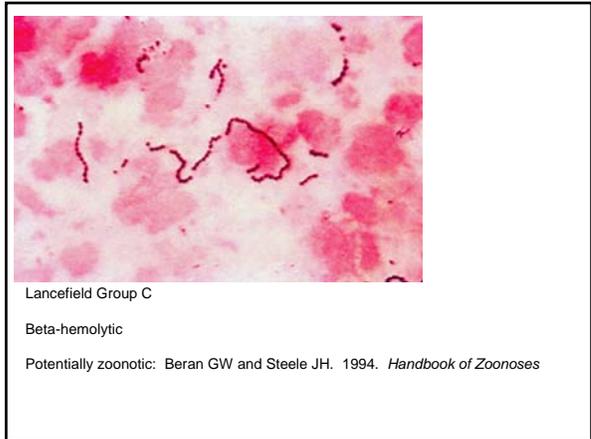
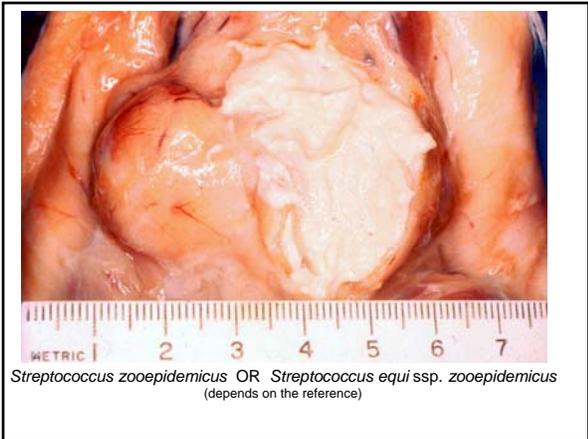
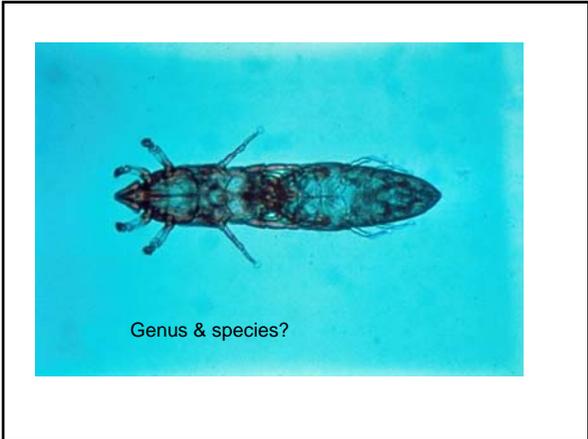
Gross image from the hairs of a guinea pig.



What's your diagnosis? Genus & species.

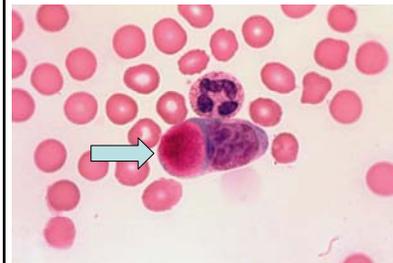


Genus & species?



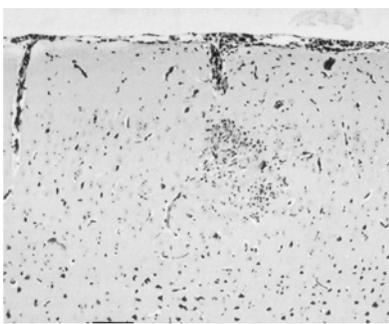


Blood smear from a guinea pig. What is it ???!!!!

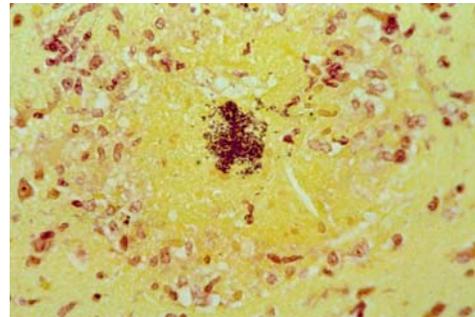


KURLOFF CELL
(A.K.A "Foa-Kurloff cells")

- Unique mononuclear cells found in certain tissues of guinea pigs
- In nonpregnant animals, located in
 - Splenic sinusoids (can be identified on splenic impression smears)
 - Stromal tissues of bone marrow and thymus
- In pregnant animals, increase with pregnancy & in response to estrogen
- PAS positive, mucopolysaccharide
- Considered to be the counterpart of NK cells in other species; NK cytotoxic activity



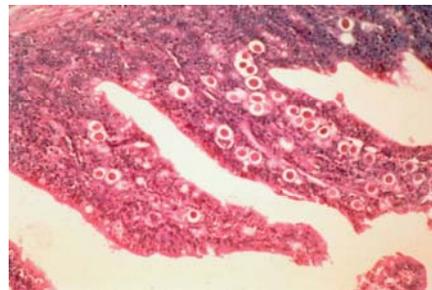
Histo slide from a guinea pig.
Morphologic diagnosis?
Differential diagnoses?



Encephalitozoon cuniculi in a guinea pig



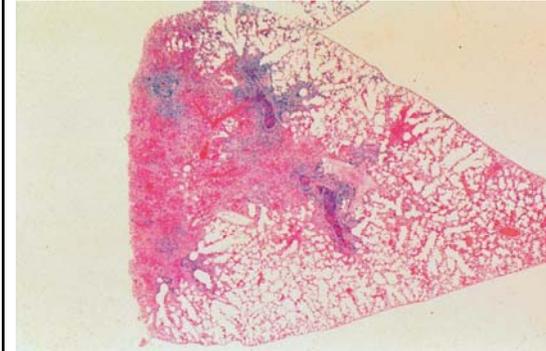
Animals in a shipment of 2-month-old Hartley guinea pigs were depressed, Anorexic, with pasty stools.



Etiologic diagnosis?

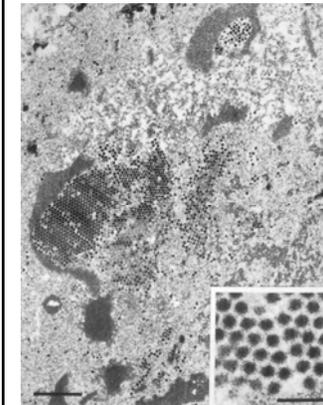
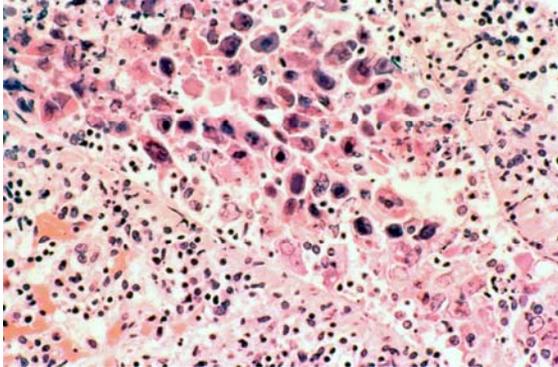
Identify the name of the test used to identify *Listeria monocytogenes* by instilling a culture of the bacterium into the conjunctival sac of guinea pigs or rabbits. The culture will produce severe keratoconjunctivitis sicca (KCS) within 24 hours.

- A. Sereny test
- B. Anton test
- C. Cobaye test
- D. Quelling test
- E. Draize test



Tissue from a guinea pig found dead without clinical signs. (histopath of lung)

Histopath: Note large oval basophilic intranuclear inclusions. Etiologic diagnosis?



Adenoviral pneumonia or pneumonitis in a guinea pig.

No serologic tests available.

"Adenoviral infections in colonies of guinea pigs are probably more relevant than currently recognized."

Percy & Barthold 2007

A recently-published paper describing a guinea pig model of transfusional iron overload confirmed that iron overload does NOT cause which of the following effects:

- a. Arrhythmias
- b. Darkly-pigmented skin
- c. Hepatomegaly
- d. Increased cardiac and hepatic iron concentrations

CM 57(4): 383-389, 2007.

Per a recent publication, the preferred injectable anesthetic regimen in guinea pigs for blood collection from the anterior vena cava is:

- a. Medetomidine 0.5 mg/kg IM
- b. Ketamine-Xylazine 30 & 2.5 mg/kg SC
- c. Ketamine-Xylazine 30 & 2.5 mg/kg IM
- d. Ketamine-Xylazine 30 & 2.5 mg/kg IP
- e. Pentobarbital 37 mg/kg IP

JAALAS 47(6): 56-60, 2008.

Guinea pigs are a suitable model for tuberculosis research because of which of the following characteristics:

- a. Extreme susceptibility to TB infection
- b. Symptoms and pathology similar to human TB infection
- c. Delayed-Type Hypersensitivity (DTH) response
- d. Demonstrated protection from infection when admin. BCG
- e. All of the above

CM 58(4): 324-340, 2008.



THE END