charles river
accelerating drug development. exactly.

Guinea Pig Adenovirus
(GpAV, GAV)

Classification
DNA virus, enveloped

Family
Adenoviridae

Affected species
Guinea pigs

Frequency
The prevalence is unknown in pet guinea pigs, but the virus has a moderate prevalence in laboratory guinea pigs.

Transmission
GpAV is transmitted through direct contact.

Clinical Signs and Lesions
In one well-documented outbreak, relatively few animals became ill, with affected animals showing only a mild dyspnea, but nearly 100% of those animals died. Subclinical infections do occur. Younger and immunosuppressed animals appear more susceptible.

Necropsy of affected animals revealed pulmonary consolidation of the cranial lobes. On histologic examination, there is non-suppurative necrotizing bronchitis and bronchiolitis. Typical basophilic adenoviral inclusion bodies are usually easily found in the nuclei of epithelial cells.

Diagnosis
Prior GpAV exposure may be detected by IFA or ELISA. Since serologic tests typically use antigen from mouse adenovirus (MAV), care should be taken that the laboratory uses both MAV-1 and MAV-2 strains, sometimes referred to as FL and K-87, in order to have adequate sensitivity for detection of GpAV.

Because animals clinically ill with GpAV are unlikely to have detectable antibodies, active disease can be diagnosed by PCR of the feces or lung. Typical gross and histopathologic lesions of adenoviral pneumonia are considered diagnostic, provided the characteristic intranuclear inclusions are seen.

Interference with Research
Other than mortality associated with some outbreaks, and pulmonary lesions associated with acute disease, there are no documented research effects. Animals infected with adenovirus may have acute changes that would render them unsuitable for use in pulmonary research.

Prevention and Treatment
Proper control of housing, materials, and personnel entry will prevent adenoviral infections of research colonies. Based on research in mice, rederivation of affected colonies via aseptic hysterectomy or embryo transfer should eradicate GpAV. It should be noted that embryo harvest and transfer in guinea pigs is technically challenging. Mouse adenovirus, which may be considered a surrogate for GpAV, remains stable in the environment for approximately 2 months at 4°C, 2 weeks at ambient temperature, and one week at 37°C. Oxidizing disinfectants should be used for decontamination of facilities and any equipment that cannot be autoclaved.

References
Butz, N., Ossent, P. & Homberger, F. R. Pathogenesis of guinea pig adenovirus infection. *Lab. Anim. Sci.* **49**, 600-604 (1999).

Fox, J.G., Anderson, L.C., Lowe, F.M. & Quimby, F.W. *Laboratory Animal Medicine*. 2nd ed. 1325 (Academic Press, San Diego, 2002).

Naumann, S., Kunstyr, I., Langer, I., Maess, J. & Horning, R. Lethal pneumonia in guinea pigs associated with a virus. *Lab Anim* **15**, 235-242 (1981).

Percy, D.H. & Barthold, S.W. *Pathology of Laboratory Rodents and Rabbits*. 325 (Ames, Iowa State University Press, 2007).

askcharlesriver@crl.com
www.criver.com