charles river
accelerating drug development. exactly.

Mouse Thymic Virus
(MTV, MTLV)

Classification
DNA virus, enveloped

Family
Herpesviridae

Affected species
Mice

Frequency
Rare in laboratory mice, common in wild mice.

Transmission
After infection, the virus persists in the salivary glands, producing a chronic and asymptomatic infection. It is excreted in the saliva for months after infection. It has also been isolated from the mammary tissues of a lactating mouse which suggests a possible transmission by milk.

Clinical Signs and Lesions
Spontaneous infections with MTV are asymptomatic. The clinical symptoms due to the virus depend upon the age of the mouse. This means that MTV experimental inoculation provokes lesions and immunosuppression only if the mice are infected as neonates (before the age of 10 days). Characteristic lesions include intranuclear inclusion bodies in thymocytes and necrosis of thymocytes. Necrosis of the lymph node and spleen may also occur, but to a lesser degree than in the thymus. When older animals are infected, thymic necrosis is not observed.

Diagnosis
MTV infection in a colony can be diagnosed with IFA, CF (complement fixation), or PCR. Animals infected as neonates may not seroconvert to MTV. In addition, observation of characteristic thymic lesions in young mice is another aid in diagnosis.

Interference with Research
Infection with MTV can have long-term immunosuppressive effects and may induce autoimmune disease in some strains of mice.

Prevention and Treatment
Wild mice are probably the principal virus reservoir and animal houses should be equipped with anti-rodent barriers. Wild-caught mouse colonies should be isolated from laboratory mice and rederived as soon as possible. Regular testing of colonies for antibodies to MTV should be part of routine health monitoring. Since this is not a common infectious agent among laboratory mice, testing frequency should be determined by the institution. Autoclaving, formalin treatment, detergents, and disinfectants effective against herpesviruses will all inactivate MTV.

Hysterectomy or embryo transfer rederivation will eradicate MTV from a colony and is recommended. Antibody-negative animals can also be selected from the colony for breeding. If this method is chosen, animals should be isolated and tested repeatedly to ensure they remain seronegative. This method will only succeed if animals are immunocompetent and if animals were not infected with MTV as neonates.

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