

Public Abstract

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Department:Veterinary Pathobiology

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Title:Isolation, Characterization, and Diagnosis of Murine Noroviruses, A Newly Recognized Pathogen of Mice

Noroviruses are the major cause of epidemic nonbacterial gastroenteritis in people, resulting in clinical symptoms of severe vomiting and diarrhea for 24 to 48 hours. In 2003, the first murine norovirus (MNV) was discovered infecting laboratory mice. To assess the extent of MNV infection in mice used for biomedical research, diagnostic assays were developed and revealed that 22.1% of 12,639 mice had antibodies to MNV. These results indicate widespread infection, making MNV the most prevalent viral pathogen in laboratory mice. Three novel strains of MNV were isolated and found to cause persistent infections in laboratory mice. This is in great contrast to the first MNV strain reported in 2003 and to human norovirus infections which both cause only transient infections lasting a few days. These novel strains were used to optimize serologic and molecular diagnostic assays to encompass detection of all known MNV strains. These diagnostic assays are currently being used as a service to the biomedical research community for the detection of MNV in laboratory mice. To determine if MNV infections in mice induces unwanted physiologic alterations that may confound research data, studies were conducted using microarrays, real-time RT-PCR, and protein detection assays to identify immunologic changes in MNV infected mice. Our studies were unable to identify any significant perturbations in more than 100 genes involved in the inflammatory response. Further studies are warranted to verify these finding and to determine the impact of MNV infection in laboratory mice used for biomedical research.