

# **Phylogenetic Characterization of Enzootic Nasal Tumor Virus (ENTV) Infecting Canadian Sheep**

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Enzootic nasal adenocarcinoma (ENA) or enzootic nasal tumor (ENT) is a contagious tumour of the nasal mucosa of sheep and goats. ENA was first recorded in Germany in 1939 and since then has been reported in all sheep-rearing countries with the exception of Australia and New Zealand. Clinical signs include a clear nasal discharge leading to a “washed nose” appearance, accompanied with snoring, coughing, wheezing and difficult breathing. ENA has been experimentally transmitted in sheep and goats using tumor extracts and concentrated nasal fluid proving the infectious nature of this disease. The retrovirus, enzootic nasal tumor virus (ENTV), has been implicated in the cause of this lethal and contagious nasal tumor but confirmation of its role in how this happens has not been possible due to our inability to grow the virus. Diagnosis of ENA depends primarily on clinical and histological findings. Sheep infected with ENTV do not seroconvert so traditional blood tests are of little use in telling if the sheep is infected. Very little is known about the prevalence of this disease, particularly in North America, and to date, no information is available for which strains of ENTV are circulating in North America. In this report, the genomic sequence of ten ENTV isolates from clinical samples of ENA obtained from conventionally reared sheep in Canada and the United States was determined.

Phylogenetic analysis of multiple ENTV genomic sequences has allowed us to develop a diagnostic test based on detecting the virus in the blood of infected sheep (using a hemi-nested PCR assay that is specific for North American strains of ENTV). This test is currently being evaluated for the diagnosis of ENTV in nasal swabs and blood samples.