Oral presentation

**LJUNGAN VIRUS, A CANDIDATE VIRUS IN ASSOCIATION WITH SEVERAL HUMAN DISEASES, FOUND IN BANK VOLES AND YELLOW-NECKED MICE FOR THE FIRST TIME IN NORTHERN ITALY**

**HEIDI C. HAUFFE**, **1,7, BO NIKLASSON**, **2,3**, **THERESE OLSSON**, **2**, **ALESSANDRO BIANCHI**, **4**, **ANNAPOALA RIZZOLI**, **1**, and **WILLIAM KLITZ** **5,6**

1 Fondazione E. Mach, Centro di Ecologia Alpina, Viote del Monte Bondone, 38100 Trento, Italy; 2 Apodemus AB, Grevgatan 38, SE-114 53 Stockholm, Sweden; 3 Department of Medical Cell Biology, Uppsala University, Box 571, SE-751 23 Uppsala, Sweden; 4 Ambulatorio Veterinario Tavernerio, via Salvo d’Acquisto 8, 22038 Tavernerio (CO), Italy; 5 School of Public Health, University of California, 140 Warren Hall, Berkeley, CA 94720-7360, USA; 6 Public Health Institute, Oakland, CA 94607-4046, USA; 7 Corresponding author (e-mail: hauffe@cealp.it)

The Ljungan (picorna) virus (LV) was first isolated in 1998 from Swedish bank voles (*Myodes glareolus*) after clinically recognizable type-1 diabetes-like symptoms were noted in this species in Denmark. LV has subsequently been shown to induce type-2-like diabetes, as well as uterine resorptions, malformations, and neonatal death in CD-1 laboratory house mice, and has been found in wild voles in the USA, as well as in lemmings and laboratory rats. Intriguingly, the incidence of type-1 diabetes, Guillain-Barré syndrome and myocarditis in the human population is correlated with rodent population cycles in Sweden. In addition, LV has been associated with intrauterine fetal death in Sweden, and a preliminary study showed that children newly diagnosed with type-1 diabetes have significantly increased levels of LV antibodies compared to controls. It has been hypothesized that the bank vole as well as other small rodents could act as reservoirs and/or vectors of LV that may be a zoonotic agent several human diseases or pathologies, including economically important type-1 diabetes. Consequently, knowledge of the distribution LV among wild and domestic mammal species is crucial to assess its potential importance as a human pathogen, identify possible zoonotic sources of the virus and lay groundwork for possible vaccine development. Here we provide a review of the current understanding of the ecopathology of LV and present the first results from southern Europe. Using Real Time RT PCR, LV was confirmed in 50% (10/20) of bank voles and in 10% (2/20) of yellow-necked mice (*Apodemus flavicollis*) collected from an alpine meadow in northern Italy during 2006. LV-positive animals included males and females, adults and subadults. This is the first time LV has been reported in Italy and in yellow-necked mice. These results significantly increase the geographical and species range of LV. We believe the global distribution of this picornavirus, and its role as a zoonotic agent, deserve further attention.