PARTIAL MOLECULAR CHARACTERIZATION OF THE ATLANTIC SALMON PAPILLOMATOSIS VIRUS

A. Doszpoly*[1], T.A. Karaseva[2], T.B. Waltzek[3], I.S. Shchelkunov[4]

[1] *Institute for Veterinary Medical Research, Centre for Agricultural Research, Hungarian Academy of Sciences, Budapest, Hungary*
[2]*Polar Research Institute of Marine Fisheries and Oceanography, Murmansk, Kola Peninsular, Russia*
[3]*Department of Infectious Disease and Pathology*, *College of Veterinary Medicine, University of Florida, Gainesville, Florida, USA*
[4]*All Russia Research Institute for Veterinary Virology and Microbiology, Pokrov, Russia*

Herpesviruses of fish and amphibians have been classified into a novel family, the *Alloherpesviridae*, under a newly established order (*Herpesvirales*) with the herpesviruses of higher vertebrates (*Herpesviridae)* and mollusks (*Malacoherpesviridae*). Presently, the family *Alloherpesviridae* contains four genera with 12 accepted virus species. The genus *Salmonivirus* contains three viruses isolated from different salmonid species, the *Salmonid herpesvirus 1*, *2* and *3*.

Atlantic salmon papillomatosis is a benign skin disease that has been reported since the 1950s in wild and farmed Atlantic salmon (*Salmo salar*) in Scandinavia, Scotland and in the northwestern part of Russia. The disease mainly affects juveniles in fresh water and occasionally migrating adults returning to rivers to spawn. A viral agent, resembling a herpesvirus, has been observed within proliferating epidermal cells by electron microscopy. Attempts to isolate the virus from diseased fish using several fish cell lines yielded negative results.

In this study we provide the very first herpesviral sequences detected in the papillomas from diseased Russian Atlantic salmon. Three partial gene fragments (DNA polymerase, terminase and glycoprotein) were amplified and sequenced from specimens collected in 2011 from different rivers and hatcheries in the Kola Peninsula. The Phylogenetic analyses, based on the partial sequences of the viral polymerase and terminase genes, supported the virus as a novel member of the genus *Salmonivirus* within the family *Alloherpesviridae* as the sister species to SalHV-3. The sequences of the Atlantic salmon papillomatosis virus differ markedly from those of the three known salmoniviruses, therefore the authors propose the Salmonid herpesvirus 4 (SalHV-4) species designation. These data are consistent with previous ultrastructural evidence that the virus is a herpesvirus.