The aim of the study is to compare the susceptibility to the Infectious Pancreas Necrosis Virus (IPNV) of the Salmonids from Salmoninae subfamily, i.e. brook trout *Salvelinus fontinalis* and its interspecific hybrid with rainbow trout *Oncorhynchus mykiss*, the rainbow brook trout *Salvelinus fontinalis* x *Oncorhynchus mykiss*. The results will provide information about the course of infectious pancreatic necrosis infection in the early development stages of brook trout. Our research will be pioneering because of the use of micromanipulation techniques to carry out experimental infection, as well as involving interspecific hybrids.

Apart from the standard methods of cumulative mortality analysis, biometric and anatomopathological evaluation, molecular techniques will be used. The experimental infection will be performed using microinjection to the eggs 50 hours after eggs fertilisation. During the experiment, we will examine cumulative mortality of eggs in each of the subgroups, so that we can detect whether there is an increased mortality in infected groups. In addition, we will determine the effect of the microinjection technique on the mortality of eggs, using injected groups without the virus. After hatching, the monitoring of fish behaviour in the subgroups will start. The hatch will be biometrically evaluated, with particular regard to the size of the yolk sac. What is more, during each sampling tissue samples for histopathological examination using haematoxylin-eosin staining will be collected. We intend to analyse the expression of immune-related genes and its changes over time. We have selected genes responsible for the encoding of pro-inflammatory cytokines IL-1α, IL-1β, IL-6, TNFα, chemokine IL-8 and antiviral IFNγ and lysozyme. For this analysis, we will use a technique for RNA isolation, reverse transcriptase PCR (RT-PCR) and quantitative PCR (qPCR).

The project will answer the question whether IPNV infection affects mortality of brook trout and rainbow brook trout eggs during incubation and fry mortality within three weeks after hatching. In addition, we will find out if IPNV infection can affect growth, yolk sac absorption time and larval behaviour. By simulating a vertical infection, it will be possible to determine how a juvenile organism with a non-mature immune system responds to the infection, and whether the infection can affect the condition of the internal organs at such an early stage of development. What is more, information on the course of mortality will bring us closer to the information whether the rainbow brook trout inherits the susceptibility to IPNV in the maternal line (after rainbow trout) or paternal (after brook trout). Besides, we will have the opportunity to evaluate the use of microinjection technique in farmed fish.

This topic is interesting because as IPN has not yet been studied on such young fish, or even using similar methods. Infectious pancreatic necrosis contributes to significant losses in Salmonids farming throughout the world, especially juvenile stages of development. Therefore, the information obtained in our study may contribute to a better fight against this dreaded disease in the future.