

ENAC-SIE, SIE Project, Fall, N° SIE#	Start: 19/09/2017
4 ECTS credits	End: 22/12/2017

Title **Proliferative kidney disease in brown trout: testing epidemiological models on data from a laboratory experiment**

Supervisors Luca Carraro, Prof. Andrea Rinaldo

Objective Develop and test various types of epidemiological models on data from a laboratory experiment aimed to assess the effect of different levels of exposure to the PKD causative agent on brown trout.

Abstract Proliferative kidney disease (PKD) affects several salmonid species in temperate rivers and in aquacultures, and it has been recognized as one of the main causes of the decline in fish catches over the last decades. Incidence and mortality are known to be enhanced by warmer water temperatures. Therefore, environmental change is feared to cause PKD outbreaks in higher latitude and altitude regions as water temperatures are expected to increase. A laboratory experiment was carried out in a bid to evaluate the effect of different levels of parasite exposure (low, high, multiple) on prevalence and mortality in brown trout. Data are ready to be analysed through epidemiological models: in particular, the goal of the project is to develop and test a compartmental model (a classical tool in epidemiology) and a survival model (widely used in several disciplines, including medicine and sociology). The project can be led by two students, each one focusing on a different type of model.

Task description • Develop an epidemiological model and test it on the provided dataset.

Required skills • Good programming skills (preferably in MATLAB).
 • Attitude towards modelling.

Location EPFL, Lausanne (CH)

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