

## **MSc Project**

# **Unravelling genetic structure and gene flow patterns in groundwater amphipods from the genus *Niphargus***

We are looking for an enthusiastic MSc student who will be working on population genetics and diversity of groundwater amphipods. The project involves molecular biology work (PCRs and genotyping) and is part of a larger research program based in the Altermatt lab at Eawag/UZH.

### **Background**

Groundwater ecosystems are largely understudied, mostly because they are particularly difficult to access. Several studies, focusing on evaluating their biodiversity, have revealed that they are dominated by crustaceans and especially by amphipod species. The genus *Niphargus* is particularly abundant with hundreds of species described in various parts of the world. However, little is still known about the genetic structure of their different populations. To gain samples from groundwater amphipods, we have collaborated with many drinking water providers from the Töss catchment area (citizen science approach). They sampled their spring wells for any macroinvertebrate found in the water, which enabled us to collect many *Niphargus* sp. individuals. With this collection, we would like to shed light on the structure and genetic divergence between groundwater populations from the same catchment area, as well as connectivity and dispersal between these populations.

### **Aim**

In this MSc project, you would work on DNA extracted from hundreds of individuals belonging to a *Niphargus* species that were collected for the project “AmphiWell”. You would set up a protocol for the amplification of microsatellite regions for these species using primers found in the literature and you would genotype all individuals according to this protocol. With the dataset, you would then analyze the genetic diversity and structure of the different groundwater populations sampled in the Töss catchment area and evaluate the dispersal patterns of these organisms. Additionally, you would link these genetic data to hydrological information on groundwater distribution and water drainage. For more details see: <https://grundwasserfauna.amphipod.ch>

### **Requirements**

Interest in population genetics and ecology of aquatic invertebrates and interest/skills in molecular biology, interest in developing molecular protocols and in the analysis of complex datasets.

The MSc project can start any time.



### **Contact/Supervision:**

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More info: [www.altermattlab.ch](http://www.altermattlab.ch) and <https://grundwasserfauna.amphipod.ch>

We are looking forward to meeting you!