

## MSc Project

### Genomes, parasites, and sex:

### Unravelling the life history of freshwater mussels

We are looking for an enthusiastic MSc student with an interest in evolution, organismal biology, and genomics. Unionida is an order of freshwater mussels containing over 900 species worldwide that provide essential ecosystem services, such as nutrient cycling and water purification in aquatic environments. However, unfortunately many of these freshwater mussel species are endangered and suffering from population declines. Complicating conservation efforts, the group has a unique and complex life cycle involving glochidia larvae that parasitize fish hosts. In addition to this, most Unionid species have separate sexes, however several are known to be hermaphroditic under certain environmental conditions.



The aim of this study is to use comparative genomics to explore the genetic blueprint that underlies the unique parasitic life stages and reproductive modes exhibited in this group. By integrating publicly available data with newly sequenced genomic data from the Weber Lab, the project will investigate candidate genes and pathways associated with sex determination, hermaphroditism, and larval parasitism in Unionida.

This project is a great opportunity for someone wanting to develop their computational skills and deepen their understanding of genomics and organismal biology in a supportive environment. Specifically, the project will involve bioinformatic analysis, data visualization, and writing a manuscript for publication. If a specific aspect of Unionid biology particularly interests you, there is the flexibility to focus the project on that.

**Requirements:** Interest in evolution and genomics, self-motivated, strong problem solving, organizational, and English language skills. This project is computationally based, but there is no requirement for previous bioinformatics or coding experience, just a willingness to learn these skills. Start date is flexible. The work will be conducted at Eawag, Department of Aquatic Ecology (Dübendorf). We are looking forward to meeting you!

**Main and direct supervisor:**

Dr. Alexandra Weber ([alexandra.weber@eawag.ch](mailto:alexandra.weber@eawag.ch))

➔ More info: <https://www.weberlab.ch/>

**Co-supervision:** Dr. Arianna Lord

**Formal link/association to UZH:** Prof. Florian Altermatt