

# PhD Position: Exploring Flatworm Speciation and Biodiversity in the African Great Lakes

A fully funded 4-year PhD position is available in the Department of Environmental Sciences at the University of Basel to explore a recently discovered radiation of *Macrostomum* flatworms in the African Great Lakes region.

Adaptive radiations—characterized by rapid speciation and remarkable morphological diversity—are key drivers of biodiversity on our planet. Ecological opportunities such as the colonization of new environments like islands or lakes often trigger adaptive radiations. Yet a fundamental question remains unanswered: Why do some lineages radiate while closely related ones do not?

This project investigates this evolutionary puzzle by studying the newly discovered *Macrostomum* flatworm radiation in the African Great Lakes. While cichlid fishes in these lakes represent one of biology's most celebrated examples of an adaptive radiation, we have recently uncovered evidence that tiny flatworms have undergone a parallel but independent radiation in the same waters. This provides a unique opportunity to compare two different animal groups that evolved in the same environment but with fundamentally different biology.

The project brings together two complementary research areas:

## 1. Speciation Research

- Conduct fieldwork along lake shores in Zambia and Tanzania to collect flatworm samples
- Use phylogenetic and population genetic approaches to study speciation patterns
- Identify and describe new species, contributing to biodiversity research
- Investigate the role of two contrasting mating systems on speciation rates

## 2. Meiofauna Ecology

- Study the role of *Macrostomum* flatworms in sediment ecosystems
- Use stable isotope analysis to explore their position in the food web
- Examine morphological and behavioral adaptations to sediment environments using phalloidin staining and confocal microscopy
- Analyze population structures to understand biodiversity patterns

This project represents the first investigation of an adaptive radiation in free-living flatworms and will substantially contribute to understanding why speciation occurs in certain lineages but not others. We will directly compare the *Macrostomum* radiation with the extensively studied cichlid radiation, thus disentangling taxon-specific from general factors.

## National and international collaborations

- **Natural History Museum London:** Dr. Chris Laumer for nanopore sequencing-based molecular analyses
- **University of Basel:** Prof. Walter Salzburger for field work and comparative studies with cichlid fish radiations and Prof. Moritz Lehmann for stable isotope analysis
- **University of Dar es Salaam:** Field work, training, and knowledge dissemination

## Position Details

- Full-time (100%) PhD position with a salary of 47,040-55,000 CHF per year
- Funding secured for 4 years via a competitive Swiss National Science Foundation Ambizione grant awarded to Dr. Jeremias Brand.
- Training in evolutionary biology, phylogenetics, and molecular techniques
- Field research in East Africa, with the opportunity to contribute to fundamental questions in biodiversity science
- Dynamic research environment in Basel, with connections to the Biozentrum, ETH Zurich, and the Swiss Institute of Bioinformatics
- Regular seminars with international researchers

## Candidate Profile

### Essential Requirements

- MSc in Biology, Evolutionary Biology, Ecology, or a related field
- Fluency in spoken and written English
- Strong motivation to develop as a scientist
- Willingness to conduct regular multi-week field expeditions in East Africa

## Preferred Experience

- Knowledge of evolutionary biology concepts
- Experience with phylogenetics or genomics
- Familiarity with stable isotope analysis
- Experience with confocal microscopy or automated image analysis
- Previous fieldwork experience

## Location

Basel is a vibrant academic city at the border of Switzerland, Germany, and France. It offers an excellent quality of life and strong international connections. The University of Basel, founded in 1460, is Switzerland's oldest university and is consistently ranked among the world's top institutions for research.

## Commitment to Diversity

We are committed to fostering diversity in science and encourage applications from underrepresented groups and candidates from developing countries.

## Application Process

Please submit the following documents to [jeremias.brand@unibas.ch](mailto:jeremias.brand@unibas.ch):

- CV
- One-page cover letter explaining your motivation and relevant experience
- Two reference letters

**Application Deadline:** May 31, 2025

**Starting Date:** September 1, 2025

For further inquiries, contact Dr. Jeremias Brand at [jeremias.brand@unibas.ch](mailto:jeremias.brand@unibas.ch).