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**UNIVERSITÄT
BERN**

Vetsuisse Faculty
Institute of Parasitology

PhD Position at the Institute of Parasitology

PhD topic: The metabolism of the fox tapeworm *Echinococcus multilocularis* and its potential for novel, targeted treatments against alveolar echinococcosis

The **Institute of Parasitology Bern** carries out research on parasitic diseases of domestic and farm animals, and of humans, and is involved in teaching and diagnostic services and consulting.

In terms of research, we focus on the study of pathogenetic processes that occur during parasitic infections, as well as on the development of new therapeutic approaches. The main topics of interest are zoonotic helminthiasis (echinococcosis, fasciolosis), and abortion-causing protozoans (neosporosis, toxoplasmosis, tritrichomonosis). More information can be found under the following link: https://www.ipa.vetsuisse.unibe.ch/index_eng.html.

Background of the project: Alveolar echinococcosis (AE) caused by the cestode *Echinococcus multilocularis* (small fox tapeworm) is the highest ranking foodborne parasitic zoonosis in Europe. The metacestodes (larval stage) of *E. multilocularis* grow mainly in the liver in a tumor-like and infiltrative manner, and frequently form metastases in other organs. AE occurs in humans, dogs, monkeys and other mammals, and causes death if left untreated. AE cannot be cured by medication, as the current drugs in use are parasitostatic and do not kill the parasite. For these reasons, novel drug treatment options are urgently needed.

We have developed *in vitro* culture of the larval stage of the parasite as a highly valuable alternative to the animal model. *In vitro* culture is applied for *in vitro* drug screening and investigations on the mode of action of drugs, as well as for answering basic, cellular and molecular biological questions. These analyses are complemented with transcriptomic, proteomic and metabolomic analyses. Our research has been focusing on the mitochondrial energy metabolism of the parasite and the host-parasite interaction.

Project:

We have identified key aspects of energy and nutrient acquisition in *E. multilocularis*. One of them is the threonine dehydrogenase (TDH)-dependent threonine-uptake, which is crucial for parasite growth and development, that represents a non-functional pathway in humans ([Kaethner et al., 2025, Int J Parasitol Drugs Drug Resist](#)). Therefore, for the proposed project, the candidate will validate EmTDH expression through transcriptomic, proteomic and enzymatic analyses in samples from infected humans and animals and assess the essential roles of this enzyme by RNAi. Specific TDH inhibitors will be identified by screening repurposed drugs on the recombinant *E. multilocularis* and mouse enzymes. We will evaluate the efficacy on *E. multilocularis* versus mammalian cells *in vitro* and in the AE mouse model,

assessing functional effects on TDH activity and identifying other drug effects through identification via affinity chromatography and proteomics.

We therefore **offer from October 1, 2025**, or by appointment, **a PhD position**.

The PhD candidate should fit the following profile:

- Master in natural sciences, veterinary or human medicine
- High interest and experience in parasitology (ideally helminthology), biochemistry, cell biology, data analysis
- Team player
- Extensive experience with cell cultures, molecular biological and biochemical methods
- Basic knowledge in biostatistics
- Work with laboratory animals
- Good German and English skills
- Highly motivated, perseverant, curious, creative

We offer:

- Young, enthusiastic team
- Close collaboration within the team and other members of the Institute
- Established parasitological, cell biological, molecular biological and biochemical methods
- PhD Students will be part of the Graduate School of Cellular and Biomedical Sciences (<http://www.gcb.unibe.ch>)
- Funding through a project financed by the Swiss National Science Foundation (SNSF) with national and international collaborations
- PhD contract for 4 years
- Salary calculations following the guidelines of the University of Bern and the SNSF

Applications (cover letter, CV, records, references) should be submitted as a single PDF document to Barbara Gautschi (barbara.gautschi@unibe.ch) by September 15, 2025. More information about team and projects can be found here: http://www.ipa.vetsuisse.unibe.ch/forschung/gruppe_lundstroem_stadelmann.

Questions can be directly addressed to the group leader Prof. B. Lundström-Stadelmann (britta.lundstroem@unibe.ch).

We look forward to your application!