



BIOLOGY CENTRE CAS

Institute of Parasitology

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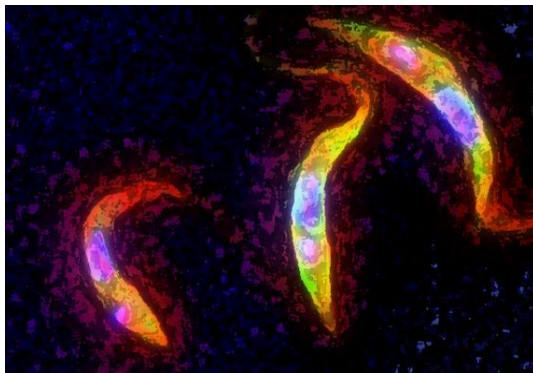
ERC funded PhD project on mitochondrial signaling and cellular differentiation

Job description:

Are you fascinated about the **determinants that influence cellular differentiation**? We are looking for a **PhD candidate** to help unravel the mitochondrial signaling pathways that contribute to these cellular decisions.

Background of your project:

The metabolites synthesized within **mitochondria** during energy production can function as intracellular **signaling molecules** that communicate the bioenergetic and biosynthetic fitness of the organelle to the nucleus. This information relay mechanism plays a powerful role in determining cellular fate. **The Laboratory of Functional Biology of Protists** utilizes the unicellular parasites, *Trypanosoma brucei* and *T. congolense*, as simplified but elegant model organisms. These protists offer exciting new possibilities to address significant knowledge gaps concerning the molecular mechanisms of mitochondrial signaling because their single mitochondrion undergoes drastic structural and metabolic rewiring during programmed development between several distinct life cycle forms.



Trypanosoma brucei cells stained for their nucleus (blue), mitochondrion (red) and cytosol (green).

Recent discoveries in the lab have determined that elevated reactive oxygen species (ROS) produced in the mitochondria are key signaling molecules required for cellular differentiation (Dolezelova et al., 2020, PLoS Biol, PMID: 32520929; also reviewed in PMID: 35325490). For more information on our research, please visit:

<https://www.paru.cas.cz/en/sections/molecular-parasitology/laboratory-of-functional-biology-of-protists/>

About your role:

You will be a key contributor to a small research team within the lab that integrates next-generation biosensors, advanced bioenergetic methods, redox proteomics and a CRISPR/Cas9 genetic screen within the *Trypanosoma* model organisms. These data sets will help resolve the following fundamental questions: Does mitochondrial ROS drive *Trypanosoma* cellular differentiation? What molecular processes are responsible for the elevated mitochondrial ROS levels during differentiation? How is the redox signal propagated to the rest of the cell? Specifically, you will contribute to the design and execution of your experiments, data analysis and manuscript preparation. Furthermore, you will have ample opportunities to present your findings at the annual PhD retreat, the institutional seminar series and international meetings.

About your workplace:

You will be enrolled in the **PhD program of Integrative Biology** under the Department of Molecular Biology and Genetics at the University of South Bohemia in Ceske Budejovice, Czech Republic (<https://www.prf.jcu.cz/en/admissions/degree-programmes/study-programme?programme=3140>).

Your scientific research will be performed at the Institute of Parasitology (IoP) (<https://www.paru.cas.cz/en/>), which is located on the same academic campus as the university. IoP is composed of 17 research groups and is the principal institution in the Czech Republic devoted exclusively to basic and applied research on human and animal parasites at the organismal, cellular and molecular levels. You will be an integral member of the vibrant and **international** research group lead by **Dr. Alena Zikova**, who was recently awarded the prestigious **European Research Council Consolidator Grant**. You will have excellent opportunities to advance your scientific career in a **nuturing and stimulating** research lab that has built an extensive network of national and international collaborators across Europe and the US. The lab is located in a **newly remodeled** open space research center that houses two other labs focused on various aspects of trypanosoma research. The scientific expertise and technical facilities of these joint Trypanosoma research groups are highly complementary, constituting a **collaborative and friendly environment** for cutting-edge research. Outstanding facilities are available for cellular physiology, advanced imaging and each of the major -omics fields.

České Budějovice is located 2 hours south of the capital city, Prague and 2 hours north of the Austria Alps. Situated on the confluence of the Vltava and Malse rivers, it has over 750 years of tradition. The many city parks and beautiful countryside contributes to a relaxed atmosphere. With about 100K inhabitants, the city still offers many cultural and recreational opportunities. In addition to these positives, the living costs are still low by international standards. Check out our **Guide for Expats** (<https://www.bc.cas.cz/en/employees/>) to read about life in the city and the Czech Republic.

About You:

You have recently completed a **Master's degree in biological sciences**.

You are an **enthusiastic scientist** with a curious mind, strong observational skills and keen analytical reasoning. Previous experience with parasites or mitochondrial research is a plus.

You are organized, accurate and responsible. Importantly, you possess **excellent communication skills** that contribute to a pleasant working atmosphere. You enjoy working collaboratively as part of a dynamic team on well-defined research projects. When necessary, your scientific passion enables you to work independently and demonstrate initiative by implementing new methodologies.

Our offer:

A four year governmental stipend supplemented by lab funding to ensure personal financial stability

While the official **PhD program will begin in September 2023**, we have the financial resources to begin your employment at an **earlier date** if you are available

A general understanding for a healthy work/life balance

Employment benefits:

- 5 weeks of paid holiday per year in total for 1 FTE
- Subsidized lunches in our own canteen
- Standard health insurance and social security
- Benefits from Social fund and student benefits
- Welcome service and further support for foreigners (visa application, administration, relocation & settlement support)
- Free language classes (Czech for foreigners, English for Czechs)
- Opportunity to take part in mentoring programmes as a mentor or a mentee
- Concessionary mobile tariff and banking services at the contractual operator and bank
- Access to accommodation in dormitories at the campus shared by the Biology Centre and the University of South Bohemia

About the selection process:

The Biology Centre of the Czech Academy of Sciences holds the **HR Excellence in Research Award**. Our selection process is transparent, open, non-discriminating, and fair. For more information about the researchers' recruitment policy at our institution, see **OTM-R**

(<https://www.bc.cas.cz/en/employees/candidates/otm-r/>).

At the deadline, we will select 3-5 of the best candidates and contact them via email to schedule an interview online.

How to apply:

Application deadline is Friday, February 24, 2023. Please submit your CV along with a motivational letter explaining your research passions and why you are uniquely qualified to join our research group. **Contact:** bpanicucci@paru.cas.cz.

You are invited to submit the names and contact information of two references.