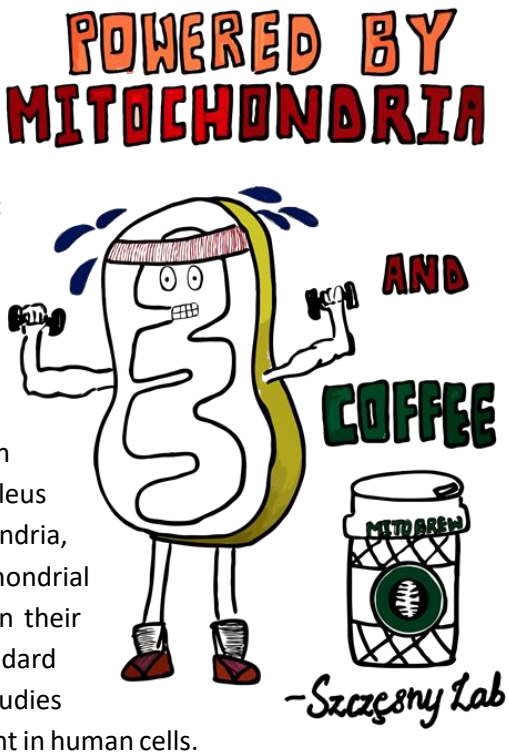
INSTITUTE OF BIOCHEMISTRY AND BIOPHYSICS
POLISH ACADEMY OF SCIENCES

Postdoc position in human mitochondrial biology

Laboratory of RNA Biology IBB PAS seeks a highly motivated Postdoc candidate who would like to join a mitochondrial research group working under the supervision of Dr Roman Szczesny.

The majority of mitochondrial proteins are nuclear-encoded, translated in the cytosol and imported into mitochondria. The most studied import pathway involves specialized outer and inner membrane translocases that recognize the N-terminal mitochondrial targeting signal (MTS) in protein precursors and deliver them to mitochondria. The number of annotated yeast and human mitochondrial proteins is likely underestimated. A bioinformatic survey and genetic and biochemical assays performed by Joanna Kufel's laboratory (a partner in the project) revealed that in yeast, a large number of non-mitochondrial proteins gain the MTS as the N-terminally extended (NTE) isoforms (Monteuuis et al. Nucleic Acids Res. 2019). NTEs are generated through the non-canonical translation initiation from non-AUG start codons. These proteins with a potential dual localization, with the major form residing in the nucleus or the cytoplasm and the alternative isoform targeted to mitochondria, represent a so-called "dark mitoproteome". Because mitochondrial variants are predominantly expressed at a much lower level than their standard counterparts, they have evaded detection by standard biochemical or proteomic approaches. Importantly, preliminary studies revealed that the phenomenon observed in yeast can also be present in human cells.



This joint project of Roman Szczesny (IBB PAS) and Joanna Kufel (University of Warsaw) laboratories aims to discover and characterize a new pathway for protein transport into the mitochondria. We intend to use several modern methods, both bioinformatic and genetic, molecular and biochemical, including high-throughput techniques using next-generation sequencing to achieve this goal. First, we plan to identify potential substrates of the new transport pathway to estimate its universal character. Next, we will determine the exact mechanism of this pathway, the factors involved in its regulation and the circumstances in which it is utilized. We also want to understand the importance of this non-canonical transport strategy for mitochondrial functions.

The selected candidate will be involved in the part of the project that utilizes human cells as a model. They will be responsible for the confirmation of mitochondrial localization of proteins identified in the bioinformatic screen, building a cell-based reporter system for monitoring of non-conventional protein import into mitochondria and performing siRNA high-throughput screen to identify machinery responsible for this process with support from other members of the laboratory. In addition, our studies revealed that mitochondrial genome expression results in double-stranded RNA production (Dhir et al., Nature, 2018). The experimental work of others and our preliminary bioinformatic analyses suggest that components of RNAi machinery might localize to human mitochondria. Thus, the selected candidate will also be involved in testing a hypothesis about the activity of RNAi-like pathways in mitochondria.

Visit our web to learn more about us: https://ibb.edu.pl/en/laboratory/roman-szczesny/

What we offer:

- Interesting and important research project.
- Supportive and inspiring work environment.
- Possibility to develop skills to supervise young researchers (doctoral and master students).
- Possibility to participate in specific international courses, workshops and conferences.
- Up to 28-months position, additional extension to 40 months depends on project implementation.
- Position with 100% focus on research (no teaching obligations).
- Remuneration: 7500-8500 PLN/month/gross, depending on experience.
- Additional annual remuneration (provided that the formal criteria are met).
- Motivation allowance (depending on research achievements affiliated with IBB PAS).
- Benefits including reduced-rate for private healthcare program and membership in MultiSport program.
- Support from the IBB Welcome Center with moving to a new place (https://welcome.ibb.edu.pl/).
- Delicious coffee and fruity Wednesdays.

Position starts on: as soon as possible, but can be discussed.

Profile of a candidate:

- PhD degree (or equivalent) in biology, biochemistry, genetics or other related life science discipline at the time of starting the position (you don't need to have the degree when applying). The PhD degree cannot have been obtained earlier than 2017[1].
- Passion for science, love of experimental research, and creativity.
- Ability to survey literature, analyze data and draw conclusions.
- Independent thinking, structured work organization, and a good team spirit are expected.
- Any experience in *in vitro* cell culture, cellular fractionation, imaging, RNA biology, next-generation sequencing, and involvement in studies on mitochondrial biology will be an advantage **but is not mandatory. Don't worry; we will be happy to support and teach you.**

Deadline for application:

The application **deadline** is **22-04-2024**. Selected candidates will be invited for interview (online). The competition may be extended until a suitable candidate who fulfils all requirements is found.
Don't wait; apply now.

Required documents:

- CV including scientific achievements, a short description of the research project(s) conducted so far, a list of known/used methods by the applicant, any other relevant information (prizes, honours, IT skills, organization of scientific meetings, experience in supervision of students/teaching).
- A copy of the PhD diploma or any other document that confirms PhD promotion or equivalent title.
- List of publications, if applicable.
- Contact information for at least one professional reference.
- Optional documents: reference letter(s), motivation letter - summary and relevance of your current research. Why you are interested in the position?

[1] This period may be extended by a time of long-term (in excess of 90 days) documented sick leaves or rehabilitation leaves granted on account of being unfit to work. In addition, the period may be extended by the number of months of a child care leave granted pursuant to the Labour Code and in the case of women, by 18 months for every child born or adopted, whichever manner of accounting for career breaks is preferable (please contact us if applicable).

How to apply:

- All documents (written in English or Polish) should be merged into one pdf file. The file should be named as follows: Last name_First name_CV.pdf. **Please email the file to** rszczesny@ibb.waw.pl. Add "Postdoc position" to the message's subject.
- Please include the following statement in your CV: *"I hereby agree to the processing of my personal data, included in the application documents by the Institute of Biochemistry and Biophysics PAS, 5A Pawińskiego Street, 02-106 Warsaw, for the purpose of carrying out the current recruitment process."*

Contact:

Any questions should be addressed to Roman Szczesny, rszczesny@ibb.waw.pl, and the "Postdoc position" should be added to the message's subject.

Funding:

National Science Center, Project number 2021/41/B/NZ2/03036, Project name: Expanding the mitochondrial proteome via the non-canonical translation mechanisms.

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