

Job posting for a PhD student/scholarship within the NCN OPUS27 project

“Mitochondrial metabolism of glycerol as a regulator of homeostasis and pathology of lymphocytes” (2024/53/B/NZ6/03902)

Name of the institute: Biotechnology Center of the Silesian University of Technology - Gliwice

Position: PhD student (scholarship holder)

Project description and research topic:

The work will be performed in the newly established "Immunometabolic Signaling" research group. Research on the metabolic mechanisms of immune regulation is one of the most dynamically developing fields of science worldwide. The group's task will be to develop this topic in collaboration with a partner laboratories at the National Institute of Oncology in Gliwice (Prof. dr. Tomasz Cichoń) and at the St. Jude Children's Research Hospital, Memphis, USA (Prof. dr. Douglas R. Green).

Induction of the T cell receptor (TCR) leads to the rapid proliferation and differentiation of lymphocytes aimed to combat pathogens. One of the still unexplained phenomena occurring after TCR ligation is the rapid generation of the mitochondrial "oxidative signal" (reactive oxygen species, ROS), which is necessary for the expression of key genes for the activation and proliferation of T lymphocytes. The molecular mechanisms of the generation of the "oxidative signal" are still not well understood and await practical application in therapy. One of the key proteins responsible for generation of the "oxidative signal" is the mitochondrial enzyme glycerol phosphate dehydrogenase (GPD2). GPD2 is an enzymatic "hub" connecting and integrating glycolysis, mitochondrial respiration, and lipid synthesis/lipolysis. Therefore, GPD2 appears to be an interesting and promising therapeutic target.

Chronic inflammation caused by obesity is one of the most serious risk factors responsible for increased mortality from diabetes, heart disease, and cancer. In obese individuals, adipose tissue is infiltrated by hyperactivated T lymphocytes, which are co-responsible for chronic inflammation in adipose tissue. **The question arises whether a therapeutic strategy aimed at inhibiting GPD2 activity and oxidative signaling would inhibit T cell activation in adipose tissue in obese individuals. This promising new approach could potentially provide an effective means of preventing adipose tissue inflammation and, consequently, the development of diabetes and cancer.**

To answer these intriguing questions, a variety of research methods will be employed, including cell cultures of primary lymphocytes and cell lines, molecular and cell biology methods, RT-PCR, flow cytometry, confocal microscopy, and metabolic tracing using GC-MS and ¹³C-labeled metabolites. T cell function will also be studied in vivo using a genetically modified GPD2-deficient mouse strain (GPD2 KO) fed a standard or high-fat diet.

Requirements:

1. **Master's degree in Biotechnology, Biology, Chemistry, Pharmacy, or a related field.**
2. Interest in one or more scientific fields: biochemistry, cellular and molecular biology, immunology, analytical chemistry, and a willingness to learn new things, as well as an open-minded and curious nature.
3. Experience in conducting research (authorship of publications and/or scientific reports is preferred).
4. Knowledge of cellular and molecular biology techniques (e.g., molecular cloning, transfection methods, cell culture transduction, RT-PCR), and biochemistry (e.g., Western Blotting, enzymatic activity assays). Experience with flow cytometry, confocal microscopy, and in particular, **analytical chemistry methods (GC-MS)** and experimental mouse in vivo work is a plus.
5. **Good command of English**, preferably confirmed by, e.g. oral presentation at an English-language scientific conference, foreign internship or an appropriate language certificate
6. Ability to think analytically and draw conclusions independently.
7. Ability to write and edit scientific texts is recommended.
8. High motivation for further development, teamwork skills and good work ethic

Responsibilities:

1. Concept development and experimental design
2. Research implementation and coordination
3. Critical thinking and data analysis
4. Reading and assessing scientific literature
5. Writing scientific papers and preparing oral scientific presentations

The employee will participate in the implementation of the tasks of the project "Mitochondrial metabolism of glycerol as a regulator of homeostasis and pathology of lymphocytes" (NCN grant OPUS27 2024/53/B/NZ6/03902), headed by Dr. Marcin Kamiński, prof. PŚ.

Deadline and submission of offers: December 15, 2025, 11:59 PM. The documents should be submitted in electronic form to the following e-mail address: **Marcin.Kaminski@polsl.pl**. Selected candidates will be invited to an online interview (MS Teams).

Employment:

Scholarship paid from the funds of the NCN OPUS27 2024/53/B/NZ6/03902 project (PLN 276,000/48 months, ca. 5000-6500 PLN/month). Employment begins in December 2025.

Additional information:

- Cover letter
- Copy of the Master's degree diploma
- Professional and academic curriculum vitae (CV) detailing completed training and courses, project participation, publications, and conference presentations. The CV must include consent to the processing of personal data for the purposes of the recruitment process in accordance with the Personal Data Protection Act of August 29, 1997 (Journal of Laws of 2015, item 2135, as amended).
- Other confirmations confirming the candidate's compliance with the above-mentioned requirements, in the form of diplomas, certificates, etc.

Information clause

Pursuant to Art. 13 of the Personal Data Protection Regulation of 27 April 2016, please be informed:

- 1) the controller of your personal data is the Silesian University of Technology with its registered office at Akademicka 2A St, 44-100 Gliwice,
- 2) the Silesian University of Technology has appointed the Data Protection Officer who can be contacted via the email address: iod@polsl.pl,
- 3) your personal data will be processed in order to carry out the recruitment process for work at the Silesian University of Technology,
- 4) the basis for the processing of your personal data is Art. 221 of the Labour Code and, if you consent to the use of your CV for future recruitment at the Silesian University of Technology, art. 6 section 1 point a of the GDPR regulation shall apply,
- 5) only employees authorized to process personal data to the necessary extent will have access to your personal data within the organizational structure of the Silesian University of Technology,
- 6) your personal data shall not be disclosed to other entities, except in cases provided for by law,
- 7) your personal data shall be stored for the period necessary to carry out the recruitment process or for the next 9 months after the end of the recruitment process, if you consent to the processing of personal data in future recruitment processes,
- 8) you have the right to request access to your data and, to the extent provided for by applicable regulations, the right to: rectify, delete, limit processing, raise objections; if you consent to the processing of data, you have the right to withdraw your consent at any time,
- 9) you have the right to lodge a complaint with the President of the Personal Data Protection Office, if you feel that the processing of your personal data violates the provisions of the General Data Protection Regulation,
- 10) providing data is voluntary, but necessary to achieve the purposes for which they are collected.