Biofabrication and bio-instructive materials

Silesian University of Technology

We are announcing a position as

Postdoctoral Researcher

in the Biofabrication and Bio-Instructive Materials research group

TOPIC: Cell culture optimisation and innovation in 3D-bioprinted vascular skin platforms obtained using volumetric printing.
PROFILE: PhD in cell biology, biochemistry, biomaterials or similar.

Outstanding Candidate needed. Are you willing to take up the challenge?

Job description:

Human skin is a complex, multi-layered organ with a highly organised microarchitecture that performs essential protective, metabolic, and sensory functions. Recreating the intricate structure and biological functionality of tissues in vitro remains one of the most significant challenges in tissue engineering. Existing commercial skin substitutes often fall short due to their limited functionality, poor integration, and inability to fully replicate the complex structure and physiology of native skin.

Therefore, in this project, we aim to develop advanced, personalised skin substitutes that closely mimic the three-layered architecture of human skin: epidermis, dermis, and subcutaneous adipose tissue with vascularisation. The approach integrates two cutting-edge biofabrication technologies: melt electrowriting (MEW) for creating precise, fibrous microstructures and volumetric bioprinting (VBP) for spatially distributing multiple cell types within 3D hydrogel matrices. Proposed engineered models will provide a highly tunable and biologically functional platform. The outcomes of this work will open new avenues in regenerative medicine, pharmacological testing, and fundamental skin biology, ultimately contributing to the development of next-generation skin-on-a-chip systems while supporting the replacement of animal testing models.

The offered position is funded by the FNP FIRST TEAM FENG grant no. FENG.02.02-IP.05-0263/24 received by dr hab. Malgorzata Wlodarczyk-Biegun.

LOCATION:
The Silesian University of Technology, Biotechnology Center
Gliwice, Poland

WORKING CONDITIONS:
Full-time

CONTRACT TYPE:
Employment

APPLICATION DEADLINE:
3rd September 2025

INTERVIEW:
September 2025

RESULTS:
Mid-September 2025

STARTING DATE:
October 2025

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Requirements:

We are seeking a highly motivated, adaptable, and intellectually curious postdoctoral researcher with good managerial skills and a strong drive for research and scientific exploration. We seek an individual who thrives in collaborative, interdisciplinary settings and is comfortable working within a culturally diverse, international research community.

A PhD degree in biology, biochemistry, biomaterials, or a related field is required. Candidates should have **expertise** in eukaryotic cell biology, cell culture, and the study of cell-material interactions, as well as experience working with growth factors, small bioactive molecules, and peptides. Additionally, proficiency in microscopy (including light, fluorescent, and confocal microscopy) and, preferably, bioprinting is required. **Proficiency in English**, in speaking and writing, is needed. Foreign internships and publications in international, peer-reviewed journals will be highly regarded, and experience in people management and supervising students or (preferably) a laboratory, is required.

We offer a unique opportunity to contribute to the groundbreaking project's goals by focusing on studying the biological performance of fabricated three-layered skin constructs that integrate fibrous MEW structures with volumetric bioprinting of various cell types (keratinocytes, fibroblasts, endothelial cells, and adipocytes) and functional vasculature. You will lead the biological evaluation of scaffolds and structures obtained at various stages of the project, ensuring optimal cell viability and tissue functionality, while performing a wide range of biochemical assays, immunostainings, and imaging techniques. You will be responsible for designing biological tests, conducting thorough data analysis, and accurately interpreting the results obtained from cell performance in fabricated structures, contributing to a deeper understanding of engineered skin regeneration. You will also contribute to project-related dissemination activities, present at national and international conferences, and publish results in peer-reviewed scientific journals. We expect you to dedicate a relevant amount of time to support the Principal Investigator in supervising the other team members and the biological laboratory.

Offer:

We offer an excellent opportunity to participate in an exciting project addressing relevant societal challenges. You will work in an attractive, interdisciplinary environment within an international, enthusiastic research group. Part of the group is based in Groningen, the Netherlands, which facilitates international collaborations and is expected to lead to increased impact and quality in the work conducted. We provide perfect conditions for the development of your independent career and international scientific network. The family-friendly working environment enables a balance between work and family life.

The temporary position is offered for four years. A very competitive salary on the European level is provided (approx. 15215 PLN /month gross, ca. 3570 EUR/month gross (with years of service)), with an additional end-of-year bonus of ca. 15520 PLN (ca. 3645 EUR), and holiday allowance (approx. 3000 PLN gross, ca. 675 EUR gross). Performance bonuses are available from the University.

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About the organisation:

This project will be conducted at the Biotechnology Center of the Silesian University of Technology (SUT) in Gliwice. SUT is one of the leading scientific institutions in Poland (ranked within the top 10 Polish research institutions), equipped with cutting-edge infrastructure. The Biotechnology Center brings together specialists from computer science, environmental science, chemistry, and biology to collaborate on innovative projects in the fields of bioinformatics, medical, environmental, and industrial biotechnology. The research lines include the development of new biomaterials, controlled cellular differentiation, and modelling of bioprocesses.

The Włodarczyk-Biegun lab, established here in 2019, is equipped with several printers, including a multifunctional GeSiM bioprinter with a melt electrowriting printhead, a Felix bioprinter, an FDM printer, an advanced rheometer with DMA function, a goniometer, and its own biological and chemical labs. A state-of-the-art volumetric printer (the second one in Poland) will be purchased from FNP First Team funds to implement the project. The group has solid experience in the field of biofabrication, developing new printable materials, new printing tools for hydrogel-based inks, electrowriting for the reconstruction of hierarchical structures and detailed characterisation of (bio)inks and printed scaffolds (e.g. rheology, SEM, and mechanical research).

Additional information:

Offers that are incomplete or submitted after the deadline will not be considered. Please be advised that only candidates selected for an interview will be contacted. The recruitment decision will be based on a combination of scientific merit, motivation, and the applicant's potential fit within our interdisciplinary and collaborative team culture. The expected date of the final selection is **mid-September 2025**.

For more information about this position and the project, please contact dr hab. inż. Malgorzata Wlodarczyk-Biegun, prof. PŚ (Associate Professor): gosia@biofabrication.group

How to apply:

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1. Submit your application in English by e-mail to: recruitment@biofabrication.group

2. In the subject, include "Postdoctoral Researcher" and your first and last name.

3. Your application should contain: a motivation letter describing your research interests; a short CV with the description of your key achievements; a list of up to 5 of your (best) publications; a copy of your diplomas; your contact details (e-mail and telephone number); names and contact details of at least two potential referees.

4. Please include the following statement in your application: "I hereby agree to the processing of my data included in the application documents by Silesian University of Technology, Gliwice, Poland, to carry out the recruitment process."

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Informative clause:

According to art. 13 of the Regulation on Personal Data Protection of 27 April 2016, please be informed:

1) The controller of your 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 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 agree to use your CV in future recruitments at the Silesian University of Technology, art. 6, clause 1 point a of the GDPR Regulation shall apply,
5) Only employees authorised to process personal data to the necessary extent will have access to your personal data within the organisational 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 from the end of the recruitment process, if you authorise the processing of personal data in future recruitment processes,
8) You have the right to request the access to the content of 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 Office for Personal Data Protection 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.