



HR EXCELLENCE IN RESEARCH



THE ADAM MICKIEWICZ UNIVERSITY, POZNAN

ANNOUNCES

A COMPETITION

for the position of Postdoctoral Researcher

at the NanoBioMedical Centre

in project nr. UMO-2022/47/D/ST5/03467

“Development and characterization of a novel bioink for fabrication of 3D printed bioartificial pulsatile prosthesis for applications in tissue engineering – PulsBioInk”

Basic information

1. Research discipline (research field):

Chemical Sciences, Material Science and Engineering, Biological Sciences

2. Number of work hours per week including a task-based work schedule (if applicable):

Full-time, 40 hours per week in a task-based work time system.

3. Type of an employment contract and expected duration of employment, i.e.: permanent/temporary/fixed-term contract for year/...years

Temporary contract for 36 months

4. Anticipated job starting date:

01-09-2024

5. Workplace location:

NanoBioMedical Centre, Wszechnicy Piastowskie 3, 61-614 Poznan.

6. Monthly salary:

11 666 zł (PLN) gross

7. Application deadline and process:

Electronic submission to jagoda.litowczenko@amu.edu.pl Application deadline: 23.06.2024.

Please note that the job reference number should be quoted in the application.

8. Required documents

- Application form/letter of the candidate (email);
- *Curriculum Vitae*;
- Diplomas or certificates issued by colleges and universities attesting to education and degrees or titles held (in case of academic degrees obtained abroad - the documents must meet the equivalence criteria set out in Article 328 of the Act of 20 July 2018 Law on Higher Education and Science (Journal of Laws of 2023, item 742 as amended ; Polish: Dziennik Ustaw 2023 poz. 742 z późniejszymi zmianami);
- Information on the Applicant's research, teaching and organizational achievements,
- Other documents as determined by the competition committee.
- Consent to the processing of personal data as follows : *In accordance with Article 6 (1) (a) of the General Data Protection Regulation of 27 April 2016. (OJ EU L 119/1 of 4 May 2016) I consent to the processing of personal data other than: first name, (first names) and surname; parents' first names; date of birth; place of residence (mailing address); education; previous employment history, included in my job offer for the purpose of the current recruitment."*;

Conditions of the competition determined by the competition committee

I) Determination of qualifications: (researcher profile) according to the Euraxess guidelines

- (R2) **Recognised Researcher** (PhD holders or equivalent who are not yet fully independent)

Applicants without a doctoral degree may apply, provided they submit their doctoral diploma no later than at the time of signing the employment contract.

II) Job Offer description

The job offer refers to the position in the SONATA project (National Science Center) titled "Development and characterization of a novel bioink for fabrication of 3D printed bioartificial pulsatile prosthesis for applications in tissue engineering – PulsBioInk" (Contract number: 2022/47/D/ST5/03467) under the supervision of dr Jagoda Litowczenko-Cybulska.

The aim of the project is to establish conditions for development of mechanically stable 3D printed stents which will be act as biocompatible biomimetic constructs containing human cardiomyocytes and endothelial cells. The main goal of the Sonata PulsBioInk project is to produce novel innovative bioimplants using the highly reproducible 3D bioprinting technique.

The project involves the use of the combination polymers of natural and synthetic origin to produce the novel bioink for direct 3D printing of cell constructs. Natural polymers based on silk fibroin with unique biological properties and mechanical properties, biodegradability, biocompatibility and bioresorbability will be used in combination with synthetic polymers with specific fiber architecture, aimed at improving the stability and mechanical properties of the scaffolds. The detailed impact of 3D-bioprinted grafts on encapsulated cell behavior as well as interactions between two types of human cells (cardiomyocytes and endothelial cells) will be studied *in vitro* and in a designed *ex vivo* bioreactor system.

Cardiovascular diseases (CVD) are one of the leading causes of death worldwide, leading to 17.9 million deaths each year. CVD is a general term covering a wide range of disorders of the heart and blood vessels that most commonly affect people over the age of 60. Congenital

heart disease (CHD) is one of the causes of chronic CVD, which is the most common cause of congenital pathologies and the most common congenital malformation, affecting almost 1% of all live births. In 2019, CHD was the leading cause of 217,000 deaths, of which 150,000 deaths were in infants under 1 year of age. A quarter of children affected by coronary heart disease will require major reconstructive surgery in their lifetime. Although significant improvements have been made in the treatment of congenital heart defects in recent decades, they remain the leading cause of death in the neonatal period. In the treatment of CHD, grafts made of synthetic materials such as polytetrafluoroethylene (PTFE or Gore-Tex) are used, which are prone to strictures, thromboembolism and infections. Graft failure rates have been reported to be 70 to 100% over 10 years. Therefore, patients require a series of reoperations to replace failed grafts, each of which is associated with mortality. Vascular tissue engineering provides a potential solution to these limitations.

The project aims to produce a highly stable for long-term culture cellular prosthesis construct that can be used as a model for testing/or treatment of cardiovascular diseases in the future. The project will be realized at the NanoBioMedical Centre (NBMC) AMU in cooperation with mainly University of Michigan.

The postdoctoral scientist will mainly be responsible for biomaterial design, 3D bioprinting, biofabrication as well as biomaterial characterization and biological investigation of cell-laden 3D bioprinted constructs and bioreactor setup.

III) Requirments and qualifications

The competition is open to individuals who meet the requirements specified in Article 113 of the Law on Higher Education and Science of 20 July 2018 (Journal of Laws of 2023, item 742, Article 113 as amended) and who meet the following requirements:

1. PhD in biological sciences, chemical sciences or materials engineering.
2. They fulfilled formal requirements regarding the date of obtaining the doctoral degree in accordance with the regulations of the National Science Center https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2021/uchwala81_2021-zal1.pdf . Applicants without a doctoral degree may apply, provided they submit their doctoral diploma no later than at the time of signing the employment contract.
3. Proven record of productivity and publications in indexed journals.
4. Experience in hydrogel methacrylation, 3D bioprinting and material characterisation.
5. Experience the techniques: Fourier Transform Infrared Spectroscopy (FTIR), UV-visible spectroscopy, Dynamic light scattering (DLS), Zeta potential analysis, and electron microscopy (both transmission [TEM] and scanning [SEM]).
6. Experience in in research work in the field of iPSC culture, differentiation and molecular biology (real time PCR, Western Blot) and antibacterial studies will be advantage.
7. Experience in the implementation of research grants as contractor.
8. Postdoc will be responsible for managing experiments in 3D bioprinting and characterization, as well as in cell biology (cell culture, molecular biology, cell imaging).

IV) Required languages

1. **Language:** English - Fluent

V) Required research, teaching or mixed experience

- Proven experience in human induced pluripotent stem cells culture, differentiation and characterisation (PCR, Western Blot).
- Expirience in 3D bioprinting and chemical characterisation of hydrogels (FTIR, UV/VIS spectrophotometer) will be an additional advantage.

- Knowledge of stem cell biology, molecular biology techniques, proteomics, Real-Time PCR, confocal microscopy methods.
- Independence, good organization of work, ability to work in a team.
- Experience in writing scientific publications and conference presentations.
- Excellent knowledge of relevant software such as: OriginLab, Fiji.
- Experience with working in an international environment will be highly appreciated

VI) Benefits

- ✓ financial bonuses for high-impact publications
- ✓ an atmosphere of respect and cooperation
- ✓ supporting employees with disabilities
- ✓ flexible working hours
- ✓ co-financing of language learning courses
- ✓ co-financing of training and courses
- ✓ additional days off for education
- ✓ life insurance
- ✓ pension plan
- ✓ savings and investment fund
- ✓ preferential loans
- ✓ additional social benefits
- ✓ leisure-time funding
- ✓ subsidizing children's vacations
- ✓ "13th" salary

VII) Eligibility criteria

1. Matching the candidate's scientific profile with the advertisement.
2. Number, scientific level of the candidate's scientific publications.
3. Number, scientific level and of the candidate's scientific conference presentations.
4. Grade on the diploma.
5. Internships and participation in research projects.

VIII) The selection process

1. Competition committee begins working no later than 14 days after the deadline for submission of documents.
2. Formal evaluation of submitted proposals.
3. Call to provide additional or missing documents if necessary.
4. Selection of candidates for the interview stage.
5. Interviews for candidates who meet the formal requirements.
6. The committee has the right to request external reviews of candidates' work or to ask candidates to conduct teaching assignments with an opportunity for student evaluation.
7. The chair of the competition committee announces the results and informs the candidates. This information will include justification with a reference to candidates' strengths and weaknesses. Submitted documents will be sent back to candidates.

IX) Prospects for professional development

- supervision in building a scientific profile through the publication in high-impact scientific journals,
- assistance in writing grant applications in domestic (FNP, NCN) and foreign (Horizon) research projects,
- establishing cooperation with renowned research centres in the world.

RODO Information Clause :

Pursuant to Article 13 of the General Data Protection Regulation of 27 April 2016. (Official Journal of the EU L 119 of 04.05.2016) we inform that:

1. The controller of your personal data is Adam Mickiewicz University, Poznań with the official seat: ul. Henryka Wieniawskiego 1, 61 - 712 Poznań.
2. The personal data controller has appointed a Data Protection Officer overseeing the correctness of the processing of personal data, who can be contacted via e-mail: iod@amu.edu.pl.
3. The purpose of processing your personal data is to carry out the recruitment process for the indicated job position.
4. The legal basis for the processing of your personal data is Article 6(1)(a) of the General Data Protection Regulation of 27 April 2016 and the Labour Code of 26 June 1974. (Journal of Laws of 1998 N21, item 94 as amended).
5. Your personal data will be stored for a period of 6 months from the end of the recruitment process.
6. Your personal data will not be made available to other entities, with the exception of entities authorized by law. Access to your data will be given to persons authorized by the Controller to process them in the performance of their duties.
7. You have the right to access your data and, subject to the law, the right to rectification, erasure, restriction of processing, the right to data portability, the right to object to processing, the right to withdraw consent at any time.
8. You have the right to lodge a complaint to the supervisory authority - the Chairman of the Office for Personal Data Protection, ul.Stawki 2, 00 - 193 Warsaw.
9. Providing personal data is mandatory under the law, otherwise it is voluntary.
10. Your personal data will not be processed by automated means and will not be subject to profiling.