INSTITUTE OF BIOORGANIC CHEMISTRY
Polish Academy of Sciences

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IBCH PAS RECRUITMENT PROCEDURE NO. 20/2024/SN FOR THE POSITION OF RESEARCH ASSISTANT

INSTITUTION:	Institute of Bioorganic Chemistry, Polish Academy of Sciences, Department of Molecular and Systems Biology
CITY:	Poznan
POSITION:	research assistant (PhD student)
POSITIONS AVAILABLE:	1
SCIENTIFIC DISCIPLINE:	Biological sciences or computer science and informatics
PUBLICATION DATE:	23.10.2024
APPLICATION DEADLINE:	22.11.2024
WEBSITE:	https://portal.ichb.pl/

KEYWORDS: ovarian cancer, spatial transcriptomics, next-generation sequencing (NGS), artificial intelligence, bioinformatics, mathematical modeling, image analysis, predictive algorithm

Principal Investigator: Mikołaj Zaborowski, PhD

Research topic: "Algorithm for personalizing ovarian cancer treatment based on a spatial transcriptomic model of tumor tissue with single-cell resolution**"**

Project description:

Most patients with ovarian cancer will experience a recurrence of the disease, which ultimately leads to a poor prognosis. The aim of the project is to develop an innovative predictive algorithm to determine (A) which patients will benefit from the use of available PARP inhibitor therapies, and (B) what new drugs could be used in the treatment-resistant group. Testing will involve developing a cancer tissue model by analyzing the spatial distribution of RNA expression, morphological features, and intercellular interactions. Data will be obtained using spatial transcriptomics of cancer tissue at single-cell resolution. Transcriptomic profile information at each location will be combined with its morphological characteristics in a 3D model of the tumor tissue. Spatial transcriptomic data and the characterization of tissue morphology will be analyzed using advanced mathematical tools and artificial intelligence techniques to develop a model that predicts which patients will respond to standard ovarian cancer treatment. In the treatment-resistant group, the algorithm will indicate which molecular pathways are disrupted and what alternative drugs could be used.

The Institute of Bioorganic Chemistry of the Polish Academy of Sciences (IBCH PAN), where this project will be implemented, is one of the leading research institutions in molecular biology, bioinformatics, and biomedicine in Poland. The work will be carried out in a young, interdisciplinary team, offering the opportunity to publish results well. Working on the project provides a great opportunity for growth and gaining experience in the field of (1) innovative spatial transcriptome sequencing techniques, (2) bioinformatic analysis of unique biomedical molecular and imaging data, (3) the application of state-of-the-art artificial intelligence methods for medical predictions, (4) large-scale computations on a high-throughput computing cluster, (5) and the use of advanced mathematical models.

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Additional information:

1. Research and doctoral work will be carried out as part of the FIRST TEAM FENG project, call 1/2023 nr FENG.02.02-IP.05-0361/23, titled: „Algorithm for personalizing ovarian cancer treatment based on a spatial transcriptomic model of tumor tissue with single-cell resolution".
2. The doctoral thesis will be carried out on an external basis.
3. The PhD student will receive a monthly salary of 11,500 PLN gross-gross (total employer cost) / full-time under an employment contract. Employment is planned at the full-time rate.

I. Requirements for the candidate:

1. Master's degree in the discipline of biological sciences, computer science, or related fields, or meeting the conditions specified in Article 186(2) of the Act of July 20, 2018, Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended).
2. Documented scientific achievements in the form of co-authorship in publications in recognized scientific journals (from the Web of Science database).
3. Required experience in analyzing data from next-generation sequencing (NGS). Experience in analyzing data from single-cell technologies and using machine learning methods is welcome. Experience in image analysis will also be an additional advantage.
4. Knowledge in transcriptomic data analysis, cancer genetics, molecular biology, machine learning, and the fundamental issues related to the research topic of the project.
5. Required experience in working with Python programming language. Knowledge of R will be an additional advantage.
6. Familiarity with libraries implementing artificial intelligence methods: tensorflow and/or pytorch or others is welcome.
7. Experience working with Linux systems and in high-throughput computing cluster environments, including the SLURM queuing system, is welcome.
8. Willingness to actively expand one's knowledge and skills.
9. Ability to work independently and solve problems independently, as well as adaptability to work in an interdisciplinary team.
10. Proficiency in spoken and written English, enabling effective communication and preparation of publications.

II. Job Description:

A bioinformatician (PhD student) experienced in analyzing next-generation sequencing (NGS) data. Their role will involve processing and analyzing data from spatial transcriptome sequencing, using bioinformatics methods for single-cell analysis and machine learning.

III. Job Responsibilities:

1. Active involvement in the implementation of the project in the following tasks:
   - Planning and conducting bioinformatics analyses, as well as developing and interpreting results
   - Processing raw data from spatial transcriptome sequencing
   - Preparing count matrices of single cells gene expression
   - Applying machine learning clustering methods and other artificial intelligence techniques to identify distinct cell populations
2. Continuously expanding knowledge in the project field through scientific literature
3. Engaging in the preparation of scientific publications
4. Presenting results at seminars, scientific meetings, and conferences.

IV. Required documents:

1. Letter of application to the Director of IBCH PAS.

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2. Scientific CV including a list of publications in recognized scientific journals (from the Web of Science database) with corresponding Impact Factor by WoS and citations count.

Additionally, depending on the candidate's achievements, the application may include:

- A list of additional publications,
- A list of patents,
- Information on leading or participating in research projects,
- Information on completed scientific internships,
- Information on awards and honors received,
- Information on completed training and passed specialized exams.

3. Copy of master's degree diploma.
4. Contact details to the referees.

V. Applications should be submitted via the eRecruiter portal:

https://system.erecruiter.pl/FormTemplates/RecruitmentForm.aspx?WebID=ca6b75eaaf484d8cb9442a0f3603cc3f

VI. The submission deadline is 22.11.2024

VII. Selection of candidates:
After conducting an initial verification based on the submitted documents, selected candidates may be invited for an interview, as a result of which a person recommended for employment will be chosen. The main criteria that will be taken into account during the selection of candidates are: (i) scientific achievements (publications), (ii) the compatibility of previous experience with the research tasks planned within the project, (iii) the PhD student's knowledge of the required skills and fundamental issues related to the project's topic (data analysis from sequencing, cancer biology, and genetics, machine learning methods)

VIII. The recruitment procedure shall be concluded no later than on 27.11.2024

IX. Employment shall take place in compliance with the provisions of the Labor Code of Poland.

X. We offer:

1. Opportunity to work in a leading scientific unit in Poland, in a young, interdisciplinary team of several people, who value reliability, cooperation and take up ambitious scientific challenges.
2. Position available immediately (depending on the outcome of the competition).
3. Position for a period of ...46... months
4. Planned full-time employment
5. The expected salary is approximately 11,500 PLN/month (total employer cost, approximately 9,450 PLN gross/month).

For more details, please contact:

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Information clause:

Under the stipulations of the regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), further referred to as GDPR, we hereby inform that:

- *The Institute of Bioorganic Chemistry, Polish Academy of Sciences, seated in Noskowskiego St. 12/14, 61-704 Poznan; REGON 000849327, NIP 777-00-02-062 is the administrator of the collected personal data (further referred to as the Institute).*
- *The Administrator appointed a Data Protection Officer, who can be contacted in writing, via traditional mail, by sending a letter to the following address: Z. Noskowskiego St. 12/14, 61-704 Poznan, or by sending an e-mail to: dpo@ibch.poznan.pl.*
- *The personal data of the candidates is processed for the purposes of fulfilling the tasks of the administrator, associated with conducting the recruitment procedure for a vacant position.*
- *The legal basis for processing personal data is the Act of 26 June 1974 – The Labor Code, Act of 30 April 2010 on the Polish Academy of Sciences or the consent of the person whose data shall be subjected to processing.*
- *Your personal data shall be subjected to processing for period of 3 months upon the date of the decision of the recruitment committee. Following this period, the data will be irretrievably and effectively destroyed.*
- *The personal data of the candidates shall not be transferred to any third country.*
- *The person whose data shall be subjected to processing has the right to:*

  - request access to his/her personal data, and to amend it or delete it, pursuant to articles 15-17 of GDPR;
  - limit data processing, in the events stipulated in Article 18 of GDPR;
  - data transferring, pursuant to Article 20 of GDPR;
  - withdraw consent at any moment, without influencing compliance with the law of the processing that was executed prior to consent withdrawal;
  - file a complaint to the Inspector General for Personal Data Protection.

Providing personal data in the scope stipulated in article 22 (1) of the Act of 26 June 1974 – The Labor Code is mandatory, whereas providing data in a broader scope is voluntary and requires consent for its processing.

Whistleblower Protection:

Please be informed that when reporting violations using the dedicated whistleblower system, the personal data of the reporting individual will be processed in accordance with the applicable data protection regulations, including the aforementioned Regulation of the European Parliament and of the Council (EU 2016/679 of April 27, 2016). We ensure the confidentiality and protection of the identity of whistleblowers, and their data will not be disclosed without their consent unless required by law.

Detailed rules regarding the protection of personal data and the procedures for reporting violations can be found in our Internal Reporting Regulations at the Institute of Bioorganic Chemistry of the Polish Academy of Sciences, available via the following link:
https://portal.ichb.pl/wp-content/uploads/2024/09/ZacznikdoZarzdzenianr29_09_2024REGULAMINZGOSZEWEWNTRZNYCH-1.pdf