

**Recruitment for the Poznań Doctoral School of the Institutes of the Polish Academy of Sciences  
at the Institute of Bioorganic Chemistry, PAS in Poznan  
Procedure no. 41/2022/ICHB/PSD**

INSTITUTION: Institute of Bioorganic Chemistry, PAS  
CITY: Poznan  
POSITION: PhD student  
POSITIONS AVAILABLE: 1  
SCIENTIFIC DISCIPLINE: biological sciences  
PUBLICATION DATE: 26.09.2022  
APPLICATION DEADLINE: 31.10.2022  
IBCH PAS WEBSITE: <https://portal.ibch.poznan.pl/homepage/>  
PDS IPAS WEBSITE: <https://psd-ipan.ichb.pl/index.php/en/home/>

**KEY WORDS:** structural biology, molecular biology, drug design, anticancer drugs, enzyme inhibitors, macromolecular structure,

Principal Investigator: PhD Piotr Henryk Małecki

Research topic: High expression levels of histone lysine demethylases family 4 (KDM4), which are the target group of the proposed study, are considered to promote oncogenesis in commonly occurring types of cancers, including prostate, breast, colon, ovarian and other types. Downregulation of KDM4s via molecular biology methods or blocking their catalytic activity has been confirmed as a strategy for oncotherapy. As KDM4 proteins are directly involved in tumorigenesis and overexpressed in various human cancer cells, they are promising targets for anti-cancer therapies. In this context, there is a strong need for the development of selective inhibitors targeting the members of the KDM4 sub-family. The goal of the proposed work is to find LEAD compounds – promising molecules, that would provide a groundwork for further drug development campaigns. Original idea is to employ Crystallographic Fragment Screening (CFS) which will reveal the binding potential of the histone binding site of the KDM4 proteins. Reaching outside the conserved 2-OG (2-oxoglutarate or  $\alpha$ -ketoglutarate) co-factor binding site towards distal, histone binding site, which is variable among KDM4 members, can improve selectivity against KDM4 isoforms. Thus implementing the detailed structural knowledge of possible interaction into the process of compound design and synthesis would give rise to novel, selective and potent inhibitor molecules.

## **I. Project description**

This project will tackle scientific problem by using CFS coupled with iterative rounds of novel compound design, synthesis (performed by an international collaborator) and evaluation. This CFS relies on screening a library consisting of small molecules (150-300 Da). Low molecular weight fragments with a low complexity allow observing more binding events thus efficiently surveying a much bigger chemical space when compared to high throughput screening (HTS). Fragments can be subsequently build-up into larger molecules with high affinity. We expect that CFS would identify possible binding moieties of various ligands within the histone binding site of KDM4D. That would give us detailed structural knowledge of the binding potential in the vicinity of the active site, allowing us to expand the inhibitors and create LEAD compounds. What is more, we will achieve the selectivity by engaging the variable flexible loop which is located on the cavity entrance for the histone methylated lysine, to close it upon our compounds binding.

### **Additional information:**

1. Research and doctoral theses shall be carried out within the SONATA nr 2021/43/D/NZ7/02879, entitled “**Structure-guided design of histone demethylase inhibitors for cancer therapy**”, funded by National Science Centre, Poland.

2. PhD students shall receive a stipend in the gross amount of ca. 4300 PLN (ca. 3800 PLN net), for the period of 36 months with possible extension
3. PhD students shall be subject to social insurance, pursuant to article. 6 section 1 passage 7b of the act of October 13th, 1998 on the social insurance system (Journal of Laws of 2019, item 300, 303 and 730).

## II. Requirements for the candidates:

1. Holding master's degree in the field of biology/biotechnology/chemistry or related, or meeting the conditions specified in art. 186 paragraph 2 of the Act of July 20, 2018 Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended).
2. Experience in laboratory work in the field of molecular biology and protein purification. Experience in drug design and / or experience in structural biology is welcome.
3. Willingness to learn and readiness to take on new challenges. Show initiative to solve problems. Ability to work independently.
4. Ability to work in a group and high personal culture.
5. Scientific achievements (publications, conference presentations, foreign research internships) will be an additional advantage, although they are not necessary.
6. Very good (B2 and higher) knowledge of the English language in speech and writing. Candidate must present a valid certificate.

## III. Duties in project:

1. Production and purification of proteins.
2. Protein crystallization.
3. Conducting a CFS campaign.
4. Collection and processing of diffraction data.
5. Solving the structures of complexes and their refinement.
6. Preparation of the manuscript and other forms of scientific communications.

## IV. Required documents:

1. Application for admission to PDS IPAS along with the consent for processing personal data upon the recruitment procedure and a statement on having acknowledged the regulations of recruitment for PDS IPAS, using \_\_\_\_\_ form \_\_\_\_\_ downloaded \_\_\_\_\_ from [http://www.psd-ipan.ibch.poznan.pl/wp-content/uploads/2021/10/ICHBApplication\\_for\\_admission\\_202110.docx](http://www.psd-ipan.ibch.poznan.pl/wp-content/uploads/2021/10/ICHBApplication_for_admission_202110.docx)
2. Certified copy of the diploma confirming graduation or a certificate confirming graduation (in the case of diplomas issued by foreign higher education schools, diploma stipulated in article 326, section 2, passage 2 or article 327, passage 2 of the act of July 20th, 2018 – Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended), entitling to apply for conferment of a doctoral degree in the state in where such a certificate was issued by the relevant higher education school. In the event when the candidate is not in possession of the aforementioned documents, he/she is obliged to submit them prior to admission to PDS IPAS. Additional information on foreign school diplomas are available at: <https://nawa.gov.pl/en/recognition/recognition-for-academic-purposes/applying-for-admission-to-doctoral-studies>
3. Scientific CV encompassing track record of previous education and employment, information on involvement in scientific activities (participation in student research groups, attendance at scientific conferences, accomplished internships and training, awarded prizes and distinction) and list of publications.

4. Cover letter featuring a short description of research interests, achievements and justification for the intention to commence education at the doctoral school.
5. Certificates or other documents confirming the degree of proficiency in English, if the candidate is in possession of such materials.
6. Contact details of at least one, previous scientific supervisor or another researcher who is entitled to issue an opinion on the candidate.

V. Applications should be submitted via the eRecruiter portal at

<https://system.erecruiter.pl/FormTemplates/RecruitmentForm.aspx?WebID=fa6d7236355f44b3b12d938716d35b27>

VI. Submission deadline is 31.10.2022

#### VII. Criteria for evaluation of candidates:

1. Candidate's research achievements, pursuant to the grades obtained in the course of studies, scientific publications, awarded scholarships and distinctions resulting from conducting scientific research or student activities or other achievements.
2. Candidate's scientific and professional experience, pursuant to participation in conferences, workshops, training sessions and internships, implementation of research and commercial projects, involvement in scientific trusts and societies, international and professional mobility, experience in other sectors, including industry.
3. Candidate's knowledge on the following discipline: biological sciences.
4. Knowledge of the subject matter described in the recruitment advertisement.

VIII. The recruitment procedure shall be concluded no later than **30.11.2022**

IX. The description of the recruitment process is stipulated in the Regulations of Recruitment for PDS IPAS. Following the recruitment procedure, the unadmitted candidates shall be informed on the number of points obtained at both stages.

Incomplete applications will not be considered.

For additional information please contact the Principal Investigator:

Dr Piotr Małecki

e-mail: [pmalecki@ibch.poznan.pl](mailto:pmalecki@ibch.poznan.pl)

#### Information clause:

*Pursuant to 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](mailto: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 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.*