

**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. 1/2024/ICHB/PSD**

INSTITUTION: Institute of Bioorganic Chemistry, PAS  
CITY: Poznan  
POSITION: PhD student  
POSITIONS AVAILABLE: 1  
SCIENTIFIC DISCIPLINE: Biological sciences  
PUBLICATION DATE: January 10, 2024  
APPLICATION DEADLINE: February 23, 2024  
IBCH PAS WEBSITE: <https://portal.ichb.pl/homepage/>  
PDS IPAS WEBSITE: <https://psd-ipan.ichb.pl/index.php/en/home/>

**KEY WORDS:** human genetics, Birt-Hogg-Dubé syndrome, Tuberous Sclerosis Complex, Hereditary Leiomyomatosis and Renal Cell Cancer, ultrasensitive next generation sequencing, somatic mutations, skin tumors, lung cysts

**Research topic:** Ultrasensitive profiling of mutations driving tumorigenesis in hereditary syndromes associated with tumor suppressor genes inactivation

**Principal Investigator:** dr Katarzyna Klonowska

## I. Project description

**Birt-Hogg-Dubé (BHD)** syndrome is one of the hereditary syndromes associated with inactivation of tumor suppressor genes, i.e., genes that help to protect cells in our bodies from tumorigenesis. The key gene in BHD pathogenesis is a tumor suppressor gene called folliculin (*FLCN*). Individuals with BHD have tumors in several organs including the skin and kidney, and also develop cysts in lungs. **It is suspected that the skin tumors and lung cysts that develop in BHD are due to somatic mutations ('second hits') occurring in *FLCN* but the genetic pathomechanism of their development is unknown.** BHD has similarities to **Tuberous Sclerosis Complex (TSC)** tumor suppressor syndrome, in which tumors occur due to somatic mutations in either *TSC1* or *TSC2* tumor suppressor genes. We have recently developed a method (i.e., '**MHPA**' method) for **ultrasensitive detection of somatic mutations**. Using this method, we performed an analysis of somatic mutations in facial skin samples from TSC patients. The analysis led to the discovery that the UV component of sunlight causes numerous *TSC2* somatic mutations in facial skin, generating >10,000 facial skin tumors in most TSC patients.

We hypothesize that **UV in sunlight also causes mutations in the *FLCN* gene in the BHD skin tumors**, since BHD patients also develop a lot of skin tumors in sun-exposed body areas. In this project, we plan to use our new MHPA method to analyze *FLCN* in a large set of BHD skin tumors. Confirming this hypothesis would deliver **completely novel insights into how skin tumors develop in BHD**. We also plan to use the MHPA method for ultrasensitive analysis of a large set of BHD lung samples.

In addition, in this project we plan to perform an **ultrasensitive profiling of mutations in skin in other syndromes associated with tumor suppressor gene inactivation**, i.e., **TSC and Hereditary Leiomyomatosis and Renal Cell Cancer (HLRCC)**. This will **expand our knowledge on the currently unknown somatic mutations spectrum and genetic pathomechanisms** for these two additional tumor suppressor syndromes, and enable comparison among findings for all three syndromes studied in this project.

In addition, using our own research findings and publicly available data, we will prepare **a catalogue of somatic mutations and genes frequently mutated in normal skin, benign skin tumors** (like skin tumors in BHD, TSC, and HLRCC), and **malignant skin tumors** (like basal cell carcinoma, squamous cell carcinoma, and melanoma).

Institute of Bioorganic Chemistry of the Polish Academy of Sciences (**IBCH PAS**), in which this project will be carried out, is **one of the leading research entities specialized in chemistry, molecular biology, and biomedicine in Poland** (considering the number and quality of research papers published and grants awarded). The job will be performed in a **young, dynamic group**, providing opportunities for successful publication of research results. The position in the project is a great chance to develop and gain further experience in human genetics and computational biology, and also access to cutting-edge technologies. Work and experience gained in IBCH PAS, and within the group in which the project will be performed, give **a solid ground for future applications for various types of grants or stipends**.

#### **Additional information:**

1. Research and doctoral theses shall be carried out within the **OPUS 25** (2023/49/B/NZ5/03438) project, entitled *“Ultrasensitive profiling of mutations driving tumorigenesis in hereditary syndromes associated with tumor suppressor genes inactivation”*, funded by the National Science Centre.
2. PhD students shall receive a stipend in the gross amount of ca 4300 PLN (3800 PLN net), for 48 months with possible extension in accordance with applicable regulations.
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. Holds a Master's degree in biology, molecular biology, biotechnology, computational biology/bioinformatics or related fields. **NOTE: We also take into account applications from candidates who expect to receive a master's degree in the upcoming months, i.e., at/before the end of the 2023/2024 academic year. However, the candidate must obtain a Master's degree before starting education as a doctoral student in this project.**
2. Knowledge of molecular biology techniques, including for example: work with RNA/DNA nucleic acids, electrophoresis, primer design, PCR.
3. Basic knowledge of computational analysis techniques will be an additional advantage, however is not strictly required.
4. Strong motivation to work and commitment to the project.
5. Good command of spoken and written English, enabling communication and involvement in preparation of publications.

#### **III. Duties in project:**

1. Active involvement in the implementation of the project, i.e. planning and conducting experiments and analysis of the results.
2. Participation in the preparation of manuscripts.
3. Presentation of the results at seminars and scientific meetings.

#### **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:  
[https://psd-ipan.ichb.pl/wp-content/uploads/2023/05/ICHBApplication\\_for\\_admission\\_10\\_05\\_23.docx](https://psd-ipan.ichb.pl/wp-content/uploads/2023/05/ICHBApplication_for_admission_10_05_23.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=bc6afc17a55849ffb5534002c43abadd>

VI. Submission deadline is **February 23, 2024 r.**

**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 **April 8, 2024 r.**

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:

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**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.*
- *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.*