INSTITUTE OF BIOORGANIC CHEMISTRY
Polish Academy of Sciences

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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. 24/2020/ICHB/PSD

INSTITUTION:	Institute of Bioorganic Chemistry, PAS
CITY:	Poznan
POSITION:	PhD student
POSITIONS AVAILABLE:	1
SCIENTIFIC DISCIPLINE:	Chemical sciences
PUBLICATION DATE:	27.10.2020 r
APPLICATION DEADLINE:	26.11.2020 r.
IBCH PAS WEBSITE:	http://www.ibch.poznan.pl
PDS IPAS WEBSITE:	http://www.psd-ipan.ibch.poznan.pl/

KEY WORDS: G-quadruplexes, structural studies, NMR spectroscopy

Research topic: "Exploring the sequence-structure relationship as a starting point for the design of DNA G-quadruplexes with a given topology -- an integrative approach combining molecular simulations with experimental methods"
Principal Investigator: prof. dr hab. Zofia Gdaniec

I. Project description

Usually thought of as the canonical Watson-Crick double helix, DNA can in reality fold into many different structures, some of which have profound effects on DNA's biological role. This project focuses on one of these non-canonical DNA forms, termed G-quadruplexes (G4), whose structure is based on the formation of the so-called G-tetrad, a planar array of four guanine bases kept together by a cyclic arrangement of hydrogen bonds. By stacking on top of each other, G-tetrads make up the core of the G-quadruplex, with four guanine tracts being connected by three intervening loops of variable sequence and conformation. Sequences capable of forming G-quadruplexes are widespread across genomes (e.g., over 700,000 seq. in the human genome) and have been found to be significantly enriched in regulatory regions, including telomeres (up to 25% of all formed G4), and gene promoters. At the same time, due to their versatility and plasticity, engineered G-quadruplex segments have also attracted attention as convenient and potentially programmable building blocks in chemistry, material sciences and nanotechnology.

Structural polymorphism of G-quadruplexes with many possible folded states (topologies) adopted depending on the sequence and environmental conditions (in particular, type and concentration of alkali metal cations) presents both opportunities and challenges to rational design. On the one hand, it allows for multiple design choices, but on the other, it requires a reliable way of predicting and controlling the structure of G-quadruplexes. Unfortunately, despite the extensive research efforts, a practical and general framework allowing for such predictions has yet to be established. Accordingly, the goal of the current project is to thoroughly understand the relation between the sequence of guanine-rich DNA strands and the structure of G-quadruplexes so as to allow for a design of DNA G-quadruplexes with a desired folded topology. Most important experimental techniques that will be applied throughout the project include: DNA synthesis on solid support, NMR spectroscopy, CD and UV spectroscopies, as well as, electrophoretic methods.

Additional information:

1. Research and doctoral thesis shall be carried out within the project UMO-2019/35/B/ST4/03559, entitled " Exploring the sequence-structure relationship as a starting point for the design of DNA G-quadruplexes with a given topology -- an integrative approach combining molecular simulations with experimental methods", 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 the period of 42 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. A M.Sc. in chemistry (or related fields) or equivalent experience according to the criteria listed in article 186 of the act of July 20th, 2018 – Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended)
2. University level knowledge of organic chemistry and spectroscopic methods, preferentially some experience in these fields.
3. Ability to work independently, plan and conduct experiments, analyze results
4. Written and oral English proficiency
5. Motivation and a willingness to further scientific development, good communication skills and teamwork abilities

III. Duties in project:

1. Involvement in all aspects of the experimental part of the project, including: oligonucleotide synthesis, spectroscopic measurements, spectral data interpretation, electrophoretic separations, usage of computational methods.
2. Participation in the preparation of publications.
3. Participation in experimental data storage and management.

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://www.ibch.poznan.pl/uploads/studium%20doktoranckie/2019/ICHB%20-%20Application%20for%20admission%20(2019-09).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=67f6a03e8308440584bb7bc9b678b786

VI. Submission deadline is **26.11.2020**

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: chemical sciences.
4. Knowledge of the subject matter described in the recruitment advertisement.

VIII. The recruitment procedure shall be concluded no later than **23.12.2020.**

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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e-mail: zgdan@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.*
- *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.