

**[6/2020/IGC/PSD] Announcement concerning recruitment to the Poznań Doctoral School of the Institutes of the Polish Academy of Sciences (PDS IPAS) as part of a research project**

The Director of the Institute of Human Genetics, Polish Academy of Sciences (IHG PAS), and leader of the current research project, Prof. Jadwiga Jaruzelska gives notice of an open competition to be held for the position of **PhD student-scholarship holder at the Poznan Doctoral School of Institutes PAS, Department of Nucleic Acids Genetics IHG PAS**  
Number of vacancies: 1

**I. General information**

1. Department in which candidate would work: **Department of Nucleic Acids**
2. Discipline: **Medical Science**
3. Planned remuneration: scholarship to the value of **3700 PLN net/ per month extending over 4 years**
4. Deadline for submission of documents: **31.08.2020**;
5. The proposed study will be carried out within the **OPUS18 (2019/35/B/NZ1/01665); PI – Prof. Jadwiga Jaruzelska**. Project title: **“NANOS1 RNP-interactome: structure and dynamics during specification/early stages of human germ cell development - significance for human reproduction”**.

**Concise description of research:** Infertility affects 15% of couples world-wide. Genetic defects account for 15-30% of male infertility and are risk factor for the testis germ cell tumour (TGCT). NANOS is post-transcriptional gene expression regulator containing a highly conserved RNA-binding domain composed of a (CCHC)<sub>2</sub> zinc-finger, which interacts with a few proteins. We have also identified a v-NANOS1 protein variant associated with infertility in patients. The general objective now is to obtain a comprehensive insight into the structure and dynamics of NANOS1 ribonucleoprotein interactome during the specification/early stages of human male germ cell development. We will make use of human models with a stable wt- and v-NANOS1 overexpression: 1/ hESCs *in vitro* differentiation towards specification and early development of primordial germ cells (hPGCLCs) will be performed and 2/ a TCam-2 cell line originating from seminoma and representing a slightly later PGC developmental stage will be used. Our specific objectives are: **1.** Identification of target RNAs bound by wt- and v-NANOS1 at different developmental stages by applying protein-crosslinked RNA extraction (XRNAX) and eCLIP. The anti-FLAG antibody will serve to co-IP NANOS1-bound RNAs. Following this, the/a total eCLIP isolated RNA using RiboZero will be analyzed by applying RNA-Seq. Databases, and bioinformatic tools will be used for gene identification. **2.** Screening for wt and v-NANOS1 protein binding partners by using Stable Isotope Labeling with Amino Acids in Cell Culture (SILAC) followed by LC-MS/MS mass spectrometry and validation by co-IP followed by western. **3.** Identification of specific motifs in target RNAs recognized by wt- and v-NANOS1 protein partners containing RNA-binding domains employing bioinformatic tools and validating RNA-protein interactions by applying luciferase reporter assays. Ribonucleoprotein networks will be assembled by implementing pertinent bioinformatic tools/platforms such as CytoScape. We expect these networks to be at least partially different for wt- and v-NANOS1 in subsequent specific developmental stages. **4.** The most interesting interactions (RNA/protein and protein/protein) in the wt-NANOS1 associated network, missing from the v-NANOS1 ones, will be validated by applying phenotypic assays for functional dependence on NANOS1. For this purpose, endogenous NANOS1 silencing will be followed by measurement of the level of NANOS1 targets by real time qPCR/western. We anticipate that the level of target RNAs/protein will change on NANOS1 silencing. If this is so, we will then test whether it influences apoptosis, cell cycle, proliferation or other parameters which could explain the phenotype of the patients and the TCam-2 cells.

**Keywords:** infertility, germ cell tumor, human germ cell development, RNA-binding proteins, post-transcriptional gene expression regulation, ribonucleoprotein complexes

**Predicted tasks in the project:**

- active participation in the realization of project goals.
- supervision of Master's students.
- participation in writing scientific papers; presenting results at seminars and conferences.

**Opportunities**

- work in an international research team, highly experienced in many cutting edge molecular methodologies, and enthusiastic about conducting scientific research
- research training (courses);
- participation in international conferences and workshops

**II. Requirements for candidates**

1. Master's degree in molecular biology, biotechnology, genetics, medicine or related field.
2. Background in molecular biology.
3. Experience in RNA, DNA, cell culture and molecular biology techniques.
4. Very good written and oral communication skills in English.
5. Motivation and enthusiasm about working in the field of science
6. Good collaborative and team work skills.

**III. Required documents**

1. CV, including research achievements.
2. Cover letter.
3. A copy of the diploma confirming completion of a Master's Studies Programme, or a certificate of their completion (in the case of diplomas issued by foreign institutions, the diploma referred to in article 326 para.2 point 2 or article 327 para. 2 of the Act of 20 July 2018 – Law on Higher Education and Science (Journal of Laws of 2018, item 1668 as amended), giving the right to apply for a doctoral degree in the country in which the University of Higher Education issuing the diploma operates. If the candidate does not have the above-mentioned documents, s/he is obliged to provide them before being admitted to Poznań Doctoral School IPAS. More information about foreign diplomas is available at: <https://nawa.gov.pl/uznawalnosc/kontynuacja-nauki-w-polsce/studia-doktoranckie-i-otwieranie-przewodow-doktorskich>.
4. Contact details of at least one current supervisor or other researcher who has previously agreed to issue an opinion about the candidate. The opinion should not be included in the application.
5. Consent for the processing of candidate's personal data for the purposes of the recruitment process: [http://bip.igcz.poznan.pl/wp-content/uploads/2018/10/Zgoda-rekrutacja-Consent\\_for\\_the\\_processing.pdf](http://bip.igcz.poznan.pl/wp-content/uploads/2018/10/Zgoda-rekrutacja-Consent_for_the_processing.pdf)
6. Application for admission to the Poznań Doctoral School IPAS, together with a consent to the processing of personal data for the purposes of the recruitment procedure plus a statement on his/her familiarity with recruitment regulations for the Poznań Doctoral School (Application is available on: <http://igcz.poznan.pl/en/phd-studies/poznan-doctoral-school-of-institutes-of-pas/recruitment-regulations-for-psd-ipan/>)
7. Certificates or other documents indicating level of English language proficiency, if the candidate possesses any.

**IV. Criteria for the evaluation of candidates**

1. Candidate's scientific and professional experience based on his/her participation in conferences, workshops, training courses and internships; participation in research and commercial projects; involvement in scientific societies and associations; international and professional mobility; experience in other sectors, including industry
2. Background in molecular biology

3. Candidate's scientific achievements, based on study grades, scientific and popular science publications, scholarships; prizes and awards resulting from research carried out; student activity or other achievements
4. Communication skills in English.

**V. Announcement of results**

Up to 30 days after the deadline of documents submission. Selected candidates will be invited for interview.

**VI. Additional conditions**

1. Period of involvement in research project: **1.10.2020.-31.09.2024**
2. A condition of involvement in the project is participation in the International Doctoral School at IGC PAN (after passing the recruitment procedure). Details of the studies are available on <http://igcz.poznan.pl/en/scientific-activity/phd-studies>). Fulfillment of requirements as set out in the Regulations for Granting Scholarships in Research Grants Financed by the National Research Center are available on ([https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2019/uchwala25\\_2019-zal1\\_ang.pdf](https://www.ncn.gov.pl/sites/default/files/pliki/uchwaly-rady/2019/uchwala25_2019-zal1_ang.pdf)).

**VII. Additional information**

Address to which documents should be submitted, in person or by registered mail: Institute of Human Genetics PAS, ul. Strzeszyńska 32, 60-479 Poznań with postscript [6/2020/IGC/PSD] or by e-mail to the Secretary for Scientific Purposes, [phdstudies@igcz.poznan.pl](mailto:phdstudies@igcz.poznan.pl). In the title please include the number of the announcement: [6/2020/IGC/PSD]

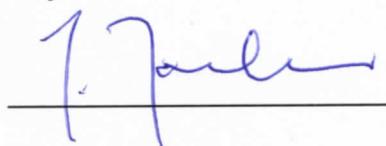
**Additional information is available from:** [jadwiga.jaruzelska@igcz.poznan.pl](mailto:jadwiga.jaruzelska@igcz.poznan.pl). The Secretary for Scientific purposes: [phdstudies@igcz.poznan.pl](mailto:phdstudies@igcz.poznan.pl), tel. 61 657 91 42

**Incomplete applications will not be considered.**

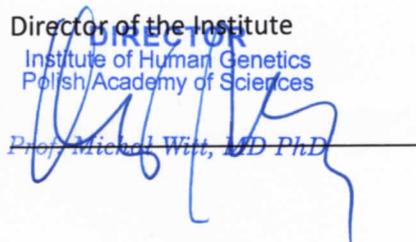
**Once the recruitment process is finished, unsuccessful candidates will be informed about the scores they have obtained at each step of evaluation.**

**Refusal of admission to PDS IPAS takes place by way of an administrative decision. The candidate is entitled to submit a request for reconsideration of the decision to the director of the institute concerned.**

Project Leader



Director of the Institute  
Institute of Human Genetics  
Polish Academy of Sciences



Prof. Mickael Witt, MD PhD