

INSTITUTE OF DENDROLOGY

POLISH ACADEMY OF SCIENCES

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Kórnik 23/12/2021

**Announcement about recruitment to the Poznań Doctoral School
of the Institutes of the Polish Academy of Sciences
at the Institute of Dendrology Polish Academy of Sciences
No. 43/2021/ID/PSD**

I. Position type: doctoral student

II. Number of vacancies: 1

III. Discipline: biological sciences

IV. Application deadline: 31/01/2022

V. Detailed information about recruitment process can be found on the website:

<http://www.idpan.poznan.pl/index.php/doctoral-school-pds-ipas/information-on-recruitment-at-the-institute-dendrology-pas> and http://www.psd-ipan.ibch.poznan.pl/?page_id=355&lang=en

VI. Research topic: Genetic variation of black poplar (*Populus nigra* L.) in Poland: the impact of human activities on genetic integrity and adaptive potential of the species

VII. Principal Investigator / Research group: Dr. Weronika Barbara Żukowska, Department of Genetics and Environmental Interactions

VIII. Project Description:

Black poplar (*Populus nigra* L.) is one of the main forest-forming species of woody riparian forests of great ecological and economic importance. It is threatened with extinction in many European countries. The species northern range limit is located in Poland, but the situation of black poplar in this area is poorly understood. Our field observations have shown that many black poplar populations in Poland are at terminal age without the possibility of natural regeneration.

Human activity is the main threat to black poplar. Over the past decades, the population size of this species has drastically decreased due to the progressing urbanization processes, river regulation and the development of natural floodplains for agricultural and forest land. Due to the fact that poplar seeds remain viable for a very short time and need specific water and soil conditions to germinate and grow, black poplar has great difficulties with natural regeneration, especially in heavily transformed regions such as the Odra and Warta valleys, as well as the upper and lower Vistula. As a consequence, the adaptive potential of this species is systematically lowered. The genetic integrity of black

poplar is also at risk. This tree can cross with fast-growing hybrid varieties of black poplar, which often have a selective advantage over pure species, gradually displacing them from their natural habitats. Poplars can also reproduce vegetatively, which reduces their adaptation capacity to changing environmental conditions, which is a serious problem in the light of the accelerating climatic changes.

Aim of the project: The aim of the project is to characterize the genetic resources of black poplar in Poland and reference populations from Europe and Africa using modern genotyping and sequencing techniques. The analyzes will comprise various types of molecular markers, which will be used to develop a conservation strategy for black poplar in Poland and to assess its adaptation potential. The project will test a number of research hypotheses regarding the influence of anthropogenic and environmental factors on the genetic variability of black poplar. We will also determine the abundance, viability and reproductive capacity of populations from river sections with various degrees of human transformation. Both older and younger generations of black poplar will be analyzed. From places where conditions are too harsh for black poplar to reproduce generatively, we will harvest the seeds and breed a descendant generation.

A number of genetic markers will be used in the research, as well as the latest techniques of genotyping of polymorphic sites in poplar DNA, together with various analytical methods in the field of population genetics and environmental genomics. The data collected in the project will provide us with the knowledge crucial for understanding how the observed patterns of genetic variation are influenced by various processes, such as: gene flow, hybridization, genetic drift, natural selection, local adaptation and human activity. We expect that the obtained results will allow us to better understand the ecology and molecular evolution of black poplar, and to predict how individual populations will cope with environmental changes. The data generated in the project will also let us develop conservation strategies and black poplar breeding programs in Poland.

Tasks for the PhD student: The PhD student will participate in the field work involving the collection of plant material in river valley areas with unique natural values. Further tasks will include DNA isolation, PCR and PCR-RFLP analyzes, as well as genotyping the samples on an automatic sequencer and their preparation for high-throughput DNA sequencing. The doctoral student will be involved in the analysis of genetic data at every stage of the project as well as in the preparation of the results and their publication. It is planned that the PhD student will participate in at least two workshops concerning the analysis of high-throughput DNA sequencing data and adaptation genomics, as well as in at least two international conferences. We expect that the research results will allow them to be disseminated in the best international journals in the field of population and conservation genomics and will become the basis for the preparation of a doctoral dissertation and further scientific development of the PhD student. We offer the opportunity to work in an experienced, well-coordinated team specializing in analyzes of the genetics of forest trees. We provide support at every stage of work, a good atmosphere, the opportunity to exchange ideas and the chance to implement your own research ideas.



IX. Additional information:

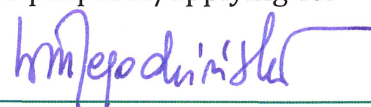
1. Research and doctoral dissertation will be conducted under research project: "Genetic variation of black poplar (*Populus nigra* L.) in Poland: the impact of human activities on genetic integrity and adaptive potential of the species" (UMO-2021/41/B/NZ9/00722, National Science Centre, Poland).
2. The doctoral student will receive a doctoral scholarship in the amount of ca. 4180 PLN gross pay (ca. 3789,00 PLN net pay) monthly during the entire doctoral studies (48 months).
3. The doctoral student will have the social insurance costs referred to in art. 6 clause 1 point 7b of the Act of October 13, 1998 on the social insurance system (Dz. U. z 2019 r. poz. 300, 303 i 730).
4. The doctoral dissertation will be possible under the condition of signing the UMO-2021/41/B/NZ9/00722 contract by the National Science Centre.

X. Requirements for candidates:

1. Master degree in discipline of biological sciences, forest sciences, Earth and environment sciences or related or meeting the conditions specified in art. 186 section 2 of the Act of July 20, 2018 Law on Higher Education and Science (Dz. U. z 2018 r., poz. 1668 z późn. zm.).
2. Very good skills in spoken and written English, allowing for preparing manuscripts of scientific publications and oral presentations during international conferences.
3. Basic knowledge and experience in laboratory analyzes in the field of genetics and/or molecular biology.
4. Predispositions for scientific and research work and readiness to conduct field research.
5. Very good work organization, self-dependence and communication skills.
6. Additional advantages will be skills in the analysis and interpretation of genetic data, knowledge of bioinformatic analyses and the R programming language and driving license category B.

XI. Required documents:

1. An application to PDS IPAS, including consent for the processing of personal data for the purposes of the recruitment procedure, and a declaration of familiarity with these rules - the current application form is available at <http://www.idpan.poznan.pl/index.php/doctoral-school-pds-ipas/documents-for-candidates-and-ph-d-students>.
2. A copy of the degree certificate confirming graduation or a certificate of graduation; in the case of degree certificates issued by foreign higher education institutions, the certificate referred to in Article 326(2)(2) or Article 327(2) of the Act, giving the right to seek to obtain a doctoral degree in the country under whose higher education system the issuing institution operates. A candidate who does not have the aforementioned documents will be obliged to supply them before being admitted to PDS IPAS. Additional information on foreign diplomas is available on the website: <https://nawa.gov.pl/en/recognition/recognition-for-academic-purposes/applying-for-admission-to-doctoral-studies>



3. A curriculum vitae showing previous education and employment, information on involvement in scientific activity (membership of student scientific groups, participation in scientific conferences, completed internships and training courses, prizes and distinctions received) a list of publications.
4. A motivation letter, containing a short description of interests, scientific accomplishments, and reasons for wishing to study at the doctoral school.
5. Certificates or other documents confirming the candidate's knowledge of English, if the candidate has such.
6. Contact details of at least one previous academic supervisor or other academic employee who has agreed to provide an opinion regarding the candidate.

XII. The application should be sent by e-mail to the address psd.idpan@man.poznan.pl with the subject **"Competition for the position of doctoral student No. 43/2021/ID/PSD"** in the form of a pdf attachment. If sending by electronic means is not possible, applications sent to the address Institute of Dendrology, Polish Academy of Sciences, Parkowa 5, 62-035 Kórnik, Poland with the note on the envelope **"Competition for the position of doctoral student No. 43/2021/ID/PSD"** are also accepted. Please do not send original documents.

XIII. Application deadline: 31/01/2022

Incomplete applications and applications submitted after the deadline will not be considered.

XIV. Criteria for assessing candidates:

1. The candidate's academic accomplishments, based on grades attained during studies, scientific and popular science publications, scholarships, awards and distinctions resulting from research or student activity, and other achievements.
2. The candidate's academic and professional experience, based on participation in conferences, workshops, training courses and internships, participation in research and commercial projects, involvement in scientific groups and associations, international and professional mobility, and experience in other fields.
3. Candidate's knowledge in the biological science discipline.
4. Knowledge of the topics listed in the recruitment notice.

XV. Competition results: by 21/02/2022

XVI. A description of the recruitment process can be found in the **Recruitment Regulations for PDS IPAS**. After the recruitment is completed, **unaccepted candidates will be informed of the scores obtained at each stage of the competition.**

XVII. Admission to PDS IPAS is refused by administrative procedure. The decision may be appealed with to the Director of the Institute of Dendrology of the Polish Academy of Sciences.



**XVIII. Additional information may be provided by Dr. Weronika Barbara Żukowska
(email: wzukowska@man.poznan.pl; tel. +48 61 817 00 33).**


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