SELF-ASSESSMENT REPORT ON THE QUALITY OF EDUCATION IN THE DOCTORAL SCHOOL

Szkoła Doktorska Nauk Przyrodniczych i Rolniczych

Instytut Botaniki im. Władysława Szafera Polskiej Akademii Nauk
Instytut Zootechniki - Państwowy Instytut Badawczy
Instytut Fizjologii Roślin im. Franciszka Górskiego Polskiej Akademii Nauk
Instytut Systematyki i Ewolucji Zwierząt Polskiej Akademii Nauk
Instytut Ochrony Przyrody Polskiej Akademii Nauk

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PART A

Director / Head of Doctoral School

First Name

Grażyna

Last Name

Szarek-Łukaszewska

Email Address

g.szarek@botany.pl

Doctoral School Address

City

Kraków

Voivodeship

12

Zip code

31-512

Street

Lubicz

Building Number

46

Premises No.

-

Contact

Website

https://botany.pl/index.php/pl/teaching-pl/doctoral-school-pl

Email Address

szkoladoktorska@botany.pl

VISITING CARD

Basic Information about the Doctoral School

Year of Creation

2019

Institutions running the doctoral school

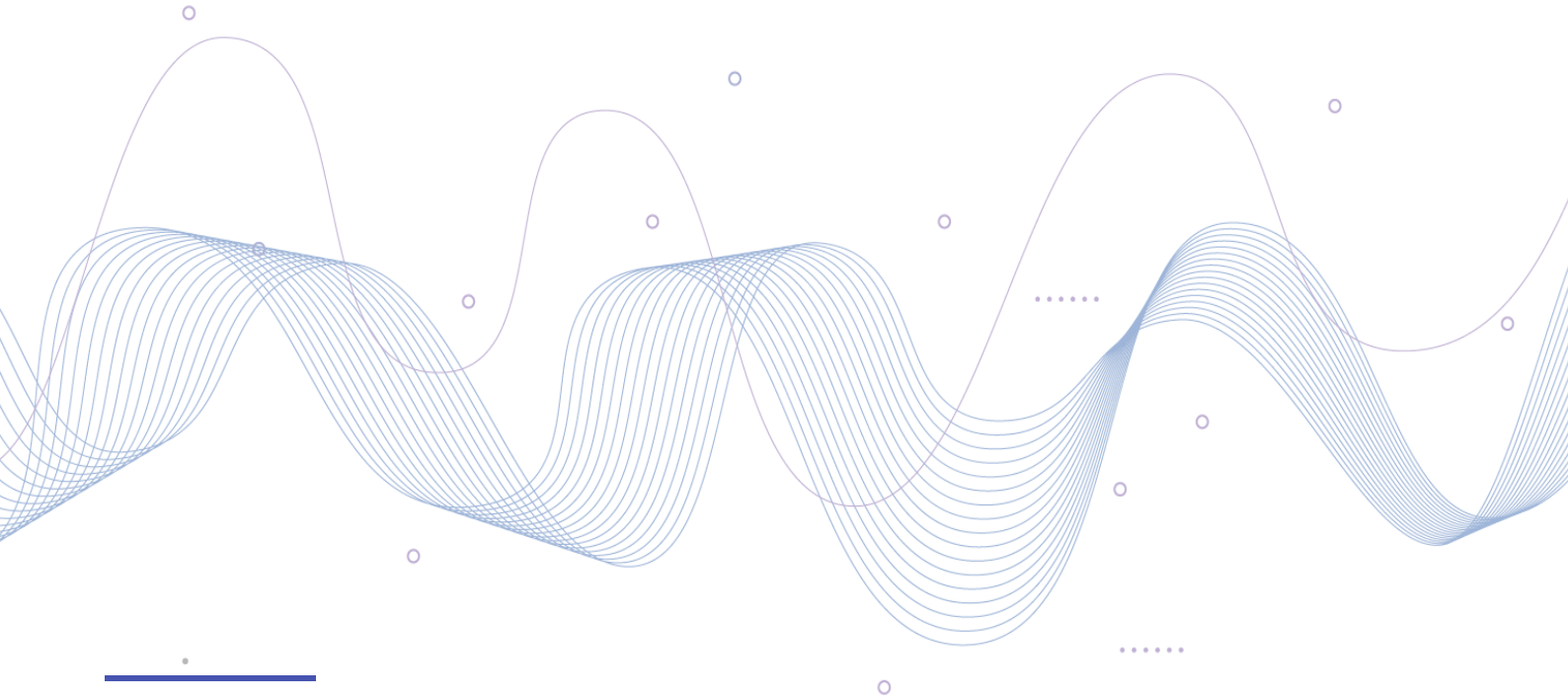
Instytut Botaniki im. Władysława Szafera Polskiej Akademii Nauk

Instytut Zootechniki - Państwowy Instytut Badawczy

Instytut Fizjologii Roślin im. Franciszka Górskiego Polskiej Akademii Nauk

Instytut Systematyki i Ewolucji Zwierząt Polskiej Akademii Nauk

Instytut Ochrony Przyrody Polskiej Akademii Nauk



Field of Education	Education Disciplines
Agricultural sciences	agriculture and horticulture animal science and fisheries
Natural sciences	biological sciences

Name/Scope of the Education Program (PL)	Name/Scope of the Education Program (EN)
Program kształcenia w Szkole Doktorskiej Nauk Przyrodniczych i Rolniczych	Programme of study at the Doctoral School of Natural and Agricultural Sciences

Characteristics of the Doctoral School

Established on 1 May 2019, the Doctoral School of Natural and Agricultural Sciences (DS) is co-managed by 4 institutes of the Polish Academy of Sciences and one National Research Institute (Managing Units - MUs) and provides doctoral programmes in 3 scientific disciplines: Biological Sciences; Agriculture and Horticulture; Animal Science and Fisheries. It offers doctoral students with the opportunity to pursue Individual Research Plans (IRP) in experienced research teams, collaborate with scientists from national and international institutions, as well as obtain projects of their own.
At DS, students pursue their programmes and develop their research interests in the topics related to the mission of MUs: (1) biodiversity, taxonomy, ecology and evolution of plants, animals, fungi and other microorganisms, both recent and fossil; (2) physiology, biochemistry, genetics of plants and animals; (3) conservation of diversity of species, habitats, ecosystems and processes creating such diversity; (4) animal husbandry, plant growing, factors affecting productivity of organisms. The primary mission of DS is to create conditions for development of scientific competence by training students under the guidance of mentors and based on a research-matched programme. Through the implementation of IRP, a doctoral student becomes not only a beneficiary but also a creator and promoter of knowledge.
The organisation of DS, the programme of study and the rights and obligations of the doctoral students are set out in the Regulations and other relevant documents at: https://www.botany.pl/index.php/pl/teaching-pl/doctoral-school-pl.
DS operation is supervised by the DS Council and the Scientific Councils of MUs. The DS Council is established to improve the DS work, guarantee performance of DS tasks, ensure efficient exchange of information between the MUs and exploit the potential of each MU. The DS Council is composed of the directors of the MUs, members of the academic staff designated by MUs, and representatives of doctoral students. The DS Council is a consultative body and monitors the financial and asset management of DS.
DS is a relatively small school, mainly due to the level of financial resources of MUs and the assumption that doctoral students are admitted to specific grant projects, including those financed by external institutions (such as NSC, MSHE EC), granted to their supervisors and/or auxiliary supervisors. As such, DS is able to create optimal conditions for student development and a friendly collaborative atmosphere fostering student integration. Validity of such a strategy is proven by the fact that IB PAS, the DS coordinating unit, was awarded as the most pro-doctoral institute of PAS in the PROPAN 2022 competition and the then Self-Government of Doctoral Students received an award for the PAS most active doctoral students' council.
Admissions to DS are held on an open competition basis under strict rules adopted for each academic year. Each year, several (4-9) doctoral students are admitted. The programme of study at DS lasts 4 years (8 semesters) and ends with the submission of a doctoral dissertation. The compulsory programme is universal across the 3 disciplines, allowing doctoral students from different MUs to expand their knowledge in areas outside their specialisation and to learn about research methodologies and various techniques they can use in their IRP and/or future research. DS offers courses taught by eminent professionals to support development of analytical and soft skills, focusing on the student's personal and social development necessary for effective functioning within the socio-economic environment. Thus, the student has the opportunity to become not only an excellent scientist but also an effective manager.
Completion of the majority of compulsory courses within the first 4 semesters allows the students to focus in the subsequent semesters on research under their IRP and improvement of their knowledge and skills in optional activities. DS permits implementation of the programme in the Individual Course of Education (ICE) mode. ICE allows part of the programme to be completed (i) at other times (e.g. in the case of industrial doctoral programme and internships) and (ii) at other doctoral schools (which is important for foreigners in case DS does not offer a particular course in English). Further, ICE supports student mobility. Compulsory courses are taught in Polish or English by the staff of MU or other academic units. DS strives to fully internationalise the educational process through a gradual transition to English as the language of instruction.
During their programme of study, doctoral students submit a semester report on the implementation of the programme and the IRP, assessed by the DS Head, and at the end of the academic year they report the findings and progress of their research

work in English at the Scientific Reporting Session (SRS). Implementation of IRP is subject to a statutory mid-term evaluation carried out by a committee of 3 independent academics and a representative of doctoral students, appointed for each doctoral student individually. Following review of the student's report on the IRP implementation and an interview with the student, the committee assesses performance of tasks specified in the IRP. During the mid-term evaluation, the committee also assesses the quality of supervisor's guidance. To date, all DS students and supervisors have passed the assessment. At DS, supervisors are members of the academic staff, positively verified and appointed by the Scientific Councils of MUs and by the DS Council.
DS sees industrial doctoral programmes as an opportunity to better combine theory with practice; MUs are encouraged to apply for funding for these. An opportunity for DS development through joint activities, courses and training will be offered by cooperation with other Kraków-based schools as part of the Forum of Doctoral Schools of Kraków, a request for the establishment of which has been sent (2.04.2025) to the College of Rectors of Higher Education Schools in Kraków.
At DS, a Self-Government of Doctoral Students (Self-Government) is present. Its representatives take part in the work of the DS Council and Admissions Committees as well as in the mid-term evaluation. DS provides the conditions necessary for the functioning of the Self-Government, including infrastructure and financial resources. The Council holds team-building meetings, seminars, or competitions for the best presentation delivered at SRS.
DS ensured support for persons with special needs including disabilities (PwD) by raising funds for the "IB PAS's Entry into Accessibility (DOSTEP)" project under the European Funds for Social Development 2021-2027 programme co-financed by ESF+. The aim is to remove barriers to access to science and education for PwD. Under the project, the DS website was transformed into a digitally accessible one according to WCAG2.1 standards.

Additional Information about the Doctoral School

Educating Staff

Numerical data for the evaluation period

Educating Staff	Instructors	Supervisors	Assistant Supervisors
Number of people	0	30	19

Doctoral Students

Number of doctoral students (total): 42

Recruitment during the evaluation period	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023	2023/ 2024	2024/ 2025	Total
Number of recruited doctoral students	5	10	7	9	7	4	42
Number of doctoral students who completed the doctoral school	3	2	1	0	0	0	6
Number of doctoral students removed from the doctoral student list	1	3	0	3	1	0	8

Mid-term evaluation results	Positive	Negative
Number of Doctoral Students	24	0

Educational Programs	Number of Doctoral Students
Programme of study at the Doctoral School of Natural and Agricultural Sciences	42

Additional Numerical Data on Doctoral Students

Number of foreign doctoral students	4
Number of doctoral students with disabilities	1
Number of doctoral students in the Implementation Doctorate program	1
Number of doctoral students in the EU program	0
Number of doctoral students employed by the institution running the doctoral school as academic teachers or research staff	0

Graduates

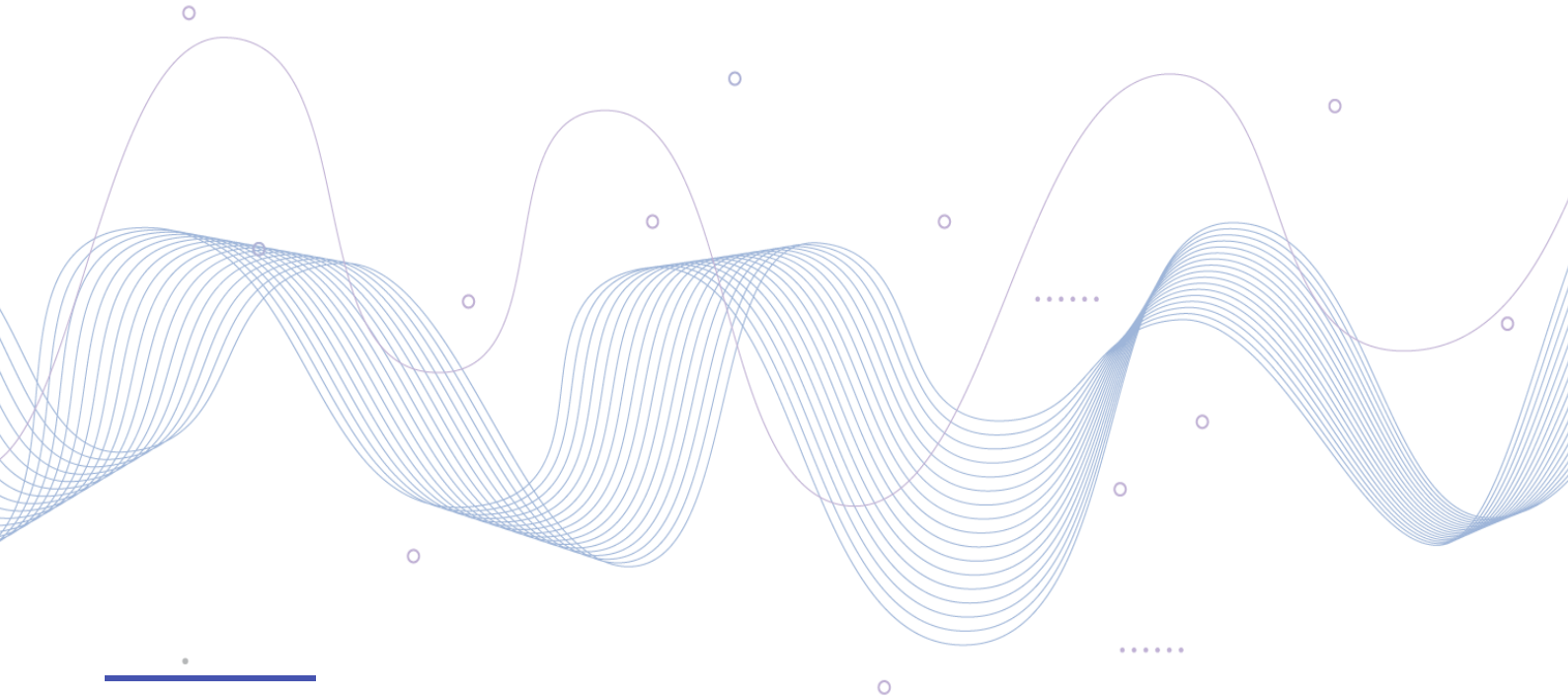
Numerical data for the evaluation period

Number of graduates who applied for initiation of proceedings for the award of a doctoral degree	5
Number of doctoral students who completed the doctoral school	3

INFORMATION ON THE ENTITY'S COOPERATION WITH THE DOCTORAL STUDENTS' COUNCIL

The Self-Government of Doctoral Students (Self-Government) is governed by the DS Regulations (**App. D.1**) and the Self-Government Regulations. The Self-Government takes part in the works of DS's key decision-making bodies, where it presents students' opinions and is engaged in decisions regarding DS. Two Self-Government representatives are members of the DS Council with voting rights. At the DS Council, they co-establish the rules of study and organisation of DS, give opinions on the doctoral students' work and the financial management of DS. Students' representatives are members of admissions committees and observers of the work of mid-term evaluation committees. They also sit on the Scientific Councils of MUs, which supervise the DS activities, participating in the adoption of the regulations, the programme and the admission rules of DS, as well as in the adoption of the annual report on the DS work.
DS provides the Self-Government with the conditions, including infrastructure and financial resources, necessary for its operation. The annual asset and financial plans of DS provide for the costs of the Self-Government's activity. These funds cover, for example, participation in the work of national doctoral student bodies (e.g. Doctoral Council of the Polish Academy of Sciences), awards in the competition held by the Self-Government for the best doctoral student's presentation at SRS, and team-building meetings. Expenditure is accounted for in the DS financial report presented at the DS Council.
In 2022, IB PAS, as the DS coordinating unit, received a distinction and the DS Self-Government an award in the PROPAN and PRODOK competitions, respectively, held by the National Representation of Doctoral Students and the PAS Doctoral Student Council for the most pro-doctoral PAS institute offering the best conditions for doctoral students' education and for the PAS doctoral students council most active for the local doctoral community.

INFORMATION ON THE DOCTORAL SCHOOL GROUPED BY 8 EVALUATION CRITERIA



1. Adequacy of the education program and individual research plans to the learning outcomes for qualifications at PRK level 8 and their implementation

The programme of study, universal for the 3 disciplines, specifies in detail the nature of doctoral education, implementation of research, the type of courses (compulsory and optional), ECTS credits assigned to them and the learning outcomes (**App. 1.1**). Detailed learning outcomes are also described in the Syllabuses available on the DS website. DS programme lasts 4 years with completion of a majority of compulsory classes scheduled for the first 4 semesters, so that the following semesters could focus on research in line with IRP and possible improvement of knowledge and skills on optional courses; thus encouraging mobility and offering international networking opportunities thanks to internships.
The *Thematic Lectures Block* courses are arranged in such a way so as to complement and expand knowledge of the latest scientific developments covering the fields of interests of all doctoral students, regardless of the discipline they pursue their doctoral process in. Not confined to their narrow specialisations, the students thus broaden their horizons and learn about the specificities, research methodologies and techniques typical of various disciplines. Initially, courses in 4 blocks were delivered in Polish or English, and now the language of instruction in all blocks is English. Varied types of the classes (tutorials, lectures, team work) foster acquisition of transversal skills (critical thinking, creativity, cooperation) (**App. 1.2**).
The ability to perceive and assimilate information, as well as to conduct scientific activities and communicate scientific knowledge, is crucial for a researcher's career both in and outside the academic world. The *Development of Scientific Career and Communication in Science* course, taught in English, is intended to prepare for that. The course teaches ways to disseminate the results of one's work by offering training in writing manuscripts, including on an open access basis, preparing multimedia presentations and posters. Positive effects of the course become apparent for example when presenting the progress in the IRP implementation at the annual SRS where, in addition to being able to present and confront their own research findings, doctoral students also learn how to manage stress accompanying public speaking. Students attend national and international conferences and publish their findings in JCR-listed journals (**App. 1.3**).
The *Statistics* course allows the students to expand their knowledge of how to choose the right statistical methods for a given type of experiment and type of data. For the past two years, the course has been preceded by *Introduction to R,* teaching how to use free software for statistical analyses. *Philosophy*, on the other hand, broadens the knowledge of the key problems in methodology and general philosophy of science, as well as of selected topics including natural philosophy.
The interdisciplinary programme of study, delivered primarily as full-time classes (except for the time of the COVID-19 pandemic), not only broadens their knowledge, but also integrates doctoral students who carry out their research on a daily basis at various MUs. Due to a relatively small number of students enrolling in a given discipline in a given academic year, a programme dedicated specifically to that discipline would not only be economically unjustified, but in fact would amount to an ICE. The ICE may be implemented upon a consent of the DS head at a student's justified request. Also, foreigners can do part of their programme of study as ICE, especially if the course is not taught in English. In such a case, foreigners attend courses offered e.g. by the Doctoral School of Exact and Natural Sciences at Jagiellonian University or BIOPLANET.
The doctoral student's key responsibilities are the implementation of IRP and collaboration with the supervisor. Through such collaboration, the doctoral student is trained in both independent and collaborative scientific work. IRP is prepared according to the applicable template (**App. 1.4**) and its relevance to the learning outcomes at PQF Level 8 is verified by the DS Council which reviews the IRP and, before the final acceptance, provides the student with possible critical comments on it. DS offers a webinar for doctoral students and supervisors on the preparation of IRP and explains in detail the IRP template. The programme's weakness is the absence of any training related to patent and intellectual property rights; such training is currently provided by MUs for their staff (including doctoral students). There are no workshops on grant applications; these issues, likewise research ethics, are discussed narrowly on the *Development of Scientific Career and Communication in Science* course. An opportunity for development of such training programmes can be seen in joint activities and training (e.g. webinars) offered in collaboration with other Kraków-based doctoral schools, e.g. as part of the Forum of Doctoral Schools of Kraków.

2. Method of verifying learning outcomes for qualifications at PRK level 8

The rules for the verification of learning outcomes are described in the programme of study (**App. 1.1**), and for the compulsory courses are described in detail in the course syllabuses in Sections: *Evaluation* and *Assessment Methods and Criteria*. In addition, the Syllabus includes detailed information on the rules for examinations/assessments (e.g. on the person who conducts and assesses the examination, and on possible grade improvement). The Syllabus is approved by the DS head. Furthermore, §22 of the DS Regulations (**App. D.1**) transparently defines the grading scale and the corresponding scale in the ECTS system (e.g. *bardzo dobry (bdb)*/very good, 5.0 = A) and allows the use of a two-grade scale: pass or fail.
Selected classes as part of courses delivered for the first time or taught by new persons are visited by the DS head.
Compulsory courses for doctoral students may be taught by academics or other persons with a significant scientific record published in the last 5 years and practical experience in the subject matter of the course. This guarantees transfer of top-level knowledge. For example, *Development of Scientific Career and Communication in Science* is taught by eminent scientists from the Jagiellonian University who have many years of experience in research and in presenting it on various forums (plenary lectures, lectures for students, conference presentations, popular science presentations, television and radio interviews, etc.). Verification of the learning outcomes achieved in this course is based on (i) evaluation of the manuscript drafted by doctoral students during the course according to the requirements of a journal chosen by the course instructor, (ii) evaluation of the peer review of the manuscript (thus, not only the instructors evaluate the work of the doctoral students, but also the doctoral students evaluate each other's work), (iii) delivery of a scientific paper using a multimedia presentation, (iv) preparation and presentation of a popular science poster, and (v) active participation in the course. At each stage, the doctoral student receives feedback and is made aware of their strengths and weaknesses. Such a multi-stage verification process guarantees that the learning outcomes envisaged in the course Syllabus are fully achieved. This is reflected in the annual SRS, which, like the aforementioned course, is held in English. During the SRS, doctoral students present their progress in the implementation of IRP in the form of an oral paper. For the past two years, 3rd and 4th year doctoral students have been involved in chairing the sessions, thus learning the role of the session chair. At the SRS, which is held in the presence of the DS Heads, doctoral dissertation supervisors and MU staff are invited. In this way, doctoral students have the chance to practice their oral presentations before participating in national and international conferences and improve their ability to respond to critical comments from session participants. Doctoral students also present the findings of their research at seminars organised by MU, as well as at seminars they organise themselves. The learning outcomes obtained at DS are confirmed by various achievements of the doctoral students, such as publications (first- and co-authored works), participation in conferences, activities popularising science, applying for funding of their own grant projects (**App. 1.3**). It is worth noting that 5 out of 6 doctoral dissertations submitted with DS were prepared as a series of several publications.
In order to pass the academic year, a doctoral student needs not only to obtain the obligatory credits and pass the examinations provided for in the curriculum, but also to obtain the required number of ECTS credits for optional courses. Verification of participation in workshops, training courses, conferences, Science Festivals, etc. is made by the DS Head based on certificates submitted by the student. The DS Head awards the appropriate number of ECTS credits provided for in the programme (**App. 1.1**). Over the years, the scoring for individual activities has been updated (over time, the number of ECTS credits has been adjusted to the number of workshop hours, duration of internship, the form of conference participation (with or without presentation)). Doctoral students willingly participate in optional activities, often in excess of the programme and/or IRP requirements (**App. 1.3**).
At the end of each semester, the doctoral student is required to submit a written semester report on their work, including a positive evaluation of the doctoral student's work by the supervisor(s). The model form of the report is determined by the DS Head (**App. 2.1**). Starting with the 3rd semester at the latest, the report should contain information with regard to the IRP, together with a justification for any discrepancies between the IRP and the actual progress. So, every semester, based on the reports, review of the training process is made (by the DS heads) plus a review of the dissertation preparation process (IRP implementation) (by the supervisor(s)). If the discrepancies between the IRP accepted by the DS Council and the actual progress in research are significant, it is permissible, with the consent of the supervisor and the DS Head, to make changes to the IRP, including changes to the schedule for the preparation of the dissertation by submitting an updated IRP together with an annex to the IRP. In addition to information on the progress in the implementation of the IRP and on scientific activity (publications, conferences, grants, courses, training, internships, popularisation activity), doctoral students inform the DS Head of their collaboration with the supervisor(s), participation in the work of their parent Department/Institute and other activities (e.g. membership in Scientific Societies, representation in various councils, organisations). ECTS credits are awarded for these additional activities, including for an activity in the Self-Government.
In the case of ISP or optional courses taken outside the DS, the adequacy of the courses proposed by the doctoral student for the learning outcomes for qualifications at PQF Level 8 is verified by the DS Head. The doctoral students are required to submit to the DS Head, together with a request for permission for the ICE, a detailed plan for completion of the programme of study in the ICE period and the Syllabuses of the courses they intend to pursue outside DS.
At the request of doctoral students, expressed by the Self-Government when the study programme was being developed, ECTS credits are not awarded for the student's participation in a research project, since most doctoral dissertations at DS are prepared and financed under a grant received by the supervisor or assistant supervisor.
To recapitulate, monitoring of the learning outcomes achieved by doctoral students is carried out at various stages of the programme through: assessment of the student's work throughout the course (e.g. activity in class), activity and presentation at SRS, delivery of seminars, examinations and credits for the particular courses, or verification of progress in the preparation of the doctoral dissertation. Perhaps the programme's weak point is the absence of any course offering improvement of the English language skills. The requirement of English language proficiency at the B2 level under the Common European Framework of Reference for Languages is verified already in the admission process based on the language certificate or diploma submitted by the student, certifying modern English proficiency at least at B2 level (**App. 2.2**). Teaching compulsory courses and SRS in English certainly supports development of doctoral students' language competence. Yet, a specialised

course in a foreign language (a discussion class), taught by a qualified language teacher, might be useful for some doctoral students. On the other hand, the number of doctoral students for whom communication in English is difficult has been steadily decreasing.
DS does not have its own Internal Educational Quality Assurance System. In the four MUs that are PAS Institutes evaluation of doctoral students' education is carried out as part of the evaluation of these entities by the Committee of the Board of Trustees of the Second Department of PAS. As DS is made up of four PAS Institutes and one National Research Institute, the education programme does include teaching practice. An opportunity for the introduction of such training (e.g. in the form of classroom visits) will be created by the planned cooperation between the Kraków-based doctoral schools as part of the Forum of Doctoral Schools of Kraków. In addition, in order to assess the learning outcomes and make possible changes in the education programme, it seems reasonable to introduce a system of career tracking of DS graduates for analytical purposes.
To date, MUs have successfully supervised four doctoral students studying at DS (three doctoral students received their doctoral degrees in the assessment period of DS and one doctoral student defended his doctoral dissertation in May), with further two doctoral dissertations submitted to DS in February and March 2025. At DS Council meetings discussions are undertaken on how to encourage doctoral students to complete an anonymous survey about the courses taught at DS, as only a small percentage of students complete such surveys.

3. Qualifications of academic teachers or research staff conducting education at the doctoral school

As a rule (§ 22 of the DS Regulations), compulsory courses for doctoral students may be taught by academic staff or other persons having significant academic achievements published within the last 5 years or practical experience in the subject matter of the course. MU staff and academic teachers from outside MU fully meet this criterion. The list of lecturers and supervisors teaching at DS is provided in **App. 3.1** and **App. 3.2**, while **App. 3.3.1 - 3.3.3** presents bios of the 5 top-qualified persons per each discipline.

Among the scientists representing Biological Sciences, employed at MU, there are persons with an outstanding publication record (> 100 publications with numerous citations, H>20; WoS), coordinating numerous national and international grants. They have extensive experience in teaching numerous courses to students and doctoral students, and successful supervision of doctoral dissertations, and are both DS lecturers and supervisors. For example, Dr Łukasz Kajtoch, delivers courses in the *Systematics and Evolutionism* block and supervises 2 foreign doctoral students, and Dr Piotr Skórka teaches the *Ecology and Nature Conservation* block and, more recently, *Statistics* and *Introduction to R* courses, and is the supervisor of a DS student. Biological sciences are also represented by Professor Ryszard Laskowski, of the Jagiellonian University, who teaches the course *Development of Scientific Career and Communication in Science* and was the auxiliary supervisor of a DS student's honours dissertation. Professor Laskowski has extensive teaching experience, has taught several courses for students and doctoral students both in Polish and English, supervised 15 doctoral dissertations, and his name appears on Stanford University's prestigious list of the world's top 2% most cited scientists.

Scientists representing the Animal Production and Fisheries discipline at the Institute of Animal Production – the National Research Institute involved in delivery of the *Contemporary Trends in Animal Raising and Breeding, and in Plant Cultivation* block and supervising doctoral students are distinguished for their publication record as well as their competence in scientific supervision, experience in obtaining grants and the number of patents. They include individuals with teaching experience gained outside DS (Dr Paweł Górka taught at the University of Agriculture in Kraków, Dr Jacek Jura taught at the University of Agriculture in Kraków and AGH University).

The staff representing Agriculture and Horticulture are also scientists publishing in important international journals, managing grants, and having teaching experience gained outside DS (University of Agriculture in Kraków, University of the National Education Commission, Doctoral Studies in Natural Sciences at PAS). At DS, they teach the *Physiology and Biochemistry of Organisms* block (Professor Iwona Żur, Dr Agnieszka Ostrowska).

Teachers at DS are evaluated by their MUs according to the rules developed by these MUs (periodic staff evaluation) and are supported in their scientific development and improvement of their qualifications and competences through the training and courses offered (e.g. Good Supervisor. Good Leader, Effective Communication, Team Building, Professional Burnout).

Selection of staff to teach compulsory courses is discussed and approved at the DS Council meetings. The qualifications and competences of the compulsory courses teachers are also assessed by doctoral students in anonymous surveys. Students can also pass on their criticism of the teachers directly to the DS Head or DS Council members. Such a situation occurred only once, when the teacher of the *Statistics* course was replaced at students' request.

Appointment of supervisors is the responsibility of the Scientific Councils of MUs. In a declaration of scientific supervision, a candidate supervisor declares that in the last 5 years (i) he/she has not been a supervisor of 4 doctoral students removed from the list of doctoral students due to a negative mid-term evaluation, or (ii) he/she has not supervised a dissertation by at least 2 doctoral candidates who failed to obtain positive reviews, or (iii) he/she has not twice obtained negative evaluation of performance of the supervisor's duties during the doctoral student's mid-term evaluation. An auxiliary supervisor also submits a declaration detailing the key tasks. The auxiliary supervisor may fulfil this role for max. 3 students. Scientific supervision of a doctoral student as well as the appointment and replacement of a supervisor(s) or auxiliary supervisor is governed by § 17 of the DS Regulations. Prior to the appointment of a supervisor by the MU's Scientific Council, the Council members review the candidate's profile and decide by secret ballot on the appointment. DS offers a webinar for the scientists acting as supervisors, discussing the supervisor's duties, the process of preparing IRP, intellectual property rights (issues of particular importance when the doctoral student's IRP overlaps with the topic of the supervisor's grant), the drawing up of grant agreements, evaluation and replacement of the supervisor, etc. Assessment of the supervisor's qualifications and competences is made by the DS Heads based on semester reports in which the doctoral student describes their collaboration with the supervisor. During the mid-term evaluation, the Committee evaluates the supervisor according to the rules specified in Section 6 of this report.

In addition to the circumstances explicitly set forth in the Law and referred to above, also proceedings pending against such individuals for mobbing may disqualify a supervisor from providing scientific doctoral supervision and a lecturer from providing training at DS. Such situations have never occurred at DS. Neither have there been cases of doctoral students withdrawing from the programme due to disputes over the DS staff's performance of their duties.

The DS staff is mainly composed of scientists from MUs, who, due to the nature of these entities (PAS Institutes and NRI), do not have any teaching duties as they are not academic teachers. Although often having recognised, not infrequently worldwide, scientific achievements, they do not always have much experience in lecturing or supervising. Therefore, it seems reasonable for DS to develop measures to improve the teaching and supervising competences. A larger number of MU staff with such competences will make it possible to reduce employment of persons from outside MUs to teach compulsory courses. There is such a risk, especially as the financial situation of MU, and hence also of DS, does not always allow to offer such remuneration for teaching doctoral students as is adequate to the position held.

4. Quality of the recruitment process

The admission process at DS is governed by DS Regulations (**App. D.1**) and DS Admissions Rules (**App. 2.2**), posted on the DS website in Polish and English. The DS Regulations refer to the admission process in a few general sections in § 10, while details of the process are stipulated in the Admissions Rules (Rules).
The Rules are drafted by the DS Council and adopted by the Scientific Councils of MUs (in 2019) or the Scientific Council of the Coordinating Unit (IB PAS) (since 2020), based on the relevant authorisation, in accordance with the DS Regulations. All versions of the documents are archived by DS.
With growing experience and expertise of those involved in the operation of DS, the Rules were subsequently modified to reflect amendments in the applicable laws and the need to supplement, clarify and improve the admission process by introducing, for example, requirements for admissions under external projects (e.g. NSC, EC projects), provisions on recognition of foreigners' diplomas, support for persons with special needs, including disabilities (PwD), and protection against harmful factors. The present Rules and other DS documents have also changed their form, as support for PwD, into digitally accessible documents under the "IB PAS's Entry into Accessibility (DOSTEP)" project.
As a rule, admissions take place in September, and the two-stage process is managed by an Admissions Committee (Committee) appointed by IB PAS Director. Its members (Directors of the five MUs, 1 representative of the Scientific Council of each MU, 2 representatives of doctoral students, and the DS Head and their deputy) are announced to the public in a regulation of IB PAS Director prior to the start of the admission procedure (**App. 4.1**). The Committee members are academics with significant scientific achievements and several years of organisational experience in the work of a scientific unit and/or a scientific council. Thus, the Committee guarantees a high academic level of the interviews and fair assessment of the candidate. Representatives of doctoral students satisfy the required standards of representation of the entire DS community.
In addition, the Committee invites the researcher who prepared description of the research topic for the admission process to take part in the admission procedure. He/she participates in an advisory capacity in the assessment of the candidate's qualifications, without a voting right on the candidate's formal evaluation. His/her knowledge of the objectives of the proposed research, the methods used in it, and of other desirable characteristics of the doctoral student guarantee fair assessment of the candidate. As regards admission for a topic submitted under an external project (e.g. NSC, EC projects), the Committee additionally includes the project coordinator and/or other persons as required by the project. If supplementary admissions are necessary at a date other than September, for a topic submitted under an external project, the Committee is appointed according to the project rules with the DS Head or their deputy included as a member. The Committee performs all the activities under the admission procedure.
A candidate applies for a framework research topic of their choice, representing a proposed dissertation topic. The candidate specifies the topic in the application for admission to DS, along with reasons for the choice. The final list of topics is decided by the DS Council based on proposals submitted by the MU academics. The admission limit is based on the number of topics available and announced no later than one month prior to the start of admissions.
In the admission process, a candidate must submit a complete set of the required documents specified in the Rules (**App. 2.2**), including, in addition to those required by law: an application with reasons for the choice of the research topic, a document confirming English language skills at B2 level, and a CV with a list of scientific achievements. As regards admissions to projects financed by external institutions, formal requirements may also include the requirements set out in the project regulations. A person with a foreign diploma meeting the statutory requirements and, in the case of non-EU foreigners, a person who submits written information on the recognition of the diploma in Poland, issued by NAWA, may apply for admission to DS.
The admission procedure consists in the Committee awarding points to a candidate for the particular stages of the procedure, summing them up and compiling a ranking of candidates for a given framework research topic. The Committee assesses, *inter alia*, compatibility of the scientific profile with the topic chosen, scientific achievements and knowledge obtained under the higher education programme in relation to the subject matter of the master-degree thesis and the topic chosen. Candidates who scored highest are enrolled as doctoral students.
Announcements of admissions to DS are published on the websites of DS and the MUs and, as regards admissions for external projects, as required by the rules of competition for these projects. Candidates also learn about the DS offer from presentations of DS on various forums (Festival of Universities - Małopolska of the Future, MU's Facebook pages). The results of the admission process are communicated by email. Admission to DS is by enrolment in the list of doctoral students. Refusal decisions are sent in writing.
With an open and competition-based admission process, DS provides all candidates with fair competition conditions. The candidates who meet formal criteria are invited to demonstrate their knowledge and skills on a fair and transparent basis in front of a multi-member Committee and according to pre-defined interview rules and scoring system.
DS ensures equal treatment in the admission process for candidates from Poland and abroad. Candidates are not required to submit documents in a hard-copy or original version, which would prolong the delivery time (especially from abroad). At the admission stage, scans sent by e-mail are accepted while the originals are necessary at the moment the candidate is finally admitted to DS. Candidates from abroad submit their documents in English and the interview, which can take place online, is also in English. On-line admission process is also available for candidates from Poland who have difficulties in arriving in Kraków at the dates set. In order to speed up communication, all requests, in particular for supplementary documents, are made by e-mail to the addresses provided by the candidates.
Since the start of DS, only one appeal against a decision to refuse admission to DS has been filed, alleging that the reason for the refusal was not explained in sufficient detail. The appeal also alleged procedural errors consisting in a breach of certain provisions of the Code of Administrative Procedure (CAP), but in the opinion of DS's lawyer, such breach did not prevent the applicant from exercising his rights in the admission process or impeded his participation in it. As the Committee's decision was upheld by IB PAS Director, the appealing person lodged a complaint with the Provincial Administrative Court in Kraków. The court dismissed the case.

DS follows the principle of equal treatment of all applicants and doctoral students both at the stage of admissions and in the education process. DS ensures that all doctoral students have the right to participate fully in the scientific and academic life without fear of marginalisation or violence based on any personal characteristics. DS has introduced a duty to respond to any incidents of bullying, harassment or hate speech against individuals across the DS community. To date, there has been no such case reported in DS.
The scale of interest in undertaking training at DS depends on the discipline the research topic relates to and the recognition of its author in Poland and abroad. Over the years of DS's existence, the particular topics have usually attracted 1-4 candidates, with the exception of some single topics for which a dozen or so persons applied, mainly from abroad, yet not all of them met the formal criteria. Since the academic year 2020/2021, max. 4 applicants with the highest score in the 1st stage of the admission process are invited to the interview.
The DS admission process appears to be successful. Out of 39 doctoral students admitted, 6 withdrew from the programme for personal reasons (all of them during the first year) and 2 were struck off for not completing their IRPs. The other students complete subsequent years of the programme and have positive mid-term evaluations. Six doctoral students submitted their dissertation on time and complied with the IRP (1 without extension and the other with a one-year extension of the programme).
DS simplified its internal procedures that had not fully complied with the formalised procedures under CAP they apply directly to the admission procedure and the procedure for removal from the list of doctoral students. Such a situation was one of the reasons for the complaint filed with the Administrative Court against the decision to refuse admission to DS. As a lesson learnt on that case, the procedures at DS were aligned with the provisions of CAP. Efforts were made to adjust the timeframes applicable to the entire admission process, so that any requests for supplementary documentation could be made fully in compliance with Article 64 § 2 of CAP and that the candidate would be given sufficient time to comply with such a request.
At DS, training in the application of CAP was provided and, in the process of admissions for the academic year 2025/2026, the waiting period for supplementary documentation from a candidate has been extended, thus ensuring that all formal conditions and timeframes under CAP are met.

5. Quality of scientific or artistic supervision and support for conducting scientific activities

The appointment of supervisors and their responsibilities are clearly defined in the DS Regulations (**App. D.1**). Within 3 months from the start of the programme, the Scientific Council of the MU in which the doctoral student is pursuing their IRP appoints a supervisor for them. As to interdisciplinary research, 2 supervisors are appointed from among specialists in the disciplines the research problem addressed by the dissertation is related to. To ensure high quality of supervision and individual approach to each student, supervisors may supervise a limited number of students at a time (supervisor: 5, auxiliary supervisor: 3).
The Scientific Councils appointing supervisors care about the high standards of scientific activity and development of the MU staff. DS does not influence any appointment decisions, it only passes on students' applications and monitors the process to ensure that the formal requirements are met.
At DS, supervisors are usually the academics who proposed the research topic the student was admitted for. They are individuals with a recognised publication record and research interests and competences falling in line with the doctoral dissertation topic. The quality of their output is confirmed by positive periodic evaluation by MU staff. In DS, more than 50 percent of supervisors have been rated high by external institutions (e.g. NSC, Ministry of Science and Higher Education) for their scientific achievements by receiving funding for the project the student is involved in. Auxiliary supervisors are academic lecturers and researchers employed either by MUs or a university, specialising in the field concerned.
At DS, a supervisor may be replaced at their own reasoned request or at the request of the student, and if the assessment of the student as part of the mid-term evaluation was positive and that of the supervisor negative (within 3 months). To date, no supervisor replacement has been needed at DS.
The supervisor provides content-related guidance with regard to the doctoral dissertation, ensuring that the student's research topic is consistent with the scientific discipline. He/she assists in formulating hypotheses, developing methodology and other elements of IRP, and also supports the student in the analysis and interpretation of research findings and preparation and publication of manuscripts. The supervisor supports the student's development by helping them to arrange for participation in training and internships in national and international research centres, as well as to commercialise research findings and apply for research projects. Together with the student, the supervisor determines the ICE, if necessary, and issues opinions on the student's requests concerning the course of study (exemptions from courses, extensions, leaves of absence). The supervisor's duty is also to provide the student with organisational support, a work place, access to office and laboratory equipment, and take care of the financing of the student's research and scientific activity in line with the research topic specified in the admission process. The supervisor proposes possible sources of funding and assists in the drafting of grant applications. The activities undertaken by doctoral students and their supervisors have resulted in 8 grants where students act as project leaders (6 grants from NSC, a grant for a foreign trip from the British Ecological Society Training and Travel Grant 2021, and a NAWA grant). The supervisor's role is also to assess the progress in the student's work in semester reports and in the report on IRP implementation, drawn up for the purposes of the mid-term evaluation, and review the dissertation, including in terms of its compliance with IRP.
The quality of the supervisor's guidance is assessed as part of mid-term evaluation. When assessing it, the committee usually uses the supervision assessment form developed by the DS Council (**App. 5.1**) or applies its own criteria. The key aspects assessed include the supervisor's performance of their obligations under § 17 of the DS Regulations. To date, all evaluated supervisors (24 persons) have been assessed positive.
At DS there are no defined methods of resolving conflicts between doctoral students and supervisors as these may involve multiple aspects and thus require diversified solutions. To date, each of the few conflicts reported to DS management, whether by the student or by the supervisor(s), has been different. In all cases, confidential discussions were held between the DS management and those concerned in order to identify the sources of the conflict and find ways of resolving it amicably. The outcome varied from mitigation of the conflict to reporting it to the Director of MU. Two cases could not be resolved positively and resulted in doctoral students being struck off the list due to a failure to implement IRP. In one of the aforementioned cases, the student disregarded repeated requests and admonitions from the supervisors to pursue the IRP. Ultimately, due to negative evaluation of the semester report for no progress in the preparation of the dissertation and failure to implement the IRP, the student was removed from the list. In the other case, the student did not obtain a positive opinion from the supervisor for the submitted IRP, and thus, due to her failure to fulfil her obligations under the DS Regulations, she was struck off the list. Only in the first case did the student appeal against the decision which was subsequently upheld by IB PAS Director.
It is planned to improve conflict management competences through training offered to DS management, doctoral students and supervisors. In order to minimise the risk of conflict, DS plans to introduce detailed terms of collaboration, including methods of communication and dates of meetings, to be agreed by the supervisor and the student at the start of the programme. It will be important to include a statement in the supervisor's declaration to the effect that there are no legal and/or factual relations (social, financial, functional, or family ties) that would affect their impartiality with respect to the particular student.
At DS, functionalities are being developed to support equal access to education and research for people with special needs, including disabilities (PwD). The first step is to implement the DOSTEP project at the Coordinating Unit (IB PAS) (**App. 4.1**). Once it is delivered, assistance to PwD will be provided by IB PAS's separate unit, the Support Office. The DS website, including all documents for doctoral students, will meet digital accessibility requirements. A catalogue of support services for doctoral students being PwD will be created. An education counsellor will be appointed to identify the individual needs of students being PwD and suggest forms of support. With possible more funding obtained, further steps will be taken to remove architectural, communication and organisational barriers to education.

6. Integrity of the mid-term evaluation process

The rules for the mid-term evaluation (MTE) of the doctoral student and of the supervisor's guidance are set out in the DS Regulations (**App. D.1**). Until the 2024/2025 academic year, the Regulations included the forms to be used for MTE; now, as electronically accessible documents were created for PwD, the forms have been extracted from the Regulations. The MTE schedule and related documents are published, in Polish and English, on the DS website as soon as they are agreed, at least one month in advance. The outcome of MTE is inputted in the POL-on system and, together with the reasons, published on the DS website.

The process of establishing MTE rules and criteria involved the DS Council, the Scientific Councils of MU and representatives of doctoral students. MTE is the turning point that decides on the doctoral student's future: a negative outcome leads to the student being struck off the list, while a positive one allows them to continue research and education at DS. Appeals against the negative outcome of a student's or a supervisor's evaluation are examined by the DS Council.

MTE covers implementation of the student's IRP approved by the supervisor and accepted by the DS Council. In IRP, the student presents the thematic scope, framework, stages and timeframe for the completion of the doctoral dissertation, scientific and popularisation activities, and improvement of qualifications according to the IRP model (**App. 1.4**). The student formulates the objectives, hypotheses and methods of research, and tries to identify the risks that might delay or prevent completion of the tasks, as well as ways of avoiding such risks; such a risk assessment may justify amendments to the IRP in the course of its implementation.

At the end of the 2nd semester (in mid-term), at least one month before the MTE date, the student submits an updated IRP and a report on its implementation (Report) with an updated timetable for the preparation of the dissertation for the following semesters (**App. 6.1**), and the supervisor submit an opinion on the quality of the IRP implementation by the student. The documents are submitted electronically and in a hard copy. In the Report, the student describes the research progress and the difficulties encountered, plus reasons for any discrepancies between IRP and the actual progress. The student also lists all the scientific and organisational activities to date. Following a review of the IRP, the Report and the supervisor's opinion, MTE committee holds a meeting with the student to discuss the progress in the IRP delivery. When in doubt, MTE Committee may invite the supervisor to the meeting. To date, there has been no such case. At MTE Committee's meeting (usually held online), the student discusses the topic of the dissertation and answers questions asked by MTE Committee members about the progress in research and other activities, the timeliness of completion and possible delays. MTE Committee assesses the progress in delivery of all the IRP elements (stages of and deadlines for research and scientific activities, and improvement of qualifications). The content-related value of the dissertation being prepared is not assessed (this being the responsibility of the reviewers), nor is the timeliness in completion of compulsory courses or optional activities provided for in the DS programme (it is verified by the DS Head based on semester reports with the supervisor's grade). MTE Committee provides reasons for its opinion individually to each student, focusing on the progress in and timeliness of IRP implementation, with possible suggestions for content-related changes in the subsequent years of IRP delivery.

MTE Committee also evaluates the supervisor's guidance. The DS Council has prepared a survey to enable independent evaluation by the student and by the supervisor (**App. 5.1**). In the survey, the student describes the support received and the supervisor the support given. Both refer to the supervisor's obligations under the DS Regulations and good practice. Although use of the survey is not obligatory, as MTE Committee has the right to develop its own rules, members of MTE Committee find this form useful.

Minutes of MTE Committee meetings are forwarded to the DS Head and archived. A template thereof specifies the scope of information to be recorded during the meeting. The form is planned to include also the evaluation criteria to serve as the basis for specification of reasons for the opinion.

MTE Committee is composed of 3 independent academics (one of whom is employed outside MU) and a doctoral student - observer (without voting rights) designated by the Self-Government (**App.6.2**). Members of MTE Committee, proposed and discussed by the DS Council, are approved collectively by MU Directors. MTE Committee members are appointed from among the academics whose research interests, as evidenced by scientific publications and output, are in line with the topic of the doctoral dissertation. MTE Committee member from outside MU is usually an academic teacher familiar with the student's research topic and the educational process at DS.

MTE Committees are appointed for each doctoral student individually and may be composed of the same persons. MTE Committees are appointed no later than one month before MTE. Over the years, the same persons have sometimes been designated to sit in several Committees in appreciation of reliability of their work, their extensive knowledge of the discipline in which the student is being evaluated and their experience in MTE Committee's works. When appointing MTE Committee members, conflicts of interest are avoided; persons closely related to the student, either personally or in terms of scientific collaboration (including supervisors), are excluded.

The evaluation schedule is posted on the DS website at least one month prior to the deadline for submission of the documents required from the student and is sent to each student and supervisor individually (by e-mail).

At DS, MTE is precisely defined and transparent. Students are familiar with the MTE process and its consequences; they obtain the information from the DS Regulations, a multimedia presentation during the academic year inauguration ceremony, as well as from doctoral students who have either undergone the evaluation process or took part in MTE Committee's work. The Committee members are familiarised with MTE rules at a training course provided by DS.

MTE is conducted timely and reliably. To date, it has received no criticism from either MTE Committee or the students. By mid-2025, 24 doctoral students had undergone MTE at DS, all of whom with a pass mark. All the students are continuing their programme as planned; several students have been granted extension (for a maximum of two years) or suspension of their programmes (under the rules described in the DS Regulations). This proves that the MTE rules as well as the work of the students and their supervisors are of good quality.

7. Internationalization

Currently, there are several foreign doctoral students at DS: Aida Parres Lluch from Spain, Rama Sarvani Krovi from India, Antonii Bakai from Ukraine and Federica Bordogna from Italy admitted in May 2025. Yet, as the MUs employ almost exclusively Polish academics who are also the DS staff, the degree of internationalisation is low. Only one doctoral student (Aida Parres Lluch) has a supervisor who is a foreigner (Dr Nuria Selva). Importantly though, both the academics teaching the compulsory courses and the supervisors are active on the international scientific forum, both in terms of publishing research findings in reputable journals and conducting research as part of international research teams. These individuals pursue research grants funded not only by national but also international agencies (e.g. Horizon Europe, Horizon 2020, BioDiversa+) and participate in COST programmes. DS staff present their research findings at numerous international conferences, complete internships abroad (e.g. Bekker NAWA, Maria Zambrano Scholarships), are active in international societies (e.g. Society of the Environmental Toxicology and Chemistry) and are rewarded for their achievements with awards from the President of the Polish Academy of Sciences and recognised international societies (e.g. Ilkka Hanski European Distinguished Service Award from the Society for Conservation Biology to Dr Nuria Selva). DS staff representatives are members of editorial boards (e.g. Applied Soil Ecology) and associate editors in international scientific journals (e.g. Ecotoxicology, Frontiers in Ecology and Evolution).

The education process in DS is evolving towards internationalisation. An increasing number of compulsory courses are offered in English. If a particular course is not offered in English (e.g. *Statistics*), as a rule (§ 24 of the DS Regulations) foreigners can apply for an ICE and complete the course at other doctoral schools. DS heads help to organise this process. DS students have participated in courses such as Behavioural Ecology, Principles of Palaeobiology or Biodiversity, taught at the BIOPLANET School, and Molecular Ecology for PhD Students, Methodological Workshop in Evolutionary Biology, Statistics for research sciences taught at the Doctoral School of Exact and Natural Sciences at the Jagiellonian University. Doctoral students are encouraged to attend seminars organised by MUs and the cooperating institutes (e.g. cooperation between the Institute of Nature Conservation PAS and Institute of Environmental Sciences of the Jagiellonian University, or between the Institute of Plant Physiology PAS and Małopolska Centre of Biotechnology of the Jagiellonian University), to which the world's most eminent researchers and specialists are often invited (e.g. Prof. Johannes Knops of Xian Jiaotong Liverpool University, Suzhou, China; Prof. Keith A. Hobson of the University of Western Ontario, London, Canada; or Prof. Djuro Huber of the University of Zagreb).

All doctoral students are required to specify in IRP their international activities, such as publications in international journals and participation in international conferences. Doctoral students successfully carry out planned activities and benefit from scholarships or internships abroad (e.g. Short-Train Scientific Missions (STSM) under ParAqua COST Action CA20125, British Ecology Society Training and Travel Grant, NAWA Preludium Bis2 Programme, Erasmus+ Exchange Programme, CEPLAS - Cluster of Excellence on Plant Sciences) whenever this forms an essential element for the completion of their IRP. Doctoral students are not required to undertake a research internship as part of their DS programme, yet they go on such internships in order to collect a material for their research, acquire skills in operating unique apparatuses or to perform part of the analyses planned in IRP. International activities are carried out in cooperation and with the support of the supervisor(s) and/or the MUs where they are pursuing their doctoral programmes, and the DS Heads, by giving consent to ICE, allows them to do so (§ 24 of DS Regulations, **App. D.1**).

DS tries to attract foreign doctoral students by announcing the competition documentation in English and posting it on the English-language DS website. Announcements on the admissions of doctoral students for projects funded by MUs (both under grants won by MU staff and from MUs own funds) are also posted on the English-language websites of MUs, as well as publicised as required by the funding agencies (e.g. announcements in EURAXESS, on NSC websites). The number of admission applications for some projects, filed by foreigners, seems to confirm that information on the opportunities to pursue doctoral projects at DS reaches a wide audience abroad. However, these are not always candidates who meet the formal requirements set by DS (**App. D.1 and 2.2**), and those who formally qualify for the admission do not necessarily prove to be better than Polish applicants. There have also been cases where successful foreigners withdraw from the programme before it starts for various reasons, including financial ones. Although scholarships covered by the supervisors' national and international research projects provide a higher amount of funding than the minimum rate of doctoral scholarship stipulated by the law, still these are insufficient amounts to allow foreigners to make a decent living as they have to pay the costs of renting an apartment and the costs of living in a big city, both for themselves and, not infrequently, their family members. MUs cannot guarantee higher scholarship rates than those stipulated by the law, mainly due to financial situations and the need to pay out the scholarship to doctoral students pursuing IRP after the scholarship funding under the projects ends (project funding often covers only 36 out of 48 months of the DS programme).

Due to a small number of doctoral students, DS does not have any position dedicated to offer support to foreign doctoral students. Support for all doctoral students, including advice e.g. on legal acts to foreigners, is provided by DS management and supervisors. So far, there have been no problems with integration of foreigners. International students are involved in all DS activities. Not only classes, but also lectures opening the academic year are delivered in English. Likewise, all documents (e.g. DS Regulations, Regulations of the Doctoral Students Self-Government, Regulations of the competition for the best SRS presentation, model forms of IRP, and all applications/requests submitted by doctoral students to DS) are available in English. MU websites are also available in English. Foreigners willingly participate in team-building activities organised by the Self-Government.

To date, DS has not carried out any activities specifically intended to attract doctoral students from abroad, such as advertising or social media campaigns. Any information about doctoral students' successes, issues addressed in their research and popularisation activities (radio interviews, participation in the Science Festival, Biology Night, etc.) is provided by MU (also in English). Doctoral students, in their publications or conference materials (multimedia presentations, posters), are not obliged to use the DS affiliation, as the DS address is assigned to only one MU (IB PAS). Therefore, doctoral students use the affiliation of the MU where they are pursuing their doctoral programmes. However, in order to increase both national and

international recognition of DS, a LOGO of DS has been developed and students are encouraged to use it in their conference presentations and other activities related to their research at DS.

8. Effectiveness of doctoral education

Percentage of individuals who obtained a doctoral degree	Doctoral students who applied for initiation of proceedings for the award of a doctoral degree	Doctoral students who were awarded a doctoral degree	Doctoral students who were denied the award of a doctoral degree
in the number of doctoral students who completed their education at the doctoral school during the evaluation period	83 %	50 %	0 %
in the total number of doctoral students who completed their education at the doctoral school	83 %	50 %	0 %

In the period under evaluation, 6 students submitted their dissertations; all of them within the timeframe set out in the Act and in their IRP. Applications for the opening of the doctoral procedure were filed by 4 students, of whom 3 were awarded their doctoral degrees (1 with distinction). A few more persons earned their degrees in May and June 2025. Doctoral dissertations of 5 persons represent a series of articles published and/or submitted in very good scientific journals (e.g. *Agric. Ecosyst. Environ*., *Sci. Rep*.). Students also publish in *Biol. Rev*., *Insect Mol. Biol*., *Genet*. *Sel. Evol*., *Ecol. Indic*. with increasing citations. The quality of their scientific output is high and their research has a considerable impact on the world's science. The competence obtained allows them, in addition to presenting their findings on international forums (publications, conferences), to popularise science and submit successful grant applications (**App. 1.3**).
At DS, courses are assessed through an anonymous survey. Students can also provide feedback on the education at and operation of DS to the Self-Government or directly to the DS Heads and/or members of the DS Council. It is examined by the DS Council and, so far, has led e.g. to replacement of a lecturer, change from full-time to online mode of delivery of some classes, or courses combined into blocks.
To date, DS has not monitored graduates' careers. The students who submitted their dissertations are at the start of their career paths: 5 of them are employed by research institutions (4 on a scientific position, 1 on an engineering position) and 1 outside the academia.
In the future, an obligation to inform students on the possibility of completing a satisfaction survey is planned to be introduced as so far, the surveys have not been carried out systematically. For the evaluation purposes a survey on the overall opinion on the programme was conducted. The findings show that DS offers good standard of education.

1. animal science and fisheries

Achievement Description

In the field of animal science and fisheries, 7 doctoral students are educated, and 2 students have already completed their education. Doctoral students are preparing their dissertations in the field of animal production and shaping the agricultural environment. The doctoral theses focus on both current and future needs to produce safe and high-quality food in animal- and environment-friendly conditions, as well as the use of farm animals for biomedical purposes. Below are descriptions of the achievements of selected doctoral students from different years of study, along with information on where the achievements were published.

Adrianna Musiał (5th-year student)
Identification of the origin and diversity of male and female founding lines of the Konik Polski breed based on targeted Y chromosome resequencing and mitochondrial DNA
The Polish Konik remains one of the most important horse breeds in Poland. These primitive, native horses with a stocky body and mouse-like coat color are protected by a conservation program, while their Polish population consists of about 3,500 individuals, representing 16 dam and six sire lines. As part of genetic research on the Polish Konik, a doctoral student demonstrated a much greater diversity of mitochondrial DNA haplotypes in female lines than previously described and identified potential inaccuracies in official pedigrees. Analysis of the Y chromosome has also revealed historical links between this breed and other horse breeds, including coldblooded horses and Dulmen ponies. These results constitute a significant contribution to the protection of the genetic resources of the Polish Konik. The research was founded by Diamond Grant scholarship, and the doctoral student was awarded, among others, *L'Oréal-UNESCO For Women and Science* scholarship for her research achievements.
Results published:
Musiał A.D., Radović L., Stefaniuk-Szmukier M., Bieniek A., Wallner B., Ropka-Molik K. 2024. Mitochondrial DNA and Y

chromosome reveal the genetic structure of the native Polish Konik horse population. *PeerJ* 12:e17549. https://doi.org/10.7717/peerj.17549

Grzegorz Myćka (3rd-year student)
Comprehensive analysis of genetic background of the endurance ability in Arabian horses
Endurance-type effort is a complex issue that has been extensively studied in humans and other mammals, including horses. The ability to cover marathon distances and longer is a unique example of the body's adaptation to extreme exertion. This type of physical activity is characterized by very long durations at the same time as moderate intensity, being the exact opposite of speed (sprint-type) exercise. The body's adaptation to endurance exercise is based on a number of biochemical processes and genetic predispositions, which are the subject of the doctoral student's research, done also as part of his own PRELUDIUM project. The doctoral student's achievements have been recognized with the award of a prestigious scholarship from the Ministry of Science and Higher Education (June 2025).
Results published:
Myćka G., Ropka-Molik K., Cywińska A., Stefaniuk-Szmukier M. 2024. Endurance Effort Affected Expression of Actinin 3 and Klotho Different Isoforms Basing on the Arabian Horses *Model. Genes* 15(12), 1618. https://doi.org/10.3390/genes15121618
Myćka G., Ropka-Molik K., Cywińska A., Szmatoła T., Stefaniuk-Szmkukier M. 2024. The modifications of Longevity Regulating Pathway resulting from endurance effort in Arabian horses. *Ann. Anim. Sci.* 24(4), 1161-1170. https://doi.org/10.2478/aoas-2024-0035
Myćka G., Ropka-Molik K., Cywińska A., Szmatoła T., Stefaniuk-Szmkukier M. 2023. Molecular insights into the lipid-carbohydrates metabolism switch under the endurance effort in Arabian horses. *Equine Vet. J.* 56(3), 586-597. https://doi.org/10.1111/evj.13984
Myćka G., Klecel W., Stefaniuk-Szmukier M., Jaworska J., Musiał A.D., Ropka-Molik K. 2022 Mitochondrial Whole D-Loop Variability in Polish Draft Horses of Sztumski Subtype. *Animals* 12(15), 1870. https://doi.org/10.3390/ani12151870
Myćka G., Musiał A.D, Stefaniuk-Szmukier M., Długosz B., Piórkowska K., Bieniek A., Szmatoła T., Ropka-Molik K., 2022. PLN Gene Analysis in Horses. Multiway Approach for Investigation and Validation of Molecular Variation. *Folia Biol.* 70(4), 177-184. https://doi.org/10.3409/fb_70-4.21

Anna Steg (5th-year student)
Effect of vitamin D3 supplementation of pigs diet on transcriptome and proteome
Vitamin D is one of the most widely supplemented nutrients in the world. Nevertheless, its detailed, tissue-specific mechanisms of action—particularly under conditions of sufficiency and excessive intake—remain poorly understood. A study conducted on healthy pigs supplemented with high doses of vitamin D_3 showed that, despite the absence of significant physiological changes, there were clear disturbances in hepatic gene and protein expression, especially in pathways related to lipid metabolism and fatty acid β-oxidation. The transcriptomic results were independently confirmed by proteomic analyses (2D electrophoresis and western blot), providing a consistent picture of the metabolic consequences of vitamin D_3 excess. These findings challenge the notion of its uniformly beneficial effects and point to potential risks of metabolic disturbances that extend beyond the well-recognized hazard of hypercalcemia. The doctoral student was awarded third place in the competition for the best poster at the 17th Copernican Doctoral Seminar for her research.
Results published:
Steg A., Oczkowicz M., Świątkiewicz M. 2024. Effects of High-Dose Vitamin D3 Supplementation on Pig Performance, Vitamin D Content in Meat, and Muscle Transcriptome in Pigs. *J. Anim. Physiol. Anim. Nutr.* 109, 560-573. https://doi.org/10.1111/jpn.14066
Steg A., Smołucha G., Świątkiewicz M., Oczkowicz M. High-dose vitamin D_3 supplementation reduces the expression of genes and proteins engaged in β-oxidation in healthy pigs – manuscript under review in *J Steroid Biochem Mol Biol.*

Dawid Słomian (4th-year student)
Evaluation of cattle breeding value using a single-step model
Routine, reliable breeding value estimation is the foundation of genetic progress and effective herd management. Single-step methods are slowly taking the place of traditional two-step BLUP procedures. Regular evaluations that are both highly reliable and quick to complete are necessary to oversee genetic improvement effectively. The introduction of single-step models, which combine pedigree, phenotypic, and genomic information all at once, has been crucial for improving the accuracy of predictions while keeping the amount of computation needed in check. Analyses of these models show that the speed and stability of convergence depend on the genetic effects included and on the structure of the population. This means that carefully adjusting model parameters can shorten run-time without affecting the accuracy of predictions. Comparing different single-step implementations shows that it is possible to keep genomic estimated breeding values (GEBV) very accurate while significantly lowering the cost of computing, even in populations with incomplete pedigrees. It is also very important to model missing parents correctly because it reduces systematic bias and makes national evaluations more reliable. In general, the results obtained show a clear path for further research that helps improve the quality of single-step evaluations.
Results published:
Słomian D., Żukowski K., Szyda J. 2023. Heterogeneity in convergence behaviour of the single-step SNP-BLUP model across different effects and animal groups. *Genet. Sel. Evol.* 55(1). https://doi.org/10.1186/s12711-023-00856-5

Kinga Szczepanik – dissertation submitted
Effects of Hermetia illucens fly larvae meal and astaxanthin on production performance, health status, and gastrointestinal structure and function in pigs
Weaning piglets is a critical stage in pig farming, associated with the risk of digestive disorders, oxidative stress, and infections. This study evaluated the effects of full-fat *Hermetia illucens* (HI) larval meal - rich in protein and bioactive compounds (antibacterial peptides, chitin, lauric acid) - and astaxanthin (AST), a natural antioxidant, on the health and development of piglets. The experiment was conducted using piglets supplemented with HI and/or AST. None of the factors had a negative effect on weight gain, feed consumption, or health parameters. Improvements were observed in intestinal morphology (elongated villi, thickened muscle layers), a better villus height-to-crypt depth ratio, and increased cell proliferation. AST improved liver structure and function by reducing fibrosis and modulating the expression of genes involved in lipid metabolism and detoxification. The combination of AST and HI also reduced lipid peroxidation in adipose tissue. The results suggest that dietary supplementation with HI and AST may positively influence piglet health by supporting intestinal and liver function, without compromising production performance.
Results published:
Szczepanik K., Furgał-Dierżuk I., Gala Ł., Świątkiewicz M. 2023. Effects of *Hermetia illucens* larvae meal and astaxanthin as feed additives on health and production indices in weaned pigs. *Animals* 13(1), 163. https://doi.org/10.3390/ani13010163
Szczepanik K., Dobrowolski P., Świątkiewicz M. 2024. Effects of *Hermetia illucens* larvae meal and astaxanthin on intestinal histology and expression of tight junction proteins in weaned piglets. *J. Anim. Physiol. Anim. Nutr.* 108(6), 1820-1832. https://doi.org/10.1111/jpn.14024
Szczepanik K., Oczkowicz M., Dobrowolski P., Świątkiewicz M.,2023. The protective effects of astaxanthin (AST) in the liver of weaned piglets. *Animals* 13(20), 3268. https://doi.org/10.3390/ani13203268
Szczepanik K., Świątkiewicz M. 2024. *Hermetia illucens* as a source of antimicrobial peptides–a review of in vitro and in vivo studies. *Ann. Anim. Sci* 24(1), 77-88. https://doi.org/10.2478/aoas-2023-0071

2. agriculture and horticulture

Achievement Description

In the field of agriculture and horticulture, three doctoral students are preparing their doctoral dissertations in plant physiology, with particular emphasis on ecophysiological factors determining the productivity of crops. One doctoral student, Julia Stachurska, has completed her education and obtained her doctoral degree, while the other two doctoral students are currently in their first year of education and are in the process of developing their Individual Research Plans. Therefore, only the scientific achievements of Dr. Julia Stachurska are briefly described below, along with information about the publications in which the achievement was published.

Julia Stachurska – doctoral dissertation defended
The physiological basis of winter rapeseed frost resistance disorders as a result of deacclimation processes – the role of brassinosteroids
Oilseed rape cultivars differ in their tolerance to deacclimation. Based on a test conducted under controlled conditions, the doctoral student demonstrated that the winter cultivar Rokascan be classified as a variety with better frost tolerance after deacclimation. The spring cultivar *Feliks* was characterized by the lowest deacclimation tolerance among all the tested cultivars. It was shown that the **decrease in frost tolerance after deacclimation in oilseed rape (7 days, T = 16°C/9°C day/night) results from numerous physiological and biochemical changes.** Deacclimation induces a partial or complete reversal of the changes triggered by cold acclimation. The factors contributing to decreased frost tolerance after deacclimation may be: (i) a decrease in fluidity of chloroplast membranes (Alim), associated with a decreased ratio of unsaturated fatty acids (18:3/18:2), reduced accumulation of protective/antioxidant compounds in membranes (e.g., tocopherols), and intensification of the activity of the light phase of photosynthesis, (ii) changes in hormonal homeostasis, including decreased levels of the stress hormone abscisic acid (ABA) and an increased levels of growth-promoting hormones (e.g., gibberellins and cytokinins), as well as high accumulation of the brassinosteroid receptor protein BRI1 associated with increased expression of SERK1, indicating the resumption of growth processes, (iii) reduced accumulation of protective heat shock proteins (HSPs) and reduced expression of genes encoding COR (cold-regulated) proteins, such as COR14. **The doctoral student also showed that the state of deacclimated oilseed rape can be detected both by non-invasive methods** (chlorophyll *a* fluorescence and leaf reflectance – leaf spectral properties) **and by biochemical analyses** of changes in the accumulation of certain hormones and proteins. Biochemical markers include ABA, I3CA, and the receptor protein BRI1. Studies show that the **selected growth regulators** (e.g., 24-epibrassinolide, Asahi SL) can improve **the frost tolerance of deacclimated oilseed rape plants, but** due to the high dependence of their effectiveness on many factors, as well as the costs of spraying, it seems more advisable to use cultivars with increased tolerance to deacclimation in cultivation. Wyniki opublikowane:
Published results:
Stachurska J., Rys M., Pociecha E., Kalaji H.M., Dąbrowski P., Oklestkova J., Jurczyk B., Janeczko A. 2022. Deacclimation-Induced Changes of Photosynthetic Efficiency, Brassinosteroid Homeostasis and BRI1 Expression in Winter Oilseed Rape (*Brassica napus* L.)—Relation to Frost Tolerance. *Int. J. Mol. Sci* 23(9), 5224. https://doi.org/10.3390/ijms23095224
Stachurska J., Sadura I., Rys M., Dziurka M., Janeczko A. 2023. Insight into Hormonal Homeostasis and the Accumulation of Selected Heat Shock Proteins in Cold Acclimated and Deacclimated Winter Oilseed Rape (*Brassica napus* L.). *Agric.*

(Switz.) 13(3), 641. https://doi.org/10.3390/agriculture13030641
Rys M., **Stachurska J.,** Rudolphi-Szydło E., Dziurka M., Waligórski P., Filek M., Janeczko A. 2024. Does deacclimation reverse the changes in structural/physicochemical properties of the chloroplast membranes that are induced by cold acclimation in oilseed rape? *Int. J. Plant Physiol. Biochem.* 214, 108961. https://doi.org/10.1016/j.plaphy.2024.108961
Stachurska J., Sadura I., Jurczyk B., Rudolphi-Szydło E., Dyba B., Pociecha E., Ostrowska A., Rys M., Kvasnica M., Oklestkova J., Janeczko A. 2024. Cold acclimation and deacclimation of winter oilseed rape – special attention being paid to role of brassinosteroids. *Int. J. Mol. Sci* 25 (11), 6010. https://doi.org/10.3390/ijms25116010
Stachurska J., Janeczko A. 2024. Physiological and Biochemical Background of Deacclimation in Plants, with Special Attention Being Paid to Crops: A Minireview. *Agronomy* 14(3), 419. https://doi.org/10.3390/agronomy14030419
Stachurska J., Janeczko A. 2024. Zjawisko hartowania i rozhartowania roślin w kontekście zmian klimatu. *Kosmos* 73(1), 37–46. (*in Polish*)

3. biological sciences

Achievement Description

In the field of biological sciences, 23 doctoral students are/were educated, including 3 who submitted their doctoral dissertations and 2 who obtained their doctoral degrees. The research is/was carried out in three research units (INC PAS, ISEA PAS, IB PAS) with different profiles, on topics resulting from their mission, such as nature conservation, biodiversity, taxonomy, ecology, and evolution of plants, animals, fungi, and other microorganisms, both contemporary and fossil. Below are described achievements of selected doctoral students from different units and years of study, along with information on where the achievement was published.

Anna Misiewicz – dissertation defended with honors
Effect of pesticides on the red mason bee O. bicornis in the agricultural landscape
The research focused on the global problem of the rapid decline in pollinator populations, which negatively affects biodiversity, can harm the agricultural economy, and lead to higher food prices. The doctoral student examined the combined impact of landscape structure and pesticides on the solitary red mason bee (*O. bicornis*). She showed that larval development in the area dominated by rapeseed crops negatively affects certain parameters of the bees' life history, and that the presence of a diverse landscape structure and the provision of a varied food base for pollinators are fundamental to their protection. It was important to demonstrate which insecticide mixtures are relatively safe for solitary bees and which insecticides should not be used in combination due to their negative impact on the metabolism and survival of the studied species. The finding of significant interactions between insecticides and their impact on solitary bees confirms that it is necessary to introduce fundamental changes in the procedures for testing plant protection products, which are currently mandatory only for individual chemical substances.
Results published:
Misiewicz A., Mikołajczyk Ł., Bednarska A.J. 2023. Impact of oilseed rape coverage and other agricultural landscape characteristics on two generations of the red mason bee *Osmia bicornis*. *Agric. Ecosyst. Environ.* 352, p.108514. https://doi.org/10.1016/j.agee.2023.108514
Misiewicz A., Mikołajczyk Ł., Bednarska A. J. 2023. Floral resources, energetic value and pesticide residues in provisions collected by *Osmia bicornis* along a gradient of oilseed rape coverage. *Sci. Rep.* 13, 13372. https://doi.org/10.1038/s41598-023-39950-5
Misiewicz A., Filipiak Z.M., Kadyrova K., Bednarska A.J., 2024. Combined effects of three insecticides with different modes of action on biochemical responses of the solitary bee Osmia bicornis. *Chemosphere* 359, p.142233. https://doi.org/10.1016/j.chemosphere.2024.142233

Joanna Kołodziejczyk (4th-year student)
The success of biological invasions - genomic research
The doctoral student undertook a review of articles using genomic methods to demonstrate the mechanisms of species invasion, showing that the "genetic paradox" of invasive species is not a common phenomenon. Demographic processes such as genetic drift and bottlenecks rarely cause a significant decrease in genomic diversity. Any reduction in genomic diversity was usually described as relatively mild and almost always resolved by gene flow between different invasive populations. Even where a decline in genomic diversity between native and invasive ranges was noted, the overall level of genomic diversity in the invasive populations usually remained high. Selection processes could be detected in more than half of the studies analyzed, further demonstrating that reduced diversity does not prevent adaptation to new habitats. Despite the large number of studies incorporating genomics in invasion research, there is still a need for wider use of genomic time-series data, the inclusion of habitat components, climate and population condition in genomic analysis, and more frequent use of whole-genome analysis data for both revealing invasion mechanisms and managing invasions.
Results published:
Kołodziejczyk J., Fijarczyk A., Porth I., Robakowski P., Vella N., Vella A., Kloch A., Biedrzycka A. 2025. Genomic investigations of successful invasions: the picture emerging from recent studies. *Biol. Rev.* 100, 1015-1418. https://doi.org/10.1111/brv.70005

Anna Janiczek (3rd-year student)

Genetic structure of high-mountain flora
The doctoral student analyzed the genetic structure of 21 species of alpine plants found in the Alps and Carpathians. The aim of the study was to determine whether the discontinuity of alpine habitats between these two mountain systems constitutes a major barrier to gene flow and whether it determines the genetic diversity of populations. Using genetic data on amplified fragment length polymorphism (AFLP) and advanced statistical methods such as Bayesian structure, PCoA, and Neighbour Joining, it was shown that only in 14% of cases does the main genetic barrier coincide with the division between the Alps and the Carpathian. In most of the species studied, other patterns of genetic structure or no clear geographical pattern was observed. The results indicate that the current genetic structure of high-mountain flora is the result of more complex historical and ecological processes than just geographical isolation between mountain ranges. The research makes an important contribution to understanding the factors shaping biodiversity in mountainous regions of Europe.
Results published:
Janiczek A., Suchan T., Paul W., IntraBioDiv Consortium, Ronikier M. 2025. Spatial Discontinuity of Mountain Systems and Genetic Structure of Alpine Plants: The Alps–Carpathians Disjunction in a Comparative Phylogeographical Context. *J. Biogeogr* 52. https://doi.org/10.1111/jbi.15122

Marcin Wiorek – dissertation defended
Taxonomy and phylogeny of selected genera of Malagasy Syntomini (Lepidoptera: Erebidae: Arctiinae)
The doctoral student's scientific achievement includes a comprehensive systematic revision of two genera of Malagasy tiger moths from the tribe Syntomini, using integrative taxonomy, in a broader phylogenetic and zoogeographic context. In the first such study of the Ambohitantely Special Reserve in central Madagascar, this relic, small and highly fragmented forest was identified as the center of local endemism (microendemism) of Syntomini. This phenomenon, although common in the fauna of Madagascar, is still very poorly studied among insects. The results of studies on the zoogeography of Malagasy Syntomini have shown that one of the evolutionary lines spread towards Mauritius and continental Africa, reaching as far as Europe and Asia. This is an intriguing example of dispersal from an island to a continent, a phenomenon that was long considered practically non-existent in zoogeography. Additionally, the species *Dysauxes florida*, endemic to Mauritius and derived from this dispersal, has been classified as critically endangered according to the criteria of the IUCN, which is consistent with efforts to protect the biodiversity of this small island. The final systematic revision describes 7 new genera and 3 new species of Syntomini, shedding new light on the diversity of this endemic group. The results of the study indicate the association of individual species with specific biotopes in Madagascar, reflecting local climatic conditions. This may be an introduction to further research on the evolution and ecology of the fauna of Madagascar, also in the context of environmental protection and ongoing climate change.
Results published:
Przybyłowicz Ł., **Wiorek M.** 2023. The first description of the female of *Tritonaclia kefersteinii* (Butler, 1882) (Lepidoptera: Erebidae: Arctiinae: Syntomini), the type species of its genus. *Zootaxa* 5351, 475–482. https://doi.org/10.11646/zootaxa.5351.4.5
Przybyłowicz Ł., **Wiorek M.,** Przystałkowska A., Wahlberg N. 2021. Alone on an island: The reassessment of an enigmatic species of Handmaiden Moth (Lepidoptera, Erebidae) endemic to Mauritius. *Zool. Scr.* 50, 752–768. https://doi.org/10.1111/zsc.12508
Wiorek M., Malik K., Lees D., Przybyłowicz Ł. 2021. Malagasy Polka Dot Moths (Noctuoidea:Erebidae: Arctiinae: Syntomini) of Ambohitantely—endemism in the most important relict of Central Plateau rainforest in Madagascar. *PeerJ* 9:e11688. https://doi.org/10.7717/peerj.11688

Rama Sarvani Krovi (3rd-year student)
Genetic diversity of the population and microbiome of saproxylic beetles
The impact of forest management on biodiversity is significant but poorly understood at the molecular level. Saproxylic beetles are an important component of forest ecosystems, and their genetic variability and interactions with microorganisms can indicate the health of forests. The research aims to clarify the relationship between the forest environment, whether natural (natural forests rich in dead wood) or transformed (as a result of timber harvesting), and the genetic structure of saproxylic beetle populations – both relic species for primeval forests and common ones, including those considered pests. A meta-analysis of knowledge about the genetics of European saproxylic beetles served as a prelude to this research. In addition, the relationships between selected beetles, their host trees, and the microbiome, which is of particular importance in the circulation of matter in forests, were investigated. Analyses of the variability of bacteria and fungi are also the subject of a PRELUDIUM project submitted by a doctoral student.
Results published:
Krovi R.S., Amer N.R., Oczkowicz M., Kajtoch Ł. 2025. Meta-analysis of spatial genetic patterns among European saproxylic beetles. *Biodivers. Conserv.* 34, 1–27. https://doi.org/10.1007/s10531-024-02940-8
Kolasa M., **Krovi R.S.,** Plewa R., Jaworski T., Kadej M., Smolis A., Gutowski J.M., Sućko K., Ruta R., Olbrycht T., Saluk S., Oczkowicz M., Kajtoch Ł. 2024. Host trees partially explain the complex bacterial communities of two threatened saproxylic beetles. *Insect Mol. Biol.* 34, 311-321 https://doi.org/10.1111/imb.12973

ATTACHMENTS

Adequacy of the education program and individual research plans to the learning outcomes for qualifications at PRK level 8 and their implementation

No.	File type	Filename
1	Education programmes during the evaluation period	1.1 Programme of study.pdf
2	Education programmes during the evaluation period	1.2 Publication prepared by doctoral students.pdf
3	Education programmes during the evaluation period	1.3 Doctoral students activity numbers.pdf
4	Education programmes during the evaluation period	1.4 Form of Individual Research Plan.pdf

Method of verifying learning outcomes for qualifications at PRK level 8

No.	File type	Filename
1	The method of assessing the learning outcomes for qualifications at level 8 of the PQF	2.1 Form of Semester Report.pdf
2	The method of assessing the learning outcomes for qualifications at level 8 of the PQF	3.1 List of lecturers.pdf
3	The method of assessing the learning outcomes for qualifications at level 8 of the PQF	3.2 List of doctoral students and supervisors.pdf

Qualifications of academic teachers or research staff conducting education at the doctoral school

No.	File type	Filename
1	biological sciences	3.3.1 Employee CVs - Biological sciences.pdf
2	agriculture and horticulture	3.3.2 Employee CVs - Agriculture and horticulture.pdf
3	animal science and fisheries	3.3.3 Emlployee CVs - Animal science and fisheries.pdf

Quality of the recruitment process

No.	File type	Filename
1	The admissions rules of the doctoral school during the evaluation period	2.2 Rules for Admissio to DS.pdf
2	The regulations of the doctoral school during the evaluation period	D.1 Terms of conditions of DS.pdf
3	The compositions of the admissions committees during the evaluation period and the rationale for their selection with the aim of maintaining high admission standards	4.1 Members of admission committees.pdf

Quality of scientific or artistic supervision and support for conducting scientific activities

No.	File type	Filename
1	Internal regulations that pertain to the midterm evaluation and that are in force during the evaluation period, such as evaluation rules and criteria	5.1 Form for the description of supervision.pdf
2	Internal regulations that pertain to the midterm evaluation and that are in force during the evaluation period, such as evaluation rules and criteria	6.1 Form of Raport of realisation of IRP.pdf
3	Internal regulations that pertain to the midterm evaluation and that are in force during the evaluation period, such as evaluation rules and criteria	6.2 Members of committees of mid-term evaluation.pdf

STATEMENTS

- I hereby declare that the information contained in the self-assessment report is fully consistent with the factual and legal status.
- I hereby declare that the information contained in the self-assessment report in Polish and English is fully identical in substance.
- I hereby declare that the documents attached to the self-assessment report in Polish and English are fully identical in substance.

Lucyna Śliwa

Elektronicznie podpisany przez Lucyna Śliwa
Data: 2025.07.30 11:07:54 +02'00'

Signature

AUTHORIZATIONS

Added files

1.1 Programme of study

Programme of study at the Doctoral School of Natural and Agricultural Sciences

General explanations

The Doctoral School of Natural and Agricultural Sciences (hereinafter referred to as: the Doctoral School) offers implementation of research projects and courses covered by the programme of study. The programme of study includes compulsory and optional courses entitling in total to 46 ECTS points, including 26 points for compulsory courses and 20 points for optional courses.

The programme offered to doctoral students is dual in nature: complementary (obtainment of missing knowledge/skills) and expanding (obtainment of knowledge in the research area and related disciplines, soft skills necessary for the functioning in the social and economic environment, and for the cooperation with representatives of other social groups).

A doctoral student shall complete a majority of compulsory courses within the first 4 semesters. In the following 4 semesters the student shall, in the first place, carry out their research as provided for in the Individual Research Plan (hereinafter referred to as: IRP) while at the same time improving their knowledge and skills in optional courses.

Carrying out research projects under IRP entails the need to complete internship programmes outside the Unit in Charge. A doctoral student should be free to use such opportunities, unrestricted by the requirement to attend any classes. Therefore, the timetable of courses whereunder a majority of compulsory courses can be completed within the first 4 semesters as well as the possibility to implement the programme as an individual plan of study supports doctoral students' mobility and facilitates international contacts.

In consultation with their doctoral dissertation supervisor, a doctoral student should be able to decide where and in what form they will complete optional courses that are highly specialist and inclusive in terms of the research process (such as seminars, workshops with prominent researchers, specialist summer schools, including ones in other cities or countries, methodology courses, courses pertaining to specialist research methods and tools, conference trips) as well as courses in which the doctoral student can develop skills that are necessary for work in the scientific domain, such as issues related to ethics, transfer of knowledge, commercialisation of research, applying for grants, or public speaking.

At the Doctoral School courses are delivered by the staff of the Units in Charge or commissioned from other research units.

Programme of study

1. The programme of study at the Doctoral School is delivered in accordance with the description included in this document.

2. The programme of study at the Doctoral School leads to the attainment of the learning outcomes specified in Appendix 1. Detailed rules for the accomplishment of specific learning outcomes and forms of assessment thereof are set forth in the syllabuses of the courses concerned.
3. The rules governing examination and granting credits for the completion of courses are set forth in the syllabuses of the courses concerned.

Compulsory courses

1. Compulsory courses include:
    a. Block of thematic lectures (at least 60 hours, which is equivalent to 4 ECTS points). The courses in the form of a lecture/tutorial are intended to broaden a doctoral student's knowledge of recent achievements in biology, agriculture and horticulture, animal production and fisheries science. The courses are offered every year and are grouped into four thematic blocks:
        i. – systematics and evolutionism;
        ii. – ecology and environmental protection;
        iii. – contemporary trends in animal raising and breeding, and in plant cultivation;
        iv. – biochemistry and physiology of organisms.
    b. Development of a scientific career and communication in science (at least 30 hours, which is equivalent to 2 ECTS points). Courses delivered in the form of a lecture and practical classes are intended to provide a doctoral student with an opportunity to gain knowledge of research financing, preparation of applications and implementation of research projects, as well as to develop a student's ability to perceive and absorb information, and communicate scientific knowledge. The courses prepare the students to apply for the financing of research projects and to present research findings in the form of presentations, posters and scientific and popular science publications;
    c. Statistics (at least 30 hours, which is equivalent to 2 ECTS points). The course is delivered in the form of a tutorial and practical classes and is intended to improve the student's understanding of the types of data and statistical methods applied in biological sciences, agriculture and horticulture, animal production and fisheries science, selection of methods that are appropriate for a particular type of experiment, design of experiments and interpretation of the findings of empirical research;
    d. Philosophy (at least 30 hours, which is equivalent to 2 ECTS points) The course is delivered in the form of a lecture or tuition and is intended to improve the student's knowledge of the key problems in methodology and general philosophy of science, and of selected issues including, but not limited to, philosophy of nature;
    e. Methodology of research – work, consultations with the doctoral dissertation supervisor (at least 50 hours per year, which is equivalent to 3 ECTS points per year). Cooperation of a doctoral student with their doctoral dissertation supervisor involves, in the first place, development of an Individual Research Plan, discussion on the course of the research work conducted by the doctoral student, drafting of a doctoral dissertation, and preparation of a presentation of the findings in a textual

form (conference abstracts, scientific publications and popular science publications, etc.), oral presentations (papers) and posters. Work with the doctoral dissertation supervisor may be also related to a doctoral student's involvement in the research work (projects) conducted by the supervisor or by other staff members, application for grants, ethics in research, transfer of knowledge to the society, and commercialisation of research. The goal of the supervisor-student cooperation is to convey knowledge and skills by the supervisor, to familiarise the doctoral student with the fundamental skills necessary for the work in the scientific domain and to train the student in autonomous and team-based research work. Such work is credited along with the doctoral student's semester report;

f. Scientific Reporting Session (10 hours per year, which is equivalent to 1 ECTS point). While participating in the Scientific Reporting Session (in the form of a seminar), a doctoral student can familiarise themselves with the research work carried out by other doctoral students and develop the skill of presentation and confrontation of the findings of their own research, as well as is taught how to manage and reduce stress associated with public speaking. The course is intended to develop a doctoral student's skill in communicating with the scientific community and forms part of the basis for assessment of the doctoral student's progress in their research work. The credit for the completion of the course is given or refused on an annual basis by the Head of the Doctoral School based on attendance and a paper delivered.

2. The aggregate number of ECTS points for the compulsory courses completed throughout the programme period is 26, of which 10 points for the courses described in Section 1. (a)–(d) (obtained in the first two years of the programme), 12 points for the courses described in Section 1. (e) and 4 points for the courses described in Section 1. (f).

Optional courses

1. Optional courses improving professional skills include:
    a. Seminars in the area of biological sciences, agriculture and horticulture, animal production and fisheries science, and related sciences, delivered by specialists from Poland and other countries. Participation in seminars allows a student to obtain a more in-depth knowledge in selected fields of study. A doctoral student may choose a single lecture/seminar. For the participation in seminars a doctoral student obtains 1 ECTS point per 5 hours (participation in 5 seminars).
    b. Doctoral seminars organised by the Doctoral School Students' Council to expand the knowledge and improve communication skills. For the participation in the seminars a doctoral student obtains 1 ECTS point for 5 hours (participation in 5 seminars).
    c. Participation in the scientific community's life, in various forms of scientific meetings (e.g. seminars, sessions, conferences, workshops), held in Poland and abroad. It provides a doctoral student with an opportunity to broaden their knowledge on their field of study and improve communication skills. The doctoral student is entitled to 2 ECTS points per each event they actively participated in (paper delivered and/or poster presented), and in the case of workshops and training courses – 0.5 ECTS points for participation up to 4 hours and 0.5 ECTS points for each further 4-hour participation, but not more than 2 ECTS points in total.

d. Presentation of science to the society. Dissemination activities enhance a doctoral student's involvement in a promotion of science. While taking part in a preparation of a presentation/lecture/class for mixed-age social groups, a doctoral student improves their skill of presenting research findings to audiences of varied education backgrounds and interests. A doctoral student may choose from among projects promoting science in society implemented by or outside the Units in Charge. The doctoral student is entitled to 2 ECTS points per each event they actively participated in.
e. Work for the community of doctoral students, developing social competences - as the chairperson, deputy chairperson and member of the Doctoral School Students' Council; a doctoral student is entitled to, respectively, 2, 1 and 1 ECTS point per year.
f. Training courses related to protection of intellectual property, managerial competences, copyrights, ethics, transfer of knowledge to the economic and social domain, commercialisation of research, applying for grants, etc. A doctoral student is entitled to 0.5 ECTS points for courses of up to 4 hours and 0.5 ECTS points for each further 4-hour course, but not more than 2 ECTS points in total.

2. The aggregate number of ECTS points for optional courses throughout the programme period may not be lower than 20, of which not less than 5 ECTS points per year.

Credits for the completion of compulsory and optional courses

1. A doctoral student should obtain credits for the completion of compulsory courses within the first 4 semesters. In exceptional situations, upon a doctoral student's request supported by the doctoral dissertation supervisor, the Head of the Doctoral School may give their consent to credits being obtained for the completion of compulsory courses in subsequent semesters.
2. A doctoral student may obtain credits for the completion of optional courses successively within the 8 semesters of the programme of study at the Doctoral School.
3. Credits for the completion of compulsory courses are given/refused by teachers in accordance with the rules laid down in the course syllabuses.
4. Credits for the completion of optional courses are given/refused by the Head of the Doctoral School based on the doctoral student's documented participation presented in the semester report.
5. Scoring ECTS points for optional courses in excess of the number required by the programme does not release a student from the obligation to obtain credits for the completion of the compulsory courses.
6. Credits for the completion of courses are given/refused on a semester basis.

Doctoral Student's research work

1. A doctoral student's responsibilities:
    a. A doctoral student is obliged to conduct their own autonomous research under the guidance of a doctoral dissertation supervisor;

b. A doctoral student should cooperate as a member of research teams on a national and/or international scale;
c. Within the first 12 months of study, a doctoral student should draft, in consultation with their doctoral dissertation supervisor(s), an Individual Research Plan;
d. As part of their programme of study at the Doctoral School, a doctoral student should publish at least one scientific paper in a scientific journal or in peer reviewed materials from an international conference, which, in the year the paper was published in its final form, were listed in JCR; or one scientific monograph published by a publishing house which, in the year the monograph was published in its final form, was included in the list compiled in accordance with regulations promulgated pursuant to Article 267(2)(2)(A) of the Polish Law on the Higher Education System and Science; or a chapter in such a monograph, covering a topic that is in line with the area of study offered by the Doctoral School.

2. A doctoral student's rights:
    a. While drafting an Individual Research Plan and a doctoral dissertation, and implementing research projects, a doctoral student shall be provided with substantive support from their doctoral dissertation supervisor;
    b. A doctoral student may apply for an international research scholarship or scientific training agreed with the doctoral dissertation supervisor, director of the relevant Unit in Charge and the Head of the Doctoral School;
    c. A doctoral student who conducts research may apply for the co-financing thereof to the Unit in Charge employing their doctoral dissertation supervisor.

Learning outcomes

The outcome of a doctoral student's own research work carried out under the supervision of a doctoral dissertation supervisor is a doctoral dissertation. Implementation of the programme of study at the Doctoral School prepares a student for research as well as research and development work, and, in particular, leads to attainment of the intended learning outcomes as regards the following:

a. Having a vast knowledge in the following disciplines: biological sciences, agriculture and horticulture, animal production and fisheries science, and related sciences,
b. Having a knowledge covering the most recent achievements of science to an extent enabling revision of the existing paradigms;
c. Having professional skills related to identification, analysis and explanation of phenomena, which are necessary for autonomous research work;
d. Skilful application of research methods and methods of analysis of research findings;
e. Skilful sharing of one's own knowledge and dissemination of the latest achievements in the field of biological sciences, agriculture and horticulture, animal production and fisheries science, and related sciences;
f. Ability to communicate and interpret research findings, and to conduct a discussion;
g. Social competences related to research activities and the social role of a scholar.

Manner of assessment of the implementation of the programme of study and research work

1. Detailed rules governing attainment of learning outcomes and forms of assessment thereof are specified in course syllabuses.
2. Research conducted for the doctoral degree and preparation of a doctoral dissertation as provided for in Article 187 (3) of the Polish Act of 20 July 2018 – the Law on the Higher Education System and Science (consolidated text: Journal of Laws (Dz. U.) of 2023, Item 742, as amended) fulfils in part the requirement to attain all the types of the learning outcomes for the PQF Level 8 qualification. Attainment of these learning outcomes is verified by the doctoral dissertation supervisor.
3. Following the end of each semester, a doctoral student shall submit a report on the research work and on the implementation of the programme of study and the Individual Research Plan, in the form conforming to the model semester report binding for a given academic year.
4. Implementation of the programme of study and of the research conducted by the doctoral student shall be assessed by the Head of the Doctoral School based on the report submitted by the student and the evaluation issued by the doctoral dissertation supervisor.
5. Requirements to be met in order to complete an academic semester:
    a. credits received for the completion of the courses provided for in the programme of study;
    b. submission of a report on the completion of the doctoral student's duties.

Appendix No. 1
To the Programme of study at the Doctoral School of Natural and Agricultural Sciences

Learning outcomes at the Doctoral School of Natural and Agricultural Sciences

Table 1. Universal Polish Qualifications Framework (PQF) level descriptors – Level

Qualification category	**Descriptors**	**Aspects of fundamental importance**	**Polish Qualifications Framework second stage descriptors – Level 8**	**Descriptor code**
Knowledge	Depth and scope	Completeness of cognitive perspective and dependencies	**Knows and understands:** 1. to an extent enabling revision of the existing paradigms – the world's achievements including: • theoretical foundations, • general and selected specific issues relevant for the scientific or artistic discipline; 2. key development trends in the scientific or artistic disciplines relevant for the programme of study; 3. methodology of research; 4. rules for dissemination of research findings, also on an open access basis.	P8S_WG
Knowledge	Context	Determinants, effects	**Knows and understands:** 1. fundamental dilemmas faced by the contemporary civilisation; 2. economic, legal and other relevant determinants of research activity; 3. basic rules governing transfer of knowledge to the economic and social domain, and commercialisation of research findings and of related know-how.	P8S_WK

Skills	Utilisation of knowledge	Problems solved and tasks carried out	**Is able to:** 1. utilise knowledge in various fields of science or art in order to creatively identify, formulate and solve in an innovative manner complex problems or carry out research tasks, and in particular: • to define the purpose and subject-matter of research, formulate research hypothesis, • to develop research methods, techniques and tools, and apply the same in a creative manner, • draw conclusions based on research findings; 2. carry out a critical analysis and assessment of research findings, expert activity and other works of creative nature, and of the contribution thereof to development of knowledge; 3. transfer research findings to the economic and social domain.	P8S_UW
Skills	Communication	Understanding and formulating statements, disseminating knowledge in the scientific community, using a foreign language	**Is able to:** 1. communicate on specialist topics at a level enabling active participation in the international scientific community; 2. disseminate research findings, also in popular science forms; 3. initiate a debate, participate in a scientific discourse; 4. use a foreign language on B2 Level under the Common European Framework of Reference for Languages with sufficient proficiency to enable participation in the international scientific and professional community.	P8S_UK
Skills	Work organisation	Planning and team work	**Is able to:** plan and implement both individual and team's research or creative project, also within an international community.	P8S_UO
Skills	Learning	Planning one's personal development and development of	**Is able to:** 1. autonomously plan and act to the benefit of their own development as well as inspire and arrange for development of other people;	P8S_UU

		other people	2. plan a course or groups of courses and deliver the same using modern methods and tools.	
Social competence	Evaluation	Critical assessment	**Is ready to:** 1. provide a critical assessment of the achievements in the scientific or artistic discipline represented; 2. provide a critical assessment of their own contribution to a development of such a discipline; 3. recognise the importance of knowledge for the solution of cognitive and practical problems.	P8S_KK
Social competence	Responsibility	Complying with social responsibilities, acting for the public interest	**Is ready to:** 1. comply with the social responsibilities of researchers and authors; 2. initiate activities in the public interest; 3. think and act in an entrepreneurial manner.	P8S_KO
Social competence	Professional role	Independence and development of ethos	**Is ready to:** uphold and develop the ethos of research and artistic communities, including to: • conduct research in an independent manner; • respect the principle of public ownership of research findings subject to the rules governing protection of intellectual property.	P8S_KR

Table 2. Assumed learning outcomes at the Doctoral School of Natural and Agricultural Sciences with respect to PQF8.

Outcome code	**Graduate's learning outcomes**	**Manner of attainment of the learning outcomes**	**Methods of assessment of the learning outcomes**	**PQF descriptor code reference**
W01	Demonstrates advanced general knowledge in the field of biological sciences, agriculture and horticulture, animal production and fisheries science, and related sciences, as well as in their own subject area of research and doctoral dissertation, which the graduate is able to develop and apply creatively in their research activity.	1. Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2. Participation in courses provided for in the programme of study. 3. Participation in the Scientific Reporting Session (SRS).	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Attendance and oral presentation delivered at SRS.	P8S_WG
W02	Demonstrates detailed knowledge including the most recent research achievements in the subject area related to their research; knowledge of scientific publications in the field covered by their research.	1. Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2. Participation in courses provided for in the programme of study. 3. Participation in the scientific community's life.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Documented active participation.	P8S_WG
W03	Demonstrates interdisciplinary knowledge; awareness and understanding of interdependencies between various disciplines, which enables cooperation with specialists representing various subject areas.	1. Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2. Participation in courses provided for in the programme of study. 3. Participation in the scientific community's life.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Documented active participation.	P8S_WG
W04	Demonstrates knowledge and understanding of civilisation-induced	1. Autonomous acquisition of knowledge, work with the	1. Assessment of the work and progress by the doctoral	P8S_WK

	threats to natural environment, including ones induced by technologies applied in agriculture and horticulture; and knows examples of how to prevent consequences thereof.	doctoral dissertation supervisor. 2. Participation in courses provided for in the programme of study. 3. Participation in the scientific community's life.	dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Documented active participation.	
W05	Explains selected general philosophy issues and issues relevant for life scientists.	1. Participation in lectures/seminars. 2. Participation in courses provided for in the programme of study. 3. Participation in the scientific community's life.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Documented active participation.	P8S_WK
W06	Demonstrates knowledge of the research methods and tools necessary for the solution of research problems (in a laboratory and on site), including methods of statistical analysis.	1. Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2. Participation in courses provided for in the programme of study. 3. Participation in the scientific community's life.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Requirements set forth in the programme of study. 3. Documented active participation.	P8S_WK
W07	Knows the rules of preparation of scientific publications, oral presentations and posters showing research findings, and the importance of such scientific evidence; knows the principal methods of review of scientific publications	1. Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2. Participation in SRS. 3. Active participation in the scientific community's life.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Attendance and oral presentation delivered at SRS. 3. Documented active participation.	P8S_WK
W08	Demonstrates basic knowledge of	1. Autonomous acquisition of	1 Assessment of the work and	P8S_WK

	the rules for obtaining funding for research from various sources; knows the rules for evaluation of research projects; and has basic knowledge of legal and ethical determinants of research activity and researcher's work.	knowledge, work with the doctoral dissertation supervisor. 2. Participation in lectures, seminars and workshops. 3. Participation in courses provided for in the programme of study.	progress by the doctoral dissertation supervisor. 2 Documented active participation.	
W09	Demonstrates basic knowledge of a transfer of knowledge to the economic and social domain, and on commercialisation of research findings	1 Autonomous acquisition of knowledge, work with the doctoral dissertation supervisor. 2 Participation in lectures, seminars and workshops.	1 Assessment of the work and progress by the doctoral dissertation supervisor. 2 Documented active participation.	P8S_WK
U01	Is able to utilise their knowledge of the state of the art in their field of study to put forward their own research hypotheses, design an experiment and select appropriate methods for it.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Active participation in the scientific community's life. 3. Preparation of a doctoral dissertation.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation. 3. Doctoral dissertation.	P8S_UW
U02	Has the ability to draw conclusions from their own research when confronted with the findings of other researchers, and to carry out a critical analysis thereof.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Active participation in the scientific community's life (sessions, conferences, workshops, seminars). 3. Preparation of a doctoral dissertation.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation. 3. Doctoral dissertation.	P8S_UW

U03	Is able to prepare and present (using modern methods) as well as discuss their findings within and outside the scientific community; is able to obtain information related to research activity, communicate with specialists in the discipline studied as well as with specialists representing other subject areas and disciplines, both in their native and foreign languages; is able to utilise their knowledge to search for, analyse, assess, select and integrate information from various sources, and formulate critical judgments based thereon.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Preparation of a scientific paper for publication. 3. Active participation in the scientific community's life, presentation of science to the society.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Published scientific paper. 3. Documented active participation.	P8S_UK
U04	Is able to plan and carry out research falling within the scope of their interests; demonstrates the ability to manage the work of a research team and cooperate with other research teams.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Preparation of a doctoral dissertation.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Doctoral dissertation.	P8S_UO
U05	Is able, autonomously and using appropriate methods, to communicate knowledge to and develop skills of various audience groups; demonstrates the ability to present their scientific achievements in scholarly discussions; has the ability to provide arguments,	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Participation in the scientific community's life. 3. Presentation of science to the society.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation.	P8S_UU

	formulate their own original opinions, draw conclusions, and arrive at problem syntheses.			
K01	Understands and feels the need for continued enhancement of their professional competences, in particular in their own scientific discipline.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Participation in the scientific community's life. 3. Presentation of science to the society.	1 Assessment of the work and progress by the doctoral dissertation supervisor. 2 Documented active participation.	P8S_KK
K02	Demonstrates a critical approach both to their own and other people's research work; is aware of the level and originality of their own research concepts, the ability to implement a research project, the level of creativity and relevance of their own contribution to development of the scientific discipline studied; demonstrates creativity in the search for new areas of research and in management of the course of such research, and actively participates in scientific communication.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Participation in the scientific community's life. 3. Preparation of a public defence of a doctoral dissertation.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation.	P8S_KK
K03	Works in research teams showing respect for the work and experience of other team members; understands the need to disseminate information and communicate opinions on	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Participation in research projects and other activities carried out	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation.	P8S_KR

	scientific achievements to the society in a manner that is comprehensible to the general public, taking into account various points of view.	by research units.		
K04	Follows the principles of research work ethics, intellectual property rules and good professional practice; is aware of being part of a scientific community and is responsible for its development and importance for the promotion of a modern knowledge-based society.	1. Autonomous work, work with the doctoral dissertation supervisor, student's own research. 2. Participation in research projects and other activities carried out by research units.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation.	P8S_KR
K05	Conducts research with respect for the natural environment and without infringement of any humanitarian principles.	1. Autonomous work, work with the doctoral dissertation supervisor, student's own research. 2. Participation in research projects and other activities carried out by research units.	1. Assessment of the work and progress by the doctoral dissertation supervisor. 2. Documented active participation.	P8S_KO
K06	Complies with the principles of personal safety and other people's safety.	1. Autonomous work, work with the doctoral dissertation supervisor. 2. Participation in research projects and other activities carried out by research units.	1. Assessment of the work and progress by the doctoral dissertation supervisor.	P8S_KO

Explanation of codes used in Tables 1 and 2:

P8 – PQF Level – education at the Doctoral School, **S** – descriptors typical of the qualifications obtained in the higher education system

SD – learning outcomes at the Doctoral School

W – knowledge (descriptor): G – depth and scope, K – context

U – skills (descriptor): **W** – utilisation of knowledge, **K** – communication, **O** – work organisation, **U** – learning

K – social competences (descriptor): **K** – critical assessment, **O** – responsibility, **R** – professional role

01, 02, 03 – numbers of the learning outcome

1.2 Publication prepared by doctoral students

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TREND EDITORIAL

Congruence between the prioritisation of conservation problems at the local and national scale: an evaluation by environmental scientists in Poland

Piotr Skórka[1] · Agata Banach[2] · Marek Banasiak[2] · Joanna Bokalska-Rajba[3] · Maciej Bonk[1] · Paweł Czachura[3] · Alberto García-Rodríguez[1] · Gabriela Gaspar[2] · Natalia Hordyńska[4] · Adriana Kaczmarczyk[4] · Kamila Kapłoniak[4] · Maciej Kociński[2] · Barbara Łopata[3] · Edyta Mazur[3] · Mohamadreza Mirzaei[4] · Anna Misiewicz[1] · Aida Parres[1] · Anna Przystałkowska[2] · Sylwia Pustkowiak[1] · Mateusz Raczyński[1] · Iwona Sadura[4] · Aleksandra Splitt[1] · Małgorzata Stanek[3] · Jakub Sternalski[2] · Alicja Wierzbicka[5] · Marcin Wiorek[2] · Paweł Zduńczyk[3]

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Abstract

The anthropogenic pressure on the environment depends on the spatial scale. It is crucial to prioritise conservation actions at different spatial scales to be cost-efficient. Using horizon scanning with the Delphi technique, we asked what the most important conservation problems are in Poland at local and national scales. Twenty-six participants, PhD students, individually identified conservation issues important at the local and national scales. Each problem was then scored and classified into broader categories during the round discussions. Text mining, cross-sectional analyses, and frequency tests were used to compare the context, importance scores, and frequency of identified problems between the two scales, respectively. A total of 115 problems were identified at the local scale and 122 at the national scale. Among them, 30 problems were identical for both scales. Importance scores were higher for national than local problems; however, this resulted from different sets of problems identified at the two scales. Problems linked to urbanisation, education, and management were associated with the local scale. Problems related to policy, forestry, and consumerism were more frequent at the national scale. An efficient conservation policy should be built hierarchically (e.g. introducing adaptive governance), implementing solutions at a national scale with the flexibility to adjust for local differences and to address the most pressing issues.

Keywords Biodiversity · Environments · Conservation · Policy · Prioritisation · Spatial scale

Responsible Editor: Philippe Garrigues

✉ Piotr Skórka
pskorka@iop.krakow.pl

[1] Institute of Nature Conservation, Polish Academy of Sciences, Al. Adama Mickiewicza 33, 31-120 Kraków, Poland

[2] Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, 31-016 Kraków, Poland

[3] W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, 31-512 Kraków, Poland

[4] The Franciszek Górski Institute of Plant Physiology, Polish Academy of Sciences, Niezapominajek 21, 30-239 Kraków, Poland

[5] National Research Institute of Animal Production, Krakowska 1, 32-083, Balice, Poland

Introduction

Conservation biology is a multidisciplinary science that has been developed to address the loss of biological diversity (Meine et al. 2006; Gerber 2010). This discipline addresses a vast range of problems; however, some of them are common and recurring. At the global scale, issues such as climate change (Sutherland et al. 2009), pollution (Farmer 1997), habitat fragmentation (Haddad et al. 2015), invasive species (Lenda et al. 2014; Early et al. 2016), water pollution (Schwarzenbach et al. 2010), and urbanisation (Nieuwenhuijsen 2016), among many others, are commonly mentioned. Most recurring problems related to nature conservation are connected to daily human life (e.g. Soga and Gaston 2016) and can have different values depending on the individual perspective (Tesfaye et al. 2011; Coleman et al. 2019).

Thus, there is a hierarchy of conservation problems that can relate to global (e.g. Sutherland et al. 2009), regional (e.g. Morton et al. 2009; Weeks and Adams 2018), national (e.g. Rudd et al. 2011; Prescott et al. 2017), and local importance (e.g. Parsons et al. 2014), including conservation of specific taxa (e.g. Hamann et al. 2010; Brown et al. 2016). People generally express a high awareness of conservation problems globally and internationally (DeHaven-Smith 1988; Uzzell 2000). However, local problems (e.g. limited to the environs of the residence place) may be perceived as more important because people have difficulties in understanding and valuing complex, distant problems (Vining and Ebro 1990), and they may be more willing to engage in solving local problems (Mishra et al. 2017; Lichtenfeld et al. 2019). Struhsaker et al. (2005) showed that the attitude of local people was the strongest correlate of success in conservation activities. However, limited research has been conducted on the differential aspects of the local/global or local/national dichotomy because most studies only consider global problems (Nicholson et al. 2019). Yet, there is evidence that such a distinction could be crucially important for understanding the public's perceptions and attitudes towards environmental problems, and understanding people's participation in solving them (Uzzell 2000). Therefore, to establish flexible policies and efficient conservation actions, there is also a need to better understand how the different environmental problems overlap among the different scales. However, because of the wide range of conservation issues societies face today and funding limitations for conservation actions, it is essential to recognise conservation problems and prioritise them to solve the most important ones (Vanham et al. 2019; Martin et al. 2016; Sutherland et al. 2018).

The methodology for identifying and prioritising the most relevant conservation issues has emerged in the last few years. There is a growing recognition of the value of collaborative exercises to support conservation priorities (Sutherland et al. 2011; Kark et al. 2015; Coleman et al. 2019). Horizon scanning and Delphi techniques use expert knowledge and strengths of social interactions, as well as confrontation of individual ideas with other people to identify and solve conservation issues (Sutherland et al. 2011; Mukherjee et al. 2015, 2018). Moreover, critical thinking is a useful tool for systematically determining the weaknesses and strengths of individual ideas (Mukherjee et al. 2015, 2018). In contrast, solving conservation problems requires fresh, non-standard thinking that may be achieved by engaging young people (Schreiner and Sjøberg 2005).

In this study, we established a protocol to explore the most relevant conservation problems for Poland from the perspective of young environmental scientists. We identified conservation problems and classified them as occurring at the national, local, or both scales. Moreover, we estimated the relative importance of each problem and determined their overlap between scales.

Methods

Twenty-six participants took part in horizon scanning, and one person was a moderator (the first author). All participants were PhD students at the Doctoral School of Natural and Agricultural Sciences in Kraków, represented by five scientific institutes (see affiliations). The study was conducted within the framework of the "Ecology and Nature Conservation" course, and participants represented a variety of disciplines focused on ecology, as revealed by the keywords provided by each of them (Fig. 1). They represented different educational pathways, work, and life experiences. First, 11 of them lived in the countryside, and the rest lived in towns and cities (Figure S1 in Supplementary Material 1). They spent most of their life in different parts of Poland, educated in 10 different universities; thus, they bear experience from a wide geographical area and various conditions (Figure S1 in Supplementary Material 1). Therefore, they face different conservation problems. The number of participants is in the range reported in such research (Mukherjee et al. 2015).

First, each of the 26 participants identified at least five conservation problems at:

a) The local scale
b) National scale (environmental problems that affect entire Poland), separately

Second, all the participants went through all the listed problems (Delphi technique) and unified the terminology to reach a consensus about their meaning. Third, each participant

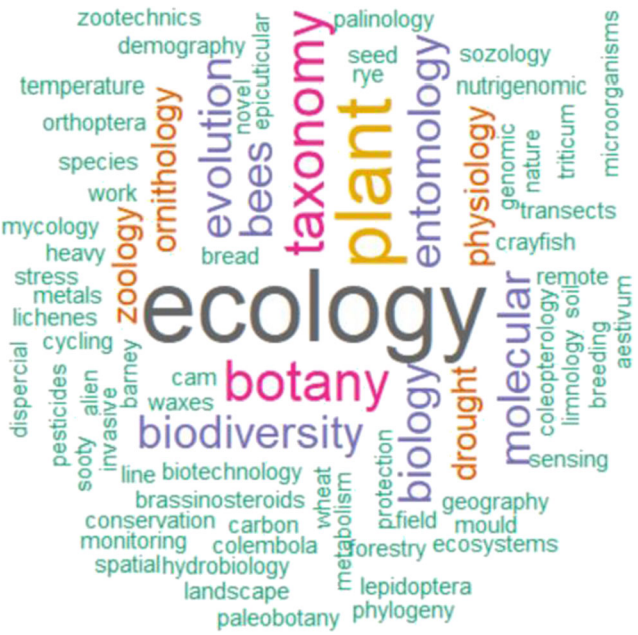

Fig. 1 Text mining analysis of keywords provided by participants (co-authors of this paper) in the horizon scanning. The largest word (ecology) is the most frequent word equalling eight

individually scored every problem from 1 (not important) to 10 (extremely important). Finally, all participants discussed scores, classified identified problems into broader categories, and attempted to establish final, agreed scores for each problem.

Statistical analysis

To identify the most relevant conservation problems at different scales, we calculated the mean scores for each identified problem (Supplementary Material 2). We then chose 25 top-scored problems at both the local and national scales to present in the graphs. We used cross-sectional analysis (hereinafter referred as the "plm model") implemented in the "plm" R package (Croissant and Millo 2008) to check for differences in mean scores between local and national scales, including the participant identity as a random factor. The same analysis was used to compare the importance scores of the common problems for the two spatial scales with importance scores of unique problems identified for pooled data and for each spatial scale. Further, all identified problems were classified into 14 broader categories for easier comparisons between the two spatial scales. We used the chi-square test to compare the frequencies of the different categories between spatial scales. The comparison was performed for all identified problems, both including and excluding repetitions (when different participants identified the same conservation problem). Related categories with frequencies below 10 were merged to meet the assumptions of the chi-square test. All statistical analyses were performed using R (R Core Team 2019). Means are presented with standard errors, and visualisations were performed using the `wordcloud` (Fellows 2018) and `ggplot2` (Wickham 2016) R packages.

Results

We identified 115 and 122 conservation problems at the local and national scales, respectively. Individual scoring of the conservation problems identified in the first scanning round revealed slightly different importance of problems, especially at the national scale (Figs. 2 and 3, Supplementary Material 2). Participants decided that scoring during the first round gave satisfactory estimates of problem importance and resigned from the second round of scoring. Generally, national problems had, on average, slightly higher importance scores (estimated mean = 7.47 ± 0.05, $\chi2 = 71.784$, df = 1, $P < 0.001$) than those in local problems (estimated mean = 6.97 ± 0.16). However, this difference disappeared if only 30 (24%) identical conservation problems for two spatial scales were compared (estimated mean for local scale = 7.42 ± 0.18, for national scale = 7.5 ± 0.10, plm model $\chi2 = 0.694$, df = 1, P = 0.405). The common conservation problems had higher importance scores (7.41 ± 0.09) than unique conservation problems on a local spatial scale (6.81± 0.16, plm model $\chi2 = 51.064$, df = 1, $P < 0.001$). However, importance scores did not differ between common conservation problems (7.50 ± 0.08) and unique conservation problems (7.37 ± 0.16) at the national scale (plm model $\chi2 = 3.132$, df = 1, P = 0.078). On a national scale, climate change had the highest scores. Moreover, intensive forestry, lack of knowledge and social awareness, and ignorance about biodiversity conservation also gained high scores (Fig. 3). At the local scale, problems related to environmental pollution, especially air and urbanisation, had the highest scores (Fig. 2).

All identified problems were classified into 14 larger categories (Fig. 4, Supplementary Material 2). When we compared these broader categories, we found that problems linked to urbanisation, education, and management were more associated with the local scale than the national one ($\chi2 = 23.22$, df = 7, P = 0.002, Fig. 4a). However, problems related to policy, forestry, and consumerism were more frequent on the national scale (Fig. 4a). The results remained the same when repetitions were removed (e.g. the same problem was identified by different participants; $\chi2 = 18.69$, df = 7, P = 0.009, Fig. 4b).

Discussion

The success of conservation strategies depends on their applicability across spatial scales. There is a need for coordinated actions at all levels, including national, provincial, and local scales (Ostrom et al. 1999; Beger et al. 2015). This requires flexibility in policy, which may be based on adaptive governance (Berkes 2017). It recognises multiple interests, community-based initiatives, and integrative science that reconcile differences among conservation problems between spatial scales (Brunner et al. 2006). However, before assessing the effectiveness of any intervention, the volume of the problems, their importance, and the scale of each problem must be considered.

Generally, there was congruency between broad problem categories in the two spatial scales; however, specific problems at the national scale had higher scores than local problems. The latter finding probably resulted from different sets of specific problems identified at two spatial scales because the importance scores of conservation problems that were identical for the two spatial scales had similar values. Moreover, these common problems had higher importance scores than unique problems on a local scale, however, not at the national scale. This result may be essential for prioritising conservation actions. Addressing problems common to two spatial scales may be a good strategy as they link these scales and require integrated actions. Coordinated conservation may achieve national or global conservation goals more efficiently because almost all resource management

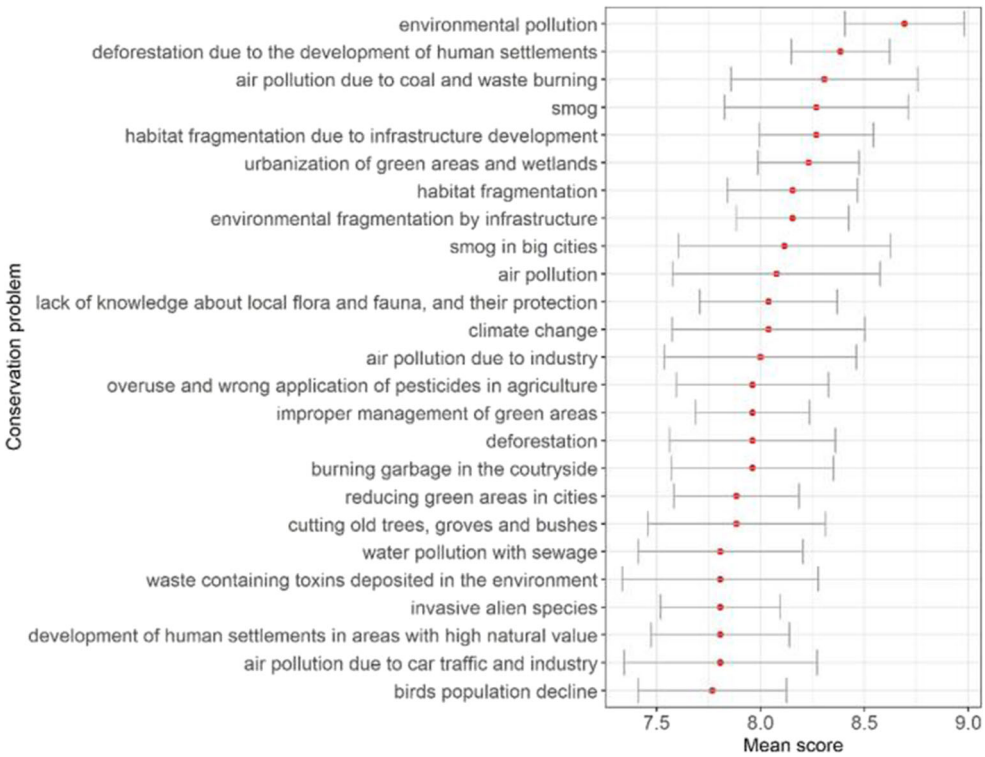

Fig. 2 Top 25 local conservation problems based on mean scores (± SE) among all identified conservation problems at the local scale

actions are established hierarchically through national, provincial, and local planning processes focused on solving the same set of problems (Beger et al. 2015).

Local conservation problems are evident when they result from the lack of appropriate environmental education or ignoring scientific evidence (Barron et al. 2005). Environmental education facilitates connections between actionable research findings and on-the-ground practices, creating synergistic spaces where stakeholders collaborate to address dynamic environmental issues that may directly benefit

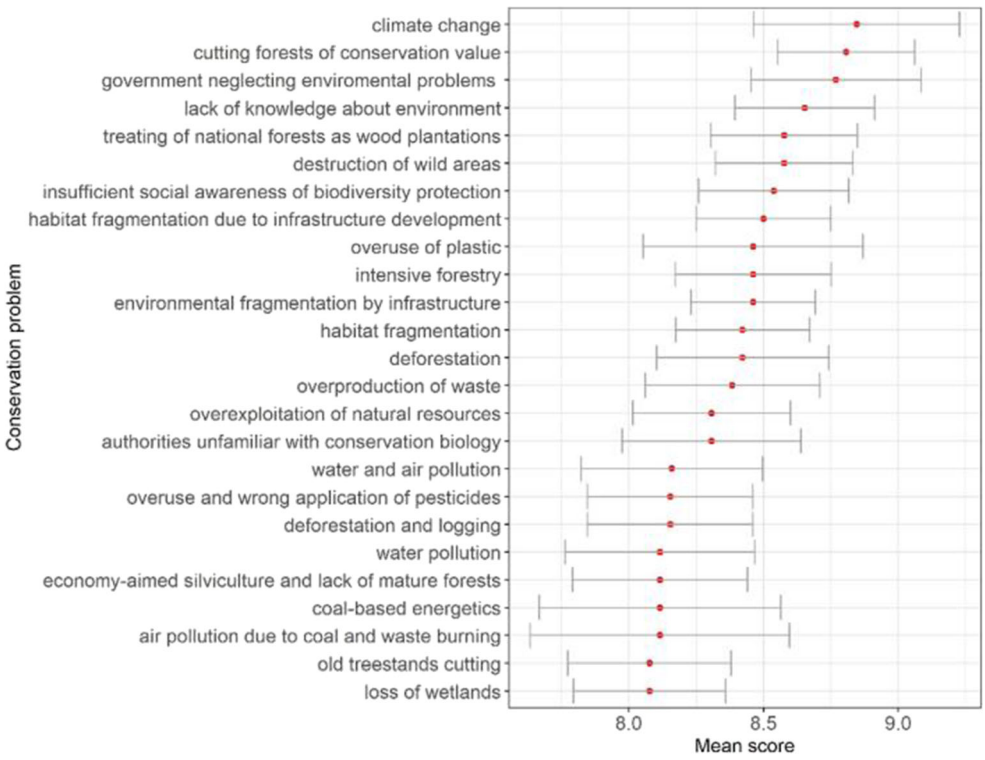

Fig. 3 Top 25 national conservation problems based on mean scores (± SE) among all identified conservation problems at the national scale

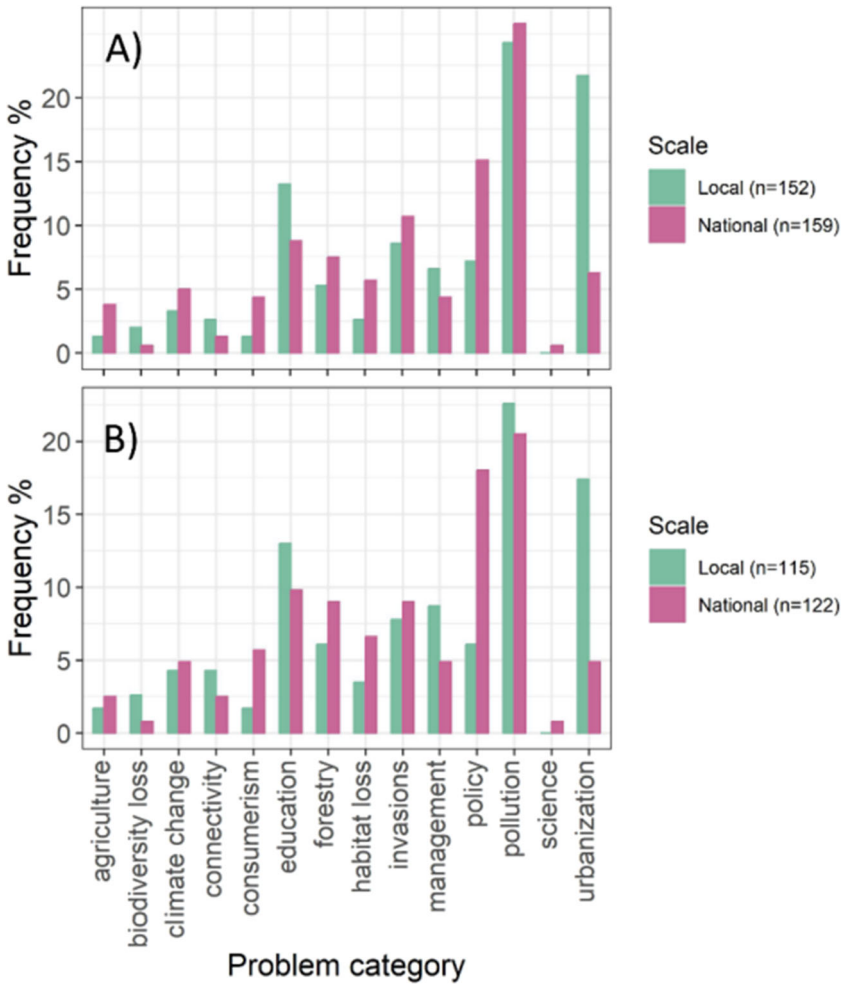

Fig. 4 Comparison of frequency of different categories of problems at the local and national scales with (**A**) and without (**B**) repetitive problems

the environment and achieve conservation goals (Ardoin et al. 2020). Problems with education were identified as the most troubling issues on the local scale. Indeed, it corresponds with the general phenomenon that problems related to environmental education and awareness in Poland arise (Machnik-Słomka and Kłosok-Bazan 2017). Knowledge about the environment is derived mostly from school education and mass media (Kobierska et al. 2007). Therefore, it is crucial to establish well-defined educational programmes regarding the environment and its conservation. They are currently underdeveloped and require a novel attitude (Hłobił 2010; Falencka-Jabłońska 2017). Teachers should address this topic in a more modern and active way, involving the use of media (i.e. TV, Internet, social media, and computer games). Topics about environmental protection are mandatory in all school subjects under Polish legislation (Śledziewska et al. 2016); however, they are generally focused on general issues and ignore local differences (Falencka-Jabłońska 2017). Addressing environmental problems at all levels requires teaching based on causal thinking skills rather than boxed knowledge (Falencka-Jabłońska 2017) and choosing teaching topics adjusted to local environmental issues (Buchcic 2002; Stoczkowska 2002). Although problems linked to environmental education were mostly associated with the local scale, it is clear that this issue requires a broader change at the national policy level (Grodzińska-Jurczak 2004; Kobierska et al. 2007). One possible solution would be to increase the number of environmental education centres (Pitoska and Lazarides 2013). The operation of environmental education centres influences students and local communities, especially when the centre operates in peripheral and disadvantaged areas (Pitoska and Lazarides 2013). Thus, such centres can play a very important role in the development of education for both students and adults, transforming local communities to solve future environmental problems.

Interestingly, urbanisation appears to be one of the major issues at the local scale. Towns and cities are currently the most rapidly developing areas globally, having a profound effect on the environment and biodiversity (Marzluff et al. 2001; Skórka et al. 2006, 2016; Evans et al. 2010). Urbanisation is associated with many phenomena, including urban sprawl, road development, noise, increased human density, and pollution. All of them have an immediate effect on local wildlife and can be easily perceived by non-professionals. Environmental phenomena, such as climate change,

become more pronounced due to urbanisation, which may lead people to consider it more recognisable on a local scale. Urbanisation implies environmental changes, however, also a political change to manage growth, which can be controlled and planned (Dodman 2017). This is where local governments are most needed, and the attitude of local authorities is crucial (Karwińska et al. 2018). The lack of actions to plan and control urbanisation processes will make them even more pressing problems, including economic and social dysfunction for humans (Litynski 2016; Karwińska et al. 2018). In addition, the history of a particular urban area and place attachment may play a role in perceiving conservation problems, and this may also be the reason why urbanisation is considered a major problem on a local scale (Buchecker and Frick 2020).

The above problems relate to general environmental policy, which is a challenge for both the Polish government and non-governmental organisations. Furthermore, the effectiveness of environmental policy appears to decline across the region of Eastern and Central Europe (Szulecka and Szulecki 2019). The shortcomings of policy were identified in our horizon scanning as belonging to major problems at the national scale. Thus, we propose that further work of the Polish government should focus on the full implementation of the International Standard for Environmental Management Systems ISO 14001 (https://www.iso.org/iso-14001-environmental-management.html). This policy should have a strong legal basis, but it should also be straightforward and easy to understand, representing a comprehensive approach to environmental issues. This should be based on adaptive governance, including flexible and learning-based collaborations and decision-making processes involving both state and non-state actors at multiple levels, to adaptively negotiate and coordinate management in human-environment systems (Brunner et al. 2006; Tesfaye et al. 2011). However, most importantly, environmental rules and regulations should be strictly followed. In this regard, an initial environmental examination or impact assessment should be conducted before starting any kind of project (Niedziałkowski 2013).

Neglecting law regulations has sparked the recent conflict between Polish state forests and the scientific community and non-governmental organisations (Żmihorski et al. 2018). The conflict arose as Polish state forests started cutting protected Białowieża Forests, violating environmental policy and law (Schiermeier 2016; Żmihorski et al. 2018). The conflict then spread because intensive and uncontrolled logging encompassed other forest complexes (Szulecka and Szulecki 2019). Intensive forestry was also identified in our scanning as a prevalent national problem. Intensive forestry is also related to habitat loss and fragmentation at this scale (Mikusiński et al. 2018; Thorn et al. 2018).

Interestingly, only one problem (the lack of green technologies) could be classified as related to science while considering broad categories. This indicates that the current accumulation of knowledge is satisfactory for undertaking practical actions and solving most of the problems. This also shows that the role of conservation science may change, solving problems regarding how to incorporate accumulated knowledge into legislation and policy, and how to deliver this knowledge to society (Mace 2014; Sutherland et al. 2019).

As we have already demonstrated, particular conservation problems vary in their relative importance according to the spatial scale. Our identification of the top questions for environmental conservation in Poland and the themes that emerged provides an overview of research areas that scientists commonly identified as priorities for the entire planet and certain regions, including Europe (e.g. Sutherland et al. 2013; Ockendon et al. 2018). The indicated problems are well-documented, and some solutions have already been published in the scientific literature (Farmer 1997). For example, environmental pollution was found to be a relevant problem at both scales; however, scoring revealed its importance mostly at the local level. Environmental pollution, in general, is a global problem that comprises different categories such as air, light, water, soil, noise, and heavy metal pollution. Thus, every category of pollution may act on different spatial scales. These problems are correlated with human activities and strongly affect human health (Lim et al. 2012).

In contrast, climate change is perceived as the most important national problem. Climate change forecasts predict that habitats sensitive to moisture levels will suffer if the climate becomes drier (Letcher 2009). Climate-related alterations in habitats could impact food production, water supply, and quality, as well as the use of land for tourism and other leisure activities. Reduced soil moisture is linked to an increased risk of wildfires (Pickrell 2019) and a higher vulnerability of species to pests and diseases (Cannon 1998). The clear change in climate dynamics is the biggest influence of climate change on the environment in Poland (Kundzewicz and Matczak 2012). These climate changes have forced the intensification of several weather phenomena, such as droughts, hurricane-force winds, tornadoes, and hail (Kundzewicz and Matczak 2012). Thus, our scoring confirmed that this is a major conservation issue.

Methodological considerations

Our Delphi technique was used to encourage consensus on specific themes. Contrary to this assumption, our discussions resulted in contrast opinions than in other published problem solving (review in Hilbert et al. 2009). Finally, participants agreed that determining the mean score of problems during the first round was a better option than seeking a unified score for each problem. This method has several advantages. First, it shows that finding a consensus on the discussed problem among specialists is difficult or sometimes even impossible. Second, the use of mean scores and associated measures of

variation depicts differences in the perception of the importance of different problems among participants. This is valuable information that can be used in modelling and decision-making. For example, one may use the value of variation in scores among participants to assess how much they agree with a given problem. Delphi is a flexible technique, and individual variation may be incorporated in agreed opinions on different topics.

Our study includes the opinions of PhD candidates linked to ecology and conservation science. This may raise concerns if this horizon scanning represents of the entire country and if the identified problems and their order of importance scores are correct. Moreover, it is unknown if research participants could represent the perception of conservation problems in Polish society. However, participants of many horizon scanning should be professionals rather than randomly chosen individuals because horizon scanning and Delphi techniques explore the knowledge of participants rather than collecting opinions (Sutherland et al. 2011; Mukherjee et al. 2015). In our research, participants were young professionals, and their opinions may shape future decision-making. Nevertheless, it is desirable to conduct similar research with a higher number of experienced professionals from different institutions and compare their opinions with horizon scanning performed with a random sample of citizens that represents the entire Polish society. Such a comparison would enable the identification of gaps between the transfer of knowledge from science to society and would also be a good base for actions or programmes informing (in educational media or school programmes) about certain conservation issues underestimated by ordinary people in both local societies and at the national level.

Conservation problems were identified on two different spatial scales. However, the complexity of the problems may cause this distinction to be artificial. For example, one may consider problems at a regional scale (not considered in this study). Moreover, problems may fluctuate across the spatial scales. This would require longitudinal analysis with the identification of problems at different times. For example, the importance of urbanisation as a conservation problem may increase in the future, as this is a rapidly ongoing process (Antrop 2004).

Conclusions

There is a certain congruency between the identified problem categories at the local and national levels. However, specific conservation problems have different importance depending on the scale, which results from the fact that 86% of the problems were unique for a scale. Thus, our findings may guide the government and local decision-makers about which problems are perceived as the most important and should be adequately solved first. An efficient policy should be built in a hierarchical way, including solutions that can be implemented on a nationwide scale and enough elasticity to adjust for local differences in conservation issues. Broad categories may be considered first, followed by the importance of specific problems within these categories. The concept of adaptive governance (Berkes 2017) appears to be especially suitable for practical implementation, as it involves different actors (local societies, local and national governments, and experts). Moreover, 30 specific conservation problems were identical between the spatial scales. They may be priority problems to address because they had higher importance scores than unique problems at the local scale and did not differ in importance scores from unique conservation problems at the national level. However, the limitations of our study should also be considered. Our analysis is the first step in recognising conservation problems in Poland, performed by young environmental scientists. This kind of study should be repeated with a broader panel of experts and should include the collection of opinions on conservation problems in Polish society. This would enable identification gaps in societal knowledge of conservation issues across spatial scales.

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Author contribution P.S. conceived the idea, analysed data, and wrote the manuscript. All authors participated in the research, collected data, built the database, participated in writing, discussed, and commented on earlier drafts. All authors have read and approved the final manuscript.

Availability of data and materials

All data generated or analysed during this study are included in this published article and its supplementary information file.

Declarations

Ethics approval and consent to participate Not applicable

Consent for publication Not applicable

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References

Antrop M (2004) Landscape change and the urbanization process in Europe. Landsc Urban Plan 67:9–26

Ardoin NM, Bowersd AW, Gaillarde E (2020) Environmental education outcomes for conservation: a systematic review. Biol Conserv 241: 108224. https://doi.org/10.1016/j.biocon.2019.108224

Barron D, Jackson S, Anderson L (2005) Ignorance, environmental education research and design education. Aust J Environ Educ 21:39–46

Beger M, McGowan J, Treml EA, Green AL, White AT, Wolff NH, Klein CJ, Mumby PJ, Possingham HP (2015) Integrating regional conservation priorities for multiple objectives into national policy. Nat Commun 6:8208. https://doi.org/10.1038/ncomms9208

Berkes F (2017) environmental governance for the anthropocene? social-Ecological Systems, Resilience, and Collaborative Learning. Sustainability 9:1232. https://doi.org/10.3390/su9071232

Brown MJF, Dicks LV, Paxton RJ, Baldock KCR, Barron AB, Chauzat M-P, Freitas BM, Goulson D, Jepsen S, Kremen C, Li J, Neumann P, Pattemore DE, Potts SG, Schweiger O, Seymour CL, Stout JC (2016) A horizon scan of future threats and opportunities for pollinators and pollination. PeerJ 4:e2249. https://doi.org/10.7717/peerj.2249

Brunner RD, Steelman TD, Coe-Juell L, Cromley CM, Edwards CM, Tucker DW (2006) Adaptive governance: integrating science policy and decision making. NY, Columbia University Press, New York

Buchcic E (2002) Teaching environmental education in the light of teachers' experience. Environmental education – its principles and reality after the school reform. Zeszyty Naukowe Komitetu „Człowiek i srodowisko" 31: 271-278

Buchecker M, Frick J (2020) The implications of urbanization for inhabitants' relationship to their residential environment. Sustainability 12:1624. https://doi.org/10.3390/su12041624

Cannon RJC (1998) The implications of predicted climate change for insect pests in the UK, with emphasis on non-indigenous species. Glob Chang Biol 4:785–796

Coleman JL, Ascher JS, Bickford D, Buchori D, Cabanban A, Chisholm RA, Chong KY, Christie P, Clements GR, dela Cruz TEE, Dressler W, Edwards DP, Francis CM, Friess DA, Giam X, Gibson L, Huang D, Hughes AC, Jaafar Z, Jain A, Koh LP, Kudavidanage EP, Lee BPYH, Lee J, Lee TM, Leggett M, Leimona B, Linkie M, Luskin M, Lynam A, Meijaard E, Nijman V, Olsson A, Page S, Parolin P, Peh KSH, Posa MR, Prescott GW, Rahman SA, Ramchunder SJ, Rao M, Reed J, Richards DR, Slade EM, Steinmetz R, Tan PY, Taylor D, Todd PA, Vo ST, Webb EL, Ziegler AD, Carrasco LR (2019) Top 100 research questions for biodiversity conservation in Southeast Asia. Biol Conserv 234:211–220

Croissant Y, Millo G (2008) Panel data econometrics in R:The plm Package. J Stat Softw 27(2):1–43

DeHaven-Smith L (1988) Environmental belief systems: Public opinion on land use regulation in Florida. Environ Behav 20:276–299

Dodman D (2017) (2017) Environment and urbanization. In: (eds Richardson D, Castree N, Goodchild MF, Kobayashi A, Liu W, Marston RA) International Encyclopedia of Geography: People, the Earth. Environ Technol. https://doi.org/10.1002/9781118786352.wbieg0623

Early R, Bradley BA, Dukes JS, Lawler JJ, Olden JD, Blumenthal DM, Gonzalez P, Grosholz ED, Ibañez I, Miller LP, Sorte CJB, Tatem AJ (2016) Global threats from invasive alien species in the twenty-first century and national response capacities. Nat Commun 7:12485 pmid:27549569

Evans K, Hatchwell BJ, Parnell M, Gaston KJ (2010) A conceptual framework for the colonisation of urban areas: the blackbird Turdus merula as a case study. Biol Rev 85:643–667

Falencka-Jabłońska M (2017) Environmental protection and education system in Poland. Inżynieria Ekologiczna 18:36–39

Farmer A (1997) Managing environmental pollution. Routledge, London

Fellows I (2018) wordcloud: Word clouds. R package version 2.6. https://CRAN.R-project.org/package=wordcloud

Gerber L (2010) Conservation biology. Nat Educ Knowledge 3:14

Grodzińska-Jurczak M (2004) Forum: environmental education in Poland: its present status. Int Res Geograph Environ Educ 13:251–257

Haddad NM, Brudvig LA, Clobert J, Davies KF, Gonzalez A, Holt RD, Lovejoy TE, Sexton JO, Austin MP, Collins CD, Cook WM, Damschen EI, Ewers RM, Foster BL, Jenkins CN, King AJ, Laurance WF, Levey DJ, Margules CR, Melbourne BA, Nicholls AO, Orrock JL, Song DX, Townshend JR (2015) Habitat fragmentation and its lasting impact on Earth's ecosystems. Sci Adv 1(2): e1500052. https://doi.org/10.1126/sciadv.1500052

Hamann M, Godfrey MH, Seminoff JA, Arthur K, Barata PCR, Bjorndal KA, Bolten AB, Broderick AC, Campbell LM, Carreras C, Casale P, Chaloupka M, Chan SKF, Coyne MS, Crowder LB, Diez CE, Dutton PH, Epperly SP, FitzSimmons N, Formia A, Girondot M, Hays GC, Cheng IS, Kaska Y, Lewison R, Mortimer JA, Nichols WJ, Reina RD, Shanker K, Spotila JR, Tomás J, Wallace BP, Work TM, Zbinden J, Godley BJ (2010) Global research priorities for sea turtles: informing management and conservation in the 21st century. Endanger Species Res 11:245–269

Hilbert M, Miles I, Othmer J (2009) Foresight tools for participative policy-making in inter-governmental processes in developing countries: lessons learned from the eLAC policy priorities Delphi. Technol Forecast Soc Chang 76:880–896

Hłobił A (2010) Ecological education in school practice. Rocznik Ochrona Środowiska 12:277–298

Kark S, Tulloch A, Gordon A, Mazor T, Bunnefeld N, Levin N (2015) Cross-boundary collaboration: key to the conservation puzzle. Curr Opin Environ Sustain 12:12–24

Karwińska A, Böhm A, Kudłacz M (2018) The phenomenon of urban sprawl in modern Poland: causes, effects and remedies. Public Governance 3:26–43

Kobierska H, Tarabuła-Fiertak M, Grodzinska-Jurczak M (2007) Attitudes to environmental education in Poland. J Biol Educ 42: 12–18

Kundzewicz ZW, Matczak P (2012) Climate change regional review: Poland. WIREs Climate Change 3:297–311

Lenda M, Skórka P, Knops JMH, Moroń D, Sutherland WJ, Kuszewska K, Woyciechowski M (2014) Effect of the internet commerce on dispersal modes of invasive alien species. PLoS One 9(6):e99786. https://doi.org/10.1371/journal.pone.0099786

Letcher TM (2009) Climate change: observed impacts on planet Earth. Elsevier, Amsterdam, The Netherlands

Lichtenfeld LL, Naro EM, Snowden E (2019) Community, conservation, and collaboration: a framework for success. National Geographic Society, Washington D.C., United States, and African People & Wildlife, Arusha, Tanzania

Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, AlMazroa MA, Amann M, Anderson HR, Andrews KG, Aryee M, Atkinson C, Bacchus LJ, Bahalim AN, Balakrishnan K, Balmes J, Barker-Collo S, Baxter A, Bell ML, Blore JD, Blyth F, Bonner C, Borges G, Bourne R, Boussinesq M, Brauer M, Brooks P, Bruce NG, Brunekreef B, Bryan-Hancock C, Bucello C, Buchbinder R, Bull F, Burnett RT, Byers TE, Calabria B, Carapetis J, Carnahan E, Chafe Z, Charlson F, Chen H, Chen JS, Cheng ATA, Child JC, Cohen A, Colson KE, Cowie BC, Darby S, Darling S, Davis A, Degenhardt L, Dentener F, Des Jarlais DC, Devries K, Dherani M, Ding EL, Dorsey ER, Driscoll T, Edmond K, Ali SE, Engell RE, Erwin PJ, Fahimi S, Falder G, Farzadfar F, Ferrari A, Finucane MM, Flaxman S, Fowkes FGR, Freedman G, Freeman MK, Gakidou E, Ghosh S, Giovannucci E, Gmel G, Graham K, Grainger R, Grant B, Gunnell D, Gutierrez HR, Hall W, Hoek HW, Hogan A, Hosgood HD III, Hoy D, Hu H, Hubbell BJ, Hutchings SJ, Ibeanusi SE, Jacklyn GL, Jasrasaria R, Jonas JB, Kan H, Kanis JA, Kassebaum N, Kawakami N, Khang YH, Khatibzadeh S, Khoo JP, Kok C, Laden F, Lalloo R, Lan Q, Lathlean T, Leasher JL, Leigh J, Li Y, Lin JK, Lipshultz SE, London S, Lozano R, Lu Y, Mak J, Malekzadeh R, Mallinger L, Marcenes W, March L, Marks R, Martin R, McGale P, McGrath J, Mehta S, Memish ZA, Mensah GA, Merriman TR, Micha R, Michaud C, Mishra V, Hanafiah KM,

Mokdad AA, Morawska L, Mozaffarian D, Murphy T, Naghavi M, Neal B, Nelson PK, Nolla JM, Norman R, Olives C, Omer SB, Orchard J, Osborne R, Ostro B, Page A, Pandey KD, Parry CDH, Passmore E, Patra J, Pearce N, Pelizzari PM, Petzold M, Phillips MR, Pope D, Pope CA III, Powles J, Rao M, Razavi H, Rehfuess EA, Rehm JT, Ritz B, Rivara FP, Roberts T, Robinson C, Rodriguez-Portales JA, Romieu I, Room R, Rosenfeld LC, Roy A, Rushton L, Salomon JA, Sampson U, Sanchez-Riera L, Sanman E, Sapkota A, Seedat S, Shi P, Shield K, Shivakoti R, Singh GM, Sleet DA, Smith E, Smith KR, Stapelberg NJC, Steenland K, Stöckl H, Stovner LJ, Straif K, Straney L, Thurston GD, Tran JH, van Dingenen R, van Donkelaar A, Veerman JL, Vijayakumar L, Weintraub R, Weissman MM, White RA, Whiteford H, Wiersma ST, Wilkinson JD, Williams HC, Williams W, Wilson N, Woolf AD, Yip P, Zielinski JM, Lopez AD, Murray CJL, Ezzati M (2012) A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 380:2224–2260

Litynski P (2016) The correlation between urban sprawl and the local economy in Poland. Urbani Izziv 27:86–96

Mace GM (2014) Whose conservation? Changes in the perception and goals of nature conservation require a solid scientific basis. Science 345:1558–1560

Machnik-Słomka J, Kłosok-Bazan I (2017) The problem of environmental awareness in terms of the eco-innovation implementation in enterprises. Econ Environ Studies 17:221–234

Martin JL, Maris V, Simberloff DS (2016) The need to respect nature and its limits challenges society and conservation science. Proc Natl Acad Sci 113:6105–6112

Marzluff JM, Bowman R, Donnelly R (2001) Avian ecology and conservation in urbanizing world. Kluwer Academic Publishers, Norwell, Massachusetts, USA

Meine C, Soulé M, Noss RF (2006) A mission-driven discipline: the growth of conservation biology. Conserv Biol 20:631–651

Mikusiński G, Bubnicki JW, Churski M, Czeszczewik D, Walankiewicz W, Kuijper DPJ (2018) Is the impact of loggings in the last primeval lowland forest in Europe underestimated? The conservation issues of Białowieża Forest. Biol Conserv 227:266–274

Mishra C, Young JC, Fiechter M, Rutherford B, Redpath SM (2017) Building partnerships with communities for biodiversity conservation: lessons from Asian mountains. J Appl Ecol 54:1583–1159

Morton SR, Hoegh-Guldberg O, Lindenmayer DB, Harriss Olson M, Hughes L, Mc Culloch MT et al (2009) The big ecological questions inhibiting effective environmental management in Australia. Austral Ecol 34:1–9

Mukherjee N, Hugé J, Sutherland WJ, Mcneill J, Van Opstal M, Dahdouh-Guebas F, Koedam N (2015) The Delphi technique in ecology and biological conservation: applications and guidelines. Methods Ecol Evol 6:1097–1109

Mukherjee N, Zabala A, Huge J, Nyumba TO, Adem Esmail B, Sutherland WJ (2018) Comparison of techniques for eliciting views and judgments in decision-making. Methods Ecol Evol 9:54–63

Nicholson E, Fulton EA, Brooks TM, Blanchard R, Leadley P, Metzger JP, Mokany K, Stevenson S, Wintle BA, Woolley SNC, Barnes M, Watson JEM, Ferrier S (2019) Scenarios and models to support global conservation targets. Trends Ecol Evol 34:57–68

Niedziałkowski K (2013) Institutional dynamics of nature conservation policy in Poland. In: Sustainability Research Institute. University of Leeds, Leeds

Nieuwenhuijsen MJ (2016) Urban and transport planning, environmental exposures and health-new concepts, methods and tools to improve health in cities. Environ Health 15(S1):7301. https://doi.org/10.1186/s12940-016-0108-1

Ockendon N, Thomas DHL, Cortina J, Adams WM, Aykroyd T, Barov B, Boitani L, Bonn A, Branquinho C, Brombacher M, Burrell C, Carver S, Crick HQP, Duguy B, Everett S, Fokkens B, Fuller RJ, Gibbons DW, Gokhelashvili R, Griffin C, Halley DJ, Hotham P, Hughes FMR, Karamanlidis AA, McOwen CJ, Miles L, Mitchell R, Rands MRW, Roberts J, Sandom CJ, Spencer JW, ten Broeke E, Tew ER, Thomas CD, Timoshyna A, Unsworth RKF, Warrington S, Sutherland WJ (2018) One hundred priority questions for landscape restoration in Europe. Biol Conserv 221:198–208

Ostrom E, Burger J, Field CB, Norgaard RB, Policansky D (1999) Revisiting the commons: local lessons, global challenges. Science 284(5412):278–282

Parsons ECM, Favaro B, Aguirre AA, Bauer AL, Blight LK, Cigliano JA et al (2014) Seventy-one important questions for the conservation of marine biodiversity. Conserv Biol 28:1206–1214

Pickrell J (2019) Australia's vulnerable species hit hard by fires. Science 366:1427–1428

Pitoska E, Lazarides T (2013) Environmental education centers and local communities: a case study. Procedia Technol 8:215–221

Prescott GW, Sutherland WJ, Aguirre D, Baird M, Bowman V, Brunner J, Connette GM, Cosier M, Dapice D, de Alban JDT, Diment A, Fogerite J, Fox J, Hlaing W, Htun S, Hurd J, LaJeunesse Connette K, Lasmana F, Lim CL, Lynam A, Maung AC, McCarron B, McCarthy JF, McShea WJ, Momberg F, Mon MS, Myint T, Oberndorf R, Oo TN, Phelps J, Rao M, Schmidt-Vogt D, Speechly H, Springate-Baginski O, Steinmetz R, Talbott K, Than MM, Thaung TL, Thawng SCL, Thein KM, Thein S, Tizard R, Whitten T, Williams G, Wilson T, Woods K, Ziegler AD, Zrust M, Webb EL (2017) Political transition and emergent forest-conservation issues in Myanmar. Conserv Biol 31:1257–1270

R Core Team (2019) R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria https://www.R-project.org/. Accessed 28 Oct 2019

Rudd MA, Beazley KF, Cooke SJ, Fleishman E, Lane DE, Mascia MB et al (2011) Generation of priority research questions to inform conservation policy and management at a national level. Conserv Biol 25:476–484

Schiermeier Q (2016) Polish scientists protest over plan to log in Białowieża Forest. Nature 530:393

Schreiner C, Sjøberg S (2005) Empowered for action? How do young people relate to environmental challenges? In: Alsop S (ed) Beyond Cartesian Dualism. Encountering affect in the teaching and learning of sccience. Science and Technology Education Library, Volume 29. Springer, Dordrecht, The Netherlands. Pages 53–68

Schwarzenbach RP, Egli T, Hofstetter TB, Von Gunten U, Wehrli B (2010) Global water pollution and human health. Annu Rev Environ Resour 35:109–136

Skórka P, Martyka R, Wójcik JD (2006) Species richness of breeding birds at a landscape scale – which habitat is the most important? Acta Ornithol 41:49–54

Skórka P, Sierpowska K, Haidt A, Myczko Ł, Ekner-Grzyb A, Rosin ZM, Kwieciński Z, Suchodolska J, Takacs V, Jankowiak Ł, Wasielewski O, Graclik A, Krawczyk AJ, Kasprzak A, Szwajkowski P, Wylegała P, Malecha AW, Mizera T, Tryjanowski P (2016) Habitat preferences of two sparrow species are modified by abundances of other birds in an urban environment. Current Zool 62:357–368

Śledziewska K, Levai A, Zięba D (2016) Internet infrastructure and its usage in Poland and other European Union member states. Inf Syst Manag 5:131–143

Soga M, Gaston KJ (2016) Extinction of experience: the loss of human–nature interactions. Front Ecol Environ 14:94–101

Stoczkowska R (2002) Reform of education and changes in environmental teaching at the primary-school level. Environmental education – curriculum, methods, effects. Zeszyty Naukowe Komitetu „Człowiek i srodowisko" 28: 169-175

Struhsaker TT, Struhsaker PJ, Siex KS (2005) Conserving Africa's rain forests: problems in protected areas and possible solutions. Biol Conserv 123:45–54

Sutherland WJ, Adams WM, Aronson RB, Aveling R, Blackburn TM, Broad S et al (2009) One hundred questions of importance to the conservation of global biological diversity. Conserv Biol 23:557–567

Sutherland WJ, Fleishman E, Mascia MB, Pretty J, Rudd MA (2011) Methods for collaboratively identifying research priorities and emerging issues in science and policy. Methods Ecol Evol 2:238–247

Sutherland WJ, Bardsley S, Clout M, Depledge MH, Dicks LV, Fellman L, Fleishman E, Gibbons DW, Keim B, Lickorish F, Margerison C, Monk KA, Norris K, Peck LS, Prior SV, Scharlemann JPW, Spalding MD, Watkinson AR (2013) A horizon scan of global conservation issues for 2013. Trends Ecol Evol 28:16–22

Sutherland WJ, Butchart SHM, Connor B, Culshaw C, Dicks LV, Dinsdale J, Doran H, Entwistle AC, Fleishman E, Gibbons DW, Jiang Z, Keim B, Roux XL, Lickorish FA, Markillie P, Monk KA, Mortimer D, Pearce-Higgins JW, Peck LS, Pretty J, Seymour CL, Spalding MD, Tonneijck FH, Gleave RA (2018) A 2018 horizon scan of emerging issues for global conservation and biological diversity. Trends Ecol Evol 33:47–58. https://doi.org/10.1016/j.tree.2017.11.006

Sutherland WJ, Taylor NG, MacFarlane D, Amano T, Christie AP, Dicks LV, Lemasson AJ, Littlewood NA, Martin PA, Ockendon N, Petrovan SO, Robertson RJ, Rocha R, Shackelford GE, Smith RK, Tyler EHM, Wordley CFR (2019) Building a tool to overcome barriers in research-implementation spaces: the conservation evidence database. Biol Conserv 238:108199

Szulecka J, Szulecki K (2019) Between domestic politics and ecological crises: (De)legitimization of Polish environmentalism. Environ Politics:1–30. https://doi.org/10.1080/09644016.2019.1674541

Tesfaye Y, Roos A, Bohlin F (2011) Attitudes of local people towards collective action for forest management: the case of participatory forest management in Dodola area in the Bale Mountains, Southern Ethiopia. Biodivers Conserv 21:245–265. https://doi.org/10.1007/s10531-011-0181-2

Thorn S, Bässler C, Brandl R, Burton PJ, Cahall R, Campbell JL, Castro J, Choi CY, Cobb T, Donato DC, Durska E, Fontaine JB, Gauthier S, Hebert C, Hothorn T, Hutto RL, Lee EJ, Leverkus AB, Lindenmayer DB, Obrist MK, Rost J, Seibold S, Seidl R, Thom D, Waldron K, Wermelinger B, Winter MB, Zmihorski M, Müller J (2018) Impacts of salvage logging on biodiversity – a meta-analysis. J Appl Ecol 55:279–289

Uzzell DL (2000) The psycho-spatial dimension of global environmental problems. J Environ Psychol 20:307–318

Vanham D, Leip A, Galli A, Kastner T, Bruckner M, Uwizeye A, van Dijk K, Ercin E, Dalin C, Brandão M, Bastianoni S, Fang K, Leach A, Chapagain A, van der Velde M, Sala S, Pant R, Mancini L, Monforti-Ferrario F, Carmona-Garcia G, Marques A, Weiss F, Hoekstra AY (2019) Environmental footprint family to address local to planetary sustainability and deliver on the SDGs. Sci Total Environ 693:133642. https://doi.org/10.1016/j.scitotenv.2019.133642

Vining JR, Ebro A (1990) What makes a recycler? Environ Behav 22:56–73

Weeks R, Adams VM (2018) Research priorities for conservation and natural resource management in Oceania's small-island developing states. Conserv Biol 32:72–83

Wickham H (2016) ggplot2: Elegant graphics for data analysis. Springer, Verlag

Żmihorski M, Chylarecki P, Orczewska A, Wesołowski T (2018) Białowieża forest: a new threat. Science 361:238

1.3 Doctoral students activity in numbers

Table of doctoral students' activity in numbers. Data based on information received from doctoral students (according to their semester reports as of May 15, 2025). The data refers to all doctoral students admitted to Doctoral School, * marks doctoral students who have completed their education. Explanations:

- Year of study – 1 - 4 is the year of study; 5 means that the doctoral student is on a one-year extension in accordance with the IPB;
- Projects – number of projects financed from external sources (e.g., NSC, Ministry of Science & Higher Education, Institue founded project) in which the doctoral student is the leader (Leader) or the investigator (Investigator);
- Publications – number of scientific publications in which the doctoral student is the first author (First author) or co-author (Co-author);
- Travel – number of buisness trips made by the doctoral student as part of research internships – abroad or in Poland;
- Conferences – number of conferences where the doctoral student presented a paper or poster, held abroad or in Poland;
- Workshops – number of workshops and training courses attended by the doctoral student, lasting one day (one-day) or more than one day (>1 day);
- Popularization – the number of activities undertaken by the doctoral student to popularize science, i.e., lectures, interviews, school lessons, presentations at science festivals, etc.;
- Awards and distinctions – number received by the doctoral student for scientific activity.

ID album	Year of study	Projects		Publications		Travels		Conferences		Workshops		Popularization	Awards	Distinctions
		Leader	Investigator	First author	Co-author	Abroud	Poland	Abroud	Poland	One-day	>1 day			
SzD.3.2019	5	1	4	2	4	2	2	4		3	7	2	3	2
SzD.2.2019	*		1	3	1			4	2	2				
SzD.4.2019	*			4	4			1	9	11	1			
SzD.1.2019	removal from the list													
SzD.5.2019	*	4	1	1	4	11		9	7	2	4	9		4
SzD.1.2020	removal from the list													
SzD.2.2020	removal from the list													
SzD.3.2020	5	1				3		2	2	1	1	14		1
SzD.4.2020	5		1		1			2		3	3	9		
SzD.5.2020	*	1	1	2	2	3	2	2	2	2	1	5		1
SzD.6.2020	5		2	2	5	1	1	1	7	5	3	2		
SzD.7.2020	*		1	5	1			3	2	15		3	3	2
SzD.8.2020	*	1	4	2	12			2	3				1	
SzD.1.2021	removal from the list													
SzD.2.2021	3,5	no data available (doctoral student on maternity leave)												
SzD.3.2021	4		1	2	1	11	1	4		2	9	6		
SzD.4.2021	*		5	5	8				12	1	8	16	2	
SzD.5.2021	4	1	5	3	2			6	5	21	3	8	1	1
SzD.6.2021	4			2	1	1	3		7	8	2	3		
SzD.7.2021	4			1		1		2	1	3	5	12	2	
SzD.8.2021	4	2	1	1	1	1		4	7	7	4	9		
SzD.1.2022	3,5		1		4			3	4	11	8	8		
SzD.2.2022	3	1	1			1		1	1	3	3	4		
SzD.3.2022	removal from the list													
SzD.4.2022	3		1	1		3		2		2	2	5		
SzD.5.2022	3		2		5						4	5		
SzD.6.2022	removal from the list													
SzD.7.2022	3	1	1	5	1				4	5		1		
SzD.8.2022	removal from the list													
SzD.10.2022	3		1	1	1	3		1	4	1	4	20		
SzD.1.2023	2,5		1	1	1	1		1	2	4	4	4	1	1
SzD.2.2023	removal from the list													
SzD.3.2023	2		1			2	1		1		1	3		
SzD.4.2023	2		1						2		3	3	1	
SzD.5.2023	2		2		1	1	1	1	3	4	1	7	1	1
SzD.6.2023	2													
SzD.7.2023	2					1	1		1		5	4		
SzD.1.2024	1,5		1			1		1						
SzD.2.2024	1		1						1			1		
SzD.3.2024	1		1							1				
SzD.4.2024	1		1											
SZ.D.1.2025	1		1											

Number of doctoral students for years 5 and 4 (18 people)		7	13	14	15	9	5	15	14	16	14	14	6	6
Percentage [%] of doctoral students in their 5th and 4th years with at least one project, publication, etc.		39	72	78	83	50	28	83	78	89	78	78	33	33

Number of doctoral students for all years (34 people)		9	27	18	20	17	8	21	23	23	23	25	9	8
Percentage [%] of doctoral students from all years with at least one project, publication, etc.		26	79	53	59	50	24	62	68	68	68	74	26	24

1.4 Form of Individual Research Plan

Appendix No. 1
to Regulation No. 1/30.03.2025, dated 30.03.2025,
of the Head of the Doctoral School of Natural and Agricultural Sciences

INDIVIDUAL RESEARCH PLAN OF A DOCTORAL STUDENT AT THE DOCTORAL SCHOOL OF NATURAL AND AGRICULTURAL SCIENCES (TIMELINE AND ACTION PLAN FOR COMPLETING A DOCTORAL DISSERTATION)

A General Information

Complete the required data or enter N/A if not applicable.

A.1 Doctoral Student's Details

Student's Record No.:
Enter the number.

First name and surname
Enter the first name and surname preceded by the professional title (mgr or mgr inż.).

Starting date of the programme of study
Enter the day, month and year in the DD.MM.YYYY format.

Semester of the programme of study
Enter the semester number (number from 2 to 12).

A.2 Doctoral Dissertation

Place where doctoral dissertation is being completed
Enter the name of the institute where the doctoral dissertation is being completed.

Scientific discipline
Enter the name of the scientific discipline (Biological sciences, Agriculture and horticulture, or Animal husbandry and fishery).

Title
Enter the (working or final) title of the dissertation.

Planned date of submission
Enter the day, month and year in the DD.MM.YYYY format.

A.3 Doctoral Dissertation Supervisor

First name and surname
Enter the first name and surname of the supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the supervisor.

Affiliation

Enter the supervisor's affiliation.

A.4 Doctoral Dissertation Second Supervisor

First name and surname

Enter the first name and surname of the co-supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the second supervisor.

Affiliation

Enter the second supervisor's affiliation.

A.5 Doctoral Dissertation Auxiliary Supervisor

First name and surname

Enter the first name and surname preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the assistant supervisor

Affiliation

Enter the auxiliary supervisor's affiliation.

B Research Conducted as Part of the Doctoral Dissertation

Description of research covering Sections B.1 to B.5 should not exceed 4,000 words in total.

B.1 Research Objectives

Describe the research objective(s).

B.2 Research Hypotheses

Provide an itemised list of the research hypotheses.

B.3 Scientific Importance of the Research

Justify the choice of the subject matter of the research by formulating the research problem against the background of the existing state of knowledge and by presenting the expected theoretical and/or practical effects of solution to that problem (new facts, theories, technologies, etc.).

B.4 Research Plan

Present a logically structured sequence of research activities leading to a solution of the research problem.

B.5 Research Methodology

Describe briefly the research procedures and techniques (e.g. design of the experiment, apparatuses, statistical methods).

B.6 References

Enter the list of sources cited (max. 10 items).

B.7 Funding

List the sources of research funding, specifying explicitly whether the funds have already been obtained or are planned to be obtained (e.g. as a result of application for a research grant by the doctoral student or the supervisor). Where funding is provided as part of a grant already obtained, specify the following: the title of the project, first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme, number of the agreement, and place and period of the project implementation.

B.8 Timetable of Research Tasks

In the Table below present a detailed plan of research tasks related to the doctoral dissertation to be carried out in the successive years of study (I–IV). The plan should include: 1) the key control points (the so-called "milestones") described in a concise and transparent manner. In a single year several tasks may be carried out; the tasks may be continued in the subsequent years within the 4-year programme of study.

Year	Description of research tasks
I	Enter the task number, name and brief description.
II	Enter the task number, name and brief description.
III	Enter the task number, name and brief description.
IV	Enter the task number, name and brief description.

B.9 Timetable of Presentation of Findings

In the Table below present a plan for the presentation of findings obtained in the course of completing the doctoral dissertation (publications, conferences) for the successive years of study (I–IV). Plan at least one publication in accordance with § 12 item 1.c of the Regulations of the Doctoral School. Provide the information in as much detail as possible.

Year	Description
I	Enter the title or thematic scope of the publication, its type (e.g. a scientific paper, a popular science article, a monograph, a chapter in a monograph) and the other bibliographical details and/or the title and form (poster or paper) of a conference presentation; provide the conference details (name and venue).
II	Enter the title or thematic scope of the publication, its type (e.g. a scientific paper, a popular science article, a monograph, a chapter in a monograph) and the other bibliographical details and/or the title and form (poster or paper) of a conference presentation; provide the conference details (name and venue).
III	Enter the title or thematic scope of the publication, its type (e.g. a scientific paper, a popular science article, a monograph, a chapter in a monograph) and the other bibliographical details and/or the title and form (poster or paper) of a conference presentation; provide the conference details (name and venue).
IV	Enter the title or thematic scope of the publication, its type (e.g. a scientific paper, a popular science article, a monograph, a chapter in a monograph) and the other bibliographical details and/or the title and form (poster or paper) of a conference presentation; provide the conference details (name and venue).

C Scientific, Popularisation and Teaching Activities

C.1 Acquisition of Research Funding

In the Table below present a plan for your own grant applications along with a specification of the sources of funding. Include also planned participation in grant projects implemented by other persons; provide basic information on such projects. Provide the information in as much detail as possible.

Year	Description
I	Enter the title or a brief description of the thematic scope of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme.
II	Enter the title or a brief description of the thematic scope of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme.
III	Enter the title or a brief description of the thematic scope of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme.
IV	Enter the title or a brief description of the thematic scope of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme.

C.2 Improving Competences

In the Table below present a plan for the participation in courses, training programmes, workshops, internships, etc. along with the expected qualifications to gain. Provide the information in as much detail as possible.

Year	Description
I	Enter the name of the course, training programme, workshop, etc.; a brief description of skills gained; and the source of funding of your participation.
II	Enter the name of the course, training programme, workshop, etc.; a brief description of skills gained; and the source of funding of your participation.
III	Enter the name of the course, training programme, workshop, etc.; a brief description of skills gained; and the source of funding of your participation.
IV	Enter the name of the course, training programme, workshop, etc.; a brief description of skills gained; and the source of funding of your participation.

C.3 Popularisation and Teaching Activities

In the Table below describe plan of activities intended to present science to the society, such as a lecture, presentation, interview or class. Provide the information in as much detail as possible.

Year	Description
I	Specify the type of activity (e.g. lecture, presentation, interview, class), venue.
II	Specify the type of activity (e.g. lecture, presentation, interview, class), venue.
III	Specify the type of activity (e.g. lecture, presentation, interview, class), venue.
IV	Specify the type of activity (e.g. lecture, presentation, interview, class), venue.

D Risk and Risk Management

D.1 Risk Characteristics

In the Table below provide an itemised list of and describe the events the occurrence of which might disturb implementation of the Individual Research Plan and justify the need to introduce changes to the Plan. Add as many lines as needed.

No.	Risk description
1	Describe briefly what the risk consists in and specify the probability of its occurrence (low, medium or high) as well as the impact of the risk (low, medium or high) on the implementation of the Individual Research Plan.
2	Describe briefly what the risk consists in and specify the probability of its occurrence (low, medium or high) as well as the impact of the risk (low, medium or high) on the implementation of the Individual Research Plan.

D.2 Risk Mitigation Plan

In the Table below describe the plan for mitigation of the particular risk. Add as many lines as needed.

No.	Description of the risk mitigation plan
1	Describe briefly what the risk mitigation plan consists in.
2	Describe briefly what the risk mitigation plan consists in.

E Statements and Signatures

E.1 Opinion of the Doctoral Dissertation Supervisor

Enter a text of max. 200 words.

E.2 Signatures

Signed by the doctoral student

_____

Signed by the doctoral dissertation supervisor

_____

Signed by the doctoral dissertation second supervisor

_____

Signed by the doctoral dissertation auxiliary supervisor

_____

E.3 Acceptance of the Individual Research Plan by the Doctoral School Secretariat

Acceptance date

_____

Signature

_____

E.4 Acceptance of the Individual Research Plan by the Head of the Doctoral School

Acceptance date

_____

Signature

_____

2.1 Form of Semester Report

Appendix No. 1
to Regulation No. 3/30.03.2025, dated 30.03.2025,
of the Head of the Doctoral School of Natural and Agricultural Sciences

SEMESTER REPORT OF A DOCTORAL STUDENT AT THE DOCTORAL SCHOOL OF NATURAL AND AGRICULTURAL SCIENCES

A General Information

Complete the required data or enter N/A if not applicable.

A.1 Doctoral Student's Details

Student's Record No.:
Enter the number.

First name and surname
Enter the first name and surname preceded by the professional title (mgr or mgr inż.).

Starting date of the programme of study
Enter the day, month and year in the DD.MM.YYYY format.

Semester of the programme of study
Enter the semester number (number from 1 to 12).

A.2 Break in Study

Break period
Specify the period of break by entering the day, month and year in the DD.MM.YYYY format.

Reason
Specify the reason for the break, e.g. maternity leave, leave on terms of maternity leave, paternity leave, parental leave, etc.

Document
Enter the name of the document confirming the reason for the break.

A.3 Doctoral Dissertation

Place where doctoral dissertation is being completed
Enter the name of the institute where the doctoral dissertation is being completed.

Scientific discipline
Enter the name of the scientific discipline (Biological sciences, Agriculture and horticulture, or Animal production and fisheries science).

Title

Enter the (working or final) title of the dissertation.

Planned date of submission

Enter the day, month and year in the DD.MM.YYYY format.

A.4 Doctoral Dissertation Supervisor

First name and surname

Enter the first name and surname of the supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the supervisor.

Affiliation

Enter the supervisor's affiliation.

A.5 Doctoral Dissertation Second Supervisor

First name and surname

Enter the first name and surname of the second supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the second supervisor.

Affiliation

Enter the second supervisor's affiliation.

A.6 Doctoral Dissertation Auxiliary Supervisor

First name and surname

Enter the first name and surname preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the assistant supervisor.

Affiliation

Enter the assistant supervisor's affiliation.

B Research Conducted as Part of the Doctoral Dissertation

Starting with the 3rd semester, the report should include information relative to the Individual Research Plan along with reasons for any discrepancies between the Plan and the actual progress. Description of research covering Sections B.1 to B.5 should not exceed 4,000 words in total. Description of research work carried out and of the findings thereof, covering Sections B.7 and B.8, should not exceed 2,000 words.

B.1 Research Objectives

Describe the research objective(s).

B.2 Research Hypotheses

Provide an itemised list of the research hypotheses.

B.3 Scientific Importance of the Research

Justify the choice of the subject matter of the research by formulating the research problem against the background of the existing state of knowledge and by presenting the expected theoretical and/or practical effects of solution to that problem (new facts, theories, technologies, etc.).

B.4 Research Methodology

Describe briefly research procedures and techniques (e.g. design of the experiment, apparatuses, statistical methods).

B.5 References

Enter the list of sources cited (max. 5 items).

B.6 Funding

List the sources of research funding, specifying explicitly whether the funds have already been obtained or are planned to be obtained (e.g. as a result of application for a research grant by the doctoral student or the supervisor). Where funding is provided as part of a grant already obtained, specify the following: the title of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme, number of the agreement, place and period of the project implementation.

B.7 Research Work Carried Out in the Semester

Present the work you carried out in the reporting semester in connection with the doctoral dissertation. Describe the research procedures and techniques (e.g. design of the experiment, apparatuses, statistical methods) you applied.

B.8 Findings of the Research Work Carried Out in the Semester

Present the findings of the research work you carried out in the reporting semester in connection with the doctoral dissertation.

B.9 Presentation of Findings of Research Carried Out in the Semester

In the Table below provide an itemised list of the publications and conference abstracts (each item separately) in which you presented the findings obtained in connection with the doctoral dissertation. Attach evidence of the presentation, such as, for example, the first page of the publication, or a certificate of participation in a conference. Indicate the presentation type (oral or poster). Add as many lines as needed.

No.	Description
1	Enter the publications in the following format: Kajtoch Ł., Grzędzicka E. 2023. Evergreen ivy vines. Forest Ecology and Management 544: 121-125. DOI: 10.1016/j.foreco.2023.121165. Points assigned by the Ministry of Science and Higher Education (if applicable), Impact Factor (IF) of the journal (if available). Appendix No.: Rybicka M. 2023. Gordineşti II-Stînca goală in the settlement context at the end of the 4th mill. BC in the eastern part of the Roztocze range in Western Ukraine. Introductory study. Wydawnictwo Uniwersytetu Rzeszowskiego, Rzeszów. ISBN 978-83-7996-698-1. Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Karpiński S., Szechyńska-Hebda M. 2023. Systemic acquired acclimation, network acquired acclimation and cellular light memory in plants – Molecular, biochemical, and physiological mechanisms. In: R. Mittler, F. van Breusegem (eds.), Oxidative Stress Response In Plants. (Advances in Botanical Research) Elsevier: 277–310. DOI: 10.1016/bs.abr.2022.11.005, Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Enter the conference abstracts in the following format: Cywa K., Karczewski M., Wacnik A. 2023. Anthracological data as evidence for cultural differences in the use of wood resources in the 1st millennium CE by communities in the Western Baltic cultural circle in Poland. In: ANTHRACO 2023, 8th International Anthracology Meeting, Faculty of Sciences University of Porto, Porto, Portugal, 29th August–2nd September 2023. Abstract book: 50. ISBN: (if present), (indicate if poster or oral presentation). Appendix No.:
2	Enter the publications in the following format: Kajtoch Ł., Grzędzicka E. 2023. Evergreen ivy vines. Forest Ecology and Management 544: 121-125. DOI: 10.1016/j.foreco.2023.121165. Points assigned by the Ministry of Science and Higher Education (if applicable), Impact Factor (IF) of the journal (if available). Appendix No.: Rybicka M. 2023. Gordineşti II-Stînca goală in the settlement context at the end of the 4th mill. BC in the eastern part of the Roztocze range in Western Ukraine. Introductory study. Wydawnictwo Uniwersytetu Rzeszowskiego, Rzeszów. ISBN 978-83-7996-698-1. Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.:

	Karpiński S., Szechyńska-Hebda M. 2023. Systemic acquired acclimation, network acquired acclimation and cellular light memory in plants – Molecular, biochemical, and physiological mechanisms. In: R. Mittler, F. van Breusegem (eds.), Oxidative Stress Response In Plants. (Advances in Botanical Research) Elsevier: 277–310. DOI: 10.1016/bs.abr.2022.11.005, Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Enter the conference abstracts in the following format: Cywa K., Karczewski M., Wacnik A. 2023. Anthracological data as evidence for cultural differences in the use of wood resources in the 1st millennium CE by communities in the Western Baltic cultural circle in Poland. In: ANTHRACO 2023, 8th International Anthracology Meeting, Faculty of Sciences University of Porto, Porto, Portugal, 29th August–2nd September 2023. Abstract book: 50. ISBN: (if present), (indicate if poster or oral presentation). Appendix No.:

C Scientific and Popularisation Activities

C.1 Acquisition of Research Funding

In the Table below provide an itemised list of scientific projects along with the source of funding. Include your own grants obtained and applied for, as well as participation in grant projects implemented by other persons. Attach evidence of obtainment, application for or participation in a grant. Add as many lines as needed.

No.	Description
1	Enter the project title, the first name and surname of the project coordinator, agreement number, the institution providing the funding and the name of the funding programme, place and period of project implementation, role under the project (project coordinator, project staff member). Enter the Appendix number.
2	Enter the project title, the first name and surname of the project coordinator, agreement number, the institution providing the funding and the name of the funding programme, place and period of project implementation, role under the project (project coordinator, project staff member). Enter the Appendix number.

C.2 Improving Competences

In the Table below provide an itemised list of the courses, training programmes, workshops, internships, etc. you participated in (each activity separately) along with the expected qualifications gained. For courses specify duration in hours. Attach evidence of participation. Add as many lines as needed.

Year	Description
I	Enter the name of the course, training programme, internship, etc.; specify the venue, dates, number of hours (if applicable) and source of funding. Specify the qualifications obtained. Enter the Appendix number.
II	Enter the name of the course, training programme, internship, etc.; specify the venue, dates, number of hours (if applicable) and source of funding. Specify the qualifications obtained. Enter the Appendix number.

C.3 Popularisation Activities

In the Table below provide an itemised list of activities presenting science to the society, such as a lecture, presentation, interview or class (each activity separately). Attach evidence of the activities conducted. Add as many lines as needed.

Year	Description
I	Specify the type of activity (e.g. lecture, presentation, interview, class), venue, date and number of attendees. Enter the Appendix number.
II	Specify the type of activity (e.g. lecture, presentation, interview, class), venue, date and number of attendees. Enter the Appendix number.

C.4 Activities for the Parent Unit

In the Table below describe briefly the works you carried out for the parent unit. Attach evidence of the work carried out. Add as many lines as needed.

Year	Description
I	Describe briefly the works carried out. Enter the Appendix number.
II	Describe briefly the works carried out. Enter the Appendix number.

C.5 Other activities

In the Table below present other forms of scientific activities not specified above, such as, for example, membership in associations. Attach evidence of such activities.

Year	Description
I	Specify the activity and provide necessary information on it. Enter the Appendix number.
II	Specify the activity and provide necessary information on it. Enter the Appendix number.

D Appendices

D.1 List of Appendices

In the Table below provide an itemised list and description of appendices evidencing the activities referred to in Tables in Sections B.8 to C.5. Add as many lines as needed.

No.	Description
1	Enter the Appendix name.
2	Enter the Appendix name.

E Statements and Signatures

E.1 Description of Collaboration with the Supervisor(s)

Enter a text of max. 200 words.

E.2 Signatures

Signed by the doctoral student

_____

Signed by the doctoral dissertation supervisor

_____

Signed by the doctoral dissertation second supervisor

_____

Signed by the doctoral dissertation auxiliary supervisor

_____

E.3 Acceptance of the Semester Report by the Doctoral School Secretariat

Acceptance date

_____

Signature

_____

E.4 Acceptance of the Semester Report by the Head of the Doctoral School

Acceptance date

_____

Signature

_____

3.1 List of lecturers

List of the lecturers teaching doctoral students as part of compulsory courses included in the Programme of Study at the Doctoral School of Natural and Agricultural Sciences

A list of lecturers for thematic blocks resulting from the Programme of Study at DS is presented, i.e.: Systematics and evolutionism, Ecology and nature protection, Contemporary trends in animal raising and breeding, and plant cultivation, Biochemistry and physiology of organisms, Development of scientific career and communication in science, Statistics, Philosophy.

Abbreviations used in the text: IB PAS – the W. Szafer Institute of Botany Polish Academy of Sciences, IPP PAS – the F. Górski Institute of Plant Physiology Polish Academy of Sciences, INC PAS – the Institute of Nature Conservation Polish Academy of Sciences, ISEA PAS – the Institute of Systematics and Evolution of Animals Polish Academy of Sciences, NRIAP – National Research Institute of Animal Production, JU – Jagiellonian University, UA – University of Agriculture in Krakow.

"Systematics and evolutionism"

- Dr Michał Adamski, employee of IB PAS
- Dr hab. Aneta Arct, employee of ISEA PAS
- Prof. dr hab. Halina Bednarek-Ochyra, employee of IB PAS
- Dr Valerii Darmostuk, employee of IB PAS
- Dr hab. Adam Flakus, employee of IB PAS
- Dr hab. Georgalis Georgios**,** employee of ISEA PAS
- Dr hab. Łukasz Kajtoch, employee of ISEA PAS
- Dr Katarzyna Kopeć, employee of ISEA PAS
- Dr hab. Joanna Lenarczyk, employee of IB PAS
- Dr Magdalena Owczarek-Kościelniak, employee of IB PAS
- Dr hab. Beata Paszko, employee of IB PAS
- Dr hab. Łukasz Przybyłowicz, employee of ISEA PAS
- Dr Kornelia Skibińska, employee of ISEA PAS
- Dr hab. Renata Stachowicz-Rybka, employee of IB PAS
- Dr Tomasz Suchan, employee of IB PAS
- Dr hab. Jarosław Wilczyński, employee of ISEA PAS
- Dr hab. Piotr Wojtal, employee of ISEA PAS
- Dr hab. Grzegorz Worobiec, employee of IB PAS
- Dr Monika Woźniak-Chodacka, employee of IB PAS

“Ecology and environmental protection”

- Dr hab. Piotr Skórka, employee of INC PAS

“Contemporary trends in animal raising and breeding, and in plant cultivation”

- Dr inż. Dorota Godyń, employee of NRIAP
- Dr hab. Paweł Górka, employee of NRIAP
- Dr hab. Jacek Jura, employee of NRIAP
- Dr hab. Agnieszka Klimek-Kopyra, employee of UA
- Dr inż. Martyna Małopolska, employee of NRIAP
- Dr Agata Piestrzyńska-Kajtoch, employee of NRIAP
- Prof. dr hab. Elżbieta Pisulewska, employee of UA
- Dr inż. Ewa Sasin, employee of NRIAP
- Dr inż. Magdalena Simlat, employee of UA
- Dr hab. Witold Szczurek, employee of NRIAP
- Dr hab. Paulina Szczurek-Janicka, employee of NRIAP
- Prof. dr hab. Małgorzata Świątkiewicz, employee of NRIAP
- Dr hab. inż. Kacper Żukowski, employee of NRIAP

“Biochemistry and physiology of organisms”

- Dr Magdalena Bryła, employee of NRIAP
- Dr Dorota Bederska-Łojewska, employee of NRIAP
- Dr inż. Dorota Godyń, employee of NRIAP
- Dr inż. Martyna Małopolska, employee of NRIAP
- Dr inż. Agnieszka Ostrowska, employee of IPP PAS
- Dr inż. Przemysław Pol, employee of NRIAP
- Prof. dr hab. Sylwester Świątkiewicz, employee of NRIAP
- Dr inż. Bogdan Śliwiński, employee of NRIAP
- Dr inż. Wojciech Witarski, employee of NRIAP

“Development of scientific career and communication in science”

- Dr hab. Agnieszka Bednarska, employee of INC PAS
- Prof. dr hab. Marcin Czarnołęski, employee of JU
- Prof. dr hab. Ryszard Laskowski, employee of JU

“Statistics”

- Dr Andrzej Antoł, employee of JU
- Prof. dr hab. Paweł Koteja, employee of JU
- Dr hab. Piotr Skórka, employee of INC PAS
- Dr hab. Łukasz Sobczyk, employee of JU

„Philosophy”

- Dr Kajetan Młynarski, employee of JU
- Prof. dr hab. Piotr Mróz, employee of JU

3.2 List of doctoral students and supervisors

List of doctoral students and their supervisors at the Doctoral School of Natural and Agricultural Sciences

The table provides: the doctoral student's name and surname along with their professional title (Doctoral Student), the supervisor's affiliation (Institute), the name and surname along with their academic degree or title (Supervisor 1, Supervisor 2, Auxiliary supervisor), and the subject of the doctoral dissertation (Dissertation Topic). The "Institute" column provides one affiliation if the supervisors have the same one, or two – for the supervisor/for supervisor 2 or auxiliary supervisor.

Abbreviations used in the text: IHMC PAS – the Institute for History of Material Culture Polish Academy of Sciences, IB PAS – the W. Szafer Institute of Botany Polish Academy of Sciences, IPP PAS – the F. Górski Institute of Plant Physiology Polish Academy of Sciences, IPBA- NRI – the Institute of Plant Breeding and Acclimatization – National Research Institute, INC PAS – the Institute of Nature Conservation Polish Academy of Sciences, ISEA PAS – the Institute of Systematics and Evolution of Animals Polish Academy of Sciences, NRIAP – National Research Institute of Animal Production, JU – Jagiellonian University, UNEC –University of the National Education Commission, UW – University of Wrocław.

No.	Doctoral student	Institute	Supervisor 1	Supervisor 2	Auxiliary supervisor	Dissertation topic
1.	mgr Aida PARRES LLUCH	INC PAS	dr hab. Nuria Selva		dr hab. Kamil Bartoń	Spatial ecology and wildlife conservation
2.	mgr Anna MISIEWICZ	INC PAS/JU	dr hab. Agnieszka Bednarska		prof. dr hab. Ryszard Laskowski	Effect of pesticides on the red mason bee *Osmia bicornis* in the agricultural landscape
3.	mgr inż. Alicja WIERZBICKA	NRIAP	dr hab. Maria Oczkowicz		dr inż. Anna Koseniuk	Evaluation of factors shaping the effect of vitamin D supplementation base on literature review, transcriptomics and epigenomics studies
4.	mgr Gabriela GASPAR	ISEA PAS	dr Dawid Moroń			Linear structures: importance for pollinator distribution at the landscape scale

5.	mgr Marcin WIOREK	ISEA PAS	dr hab. Łukasz Przybyłowicz			Taksonomia i filogeneza wybranych rodzajów madagaskarskich Syntomini (Lepidoptera: Erebidae: Arctiinae)
6.	mgr inż. Magdalena CICH	IB PAS	dr hab. Elżbieta Cieślak		dr Monika Woźniak-Chodacka	Evolutionary significance of contemporary hybridization in *Oenothera biennis* s.l.
7.	mgr Jakub WYKA	ISEA PAS	dr hab. Łukasz Kajtoch			The use of birds and insects as indicators of the role of climbers in preserving the biodiversity of arboreal habitats
8.	mgr inż. Anna MARCHEWKA	ISEA PAS	dr hab. Tomasz Postawa			The role of underground shelters in the life cycle of heterotermic herbivorous mammals on the example of the edible dormouse (*Glis glis* L.)
9.	mgr inż. Jacek DOŁĘGA	INC PAS	dr hab. Tadeusz Zając			On the influence of biocenotic relationships on active conservationof naiads: protected bullhead (Cottus gobio Linnaeus, 1758) as a host for protected thick shelled river mussel (*Unio crassus* Philipsson, 1788)
10.	mgr inż. Miron GIENIEC	IB PAS/UNEC	prof. dr hab. Zbigniew Miszalski		dr Michał Nosek	The plastoquinone redox pool and ethylene biosynthesis pathway in salinity stressed CAM facultative model plant *Mesembryanthemum crystallinum* L.
11.	mgr Anna STEG	NRIAP	dr hab. Maria Oczkowicz		dr inż. Grzegorz Smołucha	Effect of vitamin D3 supplementation of pigs diet on transcriptome and proteome in selected tissues
12.	mgr Julia STACHURSKA	IPP PAS	prof. dr hab. Anna Janeczko		dr Magdalena Ryś	Physiological basis of the disturbances in frost tolerance of winter oilseed rape as a result of deaclimation processes – role of brassinosteroids
13.	mgr Adrianna MUSIAŁ	NRIAP	dr hab. inż. Katarzyna Ropka-Molik			Identification of the origin of male and female founding lines of Polish native horse breeds based on targeted resequencing of the Y chromosome and the variability of the mitochondrial DNA – mtDNA

14.	mgr inż. Dawid MADEJ	ISEA PAS	dr hab. Dawid Moroń			Do linear structures modify the dispersion and ecosystem services of pollinators in agricultural landscapes?
15.	mgr inż. Emilia MARJAŃSKA	ISEA PAS	dr hab. Dawid Moroń			Do linear structures affect ecosystem services of pollinators in an agricultural landscape?
16.	mgr inż. Dawid SŁOMIAN	NRIAP	prof. dr hab. Joanna Szyda		dr inż. Kacper Żukowski	Assessment of the breeding value of cattle using the single-step model
17.	mgr inż. Kinga SZCZEPANIK	NRIAP	prof. dr hab. Małgorzata Świątkiewicz		dr hab. Piotr Dobrowolski	Insect meal and astaxanthin as stimulators of the development of gastrointestinal environment and health status of pigs
18.	mgr inż. Karolina ZYGMUNT	NRIAP	prof. dr hab. Katarzyna Piórkowska		dr inż. Wojciech Witarski	Analysis of the process of myogenesis to improve production efficiency and consumer quality of in vitro produced "cultured meat”
19.	mgr Emilia GULA	IPP PAS	dr hab. Marta Libik-Konieczny			The role of Pipecolic acid in the resistance of *M.crystallinum* to bacterial infection
20.	mgr Joanna KOŁODZIEJCZYK	INC PAS	dr hab. Aleksandra Biedrzycka		dr hab. Maciej Konopiński	Genomic diversity of native and invasive common raccoon populations and its pathogen diversity – their importance for the success of invasion out of natural range
21.	mgr inż. Jolanta PILCH	INC PAS/IB PAS	dr hab. inż. Włodzimierz Margielewski	dr hab. Renata Stachowicz-Rybka		Reconstruction of the Late Glacial paleoenvironmental changes of the Polish Western Carpathians, on the base of lithological and macrofossils analyses of the selected landslide fen deposits

22.	mgr Aleksandra CWAJNA	ISEA PAS	dr hab. Dawid Moroń			Do linear structures affect disparsal and fitness parameters of pollinators in agricultural landscape?
23.	mgr Karolina CHUDA	INC PAS	dr hab. Piotr Skórka		dr Magdalena Lenda	Risk of biological invasions combined with land sharing and sparing strategies, affects native organisms providing ecosystem services
24.	mgr Monika KATAN	IB PAS	dr hab. Elżbieta Cieślak		dr inż. Łukasz Piechnik	Analysis of the origin of the European bladdernut *Staphylea pinnata* L. in anthropogenic localities in the Polish Carpathians using molecular methods.
25.	mgr Anna JANICZEK	IB PAS	dr hab. Michał Ronikier		dr Tomasz Suchan	Between the mountains and the polar zone: the biogeography and evolutionary history of *Dryas octopetala* L.
26.	mgr Gabriela JUŹWIŃSKA	IB PAS/IHMC PAS	dr hab. Magdalena Moskal-del Hoyo	dr hab. Maria Lityńska-Zając		Reconstruction of vegetation and economic processes during the development of Neolithic cultures in southern Poland
27.	mgr Lena MATYASZCZYK	ISEA PAS	dr hab. Jarosław Wilczyński			Populations of Arctic fox and red fox from late Pleniglacial sites of Central Europe
28.	mgr inż. Grzegorz MYĆKA	NRIAP	prof. dr hab. Katarzyna Ropka-Molik			Comprehensive analysis of Arabian horse riding endurance
29.	mgr Oliwia OSZCZEPALIŃSKA	ISEA PAS	dr hab. Jarosław Wilczyński			The reindeer population from the late Pleniglacial sites of Central Europe
30.	mgr inż. Karolina SKORB	ISEA PAS/INC PAS	dr hab. Aneta Arct		dr Rafał Martyka	Short- and long-term consequences of ambient temperature for the development and fitness in passerine birds

31.	mgr Rama Sarvani KROVI	ISEA PAS/NRIAP	dr hab. Łukasz Kajtoch	dr hab. Maria Oczkowicz		Genetic structure and microbiome diversity: travelling the saproxylic betele population cross forest of various naturalness and continuity
32.	mgr inż. Ksenia WRÓBLEWSKA	NRIAP	prof. dr hab. Katarzyna Piórkowska		dr inż. Wojciech Witarski	Evaluation of the feasibility of using primary adipocyte cells to verify the function of a selected lncRNA in the process of adipogenesis in pigs and its molecular characterization
33.	mgr inż. Katarzyna KARPIERZ	IB PAS	dr hab. Błażej Ślązak		dr Marta Hornyák	Medicinal limonoids from rare, tropical species of Meliaceae family – the exploration of their diversity, biological activities, and ways of production in the plant in vitro cultures
34.	mgr Magdalena DUSZA	IB PAS	prof. dr hab. Anna Ronikier		dr Paulina Janik	Species richness and genetic divergence of nivicolous myxomycetes of the central European mountains against the large-scale diversity of the group
35.	mgr Martyna BUDZIAK	INC PAS	dr hab. Elżbieta Wilk-Woźniak			Cyanobacterial metabolites produced during the bloom, with particular emphasis on the decline phase
36.	mgr Joanna MACUR	INC PAS/UW	dr hab. Agnieszka Sergiel		dr Łukasz Paśko	Environmental stressors and contaminants, and their impact on brown bear populations
37.	mgr Antonii BAKAI	ISEA PAS	dr hab.Ł. Kajtoch		dr Emilia Grzędzicka	On the hybridization of Syrian and great-spotted woodpeckers – in search of their complex interaction, hybrid genesis and habitat requirements?
38.	mgr Dominika TWARÓG	INC PAS/JU	dr hab. Agnieszka Bednarska		dr Zuzanna Filipiak	Impact of pesticides on insect pollinators: implication for environmental risk assessment (ERA)

39.	mgr Honorata WACŁAWEK	IB PAS	dr hab. Adam Flakus		dr Pamela Rodriguez de Flakus	Origin and evolution of fungal symbioses in freshwater mountain ecosystems and their resilience to climate change
40.	mgr Mateusz BIBRO	IPP PAS	dr hab. Piotr Waligórski		dr inż. Paweł Rodziewicz	Biochemical system of glandular trichome microenvironment, its biocatalytic properties and potential in biotechnology
41.	mgr inż. Jakub KURCZAB	IPP PAS/IPBA	dr hab. Ewa Dubas		dr hab. Krzysztof Treder	Regulation of glandular trichome metabolism using new genomic techniques (NGT)
42.	mgr Federica BORDOGNA	INC PAS	dr hab. Rafał Martyka		dr Arkadiusz Fröhlich	Genetic structure and microbiome diversity: unravelling the saproxylic beetle populations across forests of various naturalness and continuity

3.3.1 Emloyee CVs – Biological sciences

Profiles of academic staff teaching at the Doctoral School of Natural and Agricultural Sciences

In the field of biological sciences, the CVs of the following persons are presented:

1) Dr hab. Agnieszka Bednarska
2) Dr hab. Łukasz Kajtoch
3) Prof. dr hab. Ryszard Laskowski
4) Dr hab. Nuria Selva
5) Dr hab. Piotr Skórka

Dr hab. Agnieszka Bednarska

- **Scientific discipline**

  Biological sciences

- **Research interests**

  Ecotoxicology and stress ecology: pollinators, agricultural landscape structure, pesticides, interactions between chemical and non-chemical stressors, costs of survival in polluted environment, influence of contaminations on gene expression, organism and cellular energy budgets and life history traits of organisms, metal and pesticide toksykokinetics, toxicokinetics models

- **Number of scientific publications**

  JCR journals: 45

  Other journals and book chapters: 8

- **Number of citations**

  Web of Science: 811

  Google Scholar: 1197

- **Hirsch index**

  Web of Science: 18

  Google Scholar: 22

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Sowa, G., **Bednarska, A.J.,** Laskowski, R. 2024. Mortality pattern of *Poecilus cupreus* beetles after repeated topical exposure to insecticide – Stochastic Death or Individual Tolerance? *Environmental Science & Technology* 58, 4, 1854–1864. https://doi.org/10.1021/acs.est.3c08031

  Sowa, G., **Bednarska, A.J.,** Laskowski, R. 2023. Effects of agricultural landscape structure and canola coverage on biochemical and physiological traits of the ground beetle *Poecilus cupreus*. *Ecotoxicology* 32, 1141–1151. https://doi.org/10.1007/s10646-023-02701-3

  Misiewicz, A., Mikołajczyk, Ł., **Bednarska, A.J.** 2023. Floral resources, energetic value and pesticide residues in provisions collected by *Osmia bicornis* along a gradient of oilseed rape coverage. *Scientific Reports* 13, 13372 https://doi.org/10.1038/s41598-023-39950-5

  Ziółkowska, E., **Bednarska, A.J.,** Laskowski, R., Topping, C.J. 2023. The Formal Model for the solitary bee *Osmia bicornis* L. agent-based model. *Food and Ecological Systems Modelling Journal* 4, e102102. https://doi.org/10.3897/fmj.4.102102

  Misiewicz, A., Mikołajczyk, Ł., **Bednarska, A.J.** 2023. Impact of oilseed rape coverage and other agricultural landscape characteristics on two generations of the red mason bee *Osmia bicornis*. *Agriculture, Ecosystems and Environment* 352, 108514 https://doi.org/10.1016/j.agee.2023.108514

  Sowa, G., **Bednarska, A.J.,** Ziółkowska, E., Laskowski, R. 2022. Homogeneity of agriculture landscape promotes insecticide resistance in the ground beetle *Poecilus cupreus*. *PlosOne* 17, e0266453 https://doi.org/10.1371/journal.pone.0266453

Mokkapati J.S., **Bednarska, A.J.,** Laskowski. R. 2022. Physiological and biochemical response of the solitary bee *Osmia bicornis* exposed to three insecticide-based agrochemicals. *Ecotoxicology and Environmental Safety* 230, 113095 https://doi.org/10.1016/j.ecoenv.2021.113095

Mokkapati J.S., **Bednarska, A.J.,** Choczyński, M., Laskowski. R. 2022. Toxicokinetics of three insecticides in the female adult solitary bee *Osmia bicornis*. *Environmental Pollution* 293, 118610 https://doi.org/10.1016/j.envpol.2021.118610

Bednarska A.J., Mikołajczyk, Ł., Ziółkowska, E., Kocjan, K., Wnęk, A., Mokkapati, J.S., Teper, D., Kaczyński, P., Łozowicka, B., Śliwińska, R., Laskowski, R. 2022. Effects of agricultural landscape structure, insecticide residues, and pollen diversity on the life-history traits of the red mason bee *Osmia bicornis*. *Science of the Total Environment* 809, 151142 https://doi.org/10.1016/j.scitotenv.2021.151142

Mikołajczyk, Ł., Laskowski. R., Ziółkowska, E., **Bednarska, A.J.** 2021. Species-specific landscape characterisation method in agro-ecosystems. *Ecological Indicators* 129, 107894. https://doi.org/10.1016/j.ecolind.2021.107894

Ziółkowska, E., Topping, C.J., **Bednarska, A.J.,** Laskowski, R. 2021. Supporting non-target arthropods in agroecosystems: modelling effects of insecticides and landscape structure on carabids in agricultural landscapes. *Science of the Total Environment* 774, 145746. https://doi.org/10.1016/j.scitotenv.2021.145746

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 4 – leader, 4 – investigator

  International projects: 1 – leader (in progress), 5 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024–2028: “PollinERA – Understanding pesticide-Pollinator interactions to support EU Environmental Risk Assessment and policy" (HORIZON Europe, No. 101135005); investigator, leader of the part realized at INC PAS

  2022–2023: “Development of roadmap for advancing the environmental risk assessment of chemical pesticides for insect pollinators" (IPol-ERA), project financed by EFSA (European Food Safety Authority); No OC/EFSA/ED/2021/0; leader of taks 4

  2021–2024: “Implementation and communication of multiple-stressor environmental risk assessment for bees” (MUSBERA), project financed by Miljøstyrelsen (Danish Environmental Protection Agency); investigator

  2020–2023: “Direct and long-term effects of river restoration projects in the Polish Carpathians”, project financed by Polish National Science Centre within OPUS 15, contract No. UMO- UMO-2019/33/B/ST10/00518; investigator

  2018–2023: “EcoStack – Stacking of ecosystem services: mechanisms and interactions for optimal crop protection, pollination enhancement, and productivity; EC Horizon 2020, No 773554; investigator

2018–2022: “Effects of pesticides on the red mason bee *Osmia bicornis* in agricultural landscapes: mixture toxicity and the evolution of resistance”, financed by Polish National Science Centre within SONATA 13, contract No. UMO-2017/26/D/NZ8/00606; leader

2016–2019: “Beneficial insects in agricultural landscape: modeling effect of pesticides and landscape structure”, financed by Polish National Science Centre within OPUS 12, contract No. UMO-2015/19/B/NZ8/01939; investigator

2014–2015: “Effect of metal bioavailability on toxicokinetics and compartmentalization of metals in carabids”, project financed by Foundation for Polish Science within HOMING PLUS program, contract No. Homing Plus/2013-8/1; leader

2013–2016: “Quantifying stress response in holometabolic insects: applying a Dynamic Energy Budget Theory Framework”, project financed by Polish National Science Centre, contract No. 2012/06/M/NZ4/00137; leader

- **Number of national/international awards for scientific achievements**

  National awards: 4

  International awards: 1

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2017: Exceptional Paper Award from SETAC in recognition of contribution to an innovative research paper entitled “*Using toxicokinetic-toxicodynamic modelling as an acute risk assessment approach in vertebrates ecological risk assessment*” published in *Integrated Environmental Assessment and Management*

  2010–2013: The Minister of Science and Higher Education Scholarship for Outstanding Junior Researchers (36 months)

  2010–2011: Scholarship for young researchers, Foundation for Polish Science, START Programme (12 months)

  2011: Award by the Rector of Jagiellonian University for scientific achievements

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Associate Editor in *Ecotoxicology*

  Member of the Society of Environmental Toxicology and Chemistry (SETAC)

  Member of the Steering Committee of the SETAC Ecological Risk Assessment Advisory Group (ERA AG)

  Member of the Society of Environmental Toxicology and Chemistry – Central and Eastern Europe Branch

- **International mobility (participation in international internships and scholarships)**

  Aarhus University, Department of Bioscience – Wildlife Ecology and Biodiversity, Kalø, Denmark (5 days, 2018)

  Syngenta, Jealott’s Hill International Research Centre, Bracknell, UK (post-doc within Marie Curie Initial Training Network – CREAM; 2 years)

  The Flemish Community Scholarship in Laboratory of Ecophysiology, Biochemistry and Toxicology, University of Antwerp, Belgium (3 months, 2005)

- **Number of doctoral students**

  Number of doctorates in progress: 1

  Number of promoted doctoral students: 1

- **Teaching – list of classes conducted**

  Advanced Research Communication (course for PhD students in the School of Natural and Agricultural Sciences) (in English)

  Toxicokinetic Models in Environmental Risk Assessment," SETAC MODELINK workshop, Le Croisic, France (in English)

  Ecotoxicology (course for MSc programe in Biology, Jagiellonian University) (in Polish)

  Basic Applications of Computers (course for MSc programe in Biology, Jagiellonian University) (in Polish)

Dr hab. Łukasz Kajtoch

- **Scientific discipline**

  Biological sciences

- **Research interests**

  Systematics, phylogeny, phylogeography, population and conservation genetics, molecular ecology of invertebrates (particularly beetles). Ecology, conservation biology, faunistics and population genetics of birds (mainly riparian, forest & mountain species like mergansers, woodpeckers, owls, grouses). Nature conservation

- **Number of scientific publications**

  JCR journals: 86

  Other journals and book chapters: 51

- **Number of citations**

  Web of Science: 1256

  Google Scholar: 1870

- **Hirsch index**

  Web of Science: 20

  Google Scholar: 24

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Krovi R.S., Amer N.R., Oczkowicz M., **Kajtoch Ł.** 2024. Meta-analysis of spatial genetic patterns among European saproxylic beetles. *Biodiversity and Conservation* 34, 1-27. https://doi.org/10.1007/s10531-024-02940-8

  Wyka J., Dyderski M.K., Grzędzicka E., Lešo P., Piechnik Ł, **Kajtoch Ł**. 2024. I want to climb to the tops of trees! Factors facilitating the development of ivy vines in central European forests. Forestry. *An International Journal of Forest Research*, cpae054. https://doi.org/10.1093/forestry/cpae054

  Kajtoch Ł., Lešo P., Aubrechtová E., Bydžovská T., Horák J. 2024. The transformation of river ecosystems caused by mining affects bird breeding in indigenous riparian habitats. *Science of the Total Environment* 912 (20), 169286 https://doi.org/10.1016/j.scitotenv.2023.169286

  Kajtoch Ł., Grzędzicka E., Piechnik Ł., Wyka J., Lešo P. 2023. Evergreen ivy vines as a key element maintaining the high diversity of birds wintering in Central European forests. *Forest Ecology and Management* 544, 121165. https://doi.org/10.1016/j.foreco.2023.121165

  Sikora K., Zając K., Bieniek A., Jaworski T., Kadej M., Plewa R., Ruta R., Sikora K., Smolis A., Eckelt A., Bonacci T., Brandmayr P., Cizek L., Davenis S.A., Fuchs L., Heibl C., Horak J., Kapla A., Kulijer D., Olbrycht T., Merkl O., Miłkowski M., Müller J., Noordijk J., Saluk S., Thomaes A., Vrezec A., **Kajtoch Ł.** 2023. Phylogeography and distribution modelling reveal the history and future of a saproxylic beetle of European conservation concern. *Journal of Biogeography* 50, 1299–1314. https://doi.org/10.1111/jbi.14626

  Kajtoch Ł., Kolasa M., Mazur M.A., Ścibior R., Zając K., Kubisz D. 2023. Limited congruence in phylogeographic patterns observed for riverine predacious beetles sharing distribution along

the mountain rivers. *Scientific Reports* 13, 17883. https://doi.org/10.1038/s41598-023-44922-w

Kadej M., Zając K., Gutowski J.M., JaworskiT., Plewa R., Ruta R., Sikora K., Smolis A. Magoga G., Montagna M., Eckelt A., Birkemoe T.,Bonacci T., Brandmayr P., Heibl C., Cizek L., Davenis S.A., Fuchs L., Horak J.,Kapla A., Kulijer D., Merkl O., Müller J., Noordijk J., Saluk S., Sverdrup-ThygesonA., Vrezec A., **Kajtoch Ł**. 2022. Disentanglingphylogenetic relations and biogeographic history within the Cucujus haematodes species group (Coleoptera: Cucujidae). *Molecular Phylogenetics and Evolution* 173, 107527. https://doi.org//10.1016/j.ympev.2022.107527

Lachowska-Cierlik D., Zając K., Mazur M.A., Sikora A., Kubisz D., **Kajtoch Ł.** 2020. The origin of isolated populations of the mountain weevil Liparus glabrirostris – the flagship species for riparian habitats. *Journal of Heredity* 111, 357–370. https://doi.org/10.1093/jhered/esaa018

Kajtoch Ł., Kolasa M., Kubisz D., Gutowski J. M., Ścibior R., Mazur M. A., Holecová M. 2019. Using host species traits to understand the Wolbachia infection distribution across terrestrial beetles. *Scientific Reports* 9, 847. https://doi.org/10.1038/s41598-018-38155-5

Figarski T., **Kajtoch Ł.** 2018. Hybrids and mixed pairs of Syrian and great-spotted woodpeckers in urban populations. *Journal of Ornithology* 159, 311-314 https://doi.org/10.1007/s10336-017-1513

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 6 – leader, 7 – investigator

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2023–2027: “Hybridization with a common relative – the threat or chance for the protected bird species?”; Narodowe Centrum Nauki (Preludium BIS 4); leader

  2022–2026: “Population genetics of saproxylic beetle assemblages in protected and managed forests”; NCN (Opus 22); leader

  2014–2018: “The interactions between beetles and endosymbiotic bacterium Wolbachia: the role played by the ecological niche”; Narodowe Centrum Nauki (Sonata6); leader

  2011–2015: Beetles (Curculionoidea, Chrysomeloidea) and their host plants in threatened xerothermic environments: evolutionary and ecological interactions inferred from the analysis of DNA barcodes; Narodowe Centrum Nauki (Opus1); leader

- **Number of national/international awards for scientific achievements**

  National awards: 2

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  –

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Frontiers in Ecology and Evolution – Associate Editor (since 2014)

  Polish Journal of Ecology – Editorial Board Member (since 2014)

  Fragmenta Naturae – Editorial Board Member (since 2016)

  Plos One – Editorial Board Member (since 2018)

  Acta Zoologica Cracoviensia – Deputy Editor (since 2024)

  Eurasian Dry Grassland Group (since 2013) – Member

  European Ornithologist's Union (since 2019) – Member

  World Wide Fund for Nature (since 2022) – Member

- **International mobility (participation in international internships and scholarships)**

  The Netherlands, University of Nijmegen, Socrates-Erasmus scholarship, II-IV.2004

  Spain, Molecular Biology Institute CSIC, Barcelona, scientific training, X.2009

  Ukraine, State Museum of Natural History NANU, Lwów, international cooperation, VI.2007, V-VI.2011, V-VI.2012, VI.2018

  Slovakia, Technical University in Zvolen, scientific training, X.2019

  Italy, University of Milan, scientific training, I.2020

  Czech Republic, University of Hradec Králové, scientific training, V.2022

  Czech Republic, University of South Bohemia, scientific training, V.2025

- **Number of doctoral students**

  Number of doctorates in progress: 2

  Number of promoted doctoral students: 4

- **Teaching – list of classes conducted**

  Hybridization among animals – phenomenon and consequences (lecture for doctoral students of the Doctoral School of Natural and Agricultural Sciences, in Polish and English)

Prof. dr hab. Ryszard Laskowski

- **Scientific discipline**

  Biological sciences

- **Research interest**

  Ecotoxicology and stress ecology (effects of toxicants on invertebrates, interactions between chemical and non-chemical stressors, costs of living in polluted environments, influence of toxic chemicals on life history traits, metal and pesticide toxicokinetics). Biogeochemistry (organic matter decomposition, nutrient cycling in terrestrial ecosystems, industrial pollutants in biogeochemical cycles)

- **Number of scientific publications**

  JCR journals: 116

  Other journals and book chapters: 32

- **Number of citations**

  Web of Science: 5639

  Google Scholar: 8383

- **Hirsch index**

  Web of Science: 39

  Google Scholar: 45

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Blanco-Moreno, J. M., Caballero-López, B., Cook, S. M., P. Foster, S. P., Frydryszak, D., **Laskowski, R.**, Ortega-Ramos, P., Rasko, M., Reichard, P., Sousa J. P., Sowa, G., Śliwińska-Grochot, R., Julian Winkler, J. 2024. Species Sensitivity Distribution (SSD) profiles towards λ-cyhalothrin for key ecosystem service provider (ESP) species across five European countries representing different pedoclimatic zones. *Science of the Total Environment* 954, 176412. https://doi.org/10.1016/j.scitotenv.2024.176412

  Costa, P.A., Guilhermino, L., **Laskowski, R.** 2024. Effects of pesticide formulations containing cypermethrin or tebuconazole, individually and in mixture, on the earthworm *Eisenia fetida*. *Applied Soil Ecology* 193, 105139, https://doi.org/10.1016/j.apsoil.2023.105139

  Sowa, G., Bednarska, A.J., **Laskowski, R.** 2024. Mortality pattern of *Poecilus cupreus* beetles after repeated topical exposure to insecticide – Stochastic Death or Individual Tolerance? *Environmental Science & Technology* 58(4), 1854–1864. https://doi.org/10.1021/acs.est.3c08031

  Sowa, G., Bednarska, A.J., **Laskowski, R.** 2023. Effects of agricultural landscape structure and canola coverage on biochemical and physiological traits of the ground beetle *Poecilus cupreus*. *Ecotoxicology* 32, 1141–1151. https://doi.org/10.1007/s10646-023-02701-3

  Timofieieva, O., Vlaschenko, A., **Laskowski, R.**, 2023. Could a city-dwelling bat (*Pipistrellus kuhlii*) serve as a bioindicator species for trace metals pollution? *Science of the Total Environment* 857, 159556. https://doi.org/10.1016/j.scitotenv.2022.159556

  Mokkapati J.S., Bednarska, A.J., **Laskowski. R.** 2022. Physiological and biochemical response of the solitary bee Osmia bicornis exposed to three insecticide-based agrochemicals. *Ecotoxicology and Environmental Safety* 230, 113095. https://doi.org/10.1016/j.ecoenv.2021.113095

Mokkapati J.S., Bednarska, A.J., Choczyński, M., **Laskowski. R.** 2022. Toxicokinetics of three insecticides in the female adult solitary bee *Osmia bicornis*. *Environmental Pollution* 293, 118610. https://doi.org/10.1016/j.envpol.2021.118610

Bednarska A.J., Mikołajczyk, Ł., Ziółkowska, E., Kocjan, K., Wnęk, A., Mokkapati, J.S., Teper, D., Kaczyński, P., Łozowicka, B., Śliwińska, R., **Laskowski, R.** 2022. Effects of agricultural landscape structure, insecticide residues, and pollen diversity on the life-history traits of the red mason bee Osmia bicornis. *Science of the Total Environment* 809, 151142. https://doi.org/10.1016/j.scitotenv.2021.151142

Timofieieva, O., Świergosz-Kowalewska, R., **Laskowski, R.**, Vlaschenko, A., 2021. Wing membrane and Fur as indicators of metal exposure and contamination of internal tissues in bats. *Environmental Pollution* 276. https://doi.org/10.1016/j.envpol.2021.116703

Ziółkowska, E., Topping, C.J., Bednarska, A.J., **Laskowski, R**. 2021. Supporting non-target arthropods in agroecosystems: modelling effects of insecticides and landscape structure on carabids in agricultural landscapes. *Science of the Total Environment* 774, 145746. https://doi.org/10.1016/j.scitotenv.2021.145746

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 12 – leader

  International projects: 9 – leader

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024–2027: Horizon Europe Project "PollinERA – Understanding pesticide-Pollinator interactions to support EU Environmental Risk Assessment and policy"; leader

  2018–2023: Horizon 2020 Project "EcoStack – Stacking of ecosystem services: mechanisms and interactions for optimal crop protection, pollination enhancement, and productivity"; leader

  2016–2019: National Center for Science, Grant No 2015/19/B/NZ8/01939 "Owady pożyteczne w krajobrazie rolniczym: modelowanie wpływu pestycydów i struktury krajobrazu" (Beneficial insects in agricultural landscape: modelling effect of pesticides and landscape structure); leader

  2011–2014: National Center for Science, Grant No 0384/B/P01/2011/40 "Toksykokinetyka metali u bezkręgowców: modele i fizjologia" (Toxicokinetics of metals of metals in invertebrates: models and physiology"; leader

  2009–2013: EC 7th Framework Project "CREAM – Mechanistic Effect Models for Ecological Risk Assessment of Chemicals" – Marie Curie Initial Training Network, Contract no. PITN-GA-2009-238148; leader

  2004–2009: EC 6th Framework Project "NOMIRACLE – Novel Methods for Integrated Risk Assessment of Cumulative Stressors in Europe", Contract no. 003956-2; leader

  2005–2008: SPUB Nr 158/E-338/6. PR UE/DIE 279/2005-2008 – Nowe metody zintegrowanej oceny ryzyka skumulowanego działania czynników stresogennych w Europie (*in Polish*); leader

2005–2007: SPUB Nr 158/E-338/SPB/6. PR UE/DIE 358/2004-2007 – “Ocena zagrożeń środowiska na wielką skalę za pomocą testowanych metod” (Co-PI) (*in Polish*); leader

2004–2008: EC 6th Framework Project “ALARM – Assessing Large-scale environmental Risks with tested Methods” (Co-PI); Contract no. 506675; leader

- **Number of national/international awards for scientific achievements**

  National awards: multiple awards

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  Multiple Awards by the Rector of Jagiellonian University for scientific achievements

  Stanford/Elsevier World’s Top 2% Scientists 2024, 2025

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Member of the Editorial Advisory Board of the journal *Applied Soil Ecology*: since 1997

  Member of the Scientific Panel on Plant Protection Products and their Residues (PPR) of the European Food Safety Authority (2012–2018)

  Polish Delegate to the ESF – COST Technical Committee on Environment: since 2004;

  Member of the Polish National Committee for the Cooperation with European Science Foundation (ESF): since 2003

  Member of the Council of the Tropical Biology Association; since 2002

  Member of the Steering Committee of the European Science Foundation Programme on “Food-Web Modelling for Ecological Assessment of Terrestrial Pollution” (EcolMAT): 2000–2004

  SERAS – Soil Ecotoxicological Risk Assessment System (invited member): since 1994

  SETAC – Society of the Environmental Toxicology and Chemistry: member since 1999

  – President of the SETAC Europe Central/East branch 2008–2010

  – Vice-President of the SETAC Europe Central/East branch 2011–2013

  SECOTOX – An International Society of Ecotoxicology and Environmental Safety: 1992–1999

- **International mobility (participation in international internships and scholarships)**

  1997 – 1998: Fulbright Senior Fellowship (Oregon State University, USA, 10 months)

  1994: Leverhulme Post-doctoral Visiting Fellowship (University of Reading, UK, 10 months)

  1992: Swedish Institute Scholarship (Swedish University of Agricultural Sciences, Sweden, 6 months)

- **Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: 15

- **Teaching – list of classes conducted**

  In Polish and English (for MSc and PhD students at Jagiellonian University):

  Ecology

Ecotoxicology and Ecological Risk Assessment
Fundamentals of Ecology
Global Ecological Problems
Nature Photography
Soil Ecology
Terrestrial Ecology
Tropical Ecology
Tropical Ecology – Field Course
Advanced Research Communication

Dr hab. Nuria Selva

- **Scientific discipline**

  Biological sciences

- **Research interests**

  Global change, large carnivores, ecological interactions, animal ecology, roadless areas (In general, effect of global change on animal populations, communities and ecosystems)

- **Number of scientific publications**

  JCR journals: 112

  Other journals and book chapters: 33

- **Number of citations**

  Web of Science: 4430

  Google Scholar: 8938

- **Hirsch Index (Google Scholar, Web of Science)**

  Web of Science: 36

  Google Scholar: 48

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Albrecht A., Bocherens H., Hobson K.A., Drucker D.G., Sergiel A., Swenson J.E., Zedrosser A., Marciszak A., Iregren E., Drenzel L., Kyselý R., Lipecki G., Makowiecki D., Wagner J., Zwijacz-Kozica T., Fritz S.A., Revilla E., **Selva N.** Dynamic omnivory shapes the functional role of large carnivores under global change. *Nature Communications* (in press)

  Hertel, A. G., Parres, A., Frank, S. C., Renaud, J., **Selva, N.**, Zedrosser, A., ... & De Barba, M. 2025. Human footprint and forest disturbance reduce space use of brown bears (*Ursus arctos*) across Europe. *Global change biology* 31(1), e70011. https://onlinelibrary.wiley.com/doi/10.1111/gcb.70011

  Lucas, P. M., Thuiller, W., Talluto, L., Polaina, E., Albrecht, J., **Selva, N.**, ... & Pollock, L. J. 2025. Trophic interactions are key to understanding the effects of global change on the distribution and functional role of the brown bear. *Global Change Biology* 31(6), e70252. https://doi.org/10.1111/gcb.70252

  Hertel, A. G., Albrecht, J., **Selva**, N., Sergiel, A., Hobson, K. A., Janz, D. M., ... & Mueller, T. 2024. Ontogeny shapes individual dietary specialization in female European brown bears (*Ursus arctos*). *Nature Communications* 15(1), 10406. https://www.nature.com/articles/s41467-024-54722-z

  Selva N., Hobson K.A., Zalewski A., Cortés-Avizanda A., Donázar J.A. 2024. Mammal communities of primeval forests as sentinels of global change. *Global Change Biology* 30, e17045. https://onlinelibrary.wiley.com/doi/10.1111/gcb.17045

  Stiegler, J., Gallagher, C. A., Hering, R., Müller, T., Tucker, M., Apollonio, M., ... & Blaum, N. 2024. Mammals show faster recovery from capture and tagging in human-disturbed landscapes. *Nature communications* 15(1), 8079. https://www.nature.com/articles/s41467-024-52381-8

Tucker, M. A., Schipper, A. M., Adams, T. S., Attias, N., Avgar, T., Babic, N. L., ... & Stacy-Dawes, J. 2023. Behavioral responses of terrestrial mammals to COVID-19 lockdowns. *Science* 380(6649), 1059-1064. https://www.science.org/doi/10.1126/science.abo6499

Berezowska-Cnota T., Konopiński M.K., Bartoń K., Bautista C., Revilla E., Naves J., Biedrzycka A., Fedyń H., Fernández N., Jastrzębski T., Pirga B., Viota M., Wojtas Z., **Selva N.** 2023. Individuality matters in human-wildlife conflicts: patterns and fraction of damage-making brown bears in the Northeastern Carpathians. *Journal of Applied Ecology* 60 (6), 1127- 1138. https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/1365-2664.14388

Bautista, C., Revilla, E., Berezowska-Cnota, T., Fernández, N., Naves, J., & **Selva, N.** 2021. Spatial ecology of conflicts: Unravelling patterns of wildlife damage at multiple scales. *Proceedings of the Royal Society B* 288(1958), 20211394. https://royalsocietypublishing.org/doi/10.1098/rspb.2021.1394

Moleón M., **Selva N.**, Sánchez-Zapata J.A. 2020. The components and spatiotemporal dimension of carrion biomass quantification. *Trends in Ecology & Evolution* 35, 91- 92. https://www.cell.com/trends/ecology-evolution/abstract/S0169-5347(19)30287-3

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 7 – leader, 8 – investigator

  International projects: – leader, 2 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024 – 2027: Building a scalable WILDlife monitoring system by integrating remote camera sampling and artificial INTELligence with Essential Biodiversity Variables (WildINTEL). National Science Centre, BiodivERsA+ call BiodivMon (UMO-2023/05/Y/NZ8/00104); project coordinator

  2017 – 2020: Functional connectivity and stability of European ecological networks – a case study of the brown bear. National Science Centre. 2016/22/Z/NZ8/00121 BEARCONNECT; leader

- **Number of national/international awards for scientific achievements**

  National awards: 1

  International awards: 1

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2018: Scientific Award of the President of the Polish Academy of Sciences for a publication in the prestigious journal Science: Ibisch P.L., Hoffmann M.T., Kreft S., Pe'er G., Kati V., Biber-Freudenberger L., DellaSala D.A., Vale M.M., Hobson P.R., Selva N. 2016. a global map of roadless areas and their conservation status. Science 354 (6318): 1423-1427

2024: Ilkka Hanski European Distinguished Service Award from the Society for Conservation Biology for important scientific work on the impact of global change and for scientific support for the conservation of the Bialowieza Forest and the launch of the Roadless Initiative (SCB Europe Distinguished Service Award 2024 for long-standing commitment to the SCB Mission of conserving Earth's biological diversity).

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  European Section of the Society for Conservation Biology and Policy Committee from 2007

  Science for the Carpathians (S4C) from 2012

  Member Large Carnivore Initiative for Europe from 2014

  Member IUCN Bear Specialist Group (2013–2016)

  Member of the Scientific Committee the IENE 2016 conference IENE 2016 International Conference on Ecology and Transportation "Integrating Transport Infrastructure with Living Landscapes", Lyon, France, 30.08-02.09.2016

  Member Policy Committee and Roadless Initiative of the Society for Conservation Biology-Europe Section

  Member of the Board of Directors and Chairman of the European Policy Committee of the section Society for Conservation Biology (2008–2010)

  Expert of the Polish-Slovak working group on large carnivores, set up by the Ministry of the Environment in 2012

  Member of the Scientific Committee European Congress of Biology Conservation, ECCB2009 i ECCB2012

  Associate Editor – journal Ursus

  Associate Editor Wildlife Biology

  Co-chair of the Scientific Committee and member of the Executive Committee 5th European Congress of Conservation Biology ECCB2018. 12-15.06.2018, Jyväskylä, Finlandia

- **International mobility (participation in international internships and scholarships)**

  Marie Curie Fellowship in the Department of Ecological Modelling at the Helmholtz Centre for Environmental Research (UFZ) in Leipzig, Germany (2004).

  Mobility grant, NAWA, Bekker. Mammal species and assemblages as indicators of global environmental change, Spain (a year, 2021–2022)

  MArine subsidies in DOñaNA coastal ecosystems: quantification, partitioning and trends under global change (MADONA), University of Huelva (María Zambrano fellowship) Spain (2 year, 2022–2024)

- **Number of doctoral students**

  Number of doctorates in progress: 1

  Number of promoted doctoral students: 3 as supervisor and 2 as auxiliary supervisor

- **Teaching – list of classes conducted**

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Dr hab. Piotr Skórka

- **Scientific discipline**

  Biological sciences

- **Research interests**

  Landscape ecology, behavioural ecology, road ecology, community ecology, evolution, bird, butterflies, statistics

- **Number of scientific publications**

  JCR journals: 123

  Other journals and book chapters: 20

- **Number of citations**

  Web of Science: 3116

  Google Scholar: 5146

- **Indeks Hirscha**

  Web of Science: 32

  Google Scholar: 41

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Bełcik, M., Lenda, M., Amano, T., Pustkowiak, S., **Skórka, P.** 2025. Social information can alter the effect of habitat fragmentation on bird diversity and improve its stability. *Forest Ecology and Management* 591, 122810. https://doi.org/10.1016/j.foreco.2025.122810

  Skórka, P., Grzywacz, B., Bełcik, M., Tryjanowski, P. 2024. Environmental and social correlates of the plumage color polymorphism in an urban dweller, feral pigeon (Columba livia f. domestica). *Scientific Reports* 14, 31400. https://doi.org/10.1038/s41598-024-82937-z

  Lenda, M., **Skórka, P.** 2023. Land sparing must protect common species too. *Nature* 620 (7974), 492-492. https://www.nature.com/articles/d41586-023-02568-8

  Grzywacz, B., **Skórka, P.** 2021. Genome size versus geographic range size in birds. *PeerJ* 9, e10868. https://doi.org/10.7717/peerj.10868

  Pustkowiak, S., Kwieciński, Z., Lenda, M., Żmihorski, M., Rosin, Z.M., Tryjanowski, P., **Skórka, P.** 2021. Small things are important: the value of singular point elements for birds in agricultural landscapes. *Biological Reviews* 96, 1386-1403. https://doi.org/10.1111/brv.12707

  Skórka, P., Banach, A., Banasiak, M., Bokalska-Rajba, J., Bonk, M., Czachura, P., García-Rodríguez, A., Gaspar, G., Hordyńska, N., Kaczmarczyk, A., Kapłoniak, K., Kociński, M., Łopata, B., Mazur, E., Mirzaei, M., Misiewicz, A., Parres, A., Przystałkowska, A., Pustkowiak, S., Raczyński, M., Sadura, I., Splitt, A., Stanek, M., Sternalski, J., Wierzbicka, A.,Wiorek, M., Zduńczyk, P. 2021. Congruence between the prioritisation of conservation problems at the local and national scale: an evaluation by environmental scientists in Poland. *Environmental Science and Pollution Research* 28 (27), 35317-35326. https://link.springer.com/article/10.1007/s11356-021-14741-5

  Bełcik, M., Lenda, M.L., Amano, T., **Skórka, P**. 2020. Different response of the taxonomic, phylogenetic and functional diversity of birds to forest fragmentation. *Scientific Reports* 10 (1), 20320. https://doi.org/10.1038/s41598-020-76917-2

Skórka, P., Grzywacz, B., Moroń, D., Lenda, M. 2020. The macroecology of the COVID-19 pandemic in the Anthropocene. *PLOS ONE* 15 (7), e0236856. https://doi.org/10.1371/journal.pone.0236856

Lenda, M., **Skórka, P.,** Kuszewska, K., Moroń, D., Bełcik, M., Baczek Kwinta, R., Janowiak, F., Duncan, D.H., Vesk, P.A., Possingham H.P., Knops J.M.H. 2021. Misinformation, internet honey trading and beekeepers drive a plant invasion. *Ecology Letters* 24 (2), 165-169. https://doi.org/10.1111/ele.13645

Lenda, M., **Skórka, P.,** Possingham, H., Knops, J.M.H. 2023.Abandoned land: Linked to biological invasions. *Science* 381, 277-277. https://doi.org/10.1126/science.adi7833

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 5 – leader

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2016–2022: „Interactive effects of the social information and landascape structure on the behaviour and distribution of animals" Sonata Bis 4 National Science Centre Poland; leader

- **Number of national/international awards for scientific achievements**

  National awards: 2

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2006–2007: Stipend of the Foundation for Polish Science "Start" (24 months)

  2010–2013 The Minister of Science and Higher Education Scholarship for Outstanding Junior Researchers (36 months)

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  British Ecological Society (up to 2022

  Editorial board in Acta Ornithologica, Polish Journal of Ecology

- **International mobility (participation in international internships and scholarships)**

  September-October 2012 (one month) – University of Cambridge (UK)

- **Number of doctoral students**

  Number of doctorates in progress: 1

  Number of promoted doctoral students: 4

- **Teaching – list of classes conducted**

An introduction to R (course for PhD students in the School of Natural and Agricultural Sciences) (in Polish)

Statistics in R (course for PhD students in the School of Natural and Agricultural Sciences) (in Polish)

Ecology and nature conservation (course for PhD students in the School of Natural and Agricultural Sciences) (in English)

3.3.2 Employee CVs – Agriculture and horticultire

Profiles of academic staff teaching at the Doctoral School of Natural and Agricultural Sciences

In the field of agriculture and horticulture, the CVs of the following persons are presented:

1) Dr hab. Ewa Dubas
2) Prof. dr hab. inż. Anna Janeczko
3) Dr hab. inż. Marta Libik-Konieczny
4) Dr inż. Agnieszka Ostrowska
5) Prof. dr hab. inż. Iwona Żur

Dr hab. Ewa Dubas

- **Scientific discipline**

  Agricuture and horticulture

- **Research interests**

  The mechanisms of gametogenesis, non-zygotic embryogenesis (androgenesis), and embryo formation (cell cycle, cytoskeleton, hormonal and (epi)genetic control, embryo polarity, programmed cell death) in crops. Plant biotechnology, in vitro culture, doubled haploids for accelerated plant breeding. Pathogenesis

- **Number of scientific publications**

  JCR journals: 59

  Other journals and book chapters: 5

- **Number of citations**

  Web of Science: 1055

  Google Scholar: 1854

- **Hirsch index**

  Web of Science: 18

  Google Scholar: 27

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Dubas, E., Krzewska, M., Surówka, E., Kopeć, P., Springer, A., Janowiak, F., Weigt, D., Mikołajczyk, S.K., Telk, A., Żur I. 2024. New prospects for improving microspore embryogenesis induction in highly recalcitrant winter wheat lines. *Plants-Basel* 13, 363. https://doi.org/10.3390/plants1303036

  Nowicka, A., Kovacik, M., Maksylewicz, A., Kopeć, P., **Dubas, E.**, Krzewska, M., Springer, A., Hoffie, R.E., Daghma, D.S., Milec, Z., Pecinka, A., Kumlehn, J., Żur I. 2024. The transcriptional landscape of the developmental switch from regular pollen maturation towards microspore-derived plant regeneration in barley. *Crop Journal* 12, 1064-1080. https://doi.org/10.1016/j.cj.2024.07.003

  Dubas, E., Castillo, A.M., Żur, I., Krzewska, M., Vallés, M.P. 2021. Microtubule organization changes severely after mannitol and n-butanol treatments inducing microspore embryogenesis in bread wheat. *BMC Plant Biology* 21, 586. https://doi.org/10.1186/s12870-021-03345-3

  Dubas, E., Żur I., Moravcikova, J., Fodor, J., Krzewska, M., Surówka, E., Nowicka, A., Gersi, Z. 2021. Proteins, small peptides and other signaling molecules identified as inconspicuous but possibly important players in microspores reprogramming toward embryogenesis. *Frontiers in Sustainable Food Systems* 5, 745865. https://doi.org/10.3389/fsufs.2021.745865

  Zieliński, K., **Dubas, E.**, Gersi, Z., Krzewska, M., Janas, A., Nowicka, A., Matusíková, I., Żur, I., Sakuda, S., Moravcíková, J. 2021. β-1,3-glucanases and chitinases participate in the stress-related defence mechanisms that are possibly connected with modulation of arabinogalactan proteins (AGP) required for the androgenesis initiation in rye (*Secale cereale* L.). *Plant Science* 302, 10700. https://doi.org/10.1016/j.plantsci.2020.110700

Żur I., **Dubas E.**, Krzewska M. et al. 2021. Triticale and barley microspore embryogenesis induction requires both reactive oxygen species generation and efficient system of antioxidative defence. *Plant Cell Tissue and Organ Culture* 145, 347-366. https://doi.org/10.1007/s11240-021-02012-7

- Zieliński, K., Krzewska, M., Żur, I., Juzoń, K., Kopeć, P., Nowicka, A., Moravčíková, J., Skrzypek, E., **Dubas, E**. 2020. The effect of glutathione and mannitol on androgenesis in anther and isolated microspore cultures of rye (*Secale cereale* L.). *Plant Cell Tissue and Organ Culture* 140, 577-592. https://doi.org/10.1007/s11240-019-01754-9
- Żur, I., **Dubas, E.**, Krzewska, M., Zieliński, K., Fodor, J., Janowiak, F. 2019. Glutathione provides antioxidative defence and promotes microspore-derived embryo development in isolated microspore cultures of triticale (× *Triticosecale* Wittm.). *Plant Cell Reports* 38, 195-209. https://doi.org/10.1007/s00299-018-2362-x
- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 2 – leader, 16 – investigator

  International projects: 4 – leader, 9 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2021–2026: "Identification of factors conditioning the induction of microspore embryogenesis in common wheat (Triticum aestivum L.)". Biological Progress, Ministry of Agriculture and Rural Development (MRiRW), Task No. 4; investigator

  2017–2020: "Development of an efficient method for producing doubled haploids via androgenesis using Polish wheat breeding materials (*Triticum aestivum* L.)". Tango2/NCBR/NCN 340285/NCBR/2017; investigator

  2016–2021: "The role of oxidative stress in the regulation of embryogenesis in isolated microspore cultures of triticale (× *Triticosecale* Wittm.) and barley (*Hordeum vulgare* L.)". National Science Centre (NCN) 2015/18/M/NZ3/00348; investigator

  2015–2018: "Identification of factors determining the efficiency of doubled haploid production in rye (*Secale cereale* L.) using androgenesis and distant hybridisation methods". Biological Progress, HOR.hn.802.15.2018, Task No. 84; leader

- **Number of national/international awards for scientific achievements**

  National awards: 2

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2012–2013: Director's Award (IPP PAS) for the highest number of publications in JCR-indexed journals in 2011 and 2012 among junior researchers

  2007: Distinction for the doctoral dissertation titled "The use of isolated microspore culture in oilseed rape (*Brassica napus* L.) as a model for studying early stages of embryonic

development", awarded by the Faculty of Biology and Earth Sciences of the Jagiellonian University, September 18th. 2007

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  2017: External reviewer of international research projects for the Fund for Scientific Research – FNRS, the Slovak Research and Development Agency, and the Czech National Agency.

  2013–2017: Polish delegate to the Management Committee of COST Action FA1306 "The quest for tolerant varieties: Phenotyping at the Plant and Cellular Level" (contractor).

  2010–2013: Polish delegate to the Management Committee of COST Action FA0903 "Harnessing Plant Reproduction for Crop Improvement" (contractor).

- **International mobility (participation in international internships and scholarships)**

  Research fellowship at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2018)

  Research fellowship at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2016)

  Research fellowship at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2014)

  Research fellowships at Plant Systems Biology Department (VIB), Ghent University, Ghent, Belgium (4 weeks, 2012)

  Microspore embryogenesis in triticale (x*Triticosecale* Wittm.): assignment of genes to embryo formation" (individual research project, 2 weeks) STMS of COST FA0903 "Harnessing plant reproduction for crop improvement" at EEAD-CSIC, Zaragoza, Spain, a role: the main researcher (2 weeks, 2021)

  Research fellowships at Plant Systems Biology Department (VIB), Ghent University, Ghent, Belgium (3 weeks, 2011).

  Research fellowship at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2011)

  Research fellowships at Plant Systems Biology Department (VIB), Ghent University, Ghent, Belgium (1 week, 2010)

  Research fellowship at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2010)

  Research "NOBEL" fellowships "Transformation of microspores and androgenic embryos of rapeseed (Brassica napus)" in frame of "Investment into science – Investment into future. Joint project of three scientific centers from Krakow, Olsztyn and Warsaw" at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (1 week, 2010)

  Research "SAIA" fellowships "Techniques of recombinant DNA" (individual research project) at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (4 weeks, 2010)

  Research fellowships at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (2009)

  Research fellowships at The Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Nitra, Slovakia (2008)

„Badania nad wybranymi parametrami fizjologicznymi i molekularnymi mogącymi modyfikować poziom odporności roślin na patogeny grzybowe". (Uczestnik projektu) Współpraca bilateralna Polskiej i Słowackiej Akademii Nauk, Institute of Plant Genetics and Biotechnology, Nitra, Słowacja, (1 week, 2008)

Research fellowships at Wageningen University and Research Centre in the frame of FP5 project CROPSTRESS and COST 851 Action STSM mission (2003-2004)

- **Number of doctoral students**

  Number of doctorates in progress: 2

  Number of promoted doctoral students: 2

- **Teaching – list of classes conducted**

  COURSES FOR STUDENTS (lectures, labs, seminars):

  2019–2020: Lectures and labs for undergraduate students, Plant Biology (lectures) WBNZ-823, 104 hours; Plant Physiology, (labs) WBNZ-971, 64 hours

  2019: Coordinator of the course "Modern analytical techniques in research on haploidization of plants" – lectures and labs *in English* for participants of the PAS Natural Sciences Doctoral Program, Kraków

  2016–2019: Lectures for PAS Doctoral Program participants, Kraków

  2017: Laboratory classes for Postgraduate Course participants "Modern methods in plant improvement", University of Agriculture, Kraków

  2015–2019: Lecture "Auxins" for doctoral students, Jagiellonian University, Kraków

  2018: Lecture in the doctoral course "New achievements in botany " Institute of Botany, Jagiellonian University

  2015–2017: Lecture "Fluorescence and confocal microscopy" at the Pedagogical University, Kraków

  2009–2011: Contract at the Pedagogical University, Kraków – supervision of two master's theses and courses in the postgraduate Molecular Biology and Biotechnology program funded by the European Social Fund

  ADDITIONAL LECTURES AND WORKSHOPS (outside regular student courses):

  2019:

  – Scientific supervision for a scholarship project (Regional Scholarship Program, Malopolska Region, 2014–2020)

  – Lecture series: "Cytoskeleton in plant cells", IPP PAS, Kraków

  – Workshop series: "Organization of microtubular cytoskeleton in isolated wheat microspores", IPP PAS, Kraków May-July 2019

  2018: Lecture: "Competence of plant cells under in vitro conditions" (Regional Scholarship Program, Malopolska Region, 2014–2020)

Prof. dr hab. inż. Anna Janeczko

- **Scientific discipline**

  Agriculture and horticulture

- **Research interests**

  Steroid regulators in plants; occurrence and physiological activity – role in plant growth/ development processes and stress tolerance; possibilities of practical application

- **Number of scientific publications**

  JCR journals: 81

  Other journals and book chapters: 16

- **Number of citations**

  Web of Science: 2113

  Google Scholar: –

- **Hirsch index**

  Web of Science: 25

  Google Scholar: –

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Janeczko, A., Oklestkova, J., Jurczyk, B., Drygaś, B. 2025. Pregnane derivatives in wheat (*Triticum aestivum*) and their potential role in generative development. *Journal of Plant Research* 138, 377–388. https://doi.org/10.1007/s10265-024-01614-4

  Stachurska, J., **Janeczko, A.** 2024. Physiological and Biochemical Background of Deacclimation in Plants, with Special Attention Being Paid to Crops: A Minireview. *Agronomy* 14, 419. https://doi.org/10.3390/agronomy14030419

  Słomczyńska, K., Mirek, P., Panowski, A., Saja-Garbarz, D., **Janeczko, A.**, Skoczowski, A. 2024. Assessing the feasibility of recovering heat from Mung Bean sprout production for food consumption. *Thermochimica Acta* 731, 179654. https://doi.org/10.1016/j.tca.2023.179654

  Ryś, M., Stachurska, J., Rudolphi-Szydło, E., Dziurka, M., Waligórski, P., Filek, M., **Janeczko, A.** 2024. Does deacclimation reverse the changes in structural/physicochemical properties of the chloroplast membranes that are induced by cold acclimation in oilseed rape? *Plant Physiology and Biochemistry* 214, 108961. https://doi.org/10.1016/j.plaphy.2024.108961

  Ryś, M., Saja-Garbarz, D., Fodor, J., Oliwa, J., Gullner, G., Juhász, C., Kornaś, A., Skoczowski, A., Gruszka, D., **Janeczko, A.**, Barna, B. 2024. Heat pre-treatment modified host and non-host interactions of powdery mildew with barley brassinosteroid mutants and wild types. *Life* 14, 160. https://doi.org/10.3390/life14010160

  Rudolphi-Szydło, E., Dyba, B., **Janeczko, A.**, Latowski, D., Sadura, I., Filek, M. 2022. Brassinosteroid-lipid membrane interaction under low and high temperature stress in model systems. *BMC Plant Biology* 22, 246. https://doi.org/10.1186/s12870-022-03619-4

  Janeczko, A., Oklestkova, J., Tarkowská, D., Drygaś, B. 2021. Naturally occurring ecdysteroids in *Triticum aestivum* L. and evaluation of fenarimol as a potential inhibitor of their

biosynthesis in plants. *International Journal of Molecular Sciences* 22, 2855. https://doi.org/10.3390/ijms22062855

Kula-Maximenko, M., Niewiadomska, E., Maksymowicz, A., Ostrowska, A., Oklestkov,a J., Pěnčík, A., **Janeczko, A.** 2021. Insight into details of the photosynthetic light reactions and selected metabolic changes in tomato seedlings growing under various light spectra. *International Journal of Molecular Sciences* 22, 11517. https://doi.org/10.3390/ijms222111517

Janeczko, A. 2021, Estrogens and androgens in plants: The last 20 years of studies. *Plants* 10, 2783. https://doi.org/10.3390/plants10122783

Laskoś, K., Pisulewska, E., Waligórski, P., Janowiak, F., **Janeczko, A.,** Sadura, I., Polaszczyk, Sz., Czyczyło-Mysza, I. 2021. Herbal additives substantially modify antioxidant properties and tocopherol content of cold-pressed oils. *Antioxidants* 10, 781. https://doi.org/10.3390/antiox10050781

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 4 – leader, 9 – investigator

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2020–2023: “Physiological background of decclimation process in winter oilseed rape”, OPUS 18 NCN Nr 2019/35/B/NZ9/02868; project leader

  2016–2018: “Brassinosteroid signaling and biosynthesis mutants in studies of temperature stress”, OPUS 9 NCN Nr 2015/17/B/NZ9/01695; project leader

  2014–2016: “Role of steroids in regulation of cold hardening process in winter wheat”, OPUS 5 NCN Nr 2013/09/B/NZ9/01653; project leader

  2011: "Presence and mechanisms of action of steroid regulators (brassinolide, progesterone) in drought-stressed wheat”, COST Action FA0605: Signaling control of stress tolerance and production of stress protective compounds in plants (INPAS) nr 818/N-COST/2010/0; project leader

- **Number of national/international awards for scientific achievements**

  National awards: 5

  International awards: 1

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2021: The Minister of Agriculture and Rural Development (POLAND) in recognition of the outstanding achievement in the implementation of scientific research results into agricultural practice, bringing economic and social effects, awarded in 2021 a distinction to the team from the Institute of Plant Physiology of the Polish Academy of Sciences (Anna Janeczko was a member of this team). The implementation is entitled: "Development of a line of

dietary/food products with high pro-health properties"2020: Award “MERITORIOUS FOR THE DEVELOPMENT OF SCIENCE” – given by Polish Forum of Intelligent Development; 25.11.2020, Tychy

2019: Award "SCIENTIST of the FUTURE", Polish Forum of Inteligent Development). Award is given for works on brassinosteroids – hormons with potential of practical applications; 28-29.11. 2019, Uniejów/Łódź

2011: Habilitation with Distinction – The Council of The Faculty of Agriculture and Economics of the Agricultural University in Kraków

2001: Doctoral Theses with Distinction – The Council of The Faculty of Agriculture and Economics of the Agricultural University in Kraków

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Member European Federation of Biotechnology

  Member International Society for Biological Calorimetry

  Co-organizer of international conference XX ISBC “Biological Calorimetry: past, present and future” – 13-15 June 2018, Cracow

- **International mobility (participation in international internships and scholarships)**

  From 2004 – now, constant cooperation with Plant Protection Institute, Hungarian Academy of Sciences [current name: Plant Protection Institute, Centre for Agricultural Research, Hungarian Academy of Sciences (Budapest, Hungary)]

  Bilateral projects (joint research projects – exchange between Polish and Hungarian Academies):

  2020–2023: The role of brassinosteroid hormones in the resistance of barley against powdery mildew infection and abiotic stress effects

  2017–2019: Hormonal and transcriptional changes in pathogen-infected barley and tobacco plants

  2014–2016: The role of steroid regulators in response of crop plants to abiotic and biotic stresses (PART2)

  2011–2013: The role of steroid regulators in response of crop plants to abiotic and biotic stresses (PART1)

  2008–2010: Comparative studies of the resistance of crop plant varieties to diseases and chemical pollutants using isothermal calorimetry and measurement of photosynthetic efficiency

  From 2005 – now, constant cooperation with Laboratory of Growth Regulators, Faculty of Science, Palacký University Olomouc & Institute of Experimental Botany Academy of Sciences of the Czech Republic (Olomouc, Czech Republic)

  Bilateral projects (joint research projects – exchange between Polish and Czech Republic Academies):

  2017–2019: Interplay between steroids in regulation of wheat generative development

  2012–2014: Role of steroid compounds in plant response to biotic and abiotic stresses

  2009–2011: Steroids – plant flowering induction and response to drought stress

2006–2008: Changes of brassinosteroid levels in crop plants growing in different environmental conditions

- **Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: 2

- **Teaching (list of classes conducted)**

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Dr hab. inż. Marta Libik-Konieczny

- **Scientific discipline**

  Agriculture and horticulture

- **Research interests**

  Physiology of environmental stress in plants: oxidative and nitrosative stress, the regulatory role of stress factors in plant growth and development processes, activity of the antioxidant system, signaling pathways in response to stress, secondary metabolites as components of the plant defense system, genetic manipulations, plant cell transformation

- **Number of scientific publications**

  JCR journals: 45

  Other journals and book chapters: 3

- **Number of citations**

  Web of Science: 962

  Google Scholar: –

- **Hirsch index**

  Web of Science: 16

  Google Scholar: –

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Gula, E., Dziurka, M., Hordyńska, N., **Libik-Konieczny, M.** 2024. Regulatory effect of pipecolic acid (Pip) on the antioxidant system activity of *Mesembryanthemum crystallinum* plants exposed to bacterial treatment. *Physiologia Plantarum* 176, e14583. https://doi.org/10.1111/ppl.14583

  Libik-Konieczny, M., Michalec-Warzecha, Ż., Dziurka, M., Zastawny, O., Konieczny, R., Rozpądek, P., Pistelli, L. 2020. Steviol glycosides profile in *Stevia rebaudiana* Bertoni hairy roots cultured under oxidative stress-inducing conditions. *Applied Microbiology and Biotechnology* 104, 1-13. https://doi.org/10.1007/s00253-020-10661-5

  Janeczko, A., Pociecha, E., Dziurka, M., Jurczyk, B., **Libik-Konieczny, M.**, Oklestkova, J., Novák, O., Pilarska, M., Filek, M., Rudolphi-Skórska, E., Sadura, I., Siwek, A. 20219. Changes in content of steroid regulators during cold hardening of winter wheat – Steroid physiological/biochemical activity and impact on frost tolerance. *Plant Physiology and Biochemistry* 139, 215-228. https://doi.org/10.1016/j.plaphy.2019.03.020

  Tuleja, M., Santocki, M., Dziurka, M., Musiał, K., Capecka, E., **Libik-Konieczny, M**. 2021. The search towards cyto-embryological and physiological obstacles in sexual reproduction of *Stevia rebaudiana* Bertoni. *Scientia Horticulturae* 228, 110342. https://doi.org/10.1016/j.scienta.2021.110342

  Saja-Garbarz, D., **Libik-Konieczny, M.**, Fellner, M., Jurczyk, B., Janowiak, F. 2022. Silicon-induced alterations in the expression of aquaporins and antioxidant system activity in well-watered and drought-stressed oilseed rape. *Plant Physiology and Biochemistry* 174, 73-86. https://doi.org/10.1016/j.plaphy.2022.01.033

Saja-Garbarz, D., **Libik-Konieczny, M**., Janowiak, F. 2024. Silicon improves root functioning and water management as well as alleviates oxidative stress in oilseed rape under drought conditions. *Frontiers in Plant Science* 65, 1160–1172. https://doi.org/10.3389/fpls.2024.1359747

Sadura, I., **Libik-Konieczny, M.**, Jurczyk, B., Gruszka, D., Janeczko, A. 2020. HSP transcript and protein accumulation in brassinosteroid barley mutants acclimated to low and high temperatures. *International Journal of Molecular Sciences* 21, 1889. https://doi.org/10.3390/ijms21051889

Sadura, I., **Libik-Konieczny, M.**, Jurczyk, B., Gruszka, D., Janeczko, A. 2020. Plasma membrane ATPase and the aquaporin HvPIP1 in barley brassinosteroid mutants acclimated to high and low temperature. *Journal of Plant Physiology* 244, 153090. https://doi.org/10.1016/j.jplph.2019.153090

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 2 – leader, 8 – investigator

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2016–2018: “Barley mutants with impaired brassinosteroid synthesis and perception in studies on temperature stress”, NCN No. 2015/17/B/NZ9/01695; investigator

  2014–2016: “Characterization of the antioxidant system and evaluation of endogenous gibberellin levels in *Stevia rebaudiana* Bertoni plants transformed with Agrobacterium rhizogenes and obtained via micropropagation”, NCN No. 2013/09/N/NZ9/01650; investigator

  2013–2016: “Effect of oxidative stress on the synthesis of steviol glycosides in *Stevia rebaudiana* Bertoni”, NCN No. 2012/05/B/NZ9/01035; investigator

  2010–2013: “Integration of carbon, nitrogen, and sulfur metabolism in cucumber during infection with *Pseudomonas syringae* pv. *lachrymans* under natural defense elicitation and varying nitrogen fertilization”, MNiSW No. N310 302339; investigator

  2009–2012: “Physicochemical indicators of interactions between polyamines and other antioxidants under drought and salinity stress”, NCN, COST Action FA0605 (INPAS); investigator

  2009–2010: “Pathogen tolerance conferred by H_2O_2-generating glucose oxidase in transgenic tobacco”, carried out at the Faculty of Biotechnology, DaYeh University, Da-Tsuen, Changhua, Taiwan (Taiwanese coordinator: Dr. Chih-Wen Yu), as part of bilateral cooperation between the Polish Academy of Sciences and the National Science Council in Taiwan; investigator

- **Number of national/international awards for scientific achievements**

  National awards: 1

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2010: Certificate of Recognition from the 5th Division of Agricultural, Forestry and Veterinary Sciences of the Polish Academy of Sciences for the research work entitled *"Regulation of redox balance in assimilatory leaf tissues"* – awarded to the research team led by Prof. Z. Miszalski

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Assistant Editor in Frontiers in Plant Science, section Plant Abiotic Stress

  Assistant Editor in Plant Biosystems

  Participation in the World Stevia Organisation (WSO), Paris, France

- **International mobility (participation in international internships and scholarships)**

  Faculty of Agriculture, Food and Environment, University of Pisa, Italy, within the framework of the NCN project No. 2013/09/N/NZ9/01650 (1 week, 2014)

  Institute of Botany, University of Kiel (Dr. Ch. Desel), Germany), within the framework of the KBN project No. N303 356935 (2 weeks, 2010)

  CROPSTRESS Program – *Centre of Research on the Biology of Plants Subjected to Environmental Stress in Sustainable Agricultural Production* (2003–2006)

  Course: "*Calcium Signals in Plant Cells under Cold Acclimation*", Scuola Superiore di Studi Universitari e di Perfezionamento S. Anna, Pisa, Italy (1 week, 1996)

  Scholarship funded by the Italian Government, research internship at the Institute of Botany, University of Padua (Prof. P. Mariani), Italy (12 months, 1996-1997)

  TEMPUS Program – research internship at the Department of Botany, Wageningen University (Prof. A. Van Lammeren), The Netherlands (3 months, 1993)

  TEMPUS Program – studies at the University of Manchester (Prof. P. Young), United Kingdom (6 months,1992)

- **Number of doctoral students**

  Number of doctorates in progress: 1

  Number of promoted doctoral students: 1

- **Teaching (list of classes conducted)**

  Co-organization of exercises and conducting practical classes at the Franciszek Górski Institute of Plant Physiology, Polish Academy of Sciences (IFR PAN), as part of the training course "Methods of Molecular Genetics in Plant Biology," IFR PAN Kraków, March 16–19, 2005 (Ślesak I., Libik M., Miszalski Z. "Analysis of native proteins by polyacrylamide gel electrophoresis (PAGE)," Libik M., Ślesak I., Miszalski Z. "Application of immunoblotting technique for protein analysis": pp. 39–42)

  Lectures for students and PhD candidates of the Jagiellonian University as part of the annual courses: "New Achievements in Botany" and "Advances in Cell Biology"

  Lectures for students at the Social Primary School No. 4 named after Juliusz Słowacki STO in Kraków, as part of the project "Sweet but Healthy – How?" No. W/1/2198/SZ/887/2023 funded by the Municipality of Kraków, November 14, 2023

Dr inż. Agnieszka Ostrowska

- **Scientific discipline**

  Agriculture and horticulture

- **Research interests**

  Physiological and molecular mechanisms of plant responses to drought stress and subsequent rehydration. Process of senescence and its potential acceleration under stress conditions. Functioning of the photosynthetic apparatus under drought conditions, including chlorophyll fluorescence and gas exchange, assessment of plants ability to recover after stress

- **Number of scientific publications**

  JCR journals: 53

  Other journals and book chapters: 7

- **Number of citations**

  Web of Science: 654

  Google Scholar: 958

- **Hirsch index**

  Web of Science: 15

  Google Scholar: 19

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Ostrowska, A., Hura, K., Hura, T. 2024. Accumulation of hydrogen peroxide in flag leaves induces effective regeneration of triticale during rehydration after water stress. *Journal of Plant Growth Regulation* 43, 3560-3569. https://doi.org/10.1007/s00344-024-11333-8

  Stachurska J., Sadura I., Jurczyk B., Rudolphi-Szydło E., Dyba B., Pociecha E., **Ostrowska A.**, Ryś M., Kvasnica M., Oklestkova J., Janeczko A. 2024. Cold acclimation and deacclimation of winter oilseed rape, with special attention being paid to the role of brassinosteroids. *International Journal of Molecular Sciences* 25, 6010. https://doi.org/10.3390/ijms25116010

  Ostrowska, A., Hura, K., Hura T. 2023. Different patterns of the photosynthetic apparatus recovery during early rehydration following drought stress in two types of intergeneric hybrid of triticale. *Environmental and Experimental Botany* 214, 105475. https://doi.org/10.1016/j.envexpbot.2023.105475

  Ostrowska, A., Dziurka, M., Hura, K., Hura T. 2023. A delay in senescence during rehydration following soil drought is a precondition for limiting yield loss in triticale. *International Agrophysics* 37, 69-78. https://doi.org/10.31545/intagr/156670

  Grzesiak M.T., Maksymowicz A., Hura K., Dziurka K., **Ostrowska A.** & Grzesiak S. 2023. Separate or combined effects of soil compaction and/or drought on gas exchange, chlorophyll fluorescence and physiological traits of maize (*Zea mays* L.) hybrids. *Journal of Agronomy and Crop Science* 209, 689-704. https://doi.org/10.1111/jac.12648

  Hura T., Hura K. **Ostrowska A.**, Gadzinowska J., Urban K. & Pawlowska B. 2023 The role of invasive plant species in drought resilience in agriculture: The case of sweet briar (*Rosa*

rubiginosa L.). *Journal of Experimental Botany* 74, 2799–2810. https://doi.org/10.1093/jxb/erac377

Hura T., Hura K., **Ostrowska A.** & Urban K. 2023. Toward resilient agriculture and environmental protection: The role of cell wall-bound phenolics. Journal of Plant Physiology 287, 54020. https://doi.org/10.1016/j.jplph.2023.154020

Hura, T., Hura, K., **Ostrowska, A.**, Urban, K. 2022. Non-rolling flag leaves use an effective mechanism to reduce water loss and light-induced damage under drought stress. *Annals of Botany* 130, 393-408. https://doi.org/10.1093/aob/mcac035

Hura, T., Hura, K., **Ostrowska, A.** 2022. Drought-stress induced physiological and molecular changes in plants. *International Journal of Molecular Sciences* 23, 4698. https://doi.org/10.3390/ijms23094698

Wójcik-Jagła, M., Rapacz, M., Dubas, E., Krzewska, M., Kopeć, P., Nowicka, A., **Ostrowska, A.**, Malaga, S., Żur, I. 2020. Candidate genes for freezing and drought tolerance selected on the basis of proteome analysis in doubled haploid lines of barley. *International Journal of Molecular Sciences* 21, 2062. https://doi.org/10.3390/ijms21062062

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: – leader, 12 – investigator

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024–2027: “Characterization of the regulatory mechanisms controlling adaptation and generative development of semi-dwarf brassinosteroid barley mutants in response to water deficit stress during the heading stage”, OPUS 26 NCN 2023/51/B/NZ2/00691; investigator

  2021–2026: “Identification of physiological and biochemical indicators of winter wheat (*Triticum aestivum* L.) tolerance to drought and high temperature stress” MRiRW project No. 3; investigator

  2019–2022: “Structural and functional characteristics of loci determining the level of cell wall phenols under conditions of water stress in triticale” OPUS 16 NCN 2018/31/B/NZ9/00298; investigator

- **Number of national/international awards for scientific achievements**

  National awards: –

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

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- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

Editorial Board Member BMC Plant Biology

Guest Editor Journal of Molecular Sciences in Special Issues:

– Physiological and Molecular Studies on Plant Bioactive Compounds under Environmental Stresses

– Drought-Stress Induced Physiological and Molecular Changes in Plants

– Drought-Stress Induced Physiological and Molecular Changes in Plants 2.0

– Drought-Stress Induced Physiological and Molecular Changes in Plants 3.0

– Plant Senescence Under Environmental Stresses

Guest Editor Agronomy in Special Issues:

– Crop Speed Breeding: The Contribution Efficiency of Environmental Factors

– Novel Systems Biology Tools for Improving Crop Tolerance to Abiotic Stressors

– Topical Advisory Panel Member

Editor Research Topic in Frontiers in Plant Science “Advanced Imaging in Plants: Exploring Development and Function”

- **International mobility (participation in international internships and scholarships)**

  –

- **Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: –

- **Teaching (list of classes conducted)**

  Led science outreach workshops for children at primary schools and kindergartens, promoting plant biology through hands-on activities

  Regularly teaches “Biochemistry and Physiology of Organisms” to doctoral students at the Doctoral School of Natural and Agricultural Sciences

Prof. dr hab. inż. Iwona Żur

- **Scientific discipline**

  Agriculture and horticulture

- **Research interests**

  The main focus of the research is the process of microspore embryogenesis (EM) as a manifestation of plant cell totipotency, leading to the production of completely homozygous doubled haploid lines. The identification of genetic, physiological and biochemical factors determining the efficient induction of EM allows the development of effective procedures to be applied in the crop plants breeding and in basic research

- **Number of scientific publications**

  JCR journals: 61

  Other journals and book chapters: 22

- **Number of citations**

  Web of Science: 1008

  Google Scholar: 1390

- **Hirsch index**

  Web of Science: 18

  Google Scholar: 25

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Nowicka, A., Kovacik, M., Maksylewicz, A., Kopeć, P., Dubas, E., Krzewska, M., Springer, A., Hoffie, R.E., Daghma, D.S., Milec, Z., Pecinka, A., Kumlehn, J., **Żur, I.** 2024 .The transcriptional landscape of the developmental switch from regular pollen maturation towards microspore-derived plant regeneration in barley. *The Crop Journal* 12, 1064-1080. https://doi.org/10.1016/j.cj.2024.07.003

  Juzoń-Sikora, K., Nowicka, A., Plačková, L., Doležal K., **Żur I.** 2023. Hormonal homeostasis associated with effective induction of triticale microspore embryogenesis. *Plant Cell, Tissue and Organ Culture* 152, 583–604. https://doi.org/10.1007/s11240-022-02433-y

  Żur, I., Kopeć, P., Surówka, E., Dubas, E., Krzewska, M., Nowicka, A., Janowiak, F., Juzoń, K., Janas, A., Barna, B., Fodor, J. 2021. Impact of ascorbate—glutathione cycle components on the effectiveness of embryogenesis induction in isolated microspore cultures of barley and triticale. *Antioxidants* 10, 1254. https://doi.org/10.3390/antiox10081254

  Żur, I., Dubas, E., Krzewska, M., Kopeć, P., Nowicka, A., Surówka, E., Gawrońska, K., Gołębiowska, G., Juzoń, K. Malaga, S. 2021. Triticale and barley microspore embryogenesis induction requires both reactive oxygen species generation and efficient system of antioxidative defence. *Plant Cell, Tissue and Organ Culture* 145, 347–366. https://doi.org/10.1007/s11240-021-02012-7

  Zieliński, K., Krzewska, M., **Żur, I**., Juzoń, K., Kopeć, P., Nowicka, A., Moravčiková, J., Skrzypek, E., Dubas, E. 2020. The effect of glutathione and mannitol on androgenesis in anther and isolated microspore cultures of rye (*Secale cereale* L.) *Plant Cell, Tissue and Organ Culture* 140, 577–592. https://doi.org/10.1007/s11240-019-01754-9

Malaga, S., Janeczko, A., Janowiak, F., Waligórski, P., Oklestkova, J., Dubas, E., Krzewska, M., Nowicka, A., Surówka, E., Rapacz, M., Wojcik‑Jagła, M., Kopeć, P., Hura, T., Ostrowska, A., Kaczanowska, K., **Żur, I.** 2020. Involvement of homocastasterone, salicylic and abscisic acids in the regulation of drought and freezing tolerance in doubled haploid lines of winter barley, 2020, *Plant Growth Regulation* 90, 173–188. https://doi.org/10.1007/s10725-019-00544-9

Nowicka, A., Juzoń, K., Krzewska, M., Dziurka, M., Dubas, E., Kopeć, P., Zieliński, K., **Żur, I.** 2019. Chemically-induced DNA de-methylation alters the effectiveness of microspore embryogenesis in triticale. *Plant Science* 287, 110189. https://doi.org/10.3390/plants13030363

Żur, I., Dubas, E., Krzewska, M., Zieliński, K., Fodor, J., Janowiak, F. 2019. Glutathione provides antioxidative defence and promotes microspore-derived embryo development in isolated microspore cultures of triticale (*× Triticosecale* Wittm.). *Plant Cell Reports* 38, 195–209. https://doi.org/10.1007/s00299-018-2362-x

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 5 – leader, 9 – investigator

  International projects: 3 – leader, 9 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2016–2019: “Role of oxidative stress in the regulation of embryogenesis in isolated microspore cultures of triticale (*x Triticosecale* Wittm.) and barley (*Hordeum vulgare* L.)”, HARMONIA 7 NCN 2015/18/M/NZ3/00348; leader

  2010–2013: “Increasing androgenic effectiveness by control of hormonal homeostasis and oxidative stress intensity in triticale (*x Triticosecale* Wittm.) anthers”, Ministry od Science and Higher Education NN310452638; leader

- **Number of national/international awards for scientific achievements**

  National awards: 3

  International: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  Polish Botanical Society: Diploma of appreciation for the identification of mechanisms regulating the induction and course of microspore embryogenesis and the use of this phenomenon in biotechnological research and plant breeding, 2024

  Brown Cross for the Department of Plant Physiology Polish Academy of Sciences, 2004

  The reward of Ministry of Education for scientific achievement during studies, 1990

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  –

- **International mobility (participation in international internships and scholarships)**

  Estación Experimental de Aula Dei Consejo Superior de Investigaciones Científicas, Zaragoza (Spain), bilateral cooperation stay funded by the project “N-butanol as a trigger inducing microspore embryogenesis in in vitro cultures of wheat (*Triticum aestivum* L.) and triticale (×*Triticosecale* Wittm.)” (4 weeks, 2011–2012)

  Plant Systems Biology Department /VIB UGent, bilateral cooperation stay funded by the project “Auxin as a trigger in double haploids (DHs) production of oilseed rape” (1 week, 2011)

  Institute of Plant Genetics and Biotechnology, Nitra (Slovakia), stays in the framework of bilateral cooperation financed under the project entitled “Studies of selected physiological and molecular parameters involved in plant resistance to fungal pathogens and the NOBEL project “. Investment in science, investment in the future a common cause of scientific centers from Krakow, Olsztyn and Warsaw, implemented by the Centre for Transfer of Medical Technologies Park Technologiczny Sp. z o. o. in cooperation with the University of Warsaw – University Technology Transfer Centre and the University of Warmia and Mazury in Olsztyn, entitled “Transformation of microspores and androgenic embryos of rapeseed (Brassica napus)” (4 weeks, 2007–2010)

  Scottish Crop Research Institute, Invergowrie, Dundee (UK), Short-Term Scientific Mission COST-STSM-851-01207 fellowship (6 weeks, 2005)

  Max F. Perutz Laboratories, Institute of Microbiology and Genetics, Vienna University, Vienna Biocenter, Vienna (Austria), research fellowship “Pharmacological approach for studying the microspore embryogenesis mechanisms” in the framework of the CropStress project QLAM-2001–00424 (3 months, 2004)

  Max F. Perutz Laboratories, Institute of Microbiology and Genetics, Vienna University, Vienna Biocenter, Vienna (Austria) – training course “Isolation methods and culture conditions for isolated wheat microspore cultures” (1 week, 2001)

- **Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: 1

- **Teaching – list of classes conducted**

  2009–2011: Lectures for the course "Basics of Biotechnology" financed from the project "Development of didactic potential of the Pedagogical University of Krakow" co-financed by the European Social Fund

  2014–2016: Lectures and exercises for students of the Doctoral Studies in Natural Sciences of the Polish Academy of Sciences in Krakow at the W. Szafer Institute of Botany of the Polish Academy of Sciences "Physiological basis of plant productivity under conditions of sustainable agriculture"

  2017–2018: Lectures and exercises for students of the postgraduate course “Modern methods in plant improvement”, University of Agriculture in Krakow, Faculty of Agriculture and Economics

3.3.3 Employee CVs – Animal science and fisheries

Profiles of academic staff teaching at the Doctoral School of Natural and Agricultural Sciences

In the field of animal science and fisheries, the CVs of the following persons are presented:

1) Dr hab. Anna Arczewska-Włosek
2) Dr hab. Paweł Górka
3) Dr hab. Jacek Jura
4) Prof. dr hab. Małgorzata Świątkiewicz
5) Prof. dr hab. Sylwester Świątkiewicz

Dr hab. Anna Arczewska-Włosek

- **Scientific discipline**

  Animal science and fisheries

- **Research interests**

  Animal (poultry) nutrition and physiology, feed science and technology, quality of animal origin products

- **Number of scientific publications:**

  JCR journals: 64

  Other scientific journals and book chapters: 21

- **Number of citations**

  Web of Science: 1257

  Google Scholar: –

- **Hirsch index**

  Web of Science: 21

  Google Scholar: –

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Dajnowska, A., Tomaszewska, E., Świątkiewicz, S., **Arczewska-Włosek, A**., Dobrowolski, P., Domaradzki, P., Rudyk, H., Brezvyn, O., Muzyka, V., Kotsyumbas, I., Arciszewski, M. B., Muszyński, S. 2023. Yolk Fatty Acid Profile and Amino Acid Composition in Eggs from Hens Supplemented with ß-Hydroxy-ß-Methylbutyrate. *Foods* 12 (20), 3733. https://doi.org/10.3390/foods12203733

  Arczewska-Włosek A., Świątkiewicz S., Tomaszewska E., Muszyński S., Dobrowolski P., Józefiak D. 2023. Effects of anticoccidial vaccination and *Taraxacum officinale* extract on the growth performance, biochemical parameters, immunity, and intestinal morphology of *Eimeria*-challenged chickens. *Life* 13 (9), 1927. https://doi.org/10.3390/life13091927

  Arczewska-Włosek A., Świątkiewicz S., Ognik K., Józefiak D. 2022. Effects of a dietary multi-strain probiotic and vaccination with a live anticoccidial vaccine on growth performance and haematological, biochemical and redox status indicators of broiler chickens. *Animals* 12(24), 3489. https://doi.org/10.3390/ani12243489

  Arczewska-Wlosek A., Świątkiewicz S., Bederska-Lojewska D., Orczewska-Dudek S., Szczurek W., Boros D., Fraś A., Tomaszewska E., Dobrowolski P., Muszyński S., Kwiecień M., Schwarz T. 2019. The efficiency of xylanase in broiler chickens fed with increasing dietary levels of rye. *Animals* 9(2), 46. https://doi.org/10.3390/ani9020046

  Arczewska-Włosek A., Świątkiewicz S., Ognik K., Józefiak D. 2018. Effect of dietary crude protein level and supplemental herbal extract blend on selected blood variables in broiler chickens vaccinated against coccidiosis. *Animals* 8(11), 208. https://doi.org/10.3390/ani8110208

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

  Patent No. 237575: Method for the Enhancement of Rapeseed Cake. Application No. P.422849 dated 14.09.2017. WUP 09/2021, publication date: 04.05.2021. Inventors: Damian Józefiak, Anita Zaworska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher-Strabel, Jan Jankowski, Ewa Sawosz-Chwalibóg, Romuald Zabielski, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik, Nina Strzałkowska

  Patent No. 237574: Fermented Rapeseed Cake for Animals, Especially for Monogastric Animals, Particularly for Broiler Chickens and Turkeys; Animal Feed, Especially for Monogastric Animals, Particularly for Broiler Chickens and Turkeys; and the Use of Fermented Rapeseed Cake and Feed Containing Fermented Rapeseed Cake. Application No. P.422848 dated 14.09.2017. WUP 09/2021, publication date: 04.05.2021. Inventors: Damian Józefiak, Anita Zaworska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher-Strabel, Jan Jankowski, Ewa Sawosz-Chwalibóg, Romuald Zabielski, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik, Nina Strzałkowska

  Patent No. 240049: Eubiotic Preparation for Livestock, Especially for Poultry, and a Method for Producing Feed with the Eubiotic Preparation for Livestock, Especially for Poultry. Application No. P.429797 dated 29.04.2019. WUP 06/2022, publication date: 07.02.2022. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

  Patent No. 240560: Eubiotic Preparation for Poultry, in Particular for Broiler Chickens, and a Method for Producing Feed for Poultry, in Particular for Broiler Chickens. Application No. P.429798 dated 29.04.2019. WUP 17/2022, publication date: 25.04.2022. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

  Patent No. 242641: Method for Reducing Glucosinolate Content in Rapeseed Meal by Fermentation Using Enzymes and Bacteria. Application No. P.429784 dated 29.04.2019. WUP 14/2023, publication date: 03.04.2023. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

  Patent No. 242642: Method for Reducing Phytic Phosphorus in Rapeseed Meal through Fermentation with Enzymatic Additives and Bacteria. Application No. P.429785 dated 29.04.2019. WUP 14/2023, publication date: 03.04.2023. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

  Patent No. 242643: Method for Enhancing Rapeseed Meal through Deep Fermentation Using Enzymes and Bacteria as a Means to Reduce Raffinose Family Oligosaccharides. Application No. P.429794 dated 29.04.2019. WUP 14/2023, publication date: 03.04.2023. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

  Patent No. 243413: Multicomponent Preparation Added to Feed and Method of Producing Feed for Poultry, in Particular for Broiler Chickens. Application No. P.429795 dated 29.04.2019. WUP 34/2023, publication date: 21.08.2023. Inventors: Damian Józefiak, Anita

Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

Patent No. 244622: Use of a Multicomponent Preparation in the Nutrition of Broiler Chickens as a Methane Emission Reduction Agent. Application No. P.429800 dated 29.04.2019. WUP 08/2024, publication date: 19.02.2024. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

Patent No. 244623: Use of a Multicomponent Preparation in the Nutrition of Turkeys as a Methane Emission Reduction Agent. Application No. P.429801 dated 29.04.2019. WUP 08/2024, publication date: 19.02.2024. Inventors: Damian Józefiak, Anita Zaworska-Zakrzewska, Małgorzata Kasprowicz-Potocka, Adam Cieślak, Małgorzata Szumacher, Jan Jankowski, Ewa Sawosz-Chwalibóg, Sylwester Świątkiewicz, Anna Arczewska-Włosek, Artur Jóźwik

- **Number of research projects**

  National projects: 2 – project leader, 8 – investigator

  International projects: – project leader, 1 –investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2022–2025: “Risks associated with feed contamination by antibiotics.”Opus 21, NCN 2021/41/B/NZ9/04114, Scientific consortium leader: Nicolaus Copernicus University in Toruń; investigator

  2024–2028: titled “Molecular mechanisms of phenotypic plasticity in native chicken breeds”. Opus 26, NCN 2023/51/B/NZ9/00479; Scientific consortium leader: Bydgoszcz University of Science and Technology; investigator

  2015–2018: “GUTFEED – innovative feeding in sustainable poultry production”. NCBR BIOSTRATEG1/267659/7/NCBR/2015, Scientific consortium leader: Piast Pasze Sp. z o.o.; leader at the Nati Opus-21onal Research Institute of Animal Production (IZ PIB)

  2016–2019: “A strategy to ensure and evaluate a base of cheap, efficient, and safe feed energy sources for livestock production based on domestic resources, with particular emphasis on modern rye varieties”. NCBR, BIOSTRATEG2/297910/12/NCBR/2016, Scientific consortium leader: University of Agriculture in Kraków; investigator

  Projects funded by the Agency for Restructuring and Modernisation of Agriculture (Co-financed by EU funds under the “Cooperation” measure of the RDP 2014–2020):

  2024–2025: “Development and implementation of an innovative technology for on-farm turkey production, antibiotic-free and with enhanced welfare.” Operational Group “Naturally Raised Turkey”, 00138.DDD.6509.00095.2022.07, Consortium leader: Zakład Drobiarski w Stasinie Sp. z o.o.; leader at the National Research Institute of Animal Production (IZ PIB)

  2023–2024: “Climate-friendly technology for the production of high-quality eggs and poultry meat based on innovative methods of reducing harmful gas emissions from farms to the environment”, 00050.DDD.6509.00107.2022.07, Operational Group “GHG Reduction in Poultry Farming and Egg Production.” Consortium leader: Union of Meat Industry Producers and Employers; investigator

2020–2022: “Innovative poultry production technology using preparations aimed at eliminating antibiotics”, 00017.DDD.6509.00009.2018.06, Operational Group “Healthy Poultry.” Consortium leader: National Research Institute of Animal Production; investigator

- **Number of national/international awards for scientific achievements**

  National awards: 4

  International awards: 1

- **Number of national/international awards for scientific achievements**

  2021 – Distinction awarded by the Committee of Animal Sciences and Aquaculture of the Polish Academy of Sciences for scientific achievement in 2021: “Technologies enabling a significant reduction in greenhouse gas, nitrogen, and phosphorus emissions into the natural environment without negatively affecting poultry production performance” – team member

  2015 – Bronze Cross of Merit – awarded at the request of the Minister of Agriculture and Rural Development for contributions to the development of animal science research

  2011 – Third Prize in the 4th Edition of the National Competition for the Best Doctoral Dissertation in Animal Sciences, awarded by the Polish Society of Animal Production named after Michał Oczapowski. Title of the doctoral dissertation: “The effect of selected herbal extracts and feed additives on the course of coccidiosis in broiler chickens”

  2010 – Distinction for the doctoral dissertation and its defense on 24.11.2010 during the 168th meeting of the Scientific Council. Recipient of the Director’s Award of the National Research Institute of Animal Production

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Member of the World’s Poultry Science Association (since 2010)

  Member of the European Federation of Animal Science (since 2023)

  Reviewer of a grant application (B/31458) for the International Foundation for Science (Sweden), 2014

  Guest Editor of a special issue entitled “The relationship between dietary factors and bacterial, parasitic, or fungal challenges in modern poultry production” (2022) in the journal Animals (ISSN 2076-2615)

  Guest Editor of a special issue entitled “Animal Nutritional Physiology: Effects of Feed Additives on Livestock Products” (2024) in the journal Life (ISSN 2075-1729)

- **International mobility (participation in international internships and scholarships)**

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- **• Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: –

- **Teaching – list of classes conducted**

  Coordinator of the thematic blocks: “Recent trends in animal breeding and livestock production” and “Biochemistry and physiology of organisms” at the Doctoral School of Natural and Agricultural Sciences

Dr hab. Paweł Górka

- **Scientific discipline**

  Animal science and fisheries

- **Research interests**

- Animal nutrition with particular interest in dairy calves and cows nutrition, beef cattle nutrition and the effect of nutrition on the gastrointestinal tract development, animal metabolism, growth, health and milk and meat production

- **Number of scientific publications**

  JCR journals: 66

  Other journals and book chapters: 2

- **Number of citations**

  Web of Science: 908

  Google Scholar: 2012

- **Hirsch index**

  Web of Science: 17

  Google Scholar: 21

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Świerk, S., M. Przybyło, J. Flaga, K. Szczepanik, W. Białek, P. Flieger**, P. Górka**. 2024. Effect of butyrate sources in a high-concentrate diet on rumen structure and function in growing rams. *Animal* 18, 101285. https://doi.org/10.1016/j.animal.2024.101285

  Watanabe, D.H.M., Doelman, J., Seymour, D.J., Sanz-Fernandez, M.V., López-Campos, Ó., Prieto, N., **Górka, P.,** Penner, G.B. 2024. Effect of feeding calcium gluconate embedded in a hydrogenated fat matrix on performance, gastrointestinal fermentation, ruminal morphology, carcass merit, and meat quality for finishing beef heifers. *Can. Journal of Anim. Sci*., 104, 262-274. https://doi.org/10.1139/cjas-2023-0055

  Górka, P., J. Milik, W. Budziński, M. Przybyło, J. Kański, T. Jankowiak, K. Budzińska. 2023. Effect of sodium butyrate, phytogenic compounds and egg yolk antibodies supplementation in calf milk replacer containing probiotic bacteria on farms feeding a mixture of surplus colostrum and transition milk to calves in their first days of life. *Anim. Feed Sci. Tech*. 115675. https://doi.org/10.1016/j.anifeedsci.2023.115675

  Przybyło, M., G. Krajda, Ł. Różański, G. Rolik, S. Ortmann, **P. Górka,** M. Clauss. 2023. Fluid and particle retention in a small New World and a small Old World cervid, the southern pudu (Pudu puda) and Reeves's muntjac (*Muntiacus reevesi*). *Comp. Biochem. Physio. A*. 111506. https://doi.org/10.1016/j.cbpa.2023.111506

  Świerk, S., M. Przybyło, J. Flaga, K. Szczepanik, A. Garus-Piętak, W. Biernat, E. Molik, D. Wojtysiak, R. Miltko, **P. Górka.** 2023. Effect of increased intake of concentrates and sodium butyrate supplementation on ruminal epithelium structure and function in growing rams. Animal 17, 100898. https://doi.org/10.1016/j.animal.2023.100898

Świerk, S., M. Przybyło, I. Wajsman, E. Molik, R. Miltko, **P. Górka.** 2023. Effect of increased intake of concentrates and sodium butyrate supplementation on reticulorumen macroanatomy and reticulorumen fermentation in growing rams. *Animal* 17, 100899. https://doi.org/10.1016/j.animal.2023.100899

Wiśniewska, Z., Kołodziejski, P., Pruszyńska, E., Konieczka, P., Kinsner, M., **Górka, P.,** Flaga, J.; Kowalik, K.; Hejdysz, M.; Kubiś, M.; Jarosz, Ł. S.; Ciszewski, A. 2023. Effect of emulsifier and multicarbohydrase enzyme supplementation on performance and nutrient digestibility in broiler diets containing rapeseed meal. *Poultry Sci*. 102, 102268. https://doi.org/10.1016/j.psj.2022.102268

Świerk S., K. Hasior, A. Garus-Piętak, M. Przybyło, M. Głuch, A. Waliczek, Ł. Różański, J. Kański, **P. Górka.** 2022. Effect of amount of high-fibre pellet in the diet and bedding type on feed intake, nutrient digestibility, eating behaviour and rumination in bongo (Tragelaphus eurycerus). *J. Anim. Physiol. Anim. Nutr.* 105, 1162-1173. https://doi.org/10.1111/jpn.13747

Rajtar, P., Sady, M., **Górka, P.,** Kehoe, S., Micek, P. 2022. Effect of Replacing Maize Grain by Hybrid Rye Grain in the TMR on Performance of Mid-Lactating Dairy Cows. *Ann. Anim. Sci.* 22, 237-254. https://doi.org/10.2478/aoas-2021-0006

Górka, P., Budzińska, K., Budziński, W., Jankowiak, T., Kehoe, S.,; Kański, J. 2021. Effect of probiotic and nucleotide supplementation in milk replacer on growth performance and fecal bacteria in calves. *Livest. Sci.* 250, 104556. https://doi.org/10.1016/j.livsci.2021.104556

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

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- **Number of research projects**

  National projects: 2 – leader, 11 – investigator

  International projects: – leader, 8 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024: Study ordered by The Polish Association of Oil Producers (BZ-4261/2024/WHiBZ); coordinator of the project at the University of Agriculture in Krakow

  2022 – till now: National Science Centre, project nr 2021/43/I/NZ9/02222; investigator

  2022: Study ordered by The Polish Association of Oil Producers (BZ-4238/WHiBZ/2022); coordinator of the project at the University of Agriculture in Krakow

  2020–2021: Study ordered by Chr. Hansen (BZ-4218/2020/WHiBZ); coordinator of the project at the University of Agriculture in Krakow

  2020: Agencja Restrukturyzacji i Modernizacji Rolnictwa, project No. 2134; investigator

  2020: Study ordered by Biochem Zustazstoffe Handels und Produtionsegs; investigator

  2020–2022: Study ordered by DuPond Nutrtion & Biosciences ApS (BZ-4223, BZ-4225 i BZ-4242); coordinator of the project at the University of Agriculture in Krakow

  2019: Study ordered by Polmass S.A. (BZ-4210/WHiBZ/2019); coordinator of the project at the University of Agriculture in Krakow

- **Number of national/international awards for scientific achievements**

  National awards: 18

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2023: Third price for outstanding achievements in the scientific field, Rector of University of Agriculture in Krakow, Krakow, Poland

  2022: Second price for outstanding achievements in the scientific field, Rector of University of Agriculture in Krakow, Krakow, Poland

  2021: Third price for outstanding achievements in the scientific field, Rector of University of Agriculture in Krakow, Krakow, Poland

  2020: Third price for outstanding achievements in the scientific field, Rector of University of Agriculture in Krakow, Krakow, Poland

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Member of American Dairy Science Association

  Member of American Society of Animal Science

  Member of European Federation of Animal Science

- **International mobility (participation in international internships and scholarships)**

  University of Saskatchewan, Department of Animal and Poultry Science, Saskatchewan, Canada (12 months, 2011-2012)

  Warsaw University of Life Science, Department of Physiological Sciences, Warsaw, Poland (1 months, 2008)

  The Kielanowski Institute of Animal Physiology and Nutrition, Department of Endocrinology, Jablonna, Poland (10 days, 2008)

- **Number of doctoral students**

  Number of doctorates in progress: 3

  Number of promoted doctoral students: 5

- **Teaching – list of classes conducted**

  Courses conducted at the University of Agriculture in Krakow, Faculty of Animal Sciences:

  – Animal Nutrition

  – Basics of Animal Nutrition

  – Basics of Nutrigenomics

  – Exotic Animals Nutrition

  – Biotechnology in Animal Nutrition

Dr hab. Jacek Jura

- **Scientific discipline**

  Animal science and fisheries

- **Research interest**

  Transgenesis of farm animals – modifications to improve breeding traits, production of proteins of therapeutic interest (e.g. hGH- Human Growth Hormone – rabbit, ALR- augmenter of liver regeneration – rabbit), genetic modifications of pigs for xenotransplantation (knock-out of GGTA1 gene, overexpression of human alpha GAL gene)

- **Number of scientific publications**

  JCR journals: 40

  Other journals and book chapters: 13

- **Number of citations**

  Web of Science: 542

  Google Scholar: –

- **Hirsch index**

  Web of Science: 14

  Google Scholar: –

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Łabędź-Masłowska A., Wieczorek J., Mierzwiński M., Sekuła-Stryjewska M.; Noga, S., Rajca J., Duda P., Milian-Ciesielska K., Karnas E., Kmiotek-Caller K., Szkaradek A., Madeja Z., Ficek K., **Jura J.**, Zuba-Surma E. 2025. Evaluation of the Safety and Regenerative Potential of Human Mesenchymal Stem Cells and Their Extracellular Vesicles in a Transgenic Pig Model of Cartilage-Bone Injury In Vivo. Preclinical Study. *Stem Cell Reviews and Reports* 21(4), 1075–1095. https://doi.org/10.1007/s12015-025-10853-4

  Jura J. 2024. Animal Models for the Treatment of Human Diseases – A Review. *Annals of Animal Science* 24(4), 1153–1159. https://doi.org/10.2478/aoas-2024-0058

  Wieczorek J., Stodolak-Zych E., Okoń K., Koseniuk J., Bryła M., **Jura J.,** Poniedziałek-Kempny K., Rajska I., Soból K., Kotula-Balak M., Chmurska-Gasowska M. 2023. Laparoscopic embryo transfer in pigs – comparison of different variants and efficiences of the method. *Polish Journal of Veterinary Sciences* 26(2), 295–306. https://doi.org/10.24425/pjvs.2023.145036

  Samiec M., Wiater J., Wartalski K., Skrzyszowska M., Trzcińska M., Lipiński D., **Jura J.,** Smorąg Z., Słomski R., Duda M. 2022. The Relative Abundances of Human Leukocyte Antigen-E, α-Galactosidase A and α-Gal Antigenic Determinants Are Biased by Trichostatin A-Dependent Epigenetic Transformation of Triple-Transgenic Pig-Derived Dermal Fibroblast Cells. *International Journal of Molecular Sciences* 23(18), 10296. https://doi.org/10.3390/ijms231810296

  Dzięgiel N., **Jura J.,** Samiec M. 2022. Effect of high hydrostatic pressure on the in vitro development and molecular quality of transgenic rabbit embryos derived from nano-

transfected zygotes. *Annals of Animal Science* 22(3), 931–943. https://doi.org/10.2478/aoas-2022-0016

Dzięgiel N., **Jura J.,** Samiec M. 2021. Characterization of mono-and Bi-transgenic pig-derived epidermal keratinocytes expressing human FUT2 and GLA genes—In vitro studies. *International Journal of Molecular Sciences* 22(18), 9683. https://doi.org/10.3390/ijms22189683

Wiater J., Karasiński J., Słomski R., Smorąg Z., Wartalski K., Gajda B., Cybulska M., **Jura J.** 2021. Characteristics of human leukocyte antigen-E expression in transgenic porcine liver. *Animal Science Papers and Reports* 39(4), 379 – 392

Wieczorek J., Stodolak-Zych E., Okoń K., Koseniuk J., Bryła M., Jura J., Cegła M., Poniedziałek-Kempny K., Rajska I. 2020. A New Concept in Minimally Invasive Embryo Transfer. *Annals of Animal Science* 20(4), pp. 1289 – 13081. https://doi.org/10.2478/aoas-2020-0034

Wiater J., Karasiński J., Słomski R., Smorąg Z., Wartalski K., Gajda B., Jura J., Romek M. 2020. The Effect of Recombinant Human Alpha-1, 2-Fucosyltransferase and Alpha-Galactosidase A on the Reduction of Alpha-Gal Expression in the Liver of Transgenic Pigs. *Folia Biologica (Poland)* 68, (4),121 – 133. https://doi.org/10.3409/fb_68-4.14

Nowak-Terpiłowska A., Lipiński D., Hryhorowicz M., Juzwa W., Jura J., Słomski R., Mazurkiewicz N., Gawrońska B., Zeyland J. 2020. Production of ULBP1-KO pigs with human CD55 expression using CRISPR technology. *Journal of Applied Animal Research* 48(1), 93 – 101. https://doi.org/10.1080/09712119.2020.1735396

- **Patents and protection rights**

  1 patent and 2 Utility Models

- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

  Patent P.243641 Method of preconditioning rabbit zygotes prior to transfection. Application No. P.438734 dated 12.08.2021. WUP 39/2023, publication date: 25.09.2023 r. Entitled: Institute of Zootechnics – National Research Institute of Animal Production. Creators: Jacek Jura, Natalia Dzięgiel

  Utility Model: Micromanipulation chamber WU-W.112507 – 15.06.2005 Institute of Zootechnics. Jacek Jura, Zdzisław Smorąg.

  Utility Model: Microinjection syringe WU-W.112508 – 07.09.2005. Institute of Zootechnics. Jacek Jura, Zdzisław Smorąg.

- **Number of research projects:**

  National projects: 3 – leader, 5 – investigator

  International projects: –

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2017–2024: “Development of optimised methods for the treatment of tissue damage based on innovative composites and mesenchymal stem cells and their derivatives in patients with civilisation diseases”, STRATEGMED3/303570/7/NCBR/2017; task leader

  2014–2019: “Development of an innovative technology for the use of porcine transgenic tissues for biomedical purposes” (MEDPIG), INNOMED/I/17/NCBR/2014; task leader

- **Number of national/international awards for scientific achievements**

National awards: 2

International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  2004: Award from the Minister of Agriculture and Rural Development for the development of a "Flow cytometric method for bull semen sexing" – team award

  1990: Award from the Director of the Institute for scientific achievements

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Polish Society of Animal Production – member

  International Embryo Transfer Society – member

- **International mobility (participation in international internships and scholarships)**

  Edison Biotechnology Institute, Ohio University, Athens, USA – Post doc (12 months, 1995-1996).

  Institute National de la Recherche Agronomique, Jouy-en-Josas, France – French government stipend for research stay (6 months, 1992)

  Institute of Animal Production and Genetic Research (AIPGR) Roslin/Edinburgh, UK, – UNDP-FAO stipend (9 months, 1987)

- **Number of doctoral students**

  Number of doctorates in progress: –

  Number of promoted doctoral students: 1

- **Teaching (list of classes conducted)**

  Lectures for students of biotechnology at the Agricultural University in Kraków, lectures for students of biology at the Jagiellonian University, lectures for students of biotechnology at the AGH University of Science and Technology, lectures for the Doctoral School:

  – Transgenic farm animals

  – Methods of transgenesis

  – Assisted reproduction techniques – bioethical issues

  – Biotechnology of animal reproduction for biomedicine and pharmacy

  – Swine in biomedical research

Prof. dr hab. Małgorzata Świątkiewicz

- **Scientific discipline**

  Animal science and fisheries

- **Research interests**

  Research related to pig nutrition, assessing the nutritional value of feeds, the effectiveness of feed additives, and their impact on feed utilization, meat quality, and pig health status. Current research focuses on nutritional methods that support the circular economy, antimicrobial-free pig production, reducing harmful emissions, and increasing national food safety

- **Number of scientific publications:**

  JCR journals: 73

  Other scientific journals and book chapters: 75

- **Number of citations**

  Web of Science: 878

  Google Scholar: –

- **Hirsch index**

  Web of Science: 17

  Google Scholar: –

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Grela E.R. (Ed.) 2024.Poradnik Ekologicznego Chowu Świń. Wyd. Instytut Zootechniki PIB, Kraków. ISBN: 978-83-7607-357-6, pp. 1-158 [In Polish] (**M. Świątkiewicz** – co-author)

  Świątkiewicz M., Szczepanik K., Gala Ł., Grela E.R., Witaszek K., Barszcz M., Tuśnio A., Taciak M. 2024. Determination of the impact of extruded soybean press cake on rearing and health indices of piglets. *Agriculture* 14 (1), 1899, 1-17. https://doi.org/10.3390/agriculture14111899

  Szczepanik K., Dobrowolski P., **Świątkiewicz M.** 2024. Effects of Hermetia illucens larvae meal and astaxanthin on intestinal histology and expression of tight junction proteins in weaned piglets. *J. Anim. Physiol. Anim. Nutr.* 108(6), 1820–1832. https://doi.org/10.1111/jpn.14024

  Wierzbicka A., **Świątkiewicz M.,** Tyra M., Szmatoła T., Oczkowicz M. 2023. Effect of different doses of cholecalciferol and calcidiol on meat quality parameters and skeletal muscle transcriptome profiles in swine. *Meat Science* 197. https://doi.org/10.1016/j.meatsci.2022.109071

  Świątkiewicz M., Zimniewska M., Różańska W., Gryszczyńska A., Kołodziej J., Czech A. 2022. Assessment of flax and hemp fibers in terms of their impact on the growth performance and health status of weaned piglets. *Animal*,16, 12. https://doi.org/10.1016/j.animal.2022.100677

  Świątkiewicz M., Olszewska A., Grela E.R., Tyra M. 2021. The effect of replacement of soybean meal with corn dried distillers grains with solubles (cDDGS) and differentiation of dietary fat sources on pig meat quality and fatty acid profile. *Animals* 11, 1277, 1-19. https://doi.org/10.3390/ani11051277

Grela E.R., Skomiała J. (Ed.). 2020. Normy Żywienia Świń – Zalecenia żywieniowe i wartość pokarmowa pasz dla świń, wyd. III uzupełnione z oprogramowaniem. Wydawnictwo IFiŻZ PAN Jabłonna. ISBN: 978-83-9511-612-7-8, pp. 1-124 [In Polish] (**M. Świątkiewicz** –co-author)

Grela E.R., **Świątkiewicz M.,** Florek M., Wojtaszewska I. 2020. Impact of milk thistle (*Silybum marianum* L.) seeds in fattener diets on pig performance and carcass traits and fatty acid profile and cholesterol of meat, backfat and liver. *Livestock Sci.* 239, 1-9. https://doi.org/10.1016/j.livsci.2020.104180

Hanczakowska E., Księżak J., **Świątkiewicz M.** 2019. Efficiency of pea seeds in sow, piglet and fattener feeding. *Animal Production Science* 59 (2), 304-313. https://doi.org/10.1071/AN17487

Świątkiewicz M., Oczkowicz M., Ropka-Molik K., Hanczakowska E. 2016. The effect of dietary fatty acids composition on adipose tissue quality and expression of genes related to lipid metabolism in porcine livers. *Animal Feed Science and Technology* 216, 204-215. https://doi.org/10.1016/j.anifeedsci.2016.03.020

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

  Patent for the invention "Cage for digestibility tests for pigs", filed under no. P. 430905.

- **Number of research projects**

  National projects: 3 – project leader, 7 – investigator

  International projects: – project leader, 1 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024 – till now: "Partnership on Animal Health and Welfare (PAHW)" – HORIZON-CL6-2023-FARM2FORK-01; investigator

  2023–2024: "Innovative Feeding Technology for Puławska Pigs as an Element of Implementing the Circular Economy on a Breeding Farm" (acronym: POP – Liquidly Nourished Puławska). The operation is co-financed by the European Union under the "Cooperation" measure of the Rural Development Programme 2014-2020, "European Agricultural Fund for Rural Development: Europe Investing in Rural Areas"; leader

  2023–2025: "Support for Demonstration Projects and Outreach Activities – DEMONSTRATIONS in the Production and Use of Domestic Plant Protein Sources for Feed Purposes," a project financed under the Rural Development Programme 2014-2020; consortium member, task leader

  2021–2024: "The effect of vitamin D3 supplementation in pig diets on the transcriptome and proteome in selected tissues." Preludium Bis-1, National Science Center; investigator

  2023: "Use of by-products from the processing of organic oil crops as protein feed in the nutrition of native pigs" – a project financed by the Ministry of Agriculture and Rural Development as part of the "Organic Agriculture" competition for 2023; leader

  2016–2019: "Strategy for ensuring and evaluating a database of cheap, effective, and safe feed energy raw materials for animal production based on domestic resources, with particular emphasis on modern rye varieties" (acronym: ENERGYFEED) – NCBiR BIOSTRATEG II 2015; consortium member, task lider

- **Number of national/international awards for scientific achievements**

  National awards: 6

  International awards: –

- **Number of national/international awards for scientific achievements**

  2024: Award from the Director of the National Research Institute of Animal production for active participation in the implementation of the National Renewal Plan at the Department of Animal Nutrition and Feed Science ("Development of laboratory infrastructure to strengthen the research potential of the Department of Animal Nutrition and Feed Science at the National Research Institute of Animal Production")

  2024: Award from the Director of the National Research Institute of Animal production for achieving the highest number of points for publishing original scientific papers

  2017: Special Award from the Director of the National Research Institute of Animal Production for the significant contribution to the establishment of the gastrointestinal physiology laboratory established at the Institute (IZ PIB)

  2015: Awarded the Bronze Cross of Merit by the President of the Republic of Poland

  2010: For the achievements in scientific research awarded the honorary badge "Meritorious for Agriculture" by the Minister of Agriculture and Rural Development

  2002: Award of the Director of the National Research Institute of Animal Production for the Doctoral Dissertation and distinction in the 3rd competition for the Best Doctoral Dissertation organized in 2003 by the Polish Association of Feed Producers

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Associate Editor of the journal "Revista Brasileira de Zootecnia – Brasilian Journal of Animal Science" (2016–2017)

  Guest Editor of the journal "ANIMALS" – Special Issue "Growth Performance, Nutrient Digestibility and Pork Quality in Swine Production" (since 2021, currently in its next edition)

  Member of the Scientific Council of the journal "ANIMAL SCIENCE AND GENETICS"

  Member of the European Association for Animal Production (EAAP)

  Member of the Polish Society of Animal Production (PTZ)

  Member of the Committee on Physiology and Nutrition of the Polish Academy of Sciences, within the KNZiA Polish Academy of Sciences

- **International mobility (participation in international internships and scholarships)**

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- **Number of doctoral students**

  Number of doctorates in progress: 1

  Number of promoted doctoral students: 1

- **Teaching – list of classes conducted**

  Lectures (in Polish) for the Doctoral School of Natural and Agricultural Sciences on topics such as:
  Current issues in farm animal nutrition

The impact of animal production on the environment

The role of nutrition in animal production, based on the example of pigs

The influence of nutritional factors on meat quality

Antinutritional substances limiting feed utilization

The nutritional value of DDGS and their use in pig nutrition, including the impact on meat quality

Prof. dr hab. Sylwester Świątkiewicz

- **Scientific discipline**

  Animal science and fisheries

- **Research interests**

  Animal (poultry) nutrition and physiology, feed science and technology, quality of animal origin products (food)

- **Number of scientific artcles:**

  JCR journals: 152

  Other scientific journals and book chapters: 50

- **Number of citations**

  Web of Science: 3870

  Google Scholar: 6570

- **Hirsch Index**

  Web of Science: 35

  Google Scholar: 46

- **Scientific publications from recent years (list of no more than 10, preferably from the last 6 years)**

  Tomaszewska E., **Świątkiewicz S**., Arczewska-Włosek A., Wojtysiak D., Dobrowolski P., Domaradzki P., Puzio I., Rudyk H., Brezvyn O., Muszyński S. 2024. ß-Hydroxy-ß-methylbutyrate: A feed supplement influencing performance, bone metabolism, intestinal morphology, and muscle quality of laying hens: a preliminary one-point study. *Poultry Science* 103(5), 103597. https://doi.org/10.3390/life13091927

  Tomaszewska E., Muszyński S., Arczewska-Włosek A., Domaradzki P., Pyz-Łukasik R., Donaldson J., **Świątkiewicz S.** 2021. Cholesterol content, fatty acid profile and health lipid indices in the egg yolk of hens at the end of laying cycle after alpha-ketoglutarate supplementation. *Foods* 10 (3) 596. https://doi.org/10.3390/foods10030596

  Świątkiewicz S., Arczewska-Włosek A., Szczurek W., Calik J., Bederska-Łojewska D., Orczewska-Dudek S., Muszyński S., Tomaszewska E., Józefiak D. 2020. Algal oil as source of polyunsaturated fatty acids in laying hens nutrition: Effect on egg performance, egg quality indices and fatty acid composition of egg yolk lipids. *Annals of Animal Science* 20 (3), 931-973. https://doi.org/10.2478/aoas-2020-0019

  Szczurek W., **Świątkiewicz S**. 2022. Effects of broiler chicken age and dietary protease on the standardised ileal digestibility of amino acids in seeds from two lupin species. Annals of *Animal Science* 22(4), 1351-1362. https://doi.org/10.2478/aoas-2022-0040

  Szczurek W., **Świątkiewicz S.** 2020. Standardised Ileal Amino Acid Digestibility in Field Pea Seeds of Two Cultivars Differing in Flower Colour for Broiler Chickens: Effects of Bird Age and Microbial Protease. *Animals* 10(11), 2099. https://doi.org/10.3390/ani10112099

  Szczurek W., Szymczyk B., Arczewska-Włosek A., **Świątkiewicz S**. 2020. Apparent and standardised ileal digestibility of amino acids in wheat, triticale and barley for broiler chickens

at two different ages. *British Poultry Science* 61(1), 63-69. https://doi.org/10.1080/00071668.2019.1673317

Muszyński S., **Świątkiewicz S**., Arczewska-Włosek A., Dobrowolski P., Valverde Piedra J.L., Arciszewski M.B., Szymańczyk S., Zacharko-Siembida A., Kowalik S., Hułas-Stasiak M., Tomczyk-Warunek A., Schwarz T., Tomaszewska E. 2019. Analysis of mechanical properties of bones and tendons shows that modern hybrid rye can be introduced to corn-wheat based diet in broiler chickens as an alternative energy source irrespective of xylanase supplementation. *Poultry Science* 98, 5613-5621. https://doi.org/10.3382/ps/pez323

Bederska-Łojewska D., Arczewska-Włosek A., **Świątkiewicz S.**, Orczewska-Dudek S., Schwarz T., Puchała M., Krawczyk J., Boros D., Fraś A., Micek P., Rajtar P. 2019. The effect of different dietary levels of hybrid rye and xylanase addition on the performance and egg quality in laying hens. *British Poultry Science* 60(4), 423-430. https://doi.org/10.1080/00071668.2019.1605149

Arczewska-Włosek A., **Świątkiewicz S.**, Tomaszewska E., Muszyński S., Dobrowolski P., Józefiak D. 2023. Effects of Anticoccidial Vaccination and Taraxacum officinale Extract on the Growth Performance, Biochemical Parameters, Immunity, and Intestinal Morphology of Eimeria-Challenged Chickens. *Life* 13(9), 1927. https://doi.org/10.3390/life13091927

Arczewska-Wlosek A., **Świątkiewicz S**., Bederska-Lojewska D., Orczewska-Dudek S., Szczurek W., Boros D., Fraś A., Tomaszewska E., Dobrowolski P., Muszyński S., Kwiecień M., Schwarz T. 2019. The efficiency of xylanase in broiler chickens fed with increasing dietary levels of rye. *Animals* 9(2), 46. https://doi.org/10.3390/ani9020046

- **Patents and protection rights**

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- **Patents and protection rights from recent years (list of no more than 10, preferably from the last 6 years)**

  Method for the valorization of rapeseed cake (2021). Patent number: 237575

  Fermented rapeseed cake useful as feed additive or feed component for monogastric animals, preferably chickens and turkeys, comprises protein obtained by submerged fermentation using liquid enzymatic additive comprising exogenous phytase (2021). Patent number: 237574

  Feed additive for feeding poultry, preferably chickens for fattening (2022). Patent number: 240560

  Eubiotic formulation for addition to animal feed for livestock and poultry, comprises herbal extracts. Patent number: 240049

  Eubiotic preparation for poultry, in particular broiler chickens, and a method for producing poultry feed, in particular for broiler chickens (2022). Patent number: 240560

  Method for reducing phytic phosphorus in rapeseed meal through fermentation with enzymatic additives and bacteria (2022). Patent number: 42642

  Method for reducing glucozynolans in rapeseed meal through fermentation with enzymatic additives and bacteria (2022). Patent number: 242641

  Multi-component feed additive used for feeding poultry, preferably chickens for fattening (2023). Patent number: 429795

  Fermenting rapeseed meal with enzymes and bacteria for reducing oligosaccharides from raffinose family during refining rapeseed feed (2023). Patent number: 242643

Use of multi-component preparation in feeding chickens for fattening as factor limiting emission of methane. 2024). Patent number: 244622

- **Number of research projects**

  National projects: 2 – leader, 15 – investigator

  International projects: – leader, 1 – investigator

- **Scientific national and international projects from recent years (list of no more than 10, preferably from the last 6 years)**

  2024 – till now: "Partnership on Animal Health and Welfare (PAHW)" – HORIZON-CL6-2023-FARM2FORK-01; investigator

  2024–2025: “Climate-friendly technology for the production of high-quality eggs and poultry meat based on innovative methods for reducing harmful gas emissions from farms into the environment”. The operation is co-financed by the European Union under the "Cooperation" measure of the Rural Development Programme 2014-2020, "European Agricultural Fund for Rural Development: Europe Investing in Rural Areas"; investigator

  2024–2025: “Development and implementation of an innovative technology for antibiotic-free commercial turkey farming with enhanced animal welfare”. The operation is co-financed by the European Union under the "Cooperation" measure of the Rural Development Programme 2014-2020, "European Agricultural Fund for Rural Development: Europe Investing in Rural Areas"; investigator

  2023–2025: "Support for Demonstration Projects and Outreach Activities – DEMONSTRATIONS in the Production and Use of Domestic Plant Protein Sources for Feed Purposes," a project financed under the Rural Development Programme 2014-2020; consortium member, co-executor

  2016–2019: "GUTFEED – Innovative Nutrition in Sustainable Poultry Production" (acronym: GUTFEED), NCBiR BIOSTRATEG II 2015; consortium member, investigator

  2016–2019: "Strategy for ensuring and evaluating a database of cheap, effective, and safe feed energy raw materials for animal production based on domestic resources, with particular emphasis on modern rye varieties" (acronym: ENERGYFEED), NCBiR BIOSTRATEG II 2015; consortium member, task leader

- **Number of national/international awards for scientific achievements**

  National awards: 7

  International awards: –

- **National/international awards for scientific achievements from recent years (list of no more than 10, preferably from the last 6 years)**

  Several times award from the Director of the National Research Institute of Animal production for achieving the highest number of points for publishing original scientific papers (2015, 2016, 2017, 2018, 2019, 2020)

  2021: For the achievements in scientific research awarded the honorary badge "Meritorious for Agriculture" by the Minister of Agriculture and Rural Development

  2015: Gold Cross of Merit granted for the scientific achievements by the President of the Republic of Poland

  2006: Distinction for the colloquium and habilitation lecture awarded by the Scientific Council of the National Research Institute of Animal Production

2005: Bronze Cross of Merit granted for the scientific achievements by the President of the Republic of Poland

2001: Award for the Best Doctoral Dissertation organized by the Polish Association of Feed Producers

- **International activity (participation in international scientific societies, editorial boards of journals, etc.)**

  Editor in Chief of the journal *Annals of Animal Science*

  Section Editor of the journal *British Poultry*

  Section Editor of the journal *Animals*

  Member of the Worlds Poultry Science Association

- **International mobility (participation in international internships and scholarships)**

  –

- **Number of doctoral students**

  1

- **Teaching – list of classes conducted**

  Course for PhD students in Doctoral Studies at National Research Institute of Animal Production:

  – Genetically modified plants and the production of feed and nutrition of farm animals

  – Nutritional value and egg quality in relation to the feeding of laying hens

  – Immunomodulation – nutritional factors enhancing the immunity of farm animals

  – Metabolic role and sources of microelements in the nutrition of farm animals

  – Digestive processes and metabolism of nutrients in poultry

  – Feeds and feed mixtures, nutrient requirements in poultry

  – Use of zootechnical feed additives in poultry nutrition

  – By-products from biofuels and their nutritional value in poultry feeding

  – Ethical aspects of conducting animal experiments

  Course for PhD students in the Doctoral School of Natural and Agricultural Sciences:

  – Physiological basis of poultry nutrition

2.2 Rules for admissions to DS

According to Annexe No. 1
to Resolution No. 13/26.03.2025 of the Scientific Council
of IB PAS dated 26/03/2025

Rules for admissions to the Doctoral School of Natural and Agricultural Sciences

§ 1

1. The Doctoral School admissions shall be managed by an Admissions Committee (hereinafter referred to as the Committee) appointed by the Director of the W. Szafer Institute of Botany of the Polish Academy of Sciences (hereinafter referred to as "IBPAS"), with the reservation to § 5 item 3.
2. Results of the admissions procedure shall be publicly available.
3. The limit for admissions to the Doctoral School shall be announced by the Director of IB PAS upon prior consultations with the Council of the Doctoral School one month before the start of the admissions procedure. The limit for admissions shall depend on the number of the framework research themes submitted by the relevant Units in Charge. In case of admission conducted in accordance with § 5, the Director of IB PAS, at the request of the Director of the Managing Unit being the project beneficiary, may increase the admission limit by the number of places required for the recruitment for the project.
4. The announcement about admissions procedure in a given academic year, including the deadline for the submission of documents and the framework research themes, shall be announced on the Doctoral School's website (admissions announcement).
5. The template for the description of the research topic is set out by the head of the Doctoral School.

§ 2

1. The admissions procedure shall be carried out in the form of a competition.
2. The necessary entry requirement shall be submission by a candidate of a complete set of the required documents as specified in Appendix No. 1 to these Rules for Admissions.
3. The admissions procedure shall consist in the candidate being awarded points by the Committee for the particular stages of the procedure and, subsequently, summing up of the points and composing a ranking list for a given research theme.
4. As a necessary condition for admission to the Doctoral School:
    a. the candidate holds the professional title of master of science (MSc), MSc in Engineering or equivalent, or - in exceptional cases, justified by the highest quality

of scientific achievements – completed the first degree of studies (BSc) or the third-year of Master's studies;

b. the candidate hold a certificate or a diploma certifying completion of studies, confirming English language competencies at no less than B2 level;
c. the candidate should be awarded at least 11 points in the second stage of admissions procedure.

5. The candidate with a foreign diploma may also apply for admission to the Doctoral School, if the diploma:
    a. entitles to apply for a doctoral degree in the issuing country;
    b. or has been recognized as equivalent to its Polish counterpart on the basis of international agreements;
    c. or has been recognized as equivalent to its Polish counterpart by way of nostrification.
6. Diplomas obtained abroad do not entitle to continue education in Poland if:
    a. the institutions that issued them or the institutions in which the education was provided:
        i. were were not accredited universities on the date of issuing the diploma or pursued a study program without accreditation on the date of issuing the diploma;
        ii. do not operate in any country's higher education system;
    b. the higher education program or its part was implemented contrary to the regulations of the state in which the education was conducted.
7. In case of doubts as to whether a foreign diploma entitles to admission to a Doctoral School, written information about its recognition issued by the Polish National Agency for Academic Exchange (NAWA) is required.
8. The admissions procedure shall consist of two stages:
    a. at the first stage, the Committee shall evaluate the documentation submitted in terms of compliance with formal requirements as well as adequacy of the candidate's research profile for the research theme concerned giving between 0 to 5 points; the candidates who scored highest at the first stage shall be invited to take part in the second-stage procedure, however the limit of persons per research theme shall be four;
    b. at the second stage Committee shall conduct an interview with the candidate, intended to demonstrate the candidate's knowledge within the scope of the programme of the higher-education studies in connection with the candidate's Master's thesis giving between 0 to 5 points as well as evaluate the research interests and plans of the candidate related to the framework research theme referred to in § 1 Section 3, the candidate's knowledge of the scientific discipline represented by the Unit in Charge concerned, or the subject matter of the research covered by the project, giving between 0 and 10 points.
9. The admissions procedure shall be carried out in Polish. The interview referred to in item 9 b. may be held in English subject to prior arrangement with the Committee.

10. The admissions procedure may be carried out online with the use of electronic communications means allowing control over and recording of the course of the procedure as well as ensuring secret voting. Decision in this respect shall be taken by the Committee.

§ 3

1. The Committee shall be composed of: members of the Council of the Doctoral School and Head or Deputy Head of the Doctoral School acting as the chairperson of the Committee.
2. Names of the Committee members shall be announced to the public prior to the start of the admissions procedure.
3. Decisions of the Committee shall be taken by a simple majority of votes with at least one-half of the number of the Committee members present.
4. The Committee shall carry out the following tasks involved in the admissions procedure:
    a. award points for the 1st and 2nd stage of the admissions procedure;
    b. compile a ranking list of persons who scored highest up to the limit of admissions to the Doctoral School;
    c. take decisions on whether a candidate is to be admitted or refused admission to the Doctoral School;
    d. notify a candidate of admission to the Doctoral School;
    e. communicate a decision to a candidate, in writing, on a refusal to admit to the Doctoral School; delivery of the decision by ordinary mail shall require confirmation of receipt.
5. Admission to the Doctoral School shall consist in enrolment in a list of doctoral students.
6. A refusal to admit to the Doctoral School shall be in the form of an administrative decision of the Admissions Committee. The decision shall be signed by the chairperson of the Admissions Committee.
7. The decision of the Admissions Committee may be appealed against to the Director of IB PAS within fourteen days of receipt thereof. The decision of the Director of IB PAS shall be final.

§ 4

1. Meetings of the Committee shall be reports.
2. The reports shall be signed by the reporting clerk and the chairperson of the Committee. A list of attendance at the Committee meeting shall be attached to the report.
3. A model form of decision on a refusal of admission to the Doctoral School.

§ 5

1. The Head of the Doctoral School may agree to conduct additional recruitment to the Doctoral School carried out along with admissions of candidates for doctoral students to a project financed by external institutions (The Ministry of Science and Higher Education, The National Science Centre, The National Centre for Research and Development, The

Foundation for Polish Science, etc.), where one of the Doctoral School's Managing Units is a beneficiary.

2. In the event of admission process mentioned in item 1,, formal requirements to be satisfied by a candidate to the Doctoral School shall be extended, should such a need arise, to include the requirements set forth in the rules for the project concerned.
3. Admission, referred to item 1, may be conducted by the Committee in accordance with the rules applicable in the project, appointed in the Managing Unit being the project beneficiary, after increasing the admission limit by the Director of IB PAS. The Head of the Doctoral School or his/her deputy is a member of the Committee.
4. The announcement of the admission to a project should contain information about the simultaneous admission to the Doctoral School, and the candidate should also submit a set of documents specified in Appendix No. 2 to the to these Rules for Admission.
5. After conducting the admission referred to in item 1, the director of the Managing Unit being the project beneficiary informs the head of the Doctoral School about the result of the recruitment and provides him/her with the relevant documentation of the admitted person.
6. The person admitted to the project is enrolled on the list of doctoral students after the head of the Doctoral School positively verifies that the person meets the requirements for admission to the Doctoral School.
7. The other admission rules specified in paragraphs 2 to 4 shall apply to admission referred to item 1, accordingly.

§ 6

1. The Doctoral School shall provide conditions for persons with special needs due to health conditions, including persons with disabilities, to fully participate in the admission process to the Doctoral School, in particular by ensuring accessibility to the admission process.
2. Applications of a candidate with special needs, shall be submitted to the Head of the Doctoral School through the Commission.
3. The candidate's medical records going to the Head of the Doctoral School for consideration of a given application shall be returned to the candidate after the decision is made, unless special regulations require them to remain on file. The Head shall make a note of the return of the medical records and attach it to the recruitment file.

§ 7

1. Protection from harmful, arduous, and hazardous to health factors during scientific research shall be provided to doctoral students by the respective Managing Units according to the rules applicable to the employees of these Units.
2. At the request of the Director of the Managing Unit, the Head of the Doctoral School shall issue a referral to a person recruited to the Doctoral School for an appropriate medical examination.

§ 8

1. Unless otherwise stipulated in these Recruitment Rules, candidates' applications shall be submitted in writing, in electronic form (with qualified electronic signature), in electronic form with trusted or personal signature.
2. Unless otherwise stipulated in these Recruitment Rules, the deadlines established therein may be postponed or restored at the justified request of the candidate, in particular caused by health reasons.

Appendix No. 1
to the Rules for Admissions to the Doctoral School of Natural and Agricultural Sciences

Required documents to be submitted by persons applying for admission to the Doctoral School of Natural and Agricultural Sciences

1. Application for admission to the Doctoral School along with reasons therefor and specification of the framework research theme referred to in the admissions announcement; the candidate may indicate the second research theme (along with the justification of the choice), the implementation of which he/she is interested in if he/she is not accepted for the research theme indicated as the first choice.
2. Consent to the processing of personal data for the purposes of the admissions procedure.
3. CV specifying a list of scientific achievements, employment record and participation in scientific Project.
4. Personal data form (a model form is available on the website: www.botany.pl).
5. 2 photos + one photo in electronic form (passport-sized format).
6. Diploma certifying completion of Master studies or a document confirming the fulfilment of the conditions set out in § 2 sec. 6-8 of Recruitment Rules; in the case of a diploma of study abroad, it should be endorsed with an apostille clause.
7. Certificate or diploma certifying completion of studies, confirming English language competencies at no less than B2 level; the list of certificates is specified in Appendix No. 2 to these Rules for Admissions.
8. Photocopy of the student's record book/diploma supplement containing the relevant entries.
9. Statement concerning previously commenced doctoral studies or doctoral programme, or education at another doctoral school.
10. Information on the doctoral scholarship received at the doctoral school and the period for which it has been paid.
11. A copy of the abstract of the Master's thesis in Polish or English.
12. A statement of no health-related contraindications to carry out the tasks provided for under the research theme concerned.
13. A statement to the effect that the person can use electronic equipment in order to attend classes held with the use of distance learning methods and techniques.
14. Declaration of disability.

List of certificates confirming English language competencies at the B2 level

Certificates confirming English language competencies at no less than B2 level according to the Common European Framework of Reference for Languages: learning, teaching, assessment (CEFR) - Global scale:

1. Certificates issued by institutions associated with the Association of Language Testers in Europe (ALTE) for the following levels: ALTE Level 3 (B2), ALTE Level 4 (C1), ALTE Level 5 (C2), in particular First Certificate in English (FCE), Certificate in Advanced English (CAE), Certificate of Proficiency in English (CPE), Business English Certificate (BEC) Vantage - not lower than Pass, Business English Certificate (BEC) Higher, Certificate in English for International Business and Trade (CEIBT),
2. Certificates issued by the following institutions:
    a. Educational Testing Service (ETS) - in particular the following certificates: Test of English as a Foreign Language (TOEFL) - at least 87 points in the Internet-Based Test (iBT) version; Test of English as a Foreign Language (TOEFL) - at least 180 points in the Computer-Based Test (CBT) version plus at least 50 points for Test of Spoken English (TSE); Test of English as a Foreign Language (TOEFL) - at least 510 points in the Paper-Based Test (PBT) version plus at least 3.5 points z Test of Written English (TWE) and at least 50 points for Test of Spoken English (TSE); Test of English for International Communication (TOEIC) - at least 700 points; Test de Français International (TFI) - at least 605 points,
    b. European Consortium for the Certificate of Attainment in Modern Languages (ECL),
    c. City & Guilds, City & Guilds Pitman Qualifications, Pitman Qualifications Institute - in particular the following certificates: English for Speakers of Other Languages (ESOL) - First Class Pass at Intermediate Level, Higher Intermediate Level, Advanced Level; International English for Speakers of Other Languages (IESOL) - the "Communicator" level, the "Expert" level, the "Mastery" level; City & Guilds Level 1 Certificate in ESOL International (reading, writing and listening) Communicator (B2) 500/1765/2; City & Guilds Level 2 Certificate in ESOL International (reading, writing and listening) Expert (C1) 500/1766/4; City & Guilds Level 3 Certificate in ESOL International (reading, writing and listening) Mastery (C2) 500/1767/6; Spoken English Test (SET) for Business - Stage B the "Communicator" level, Stage C the "Expert" level, Stage C the "Mastery" level; English for Business Communications (EBC) - Level 2, Level 3; English for Office Skills (EOS) - Level 2,
    d. Edexcel, Pearson Language Tests, Pearson Language Assessments - in particular the following certificates: London Tests of English, Level 3 (Edexcel Level 1

Certificate in ESOL International); London Tests of English, Level 4 (Edexcel Level 2 Certificate in ESOL International); London Tests of English, Level 5 (Edexcel Level 3 Certificate in ESOL International),

e. Education Development International (EDI), London Chamber of Commerce and Industry Examinations Board - in particular the following certificates: London Chamber of Commerce and Industry Examinations (LCCI) - English for Business Level 2, English for Business Level 3, English for Business Level 4; London Chamber of Commerce and Industry Examinations (LCCI) - Foundation Certificate for Teachers of Business English (FTBE); London Chamber of Commerce and Industry Examinations (LCCI) - English for Tourism Level 2 - "Pass with Credit" level, "Pass with Distinction" level,

f. University of Cambridge ESOL Examinations, British Council, IDP IELTS Australia - in particular the following certificates: International English Language Testing System IELTS - more than 6 points,

g. The Coordination Board for Language Proficiency Certification at the Warsaw University;

3. Telc GmbH, WBT Weiterbildungs-Testsysteme GmbH - in particular the following certificates: B2 Certificate in English - advantage, B2 Certificate in English for Business Purposes - advantage, Certificate in English for Technical Purposes (B2), telc English B2, telc English B2 Business, telc English B2 Technical, telc English C1.

D.2 Terms of conditions of DS

According to Annexe No. 1
to Resolution No. 12/26.03.2025 of the Scientific Council
of IB PAS dated 26/03/2025

Terms and conditions of the Doctoral School of Natural and Agricultural Sciences

General provisions

§1

1. The provisions of these Terms and Conditions shall apply to the Doctoral School of Natural and Agricultural Sciences (hereinafter referred to as the "Doctoral School") run by:
    a. W. Szafer Institute of Botany of the Polish Academy of Sciences (the "IB PAS") – Coordinating Unit;
    b. The Franciszek Górski Institute of Plant Physiology of the Polish Academy of Sciences (the "IPP PAS");
    c. The Institute of Nature Conservation of the Polish Academy of Sciences (the "INC PAS");
    d. The Institute of Systematics and Evolution of Animals of the Polish Academy of Sciences (the "ISEA PAS");
    e. The National Research Institute of Animal Production (the "NRIAP"), hereinafter referred to as the "Managing Units".
2. The Doctoral School shall operate under the Higher Education and Science Law of 20 July 2018 (Dz. U. of 2024, item 1571, as amended), hereinafter referred to as the "Law", and secondary legislation issued on the basis thereof.
3. The detailed distribution of tasks connected with management of the Doctoral School and the manner of financing thereof shall be defined in an agreement concluded among Managing Units.
4. These Terms and Conditions define the organisation of education in the Doctoral School to the extent not regulated by the Law, in particular:
    a. the procedure for appointing and changing a supervisor, supervisors or an auxiliary thesis supervisor;
    b. the manner of documenting the course of education;
    c. the manner of conducting the mid-term evaluation;
    d. the conditions for extending the deadline for submission of the thesis.

§ 2

1. The Doctoral School is an organised form of education that prepares doctoral students for obtaining a degree of doktor.
2. The education of doctoral students in the Doctoral School shall be interdisciplinary and prepare for obtaining a degree of doktor in the following fields:
    a. biological sciences;

b. agriculture and horticulture;
c. animal science and fisheries.

3. The education of doctoral students in the Doctoral School shall be free of charge.
4. One may only be a doctoral student in one doctoral school at the same time.
5. The main tasks of the Doctoral School include:
    a. to create the working environment for doctoral students, which enables doctoral students to conduct research that results in a doctoral thesis;
    b. to implement curricula aimed at supplementing knowledge and improving competences, from different disciplines and areas of science, development of scientific independence, building a set of competences which increase a chance of finding an attractive job after obtaining a degree of doktor;
    c. to ensure area for integration of doctoral students conducting research in different disciplines.
6. In particular, the Doctoral School creates conditions for full participation in education and research and in the life of the scientific community, including:
    a. to be educated within the framework of an interdisciplinary educational program, including compulsory and optional classes;
    b. to conduct independent scientific research in accordance with the Individual Research Plan (hereinafter referred to as IRP);
    c. preparation of scientific publications by the doctoral student;
    d. preparation of a doctoral dissertation under the supervision of a supervisor or supervisors or a supervisor and an auxiliary thesis supervisor.
7. The Doctoral School creates conditions for the implementation of projects funded by external institutions (the Ministry of Science and Higher Education, the National Science Centre, the National centre for Research and Development, the Foundation for Polish Science, etc.), including Implementation Doctorate, in accordance with the rules established by the relevant institutions.

§ 3

Doctoral students shall establish the Self-Government of Doctoral Students, which shall operate in compliance with the Law and the Terms and Conditions of the Self-Government of Doctoral Students.

§ 4

The organisational and administrative services of the Doctoral School and doctoral students shall be provided by the Secretariat of the Doctoral School.

§ 5

1. The Head of the Doctoral School shall be appointed and removed by the college of Directors of Managing Units.
2. The Director of the IB PAS shall appoint and remove the Deputy Head of the Doctoral School and the Secretary of the Doctoral School, and indicate the scope of their tasks.

3. The Head of the Doctoral School may be a researcher holding at least the degree of doktor habilitowany, and Deputy Head of the Doctoral School - a researcher holding at least the PhD degree (doktor) employed with the one of the Units in Charge.
4. The Head of the Doctoral School shall:
    a. manage the works of the Doctoral School and represent it towards Directors of Managing Units and third parties, in compliance with the scope of duties and granted powers of attorney;
    b. issue decisions in individual cases pertaining to doctoral students, including administrative decisions under the authority of the IB PAS Director;
    c. present to the Scientific Councils of the Managing Units, on an annual basis, a report on the activity of the Doctoral School;
    d. prepare the material and financial plan of the Doctoral School and present it to the Council of the Doctoral School for approval;
    e. have at his/her disposal funds intended for managing the Doctoral School, in compliance with the approved material and financial plan;
    f. prepare the annual financial settlement of the activity of the Doctoral School and present it to the Council of the Doctoral School for approval;
    g. together with the Council of the Doctoral School, prepare the School for evaluation;
    h. organise performance the programme of doctoral studies;
    i. makes decisions on extending the deadline for submission of the thesis;
    j. issues internal acts in force at the Doctoral School (regulations, announcements).
5. A doctoral student may file an appeal against a decision of the Head of the Doctoral School with the Director of the IB PAS. The decision of the Director of the IB PAS shall be final.

§ 6

1. The substantive supervision over the activity of the Doctoral School shall be exercised by Scientific Councils of the Managing Units.
2. The Scientific Councils of the Managing Units shall, under identical resolutions, in particular:
    a. adopt the principles of recruitment to the Doctoral School;
    b. adopt the terms and conditions of the Doctoral School;
    c. establish the curriculum of the Doctoral School, after evaluation of the Self-Government of Doctoral Students. In the event of ineffective lapse of 7 days, the requirement to make the said evaluation shall be deemed satisfied;
    d. adopt the annual report of the Head of the Doctoral School on the Doctoral School's activity.
3. The Scientific Councils of the Managing Units may authorise the Scientific Council of the Coordinating Unit to introduce any modification to the resolutions set out in item 2 letters (a)-(c), save for the necessity to obtain a positive outcome of the evaluations made by the Council of the Doctoral School as set out in § 7 item 3 letters (a)-(c).

§ 7

1. The Council of the Doctoral School (the "Council") shall operate in the Doctoral School.
2. The Council shall be composed of:

a. the Head of the Doctoral School as the Chair of the Council;
b. Directors of the Managing Units or persons authorised by the Directors;
c. one representative designated by each Director or by the Scientific Councils of the Managing Units;
d. two representatives of the Self-Government of Doctoral Students.

3. The tasks of the Council shall include in particular:
   a. to evaluate draft courses of studies and curricula in the Doctoral School and any modification thereof;
   b. to evaluate the draft Terms and Conditions of the Doctoral School and any modification thereof;
   c. to evaluate the draft resolution on recruitment for the Doctoral School and any modification thereof;
   d. to designate a candidate for the Head of the Doctoral School;
   e. to approve the annual material and financial plan of the Doctoral School;
   f. to approve the report of the Head of the Doctoral School on performance of the material and financial plan of the Doctoral School;
   g. to prepare a proposal on the effects of education that should be acquired by a doctoral student during education in the Doctoral School;
   h. collecting IRP of doctoral students;
   i. to consider appeals filed by doctoral students against a negative outcome of the mid-term evaluation;
   j. to approve the Terms and Conditions of Work of the Council;
   k. together with the Head of the Doctoral School, prepare the School for evaluation;
   l. to express opinions and remarks in issues of key significance for the functioning of the Doctoral School or education of doctoral students.

§ 8

1. The Doctoral School has been established on the basis of the decision of Directors of the Managing Units.
2. The purpose of education of doctoral students in the Doctoral School shall be acquisition by doctoral students of skills and knowledge as well as social qualifications on the level of the Eighth Polish Qualification Framework in the scope of conducting scientific research connected with the scientific disciplines represented in the Doctoral School.
3. Education of doctoral students in the Doctoral School shall allow to obtain the effects of education in the form of:
   a. advanced knowledge in a defined field connected with the area of the conducted scientific research;
   b. skills connected with the methodology of conducting scientific research;
   c. social competences relating to the scientific and research activity and the social role of the scholar.

§ 9

1. Classes in the Doctoral School shall be run in Polish or English.

2. The education in the Doctoral School shall last eight terms.

Recruitment

§ 10

1. A Polish citizen or foreigner may be admitted to the Doctoral School, save that the principles of undertaking education by foreigners are regulated by separate provisions.
2. A person who holds a professional title of magister, magister inżynier or an equivalent professional title may be admitted to the Doctoral School; in exceptional events, justified by the highest quality of the scientific accomplishments, a person that does not meet the said requirements may be admitted to the Doctoral School, if he/she is a graduate of undergraduate study or a student that has completed the third year of long-cycle programmes.
3. Recruitment to the Doctoral School shall be conducted as a competition under the principles adopted by the Scientific Councils of the Managing Units. The outcome of the competition shall be public.
4. The principles of recruitment adopted by the Scientific Councils of the Managing Units shall be made public not later than 5 months prior to commencement of the recruitment.
5. Admission to the Doctoral School shall be effected by making an entry onto the register of doctoral students.
6. Refusal to admit to the Doctoral School shall be made under an administrative decision of the Recruitment Committee. The decision shall be signed by the Chair of the Recruitment Committee.
7. An appeal against the decision of the Recruitment Committee may be filed with the Director of the IB PAS, within fourteen days of service thereof. The decision of the Director of the IB PAS shall be final.

Rights and obligations of doctoral students

§ 11

1. A person admitted to the Doctoral School shall acquire the rights of the doctoral student from the time of taking an oath, whose content is defined in Annexe No.1 to these Terms and Conditions.
2. The doctoral student shall comply with the content of the oath, these Terms and Conditions, the Code of Ethics of the Doctoral Student and any other generally applicable legal provisions and applicable internal regulations of the Managing Units.
3. The rights and obligations of the doctoral student shall expire on the date of completion of education in the Doctoral School or removal from the register of doctoral students.

§ 12

1. In particular, the doctoral student shall:

a. perform the curriculum;
b. perform the IRP;
c. publish, as part of education in the Doctoral School, at least one scientific article in a scientific journal or in reviewed materials from an international conference, included in the year of publication of the article in the final form in the list of articles issued under Article 267 Section 2 item 2 letter (b) of the Higher Education and Science Law, or one scientific monograph published by the publishing house that was entered, in the year of publishing the monograph in the final form, in the specification prepared in compliance with the provisions issued under Article 267 Section 2 item 2 letter (a) of the Higher Education and Science Law or a chapter in such monograph, whose topic corresponds to the profile of the Doctoral School;
d. participate in organisational, teaching and scientific works of the Managing Units;
e. excuse absence during mandatory classes covered by the syllabus, on the basis of:
    1) a sick leave,
    2) participation in field research, confirmed by the thesis supervisor,
    3) going to conferences, trainings, internships, workshops and other events, as agreed with the thesis supervisor;
f. run classes, if this obligation is provided for in the curriculum;
g. publish, in consultation with the thesis supervisor, the obtained research results;
h. present the doctoral thesis within the time limits defined in the IRP;
i. apply, in consultation with the thesis supervisor, for funds intended for research in the Unit in Charge in which the research for doctoral dissertation is being conducted;
j. submit semesterly reports on, among other things, the implementation of the IRP, duties performed and other achievements;
k. promptly inform the Head of the Doctoral School of any change of name or address and other personal information required by the Doctoral School.

2. The doctoral student shall be entitled in particular to:
    a. scientific supervision;
    b. social and health insurance under the principles defined in separate provisions;
    c. a doctoral scholarship under the principles defined in these Terms and Conditions;
    d. a doctoral student identity card;
    e. leaves not exceeding eight weeks per year, set by the head of the Doctoral School in the organization of the academic year, referred in § 18 item 3;
    f. apply for going to a scientific scholarship or scientific training, as agreed with the thesis supervisor, Director of a relevant Managing Unit and the Head of the Doctoral School;
    g. suspend the education for the period corresponding to the duration of the maternity leave, the leave under the terms of the maternity leave, the paternity leave and the parental leave;
    a. extend the time limit for presentation of the doctoral thesis defined in the IRP under the principles defined in these Terms and Conditions;
    b. receive a certificate on the course of education in the Doctoral School;
    c. become associated in organisations of doctoral students of the Managing Units.
3. The doctoral student shall not be entitled to repeat a year.

Self-government of doctoral students

§ 13

1. The doctoral students in the Doctoral School shall establish a Self-Government of Doctoral Students.
2. The Self-Government of Doctoral Students shall operate through its authorities, including:
    a. chair;
    b. resolution-adopting body.
3. The Self-Government of Doctoral Students shall be the only representative of all doctoral students in the Doctoral School.
4. The Self-Government of Doctoral Students shall conduct activity in the scope of matters pertaining to doctoral students, including social and cultural matters.
5. The Self-Government of Doctoral Students operates on the basis of the Terms and conditions of Self-Government of Doctoral Students.
6. The Director of the IB PAS shall repeal the acts issued by the Self-Government of Doctoral Students that do not conform with generally applicable legal provisions in force, the statutes of the Managing Units, these Terms and Conditions or the terms and conditions of the Self-Government. A complaint against the decision on repealing an act may be filed with the administrative court within 30 days of the delivery thereof. Provisions on filing complaints against administrative decisions with the administrative court shall apply mutatis mutandis.
7. The Managing Units shall provide for the conditions necessary for functioning of the Self-Government of Doctoral Students, including the infrastructure and funds which shall be at disposal of the Self-Government of Doctoral Students as part of its activity.

§ 14

1. In the event of occurrence in the Doctoral School of a labour dispute regarding material issues of doctoral students, there may be conducted a protest or strike under the principles defined in the Law.
2. Participation in a protest or strike shall be voluntary and constitute no breach of the doctoral student's duties.

Disciplinary liability of doctoral students

§ 15

1. For breach of rules and regulations applicable to the Managing Units and any acts to the detriment of dignity of the doctoral student, the doctoral student shall bear disciplinary liability.
2. The disciplinary procedure for doctoral students shall be conducted by the Disciplinary Ombudsman, the Disciplinary Committee and the Appeal Disciplinary Committee, in compliance with the principles defined in the Law, the terms and conditions of the Self-Government of Doctoral Students and the Regulations of Disciplinary Proceedings in Doctoral Students' Affairs.

3. The Disciplinary Ombudsman competent for cases pertaining to doctoral students shall be appointed by the Director of the IB PAS from researchers of the Managing Units for the term of four years, beginning on 1 January of the year following the year in which the term of the Director of the IB PAS started.
4. The Disciplinary Ombudsman shall instigate and conduct investigation upon instructions of the Director of the IB PAS and serve the function of the prosecutor before the Disciplinary Committee. The instructions of the Director of the IB PAS may not regard the actions taken by the Disciplinary Ombudsman as part of the handled matters.
5. The Director of the IB PAS shall appoint the Disciplinary Committee and the Appeal Disciplinary Committee for the term of one year, to deal with cases pertaining to doctoral students under the principles defined in the Statute of the IB PAS.
6. Election of Members of the Disciplinary Committees, from among doctoral students, shall be conducted by the Self-Government of Doctoral Students, in compliance with the principles defined in the terms and conditions of the Self-Government of Doctoral Students.
7. The chair of each committee shall be appointed by the Director of the IB PAS from among its Members being researchers.

Doctoral scholarship

§ 16

1. A doctoral student that does not hold a degree of doktor shall be granted a doctoral scholarship, subject to item 2.
2. A doctoral scholarship is not entitled to a doctoral student whose study at the Doctoral School entails the obligation to be employed at the Managing Unit under an employment contract with a salary higher than that of a professor.
3. The total period of receiving the doctoral scholarship in the Doctoral School may not exceed 4 years. The suspension period shall not be included in the aforesaid period.
4. The amount of the monthly doctoral scholarship shall reach, subject to item7, not less than:
    a. 37% of the minimum remuneration for a profesor, defined under separate provisions, up to the month in which the mid-term evaluation was conducted;
    b. 57% of the minimum remuneration for a profesor, defined under separate provisions, after the month in which the mid-term evaluation was conducted.
5. The principles and amount of granting and paying the doctoral scholarship in a given academic year shall be defined by the Director of the IB PAS after obtaining an opinion of the Council of the Doctoral School and made public at least one month prior to the beginning of the academic year. In compliance with the principles set out in item 3, the doctoral scholarship may be made dependent on the achievements of doctoral students.
6. Within the education suspension period, the relevant provisions on determination of the maternity benefit shall apply to determination of the amount of the doctoral scholarship, save that the base of the benefit shall be understood as the amount of the monthly doctoral scholarship set out in item 3, due on the date of submission of an application for suspension.

7. A doctoral student that holds a certificate on disability, a certificate on the degree of disability or the certificate set out in Article 5 and Article 62 of the Vocational and Social Rehabilitation and Employment of the Disabled Act of 27 August 1997 shall receive a doctoral scholarship in the amount 30% higher than the amount set out in item 3 subitem 1.
8. A doctoral student that has presented a doctoral thesis earlier than the date of completion of the education as set out in the curriculum shall receive a doctoral scholarship up to the date of expiry of the education, but not longer than for the period of 6 months. The provisions of item 2 shall apply.
9. The doctoral scholarship shall be paid by the IB PAS, unless the doctoral student receives a research scholarship covering the doctoral scholarship - then the scholarship is paid by the Director of the Unit in Charge being the beneficiary of the research project.
10. Doctoral scholarships shall be financed from a subsidy received by the IB PAS for education of doctoral students, after deducting the other costs of running the School, and if the funds from the subsidy do not suffice, the Unit in Charge in which the research for doctoral dissertation is being conducted shall be liable to finance the scholarship of a given doctorate student.

Research supervision over doctoral students

§ 17

1. The Managing Units shall provide the doctoral student, throughout the period of education, with research supervision and support in the independent research work, exercised by the thesis supervisor, including during the doctoral student's stay abroad.
2. Within 3 months of the date of undertaking education, the Scientific Council of the Unit in Charge in which the research for doctoral dissertation is being conducted shall designate a thesis supervisor or thesis supervisors for the doctoral student.
3. The Scientific Board of IB PAS shall appoint a doctoral dissertation supervisor, supervisors or an auxiliary supervisor at the request of a doctoral student via the head of the Doctoral School. The following should be attached to the request:
    a. a concept of the doctoral dissertation, including: the proposed title of the dissertation and its key assumptions;
    b. proposed candidates for the functions of the supervisor, supervisors or an auxiliary supervisor, together with their written consent and a a declaration of compliance with the conditions set forth in paragraph 3;
    c. a curriculum vitae proposed candidates for the functions of the supervisor or supervisors.
4. The thesis supervisor may be a person that holds at least habilitation degree.
5. If necessary, a competent Scientific Council may designate for the doctoral student an auxiliary thesis supervisor, prior to presentation of the IRP. An auxiliary thesis supervisor may be a person that holds at least a degree of doktor.
6. The thesis supervisor may exercise, at the same time, supervision over not more than five doctoral students.

7. An auxiliary thesis supervisor may exercise, at the same time, supervision over not more than three doctoral students.
8. An auxiliary thesis supervisor shall serve the auxiliary function as regards the supervision over the doctoral student, including in particular in the research planning, performance and result analysis processes.
9. In particular, the thesis supervisor, acting in compliance with the education programme and an IRP of the doctoral student, shall:
    a. establish the individual course of education and self-education of the doctoral student;
    b. introduce the doctoral student into the theme of the doctoral thesis and make him/her familiar with proper research methods and techniques;
    c. exercise supervision over the progress of the doctoral student's works and the presentation of the results;
    d. carry out evaluation of progress in the works of the doctoral student;
    e. issue an opinion on the doctoral student's applications for extension, suspension of education in the Doctoral School, leave and any other applications set out in these Terms and Conditions;
    f. issue an opinion on all applications submitted by the doctoral student with regard to the course of studies.
10. In particularly justified cases, the Units in Charge may provide the doctoral student, throughout the period of doctoral studies, with research supervision and support exercised by the second thesis supervisor, holding at least the degree of doktor habilitowany in any other field than biological sciences (biology), agriculture and horticulture (agronomy) or animal production and fisheries (zootechnics).
11. Any change of the designated thesis supervisor or auxiliary thesis supervisor shall be made upon a reasonable application submitted by such persons or in the event of a negative outcome of the evaluation of the thesis supervisor at the time of the mid-term evaluation. The change may also take place at the justified request of the doctoral student.

Organisation and course of studies

§ 18

1. In the Doctoral School the academic year shall last from 1 October to 30 September and be divided into two terms.
2. On the basis of the programme of study and learning outcomes in the Doctoral School, the Head of the Doctoral School shall define the course of education and develop schedules of classes.
3. The organisation of the academic year shall be defined by the Head of the Doctoral School and made public at least 3 months prior to the beginning of the academic year.
4. The Head of the Doctoral School may announce temporary suspension of classes and introduce any other changes to the announced schedule of the academic year or plans of classes.

§ 19

1. In the Doctoral School classes may be run with the use of e-distance teaching methods and techniques, and in such situation verification of the achieved effects described in study program can also be done by means of e-distance techniques ensuring control over the verification process of the achieved effects and its registration. The scope and form of classes run with the use of e-distance teaching methods and techniques shall be defined in the programme of the studies.
2. All classes shall be subject to anonymous evaluation carried out by doctoral students.

§ 20

1. At the Doctoral School, doctoral education is conducted on the basis of the program of study and learning outcomes established by the Scientific Councils of the Managing Units with consideration of universal design.
2. The curriculum of the Doctoral School shall define in particular:
    a. mandatory classes;
    b. optional classes;
    c. the specification and number of mandatory credits and examinations.
3. The curriculum of the Doctoral School may also define requirements for student practice.
4. The course of education shall define the duration of the education , particular courses, the number of hours of particular courses, the number of ECTS credits allocated to them, as well as the form of crediting.
5. The syllabus shall define:
    a. the category of the subject (compulsory and optional classes);
    b. the forms of running classes and the educational methods, together with the number of hours assigned to such forms;
    c. manners of verification of the degree of accomplishing the assumed effects of education;
    d. manners and conditions of crediting each term;
    e. types of the doctoral student's activity constituting the justification of the allocated number of ECTS credits.
6. The syllabus shall be prepared by the tutor running a particular course.

§ 21

1. In consultation with the thesis supervisor(s), the doctoral student shall develop an IRP that includes, in particular, the schedule of preparation of the doctoral thesis and submit it to the Council of Doctoral School within 12 months of the beginning of the education. If an auxiliary thesis supervisor is also designated, the plan shall also be presented to the auxiliary thesis supervisor for the purpose of its evaluation.
2. The doctoral student's Individual Research Plan shall take into account the profile of the scientific research conducted in the Managing Units.
3. A template of the form of the Individual Research Plan is set out by the Head of the Doctoral School.

4. The IRP of the doctoral student is subject to approval by the School Council. In the event of formal deficiencies, the School Council has the right to oblige the doctoral student to supplement or correct the submitted Individual Research Plan within 10 business days of receiving the request to supplement or correct it. The resubmitted Individual Research Plan should also be agreed with the thesis supervisor or supervisors and approved by the auxiliary thesis supervisor.
5. Implementation of the plan shall be subject to the mid-term evaluation carried out in the middle of the education period defined in the curriculum.
6. In reasonable cases it shall be permissible, upon consent of the thesis supervisor and the Head of the Doctoral School, to change the Individual Research Plan, as well as changes in the schedule for the preparation of the doctoral thesis. The changes shall be made not late as 60 days before the data of the mid-term evaluation and 30 days before the date indicate deadline for submitting the doctoral dissertation.
7. Changes of the Individual Research Plan are made by submitting an annex to the Individual Research Plan along with the uniform text of the the Individual Research Plan. The annex shall be approval as follow items 4-6.
8. The mid-term evaluation shall be conducted by the committee, appointed by the College of Directors of the Managing Units. The Committee shall be composed of 3 persons, including at least 1 person holding the degree of doktor habilitowany or title of profesor in the field in which the doctoral thesis is prepared, employed beyond the Managing Units, or an employee of a foreign university or scientific institution with significant achievements in the field covered by the doctoral thesis. Neither the thesis supervisor nor the auxiliary thesis supervisor may be Members of the Committee.
9. A person composing the Committee, employed beyond the Managing Units, shall be entitled to the remuneration in the amount of 20% of the minimum remuneration of a profesor, defined in separate provisions.
10. At the time of the mid-term evaluation, the Committee shall also evaluate the supervision exercised over the doctoral student by the thesis supervisor.
11. The mid-term evaluation shall result in a positive or negative outcome. The outcome of the evaluation, together with reasons, shall be public.
12. The principles of the mid-term evaluation and evaluation of the supervision exercised over the doctoral student by the thesis supervisor are set out in Annexe No. 2 to these Terms and Conditions.
13. Reports on the course and outcome of the mid-term evaluation of the doctoral student and the supervision exercised over the doctoral student by the thesis supervisor shall be presented by the Committee to the Head of the Doctoral School.
14. The doctoral student or the thesis supervisor may file an appeal against a negative outcome of the mid-term evaluation with the Council of the Doctoral School.
15. The evaluation of the supervision exercised over the doctoral student by the thesis supervisor shall be taken into account in the periodic evaluation of the employee and, in compliance with the Law, affect the possibility of entrusting the employee with supervision over other doctoral students.
16. In the event of a positive outcome of the evaluation of the doctoral student and a negative outcome of the evaluation of the thesis supervisor, the thesis supervisor should be changed within three months.

§ 22

1. Classes for doctoral students shall be run in the form of obligatory lectures and classes, ended with examinations or credits, on the dates provided for in the education programme.
2. Classes for doctoral students may be run by researchers or any other persons with considerable scientific achievements published in the last 5 years or holding practical experience in the topic of the classes to be run.
3. To credits and examinations there shall apply the two-grade scale of "passed" or "failed" or a grade according to the following scale of marks and the corresponding ECTS credits:

very good	5.0 = A
good plus	4.5 = B
good	4.0 = C
satisfactory plus	3.5 = D
satisfactory	3.0 = E
fail	2.0 = F

4. A fail shall mean that no credit was obtained or that the examination was not passed.
5. The doctoral student may only resit an examination once in a given course in a given academic year.
6. The procedure for examinations shall be defined by the syllabus of the course, approved by the Head of the Doctoral School.

§ 23

1. Conditions for crediting the academic year by a doctoral student shall include:
    a. submission, at the end of each term, of a written end-of-term report on the course of the doctoral student's work, including the positive outcome of the evaluation of the doctoral student's work made by the thesis supervisor(s). The form of the report is determined by the Head of the Doctoral School;
    b. obtaining by the doctoral student of mandatory credits and passing all examinations provided for in the course of education for a given term;
    c. obtaining the number of ECTS credits for compulsory and optional classes indicated in the educational program;
    d. presence the oral report at the Scientific Reporting Session.
2. A mark based on the evaluation of the doctoral student's work made by the thesis supervisor(s) shall be given at the end of each term and entered into the written end-of-term report of the doctoral student.

Individual course of education

§ 24

1. In justified cases, doctoral students may apply for a mode of education based on an individual course of education.
2. The individual course of education concerns mainly changes in the organization of classes, it cannot refer to the scope of the learning outcomes resulting from the curriculum at the Doctoral School. In particular, it includes changes in the forms and dates of crediting classes and the schedule for their implementation.
3. A doctoral student applying for education on the basis of an individual course of education shall submit an application together with a justification to the Head of the Doctoral School.
4. The consent for the implementation of education on the basis of an individual course of education is granted by the Head of the Doctoral School at least 14 days before the commencement of the individual course of education. The attachments to the decision of the Head of the Doctoral school are:
    a. list of subjects included in the individual course of education , along with their syllabuses;
    b. consent of other domestic or foreign units for the implementation of subjects from which the doctoral student intends to obtain credit, if they have been demonstrated in the individual course of education.
5. The Head of the Doctoral School determines the rules and procedure for the implementation of the individual course of education throughout its duration and supervises the implementation of the adopted schedule.
6. In particular, the below mentioned doctoral students may apply for the education mode implemented on the basis of an individual program:
    a. foreigners;
    b. with special needs ;
    c. participating in a part of education in another national or foreign unit;
    d. having a difficult life situation.
7. As part of the individual course of education, a doctoral student with a special needs may also apply for adaptation to individual needs of:
    a. conditions of education;
    b. forms of the classes;
    c. forms and dates of credit.
8. In justified cases resulting from the type and degree of special needs, at the request of the doctoral student, the Head of the Doctoral School may permit not to participate in the indicated classes, which, however, does not release the doctoral student from the obligation to complete them.
9. An individual course of education may be used by the Head of the Doctoral School in relation to a doctoral student resuming education pursuant to § 27 item 2.

Annul leave and absences

§ 25

1. Doctoral students shall be entitled to annual leave not exceeding eight weeks per year, which should be taken in the period free from classes, in consultation with the thesis supervisor.
2. The absence of the doctoral student should also be reported to the thesis supervisor, and the inability to participate in classes resulting from an illness should be documented with a relevant certificate presented to the Head of Doctoral School.
3. In the event of long-lasting absence, due to special circumstances, including health status, the doctoral student shall notify the Head of the Doctoral School of the impossibility to participate in the classes or implementation of the IRP and document the circumstances accordingly.

§ 26

1. On the basis of an application submitted by the doctoral student, the Head of the Doctoral School may extend the time limits for presentation of the doctoral thesis defined in the IRP, in case:
    a. it is necessary to conduct long-lasting scientific research performed as part of the Doctoral School,
    b. documented waiting for the publication constituting part of the doctoral dissertation to be printed;
    c. of a fortuitous event affecting the preparation of the doctoral thesis;
    d. - but for not longer than two years in total.
2. The extension of the time limits for presentation of the doctoral thesis shall require relevant modification of the IRP, as agreed with the thesis supervisor. Within the extension period the doctoral student shall make end-of-term reports on implementation of the research plan.
3. During the period of extension, the doctoral student retains the rights and obligations arising from the status of a doctoral student, subject to § 16 item 3.
4. The Head of Doctoral School may, on the basis of an application submitted by the doctoral student, suspend the education in the Doctoral School for the period corresponding to the duration of the maternity leave, the leave under the terms of the maternity leave, the paternity leave and the parental leave, defined in the Polish Labour Code of 26 June 1974.

Removal from the register of doctoral students

§ 27

1. The doctoral student shall be removed from the register of doctoral students in the event of:
    a. negative outcome of the mid-term evaluation;
    b. failure to present the doctoral thesis within the time limits defined in the Individual Research Plan;
    c. resignation from education;

d. failure to commence training;
e. violation of the prohibition of being a doctoral student in more than one doctoral school;
f. punishment by disciplinary penalty of expulsion from the Doctoral School.

2. In the procedure for removal of a doctoral student from the list of doctoral students, in the case referred to item 1 e., the doctoral student shall be called upon to submit, within no less than 30 days, a resignation from training at another doctoral.
3. The doctoral student may be removed from the register of doctoral students in the event of:
    a. unsatisfactory progress in preparation of the doctoral thesis;
    b. failure to comply with these Terms and Conditions or to meet the obligation to implement the curriculum and individual research plan.
4. Removal from the register of doctoral students shall be effected under an administrative decision of the Head of the Doctoral School, made in consultation with the thesis supervisor or at the thesis supervisor's request.
5. Resignation from education shall be based on the statement, submitted by the doctoral student to the Head of the Doctoral School, on resignation from studies, made in writing, subject to item 6. The doctoral student should attach to the statement the opinion of the head of the Managing Unit, where the research was carried out, that the doctoral student has properly accounted for his obligations to the Managing Unit.
6. Failure to take the oath within the prescribed period shall be tantamount to resignation from education at the Doctoral School.
7. Prior to making a decision on the removal from the register, the Head of the Doctoral School shall inform the doctoral student of the initiation of the procedure for removal from the register of doctoral students and set the time limits within which the doctoral student may make clarifications relating to the case in question.

§ 28

1. The final removal from the register of doctoral students shall result in loss of the doctoral scholarship.
2. The payment of the scholarship shall be suspended with the effect from the first day of the month following the month in which the decision on removal from the register becomes final.

Doctoral students with special needs and medical examinations

§ 29

1. The Doctoral School shall provide conditions for persons with special needs due to health conditions, including persons with disabilities, to fully participate in the life of the Doctoral School, including education, in particular by:
    a. ensuring accessibility of the didactic process and verification of learning outcomes;
    b. the possibility of education in the mode of an individual course of education;
    c. providing didactic and scientific support.

2. Applications of a doctoral student with special needs, shall be submitted to the Head of the Doctoral School.
3. Medical records of a doctoral student submitted to the Head of the Doctoral School for consideration of a given application shall be returned to the doctoral student after the decision is made, unless special regulations require them to remain in the doctoral student's personal file. The Head of the Doctoral School shall make a note of the return of the medical records and attach it to the doctoral student's personal file.

§ 30

1. Protection from harmful, arduous and hazardous factors to health in the course of research shall be provided to doctoral students by the respective Managing Units under the rules applicable to employees of such Units.
2. At the request of the Director of the managing Unit, the Head of the Doctoral School shall issue a referral to the doctoral student for the relevant medical examination.

§ 31

Unless otherwise stipulated by the Regulations or the Act, the deadlines established by the Regulations may be postponed or restored at the justified request of a doctoral student, in particular due to health reasons or other special needs.

Completion of education in the Doctoral School

§ 32

1. Education of the doctoral student in the Doctoral School shall end upon presentation of the doctoral thesis.
2. The IRP shall determine the deadline for submission of the doctoral thesis.
3. The doctoral thesis shall meet the requirements of Article 187 of the Law.
4. The doctoral student shall attach to the submitted doctoral thesis a positive opinion of the thesis supervisor(s) regarding the fulfilment of the formal and substantive requirements of the submitted doctoral thesis and compliance with the Individual Research Plan.
5. After formal verification of the submitted doctoral thesis and the opinion of the thesis supervisor(s), the Head of the Doctoral School shall issue a certificate of completion of the Doctoral School.

§ 33

1. Completion of the education in the Doctoral School shall not guarantee obtaining the degree of doktor and constitute no basis for seeking satisfaction of claims for awarding such degree, if the doctoral student fails to meet the required substantive and formal conditions.
2. The procedure for a awarding the degree of doktor and the thesis defence shall be conducted, at the doctoral student’s request, by the unit authorised to award the degree of doktor in the field

and discipline covered by the doctoral student's thesis, in compliance with applicable legal provisions in force.

Documentation of the course of education

§ 34

1. The information regarding the doctoral student and the course of education in the Doctoral School shall be gathered in:
    a. the electronic doctoral student's album;
    b. doctoral files;
    c. the doctoral student's book.
2. After taking an oath the doctoral student shall receive the doctoral student's electronic identity card.
3. The electronic doctoral student's album shall contain the following information: album name, name (names) and surname, date and place of birth of the doctoral student, PESEL (Personal Identification Number), and if the doctoral student has no PESEL, name and number of the identity document, information on the document constituting the basis for application for admission to the Doctoral School (type and number of the document, date and place of issuance, issuing institution), date of commencement of education in the Doctoral School, date of completion of education in the Doctoral School or date of removal from the register of doctoral students, including the reason for removal, information on the period of extension of education in the Doctoral School, date of presentation of the doctoral thesis.
4. The Doctoral School shall, on an ongoing basis, enter (update) data as part of electronic documentation of the course of education in the Doctoral School and provide doctoral students with access to the doctoral student's file.
5. The documentation of the course of education in the Doctoral School shall include, in particular:
    a. mid-term evaluation report;
    b. the doctoral student's book.
6. The Doctoral School shall maintain doctoral students' files.
7. Doctoral students' files shall include the following documents:
    a. documents required from a candidate at the time of admission to the doctoral studies, including a certificate of recognition of diploma of higher education abroad;
    b. an individual report of the recruitment committee on the recruitment procedure;
    c. the oath signed by the participant of doctoral education;
    d. IRP of doctoral student
    e. copies of individual decisions regarding the doctoral student, in particular the decision to extend the time limits for presentation of the doctoral thesis, to suspend the education, to remove the doctoral student from the register of doctoral students, together with original copies of confirmation of delivery of such decisions;
    f. end-of-term reports;
    g. report on the mid-term evaluation;
    h. a copy of the doctoral thesis'

i. certificate of completion of education.

Final and transitional provisions

§ 35

1. Unless otherwise stipulated in the Regulations, applications (statements, appeals, etc.) of the doctoral students should be submitted in writing form, especially in electronic via e-mail in the domain of Managing Unit of Doctoral School.
2. Requests for reconsideration of administrative decisions shall be submitted in the form prescribed in accordance with the Code of Administrative Procedure.

§ 37

1. At a request of a person that has completed education in the Doctoral School the Doctoral School shall issue a certificate on completion of the education and on the period of receiving the doctoral scholarship.
2. At a request of a person that has not completed education in the Doctoral School, the Doctoral School shall issue a certificate on the course of the doctoral education.
3. The certificates set out in items 1 and 2 shall be signed by the Head of the Doctoral School.
4. The Managing Units shall not be financially liable towards doctoral students for any amendments to generally applicable legal provisions in force.

Annex No. 1
to the Terms and Conditions of the Doctoral School

OATH
of the doctoral students
of the Doctoral School
of the Natural and Agricultural Sciences

“In full awareness of the rights and obligations of a doctoral student
of the Doctoral School of Natural and Agricultural Sciences,
and being mindful of my own dignity,
I oath:
to conscientiously gain knowledge and skills;
in the spirit of the truth, freedom and responsibility,
and to perform the scientific work with due diligence;
to care about the good name of the Doctoral School
and to multiply the achievements and enrich the traditions of the Doctoral School;
to comply with the principles of community life,
the terms and conditions of the Doctoral School
and relevant legal regulations.”

Annex No. 2
to the Terms and Conditions of the Doctoral School

Principles of mid-term evaluation of the doctoral student and evaluation of the supervision exercised over the doctoral student by the thesis supervisor in the Doctoral School of Natural and Agricultura Sciences

§ 1
General principles

1. The mid-term evaluation of the doctoral student (the "Evaluation") shall be made in the middle of education period
2. The outcome of the evaluation may be positive or negative.
3. The outcome of the evaluation, together with reasons, shall be public.
4. The evaluation shall be conducted by the committee, composed of three persons designated by the College of Directors of the Units in Charge, including one person holding the degree of doctor with a habilitation or title of professor in the field in which the doctoral thesis is prepared, employed beyond the Units in Charge.
5. A representative of doctoral students elected by the Doctoral Students' Self-Government may participate in the work of the Committee as an observer.
6. The mid-term evaluation of the doctoral student can take place on-site, in hybrid or in remote form.
7. The committee shall be appointed separately for each doctoral student; the compositions of the committees may be the same for different doctoral students.
8. The composition of the committee shall be public.
9. The committee shall be appointed not later than one month prior to the mid-term evaluation.

§ 2
Evaluation of the doctoral student

1. Not later than two weeks prior to the date of the committee meeting, the doctoral student should submit to the Secretariat of the Doctoral School a written report on implementation of the Individual Research Plan (the 'IRP"), which shall include the updated schedule of preparation of the doctoral thesis for the further terms. A template of the report is defined by the Head of the Doctoral School.
2. The supervisor within the time limit specified in item 1 should submit a written opinion on the doctoral student to the Secretary of the Doctoral School.

3. After becoming familiar with the report, the Committee shall meet the doctoral student for the purpose of conducting the substantive evaluation of the progress in implementation of IRP.
4. For the purpose of clarification of any doubts connected with implementation of the IRP or any difficulties tackled by the doctoral student, the commission may request the thesis supervisor to take part in the committee meeting.
5. A negative outcome of the mid-term evaluation is the basis for removing the doctoral student from the register of doctoral students.

§ 3
Evaluation of supervision exercised over the doctoral student by the thesis supervisor

1. At the time of the mid-term evaluation, the Committee shall also evaluate the supervision exercised over the doctoral student by the thesis supervisor.
2. The outcome of the evaluation may be positive or negative.
3. A negative outcome of the mid-term evaluation of the thesis supervisor shall result in change of the thesis supervisor, if the outcome of the evaluation of the doctoral student is positive.

§ 4
Other provisions

1. The committee shall prepare a report on the course and mid-term evaluation and the evaluation of the thesis supervisor, which shall be presented to the Head of the Doctoral School.
2. The protocol of the student's mid-term evaluation as well as the supervisor's evaluation includes:
    a. description of the course of the work of the Committee;
    b. evaluation of the doctoral student and supervisor;
    c. the rationale for the assessment.
3. The doctoral student and the thesis supervisor shall be notified of the outcome of the evaluation within not more than a week of the committee meeting.
4. The doctoral student and the thesis supervisor may file an appeal against the negative outcome of the mid-term evaluation with the Council of the Doctoral School.
5. In the event of a positive evaluation of the doctoral student and a negative evaluation of the thesis supervisor, the change the thesis supervisor should be changed within three months.

4.1 Members of admission committees

Members of admission committees at the Doctoral School of Natural and Agricultural Sciences

The members of the recruitment committees for the relevant research topics within the framework of recruitment to DS for academic years 2019/2020 – 2024/2025 are presented. Research topics are divided into those financed by the own fund of DS Managing Units (regular recruitment) and those financed by research grants (e.g., from the National Science Centre) implemented in these Units (project recruitment).

Abbreviations: IB PAS – W. Szafer Institute of Botany Polish Academy of Sciences, IPP PAS – F. Górski Institute of Plant Physiology Polish Academy of Sciences, INC PAS – Institute of Nature Conservation Polish Academy of Sciences, ISEA PAS – Institute of Systematics and Evolution of Animals Polish Academy of Sciences, NRIAP – National Research Institute of Animal Production, NSC – National Science Centre, DS – Doctoral School of Natural and Agricultural Sciences.

Academic year 2019/2020

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No. 24/2019 of 20 August 2019 (regular recruitment)

Framework research topic:

1. Linear structures: significance for the distribution of pollinating insects in the landscape scale
2. Spatial ecology of brown bears in human-dominated landscapes
3. Record of Holocene paleoenvironmental changes in deposits of landslides depressions of the Polish Carpathians: from mountain lakes to landslide fen
4. Effect of vitamin D3 supplementation of diet on carcass and feeding traits health status and transcriptomic and epigenetic profiles of selected tissues in pigs

Admission committee:

1. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
2. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
3. Prof. dr hab. Zbigniew Miszalski (director of IPP PAS)
4. Dr hab. Sebastian Tarcz (director of ISEA PAS)
5. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
6. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
7. Dr hab. Piotr Wójcik (director of NRIAP)
8. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
9. Dr Joanna Nowak (representative of NRIAP)
10. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
11. Dr hab. Renata Stachowicz-Rybka (representative of the Scientific Council of IB PAS)
12. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
13. Mgr Michał Bełcik (representative of doctoral students)
14. Mgr Agata Żmuda (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

> Taxonomic revision of selected genera of Madagascar Syntomini (Lepidoptera: Erebidae: Arctiinae)

Competition committee (order of the director of ISAE PAS No. 021.19.2019 of 27.09.2019):

1. Dr hab. Łukasz Przybyłowicz
2. Dr hab. Beata Grzywacz
3. Dr hab. Dawid Moroń

Framework research topic:

> Effects of pesticides on the red mason bee *Osmia bicornis* in agricultural landscapes: mixture toxicity and the evolution of resistance

Competition Commission (order of the director of INC PAN No. 24/2029 of 2.09.2019)

1. Dr hab. Agnieszka Bednarska
2. Prof. dr hab. Henryk Okarma
3. Dr hab. Łukasz Kajtoch

Academic year 2020/2021

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No. 29/2020 of September 9, 2020 (regular recruitment)

Framework research topic:

1. Evolutionary significance of contemporary hybridization in *Oenothera biennis* s.l.
2. Symbiotic interactions in the lichen holobiont and their role in the evolution of biodiversity of lichenicolous fungi in tropical mountain forests
3. Evaluation of the impact of innovative high-protein non-GMO domestic feed on nutrient digestibility, production indicators and the health status of pigs
4. On the influence of biocenotic relationships on active conservation of naiads: threatened *Cottus gobio* as host for threatened *Unio crassus*
5. The use of birds and insects as indicators of the role of lianas in preserving the biodiversity of arboreal habitats
6. The role of underground shelters in the life cycle of heterotermic herbivorous mammals on the example of the edible dormouse (*Glis glis* L.).

Admission committee:

1. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
2. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
3. Prof. dr hab. Zbigniew Miszalski (director of IPP PAS)
4. Dr hab. Sebastian Tarcz (director of ISEA PAS)
5. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
6. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
7. Dr hab. Piotr Wójcik (director of NRIAP)
8. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
9. Dr Joanna Nowak (representative of NRIAP)
10. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
11. Dr hab. Renata Stachowicz-Rybka (representative of the Scientific Council of IB PAS)
12. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
13. Mgr Edyta Mazur (representative of doctoral students)
14. Mgr Agata Banach (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

Physiological basis of the disturbances in frost tolerance of winter oilseed rape as a result of deaclimation processes – role of brassinosteroids

Competition committee (order of the director of IPP PAS No. 14/2020 of 09.09.2020):

1. Dr hab. inż. Anna Janeczko
2. Dr hab. inż. Franciszek Janowiak
3. Dr Magdalena Ryś
4. Dr hab. Agnieszka Bednarska

Framework research topic:

Intracellular carbon dioxide and redox state of plastoquinone pool as regulators of ethylene biosynthesis pathway

Competition committee (order of the director of IPP PAS No. 15/2020 of 11.09.2020):

1. Prof. dr hab. Zbigniew Miszalski
2. Prof. dr hab. Ireneusz Ślesak
3. Dr hab. Agnieszka Bednarska

Framework research topic:

Analysis of transcriptome and proteome changes in selected pig tissues under the influence of vitamin D3 supplementation

Competition committee (order of the director of NRIAP No. 41/20 of 24.07.2020):

1. Dr hab. Maria Oczkowicz
2. Dr hab. Grażyna Szarek-Łukaszewska
3. Dr Grzegorz Smołucha
4. Dr hab. Katarzyna Ropka-Molik

Framework research topic:

Do linear structures affect dispersal of pollinators in an agricultural landscape?

Competition committee (order of the director of ISEA PAS No. 021.5.2021 of 2.02.2021); additional recruitment:

1. Dr hab. Dawid Moroń
2. Dr hab. Beata Grzywacz
3. Dr hab. Agnieszka Bednarska
4. Mgr Marcin Wiorek

Academic year 2021/2022

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No. 21/2021 of 1 July 2021 (regular recruitment)

Framework research topic:

1. Symbiotic interactions in the lichen holobiont and their role in the evolution of biodiversity of lichenicolous fungi in tropical mountain forests
2. Plant secondary metabolites in a defence response to environmental stresses
3. The evolutionary changes occurring in a selected group of Diptera Nematocera during the Eocene
4. Assessment of the impact of innovative high-protein non-GMO feeds of domestic origin on the gastrointestinal tract development, health status and rearing indices of piglets
5. Breeding value prediction in dairy cattle using a single step model
6. Analysis of myogenesis process to improve production efficiency and product quality for in vitro produced artificial meat

Admission committee:

1. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
2. Mgr inż. Anna Drabik (representative of NRIAP)
3. Prof. dr hab. Franciszek Janowiak (director of IPP PAS)
4. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
5. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
6. Dr hab. Renata Stachowicz-Rybka (representative of the Scientific Council of IB PAS)
7. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
8. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
9. Dr hab. Sebastian Tarcz (director of ISEA PAS)
10. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
11. Dr hab. Piotr Wójcik (director of NRIAP)
12. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
13. Mgr inż. Edyta Mazur (representative of doctoral students)
14. Mgr Marcin Wiorek (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

Reconstruction of the Late Glacial palaeoenvironmental changes of the Polish Western Carpathians, on the base of lithological and macrofossils analyses of the selected landslide fen deposits

Competition committee (order of the director of INC PAS No. 17/2021 of 2.07.2021):

1. Dr hab. inż. Włodzimierz Margielewski
2. Dr hab. Agnieszka Bednarska
3. Dr hab. Agnieszka Pociecha

Framework research topic:

A role of genomic diversity and pathogen pressure in the invasion success – a case study of natural and invasive populations of common raccoon

Competition committee (order of the director of INC PAS No. 18/2021 of 31.08.2021):

1. Dr hab. Aleksandra Biedrzycka
2. Dr hab. Agnieszka Bednarska
3. Dr hab. Elżbieta Wilk-Woźniak

Framework research topic:

Do linear structures affect dispersal of pollinators in an agricultural landscape?

Competition committee (order of the director of ISEA PAS Np. 021.5.2020 of 15.02.2022); additional recruitment:

1. Dr hab. Dawid Moroń
2. Dr hab. Agnieszka Bednarska
3. Dr hab. Beata Grzywacz

Academic year 2022/2023

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No.19/2022 of 1 June 2022 (regular recruitment)

Framework research topic:

1. The ERC CoG project entitled "Exploring Mammoth Bone Accumulations In Central Europe" (MAMBA)
2. The evolutionary changes occurring in a selected group of Diptera Nematocera during the Eocene
3. A comprehensive investigation of endurance capacity in Arabian horses
4. Evaluation of the possibility of using murine preadipocyte lines in the verification of the functions of selected porcine lncRNAs in the adipogenesis process
5. Analysis of the origin of the European bladdernut Staphylea pinnata L. in anthropogenic sites in the Polish Carpathians using molecular methods

Admission committee:

6. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
7. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
8. Prof. dr hab. Franciszek Janowiak (director of IPP PAS)
9. Dr hab. Sebastian Tarcz (director of ISEA PAS)
10. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
11. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
12. Dr hab. Piotr Wójcik (director of NRIAP)
13. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
14. Dr Joanna Nowak (representative of NRIAP)
15. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
16. Dr hab. Renata Stachowicz-Rybka (representative of the Scientific Council of IB PAS)
17. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
18. Mgr inż. Edyta Mazur (representative of doctoral students)
19. Mgr Marcin Wiorek (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

Short- and long-term consequences of ambient temperature for the development and fitness in passerine birds

Competition committee (order of the director of ISEA PAS No. 021.22.2022 of 29.08.2022):

1. Dr Aneta Arct
2. Dr hab. Łukasz Kajtoch
3. Dr hab. Dawid Moroń

Framework research topic:

Reconstruction of vegetation and economic processes during the development of Neolithic cultures in southern Poland

Competition committee (order of the director of IB PAS No. 23/2022 of 18.06.2022):

1. Dr hab. Magadalena Moskal-del Hoyo
2. Dr hab. Renata Stachowicz-Rybka
3. Dr hab. Grażyna Szarek-Łukaszewska

Framework research topic:

Palaeogenomics of Central European refugia: spatio-temporal dynamics of arctic-alpine flora at the interplay of northern and temperate latitudes

Competition committee (order of the director of IB PAS No. 24/2022 of 19.08.2022).

1. Dr hab. Michał Ronikier
2. Dr Tomasz Suchan
3. Dr hab. Sebastian Tarcz

Framework research topic:

Risk of biological invasions combined with land sharing and sparing strategies affect native organisms providing ecosystem services

Competition committee (order of the director of INC PAS No. 24/2022 of 22.08.2022):

1. Dr Magdalena Lenda
2. Dr hab. Piotr Skórka
3. Dr hab. inż. Szymon Śniegula

Framework research topic:

Population genetics of saproxylic beetle assemblages in protected and managed forests

Competition committee (order of the director of ISEA PAS No. 021.9.2022 of 14.03.2022); additional recruitment:

1. Dr hab. Sebastian Tarcz
2. Dr hab. Łukasz Kajtoch
3. Dr Natalia Sawka-Gądek
4. Dr hab. Agnieszka Bednarska

Academic year 2023/2024

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No. 16/2023 of June 21, 2023 (regular recruitment)

Framework research topic:

1. Evaluation of the possibility of using porcine preadipocyte lines in the verification of the functions of selected lncRNA during adipogenesis
2. Medicinal limonoids from rare, tropical species of Meliaceae family – the exploration of their diversity, biological activities, and ways of production in the plant in vitro cultures
3. Abiotic and biotic factors associated with the decline of cyanobacterial blooms
4. Environmental stressors and contaminants, and their impact on brown bear populations

Admission committee:

1. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
2. Prof. dr hab. Franciszek Janowiak (director of IPP PAS)
3. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
4. Dr hab. Paweł Kapusta (representative of the Scientific Council of IB PAS)
5. Dr Joanna Nowak (representative of NRIAP)
6. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
7. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
8. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
9. Dr hab. Sebastian Tarcz (director of ISEA PAS)
10. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
11. Dr hab. Piotr Wójcik (director of NRIAP)
12. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
13. Mgr Anna Misiewicz (representative of doctoral students)
14. Mgr Marcin Wiorek (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

Hybridization with a common relative – the threat or chance for the protected bird species?

Competition committee (order of the director of ISEA PAS No. 021.23.2023 of 28.08.2023):

1. Dr hab. Łukasz Kajtoch
2. Dr hab. Agnieszka Bednarska
3. Dr hab. Dawid Moroń

Framework research topic:

Mountain ecosystems facing global warming: study of impact of snow cover parameters on microbial communities of nivicolous myxomycetes

Competition committee (order of the director of IB PAS No. 24/2023 of 01.09.2023):

1. Dr. hab. Anna Ronikier
2. Dr Paulina Janik
3. Dr hab. Sebastian Tarcz

Framework research topic:

Impact of pesticides on insect pollinators: implications for environmental risk assessment (ERA)

Competition committee (order of the director of INC PAS No. 10/2024 of 8.03.2024), additional recruitment:

1. Dr hab. Agnieszka Bednarska
2. Prof. dr hab. Henryk Okarma
3. Prof. dr hab. Ryszard Laskowski
4. Dr hab. Grażyna Szarek-Łukaszewska

Academic year 2024/2025

Framework research themes financed by the Units in Charge of DS and the composition of the admission committee according to the order of the Director of IB PAS No. 15/2024 of July 1, 2024 (regular recruitment)

Framework research topic:

1. Regulation of secretory trichome metabolism using new genomic techniques (NGT)
2. Biochemical system of glandular trichome microenvironment, its biocatalytic properties and potential in biotechnology

Admission committee:

3. Dr hab. Agnieszka Bednarska (chairperson of the Committee, deputy head of DS)
4. Dr hab. Beata Grzywacz (director of ISEA PA))
5. Prof. dr hab. Franciszek Janowiak (director of IPP PAS)
6. Dr hab. Łukasz Kajtoch (representative of the Scientific Council of ISEA PAS)
7. Dr hab. Paweł Kapusta (representative of the Scientific Council of IB PAS)
8. Dr Joanna Nowak (representative of NRIAP)
9. Prof. dr hab. Henryk Okarma (representative of the Scientific Council of INC PAS)
10. Dr hab. Grażyna Szarek-Łukaszewska (head of DS)
11. Prof. dr hab. Lucyna Śliwa (director of IB PAS)
12. Prof. dr hab. Sylwester Świątkiewicz (director of NRIAP)
13. Dr hab. Elżbieta Wilk-Woźniak (director of INC PAS)
14. Dr hab. Iwona Żur (representative of the Scientific Council of IPP PAS)
15. Mgr Joanna Kołodziejczyk (representative of doctoral students)
16. Mgr Miron Gieniec (representative of doctoral students)

Framework research topics financed by external entities (e.g., NSC) and composition of committees for selecting candidates for scholarships within the research project (project recruitment)

Framework research topic:

The origin and evolution of fungal symbioses in freshwater mountain ecosystems and their resilience to climate change

Competition committee (order of the director of IB PAS No. 22/2024 of 26.08.2024):

1. Dr Pamela Rodriguez de Flakus
2. Dr hab. Marcin Piątek
3. Dr Tomasz Suchan

Framework research topic:

The role of global wind regimes in avian evolution

Competition committee (order of the director of INC PAS No. 5/2025 of 6.02.2025); additional recruitment:

1. Dr hab. inż. Arkadiusz Fröhlich
2. Dr hab. Rafał Martyka
3. Dr Maria Gołąb
4. Dr hab. Agnieszka Bednarska

5.1 Form for description of supervision

According to Annex No. 4/23/04/2024 of April 23, 2024
to the Resolution of the Council of the Doctoral School of Natural and Agricultural Sciences

Form for the description of supervision

for supervisor and doctoral student

The description should contain statements (up to 200 words) about:

1) Meetings with the doctoral student / supervisor * (frequency (sufficient / insufficient), topics of meetings (e.g. consultations / discussions on the stages of research being carried out, evaluation of the progress in research implementation, opinions on various project applications and/or semester reports):

   ……

2) Scientific support provided to the doctoral student / received by the doctoral student (e.g. introduction to the topic of dissertation, methods used, results interpretation, assistance in the preparation of the Individual Research Plan):

   ……

3) Organizational support provided to the doctoral student / received from the supervisor (e.g. organization of the workplace, providing access to office equipment, i.e. computer, printer, scanner, photocopier and research equipment, access to the laboratory, help / support in the laboratory and during field trips, supervision over the doctoral student while working in laboratories):

   ……

4) Support provided to the doctoral student / received by the doctoral student in the preparation of manuscripts, conference abstracts (e.g., discussion of the scope of the article, analysis and interpretation of results, assistance in the publication process):

   ……

5) Support provided to the doctoral student / received by the doctoral student in the field of research funding, e.g. by indicating possible sources of applying for funds and assistance in applying for them (including the promoter's grant, applying for internal and external grants), encouraging independent search for sources of financing:

   ……

6) Support provided to the doctoral student / received by the doctoral student in expanding his knowledge and skills (e.g. participation in training, workshops, internships, study visits to various research centers, participation in research by other research teams):

   ……

7) Support granted to the doctoral student / received by the doctoral student in enabling participation in the life of the scientific community (e.g. participation in conferences, seminars, workshops) and non-scientific activity (e.g. in popularization, in the activities of doctoral students' self-government):

   ……

8) Methods of solving conflicts (if any has appeared) in the cooperation between the doctoral student and the supervisor

   ……

Other remarks, comments:

……

* delete what does not apply

…… ……

Name and surname Signature

6.1 Form of Report of realisation of IRP

Appendix No. 1
to Regulation No. 2/30.03.2025, dated 30.03.2025,
of the Head of the Doctoral School of Natural and Agricultural Sciences

PROGRESS REPORT ON THE IMPLEMENTATION OF THE INDIVIDUAL RESEARCH PLAN FOR THE MID-TERM EVALUATION OF A DOCTORAL STUDENT AT THE DOCTORAL SCHOOL OF NATURAL AND AGRICULTURAL SCIENCES

A General Information

Complete the required data or enter N/A if not applicable.

A.1 Doctoral Student's Details

Student's Record No.:
Enter the number.

First name and surname
Enter the first name and surname preceded by the professional title (mgr or mgr inż.).

Starting date of the programme of study
Enter the day, month and year in the DD.MM.YYYY format.

Semester of the programme of study
Enter the semester number (number from 2 to 12).

A.2 Doctoral Dissertation

Place where doctoral dissertation is being completed
Enter the name of the institute where the doctoral dissertation is being completed.

Scientific discipline
Enter the name of the scientific discipline (Biological sciences, Agriculture and horticulture, or Animal husbandry and fishery).

Title
Enter the (working or final) title of the dissertation.

Planned date of submission
Enter the day, month and year in the DD.MM.YYYY format.

A.3 Doctoral Dissertation Supervisor

First name and surname
Enter the first name and surname of the supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the supervisor.

Affiliation

Enter the supervisor's affiliation.

A.4 Doctoral Dissertation Second Supervisor

First name and surname

Enter the first name and surname of the second supervisor preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the second supervisor.

Affiliation

Enter the second supervisor's affiliation.

A.5 Doctoral Dissertation Auxiliary Supervisor

First name and surname

Enter the first name and surname preceded by the academic title/degree.

Scientific discipline

Enter the name of the scientific discipline represented by the auxiliary supervisor.

Affiliation

Enter the auxiliary supervisor's affiliation.

B Research Conducted as Part of the Doctoral Dissertation

Description of research covering Sections B.1 to B.5 should not exceed 4,000 words in total.

B.1 Research Objectives

Describe the research objective(s).

B.2 Research Hypotheses

Provide an itemised list of the research hypotheses.

B.3 Scientific Importance of the Research

Justify the choice of the subject matter of the research by formulating the research problem against the background of the existing state of knowledge and by presenting the expected theoretical and/or practical effects of solution to that problem (new facts, theories, technologies, etc.).

B.4 Research Projects Completed

Present a description of the research projects implemented in the evaluation period. Include information on the progress, objectives attained, difficulties encountered, as well as any changes relative to the assumptions made in the Individual Research Plan along with a short justification for the introduction of such changes.

B.5 Funding

List the sources of research funding. Where funding is provided as part of a grant, specify the following: the title of the project, the first name and surname of the project coordinator, the institution providing the funding and the name of the funding programme, number of the agreement, and place and period of the project implementation.

B.6 Timetable of Research Tasks

In the Table below present, for the successive years of study (I-II), a concise description of the research tasks completed in connection with the doctoral dissertation along with information on changes, if any, as compared with the Individual Research Plan. The description should include the key control points (the so-called "milestones").

Year	Description
I	Enter the task number, name and description.
II	Enter the task number, name and description.

B.7 Timetable of Presentation of Findings

In the Table below provide information for the successive years of study (I–II) on how the findings obtained in the course of completing the doctoral dissertation (publications, conferences) were presented; include also information on changes, if any, as compared with the Individual Research Plan. Attach evidence, such as, for example, the first page of the publication or a certificate of participation in a conference.

Year	Description
I	Enter the publications in the following format: Kajtoch Ł., Grzędzicka E. 2023. Evergreen ivy vines. Forest Ecology and Management 544: 121-125. DOI: 10.1016/j.foreco.2023.121165. Points assigned by the Ministry of Science and Higher Education (if applicable), Impact Factor (IF) of the journal (if available). Appendix No.: Rybicka M. 2023. Gordineşti II-Stînca goală in the settlement context at the end of the 4th mill. BC in the eastern part of the Roztocze range in Western Ukraine. Introductory study. Wydawnictwo Uniwersytetu Rzeszowskiego, Rzeszów. ISBN 978-83-7996-698-1. Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Karpiński S., Szechyńska-Hebda M. 2023. Systemic acquired acclimation, network acquired acclimation and cellular light memory in plants – Molecular, biochemical, and physiological mechanisms. In: R. Mittler, F. van Breusegem (eds.), Oxidative Stress Response In Plants. (Advances in Botanical Research) Elsevier: 277–310. DOI: 10.1016/bs.abr.2022.11.005, Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Enter the conference abstracts in the following format: Cywa K., Karczewski M., Wacnik A. 2023. Anthracological data as evidence for cultural differences in the use of wood resources in the 1st millennium CE by communities in the Western Baltic cultural circle in Poland. In: ANTHRACO 2023, 8th International Anthracology Meeting, Faculty of Sciences University of Porto, Porto, Portugal, 29th August–2nd September 2023. Abstract book: 50. ISBN: (if present). Appendix No.:
II	Enter the conference abstracts in the following format: Kajtoch Ł., Grzędzicka E. 2023. Evergreen ivy vines. Forest Ecology and Management 544: 121-125. DOI: 10.1016/j.foreco.2023.121165. Points assigned by the Ministry of Science and Higher Education (if applicable), Impact Factor (IF) of the journal (if available). Appendix No.: Rybicka M. 2023. Gordineşti II-Stînca goală in the settlement context at the end of the 4th mill. BC in the eastern part of the Roztocze range in Western Ukraine. Introductory study. Wydawnictwo Uniwersytetu Rzeszowskiego, Rzeszów. ISBN 978-83-7996-698-1. Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Karpiński S., Szechyńska-Hebda M. 2023. Systemic acquired acclimation,

	network acquired acclimation and cellular light memory in plants – Molecular, biochemical, and physiological mechanisms. In: R. Mittler, F. van Breusegem (eds.), Oxidative Stress Response In Plants. (Advances in Botanical Research) Elsevier: 277–310. DOI: 10.1016/bs.abr.2022.11.005, Points assigned by the Ministry of Science and Higher Education (if applicable). Appendix No.: Enter the conference abstracts in the following format: Cywa K., Karczewski M., Wacnik A. 2023. Anthracological data as evidence for cultural differences in the use of wood resources in the 1st millennium CE by communities in the Western Baltic cultural circle in Poland. In: ANTHRACO 2023, 8th International Anthracology Meeting, Faculty of Sciences University of Porto, Porto, Portugal, 29th August–2nd September 2023. Abstract book: 50. ISBN: (if present). Appendix No.:

C Scientific and Popularisation Activities

C.1 Acquisition of Research Funding

In the Table below describe how the plan for your own grant applications was implemented and include information on changes, if any, as compared with the Individual Research Plan. Include also planned participation in grant projects implemented by other persons. Attach evidence.

Year	Description
I	Enter the project title, the first name and surname of the project coordinator, agreement number, the institution providing the funding and the name of the funding programme, place and period of project implementation, role under the project (project coordinator, project staff member). Enter the Appendix number.
II	Enter the project title, the first name and surname of the project coordinator, agreement number, the institution providing the funding and the name of the funding programme, place and period of project implementation, role under the project (project coordinator, project staff member). Enter the Appendix number.

C.2 Improving Competences

In the Table below describe how the plan for the participation in courses, training programmes, workshops, internships, etc. was implemented; specify the qualifications gained and explain how they relate to the doctoral dissertation. Provide information on changes, if any, as compared with the Individual Research Plan. Attach evidence of participation.

Year	Description
I	Enter the name of the course, training programme, internship, etc.; specify the venue, dates and source of funding. Specify the qualifications obtained. Enter the Appendix number.
II	Enter the name of the course, training programme, internship, etc.; specify the venue, dates and source of funding. Specify the qualifications obtained. Enter the Appendix number.

C.3 Popularisation Activities

In the Table below describe how the plan of activities intended to present science to the society, such as a lecture, presentation, interview or class, was implemented. Provide information on changes, if any, as compared with the Individual Research Plan. Attach evidence of the activities carried out.

Year	Description
I	Specify the type of activity (e.g. lecture, presentation, interview, class), venue, date and number of attendees. Enter the Appendix number.
II	Specify the type of activity (e.g. lecture, presentation, interview, class), venue, date and number of attendees. Enter the Appendix number.

C.4 Other Activities

In the Table below present other forms of scientific activities not specified above, such as, for example, participation in the organisational works of the parent unit, membership in associations, etc. Attach evidence of such activities.

Year	Description
I	Specify the activity and provide necessary information on it. Enter the Appendix number.
II	Specify the activity and provide necessary information on it. Enter the Appendix number.

D Appendices

D.1 List of Appendices

In the Table below provide an itemised list and description of appendices evidencing the activities referred to in Tables in Sections B.7 to C.4. Add as many lines as needed.

No.	Description
1	Enter the Appendix name.
2	Enter the Appendix name.

E Statements and Signatures

E.1 Signatures

Signed by the doctoral student

_____

Signed by the doctoral dissertation supervisor

_____

Signed by the doctoral dissertation co-supervisor

_____

Signed by the doctoral dissertation assistant supervisor

_____

E.2 Acceptance of the Progress Report on the Implementation of the Individual Research Plan by the Doctoral School Secretariat

Acceptance date

_____

Signature

_____

E.3 Acceptance of the Progress Report on the Implementation of the Individual Research Plan by the Head of the Doctoral School

Acceptance date

_____

Signature

_____

6.2 Members of committees for mid-term evaluation

Members of the committee for the mid-term evaluation of doctoral students at the Doctoral School of Natural and Agricultural Sciences

The composition of the mid-term evaluation committees is provided for each year of the mid-term evaluation (2021–2025), broken down by scientific discipline (biological sciences, agriculture and horticulture, animal science and fisheries). The affiliation of each committee member is given in brackets. In addition, a list of doctoral students evaluated is provided for each committee.

Abbreviations used: IAE PAS – Institute of Archaeology and Ethnology Polish Academy of Sciences, IB PAS – W. Szafer Institute of Botany Polish Academy of Sciences, IPP PAS – F. Górski Institute of Plant Physiology Polish Academy of Sciences, IPBA-NRI – Institute of Plant Breeding and Acclimatization-National Research Institute, INC PAS – Institute of Nature Conservation Polish Academy of Sciences, ISEA PAS – Institute of Systematics and Evolution of Animals Polish Academy of Sciences, NRIAP – National Research Institute of Animal Production, MiAP PAS – Museum and Institute of Zoology Polish Academy of Sciences, OG – Botanical Garden of the University of Warsaw, NVI NRI – National Veterinary Institute National Research Institute, UG – University of Gdańsk, JU –Jagiellonian University, UNEC – University of the National Education Commission in Kraków, UA – H. Kołłątaj University of Agriculture in Kraków, UW – University of Wrocław. Doctoral Students' Self-Government – Doctoral Students' Self-Government of the Doctoral School of Natural and Agricultural Sciences.

Year 2021

Scientific discipline: biological sciences

Members of the committee for the mid-term evaluation:
dr hab. Marcin Czarnołęski (JU)
prof. dr hab. Małgorzata Świątkiewicz (NRIAP)
dr hab. Gwiazda Robert (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Edyta Mazur

Doctoral students subject to evaluation:

mgr Anna Misiewicz
mgr Aida Parres Lluch
mgr Marcin Wiorek

Scientific discipline: animal science and fisheries

Members of the committee for the mid-term evaluation:
dr hab. inż. Monika Karolina Stefaniuk-Szmukier (UA)
dr hab. inż. Mirosław Tyra (NRIAP)
prof. dr hab. Henryk Okarma (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Natalia Hordyńska

Doctoral student subject to evaluation:

mgr inż. Alicja Wierzbicka

Year 2022

Scientific discipline: biological sciences

Members of the committee for the mid-term evaluation:
dr hab. Marcin Czarnołęski (JU)
dr hab. Monika Trzcińska (NRIAP)
dr hab. Robert Gwiazda (INC PAS)
observer from the Doctoral Students' Self-Government: mgr inż. Edyta Mazur
Doctoral students subject to evaluation:
mgr inż. Anna Marchewka
mgr inż. Jacek Dołęga
mgr inż. Miron Gieniec

Scientific discipline: animal science and fisheries

Members of the committee for the mid-term evaluation:
prof. dr hab. Piotr Micek (UA)
dr hab. inż. Mirosław Tyra (NRIAP)
prof. dr hab. Henryk Okarma (INC PAS)
observer from the Doctoral Students' Self-Government: mgr inż. Alicja Wierzbicka.
Doctoral students subject to evaluation:
mgr Anna Steg
mgr Adrianna Musiał

Scientific discipline: agriculture and horticulture

Members of the committee for the mid-term evaluation:
prof. dr hab. Agnieszka Płażek (UA)
dr hab. Maciej Grzesiak (IPP PAS)
dr hab. Paweł Kapusta (IPP PAS)
observer from the Doctoral Students' Self-Government: mgr inż. Edyta Mazur
Doctoral student subject to evaluation:
mgr Julia Stachurska

Year 2023

Scientific discipline: biological sciences

Members of the committee for the mid-term evaluation:
prof. dr hab. Marcin Czarnołęski (JU)
dr hab. Monika Trzcińska (NRIAP)
dr hab. Robert Gwiazda (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Marcin Wiorek.
Doctoral students subject to evaluation:
mgr Emilia Marjańska

Members of the committee for the mid-term evaluation:
dr hab. Marcin Czarnołęski (JU)
dr hab. Elżbieta Worobiec (IB PAS)
dr hab. Robert Gwiazda (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Marcin Wiorek
Doctoral students subject to evaluation:
mgr Emilia Gula
mgr Joanna Kołodziejczyk
mgr inż. Jolanta Pilch

Scientific discipline: animal science and fisheries

Members of the committee for the mid-term evaluation:
prof. dr hab. Piotr Zapletal (UA)
dr hab. Grzegorz Żak (NRIAP)
prof. dr hab. Henryk Okarma (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Anna Misiewicz
Doctoral students subject to evaluation**:**
mgr inż. Dawid Słomian
mgr inż. Kinga Szczepanik
mgr inż. Karolina Zygmunt

Year 2024

Scientific discipline: biological sciences

Members of the committee for the mid-term evaluation:
dr hab. Hajnalka Szentgyörgyi (JU)
dr hab. Magdalena Żywiec (IB PAS)
dr hab. Robert Gwiazda (INC PAS)
observer from the Doctoral Students' Self-Government: mgr Julia Stachurska
Doctoral student subject to evaluation:
mgr Aleksandra Cwajna

Members of the committee for the mid-term evaluation:
dr hab. Magdalenę Zagalska – Neubauer (UW)
dr hab. Robert Gwiazda (INC PAS)
dr hab. Łukasz Przybyłowicz (ISEA PAS)
observer from the Doctoral Students' Self-Government: mgr Joanna Kołodziejczyk
Doctoral students subject to evaluation:
mgr inż. Karolina Skorb
mgr Karolina Chuda

Members of the committee for the mid-term evaluation:
dr hab. Joanna Święta-Musznicka (UG)
dr hab. Sebastian Tarcz (ISEA PAS)
dr hab. Paweł Kapusta (IB PAS)
observer from the Doctoral Students' Self-Government: mgr inż. Miron Gieniec
Doctoral students subject to evaluation:
mgr Gabriela Juźwińska
mgr Anna Janiczek

Scientific discipline: animal science and fisheries

Members of the committee for the mid-term evaluation:
dr hab. inż. Urszula Kaczor (UA)
dr hab. Grzegorz Żak (NRIAP)
prof. dr hab. Henryk Okarma (INC PAS)
observer from the Doctoral Students' Self-Government: mgr inż. Kinga Szczepanik
Doctoral students subject to evaluation:
mgr inż. Grzegorz Myćka

Year 2025

Scientific discipline: biological sciences

Members of the committee for the mid-term evaluation:
dr hab. Aleksandra Biedrzycka (INC PAS)
dr hab. Krystyna Nadachowska-Brzyska (JU)
dr hab. Tomasz Ząbek (NRIAP)
observer from the Doctoral Students' Self-Government: mgr inż. Karolina Zygmunt

Doctoral student subject to evaluation**:**

mgr Rama Sarvani Krovi

KEN

2023-2027

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