

# Registration Form - declaration of willingness for establishing interdisciplinary Dioscuri Centres of Scientific Excellence

This is a registration form for Host Institutions wanting to establish an interdisciplinary Dioscuri Centre of Scientific Excellence within [Dioscuri 5 call](#).

## Registration form for Polish research institution

1. Research institution data (name and address):  
**Institute of Biochemistry and Biophysics Polish Academy of Sciences**
2. Type of research institution<sup>1</sup>:  
**scientific institutes of PAN**
3. Head of the Institution: **prof. dr hab. Jarosław Poznanski**
4. Contact information of designated person(s) for applicants and the NCN: first and last name, position, e-mail address, phone number, correspondence address:  
**Agnieszka Sirko, Director of Science, [sci-director@ibb.waw.pl](mailto:sci-director@ibb.waw.pl), +4225922145, Institute of Biochemistry and Biophysics PAS, ul. Pawinskiego 5A, 02-106 Warsaw, Poland**
5. Research disciplines in which the institution ensures establishing of an interdisciplinary Dioscuri Centre (select two (and if necessary three) of the domains that should be combined; select two (or if necessary three) from the 25 listed auxiliary panels of disciplines). Provide two (and if necessary three) specific NCN subpanels according to the list<sup>2</sup>.

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<sup>2</sup> Lists of the disciplines for each auxiliary panel of disciplines to be found here:  
<https://www.ncn.gov.pl/en/finansowanie-nauki/panele-ncn>

**DOMAIN: Humanities, Social Sciences and Art Sciences**<sup>3</sup>

- Fundamental questions about human existence and the nature of reality
- Culture and cultural production
- The study of the human past
- Institutions, markets, space
- Law and political science
- Human nature and human society

**DOMAIN: Life Sciences**<sup>4</sup>

Molecules of Life: Biological Mechanisms, Structures and Functions

- Integrative Biology: from Genes and Genomes to Systems
- Cellular, Developmental and Regenerative Biology
- Physiology in Health, Disease and Ageing
- Neuroscience and Disorders of the Nervous System
- Immunity, Infection and Immunotherapy
- Prevention, Diagnosis and Treatment of Human Diseases

Environmental Biology, Ecology and Evolution

- Biotechnology and Biosystems Engineering

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**DOMAIN: Physical Sciences and Engineering**<sup>5</sup>

- Mathematics
- Fundamental constituents of matter
- Condensed matter physics
- Chemistry
- Synthetic Chemistry and Materials Science
- Computer science and informatics
- Systems Engineering
- Production and processes engineering
- Earth sciences
- Materials Engineering

6. Description of important research achievements from the selected disciplines from the last 5 years including a list of the most important publications, data bases, series of workshops, patents, policy briefs, field work/ field site, exhibitions, other:

The Institute of Biochemistry and Biophysics of the Polish Academy of Sciences (IBB PAS), established in 1957, is a modern interdisciplinary research center specializing in molecular biology, bioinformatics, and omics technologies. The Institute conducts research of high scientific and translational relevance, contributing to advances in medicine, biotechnology, and systems biology.

Originally focused on classical biochemistry and biophysics, the Institute has expanded its research profile to include: molecular genetics of microorganisms and yeasts, medical biology, including mutagenesis, DNA repair, and genome stability, plant molecular biology, pathogen–host interactions and mechanisms of pathogenesis, RNA and protein biology, structural biology, bioinformatics and biological chemistry, genomics, transcriptomics, proteomics, and metabolomics.

IBB PAS employs more than 250 staff members, including over 100 researchers, many of whom hold professorial positions. The Institute runs the Doctoral School of Molecular Biology and Biological Chemistry and participates in interinstitutional initiatives such as the Translational Medicine Doctoral School “Bench to Bedside

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– B2B4PhD.” It also maintains extensive collaborations with national and international academic institutions and actively supports the training of young scientists.

Between 2022 and 2025, researchers affiliated with the Institute published more than 600 scientific papers, including over 40 articles in journals listed in the Nature Index. The Institute currently coordinates more than 80 national and approximately 10 international research projects funded by organizations including the NIH and the European Research Executive Agency (REA), reflecting the strong international dimension of its research activities.

Technology and knowledge transfer constitute another important aspect of the Institute’s mission. Currently, 26 inventions are protected by patents, while additional patent applications are under evaluation, highlighting the practical and innovative potential of the research conducted at IBB PAS.

The Institute also maintains an extensive network of scientific partnerships, having collaborated with more than 1,000 academic and non-academic institutions worldwide over the past five years.

The Institute runs several Collections that offer biological material for scientific research, including Collection of Strains and Plasmids, Collection of Polyrenols, Collection of siRNA.

IBB PAS provides a unique contribution to studies on biodiversity, ecology, and evolutionary processes in extreme and remote ecosystems through its long-term monitoring of Antarctic environments. Holistic activities of scientists at IBB PAS integrate limnology, meteorology, glaciology, microbiology, botany, zoology, and genomics to uncover spatial drivers of the organisms distribution, mechanisms of adaptation in extreme conditions and studies on endangered species affected by global warming. Antarctic station operated by IBB PAS allows testing new tools and approaches in studies on changing polar ecosystems, such as using remote sensing in studies on population dynamics or using eDNA in monitoring and food webs. The robust background on the abiotic environment allows for the understanding the interaction between the changing climate and organisms including microbial responses to freeze–thaw cycles and the functional diversity of polar microbiomes. The melting cryosphere serve as a natural laboratory for studies of the release of biological hazards from melting glaciers, such as antibiotic resistance genes, into terrestrial and marine environments. Additionally, integration of molecular and microscopic approaches allow for description of unique, endangered due to rising temperatures glacier and snow related species. Importantly, these studies extend beyond natural variability to include the impact of anthropogenic factors on polar ecosystems. Monitoring of persistent pollutants, including cyclic volatile methylsiloxanes (CVMS), across air, soil, flora, and fauna demonstrates how even remote environments are influenced by global human activity. AI-based approaches are also developed (Robert Bialik) for large-scale

ecological monitoring, including the application of deep learning architectures such as YOLO to detect and quantify animal populations from aerial imagery.

Recent publications (selected):

HOSZEK-MANDERA K., STANISZEWSKA M., BEŁDOWSKA M., FUDALA K., BIALIK R., HINKE J.T., POUCH A., PANASIUK A., Presence of toxic organic substances in antarctic wildlife as an indicator of human impact in the South Shetland Islands area (Western Antarctic). *Journal of Hazardous Materials* (2025) 500: 140567 (16 p.) DOI: 10.1016/j.jhazmat.2025.140567 IF 11.3 (2024)

JENNINGS S.J.A., Influence of glaciological structures on the spatial distribution of cryoconite holes, Northern Victoria Land, East Antarctica. *Journal of Geophysical Research: Earth Surface* (2025) 130(12): e2025JF00839 (24 p.) DOI: 10.1029/2025JF008399 IF 3.8 (2024)

REINDL A.R., WOLSKA L., PAWŁOWSKI J., HOSZEK-MANDERA K., BEŁDOWSKA M., FUDALA K., BIALIK R.J., PANASIUK A., Pygoscelis penguins as indicators of perfluoroalkyl substances pollution and global health risks - case study from King George Island (Western Antarctic). *Environmental Research* (2025) 285(Pt 3): 122475 (7 p.) DOI: 10.1016/j.envres.2025.122475 IF 7.7 (2024)

GÓRNIAK D., ŚWIĄTECKI A., KOWALIK J., GRZESIAK J., JASTRZĘBSKI J.P., ZDANOWSKI M. K., High antagonistic activity and antibiotic resistance of flavobacteria of polar microbial freshwater mats on King George Island in maritime Antarctica. *Scientific Reports* (2025) 15(1): 13615 (15 p.) DOI: 10.1038/s41598-025-97205-x IF 3.9 (2024)

PANASIUK A., GIC-GRUSZA G., KORCZAK-ABSHIRE M., Availability to predators and a size structure of the Antarctic krill *Euphausia superba* in the 48.1 CCAMLR subarea. *Scientific Reports* (2024) 14(1): 21538 (14 p.) DOI: 10.1038/s41598-024-72895-x IF 3.9 (2024)

ROMAN M., PÍŠKOVÁ A., SANDERSON D.C.W., CRESSWELL A.J., BULÍNOVÁ M., POKORNÝ M., KAVAN J., JENNINGS S.J.A., LIRIO J.M., NEDBALOVÁ L., SACHEROVÁ V., KOPALOVÁ K., GLASSER N.F., NÝVLT D., The Late Holocene deglaciation of James Ross Island, Antarctic Peninsula: OSL and <sup>14</sup>C-dated multi-proxy sedimentary record from Monolith Lake. *Quaternary Science Reviews* (2024) 333: 108693 (17 p.) DOI: 10.1016/j.quascirev.2024.108693 IF 3.3 (2024)

SUŁOWICZ S., ZAWIERUCHA K., MARKOWICZ A., KOZIOŁ K., ZIENTAK W., NAWROT A., TOMASZEWSKI K., KEUSCHNIG C., LUKS B., LAROSE C. Vertebrate impact on bacterial community structure of coastal Arctic spring snowpacks. *Biogeosciences* (2026) 23, 3023–3038. DOI: 10.5194/bg-23-3023-2026. IF: 3.9

SACHAROWSKI S. P., KUBALA S., CWIEK P., STECIUK J., GRATKOWSKA-ZMUDA D., OKSINSKA P., BUCIOR E., ROLICKA A. T., CIESLA M., NOWICKA K., ALSEEKH S., TOHGE T., GIAVALISCO P., ZUGAJ D. L., STOLZE S. C., HARZEN A., FRANZEN R., HUETTEL B., GRZESIUKE E., HAJIREZAEI M.-R., NAKAGAMI H., KONCZ C., FERNIE A. R., SARNOWSKI T. J. (2025) *New Phytologist* 247: 791-812. DOI: 10.1111/nph.70182. IF: 8.1

SACHAROWSKI S. P., KRZYSZTON M., BRZEZNIAK L., ROGOWSKI K. J., MONTEZ M., ROSOL K., WRONA M., YATUSEVICH R., MANJUNATH V. H., SZEWC L., JARMOŁOWSKI A. & SWIEZEWSKI S. Chromatin retained MUSER lncRNA integrates ABA and DOG1 signalling pathways to enhance Arabidopsis seeds dormancy. *Nat Comms* (2025) 16, 7545. DOI: 10.1038/s41467-025-62991-5. IF: 15.7

The full list of our publications in the last years is available at the IBB website <https://ibb.edu.pl/en/research/publications/>

7. List of no more than 4 important research projects from the selected disciplines awarded in national and international calls to the institution in the last 5 years (title, name of PI, source of funding, amount of funding):

- RIBO-ICE: Ribosomes and Translation. Protein biosynthesis in cold, a study of Antarctic bacteria; (NCN, OPUS); Project leader: Agata Starosta; Duration: 2025-10-29 / 2028-10-29; Budget: 3 081 200 PLN
- Unmanned Aerial Vehicles (UAV) and satellites synergy for monitoring of Antarctic lichen communities (USNEA); (NCN, OPUS); Project leader: Robert Bialik; Duration: 2025-07-01 / 2029-06-30; Budget: 1 360 300 PLN
- King George Island Glacial History (KNIGHT) (NCN, SONATA); Project leader: Stephen Jennings; Duration: 2022-08-01 / 2025-07-31; Budget: 996 716 PLN
- Parasites of *Pygoscelis penguins* in breeding colonies in the South Shetland Islands, maritime Antarctica (NCN, SONATINA); Project leader: Katarzyna Tołkacz; Duration: 2022-11-02 / 2025-11-01; Budget: 974 411 PLN

8. Description of the available office space, working space, laboratory for the Dioscuri Centre:

Half the floor at one of the buildings of IBB PAS consisting of three laboratories (18m<sup>2</sup> and two 36m<sup>2</sup>) with the adjacent 9m<sup>2</sup> offices, two separate offices, 9m<sup>2</sup> each and 18m<sup>2</sup> cold room will be provided for the Dioscuri Center at IBB PAS. If required, additional space could be available.

9. List of the available research equipment for the Dioscuri Centre:

The DC will benefit from full access to our common infrastructure, such as ultracentrifuges, incubators, cold rooms, ultra-deep freezers (-90°C), anaerobic hoods (chamber), BSL2 labs, an isotope lab class 2, phosphorimagers, chemiluminescence imaging systems, real-time quantitative PCR instruments, autoclaves and will be supplied with common standard services, such as the Milli-Q ultrapure water system and Internet network. The Institute has several Central Service Units to support researchers in reaching their scientific goals, such as: sterilization and growth media service, media preparation facilities. IBB PAS has also the Phytotron and Greenhouse Complex providing facilities for cultivating plants and in vitro cultures in greenhouse conditions and phytotron chambers. It enables users to grow plants under stable temperature and lighting conditions.

In addition, the following dedicated research facilities exist at IBB PAS: Fluorescence Microscopy, Mass Spectrometry, DNA Sequencing and Synthesis, Cell Culture and Protein Production, Biological NMR, Microarray Analysis and Single-Molecule Biophysics. The Facilities offer access to modern proteomic and microarray methods, DNA sequencing, purification of recombinant proteins, biophysical analysis of single molecules, analyses using nuclear magnetic resonance, and a broad array of fluorescence microscopy techniques. Their teams of experts provide support tailored to individual needs, from guidance in study design and training in instruments use and data analysis to complete end-to-end support in the entire workflow. More information can be found on our website <https://ibb.edu.pl/en/research/facilities/#content>

The internal research equipment database is available at the IBB website <https://ibb.edu.pl/en/research-equipment/>

**Access to the Antarctic Station:** Since 2012 IBB PAS manages the Henryk Arctowski Polish Antarctic Station on King George Island in the West Antarctic. The Station was established in 1977 and has been operating continuously since then. From the very beginning, the Station has provided technical and logistical support for Polish and international research groups doing research in the Antarctic, as an informal embassy of our country (at the moment it is the only working Polish research station in this region of the world). In recent years, scientists from 15 Polish and foreign research institutions have used the station's infrastructure every year. Thanks to a subvention received from the Ministry of Science and Higher Education, the infrastructure entitled 'ARCTOWSKI – PolarPOL – Polish Multidisciplinary Laboratory for Polar Research in the Antarctic' is undergoing comprehensive modernisation. The construction of a new main building is planned, as well as the revitalisation of the existing technical infrastructure of the energy and fuel system, and the water supply network. The work is scheduled for completion in 2027.

10. List of the additional benefits (other than listed in invitation call) that the Institution declares to provide for the Dioscuri Centre (i.e.: additional funds, personal benefits, other):

IBB PAS will provide the following, cost-free personal benefits to the DC personnel: on-site medical and dental care, multi-sport admission cards to gyms and to the next-door Olympic size swimming pool, accommodation at the Institute's hotel for the initial few months of stay. Additional benefits will be offered, such as extended medical-package at low cost. Additionally IBB PAS will cover one Scholarship for PhD student to complement those planned within the Dioscuri funding. PhD students participating in the DC research will be enrolled in either the Doctoral School of Molecular Biology and Biological Chemistry run by IBB PAS or the Doctoral School of Translational Medicine "Bench to Bedside – B

2 B 4 PhD” run by Medical Centre for Postgraduate Studies (where IBB PAS is a partner), ensuring high level training and alleviating all administrative issues.

11. Other information about the internationalisation of the research institution e.g. international environment (international researchers community at the institution, internationalization of the management and administration), didactic in English, availability of Polish course for Foreigners etc.:

Since June 2021, the Institute of Biochemistry and Biophysics PAS (IBB PAN) has operated the “Welcome to IBB Center,” funded by the Polish National Agency for Academic Exchange (NAWA) under the “Welcome to Poland” programme. The initiative supports the internationalization of the Institute by providing dedicated assistance to international researchers and students, as well as organizing informational, promotional, and integration activities that foster a welcoming research environment. The Welcome Center has significantly improved the transparency of procedures and the quality of support offered to foreign employees and doctoral students. These efforts have strengthened the Institute’s international profile: four new laboratories have recently been established by researchers previously unaffiliated with IBB PAN. Currently, 19 of the Institute’s 191 scientific and technical staff members are foreign nationals from 14 countries; among them, 3 lead laboratories and 8 coordinate projects funded by NCN, NIH, PASIFIC, and the European Union.

Internationalization is also strongly reflected in the Doctoral School, where more than half of the participants are international students (56 doctoral candidates from 19 countries). Since 2020, the number of foreign nationals associated with the Institute has increased by nearly 250%.

Currently, the Institute is implementing two projects supporting the internationalization of scientific activities and the development of international cooperation, funded by the Polish National Agency for Academic Exchange (NAWA): the PROM Project – short-term academic exchange, and the 3xW Project under the Strategic Partnerships Programme.

IBB PAS provides language courses for employees and PhD students, including English, German, French, Spanish, Polish for foreigners and other.

We have a Research Management Unit with English-speaking staff that provides administrative support for research conducted by the Institute independently or in collaboration with national and international institutions.

Since July 2025, a Representative for International Relations and a dedicated support office have been active at IBB PAS. They support researchers in securing EU and other international funding by identifying relevant calls, providing guidance on grant applications, and assisting with administrative and budgetary preparation, including mobility grants.

Our IT Support Department responsible for maintaining the Institute's digital infrastructure and providing technical support for research, administration, communication, and data security. In addition, Data Steward at IBB PAS provides support in research data management for staff and doctoral students.