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List of potential supervisors at the BioMedChem Doctoral School of the UL and Lodz Institutes of the Polish Academy of Sciences in the academic year 2025/2026 in the biological sciences

Name of academic staff member	Area of scientific and research interests/ Proposed topics for the doctoral thesis
Prof. dr hab. Magdalena Błażewicz University of Lodz, Faculty of Biology and Environmental Protection ✉ magdalena.blazewicz@biol.uni.lodz.pl ☎ +48 42 635 42 92 **ORCID:** https://orcid.org/0000-0002-4753-3424 *Leading discipline - biological sciences*	Area of scientific and research interests: - integrative taxonomy and systematics of marine crustaceans, - ecology of benthic crustaceans, - zoogeography and genetic connectivity of marine crustaceans, - environmental protection and sustainable use of marine resources Proposed topics for the doctoral thesis: Environmental drivers of Peracarida biodiversity in the Clarion-Clipperton Zone: Assessing the impact of deep-sea mining. The overarching objective of the proposed doctoral research is to assess the diversity and connectivity of crustaceans from the Peracarida group in the Clarion-Clipperton Fracture Zone (CCZ), both in undisturbed areas and those exposed to anthropogenic pressure. This will be achieved through an integrative approach combining morphological analyses and genetic barcoding. The resulting data will enable the evaluation of taxonomic and functional diversity, as well as the influence of environmental gradients on beta diversity within the CCZ. The findings will also facilitate the identification of key species and the assessment of potential threats to marine ecosystems in areas designated for deep-sea mining activities.

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Prof. dr hab. Maksim Ionov University of Lodz, Faculty of Biology and Environmental Protection ✉ maksim.ionov@biol.uni.lodz.pl ☎ +48 42 635 43 80 **ORCID:** https://orcid.org/0000-0001-7227-6864 *Leading discipline - biological sciences*	Area of scientific and research interests: Nanotechnology; Medical Biophysics; Drug delivery; Gene therapy; Anticancer biosystems; Cytotoxicity; Polymer nanoparticles as drug delivery agents. Proposed topics for the doctoral thesis: 1. Study on artificial intelligence (AI)-assisted anti-tumor cell-targeting small RNA delivery system. 2. Polymeric and lipid nanoparticles as nucleic acids carriers.
Dr hab. Damian Jacenik, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection ✉ damian.jacenik@biol.uni.lodz.pl ☎ + 48 42 635-52-99 **ORCID:** https://orcid.org/0000-0003-4563-2303 *Leading discipline - biological sciences*	Area of scientific and research interests: gastrointestinal cancers; G-protein coupled receptors; immune response; immunotherapy Proposed topics for the doctoral thesis: The significance of neutrophil immune response in the progression of gastrointestinal cancers.
Dr hab. Edyta Kiedrzyńska, prof. ERCE PAS European Regional Centre for Ecohydrology Polish Academy of Sciences ✉ e.kiedrzynska@erce.unesco.lodz.pl ☎ + 48 42 6817007 lub 06 **ORCID:** https://orcid.org/0000-0003-0649-4438 *Leading discipline - biological sciences*	Area of scientific and research interests: Associate Professor Edyta Kiedrzyńska, PhD, DSc, is a long-standing researcher at the European Regional Centre for Ecohydrology of the Polish Academy of Sciences (researcher – professor at ERCE PAS and Deputy Director), as well as at the UNESCO Chair in Ecohydrology and Applied Ecology at the Faculty of Biology and Environmental Protection, University of Łódź (Assistant Professor). She conducts catchment-scale research in the following areas: 1/ Ecohydrology and Phytotechnologies; 2/ Water and wastewater quality analysis, including nutrients, pharmaceuticals, microplastics, heavy metals, and xenobiotics; 3/ Assessment of wastewater treatment plants' impact on the microbiological status of waters and the spread of antimicrobial resistance in the environment; 4/ Flood sedimentation processes in river floodplains; 5/ Analysis of pollution in the waters of the Baltic Sea. She also conducts research on the use of hybrid sequential biofiltration systems for wastewater polishing.

	Proposed topics for the doctoral thesis: Analysis of β-blocker residues in surface waters and wastewater using LC-MS/MS technique.
Dr hab. Tomasz Mamos, prof. UŁ University of Lodz, Department of Invertebrate Zoology and Hydrobiology ✉ tomasz.mamos@biol.uni.lodz.pl ☎ +48 42 643 44 46 **ORCID:** https://orcid.org/0000-0002-0524-3015 *Leading discipline - biological sciences*	Area of scientific and research: Phylogenetics, phylogeography, molecular ecology and evolution of invertebrates. Proposed topics for the doctoral thesis: Genomics and gene expression patterns of microcrustaceans in temporal ponds.
Dr hab. Katarzyna Miłowska, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection ✉ katarzyna.milowska@biol.uni.lodz.pl ☎ +48 635 44 78 **ORCID:** https://orcid.org/0000-0002-4050-2756 *Leading discipline - biological sciences*	Area of scientific and research interests: My research interests focus on the evaluation of biological properties of nanomaterials (including dendrimers, gold and silver nanoparticles, chitosan nanocomposites) and their potential applications in medicine. Proposed topics for the doctoral thesis: Evaluation of the biological properties and toxicity of modified carbosilane dendrimers in 3D cultures. The aim of this work is to investigate whether modified carbosilane dendrimers have potential anti-cancer properties. The toxicity of these dendrimers to cancer cells in 2D and 3D cultures will be evaluated.

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Dr hab. Przemysław Płociński, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection ✉ przemyslaw.plocinski@biol.uni.lodz.pl ☎ +48 42 635 56 06 **ORCID:** https://orcid.org/0000-0002-6623-3494 *Leading discipline - biological sciences*	Area of scientific and research interests: Molecular microbiology, "omics" research, nucleic acid metabolism, recombinant proteins, protein complexes, search for new molecular targets for future antibiotics, enzymology Proposed topics for the doctoral thesis: Searching for inhibitors of enzymes involved in RNA metabolism in human bacterial pathogens. Evaluation of proteins participating in bacterial transfer RNA (tRNA) synthesis, maturation, and degradation as potential molecular targets for future antimicrobial therapies. Detailed characterization of the ribosome rescue process mediated by transfer-messenger RNA (tmRNA) in major human pathogens, and the search for specific inhibitors of trans-translation.
Dr hab. Łukasz Pułaski, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection Department of Oncobiology and Epigenetics, Faculty of Biology and Environmental Protection UL ✉ lpulaski@uni.lodz.pl ☎ +48 42 6517663 **ORCID:** https://orcid.org/0000-0002-6623-34940000-0001-8063-801X *Leading discipline — biological sciences*	Area of scientific and research: biotechnology, synthetic biology, immunology, toxicology, medical biology Proposed topics for the doctoral thesis: Genetic modification of cells towards controlled exocytosis – signalling pathway engineering

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Prof. dr hab. Edyta Reszka University of Lodz, Faculty of Biology and Environmental Protection ✉ edyta.reszka@biol.uni.lodz.pl ☎ +48 42 635 44 53 **ORCID:** https://orcid.org/0000-0003-2153-4864 *Leading discipline — biological sciences*	Area of scientific and research: Genetic, epigenetic and environmental aspects of common diseases and public health; shift work, circadian rhythms, artificial light exposure and their effects on the humans; the gene-gene, gene-environment interactions in molecular epidemiology studies; NRF2-regulated cytoprotection, selenium and selenoproteins; epigenetic biomarkers; clock genes; the influence of environmental factors on the molecular early effect biomarkers: mRNA expression, DNA methylation, DNA polymorphism, telomere length etc.; urinary bladder cancer. Proposed topics for the doctoral thesis: Current environmental hazards and the role of circadian rhythm and Nrf2-dependent cytoprotection
Dr hab. Agnieszka Robaszkiewicz, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection ✉ agnieszka.robaszkiewicz@biol.uni.lodz.pl ☎ +48 42 635 41 44 **ORCID:** https://orcid.org/0000-0002-6265-5585 *Leading discipline — biological sciences*	Area of scientific and research interests: Cancer, epigenetics, gene transcription control, DNA repair, PARP1, polyaneuploidy. Proposed topics for the doctoral thesis: 1. The role of HIF1A-iNOS functional axis for chemotherapy-induced polyaneuploidy. 2. The role of PARP1 in DNA repair of double-stranded breaks in polyaneuploid cancer cells and in cancer recurrence.
Dr hab. Sylwia Różalska, prof. UŁ University of Lodz, Faculty of Biology and Environmental Protection ✉ sylwia.rozalska@biol.uni.lodz.pl ☎ +48 42 635 41 48 **ORCID:** https://orcid.org/0000-0003-1695-5154 *Leading discipline - biological sciences*	Area of scientific and research interests: My scientific interests focus on entomopathogenic fungi, which are widely used as biopesticides in agriculture. I study their ability to infect insects and stimulate plant growth, as well as the influence of environmental factors on their effectiveness. I also analyze their potential for the biodegradation of toxic substances. In my research, I employ a multi-omics approach, encompassing metabolomics and proteomics. Proposed topics for the doctoral thesis: 1. As part of the doctoral research, the metabolism of the entomopathogenic fungus from the genus Samsoniella and its interactions with plants and insects will be studied. The research will assess the

	impact of this microorganism on plant growth and metabolism , as well as its ability to infect insects. The identification of key metabolites involved in these processes will be based on omics techniques (metabolomics, proteomics, lipidomics). Additionally, the influence of environmental factors , such as pesticides, on the biocontrol and biostimulatory abilities of this fungus will be examined. 2. Entomopathogenic fungi of the *Akanthomyces* genus exhibit both insect-pathogenic properties and the potential to stimulate plant growth, making them promising organisms for use in biological crop protection. The aim of this doctoral research is to assess the impact of *Akanthomyces* strains on seed germination, plant growth, and resistance to biotic and abiotic stresses. Additionally, metabolites produced during plant interactions will be analyzed for their potential insect-repellent activity. The project will employ advanced multi-omics approaches to elucidate the molecular basis of both processes.
Prof. dr hab. Tomasz Śliwiński University of Lodz, Faculty of Biology and Environmental Protection ✉ tomasz.sliwinski@biol.uni.lodz.pl ☎ + 48 42 635 44 86 **ORCID:** https://orcid.org/0000-0001-8385-7744 *Leading discipline - biological sciences*	Area of scientific and research interests: Genetic and functional aspects of DNA repair in the diagnosis and therapy of various human diseases, including cancer and psychiatric diseases. Proposed topics for the doctoral thesis: 1. Impact of various toxicity levels of mineral fibers on the production of high-temperature thermal insulation (Industrial PhD Program). 2. Impact of post-vulcanization by-products on the toxicity of mineral fibers in thermal insulation (Industrial PhD Program). 3. Using a single-nucleus DNA-sequencing approach to identifying an alternative genetic mechanism with somatic loss-of-heterozygosity, a class of such hidden mutations in solid tumors.

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