

**Supervisors of the University of Lodz Doctoral School of Exact and Natural Sciences  
for the academic year 2023/2024**

No	Academic staff member	Contact ✉ e-mail ☎ phone 🆔 ORCID	Field of science and research interests	Proposed dissertation subject
<b>Biological sciences</b>				
1.	dr hab. Aneta Balcerczyk, prof. UŁ  Faculty of Biology and Environmental Protection, University of Lodz	✉ aneta.balcerczyk@biol.uni.lodz.pl ☎ 42 635 44 76 🆔 0000-0001-8544-5778	Epigenetic mechanisms in regulation of metabolism, biology of endothelium, tumor growth and development	Histone code/Histone posttranslational modifications cross-talk, epigenetic background of metabolic disorders
2.	dr Francesco Maria Galassi, prof. UŁ  Faculty of Biology and Environmental Protection, University of Lodz	✉ francesco.galassi@biol.uni.lodz.pl ☎ 42 635 44 55 🆔 0000-0001-8902-3142	Biological sciences, physical anthropology, human anatomy, palaeoradiology	- morphology of past diseases and palaeoradiology - anatomical variation - mummy studies
3.	dr hab. Marcin Kiedrzyński  Faculty of Biology and Environmental Protection, University of Lodz	✉ marcin.kiedrzyński@biol.uni.lodz.pl ☎ 42 6354518 🆔 0000-0002-1751-9357	Plant biogeography, climate change refugia, population genetics, local adaptations, polyploidy, epigenetics, ecological niche modelling	Molecular basis of local adaptations in fine- leaved Festuca species

4.	dr hab. Piotr Minias, prof. UŁ Faculty of Biology and Environmental Protection, University of Lodz	✉ piotr.minias@biol.uni.lodz.pl ☎ 42 635 47 83 📞 0000-0002-7742-6750	Urban ecology, mechanisms of urban colonization in birds, genetic adaptations, immunogenetics, microbiome analyses, heterozygosity-fitness correlations, genome-wide association analyses.	Genetics, genomics, and metagenomics of urbanization processes in birds
5.	dr hab. Agnieszka Robaszkiewicz, prof. UŁ Faculty of Biology and Environmental Protection, University of Lodz	✉ agnieszka.robaszkiewicz@biol.uni.lodz.pl ☎ 42 635 41 44 📞 0000-0002-6265-5585	Molecular biology, transcription control, cancer, macrophage polarization	Response of immune system to chemotherapy combined with inhibitors of epigenetic remodelers
6.	dr hab. Małgorzata Ruskiewicz-Michalska Faculty of Biology and Environmental Protection, University of Lodz	✉ malgorzata.ruskiewicz@biol.uni.lodz.pl ☎ 42-623-40-62 📞 0000-0001-8901-0552	Ecology, taxonomy and biogeography of microscopic fungi trophically (parasitic, symbiotic, saprotrophic) associated with plants and invertebrates (mainly insects and arachnids); fungi as alien and invasive organisms; fungal hemerophilia and hemerophobia; fungi pathogenic to plants, animals and humans, including fungi associated with the water and air environment, including responsible for the so-called Sick Building Syndrome	Fungal parasites and endophytes of the phyllosphere of semi-parasitic plants
7.	dr hab. Mirosława Słaba, prof. UŁ Faculty of Biology and Environmental Protection, University of Lodz	✉ mirosława.slaba@biol.uni.lodz.pl ☎ 635 4148 📞 0000-0002-1337-8905	Heavy metals and herbicides toxicity to filamentous fungi; plant growth-promoting fungi; herbicide biodegradation; biocontrol; Trichoderma-plant-phytopathogen interactions	Effect of microplastic and heavy metals on the ability of Trichoderma spp. fungi to biocontrol, promote plant growth and degrade selected herbicides

8.	dr hab. Radosław Włodarczyk  Faculty of Biology and Environmental Protection, University of Lodz	✉ radoslaw.wlodarczyk@biol.uni.lodz.pl ☎ 042-635-45-98 📞 0000-0001-5932-0226	Earth and environmental sciences (ornithology, breeding ecology, waterbirds, ecophysiology, population genetics)	How do immune genes and pollution interact to affect the microbiome and fitness components of common tern <i>Sterna hirundo</i> ?
<b>Chemical sciences</b>				
1.	dr hab. Lilianna Chęcińska  Faculty of Chemistry University of Lodz	✉ lilianna.checinska@chemia.uni.lodz.pl ☎ (42) 635 57 32 📞 0000-0002-3546-920X	Crystallography: X-ray structural analysis of monocrystals	X-ray structural analysis of Zn(II) complexes.
2.	prof. dr hab. Witold Ciesielski  Faculty of Chemistry University of Lodz	✉ witold.ciesielski@chemia.uni.lodz.pl ☎ 42 635 58 09 📞 0000-0002-2115-0214	Chemical sciences	Electrochemical diagnostic system for studies of gaseous H <sub>2</sub> O <sub>2</sub> presence
3.	dr hab. Magdalena Małecka, prof. Uł  Faculty of Chemistry University of Lodz	✉ magdalena.malecka@chemia.uni.lodz.pl ☎ 42 635 57 31 📞 0000-0003-3384-9855	Crystallography, crystallochemistry, biological active compounds, experimental electron density, intermolecular interactions, crystallization of macromolecular complexes	Host-gest complexes

4.	prof. dr hab. Marcin Palusiak  Faculty of Chemistry, University of Lodz	✉ marcin.palusiak@chemia.uni.lodz.pl ☎ 42 635 57 37 📞 0000-0002-0032-0878	Crystallography, structural chemistry, computational chemistry, theoretical chemistry	Multicomponent crystals synthesis of compounds exhibiting biological activity.
5.	dr hab. Ireneusz Piwoński, prof. UŁ  Faculty of Chemistry, University of Lodz	✉ ireneusz.piwonski@chemia.uni.lodz.pl ☎ 42 635 58 33 📞 0000-0002-6505-3088	<b>Nanotechnology and chemistry of materials.</b> Preparation and physicochemical characterization of nanomaterials (thin coatings, nanoparticles) exhibiting <b>photocatalytic properties</b> (metal oxides modified with metallic and other types of nanostructures including 2D and 3D materials). Systems having self-cleaning and antibacterial properties for water and air purification. Application of microscopic methods - scanning electron microscopy with EDS elemental analysis, atomic force microscopy and spectroscopic methods (UV-Vis, FT-IR, Raman, xps) for research in the field of engineering and chemistry of materials (ceramic, metallic and carbon nanomaterials). Photoelectric measurements. Methods: sol-gel, hydro- , solvothermal.	Research on multi-component photocatalysts and energy harvesting materials for pollutant degradation, spectroscopic analytical applications and for generation of photoelectricity.
6.	dr hab. Łukasz Półtorak, prof. UŁ  Faculty of Chemistry, University of Lodz	✉ lukasz.poltorak@chemia.uni.lodz.pl ☎ 789 258 794 📞 0000-0002-8799-8461	Electrochemistry, sensors, miniaturization for electrochemistry, electrochemistry for miniaturization, electrochemically assisted deposition, analytical chemistry, biomimetic systems, 3D printing, liquid-liquid interfaces.	Electrochemical sensors for food quality control.
			Electrochemistry, sensors, miniaturization for electrochemistry, electrochemistry for miniaturization, electrochemically assisted deposition, analytical chemistry, biomimetic systems, 3D printing, liquid-liquid interfaces.	Wireless deposition of materials at the electrified 3D liquid-liquid interfaces.

7.	dr hab. Michał Rachwalski, prof. UŁ  Faculty of Chemistry University of Lodz	✉ michal.rachwalski@chemia.uni.lodz.pl ☎ 42 6355767 📞 0000-0003-4803-8078	<ul style="list-style-type: none"> <li>- organic chemistry</li> <li>- organic synthesis</li> <li>- asymmetric catalysis</li> </ul>	<ul style="list-style-type: none"> <li>- asymmetric synthesis using chiral ligands and organocatalysts</li> <li>- synthesis of chiral ligands and organocatalysts bearing aziridines subunits</li> <li>- synthesis of nitrogenous biologically active compounds</li> <li>- synthesis of nitrogenous compounds having luminescent properties</li> </ul>
8.	dr hab. Katarzyna Ranoszek-Soliwoda  Faculty of Chemistry, University of Lodz	✉ katarzyna.soliwoda@chemia.uni.lodz.pl   ☎ 42 635 46 63 📞 0000-0001-8522-3593	Nanotechnology; nanomaterials; hybrid functional nanomaterials; preparation, functionalization and characterization of metallic nanoparticles for biomedical applications; nanomaterials for antiviral applications	<p>Nanomaterials with antiviral properties</p> <p>Synthesis, functionalization and characterization of nanoparticles for biomedical applications</p> <p>Metallic functional nanoparticles with antiviral properties</p> <p>Functionalization of metallic nanoparticles with polyphenols for biomedical applications</p>
<b>Physical sciences</b>				
1.	dr hab. Stanisław Bednarek, prof. UŁ  Faculty of Physics and Applied Informatics University of Lodz	✉ stanislaw.bednarek@uni.lodz.pl ☎ 48 42 635 56 83 📞 0000-0001-5072-2595  <b>preferred contact by e-mail</b>	Physics: condensed matter, high magnetic fields, applied	Theoretical and experimental research of the Moses effect

2.	dr hab. Paweł Kowalczyk, prof. UŁ  Faculty of Physics and Applied Informatics University of Lodz	✉ pawel.kowalczyk@uni.lodz.pl, ☎ +48 42 635 56 10 📞 0000-0001-6310-4366	Physics of nanomaterials, two-dimensional materials and their hybrids. Their electronic and morphological structure. Studies using close interaction microscopy (STM, STS, AFM) and global characterization techniques (XPS, AES, UPS, ARPES). Growth of materials in ultra-high vacuum conditions.	Low-dimensional structures of topological semimetals
3.	dr hab. Jarosław Perkowski, prof. UŁ  Faculty of Physics and Applied Informatics University of Lodz	✉ jaroslaw.perkowski@uni.lodz.pl ☎ 42 635 56 41 📞 0000-0002-9142-329X	Experimental nuclear physics	Study of neutron-induced reactions important in astrophysics or nuclear energy. The research will be carried out with using a neutron spallation source at CERN in the framework of the n_TOF international collaboration.
4.	dr hab. Julian Sitarek, prof. UŁ  Faculty of Physics and Applied Informatics University of Lodz	✉ jsitarek@uni.lodz.pl ☎ 42 635 56 47 📞 0000-0002-1659-5374	Cherenkov telescopes (in particular data analysis methods), active galaxies, high-energy processes in cosmic sources	Development of analysis methods for Cherenkov telescopes. Observations of active galaxies with LST telescopes.
<b>Mathematics</b>				
1.	dr hab. Aleksandra Orpel, prof. UŁ  Faculty of Mathematics and Computer Science University of Lodz	✉ aleksandra.orpel@wmii.uni.lodz.pl ☎ 608724986 📞 0000-0001-8360-7083	Ordinary differential equations and partial differential equations - existence of solutions and qualitative theory	Ordinary differential equations and partial differential equations - existence of solutions and qualitative theory

Earth and environmental sciences				
1.	prof. dr hab. Piotr Kittel Faculty of Geographical Sciences, University of Lodz	✉ piotr.kittel@geo.uni.lodz.pl ☎ 601 302 891 📞 0000-0001-6987-7968	Geomorphology, paleogeography of Late Weichselian and Holocene, geoarchaeology, environmental archaeology	Paleogeography of selected area based on paleoenvironmental analyses. Human-environment relationships in Late Weichselian and Holocene.
2.	dr hab. Joanna Petera-Zganiacz, prof. UŁ Faculty of Geographical Sciences, University of Lodz	✉ joanna.petera@geo.uni.lodz.pl ☎ 42 665 59 72 📞 0000-0002-1045-5506	Geomorphology, Quaternary palaeogeography	Palaeogeography of the Vistulian Periglacial processes
3.	dr hab. Edmund Tomaszewski Faculty of Geographical Sciences, University of Lodz	✉ edmund.tomaszewski@geo.uni.lodz.pl ☎ 42 665 59 43 📞 0000-0003-4375-3638	Physical geography, hydrology, hydrometeorology, water management	Hydrological extremes: river low-flows and hydrological droughts – spatial and temporal variability, natural determinants, importance for water management. Natural and anthropogenic determinants of flow variability in seasonal and multiannual scale.
4.	dr hab. Maciej Ziułkiewicz, prof. UŁ Faculty of Geographical Sciences, University of Lodz	✉ maciej.ziulkiewicz@geo.uni.lodz.pl ☎ +48 42 66 55 917 📞 0000-0002-9196-845X	Hydrochemistry of natural waters: rivers, springs, peatbogs, hyporheic zone, groundwaters.	The hyporheic zone of rivers in urbanized landscape and rivers heavily polluted by urban sewage (for example, the Ner river)