

Name and surname:	Aleksandra Mironczuk
Academic Degree:	dr hab. (DSc.)
Institute/Department:	Institute of Environmental Biology
e-mail address:	aleksandra.mironczuk@upwr.edu.pl
ORCID:	0000-0003-1604-1635
UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/seam?id=UPWr3d2c277d8cbe4817a5e66e9c7ad81b81&affil=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Aleksandra-Mironczuk
Personal website / Working group website:	https://www.instagram.com/lab4bio_upwr/reel/Cut7fxyMyDm/
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>PI:</p> <ol style="list-style-type: none"> 1) 2015-2018 LIDER/010/207/L-5/13/NCBR/2014 Improvement of the biosynthesis of natural sweeteners from waste materials by the yeast <i>Yarrowia lipolytica</i> 2) 2018 MINIATURA Investigating the effect of <i>Vitreoscilla haemoglobin</i> overexpression on the metabolism of the yeast <i>Yarrowia lipolytica</i> 3) 2018-2023 OPUS14 Study of the physiological capacity of the yeast <i>Yarrowia lipolytica</i> to degrade plastics 4) 2019-2024 OPUS16 Molecular mechanism of polyol assimilation in the yeast <i>Yarrowia lipolytica</i> <p>RF:</p> <ol style="list-style-type: none"> 1) 2018-2021 Sonata BIS Investigating the effect of alternative carbon sources on lipid biosynthesis in the yeast <i>Yarrowia lipolytica</i> 2) 2017-2020 Preludium Identification of key genes involved in regulation of erythritol metabolism, as a cell response of yeast <i>Yarrowia lipolytica</i> to osmotic stress 3) 2019-2024 Polish Member of COST action: "Yeast4Bio (Non-Conventional Yeasts for the Production of Bioproducts)" Action N° CA18229 (MC Member)
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
	Auxiliary supervisor
Name and surname:	Tomasz Strzała
Academic Degree:	dr (Dr.)
Faculty, Institute/Department:	Department of Genetics
e-mail address:	tomasz.strzala@upwr.edu.pl
ORCID:	0000-0002-7761-1630
UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	https://bazawiedzy.upwr.edu.pl/info/author/UPWrd4f248cd3e3841c4aadadbea694d746b?r=author&ps=20&tab=&lang=en&title=Profil%2Bosoby%2B%25E2%2580%2593%2BTomasz%2BStrza%25C5%2582a%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu&pn=1&qp=&cid=35327
Researchgate:	brak
Personal website / Working group website:	brak
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>PI:</p> <p>2022. Project with business entity, B090/0067/22. Genetic analysis of the breeding population of capercaillie in the Wisła forest district, together with an analysis of genetic variability and a proposal for mating based on genetic distance between individuals. Forest Inspectorate of Wisła. PI of the project.</p> <p>2022. Project with business entity, B090/0007/22. Genetic analysis of capercaillie breeding population in the Leżajsk forest district. Forest Inspectorate of Leżajsk. PI of the project.</p> <p>RF:</p> <p>2022-2025. National Research Centre, 2021/43/B/NZ8/02136, Evolution of duplicated elements in avian mitochondrial genomes. RF responsible for NGS genomes sequencing and data analysis.</p> <p>2017-2020. National Research Centre, 2016/21/B/NZ9/02084, Analysis of the relationship between selected reproductive traits, male homozygosity and parental genetic distance of a protected population of Capercaillie (<i>Tetrao urogallus</i>). RF responsible for genetic analyses and DNA data analysis.</p>
PhD topic:	Microbiological decomposition of synthetic polymers
Research discipline in Doctoral School:	Biological Sciences
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	The increasing amount of plastic waste poses new challenges for scientists to find ways to reduce environmental pollution. Plastics (polymers) are considered non-biodegradable because of the very slow breakdown process we can observe in nature. Microplastics, i.e. plastic fragments with a diameter of less than 5 mm, are extremely hazardous because they can accumulate in living organisms: plankton, fish, plants and also in the human body. The long-term effects of microplastic accumulation in living organisms have not yet been fully studied. However, one way to break them down is to engineer the metabolism of microorganisms, which is able to accelerate the process. The aim of the study will be to isolate new microorganisms from the digestive tracts of insects fed on plastics, followed by laboratory adaptive evolution to increase the microorganisms' ability to utilise plastics. The insect microbiota will be analysed before and after the adaptation process, then the differences found between the analysed probes will allow gene selection for heterologous expression in the unconventional yeast <i>Yarrowia lipolytica</i> . The final stage of the research will be to study the biodegradation of plastics by the engineered <i>Y. lipolytica</i> yeast
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	The candidate applying for the postdoctoral position should have a university degree in biology, experimental biology, chemistry, biotechnology or related. Fluency in English is a prerequisite. A completed internship abroad is welcome. Knowledge of molecular biology techniques such as PRC, primer design, cloning is an additional requirement. Ability to think critically and analytically, willingness to work and to do internships abroad. Learning to write scientific papers, presenting results in oral presentations will also be essential.
a) Project title:	0
b) Agreement number:	0
c) Number of months in the project to support PhD student (in months; starting from 1st of October 2024):	0
Project website:	