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Academic Degree	dr hab. inż. (DSc.)
Institute/Department	Department of Biocatalysis and Food Chemistry
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UPWr Base of Knowledge - link	https://bazawiedzy.upwr.edu.pl/info/author/UPWr993e480ebb5f4fb396256126b3c67ec1P/rofil%2Bosoby%2B%25E2%2580%2593%2BWitold%2BG%25C5%2582adkowski%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu?aq=%40id%3AUPWr0a0df4224981428aa173a2deb2911aad&r=author&ps=20&tab=&lang=pl&pn=1&cid=311280
Researchgate	
Personal website / Working group website	https://upwr.edu.pl/badania/wiodace-zespoly-badawcze/biokataliza-i-aktywnosc-biologiczna-bioactiv/zespol
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca))	Research project no 2018/31/B/NZ9/00602 "Study of the physicochemical and biological properties of sterol glycerides and their products formed during thermal oxidation" financed by National Science Centre, 2019-2023 (RF).
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
	Second supervisor (from other discipline, polish or international research unit)
Name and surname	Hanna Pruchnik
Academic Degree	dr hab. inż. (Dr. Sc)
Faculty, Institute/Department	Faculty of Biotechnology and Food Science/Department of Physics and Biophysics
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ORCID	0000-0001-5229-4299
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.seam?id=UPWr78dba10f1b24194a536e010a6fd1890
Researchgate	
Personal website / Working group website:	https://upwr.edu.pl/badania/wiodace-zespoly-badawcze/biokataliza-i-aktywnosc-biologiczna-bioactiv/zespol
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PhD topic	Chemoenzymatic synthesis and determination the biological activity of vaniline-derived lactones and increasing the efficiency of their delivery to cancer cells
Research discipline in Doctoral School	Biological Sciences
Short description of the research problem to be solved in the PhD (minimum 1000 characters)	The subject of the dissertation will be new, optically active compounds with a lactone group obtained from vanillin and their biological activity. The research will include chemoenzymatic synthesis of target lactones, their detailed structural characterization by spectroscopic methods and determination of antioxidant, anti-inflammatory and antiproliferative activity towards cancer cell lines. For the most active derivatives, their interaction with various models of cell membranes (monocomponent membranes, mimetic membranes with a lipid composition mimicking a cancer cell and membranes of cancer cells) will be investigated. Due to the limited use of drugs caused by their toxicity to normal cells, it is important to improve the efficiency of their delivery to target cancer cells. Therefore, conjugates of phospholipids with newly synthesized biologically active lactones will also be obtained, and then, with the use of the phospholipid-lactones conjugates, liposomes will be formed. Both the resulting conjugates and the formed liposomes will be tested for antiproliferative activity to develop the most effective Drug Delivery System (DDS) of active compounds to cancer cells.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters)	Master of Science in the field of biotechnology or chemistry, basic knowledge of the English language, basic knowledge of chromatographic and spectroscopic techniques and techniques of synthesis and purification of organic compounds, basic knowledge of biology and biotechnology, the ability to work with enzymes, the ability to present results at scientific conferences, communication skills, availability .
Details of the project to support PhD research	
a) Project title	none
b) Agreement number	none
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022)	0
d) Project website	