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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/author/UPWwrecff532cc7154463a83db98b8ca2d16c/Agnieszka+%25C5%259Amieszek?t%20ab=main&conversationPropagation=join&sort=&lang=pl&cid=2690
Researchgate:	https://www.researchgate.net/profile/Agnieszka-Smieszek
Personal website / Working group website:	https://bazawiedzy.upwr.edu.pl/info/team/UPWR397ae95471674c5d8ddc4560ea9ea12c?r=activity&ps=20&title=Profil%2Bzespo%25C5%2582u%2B%25E2%2580%2593%2Bzespo%25C5%2582y%2B%2528badawcze%252C%2Beksperckie%252C%2Bko%25C5%2582a%2Bnaukowe%252C%2Binne%2529%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu+title&lang=pl&pn=1
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	(1)N090/0003/21 – internal founding „Mistrz”; Principal investigator: BAM15, as a factor improving metabolism, mitochondrial dynamics and decidualisation of endometrial progenitor cells in mares with obesity.(2)2021/43/B/ST5/02960 Principal investigator at UPWr: Biocompatible materials with theranostics' properties for precision medical application; consortium with ILT&SR PAS Wrocław - Poland, Project leader: prof. Rafał J. Wiglusz; (3)2019/ABM/01/00016-00 Principal investigator at UPWr: Optimisation of the procedure and of therapy of minor patients with histiocyte cell growths - the first Polish non-commercial clinical trial POL HISTIO". Project financed by Medical Research Agency (Agencja Badań Medycznych, ABM). Project leader: prof. Anna Raciborska;
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:	Rafał J. Wiglusz
Academic Degree:	prof. dr hab. inż. (Prof.)
Faculty, Institute/Department:	•Department of Organic Chemistry, Bioorganic Chemistry and Biotechnology, Faculty of Chemistry, Silesian University of Technology; •Institute of Low Temperature and Structure Research PAS, Division of Biomedical Physicochemistry.
e-mail address:	r.wiglusz@intibs.pl
ORCID:	https://orcid.org/0000-0001-8458-1532
UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	<p>1.B.M. Szczęsniak-Siega, B. Wiatrak, Z. Czyznikowska, J. Janczak, Rafał J. Wiglusz, J. Maniewska, "Synthesis and biological evaluation as well as in silico studies of arylpiperazine-1,2-benzothiazine derivatives as novel anti-inflammatory agents" Bioorganic Chemistry, 106 (2021) 104476.</p> <p>2.Sara Targonska, Monika Dobrzynska-Mizera, Marta Wujczyk, Justyna Rewak-Soroczynska, Monika Knitter, Katarzyna Dopierala, Jacek Andrzejewski, Rafał J. Wiglusz, "New way to obtain the poly (L-lactide-co-D, L-lactide) blend filled with nanohydroxyapatite as biomaterial for 3D-printed bone-reconstruction implants", European Polymer Journal, 165, (2022) 110997.</p> <p>3.Paulina Sobierajska, Nicole Nowak, Justyna Rewak-Soroczynska, Sara Targonska, Agnieszka Lewińska, Lukasz Grosman, Rafał J. Wiglusz, "Investigation of topography effect on antibacterial properties and biocompatibility of nanohydroxyapatites activated with zinc and copper ions: In vitro study of colloids, hydrogel scaffolds and pellets", Biomaterials Advances, 134 (2022) 112547.</p> <p>4.Paulina Sobierajska, Benita Wiatrak, Paulina Jawien, Maciej Janeczek, Katarzyna Wiglusz, Adam Szeląg, and Rafał J. Wiglusz, "Imatinib-Functionalized Galactose Hydrogels Loaded with Nanohydroxyapatite as a Drug Delivery System for Osteosarcoma: In Vitro Studies", ACS Omega, 8 (2023) 17891–17900.</p> <p>5.Nicole Nowak, Dominika Czekanowska, Tomasz Gebarowski, and Rafał J. Wiglusz, "Highly cyto- and immune compatible new synthetic fluorapatite nanomaterials co-doped with rubidium(I) and europium(III) ions", Biomaterials Advances, 156 (2024) 213709.</p> <p>1.US 11180370 B2 "Nanocrystalline calcium hydroxyapatites, method for its manufacture and use thereof in regenerative medicine and theranostic".</p> <p>2.PL 437485 A1 „Kompozyt na bazie (ko)polimeru polilaktydowego z napełniaczem nanohydroksyapatytowym do zastosowań biometrycznych oraz sposób jego wytwarzania i zastosowania”.</p>

	<p>3.PL 229920 B1 „Sposób wytwarzania nanokrystalicznych czystych hydroksyapatytów $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$”.</p> <p>4.PL 417033 A1 „Kompozycja do stosowania miejscowego i sposób jej wytwarzania”</p> <p>5.PL 436311 A1 „Sposób wytwarzania i aktywność przeciwgrzybowa fluoroapatytów domieszkowanych jonami srebra”.</p> <p>6.PL 437485 A1 „Kompozyt na bazie (ko)polimeru polilaktydowego z napełniaczem nanohydroksyapatytowym do zastosowań biomedycznych oraz sposób jego wytwarzania i zastosowania”.</p> <p>7.PL 405842 B1 „Klej biomedyczny”.</p> <p>8.PL436311B1 „Sposób wytwarzania i aktywność przeciwgrzybowa fluoroapatytów.</p> <p>9.PL437485B1 pt.: „Kompozyt na bazie (ko)polimeru polilaktydowego z napełniaczem nanohydroksyapatytowym do zastosowań biomedycznych oraz sposób jego wytwarzania i zastosowania”.</p>
Researchgate:	https://www.researchgate.net/profile/R-Wiglusz
Personal website / Working group website:	https://www.intibs.pl/o-instytucie/badania-naukowe/oddzial-fizykochemii-biomedycznej.html
Participation projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>1.UMO-2021/43/B/ST5/02960 “Biocompatible materials with theranostics’ properties for precision medical application” ILT&SR PAS Wrocław - Poland, project leader.</p> <p>2.UMO-2019/33/B/ST5/02247 „Preparation and modulation of spectroscopic properties of YXZO_4, where X and Z - P5+, V5+, As5+, doped with "s2-like" ions and co-doped with rare earth ions”, ILT&SR PAS Wrocław - Poland, project leader.</p> <p>3.UMO-2015/19/B/ST5/0133 „Preparation and characterisation of biocomposites based on nanoapatites for theranostic.”, ILT&SR PAS Wrocław - Poland, project leader.</p> <p>4.UMO-2016/21/B/NZ6/01157 “Elaboration and characteristics of biocomposites with anti-virulent and anti-bacterial properties against <i>Pseudomonas aeruginosa</i>” Wrocław University, ILT&SR PAS Wrocław, project consortium.</p> <p>5.WND-POWR.03.02.00-00-I30/17 “Multidisciplinary PhD studies - Nanotechnology in biomedicine”, ILT&SR PAS Wrocław - Poland, project leader.</p> <p>6.POIR.01.01.01-00-0960/20 “Advanced hydrogel composites for treatment difficult to heal wounds”, Syntplant sp. z o.o., ILT&SR PAS Wrocław, project consortium.</p> <p>7.UMO-2017/26/M/NZ5/01184 „ Novel, two-stage delivery, nanohydroxyapatite (nHAp) - iron oxide ($\text{Fe}_2\text{O}_3/\text{Fe}_2\text{O}_4$) - miRNA scaffold with controlled by static magnetic field payload release for osteoporotic bone fracture regeneration”, University of Environmental and Life Sciences, ILT&SR PAS Wrocław – Poland and Universitete Blaise Pascal, Institut de Chimie de Clermont-Ferrand – France, project consortium.</p> <p>8.UMO-2012/05/E/ST5/03904 „Preparation and characterisation of nanoapatites doped with rare earth ions and their biocomposites”, ILT&SR PAS Wrocław - Poland, project leader.</p> <p>9.UMO-2012/06/M/ST5/00048 „ Nanomaterials for fluorescence lifetimes bio-imaging (NFLBio)”, ILT&SR PAS Wrocław – Poland and Universitete Blaise Pascal, Institut de Chimie de Clermont-Ferrand – France, project leader.</p> <p>10.UMO-2011/01/D/ST5/05827 "Smart nanoparticles for bio-imaging and drug delivery" project funded by National Science Centre, ILT&SR PAS Wrocław - Poland, project executor.</p>
PhD topic:	Evaluation of the functional bone-forming nanosized biomaterials with theranostic properties in regenerative medicine and bone tissue oncology - translational research
Research discipline in Doctoral School:	Veterinary Science

<p>Short description of the research problem to be solved in the PhD (minimum 1000 characters):</p>	<p>The research is aimed to evaluate the potential clinical utility of organic-inorganic biomaterials promoting bone tissue reconstruction on a cartilaginous substrate. Theranostic biomaterials based on nanosized compounds with hydroxyapatite structure and characterized by high cytocompatibility towards progenitor bone tissue cells will be tested for their selective action against bone tissue cancer cells (i.e., osteosarcoma).</p> <p>The studies will be conducted using complex organotypic and tissue cultures, enabling the evaluation of interactions between normal progenitor bone cells and cancer stem cells. The research will be carried out using human cells as well as canine tissues and cells, to assess the translational potential of the obtained therapeutic platforms and their significance as carriers of anticancer drugs. This approach will allow for a better understanding of the action of nanosized biomaterials in a complex tissue environment, while simultaneously tracking the dynamics of processes regulated by the developed therapeutic system. The selectivity of nanosized carriers is of fundamental importance for potential oncological applications and achieving the desired therapeutic effect, which is effective cancer treatment followed by bone tissue regeneration to restore its homeostasis after surgical intervention.</p> <p>As part of the project, comprehensive molecular and biochemical studies are planned, aimed at characterizing key molecular pathways involved in the processes of regeneration and neoplasia of bone tissue, as well as identifying new molecules that could serve as potential therapeutic targets.</p> <p>The PhD candidate will be involved in the implementation of research tasks within the OPUS 22 project entitled "Biocompatible materials with theranostic properties for precise medical applications" (UMO-2021/43/B/ST5/02960, please see the website of the project), led by the second supervisor - Prof. Rafał J. Wiglusz. The doctoral student will receive an additional scholarship (about 550 PLN per month; planned for 24 months).</p>
<p>Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):</p>	<p>Qualifications & Skills: • Master's degree in biology or similar; • fluency in spoken and written English; • experience in working with cell/tissue cultures and biomaterials testing; • at least basic knowledge regarding molecular-based techniques; • experience with animals; handling and in vivo studies will be much appreciated; • knowledge of general basic statistical programs and methods; • good general IT skills (e.g. MS Office: Excel, MS Word, or similar);</p> <p>Core Competencies: • commitment and availability in research work; • communication skills; • ability to work in a team; • the ability to organize work and the desire for continuous scientific development; • pro-active attitude, flexible, professional.</p>
<p>a) Project title:</p>	<p>None</p>
<p>b) Agreement number:</p>	<p>None</p>
<p>c) Number of months in the project to support PhD student (in months; starting from 1st of October 2024):</p>	<p>0</p>
<p>Project website:</p>	<p>https://projekty.ncn.gov.pl/index.php?projekt_id=533673</p>