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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/autor/UPWrref532cc7154463a83db98b8ca2d16c/Agnieszka+%25C5%259Amieszek?ab=main&conversationPropagation=join&sort=&lang=pl&cid=2690
Researchgate:	https://www.researchgate.net/profile/Agnieszka-Smieszek
Personal website / Working group website:	
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. Rafal 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;
Name and surname:	Second supervisor (from other discipline, Polish or international research unit)
Academic Degree:	Rafal J. Wiglusz
Faculty, Institute/Department:	prof. dr hab. (Prof.)
e-mail address:	Institute of Low Temperature and Structure Research PAS, Division of Biomedical Physicochemistry;
ORCID:	r.wiglusz@intibs.pl
UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	https://orcid.org/0000-0001-8458-1532 1.K. Marycz, A. Smieszek, J. Trynda, P. Sobierajska, S. Targonska, L. Grosman and R.J. Wiglusz, Nanocrystalline Hydroxyapatite Loaded with Resveratrol in Colloidal Suspension Improves Viability, Metabolic Activity and Mitochondrial Potential in Human Adipose-Derived Mesenchymal Stromal Stem Cells (hASCs), Polymers, 11 (2019) 92-115. 2.K. Szustakiewicz, B. Kryszak, J. Piglowski, M. Gazinska and R.J. Wiglusz, The influence of hydroxyapatite content on properties of poly(L-lactic) acid/hydroxyapatite porous scaffolds obtained using thermal induced phase separation technique” European Polymer Journal, 113 (2019) 313-320. 3.P. Sobierajska and R.J. Wiglusz, Influence of the grain sizes on Stokes and anti-Stokes fluorescence in the Yb3+ and Tb3+ ions co-doped nanocrystalline fluorapatites, J. Alloy. Comp., 785 (2019) 808-818. 4.Sara Targonska, Monika Dobrzynska-Mizera, Marta Wujczyk, Justyna Rewak-Soroczynska, Monika Knitter, Katarzyna Dopierala, Jacek Andrzejewski, Rafal 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. 5.Paulina Sobierajska, Nicole Nowak, Justyna Rewak-Soroczynska, Sara Targonska, Agnieszka Lewińska, Lukasz Grosman, Rafal 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. 1.US 11180370 B2 "Nanocrystalline calcium hydroxyapatites, method for its manufacture and use thereof in regenerative medicine and theranostic". 2.PL 437485 A1 „Kompozyt na bazie (ko)polimeru polilaktydowego z napełniaczem nanohydroksyapatytowym do zastosowań biometrycznych oraz sposób jego wytwarzania i zastosowania”. 3.PL 229920 B1 „Sposób wytwarzania nanokryształicznych czystych hydroksyapatytów Ca10(PO4)6(OH)2”. 4.PL 417033 A1 „Kompozycja do stosowania miejscowego i sposób jej wytwarzania”. 5.PL 436311 A1 „Sposób wytwarzania i aktywność przeciwrzybowych fluoroapatytów domieszkowanych jonami srebra”. 6.PL 437485 A1 „Kompozyt na bazie (ko)polimeru polilaktydowego z napełniaczem nanohydroksyapatytowym do zastosowań biomedycznych oraz sposób jego wytwarzania i zastosowania”. 7.PL 405842 B1 „Klej biomedyczny”.
Researchgate:	https://www.researchgate.net/profile/R-Wiglusz
Personal website / Working group website:	https://www.intibs.pl/o-instytucje/badania-naukowe/oddzial-fizykochemii-biomedycznej.html
Participation projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	1.UMO-2021/43/B/ST5/02960 "Biocompatible materials with theranostics' properties for precision medical application" ILT&SR PAS Wrocław - Poland, project leader. 2.UMO-2019/33/B/ST5/02247 „Preparation and modulation of spectroscopic properties of YXZO4, 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. 3.UMO-2015/19/B/ST5/0133 „Preparation and characterisation of biocomposites based on nanoapatites for theranostic”, ILT&SR PAS Wrocław - Poland, project leader. 4.UMO-2016/21/B/NZ6/01157 "Elaboration and characteristics of biocomposites with anti-virulent and anti-bacterial properties against Pseudomonas aeruginosa" Wrocław University, ILT&SR PAS Wrocław, project consortium. 5.WND-POWR.03.02.00-00-130/17 "Multidisciplinary PhD studies - Nanotechnology in biomedicine". ILT&SR PAS Wrocław - Poland, project leader. 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. 7.UMO-2017/26/M/NZ5/01184 „ Novel, two-stage delivery, nanohydroxyapatite (nHAp) - iron oxide (Fe2O3/Fe2O4) - 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. 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. 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. 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.
PhD topic:	Nanoscaled theranostic biomaterials as therapeutic platforms for bone and cartilage tissue functional regeneration.
Research discipline in Doctoral School:	Biological Sciences
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	The thesis aims to determine the biocompatibility of novel nanoscaled biomaterials with theranostic properties in terms of their pro-osteogenic and pro-chondrogenic potential. The biomaterials will be organic-inorganic hybrids, formed by bioactive polymers with nanosized phosphate-silicate compounds of apatite structure. The study will evaluate biomaterials' influence on endochondral bone formation at the cellular and molecular levels. Thus the analysis will be performed using sophisticated in vitro models (3D cultures) and in vivo models (humanised mice). The signalling pathways of critical bone and cartilage formation regulators will be studied using functional assays to determine the potential molecular mechanism of biomaterials action. The molecular axis of master regulators will be determined based on the profile of coding and non-coding transcripts. Immuno-based techniques will monitor the expression of relevant extracellular and intracellular proteins. The cytocompatibility of biomaterials will be evaluated using cells of high cellular plasticity, i.e. bone marrow-derived mesenchymal stromal cells. The result of the thesis will be the profound characterisation of nanosized biomaterials with great emphasis on understanding the molecular mechanism of the theranostics platforms' action. The PhD student will be involved in the realisation of convergent research tasks in the OPUS 22 project titled: Biocompatible materials with theranostics' properties for precision medical application (UMO-2021/43/B/ST5/02960) lead by Prof. Wiglusz. The student will get an additional scholarship (around 550 PLN/1 month; planned for 24 months)
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	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); Core Competencies: • commitment and availability in research work; • communication skills; • ability to work in a team; • the ability to organise work and the desire for continuous scientific development; • pro-active attitude, flexible, professional.
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
Project website:	https://projekty.ncn.gov.pl/index.php?projekt_id=533673