Name and surname	**Błażej Pośniak**
Academic Degree	dr hab. (DSc.)
Institute/Department	Department of Pharmacology and Toxicology
e-mail address	blazej.pozniak@upwr.edu.pl
ORCID	0000-0002-5813-1404
UPWr Base of Knowledge - link	https://bazawiedzy.upwr.edu.pl/info/author/UPWrd49ccb711c034216ba37ea5dcf20339d/Profil%2Bosoby%2B%25E2%2580%2593%2BB%25C5%2582a%25C5%25BCej%2BPo%25C5%25BAniak%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodniczy%2Bwe%2BWroc%25C5%2582awiu?r=author&tab=&lang=pl&qp=
Researchgate	https://www.researchgate.net/profile/Blazej-Pozniak
Personal website / Working group website	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca))	2020-2022: RF in the project "Multicentryczna międzynarodowa platforma naukowa kluczem do efektywnego prowadzenia badań" NAWA, project No. PPI/APM/2019/1/00044/U/00001 2017-2020: PI in the project "Ocena wpływu intensywnego wzrostu na farmakokinetykę tylozyny i enrofloksacyny u indyków - modelowanie i walidacja dawkowania w oparciu o integrację parametrów farmakokinetycznych i farmakodynamicznych" Sonata NCN, Project No. 2016/21/D/NZ7/01053 2017-2020: RF in the project "aHEAD - advanced Head models for safety Enhancement And medical Development" NCBiR, Lider, project No. LIDER/8/0051/L-8/16/NCBR/2017 2017-2020: RF in the project "High sensitive thermal imaging for biomedical and microelectronic application" FNP First Team, Project No. 0249
Do you plan to engage support of second supervisor or auxiliary supervisor?	NO
PhD topic	**The development of an in vitro pharmacokinetic-pharmacodynamic model of bovine mastitis related to staphylococcal biofilm**
Research discipline in Doctoral School	Veterinary Science
Short description of the research problem to be solved in the PhD (minimum 1000 characters)	It is estimated that up to 80% of bacterial infections is associated with biofilm formation. Biofilms are a collective of microorganisms that can grow on many different surfaces and are embedded in complex organic matrix. This type of growth significantly increases bacterial resistance to antimicrobials and may be responsible for suboptimal treatment outcome particularly in chronic infections. Bovine mastitis, an inflammation of the mammary gland, is the most common disease of dairy cattle causing economic losses due to poor quality and reduced yield of milk. Staphylococci that have been cultured from clinical cases of chronic mastitis were often found to produce biofilm in vitro and this feature appears to correlate with virulence and resistance to antimicrobial treatment. However, currently used in vitro systems differ significantly from the in vivo infection which makes the clinical relevance of laboratory findings difficult to assess. Therefore, there is a need to develop more advanced models that account for some physiological factors relevant to mastitis like medium composition and flow. The aim of this project will be to develop a dynamic pharmacokinetic-pharmacodynamic in vitro infection model of bovine mastitis associated with biofilm formation based on existing flow systems for biofilm culture. This task will be carried out in an interdisciplinary team of veterinary pharmacologists and microbiologists. The development steps will cover the selection and characterization of model organisms, media and flow optimisation, sensitivity assessment and biofilm characterization with different visual and chemical techniques. The model will be then used to mimic complex pharmacokinetic profiles of drugs used in mastitis treatment as well as novel combinations of agents in order to explore new strategies for combating mastitis.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters)	A prospective candidate is expected to hold a DVM or MSc in microbiology. Fluent English and basic experience in techniques used in microbiology are mandatory. For candidates holding a DVM, clinical experience with dairy cattle will be welcomed but not required. Basic understanding of pharmacokinetics and some experience in chromatography will be considered as an asset. Experience in molecular biology, bacterial genetics, metabolomics, analytical chemistry will all be considered as additional assets.
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	