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Academic Degree:	dr hab. (DSc.)
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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info/author/UPWr51f62c196ed44292a4a18c87cf2d9bca/Profil%2Bosoby%2B%25E2%2580%2593%2BKrzysztof%2BGrzymaj%25C5%2582o%2B%25E2%2580%2593%2BUniwersytet%2BPrzyrodnicz%2Bwe%2BWroc%25C5%2582awiu?r=author&tab=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Krzysztof-Grzymajlo
Personal website / Working group website:	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	1) (PI) "The role of the <i>sanA</i> gene in <i>Salmonella</i> pathogenicity" 2019/35/O/NZ6/01590; 2020-2024 2) (PI) "Innate immune response during first stages of <i>Salmonella</i> infection" PPN/BEK/2018/1/00270; 2019 3) (PI)"Host-pathogen-microbiota interactions at the first stages of <i>Salmonella enterica</i> infection" 2020/38/E/NZ6/00182 ; 2021-2026 4 (PI) „Swim and adhere – regulation of <i>Salmonella</i> 's virulence factors expression and its impact on infection" 2022/47/O/NZ6/01128; 2023-2027
PhD topic:	Swim and adhere – regulation of <i>Salmonella</i> 's virulence factors expression and its impact on infection
Research discipline in Doctoral School:	Veterinary Science
Short description of the research problem to be solved in the Ph.D. (minimum 1000 characters):	<i>Salmonella</i> infection is a multistage interaction of bacteria and host, driven by virulence factors like flagella, fimbriae, and secretion systems. The first two, flagella (motility) and fimbriae (binding) are crucial for the initial stages of infection. Despite numerous studies, the role and significance of T1F-flagella cross-talk remain relatively unknown. Therefore, the research objective is to explain this mutual regulation. Our preliminary studies revealed that T1F expression is dependent on growth conditions and affects <i>Salmonella</i> adhesion. What is more, the knock-out of T1F operon regulatory genes impacts flagella expression level. This research project is focused on the cross-talk between the adhesive and motility structures during the first and crucial stages of the pathogen infection. We are planning to make the new experimental models which allow us for the first time real-time tracking of <i>Salmonella</i> 's virulence factor expression through the course of infection. In addition, we will manipulate the level of T1F and flagella expression, by the construction of mutants with high constant expression and inducible expression of those structures.
Professional skills for PhD candidate (e.g. master program, specializations, software, language, analytical techniques, minimum 500 characters):	Master's degree in veterinary medicine, microbiology, biotechnology, or in a related field - Sound understanding of molecular mechanisms of bacterial pathogenesis (with particular emphasis on the <i>Salmonella</i> genus) - Basic proficiency in the use of biological databases and online resources/tools -Experience in laboratory work: a) Molecular biology skills: PCR methods, DNA electrophoresis, DNA/RNA extraction, plasmid isolation, generation of deletion mutants, cloning; protein expression and purification; b) Cell biology skills: in vitro culture of cell lines; c) Microbiology skills: cultivation of bacteria, adhesion and invasion assays; protein expression and purification; - Ability to work with animals in a research setting - Teamwork skills and strong motivation for scientific work - Ability to critically analyze and interpret data - Good written and spoken English communication skills
a) Project title:	Swim and adhere – regulation of <i>Salmonella</i> 's virulence factors expression and its impact on infection
b) Agreement number:	2022/47/O/NZ6/01128
c) Number of months in the project to support PhD (in months; starting from 1st of October 2023):	48
Project website:	