

Name and surname:	Pawel Migdal
Academic Degree:	dr hab. inż. (DSc.)
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UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info.seam?id=UPWre59b4c6baee1494aadf63e93864ad719&affil=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Pawel-Migdal
Personal website / Working group website:	
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>PI:</p> <ol style="list-style-type: none"> 1. Changes in biochemical indicators of honey bee workers under the influence of various compositions of plant protection products - 2020-2022. 2. High-frequency electromagnetic fields as a possible factor influencing gene expression in honeybees - 2023 - 2024. <p>RF:</p> <ol style="list-style-type: none"> 1. Implementation of a research and development project to develop methods and algorithms necessary to create a modern BeeMonitor product - 2019-2020. 2. Development and implementation of a bacteriophage preparation used in the treatment and prevention of foulbrood in honey bee brood - 2019. 3. Analysis of the mechanisms of increased effectiveness of antimicrobial substances against biofilm in the presence of a rotating magnetic field - 2019-2020.
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
	Auxiliary supervisor
Name and surname:	Agnieszka Murawska
Academic Degree:	dr inż. (Dr. Eng.)
Faculty, Institute/Department:	Faculty of Biology and Animal Science, Institute of Animal Husbandry and Breeding, Department of Bees Breeding
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ORCID:	
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=UPWrc3b044afa7f496bbf0527abba64ddc7&affil=&lang=pl
Researchgate:	
Personal website / Working group website:	
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	Development and implementation of a bacteriophage preparation used in the treatment and prevention of foulbrood in honey bee brood - 2019.
PhD topic:	Assessment of changes occurring in the honey bee's body under the influence of 5G technology
Research discipline in Doctoral School:	Animal Science and Fisheries

<p>Short description of the research problem to be solved in the PhD (minimum 1000 characters):</p>	<p>Artificially created electromagnetic fields of various frequencies and intensities currently pollute the natural environment. Worker bees, while working in the environment but also staying in hives, may be exposed to the influence of this factor. The current state of knowledge allows us to identify the influence of electromagnetic fields in the range of 50 Hz and from 900 MHz to 2100 MHz on individual individuals and their orientation in the field. However, the introduction of 5G technology in recent years has raised a lot of controversy and opposition, because we do not have enough knowledge in this field to be able to determine the degree of its impact. Therefore, it is important to examine the impact of the electromagnetic field of 5G technology on the honey bee's body. This is justified because beekeepers are increasingly using modern technologies in apiary management. This is one of the fastest-growing branches of this sector. Unfortunately, there are no known effects on entire bee colonies or on individual individuals of the use of these technologies, which may be a source of electromagnetic field emissions from the radio range used in 5G technology. The scope of work to be performed as part of this project assumes the analysis of entire bee colonies exposed to the influence of an electromagnetic field in terms of performance parameters. In addition, it will be necessary to examine the functioning of individual bees in a space where they will be exposed to the electromagnetic field of 5G technology. For this purpose, it will be necessary to characterize changes in selected biochemical markers and molecular biomarkers.</p>
<p>Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):</p>	<p>Education in zootechnic, biology, biotechnology, or related sciences will be useful to implement this topic. The candidate should have basic knowledge of breeding and the biology of insects. Experience in working with bees or other insects is desirable. Experience in working with bees in laboratory conditions will be an additional advantage. The candidate should have basic knowledge of laboratory work and research projects. In addition, he should be open to new challenges and trips abroad that will enable the achievement of the assumed work goals. Experience in writing scientific publications and participation in conferences is welcome.</p>
<p>a) Project title:</p>	<p>0</p>
<p>b) Agreement number:</p>	<p>0</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></p>