

Prospective supervisor's form

Name of the supervisor: Beata Krawczyk

Academic title: Ph.D., D. Sc., GUT professor

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Faculty of Chemistry

Gdańsk University of Technology Department of Molecular Biotechnology and Microbiology

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Discipline: chemical sciences [NCh] none

Optional

Key words (obligatory four key words describing research interests / expertise):

microbiome

infant

molecular method of typing

virulence factors

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 48/47

2. Citations excluding self-citations WoS 338 Scopus 417

3. Hirsch index WoS 12 Scopus 13

1. The number of PhD students who have graduated under your supervision: 3

2. The number of PhD students currently supervised:

a. within the current doctoral school 1

b. within doctoral studies (previous system) 1

3. Are you currently accepting new PhD students:

a. Polish Yes/No Yes

b. Foreign Yes/No No

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Research interests or topics offered for PhD research (no more than 2000 characters)ⁱⁱ

The influence of neonatal gut microbiome on the digestibility and absorption of nutrients by the infant. Human milk is recommended as the optimal nutrient source for infants. In addition to the ingredients necessary to satisfy the needs of the child (nutritional, immune), human milk also contains ingredients that facilitate digestion of food (digestive enzymes) and probiotic ingredients (oligosaccharides) conditioning the development of infants microflora. Scientific studies carried out in recent years have shown that the child's state of health largely depends on the quality of the microbiota and its ability to defend against pathogens. Colonization of the infant gut begins in early life. A newborn acquires a various bacteria from his mother during delivery. Additionally, microbial colonization of the gut neonatal has a strong relationship with the way of feeding the newborn baby (formula feeding versus breastfeeding). We are able to monitoring the change in the microbiome of neonatal/infant by using genetic typing methods and estimation the plasticity of bacteria genomes base on the acquiring virulence factors. On the basis of the actual state of knowledge, however, it is not sure how colonization of the gut effect this process has on the absorption of nutrients by the child. Therefore, extremely important becomes the understanding of the correlation between the mother's microbiome, human milk composition, baby's microbiome and digestibility and absorption of nutrients by neonates. The colonization of an infant's gut with optimal bacteria may help reduce the risk of disease later in life. The result of the research will be there will be an indication of the criteria enabling the design of optimal food for infants, especially premature, whose digestive system is not fully functional. Due to the interdisciplinary research, cooperation with Department of Chemistry, Technology and Biotechnology of Food (Chemical Faculty) is planned (the second supervisor).

Funding or special equipment needed to carry out a PhD projectⁱⁱⁱ:

1. Is funding available for experimental work: *Yes/No/not needed*

Yes

2. Is the equipment needed to complete a PhD project

available in your lab/department: *Yes/No/not needed*

Yes

Most important publications no more than 5 published after 1.01.2018

No	Authors/title/journal	Number of points according to the current list of the Ministry of Science and Higher Education	Publication year
1.	Beata Krawczyk, Michał Michalik, Magdalena Fordon, Magdalena Wysocka, Alfred Samet, Bogdan Nowicki. Escherichia coli Strains with Virulent Factors Typical for Uropathogens were Isolated from Sinuses from Patients with Chronic Rhinosinusitis—Case Report. Pathogens 2020, 9(5), 318; https://doi.org/10.3390/pathogens9050318	100	2020
2.	Gołębiewska JE, Krawczyk B, Wysocka M, Ewiak A, Komarnicka J, Bronk M, Rutkowski B, Dębska-Ślizień A. Host and pathogen factors in Klebsiella pneumoniae upper urinary tract infections in renal transplant patients. J Med Microbiol. 2019 Mar;68(3):382-394. doi: 10.1099/jmm.0.000942.	70	2019

Prospective supervisor's form

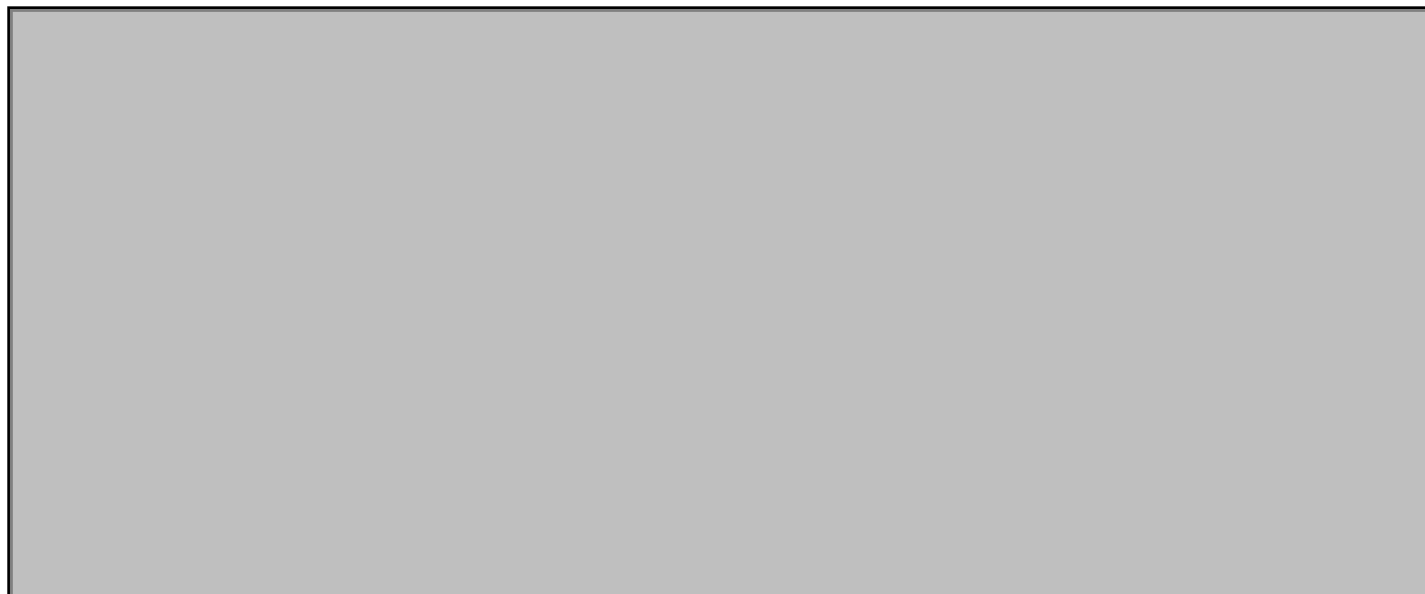
3.	Michalik M, Samet A, Marszałek A, Krawczyk B, Kotłowski R, Nowicki A, Anyszek T, Nowicki S, Kur J, Nowicki B. Intra-operative biopsy in chronic sinusitis detects pathogenic <i>Escherichia coli</i> that carry <i>fimG/H</i> , <i>fyuA</i> and <i>agn43</i> genes coding biofilm formation. <i>PLoS One</i> . 2018 Mar 23;13(3):e0192899. doi: 10.1371/journal.pone.0192899.	100	2018
4.	Śpibida M, Krawczyk B, Zalewska-Piątek B, Piątek R, Wysocka M, Olszewski M. Fusion of DNA-binding domain of <i>Pyrococcus furiosus</i> ligase with TaqStoffel DNA polymerase as a useful tool in PCR with difficult targets. <i>Appl Microbiol Biotechnol</i> . 2018 Jan;102(2):713-721. doi: 10.1007/s00253-017-8560-6.	100	2018
5.	Siebert A, Wysocka M, Krawczyk B, Cholewiński G, Rachoń J. Synthesis and antimicrobial activity of amino acid and peptide derivatives of mycophenolic acid. <i>Eur J Med Chem</i> . 2018 Jan 1;143:646-655. doi: 10.1016/j.ejmech.2017.11.094.	140	2018

Most recent externally funded projects you were involved in – no more than 3

No	Project title, the name of the Principal Investigator (PI) and the institution the project was carried out	Years	Role in the project ^{iv}
1.	The metabolomic and genetic characteristics of <i>E. coli</i> strains as a trigger of urosepsis. NCN, OPUS-15. Scientific Consortium: Medical University of Gdańsk - Lider and Gdańsk University of Technology - Partner. The leadership of the part research project.	2019	PI
2.	LMS PCR (Ligation Mediated Suppression PCR) as a new technique for genetic typing of <i>Acinetobacter</i> . "Gdańsk University of Technology.	2012	PI
3.	Development, optimization and validation of a new method of genetic typing of microorganisms based on the LM PCR technique using class IIS restriction enzymes "Gdańsk University of Technology.	2011	PI

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Additional relevant information (no more than 1600 characters)^v



- ⁱ You may select up to two disciplines out of 12 disciplines represented in the Doctoral School
- ⁱⁱ Observe the limit of not more than 2000 characters
- ⁱⁱⁱ Leave only one answer
- ^{iv} Select the role in the project: PI stands for principal investigator (refers to the holder of an independent grant and the lead researcher for the grant project), Co-I for co-investigator (Co-I assists the principal investigator in the management and leadership of the research project), R for researcher
- ^v Add any other relevant information e.g. awards for PhD students whom you supervised (no more than 1600 characters)