

Prospective supervisor's form

Name of the supervisor: Agnieszka Bartoszek-Pączkowska

Academic title: GUT Professor

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Faculty of Chemistry

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Discipline¹ chemical sciences [NCh]

none

Optional

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

Food science

Antioxidants

Chemoprevention

Redox biology

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 81/80

2. Citations excluding self-citations WoS 1022 Scopus 1016

3. Hirsch index WoS 18 Scopus 19

1. The number of PhD students who have graduated under your supervision: 5

2. The number of PhD students currently supervised:

a. within the current doctoral school -

b. within doctoral studies (previous system) 3

3. Are you currently accepting new PhD students:

a. Polish Yes/No Yes

b. Foreign Yes/No Yes

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

The research proposed within the scope of doctoral project will concentrate on the nutritional role of dietary nucleic acids, especially on their impact on cancer risk. Currently, the perception of nucleic acids, including food science field, is dominated by considering them almost exclusively as genetic information carriers, where the most important feature of structure of these molecules is specific nucleotide sequence. Also, the most recently recognized regulatory functions of noncoding RNA (ncRNA) are connected with the presence of specific nucleotide sequences, which are encoded in the genome. The proposed project, in contrast to the above approach, does not concern in any aspect the coding role of nucleic acids.

The proposed scope of research will concentrate specifically around the assumed toxicological risk associated with the exposure of cells of the alimentary tract to oxidatively modified nucleosides that could be present in food, especially thermally processed. To assess the nutritional significance of oxidised nucleic acids and their components, the impact on different cellular functions in both normal and cancer cells will be investigated in cellular models representing human alimentary tract. Particular emphasis will be placed on the transport of exogenous nucleic acids via cell membranes, the impact on processes requiring DNA synthesis (proliferation, DNA repair, chromatin integrity) as well as epigenetic regulation, which involves chemical modification of nucleobases. Moreover, the oxidatively modified exogenous dietary nucleic acids can be a source of oxidised nucleotides which when incorporated into cellular DNA may cause mutations and thereby increase the risk of carcinogenic transformation. This point will be also the subject of the study. The proposed scope of research is an absolutely novel field as dietary nucleic acids have not been considered in such a nutritional context so far.

Funding or special equipment needed to carry out a PhD project ⁱⁱⁱ:

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

No

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.	Baranowska M., Suliborska K., Chrzanowski W., Kuszniereicz B., Namieśnik J., Bartoszek A. The relationship between standard reduction potentials of catechins and biological activities involved in redox control. <i>Redox Biology</i> , 2018, 17: 355-366.	140	2018
2.	Koss-Mikołajczyk I., Kuszniereicz B., Wiczowski W., Płatosi N., Bartoszek, A. Phytochemical composition and biological activities of differently pigmented cabbage (<i>Brassica oleracea</i> var. <i>capitata</i>) and cauliflower (<i>Brassica oleracea</i> var. <i>botrytis</i>) varieties. <i>Journal of the Science of Food and Agriculture</i> , 2019, 99: 5499–5507.	100	2019

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3.	Koss-Mikołajczyk I., Kuszniereicz B., Wiczowski W., Sawicki T., Bartoszek, A. The comparison of betalain composition and chosen biological activities for differently pigmented prickly pear (<i>Opuntia ficus-indica</i>) and beetroot (<i>Beta vulgaris</i>) varieties. <i>International Journal of Food Sciences and Nutrition</i> . 2019, 70:442-452.	70	2019
4.	Koss-Mikołajczyk I., Baranowska M., Todorovic V., Albini A., Sansone C., Androletti P., Cherkaoui-Malki M., Lizard G., Noonan D., Sobajic S., Bartoszek A. Prophylaxis of Non-communicable Diseases: Why fruits and vegetables may be better chemopreventive agents than dietary supplements based on isolated phytochemicals? <i>Current</i>	70	2019
5.	Baranowska M., Suliborska K., Todorovic V., Chrzanowski W., Kuszniereicz B., Sobajic S., Bartoszek A. Interactions between bioactive components determine antioxidant, cytotoxic and nutrigenomic activity of cocoa powder extract. <i>Free Radical Biology and Medicine</i> , 2020, 154: 48-61.	140	2020

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.	Sustainable food production through quality optimized raw material production and processing technologies for premium quality vegetable production and generated by-products. SUSFOOD/2013/2. (Gdansk University of Technology)	2014-2017	PI
2.	Projekt MAESTRO. Szereg Mocy Przeciwtleniającej jako narzędzie pozwalające na racjonalne projektowanie i ocenę właściwości prozdrowotnych żywności funkcjonalnej zawierającej przeciwutleniające związki fitochemiczne. UMO-2014/14/A/ST4/00640. PI was Professor Jacek Namieśnik, now replaced by Professor Piotr Konieczka (Gdansk University of Technology)	2015-2021	Co-I
3.	NutRedOx COST action CA16112. Personalized nutrition in aging society: redox control of major age related diseases. (34 participating countries), PI is Professor Mustapha Cherkaoui Malki (Université de Bourgogne, France)	2017-2021	Co-I

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

Traditionally, PhD students who are under my supervision are involved actively in international cooperation and are encouraged to apply for their own research grants. So far, all "my" graduate students were the leaders of their own research projects funded by Polish National Science Council and spend some time in high-rank European laboratories, where they could realize part of their experiments.

- 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)