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Academic Degree	dr hab. inż. (DSc.)
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UPWr Base of Knowledge - link	https://bazawiedzy.upwr.edu.pl/info/author/UPWr3a292f5d6af9405396715eeeb6f6d54f/Joanna%2BKolniak-Ostek?affil=&tab=main&conversationPropagation=join&sort=&lang=pl&cid=703528
Researchgate:	
Personal website / Working group website:	
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<ol style="list-style-type: none"> 1. Determination of chemical composition, pro-health properties and antioxidant capacity of pear (<i>Pyrus communis</i> L.). 2014-2017. National Science Centre project 2013/09/D/NZ9/00375; PI and RF 2. Factors affecting the quality of grapes and wine. 2014-2017. National Science Centre project 2013/09/B/NZ9/01745; RF 3. Development of chokeberry drink prosperous in bioactive compounds with high antioxidant activity and low turbidity and sediment. 2015-2018. National Centre for Research and Development project PBS3/B8/21/2015; RF
Do you plan to engage support of second supervisor or auxiliary supervisor?	YES
	Second supervisor (from other discipline, polish or international research unit)
Name and surname:	Claire Dufour
Academic Degree	dr hab. (Dr. Sc.)
Faculty, Institute/Department	INRA/University of Avignon Unit "Safety and Quality of Plant Products", Avignon
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UPWr Base of Knowledge - link or most important publications from last 3 year (JCR) / patents from last 3 years (maximum 5):	<ol style="list-style-type: none"> 1. Boléa G., Philouze C., Dubois M., Risdon S., Humberclaude A., Ginies C., Charles A. L., Geny B., Reboul C., Arnaud C., Dufour C., Meyer G. Digestive n-6 lipid oxidation, a key trigger of vascular dysfunction and atherosclerosis in the Western diet: protective effects of apple polyphenols. <i>Molecular Nutrition & Food Research</i>, 2021, DOI: 10.1002/mnfr.202000487. 2. Monfoulet L-Em., Buffière C., Istars G., Dufour C., Le Bourvellec C., Mercier S., Bayle D., Boby C., Rémond D., Borel P., Rodriguez-Mateos A., Milenkovic D., Morand C.. Effects of the apple matrix on the postprandial bioavailability of flavan-3-ols and nutrigenomic response of apple polyphenols in minipigs challenged with a high fat meal. <i>Food & Function</i>, 2020, 11, 5077-5090. DOI: 10.1039/d0fo00346h. 3. Boléa G., Ginies C., Vallier M.-J., Dufour C. Lipid protection by polyphenol-rich apple matrices is modulated by pH and pepsin in vitro gastric digestion, <i>Food & Function</i>, 2019, 10, 3942-3954. DOI: 10.1039/C9FO00705A. 4. Brodkorb, A., Egger, L., Alming, M. et al. INFOGEST static in vitro simulation of gastrointestinal food digestion. <i>Nature Protocols</i>, 2019, 14, 991-1014. DOI:10.1038/s41596-018-0119-1 5. Dufour C. Loonis M., Delosière M., Buffière C., Hafnaoui N., Santé-Lhoutellier V., Rémond D. The matrix of fruit & vegetables modulates the gastrointestinal bioaccessibility of polyphenols and their impact on dietary protein digestibility, <i>Food Chemistry</i>, 2018, 240, 314-322.
Researchgate:	https://www.researchgate.net/profile/Claire_Dufour
Personal website / Working group website:	
Participation projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>2021-2024 Principal investigator in ITN HiStabJuice (Establishing a strong and lasting international training network for innovation in food and juice industries: a 4D-research approach for fruit juice processing). PhD Co-supervision. 9 partners from academia and 8 companies. H2020 funded.</p> <p>2021-2024 Principal investigator and WP3 leader in the national project TomHealth. Improvement of tomato health-promoting effects via innovative combination of genotype choices, cultural practices and food technology. Partners: INRAE (PSH, C2VN), Univ. (GEPEA), technical centers (CTCPA, IDCAPS) & GB Food company. Funded by ANR.</p> <p>2021-2024 Principal investigator in a national project funded by INRAE, 24 companies and 2 technical centers in meat processing. PhD director of Charlene Sirvins. Protective role of plant micronutrients in lipid oxidation and the formation of nitroso-compounds during production and digestion of cured meat products.</p> <p>2021-2023 Principal investigator in a national project funded by Carnot Qualimut. Optimization of the extraction of anthocyanins from grape by-products and valorization as antioxidants and colorants.</p> <p>2020-2023 PhD director of Emmanuelle Richard. Microwave heating in food processing. Qualifying and intensification studies. Coll. with Dr. Carine Le Bourvellec (Inrae) and Pr. Farid Chemat (Avignon Univ.) Funded by the doctoral school of Avignon University</p> <p>2020-2023 Leader for SQPOV Unit in the Knowledge Hub Systemic "An integrated approach to the challenge of sustainable food systems: adaptive and mitigatory strategies to address climate change and malnutrition". Funded by JPI Oceans, JPI-HDHL & FACCE-JPI.</p> <p>2020-2021 Co-coordinator of a project with start-up Inaturals. Analysis of bioactive compounds in tomato co-products and their bioaccessibility in vitro digestion.</p> <p>2019-2020 Co-coordinator of a project with start-up Centaur Clinical. Impact of food constituents on the stability of a natural polymer in vitro digestion.</p> <p>2019-2020 Collaboration with Prof. Mario Marostica Junior (Univ. of Campinas, Brazil). Hosting of a PhD student (Adriana Tarone). Project: Jaboticaba peel: extraction, identification and microencapsulation of phenolic compounds as well as the evaluation of their bioaccessibility and antioxidant activity in vitro gastrointestinal digestion. Tarone et al., submitted to <i>Food Chemistry</i>, 2021.</p>
Research topic and funding	
1) PhD topic:	Determination of the effect of lactic acid fermentation on increasing the biological properties and bioavailability of polyphenols
2) Research discipline in Doctoral School	Nutrition and Food Technology

3) Short description of the research problem to be solved in the PhD:	<p>Numerous epidemiological studies confirm the effectiveness of a diet rich in fruit, vegetables and their products in preventing the emergence of chronic diseases of civilization, seeing in it primarily the health promoting effects of polyphenols. Their pro-health properties are related to anti-inflammatory and antioxidant properties. Normally, polyphenols are presented in dietary in terms of glycosides, ester, or polymeric forms and only 5%–10% of them may be taken in the small intestine, and undergone further extensive metabolism. The first step of polyphenol's metabolism should be removal of the sugar moiety, which would increase the passive diffusion of phenolic substances. The natural process influencing the plant composition by releasing the chemically bound compounds, breaking down plant macromolecules and synthesizing new metabolites is lactic acid fermentation. This process allows to obtain products with a prolonged shelf life in a natural way, and may affect the metabolism of phenolic compounds, increasing their bioavailability. Therefore, this project proposes to investigate polyphenolic profile changes of fruit and vegetables and the consequent changes in the bioavailability and biological activity of polyphenol molecules, that occur under the influence of lactic acid fermentation. The research will include five stages in which the influence of lactic acid fermentation on the basic chemical composition of fruit and vegetables (dry matter, extract, pH, total acidity, sugar content, organic acid content, including lactic acid, vitamin C content), the profile and content of polyphenols, antioxidant and anti-inflammatory properties, as well as bioavailability of polyphenolic compounds in simulated in vitro gastric and intestinal digestion will be assessed. Vegetables and fruits the most common used for lactic acid fermentation will be used for the research: white and red cabbage, cucumbers, beetroots, garlic, apples, plums, lemons, strawberries and grapes. The research will be carried out on fresh raw materials, during the lactic acid fermentation process, and in stored products after the fermentation is completed.</p>
4) Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques):	<ul style="list-style-type: none"> - having an academic title of Master of Science in the field of agricultural sciences in the discipline of food and nutrition technology or exact and natural sciences in the discipline of biological sciences; average grade for the course of 1st and 2nd cycle studies or uniform Master's studies - at least 4.0; - knowledge of English at the minimum B2 level of the European System for the Description of Languages - scientific achievements in the field of the characterization of bioactive compounds, including polyphenolic compounds - experience in the implementation of research related to the processing of plant products - knowledge of research methods in the field of physicochemical analyzes of plant raw materials
5) 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 2021):	
6) Project website:	