

Registration form

This is a registration form for Host Institutions wanting to establish a Dioscuri Centre of Scientific Excellence within Dioscuri 4 call.

Registration form for Polish research institution

1. Research institution data (name and address):

Wrocław University of Environmental and Life Sciences - UPWr

ul. C.K. Norwida 25

50-375 Wrocław

Poland

Website: <https://upwr.edu.pl/en/>

2. Type of research institution¹ (select one from the 9 listed options):

1) higher education institution

3. Head of the institution:

prof. dr hab inż. Jarosław Bosy

Rector

4. Contact information of designated person(s) for applicants and the NCN: first and last name, position, e-mail address, phone number, correspondence address:

dr hab. Anna Michalska-Ciechanowska, associate professor,

anna.michalska@upwr.edu.pl; 71 320 7712;

Department of Fruit, Vegetable and Plant Nutraceutical Technology

Faculty of Biotechnology and Food Science,

Wrocław University of Environmental and Life Sciences

Chelmońskiego 37, 51-630 Wrocław, Poland

5. Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre (select one from the 25 listed disciplines):

Life Sciences

x Applied life sciences and biotechnology

1 As specified in "Addressees of the call"

6. Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, other (*up to one page in A4 format*):

The UPWr is one of the best specialised research Universities in Poland with three major Priority Research Areas: Food, Veterinary Medicine, and Environment. The UPWr was ranked 12 among all Polish Universities in the Excellence Initiative – Research University, competition in 2019. The Faculty of Biotechnology and Food Science with its **Nutrition and Food Technology discipline is one of the best faculties at UPWr and the best in Poland** among all universities. The faculty have been awarded the A+ grade (the highest possible) in the last governmental evaluation. Members of the faculty are highly-recognised specialists working, among others, within the Leading Scientific Groups of UPWr, including **Plants4FOOD** (Plants Processing and Technology for Bioactive Food) (<https://upwr.edu.pl/badania/wiodace-zespoly-badawcze/zywnosc-funkcjonalna-pochodzenia-roslinnego-plants4food>). The main scientific achievements of the group includes: development of functional food products with pro-health properties dedicated to people with civilization diseases as well as products dedicated to children, adults, elderly and for active persons; identification of bioactive profile and health-promoting properties of plant materials (different morphological parts of plants as leaves, flowers, roots, etc.) based on chromatographic techniques (LC-MS/QToF, UPLC-PDA-FL); modeling of the quality of plant-based foods by innovative drying methods including microencapsulation and other nanotechnology as a method for nutraceuticals production; design of functional foods on the basis of sustainable sources including post-production wastes; moderation of technological and biological properties of food products. Our staff members have been recognised as high-quality researchers being distinguished by, among others, **L'oreal for Women is Science** prestigious award.

Michalska, A., Wojdyło, A., Lech, K., Łysiak, G.P., Figiel, A. (2017) Effect of different drying techniques on physical properties, total polyphenols and antioxidant capacity of blackcurrant pomace powders. *LWT - Food Science and Technology*, 78, 114-121.

Cano-Lamadrid, M., Lech, K., Michalska, A., Wasilewska, M., Figiel, A., Wojdyło, A., Carbonell-Barrachina, Á.A. (2017) Influence of osmotic dehydration pre-treatment and combined drying method on physico-chemical and sensory properties of pomegranate arils, cultivar Mollar de Elche. *Food Chemistry*, 232, 306-315.

Wojdyło, A., Nowicka, P., Bąbalewski, P. (2018) Phenolic and carotenoid profile of new goji cultivars and their anti-hyperglycemic, anti-aging and antioxidant properties. *Journal of Functional Foods*, 48, 632-642.

Majerska, J., Michalska, A., Figiel, A. (2019) A review of new directions in managing fruit and vegetable processing by-products. *Trends in Food Science and Technology*, 88, 207-219.

Kalisz, S., Oszmiański, J., Kolniak-Ostek, J., Grobelna, A., Kielszek, M., Cendrowski, A. (2020) Effect of a variety of polyphenols compounds and antioxidant properties of rhubarb (*Rheum rhabarbarum*). *LWT*, 118, 108775.

7. List of no more than 3 important research projects from the selected discipline awarded in national and international calls to the institution in the last 5 years (title, name of PI, source of funding, amount of funding):

Synthetic microbial consortia-based platform for flavonoids production using synthetic biology (SynBio4Flav); Prof. Ewa Huszcza, Horizon 2020; 7 371 051 Euro

Protein-fibre biorefinery for scattered material streams (PROWASTE); Dr hab. Małgorzata Korzeniowska; ERA-NET CO-FUND Horizon 2020 - FACCE SURPLUS Sustainable and Resilient Agriculture for Food and Non-Food Systems; 838 000 Euro

Interactions between bioactive compounds and carrier agents during drying of fruit; Dr hab. Anna Michalska-Ciechanowska; National Science Centre, Alphon; 399 611 Euro

8. Description of the available laboratory and office space for the Dioscuri Centre (*up to one page in A4 format*):

For Dioscuri Centre, UPWr will offer equipped laboratory space within a brand-new building dedicated for the Faculty of Biotechnology and Food Science (see point 9).

One of the strategic infrastructure programs currently running at the UPWr is the CIT (**Regional Center for Innovative Technologies in Production, Processing and Food Safety at the Wrocław University of Environmental and Life Sciences**) including 6 research and development infrastructure facilities, five of those dedicated to biotechnology and food science: **Center for Applied Biology and Innovative Food Production Technologies**; Regional Product Center; Center for Advanced Horticultural Production Technologies; Research Center for Plant Production Technology; Center for Diagnostics of Plant Diseases.

The research and development center is aimed at conducting biotechnology research targeted at, inter alia, preventive and therapeutic foodstuffs, food and nutrition supplements, new intelligent plant types, high-quality feed and alternatives in animal pharmacotherapy, specialized feed and animal nutrition supplements, organic, traditional, regional and local food, functional food and nutraceuticals, food with enhanced nutritional properties, packaging and storage technologies. The CIT project was co-financed within the Regional Operational Program of the Lower Silesian Voivodeship 2014-2020, co-financed by the European Union, the European Regional Development Fund, and the eligible expenditure in the project is over 99.5 million PLN.

The additional laboratory space will be available to Dioscuri Centre when needed. The Centre team members will have full access to seminar rooms.

9. List of the available research equipment for the Dioscuri Centre:

For Dioscuri Centre, UPWr will provide an access to scientific equipment available at the Faculty of Biotechnology and Food Science, including:

- equipment for the evaluation of basic chemical composition of fruit, vegetables and cereals, including: dry matter, extract, acidity, protein and starch content, L-ascorbic acid. Additionally, physical properties of raw materials and processed products can be examined in terms of colour (HunterLab CIEL^a*b*), viscosity (Brookfield DV-II+ Pro), turbidity (Turbiquant 3000 IR, Merck), water activity (AquaLab DrewPoint 4TE, Meter).
- specialised equipment for chromatography: GC-MS (Shimadzu GCMS-QP2020), GC with olfactometry, UPLC-PDA-Q/TOF-MS (Waters Corporation; Milford, MA, USA),
- UV-VIS microplate reader Synergy H1 spectrophotometer (BioTek Instruments Inc., USA),
- Mini Spray Dryer B-290 Advanced with Inert Loop B295 and dehumidifier B-296 (Buchi) for closed mode drying of organic solvent or oxygen sensitive bioactive compounds,
- dryers: freeze dryers, vacuum dryers, microwave-vacuum dryer, etc.,
- bioreactors, encapsulators, microfluidizer,
- texture analyser (Zwick/Roell Z010),
- rheometer (ReoStress6000, Haake),
- amylograph (Brabender), 2400/2460 Kjeltac Auto Sampler System (Foss), Falling number system (Perten), Farinograph (Brabender), Mixolab (Chopin), Laboratory mill Quadrumat Senior (Brabender).

10. List of the additional benefits (other than listed in call text) that the Institution declares to provide for the Dioscuri Centre (i.e.: additional funds, personal benefits, other) (*up to one page in A4 format*):

The implementation of the HRS4R Strategy at UPWr translates into an increase in national and international mobility, conducting international scientific teams and consortia, participation in recognized international scientific networks. The prestigious HR Excellence in Research distinction offers a friendly environment for scientific work, and the recruitment rules applied in it are fully transparent.

The Dioscuri Centre - created at UPWr favorable, international working environment - will be a lighthouse of scientific excellence in Poland. The initiative is fully supported by UPWr authorities who declares to ensure:

1) additional funding:

- Apart from 25k EUR/year funding (obligatory in the proposal), UPWr will offer 20k EUR/year additionally for DC. This additional funds are in line with UPWr Excellence Initiative strategy which assumes systemic mechanism for financing excellence research (Leading Research Groups) and doctoral school

- family allowance (for DC leader whose family stays in Poland for at least 3 months): 300 EUR gross per month

- Special needs allowance: € 200 per month (if eligible)

2) professional assistance from English-speaking administrative staff, among others:

- provide administrative support in recognition of national and international research programmes and grant schemes (International Research Office)

- support in all matters relating to knowledge transfer and Intellectual Property Right (Centre of Innovation and Knowledge Transfer)

- assistance in relocation, visa procedures, mobility grants/travels in Poland and abroad (International Relations Office)

3) research networking and support:

- provide integration in academic community by attending scientific seminars held in English, introducing to doctoral school and participating in networking events in Wrocław academic community

- provide support in recruitment procedure of DC research team

- support the DC research team in obtaining the required consents, opinions, authorisations or permits if the research carried out within the fellowship requires formal certification with ethical standards

4) social benefits:

- provide (in cooperation with Wrocław Municipality) a flat for DC leader and his/her family

- assistance (in cooperation with Wrocław Municipality) in getting a place in nursery, kindergarten, school

- others: Multisport programme; language courses on preferable conditions at UPWr Language Centre; loans from UPWr social allowance available on preferable financial conditions)

11. Other information about the internationalisation of the research institution, international researchers employed at the institution, the availability of English language seminars etc. (*up to one page in A4 format*):

The strategic goals stated in "UPWr Development Strategy to 2030" are strongly linked to internationalisation, among others are: i) strengthening the scientific excellence of the University's employees, doctoral students and undergraduate students based on international exchange and cooperation; ii) internationalisation of education and creating an environment conducive to international B+R+I collaboration. Within the last years and by following the Excellence Initiative strategy (<https://upwr.edu.pl/en/research/research-university>), following actions were implemented:

- increasing scientific excellence through international cooperation - outcome - the outcome: since 2018 UPWr has tripled funds within international programmes/initiatives; intensive doctoral and staff mobility within a wide range of national and international programmes

such as NAWA, DAAD, Fullbright, Foundation for Polish Science, Polish Academy of Science Scholarships etc. avg. per year doctoral students mobilities 40 (incoming), 70 (outgoing); avg. per year staff mobilities - 50 (incoming), 500 (outgoing);

- new approach to UPWr doctoral training - outcome: 70% of the doctorates are run within dedicated, externally funded projects; 42% are fully implemented in English with foreign co-supervision and the mandatory one year international research internship; currently, 21% of PhD candidates are from abroad

- increasing the competences of administration staff - outcome: establishment of new units dedicated to international grant applications (International Research Office) and project implementation (Centre for Project Implementation and FinanceFinancial). The staff is fluent in English, moreover the management staff are holding PhD degrees and are having scientific background. This helps to understand the requirements, needs and problems of international visitors.

The internationalisation is not only at University level, but also within the faculty and Leading Research Group (Plants4Food). The researchers were performing the post-doc positions, i.e. Switzerland, Canada, Portugal, Spain, Czech Republic, etc. PhD students are enrolled within the international research groups from, among others, Spain, Norway, Portugal, Finland, Denmark, Mexico, etc. Not only doctoral students, but also academic staff is strongly cooperating with the Plants4Food team which results in mutual research projects and in some cases full employment of international researchers (dr hab. Dusan Mistic). Numerous international scientific projects are performed including projects financed within the calls of Horizon 2020 (Synbio4Flav), ERA-NET CO-FUND (PROWASTE) and ERA-NET Co-FUND and CORE Organic Cofund FERBLEND).