

Nicolaus Copernicus University  
Faculty of Biological and Veterinary Sciences  
Department of Microbiology

**Title of the project:** NAPERDIV: Nature-based perennial grain cropping as a model to safeguard functional biodiversity towards future-proof agriculture

**Project summary:**

Conventional annual crop production results in a global magnification of environmental degradation and biodiversity loss. The shift from annual to perennial grain crops is perceived the nature-based solution to counteract these negative environmental effects. Perennial grain cropping systems are advantageous for climate change mitigation by providing permanent soil cover and improve soil conditions for biodiversity conservation.

The research objectives, addressed by the project, are (1) to study the extend of functional biodiversity and interactions developed over years in a perennial grain cropping system and (2) to reveal the contribution of biotic changes to the crop performance, sustainability, ecosystem service delivery and resilience. Characterization of the crop-associated microbiome will be conducted to establish the diversity of the crop-associated microbiome, its functional traits and its implications for perennial crop cultivation on plant and agro-ecosystem scale.

**Post-doc tasks:**

Post-doc researcher will be responsible for conducting research tasks including analysis of fungal and bacterial microbiome from perennial grain cropping systems to establish the effect of this innovative agricultural practice on the environmental diversity of microorganisms. Specific research tasks that are planned to study environmental microbiom. Furthermore post-doc will be responsible e.g. for selection and testing of plant growth-promoting strains of bacteria and fungi, pot and field experiments, statistical analysis of the results. Post-doc will prepare at least three original manuscripts that will be published in the top microbiological and agricultural journals.

**Candidate profile:**

Following qualifications are required to execute the research tasks planned for post-doc researcher:

- Experience in collecting environmental samples (soil and plant tissue) under field conditions. Process of sample collection is critical for the result of field experiment samples and it determines the validity of the study.
- Profound experience in molecular biology methods, including environmental DNA isolation, PCR, preparation and quantification of DNA libraries for MiSeq sequencing. Good laboratory skills are important for keeping high quality of obtained results.
- Bioinformatics skills are highly appreciated.
- Proficiency in carrying out statistical analyses (including e.g. ANOVA, ANOSIM, ordinations) and data interpretation. Computation skills will be required to manage large datasets including taxonomical data.

- Experience in writing for scientific publications and presentation of research to scientific audiences.
- Interpersonal communication skills and good time management and organizational skills.
- Fluent in English written and spoken.

### **The conditions of employment**

Maximum period of position agreement: 14 months.

Position starts on: July/August 2021

Salary: 7 500 PLN (gross)

### **Documents:**

Applicants should provide the following documents:

- curriculum vitae including a list of publications and expertise,
- a motivation letter
- a copy of PhD diploma in biological sciences (specialization in microbiology will be an advantage)
- contact addresses of two referees.

Applications in English should be sent to Prof. dr hab. Katarzyna Hrynkiewicz:

[hrynk@umk.pl](mailto:hrynk@umk.pl) (with the title of email: **NAPERDIV – post-doc position**)

**Deadline for submitting offers:** 20 June 2023

### **Evaluation criteria:**

The committee will evaluate the candidate's academic achievements, achievements related to the participation in the scientific projects and competence to perform specific tasks, using the following criteria:

- Academic achievements, including the number of publications and IF (50% of total score).
- Achievements related to the participation in the scientific projects, scholarships, awards, internships and workshops (20% of total score).
- Competence to perform specific tasks planned in the project, including laboratory experience (30% of total score).