

# Twinning for intensified enzymatic processes for production of prebiotic-containing functional food and bioactive cosmetics (TwinPrebioEnz)

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**INTRODUCTION:** The primary aim of TwinPrebioEnz project is to enhance the research and innovation capabilities of the Faculty of Technology and Metallurgy in the field of prebiotics technology through collaboration with leading institutions possessing complementary expertise.

**METHODOLOGY:** The project consortium comprises Maastricht University and Radboud University Medical Center, due to their expertise in the analysis of human microbiota that will be applied to determine the activity of potential gut and skin prebiotics. Additionally, the Spanish National Research Council contributes expertise in protein engineering, facilitating the enhancement of catalytic properties of enzymes used in prebiotic production. In addition to transferring knowledge within these two areas of expertise, specific objectives is also to strengthen management capacities of the FTM. While the main focus is on advancing FTM, the project encompasses various objectives that benefit the entire consortium. For instance, specific work packages are dedicated to unlocking the potential of young scientists, establishing a network within the scientific community and potential industrial partners in prebiotic production and research. Joint research activities are intended to result in collaborative scientific publications, elevating the research profile of the project consortium and extending the interdisciplinary development of new prebiotic products. Dissemination and communication strategies target diverse audiences to achieve broader economic, technological, and societal impacts.

**RESULTS AND DISCUSSION:** Up to this point, FTM has conducted training sessions for young scientists, including Ph.D. students and early career researchers, within EU institutions. Methods and techniques for in vitro analysis of skin microbiota, chemical modification of enzymes, and structural characterization of prebiotics (oligosaccharide and polyphenols) were successfully transferred to FTM facilities. Additionally, an international workshop involving the participation of students and young scientists has been arranged at the FTM to facilitate broader knowledge transfer. Further dissemination of knowledge is planned through the organization of a summer school. Noteworthy advancements in project management skills were achieved at FTM through dedicated seminars and workshops, focusing on the transfer of both pre- and post-award management skills and knowledge. Furthermore, collaborative research within the project consortium has yielded joint publications in open-access journals. Notably, there has been a significant enhancement in the impact of FTM's publications in the field of prebiotic technology, evident in an increase of the average impact factor by more than 50%. The international conference for young scientists in the field of Biochemical Engineering and Biotechnology, organized by early career scientists in Belgrade, facilitated the dissemination of project results and objectives within the broader scientific community.

**CONCLUSIONS:** Activities during the first half of TwinPrebioEnz project timeline enabled significant improvement of FTM's research potential and management capabilities and laid the groundwork for future networking opportunities among institutions within project consortium and young scientists in this specific scientific domain.

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