

Name of the MSC Fellow: Mario Novak

Nationality: Croatian

Host organization: The Scientific and Production Center “Armbiotechnology” of the National Academy of Sciences of the Republic of Armenia

Country of the Host: Armenia

Project Acronym: PHOENIX

Secondment start and end date: 19.09.2018-19.12.2018

Type of MSC action, H2020: RISE



Your story:

Project objectives and research field:

People for the European bioENERgy mix (PHOENIX) project promotes international and intersectoral collaboration through research and staff exchanges with knowledge sharing from research to market. Its main goal is to bring together people from academia, business and public sector to develop and improve innovative solution for a European bio-economy based on non-conventional bioresource utilization.

Tell us why your topic is important and/ or how it brings to advancement in your research field:

Sustainable development of new processes with implementation of new industrial microorganisms is an important step towards development of biorefineries in Europe. Purple non-sulphur bacteria are versatile microorganisms that can be used for production of biofuels as hydrogen, various biochemicals as amino levulinic acid, specific pigments and carotenoids, for production of biopesticides and biofertilizers and can be used for bioremediation and as a source of single-cell proteins. Research on full utilization of purple bacteria in biorefineries is still ongoing and it has great potential. Usage of purple bacteria in various productions on renewable resources can significantly reduce our dependence on crude oil for production of biofuels and biochemicals and contributes to sustainable ecologic and economic development of bioprocesses.

What are the benefits of participating in an MSC action? During my participation in PHOENIX project, I had the opportunity to work with new types of microorganisms that can be used as potential producers of new and useful chemicals and also as producers of alternative biofuels (hydrogen). My personal objective was to obtain the necessary knowledge for work and manipulation with new type of microorganisms - photosynthetic bacteria (isolation of wild strains, genetic manipulation, cultivation and process optimization) and to implement this in the field of bioprocess engineering for research of optimal parameters and cultivation techniques to obtain maximum yields during growth and production of useful biochemicals and biofuels from renewable resources. Also, very good professional and scientific collaboration was established which is still ongoing.

Did you encounter any challenges during application/ implementation and did you get any help? Challenging part of my work was the cultivation of pure cultures without contamination. Purple non-sulphur bacteria have lower growth rate in comparison to bacterial contaminants, so one must be very careful during cultivation, manipulation during sampling and addition of new media or chemicals that enhance production of biochemicals. Another challenge was bureaucracy and finding proper accommodation for a short period of visit. Luckily, I had great help from people in the Laboratory of Alternative Energy Sources.

Why did you choose a widening country as a Host? What was the reason that convinced you? What is making you professionally happy here? Laboratory of Alternative Energy Sources from The Scientific and Production Centre "Armbiotechnology" of the NAS RA, has similar work experience in research of useful microorganisms and great knowledge in the field of microbiology. Every opportunity for learning is useful to me as a scientist. Gaining new knowledge, enhancing the existing in my field of research was possible with work in the Laboratory of Energy Alternative Sources. New knowledge about photosynthesizing microorganism will be very useful for my future research of sustainable production of new bio-chemicals or bio-solvents with renewable resources. Purple non-sulphur bacteria are not only useful for production of hydrogen or ALA, but they can also be used for wastewater treatment and this is going to be one of my new interests for investigation. Also I always wanted to visit Armenia, one of the most beautiful countries with rich history and tradition, great wine selection and fine food.

Would you recommend others to apply? What useful advice/ tips can you give them? To gain new knowledge, to experience new places, to do research with colleagues from other countries, to work with experts in a field is always a great experience and can only broaden someone's life as a person and as a scientist.