



**“Joint development of higher education and training programmes in plant biology in support of knowledge-based society”
(PLANTTRAIN, ID: HUSBR/1203/221/173)**

Lead Beneficiary: University of Szeged

Project Partner 1: Faculty of Agriculture, University of Novi Sad

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Own contribution (SRB) 15 001,50 €

Start of the project: 01.01.2015

End of the project: 30.06.2016



Summary Project Description

Rationale and background

The Hungarian and Serbian partner universities will join forces and collaborate in development of higher education and training of experts on the field of basic and applied plant biology. The complementing feature of research work of the partner institutions (basic and applied plant biology) significantly supports the elaboration of common lectures and partial curricula on master and PhD level both in native and English language. This enables us to launch training programmes on Plant Biology on MSc and PhD levels in English language.

Integration of the work of the teaching staff and young researchers contributes to the development of a region-specific knowledge, supports the competitiveness of undergraduate and graduate students and young scientists either in Hungary or Serbia. Improving the conditions of education, demonstration and setting up laboratories suitable for carrying out advanced molecular biological and biochemical experiments will significantly extend the possibilities of undergraduate and PhD students. The research teams of partner institutions deal with abiotic and biotic stress responses of plants. The partner institutions investigate several aspect of stress acclimation (e.g. photosynthesis, hormonal changes, changes in gene expression and proteomics, analysis of plant phenolics and determination of total antioxidant capacity and oxidative stress response of plants). The

improvement of analytical facilities of the Departments within the frame of this project and the mutual use of the laboratory equipments make the research work more effective. The results and practical benefits are expected after years of sustained training and research.

Objectives (general and specific)

The aim of the proposed project is the development of the regional potential through collaboration in higher education and in expert training on the field of basic and applied plant biology. The two Departments represent two aspects of plant biology. The Hungarian partner deals with basic science and basic research, while the Serbian group represents the applied field of plant biology. The aim of the basic research is to invent new knowledge, new approaches and new methods for applied science, and the applied science puts the questions to be solved. New research projects will be developed for PhD students at both institutions which will be supported by infrastructural development.

In the last decade, new training programs were worked out on BSc and MSc levels according to the Bologna system in both countries. This activity also establishes the basis of training in English language both on Master and PhD levels. Within the frame of this project we work out common lectures and laboratory exercises for MSc students specialized in the field of Plant biology and common training plan for PhD students of both sides.

Cross-border character and impact

The proposed project results in the development of the regional potential through collaboration in higher education and training of experts on the field of basic and applied plant biology. Integration of the work of teachers and plant biologists contributes to the development of a region-specific knowledge, supports the competitiveness of undergraduate and graduate students and young scientists either in Hungary or Serbia.

Additionally, these investments will increase the competence of the region on the scientific market and the new scientific results will improve the economic position on both sides of the border. Due to the complementing expertise, educational and technical background of the partners, this IPA project will strengthen the collaboration between our universities. The project will facilitate information exchange, technology transfer between partners. Young scientists and students will have the opportunity to visit the partner laboratories and acquire technical skills in the area of molecular biology, proteomics, physiology, analytical technologies, etc.

Project Partners

Lead Beneficiary



Name of the institution	University of Szeged
Address	Dugonics tér 13. Szeged, Hungary 6720
Legal status	body governed by public law
County / Region	Csongrád

Project partner 1



Name of the institution	Faculty of Agriculture, University of Novi Sad
Address	Novi Sad, Trg Dositeja Obradovica 8, 21 000Serbia
Legal status	body governed by public law
County / Region	Vojvodina

Project experts

Project director	Dr. Habil. Irma Tari - Hungarian
Internal PRAG expert	Bernadett Macsek - Hungarian
Administrative officer	Erika Pál - Hungarian

Financial assistant	Julianna Bajmóczy - Hungarian
Scientific coordinator, Defence mechanisms expert	Assoc. Prof. Dr. Csiszár Jolán – Hungarian
Molecular biology expert	Assist. Prof. Dr. Gallé Ágnes – Hungarian
Photosynthesis expert	Assist. Prof. Dr. Barnabás Wodala – Hungarian
Signal transduction expert	Assist. Prof. Dr. Kolbert Zsuzsanna – Hungarian
Analytical expert	Lecturer Dr. Attila Ördög - Hungarian
Stress physiology expert	Assist. Prof. Dr. Peter Poór - Hungarian
Molecular biology expert	MSc Edit Horváth - Hungarian
Antioxidants expert	Assist Prof. Dr. Szepesi Ágnes – Hungarian
Molecular biology expert	MSc Dániel Benyó- Hungarian
Signal transduction expert	Lecturer Gábor Feigl-Hungarian

Project coordinator, Antioxidants expert	Prof. Dr Dubravka Štajner-Serbian
Analytical expert	Assoc. Prof. Dr Boris Popović. Serbian
Analytical and plant flavonoid expert	Prof. Dr Đorđe Malenčić- Serbian
Supervisor of PhD students	Prof. Dr Milan Popović - Serbian
Plant- insect interaction; biocontrol expert	Assist. Prof. Dr Aleksandra Popović- Serbian
Analytical expert	Assist. Prof. Dr Dejan Prvulović- Serbian
Antioxidants expert	MSc Ružica-Ždero-Pavlović- Serbian
Financial and personal manager	Sonja Vučinić- Serbian

Joint Working Plan

No.	Activity name (max 45 char)	Abbreviated name of the Responsible LB or Partner(s)	Reporting period I	Reporting period II	Reporting period III	Reporting period IV-V	Location(s) of activity (max.70 char.)	Description of activity (please write a detailed description of activity, reasons, goals, maximum 600 characters)
Mark with an 'X' the period in which the activity is implemented by the responsible LB/PP								
1	Upgrading BSc, MSc, PhD courses	SZTE	x	x	x	x	Szeged, Hungary and Novi Sad, Serbia	Extending the topics of the basic and specialized courses. Integration of region-specific academic and applied plant biological knowledge in order to develop a broad
		PF-UNS	x	x	x	x		
2	Inviting lecturers, organizing seminars	SZTE		x	x		Szeged, Hungary and Novi Sad, Serbia	Organizing seminars for MSc and PhD students in the topic of Plant biochemistry, Biochemistry of medicinal plant and functional food, Ecological biochemistry, Molecular
		PF-UNS		x	x			
3	Procurement of instruments	SZTE	x	x	x	x	Szeged, Hungary and Novi Sad, Serbia	Procurement of equipment is planned for both of the partners. For LB, the conditions of education will be improved and the existing Plant Molecular and Biochemical
		PF-UNS	x	x	x	x		
4	Improve equipments of research laboratories	SZTE	x	x	x	x	Szeged, Hungary and Novi Sad, Serbia	For LB, the conditions of education will be improved and the existing Plant Molecular and Biochemical Laboratory and Laboratory for students will be upgraded with new
		PF-UNS	x	x	x	x		
5	ROS, antioxidants, redox state determinations	SZTE	x	x	x	x	Szeged, Hungary and Novi Sad, Serbia	Research projects will be developed for students and PhD students connecting to detect levels of ROS and changes in the redox state by stress treatments. During this IPA project we
		PF-UNS	x	x	x	x		
6	Physiological stress responses, cell viability	SZTE	x	x	x	x	Szeged, Hungary	Students, PhD students will be involved in researches connected to investigations of stress responses at physiological, whole plant and cellular levels. Some enzymes of antioxidant
		PF-UNS						
7	Signalling, molecular analysis	SZTE	x	x	x	x	Szeged, Hungary	The training and research work of students, PhD students and young scientists involve the investigation of signalling roles of ROS, NO and regulation of redox state
		PF-UNS						
8	Exchange of PhD students between partners	SZTE	x	x	x	x	Szeged, Hungary and Novi Sad, Serbia	Exchange of PhD students, young scientists between the partner universities. One week long or two-week-long short visits are planned for young scientists, PhD students.
		PF-UNS		x	x	x		
9	Organizing workshop	SZTE		x			Szeged, Hungary and Novi Sad, Serbia	Organization of workshops, common academic and practical trainings for PhD students, young scientists is planned to meet and use new methods. In Szeged, the guide into the use of
		PF-UNS			x			
10	Organizing conference	SZTE	x				Szeged, Hungary and Novi Sad, Serbia	Opening conference will be held at University of Szeged, Department of Plant Biology, it is the responsibility of the Leading Partner. The closing conference will be
		PF-UNS				x		
11	Publicity	SZTE	x			x	Szeged, Hungary and Novi Sad, Serbia	Several scientific meetings will be organized during the project.
		PF-UNS				x		

Project meetings

1st Preparatory Meeting - SZEGED, January 29, 2015

Programme Presentation

Opening Conference – Szeged, April 20-21, 2015

1st Workshop and Seminars – Novi Sad, June 8-12, 2015

2nd Workshop and Seminars - Szeged, August 31- September 4, 2015

Closing Conference - Novi Sad, May 15-16, 2016

Procuration of equipments

In Szeged, a Real-Time quick system PCR equipment will be procured which will be used for studying expression of selected genes involved in stress responses using in training and scientific work. Three items, including a gel documentation system which is necessary to take images of polyacrylamide and agarose gels, computers and a projector which helps to demonstrate the scientific material. Two analytical scales will be purchased which are essential to measure the precise quantities of small plant materials. Fine chemicals, special reagents, and enzymes will be purchased for biochemical experiments to analyze gene expression, proteins and for physiological studies of plants. Molecular kits will facilitate RNA, DNA isolation, protein purification and detection, RT-PCR studies, etc. Glassware, disposable plastic tubes, Petri dishes, pipette tips etc. will be used for molecular and biochemical analysis, culturing cells and plants. Laboratory, office furniture and small instruments, as vortex, pH meter, pipettes will be purchased to help the training in laboratories (64 145,60 EUR).

In Novi Sad a UHPLC system with photo diode array detection for separation of biactive ingredients in plant material, determination of phenolic compounds, a vertical deep freezer (-86 C) for storage of plant material for continuous laboratory extraction and experimental work, a rotary vacuum concentrator for preparing plant extracts, a lyophilisator for the preparation of plant material for a longer storage, and general consumables for laboratory purpose will be purchased (63 150,00 EUR).



<http://www.hu-srb-ipa.com>

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