**HORIZON 2020**

**PARTNER SEARCH**

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| **Call Information** | |
| **Call title** | SFS-10-2017: Research and approaches for emerging diseases in plants and terrestrial livestock |
| **Call identifier** | SFS-2016-2017 |
| **Funding scheme** |  |
| **Deadline** | 14 February 2017 17:00:00; 2nd stage Deadline: 13 September 2017 17:00:00 |
| **Partner search deadline** | N/A |

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| **Project Information** | |
| **Project title** | Plant secondary metabolites and small RNAs: a big tools in plant defense system |
| **Abstract of the project** | Secondary metabolites are organic compounds that are not directly involved in the normal growth or reproduction of organisms. However secondary metabolites are indispensable in plants exposed to abiotic and biotic stress and therefore they are indirectly essential for growth in natural, mostly extreme, conditions. Small RNAs are other key players in plant response to stress conditions. The extreme changes of the weather are currently the major problem in the crop plant growing. In the near future, we can expect more difficult conditions for sustainable crop production. Hence, understanding the molecular basis of interplay between small RNAs and biosynthesis of secondary metabolites and identification of key factors involved in their pathways are fundamental knowledge to develop of resistant crop plants. Because the biosynthesis of secondary metabolites is restricted to selected plant groups, the project will be focused to different plants species including *Hordeum*, *Zea*, *Nicotiana* and *Selengia* genus, and also *Algae* and *Lichen*. Otherwise CRISPR/Cas9 system will be used for the investigation of the regulation of secondary metabolites biosynthesis.  The principal objectives of the project are as follows: i) Analysis of metabolome in mentioned plants, Algae and Lichen in different conditions such as drought, nutrient starvation and heavy metals. ii) Analysis of transcriptome and miRNA-seq in tolerant species. iii) From the sequencing data to design of probes and analysis of specific miRNAs and gene expression using both the classical approaches and the electrochemical microarray. iiii) On the basis of the obtained data, applying the CRISPR/Cas9 method to improve plant defense against stress.  Our laboratory has extensive experience with modern analytical facilities (HRMS, DESI, DART, AP MALDI, LC MS/MS, 2D UHPLC, HPTLC, SFE and SFC - supercritical fluid extraction and chromatography) and methods for determination of secondary metabolites, molecular biology, cultivation of plant cell culture and microalgae, SEM and TEM microscope, electrochemical microarray and capillary chip electrophoresis.  We are looking for the laboratory group primary focused on small RNAs biology, bioinformatics and with experience in CRISPR/Cas9 method in plants. |
| **Further information** | TRL of our sub parts is 1.  For more, please, see http://af.mendelu.cz/239 |
| **Proposal development stage** | N/A |
| **Requested funding** | App. 400 000 Euro |

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| **Proposer** | |
| **Type of organization** | University |
| **Role in the project** | Partner |
| **Previous FP experience** |  |

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| **Target Partner(s)** | |
| **Type of organization** | SMEs, Universities, Research Organization |
| **Required skills and expertise** | * Integration * Facility to work with CRISP/Cas9, RNAi and GMO. * Bioinformatics experience |
| **Role in the project** | * We are looking to be partner |
| **Preferred countries** | N/A |
| **Keywords** | bioengineering, secondary metabolites, small RNAs, epigenetic, plant stress, CRISPR/Cas9, GMO, Algae, Lichenes, |

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