



POLITÉCNICA



Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria



EXCELENCIA SEVERO OCHOA 2017-2021



CENTRO DE BIOTECNOLOGÍA Y GENÓMICA DE PLANTAS UPM-INIA (CBGP)

Postdoctoral Researcher Positions at the CBGP (UPM-INIA) (CBGP-Severo Ochoa Centre of Excellence Research Program)

The **Centro de Biotecnología y Genómica de Plantas (CBGP, UPM-INIA)** is seeking for outstanding candidates for **11 postdoctoral researcher positions** for its research Programs:

- Plant Response to Biotic Stress (TSP1: 2 positions)
- Plant Adaptation to Environmental Changes (TSP2: 6 positions)
- Empowering Plant Nutrition (TSP3: 2 positions)
- Computational, Systems Biology, and Genomics Program (CBGP: 1 position)

TSP1 - PLANT RESPONSE TO BIOTIC STRESSES

Job Reference: EOI-TSP1-05

Title: INTERACTIONS BETWEEN BACTERIA AND VIRUSES IN CO-INFECTED HOSTS: EFFECTS ON HOST RESISTANCE AND ON THE EVOLUTION OF PATHOGEN VIRULENCE EOI-TSP1-05

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: Applicants are expected to hold a PhD in Biology or equivalent area, and expertise in host-pathogen interactions. A record of publications in this field is desirable. Fluency in English is required.

Task to be developed: Designing and performing experimental approaches to tackle the project objectives: virus-bacteria coinfection experiments, pathogen quantification, statistical analysis of results to describe pathogen interactions, evolutionary experiments based in sequence analysis of samples obtained from serial passage experiments. Involvement in general task related to the lab work routine; Active participation in periodic laboratory meetings; Manuscript preparation and publishing; Presentation of work in international conferences.

Expected duration: two months

Annual gross salary: 27500 euros / year.

Start date: September 23rd, 2021

Job Reference: EOI-TSP1-07

Title: WALLSENSE: BALANCING PLANT DISEASE RESISTANCE AND PATHOGEN VIRULENCE BY SENSING PLANT CELL WALL-DERIVED GLYCANS

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: Applicants are expected to hold a PhD in Biology or related area, and expertise in the area of plant cell wall. Applicants must have experience in state-of-the-art technologies used for cell wall biochemical characterization. The applicants should have some previous experience in the study of plant-pathogen interactions (bacteria and fungi) and in the regulation of plant immunity by Microbe-Associated Molecular Patterns or by Damage Associated Molecular Patterns. A record of publications in these related field is desirable.

Task to be developed: Determining the resistance of Arabidopsis wild-type plants and cell wall mutants to the bacterium *Pseudomonas syringae* pv. *tomato* (Col-0). Determination of PTI activation in Arabidopsis wild-type plants and cell wall mutants upon infection with different type of pathogens. PTI activation and disease resistance control experiments upon treatment of Arabidopsis with plant cell wall derived glycans.

Expected duration: five months

Annual gross salary: 27500 euros / year.
Start date: July 1st, 2021

TSP2 - PLANT ADAPTATION TO ENVIRONMENTAL CHANGES

Job Reference EOI-TSP2-04

Title: EXPLORING PLANT ADAPTATION TO CLIMATE CHANGE

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: 3 years of postdoctoral training in plant molecular biology. We are looking for a highly motivated researcher specialist in plant biology. The candidate should demonstrate experience in the study of plant response to abiotic and/or biotic stresses and in phytohormones. Expertise in the study of cochaperones and plant response to auxin will be highly valuable. Good English level is required.

Task to be developed: To analyze the stability of HOP targets through the analysis of reporter lines. To characterize the response to heat of Arabidopsis and tomato plants overexpressing HOP proteins. Selection of the lines expressing the ectopic proteins and phenotypical analyses of their response to heat. To carry out translomic analyses in Arabidopsis plants in response to pest infestation and in response to heat

Expected duration: five months
Annual gross salary: 27500 euros / year.
Start date: July 1st, 2021

Job Reference: EOI-TSP2-05

Title: IMPROVING SEED VIGOUR IN BRASSICA CROPS EOI-TSP2-05

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: Postdoctoral researcher with at least five years of experience in plant development and/or plant molecular biology research and in the use of model species and crops and with technical skills on: molecular biology and cell biology (microscopy and imaging analysis). Expertise on Bioinformatics and big data management is also required. Excellent English is requested.

Task to be developed: Quantification of cellular and morphological parameters using different histochemical techniques coupled to confocal and fluorescence microscopy. Generation and analysis of *Brassica napus* transgenic plants harbouring fluorescent hormonal-responsive markers. Genome-wide transcriptomic analysis of oilseed rape seeds development.

Expected duration: three months
Annual gross salary: 27500 euros / year.
Start date: July 1st, 2021

Job reference: EOI-TSP2-06

Title: MECHANISMS OF PLANT TOLERANCE TO VIRUSES BY VIRUS-INDUCED FLOWERING TIME REGULATION

Researcher profile: Postdoctoral First Stage Researcher (R1)

Required qualifications: The successful applicant should hold a doctoral degree or equivalent qualification in Plant Biology. A record of publications in a related field is desirable. Fluency in English is required.

Task to be developed: Expression analyses of flowering time regulators in virus-infected plants. Tolerance assays to viral infection of mutants in the flowering and RNA silencing pathways. RNA-Seq analysis of virus-infected plants. RNA immunoprecipitation (RIP) assays. Determination of Luciferase activity in transgenic Arabidopsis plants. Management of plants required for the project. Manuscript preparation and publishing. Participation in periodic laboratory meetings. Presentation of work in international conferences

Expected duration: five months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

Job Reference: [EOI-TSP2-11](#)

Title: [MOLECULAR BASES OF CIRCADIAN AND SEASONAL RBOHD PRIMING](#)

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: Postdoctoral researcher with expertise in different genetic tools (transformation, crossing, genotyping, ...) and recording temporal changes in gene expression and other signals. Fluency in English is required.

Task to be developed: The candidate will carry out the following tasks: monitoring circadian and seasonal changes in gene expression and signals by means of specific biosensors; evaluating the effect of different genomic backgrounds on these gene expressions and signals; and identifying/generating Arabidopsis and poplar lines altered on these signals in order to evaluate its priming effect on plant growth performance and development.

Expected duration: three months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

Job Reference: [EOI -TSP2-12](#)

Title: [COMBINED GENETIC APPROACHES TO DISCLOSE SEED GROWTH AND GERMINATION CONTROL BY INDOLIC COMPOUNDS](#)

Researcher profile: Postdoctoral First Stage Researcher (R1)

Required qualifications: PhD degree in Biology, Biochemistry, Biotechnology or related areas.

Task to be developed: The candidate will realize genetic and molecular characterization studies on various mutants identified as possible determinants in the response to the signaling molecule, indole-3-acetamide. The work will be integrated in the scientific tasks of "Combined genetic approaches to disclose seed growth and germination control by indolic compounds".

Expected duration: three months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

Job Reference: [EOI-TSP2-13](#)

Title: MECHANISTIC PRINCIPLES UNDERLYING DYNAMICS OF PLANT GROWTH COMPENSATION BY LOW TEMPERATURES

Researcher profile: Postdoctoral First Stage Researcher (R1)

Required qualifications: PhD in Molecular or Developmental Biology or related discipline. An International research experience is highly desirable. Expertise is required in molecular genetics, confocal microscopy and image processing and image analysis software such as ImageJ. The ability to work independently on the project, self-organization and writing skills will be valued. Excellent level of English is required

Task to be developed: Perform confocal imaging of plants carrying new plant hormone sensors developed in PlantDynamics Lab under various environmental conditions (light, temperature, gravity) and in response to chemical induction. Gather and analyze data using in house segmentation software pipeline perform statistical analysis and quantify parameters for lab-developed computer models. Contribute to manuscript preparation (figures, data analyses) and writing process.

Expected duration: three months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

TSP3 - EMPOWERING PLANT NUTRITION

Job Reference: EOI-TSP3-03

Title: TOWARD A SUSTAINABLE AGRICULTURE: UNDERSTANDING ROOT RESPONSES TO PHOSPHATE STARVATION TO IMPROVE PLANT NUTRITION AND PRODUCTIVITY

Researcher profile: Postdoctoral Recognised Researcher (R2)

Required qualifications: PhD degree Plant Molecular Biology. Postdoc with experience in plant molecular biology, transcriptomic analyses, RNAseq data processing. Experience in translational regulation and riboseq analyses will be recommended.

Task to be developed: To validate by qRT-PCR the gene expression data obtained in RNAseq analyses. To generate protoplasts of FGP marker lines to carry out additional cell sorting analyses by flow cytometry. Bioinformatic analyses to generate regulatory networks of genes expressed in different cell types by Pi starvation. Genotyping and phenotyping of mutant lines identified in the regulatory networks. Analyses of phosphate deficiency through protein purification labelled with OPP-biotin and subsequently MS-MS analyses. Metabolic labelling with Met-S35 of proteins during Phosphate starvation

Expected duration: five months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

Job Reference: EOI-TSP3-05

Title: USING MICROBIAL DARK MATTER AND COMPUTATIONAL MODELS TO STREAMLINE SYNTHETIC NITROGENASE PATHWAYS

Researcher profile: Postdoctoral Recognised Researcher (R2)

Requirements: PhD degree in any Life Science discipline, Experience with Target Enrichment Techniques and Capture kits, Knowledge on phylogenetics

Task to be developed: Designing and Developing a Nitrogenase capture kit (WP1.3). Analyzing nitrogenase genes using phylogenomic techniques (WP1.2)

Expected duration: four months

Annual gross salary: 27500 euros / year.

Start date: July 1st, 2021

CsBGP - COMPUTATIONAL, SYSTEMS BIOLOGY, AND GENOMICS PROGRAM

Job Reference: [EOI-CSBGP-01](#)

Title: [COMPARATIVE METAGENOMICS AND PHYLOGENOMICS EOI-CSBGP-01](#)

Researcher profile: Postdoctoral Recognised Researcher (R2)

Requirements: PhD degree in any Life Science discipline, Experience with DNA extraction protocols from Phyllosphere and Rhizosphere, knowledge on pathogenesis and chemoperception in plant-associated bacteria

Task to be developed: DNA extraction from Phyllosphere, soil and rhizosphere samples for prokaryotic sequencing proposes, Library preparation and capture protocols, Comparing chemoreceptor profiles between metagenomic samples

Expected duration: six months

Annual gross salary: 27500 euros / year.

Start date: June 1st, 2021

APPLICATION INSTRUCTIONS AND ADDITIONAL INFORMATION:

Application deadline: May 18th, 2021. Send to humanresources.cbgp@upm.es a detailed CV in pdf format indicating in the subject of the e-mail message the job reference and title of the chosen position for application

For further information contact: humanresources.cbgp@upm.es

About the CBGP: The mission of the CBGP (UPM-INIA) is to carry out fundamental and strategic research in plant science and in microorganisms interacting with plants. The research is focused in understanding important biological process such as plant development, the interaction of plants with the environment and the mechanisms of plant nutrition. In addition, the CBGP is interested in developing and using computational biology tools to achieve its goals. The acquired knowledge is used to tackle major problems of the agriculture and forestry, and to develop novel technological solutions. CBGP (UPM-INIA) also has an educational role and is a reference center for training scientists and Master's and Bachelor-level students, in plant biotechnology and genomics. The CBGP (UPM-INIA) is a research institute recognized with the seal "Severo Ochoa (SO) Center of Excellence".