Position Offered: UNIVERSITY GRADUATE

Project: *Machine Learning Applied to the Search for the Distribution Pattern of a Unique Plant Cell Type: The Laticiferous Cell Network in Euphorbia lathyris*

Technological and scientific fields: Biotechnology, Computational Biology, Artificial Intelligence, Image Analysis and computer vision

Location: Valencia. Comunidad Valenciana. Instituto de Biología Molecular y Celular de Plantas (IBMCP) https://ibmcp.upv.es

Research Group/PI: Plant Adaptation to Environmental Stress and Biotechnology of Energy Crops/ Pablo Vera

PROJECT SUMMARY

The main objective of the project is to generate, using computational learning tools, a model for recognizing laticiferous cells, their parameterization and unraveling their distribution pattern in plant organs and also in the entire plant. In plant organisms, very little is known about the tubular system based on cells called laticifers, which constitute the longest, if not the longest, type of plant cell of all cell typologies identified in nature. The laticifers form a tissue network close to the surface of the leaf, and when this tissue is slightly damaged, a viscous suspension of particles known as latex oozes out, which fulfills a defensive function against insect attack. Latex has in its composition metabolites of great economic importance depending on the plant species (e.g. rubber, morphine, triterpenes, etc.). Despite the particularity and economic and ecological importance of this cell type, there is a great lack of knowledge about the differentiation mechanisms of laticiferous cells and how the system of laticiferous cells is organized within the plant body and in its different organs (leaves , stems, fruits, roots). AI, through its machine learning disciplines, would improve the possibility of analyzing and predicting the distribution pattern of this system of laticiferous cells, both under conditions of normal development and in situations of stress and climate change conditions

PROFESSIONAL PROFILE

Minimum requirements:

Agronomic Engineer or graduate in Biotechnology or biology

Merits to be considered:

Experience in the management of the E. lathyris plant and in the understanding of the laticiferous cell system will be positively valued, also in the plant-pathogen interaction processes and especially in the computational transcriptomic analysis and the study and analysis of plant secondary metabolites.

WHAT IS OFFERED

We offer the candidate a training plan of at least 240 ECTS to be developed over 4 years and the development of a project related to digitalization of cellular images of laticiferous cells together with their processing and application of AI tools for the determination of patterns of growth and distribution of said cells.

Contract conditions:

Indefinite contract for a University Graduate associated with the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (37.000 € - 41.000 €).

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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