

Expression of Interest-UPM Supervisor

Marie Skłodowska Curie Action–Postdoctoral Fellowship 2026 (MSCA-PF-2026)

Supervisor Name	Julio Isidro Sánchez
Email	j.isidro@upm.es
Department /Institute / Centre Name/Location	CBGP (https://www.cbgp.upm.es/index.php/es/)
Research Area	Life Sciences (LIF) - Genomics, comparative genomics, functional genomics - Quantitative genetics Environment and Geoscience (ENV) - Biodiversity, conservation biology, conservation genetics
Research team/group	The Rocinante Lab (CBGP-UPM, Madrid) develops AI-enabled predictive breeding tools to support sustainable crop protection. We combine large host–pathogen datasets, curated high-throughput image repositories, institutional HPC (SLURM) and GPU workstations, and strong European/industry networks. The fellow will benefit from structured mentoring, opportunities for collaboration/secondments, and an open-science environment (code, models, and datasets released when possible). Website: https://therocinante-lab.github.io GitHub: https://github.com/TheRocinante-lab
Keywords	Genomic prediction; foundation models; transformers; computer vision; multimodal AI; quantitative genetics.
Research Focus	Multimodal Foundation Models for Predictive Host–Pathogen Genomics Current breeding and disease-resistance prediction models often treat biological interactions as static linear components. This project aims to disrupt this paradigm by leveraging Foundation Models and Deep Learning to capture non-linear dynamics in agricultural systems. The selected fellow will work at the interface of Computational Biology and AI, focusing on: <ul style="list-style-type: none"> • Sequence-Based Foundation Models: Utilizing self-supervised learning to extract transferable features from raw genomic data (DNA/RNA) without relying on pre-defined marker sets. • High-Dimensional Phenomics: Deploying Computer Vision architectures (e.g., Vision Transformers) to quantify complex disease phenotypes from high-throughput imaging. • Multimodal Integration: Designing fusion architectures that integrate heterogeneous data streams, genomics, imaging, and environmental factors, into a unified predictive engine. The fellowship will generate reusable models and open resources, with direct relevance for sustainable crop health and European agri-food resilience.
Applications: documents to be submitted and deadlines	<i>Candidates must verify they are eligible for the MSCA European Fellowship:</i> <ul style="list-style-type: none"> • <i>PhD Rule: Must hold a PhD at the call deadline (Sept 9, 2026).</i> • <i>Experience Rule: Normally up to 8 years full-time research experience post-PhD.</i> • <i>Mobility Rule: Must not have resided or worked in Spain for more than 12 months in the 36 months prior to the deadline.</i>

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We seek a researcher with a PhD in Computational Biology, Computer Science, Plant breeding, Quantitative Genetics, Mathematics, or a related field. The ideal candidate has:

- Proficiency in Python and deep learning frameworks (PyTorch/TensorFlow).
- Experience or a strong interest in Genomic Prediction or LLMs/Transformers.
- A drive to publish in high-impact journals and transition to scientific independence.

Please send your CV and a brief motivation letter to Dr. Julio Isidro Sanchez (j.isidro@upm.es).

Subject: MSCA 2026 EoI - [YourNameandLastName]

Deadline for Expression of Interest: **April – 30 – 2026.**