PhD position available

The Microbial Systems Biology (MSB) lab at the Dairy Products Institute of Asturias (IPLA-CSIC) is looking for candidates to fill a predoctoral position under a PIF2025 Fellowship (former FPI program).

About the group: The recently-born MSB lab is currently under construction, and hosts members with backgrounds in Physics, Mathematics, Biology, and related fields. The lab works in the development of mathematical models of biological systems, with an emphasis on microbial populations and communities, using a combination of theory and experiments (more information can be found in the PI's website). We strive to create a supportive, interdisciplinary, and stimulating environment in which members can develop their academic skills working collaboratively. Our priority is everyone's well-being and we strictly respect their time off.

About the project: The available position is associated to the *GENESIS* project, which aims to develop mathematical models for predicting the order in which mutations accumulate during an evolutionary process — with important implications for predicting cancer progression or the evolution of antibiotic resistance in pathogens, among other contexts. For that, we will combine mathematical modeling, computer simulations, and experiments using model microbial strains.

About the position:

Duration	Full-time, 4 years
Start date	No earlier than late 2025/early 2026, subject to PIF2025 call timeline
Salary	In accordance with PIF2025 regulations (as a reference, in the 2024 call the gross salary was 1,623.26€/month in year 1, and 2,029.07€/month in years 2, 3, and 4)
Additional benefits	✓ Tuition fee coverage ✓ Funding for conference travel and short stays at international research institutions ✓ Training in advanced scientific and professional skills, including statistics, programming, scientific writing, grant/job applications, and career planning ✓ Access to a wide network of national & international collaborators

About you: We are looking for a candidate who is curious, self-driven, and eager to grow into an independent researcher with the full support of the PI and lab members. You will be encouraged not only to execute specific tasks assigned to you, but to learn how to develop your own ideas, critically evaluate your progress, and take initiative in shaping your project. Specific requirements include:

- ✓ A Bachelor's and a Master's degree that are officially recognized within the European Union (degrees obtained outside the EU must be formally validated or recognized as equivalent according to EU regulations)
- ✓ A background in Mathematics, Physics, or related quantitative disciplines (other degrees will be considered if the candidate can justify their relevance to the position)
- ✓ A genuine interest in biological systems and their mathematical modeling
- ✓ Coding experience in high-level languages (R, Python, or similar) is desirable
- ✓ Strong communication and collaboration skills
- ✓ Fluency in English is a must

How to apply: If you are interested or have questions, contact the PI of the group, Juan Díaz Colunga (juan.diaz@ipla.csic.es). Applications must be submitted to that same address, specifying "PhD GENESIS" in the subject line, and include an updated CV together with a short letter (1-2 paragraphs) introducing yourself and explaining why you think you would be a good fit.

Recent publications relevant to the position:

Diaz-Colunga J, Skwara A, Vila JC, Bajic D and Sanchez A (2024). Global epistasis and the emergence of function in microbial consortia. *Cell* **187(12)**:3108–3119

Diaz-Colunga J, Sanchez A and Ogbunugafor CB (2023). Environmental modulation of global epistasis in a drug resistance fitness landscape. *Nature Communications* **14(1)**:8055405

Diaz-Colunga J, Skwara A, Gowda K, Diaz-Uriarte R, Tikhonov M, Bajic D and Sanchez A 375 (2023). Global epistasis on fitness landscapes. *Philosophical Transactions of the Royal Society B* **378(1877)**:20220053