

Scientific Initiation Studentships

Applications are open for 1 Scientific Initiation Studentships, within the framework of project/R&D institution Grupo de Física Matemática (GFM), 1801P.01443 GFM PROGRAMATICO UIDP 2025-2029, financed by national funds through FCT, under the following conditions:

Scientific Area: Biological Sciences

Admission Requirements:

- a) *To be enrolled at a professional higher technical course, at a bachelor degree, at an integrated master or master degree, or to have a bachelor degree and be enrolled at a course that does not award an academic degree and it is integrated in the educational project of a higher education institution, performed in association or cooperation with one or several R&D units;*
- b) *not to exceed with this contract, including the possible renovations, an accumulated period of one year in this type of studentship, continuously or with interruptions;*
- c) *not to have held any other fellowship directly or indirectly funded by FCT.*

Workplan: Growth rate distribution of E. Coli in a chemostat

The project addresses the mathematical/theoretical study of the evolution of the growth rate distribution of E. Coli in a chemostat.

The starting point is the standard chemostat model, which describes the time evolution of glucose level and the bacteria density assuming that all bacteria have the maximal allowed growth rate, as described in 'An Introduction to Mathematical Biology', by Linda Allen.

We study a modification of the standard chemostat model, which assumes, more realistically, that bacteria can randomly alter their phenotype.

The object of the project is to describe theoretically and/or numerically the equilibria of such a new model for realistic values of the parameters.

The research can be carried out at the Instituto Superior de Agronomia (ISA) or at IST.

Legislation and Regulations: Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

Workplace: The work will be developed at the Group of Mathematical Physics of IST or at ISA, under the scientific supervision of Davide Masoero

Duration: The research fellowship(s) will have the duration of 3 months. It's expected to begin in 11/2025, and may be eventually renewed up to the maximum of 6 months, including the duration of the initial contract.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (<https://www.fct.pt/fct-atualizou-o-valor-das-bolsas-para-2025/>), the amount of the monthly maintenance allowance is € 651,12, being the payment method an option of the Fellow by Wire Transfer/Check.



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Selection methods: The selection methods will be the following: *Curriculum evaluation and individual interview, (to be held in person or by zoom, if not possible). A candidate is considered eligible whenever the curriculum evaluation is 14 over 20 or above. The three eligible candidates with the best curriculum evaluation are selected for the individual interview. The weight of the final score is 50% for curriculum evaluation and 50% for individual interview. If a candidate is not selected for the interview, its interview score will be 0. In case only one eligible candidature is received, the individual interview will be omitted.*

Composition of the selection Jury: Prof. Davide Masoero (head), Prof. Maria João Teixeira Martins, Investigador Giordano Cotti. Substitutes: Prof Ana Bela Cruzeiro, Prof. Giulio Ruzza

Announcement/ notification of the results: The final evaluation results will be communicated to all applicants by email.

Deadlines and procedures of complaint and appeal. A complaint may be lodged from the final decision within 15 working days, or an appeal to the Executive Board of IST-ID within 30 working days, both counted from the respective notification

Application deadline and formalization: The call is open from October 29 until November 11, 2025.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/recursos-humanos/bolseiros/#documentos-relacionados>); ii) *Curriculum Vitae*; iii) academic degree certificate, where applicable; iv) proof of enrollment at an academic degree course or at a course that does not award an academic degree; v) motivation letter; vi) declaration on honour that the applicant does not exceed with this contract, including the possible renovations, an accumulated period of one year in this type of studentship, continuously or with interruptions, and has not held any other fellowship directly or indirectly funded by FCT.

Applications must be submitted to the email: davidem@isa.ulisboa.pt



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