

NOTICE OF OPENING OF AN INTERNATIONAL COMPETITION FOR THE RECRUITMENT OF A DOCTORATE RESEARCHER FOR IST-ID

Public Notice Number CEMAT_FCT TENURE/IST-ID

1. Framework

The Executive Board of the Association of Instituto Superior Técnico for Research and Development (IST-ID) on the 25 of June of 2024 took the decision to open an international selection competition for 1 doctorate position, in exclusive dedication, for the exercise of activities of scientific research in the scientific area(s) of **Mathematics/ sub area Applied Mathematics/ fields Mathematical Biology, Mathematical Modeling for Biomedicine, Dynamics Evolution and Control of Infectious Diseases** in the form of a non-term employment contract under the “Código do Trabalho” (Labor Code), approved by Law No. 7/2009 of February 12, as currently amended, and within the scope of the funding mechanism of the Ministry of Science, Technology and Higher Education to support the hiring of PhDs for the scientific research career resulting from the financing program provided for in Law No. 82/2023, of December 29 (State Budget Law).

The candidate will be leading ambitious and interdisciplinary research at CEMAT (UIDB/04621/2020), working on mathematical models in biology and biomedicine, with a focus on mechanisms and bioprocesses of infectious diseases, their dynamics, evolution, and control. The research activities to be developed will be directed toward understanding the mechanistic qualitative behavior of pathogen systems, nonlinear dynamics, parameter criticality, and biomedical implications. The candidate will contribute with modeling and computation frameworks for simulation, prediction, parameter estimation, and optimization across a range of systems. Mathematical research will integrate advances in dynamical systems with applications of probability and statistics, to interface with biological data, contributing to biomedical or clinical applications and theoretical mathematical innovation. The candidate will present a strong research plan, supervise and mentor students and post-docs, provide curricular contributions to PhD and Master programs at IST, develop and maintain a solid line of research, and produce excellent scientific output, collaborating at local and international levels, and attracting competitive funding.

Open position under the FCT TENURE program - 1st edition, within the strategic objectives of the CEMAT, wherein the researcher will become an integrated member of this Research Unit and the financing line to support the hiring of doctorates for indefinite term (OE 2024 additional financing program to encourage the hiring of researchers).

2. Applicable law:

- “Código do Trabalho” (Labor Code), approved by Law No. 7/2009, of February 12, in its current wording.
- If relevant, specific regulations applicable to IST-ID, namely the Research Career Regulation of the Association of Instituto Superior Técnico for Research and Development (hereinafter referred to as RCISTID), available at <https://ist-id.pt/files/sites/43/regulamento-da-carreira-de-investigacao-da-ist-id-1.pdf>, and the General Principles of the Human Resources Policy for Researchers of IST-ID, available at <https://ist-id.pt/files/sites/43/principios-gerais-da-politica-de-recursos-humanos-investigadores-da-ist-id.pdf>.

3. Work place

The place of work is located at CEMAT and IST-ID, Av. António José de Almeida 12, 1000-043 Lisboa, Portugal.

4. Remuneration

The gross monthly remuneration complies with the provisions of Article 15 of the RCISTID, corresponding to the 1st remuneration level of Principal Researcher of the single remuneration table.

5. Admission Requirements

5.1 General Requirements

The competition is open for national candidates, foreigners and stateless persons who hold the PhD degree or hold the recognition of that degree under the terms of the Decree-Law n.o 66/2018, of August 16, in a branch of knowledge or specialty that covers the scientific areas of **Mathematics** or related scientific area, and are also holders of a scientific and professional curriculum that reveals an adequate profile to the activity to be developed.

If the doctorate was conferred by a foreign higher education institution, it must comply with Portuguese legislation regarding the registration/recognition of foreign degrees. For this purpose, the procedures described in point 6.2 (submission of applications) of this Notice must be followed.

5.2 Specific Requirements

The applicants must hold the PhD degree, and also hold a scientific and professional curriculum that reveals an adequate profile to the activity of leadership and development of highly versatile and interdisciplinary mathematical biology research on mathematical models in biomedicine, with special emphasis on infectious diseases.

In particular, the ideal candidates will have:

- At least 10 years of experience as a researcher.
- A breadth and depth of knowledge in areas of Mathematics and its applications, and specific related topics to Mathematical Modeling in Biomedicine aligned with the goals of CEMAT, and raising the profile of the activities in this field across the CEMAT.
- An international reputation in research in mathematical biology, focus on infectious diseases, with contributions to diverse topics and methods of mathematical epidemiology.
- Evidence of independence and research leadership.
- Evidence of research design and development to achieve high impact.
- Evidence of collaboration and co-authorship with national and international partners.
- Experience with successful research proposals – attracting competitive funding from organizations, industry, and other funding bodies.
- Ability to deliver student learning in mathematical biology and biomedicine, including project design and supervision (MSc/PhD).
- High productivity index (number and quality of papers per funding received), and visibility of student work.
- Experience in teaching and organizing scientific events/workshops.

6. Formalization of applications

6.1 Applications are formalized by means of an application form, made available at <http://ist-id.pt/concursos/emprego-cientifico-projetos/> electronic address, addressed to the President of Instituto Superior Técnico Association for Research and Development (IST-ID), stating the

identification of this notice, full name, affiliation, number and date of identity card, Citizen Card, or civil identification number, tax identification number, date and place of birth, marital status, profession, residence and contact address, including e-mail address and telephone contact.

The recognition of the PhD degree should be obtained by the date of the act of contracting.

In the application form, the candidate must indicate his / her consent so that the communications and notifications in the context of this hiring procedure can take place by electronic mail, to the electronic address indicated in that application form.

6.2 The application shall be accompanied by documents proving the conditions laid down in point 5 for admission to this invitation to tender, in particular:

- a) Copy of certificate or PhD diploma indicating the respective date of completion;
- b) PhD Thesis or equivalent document(s) that determined the award of the academic PhD degree;
- c) Detailed *Curriculum Vitae*, structured in accordance with the items in points 7 and 8, indicating the works, and adding a copy of them, that the candidate considers most relevant to each of the items in points 7 and 8;
- d) Scientific project, focusing on applied mathematics to biology and biomedicine, for infectious disease modelling (at most 5 pages, excluding cover and references).
- e) Other documents that the candidate justifies to be relevant to the analysis of his/her application.

If the PhD was conferred by a foreign higher education institution, it must comply with Portuguese legislation regarding the recognition of foreign degrees, regulated by Decree-Law No. 66/2018, of August 16. In the event that the candidate is selected, the signing of the contract is conditional upon the presentation of the formal document.

6.3 Application Deadline

Applicants submit the documents referred to in 6.1 and 6.2 in PDF format at the electronic address <http://ist-id.pt/concursos/emprego-cientifico-projetos/> , issued up to the last day of the tender opening period, which is fixed at 15 (fifteen) working days after publication of this Notice.

An applicant may, by reason of the impossibility or technical difficulty of sending any of the documents referred to in 6.1 and 6.2 by e-mail, deliver them on physical support, respecting the above date, by registered mail with acknowledgment of receipt to the address postal service "Av. António José de Almeida, nº12, 100-043 Lisboa" or by hand at IST Human Resources Division located at Av. Rovisco Pais, 1049-001 Lisboa until 4:30 p.m. (Lisbon time) on the 17 of July of 2024.

Not being accepted the justification of the candidate for the delivery of documents only in physical format, the President of the jury will give a deadline of 5 (five) working days to present them also in digital support.

6.4 The application form is submitted in Portuguese, while the *curriculum vitae* and documents are presented in English.

6.5 Candidates who do not comply with the provisions of point 6. or fail to provide evidence of the requirements required are not admitted to the present competition. Candidates who do not submit the application using the form or who do not deliver all the documents referred to in points 6.2 a) to d) or who present them unreadable, incorrectly completed, or invalid are eliminated. The jury is also

entitled to require any candidate, in case of doubt and for the purposes of admission to competition, to present documentary evidence of the declarations in the submitted documents. Failure to submit the requested clarifications, information, or documents within 5 (five) working days will result in the exclusion of the application.

False statements made by the candidates will be punished in accordance with the law.

6.6 Selection process

In accordance with Article 6 of the RCISTID, the selection process is made through the evaluation of the scientific and curriculum path of the candidates.

7. Evaluation of the candidate(s)

7.1. The evaluation focuses on the relevance, quality, and timeliness of the scientific and curriculum path:

a) of the scientific, technological, academic, cultural or artistic production during the last five years and considered more relevant by the candidate;

b) of the applied or practice-based research activities developed over the last five years and considered as having the greatest impact by the candidate;

c) of the activities of extension and dissemination of knowledge developed during the last five years, in particular in the context of promoting the culture and scientific practices considered by the candidate to be of greater relevance;

d) of the activities of science, technology and innovation programs management or of the experience in observing and monitoring the scientific and technological system or higher education, in Portugal or abroad.

7.2 The period of five years referred to in the preceding paragraph may be increased by the jury, at the request of the candidate, when justified on grounds of suspension of scientific activity for socially protected reasons, namely for reasons of parental leave, prolonged serious illness, and other situations of unavailability for work legally protected.

7.3 The final classification system for candidates is expressed from 0 to 100. The value is calculated considering that only relevant activity for the field of the competition will be considered for each item, according to the weighting referred to in point 8 of present notice.

8. Assessment criteria

The assessment criteria are set out in this entry, with the option mentioned in point 8.5, with particular emphasis on the *curriculum vitae* and the contributions considered to be of higher relevance by the candidate in the last 5 years:

8.1 Quality of the scientific, technological, cultural or artistic production, considered more relevant by the candidate, and relevant to the project to be developed, which was given a weighting factor of 80% considering:

(i) Scientific publications: a parameter which includes books, chapters of books, articles in scientific journals and international conference proceedings of which the applicant was the author or co-author, considering:

- its nature;
- its impact;
- the scientific / technological level and innovation;
- diversity and multidisciplinary;
- international collaboration;
- the importance of contributions to the advancement of the current state of knowledge;
- the importance of the works that have been selected by the candidate as most representative, in particular as regards their contribution to the development and evolution of the scientific area for which the competition is open.

ii) Creation and strengthening of laboratory resources: a parameter that considers the candidate's participation and coordination of initiatives resulting in the creation or strengthening of experimental and/or computational laboratory infrastructures to support research.

iii) Recognition by the international scientific community: a parameter that takes into account:

- prizes from scientific societies;
- editorial activities in scientific journals;
- participation in editorial bodies of scientific journals;
- coordination and participation in program committees of scientific events;
- invited lectures in scientific meetings or in other institutions;
- participation as a member of competitive admission scientific societies and other similar distinctions.

iv) Coordination and participation in Portuguese and European scientific projects: a parameter that includes the candidate's participation and coordination of Portuguese and European scientific projects subject to competitive procedures, considering:

- the territorial scope and its dimension;
- the technological level and the importance of contributions;
- innovation and diversity.

v) Enhancement of scientific activity: a parameter that takes into account the capacity of coordination and leadership of research teams demonstrated by the candidate.

vi) Accompaniment and orientation of students, trainees and research fellows: a parameter that intends the orientation of doctoral students, master's and undergraduate students, trainees and research fellows taking into account the number, quality, scope and scientific / technological impact of the resulting publications, theses, dissertations and final course papers, distinguishing especially the awarded works and the international recognition.

8.2. Activities of applied or practice-based research, considered to be of greatest impact by the candidate, and relevant to the project to be developed, which was given a weighting factor of 5% considering:

(i) Vocational training actions: a parameter which takes into account the participation and coordination of technological training actions aimed at enterprises and the public sector, taking into account their nature, technological intensity and results achieved.

ii) Provision of services and integrated consultancy in the institutional mission: a parameter that considers participation in activities involving the business community and the public sector, taking into account the type of participation, size, diversity, technological intensity and innovation.

iii) Design, project, and production of scientific achievements: a parameter that takes into account the value of relevant professional experiences for the activities of the Institute.

8.3 Activities of extension and dissemination of knowledge, particularly in the context of the promotion of culture and scientific practices, considered of greater relevance by the candidate, and relevant to the project to be developed, which was given a weighting factor of 10% considering:

i) Industrial and intellectual property;

ii) Publications of scientific and technological outreach: parameter that takes into account the articles in magazines and national conferences and other publications of scientific and technological diffusion, taking into account their professional and social impact.

iii) Services to the scientific community and to society: a parameter that takes into account the participation and coordination of scientific and technological dissemination initiatives and considering the nature and results achieved by these initiatives, when carried out towards:

- the scientific community, including the organization of congresses and conferences;
- the media;
- companies and the public sector.

8.4 Contribution to activities related to the management of science, technology and innovation programs, or experience in the observation and monitoring of the scientific and technological system or higher education, in Portugal or abroad, and relevant to the project to be developed, with a weighting factor of 5% considering:

i) Positions in university, school, or research unit bodies: a parameter that considers the nature and responsibility of the position.

ii) Other positions: parameter that takes into account the exercise of positions in national and international scientific organizations.

8.5. In weighing the evaluation criteria listed in paragraphs 8.1 to 8.4, each jury member may consider the following additional parameters under the following conditions:

8.5.1 The relevance and quality of the scientific project proposed in/for multi-strain pathogen dynamics, computational vaccine research, antibiotic resistance, microbial ecosystem modelling, biodiversity and optimal infection control.

8.5.2 Contribution to the development and evolution of themes: i) mathematical model reduction, ii) integrative data modelling, iii) biological hypothesis testing.

8.5.3 Diversity of biological systems modelled and analysed, including type of questions, data, and tools.

9. Jury composition

In compliance with article 8º of RCISTID, the jury of the competition is composed as follows:

Manuel Scotto (President of the Jury, Full Professor, IST – Univ. Lisboa)

Adélia Sequeira (Full Professor, “Jubilada”, IST – Univ. Lisboa)

Carlota Rebelo (Full Professor, FCUL– Univ. Lisboa)

Cláudia Nunes Philippart (Associate Professor with “Agregação”, IST– Univ. Lisboa)

Ana Leonor Silvestre (Associate Professor with “Agregação”, IST– Univ. Lisboa)

10. Competencies, functioning, and decisions of the Jury

It is the responsibility of the jury of the competitive procedure to ensure its processing, namely: assess the applications; deliberate through reasoned nominal voting according to the adopted and disclosed selection criteria, with no abstentions allowed; hold meetings, including those for the final decision, using telematic means.

Minutes are drawn up for the jury meetings, containing a summary of what occurred therein, as well as the votes cast by each member and their respective justifications.

After the completion of the application of the selection criteria, the jury must proceed to prepare an ordered list of approved candidates with their respective ratings.

10.1 The jury may decide to select up to 3 candidates who will be called to hold a session presenting the results of their investigation, following which the jury members should stimulate an open debate on its content and innovative character. This presentation session does not constitute a selection method and is not classified, aiming merely to obtain explanations or clarifications of elements contained in the candidates' curricula.

10.2 The jury, when it deems it necessary, may request the candidate to present additional documents proving the candidate's statements, which are relevant to the analysis and classification of his/her application.

10.3 Approval on absolute merit:

10.3.1 The Jury will deliberate on its approval or rejection on absolute merit, by a justified vote where no abstentions are admitted.

10.3.2 A candidate is considered approved on absolute merit when he/she obtains a favorable vote of more than half of the members of the jury.

10.3.3 Candidates who have a scientific and curricular path relevant to the scientific area(s) of the competition and taking into account their suitability for the additional weighting criteria identified in 8.5 will be approved on absolute merit.

10.3.4 The unfavorable vote to approval on absolute merit can still be justified by the failure to fulfill the following circumstance: a) the Scientific Project prepared by the candidate is shown to be clearly insufficient and misaligned with the scientific area (s), suffering from serious inaccuracies or not supported by previous work of the candidate.

10.4 Each member of the jury assigned a classification to each of the candidates in each evaluation criteria, on a scale of 0 to 100 points, ranking the candidates according to their classification consisting on the sum of the partial classifications assigned in each evaluation criteria, and taking into account the weighting factor given to each parameter.

10.5 Candidates shall be ordered by applying the successive voting method.

10.6. The jury decides by absolute majority, and abstentions are not allowed.

10.7 The final classification of each candidate is the one corresponding to his/her ranking resulting from the application of the method referred to in point 10.4.

10.8 After the selection criteria assessment, the jury proceeds to prepare the ordered list of approved candidates with their respective ratings.

10.9 The final deliberation of the jury is approved by the President of IST-ID, and it is his responsibility to establish the respective contract.

11. Publication

The list of admitted and excluded candidates, as well as the final ranking list of candidates, will be published on the IST-ID website (<https://ist-id.pt/concursos/emprego-cientifico-sem-termo/>), with candidates notified via email, with a delivery receipt for the notification.

12. Prior Hearing and Deadline for Final Decision

After being notified, the candidates have 10 (ten) working days to submit a formal rebuttal. Within the term of 90 days, counted from the deadline for the submission of applications, the final decisions of the jury are given.

13. Final Ranking List and Job Occupancy

This tender is exclusively intended to fill the vacancy(s) indicated and may be terminated until the homologation of the final ranking list of candidates and expiring with the respective occupation of the working position on offer.

14. Non-discrimination and equal access policy

14.1 IST-ID actively promotes a policy of non-discrimination and equal access, so that no candidate can be privileged, benefited, disadvantaged or deprived of any right or exemption from any duty owing, in particular, to ancestry, age, sex, sexual orientation, marital status, family status, economic situation, education, social origin or condition, genetic heritage, reduced working capacity, disability, chronic illness, nationality, ethnic origin or race, territory of origin, language, religion, political or ideological beliefs and trade union affiliation.

14.2 Under the terms of Decree Law No. 29/2001, of February 3, a disabled candidate has a preference when in equal classification, which prevails over any other legal preference. Candidates must declare on the application form their respective degree of disability, the type of disability and the means of communication/expression to be used in the selection process, under the terms of the aforementioned diploma.

15. Privacy Policy

IST-ID is the Data Controller within the meaning of Regulation 2016/679 (General Data Protection Regulation).

The personal data processed in the context of this recruitment procedure are intended for its instruction and will be processed by IST-ID for the purpose of verifying that the candidates meet the prerequisites set out in the applicable legislation for their hiring.

Opposition to the processing of data by candidates will render the application inadmissible and, consequently, its analysis and evaluation.

The data retention period will correspond to the legally defined five-year period.

Data subjects have the right to object to the collection and processing, to verify, correct, delete, and limit the use of the data collected. The exercise of these rights is exempted when personal data are used to safeguard public interest, particularly in cases of crime detection and prevention, or when they are subject to professional secrecy.

Data subjects have the right of access and data portability.

To exercise their rights, contact IST-ID via email dpo@ist-id.pt.

Data subjects always have the right to contact and lodge a complaint with the National Data Protection Commission.