

PhD CANDIDATE POSITION (P-FIS FELLOWSHIP)

JOB DESCRIPTION

If you are passionate about translational research in surgery, artificial intelligence applied to health, and science with real clinical impact, we invite you to join the Translational Research and Innovation in General and Digestive Surgery Group (GITIC) at the Health Research Institute of La Paz University Hospital (IdiPAZ), Madrid.

THE PROJECT

The project “Adaptation of predictive models for risk assessment and surgical planning using patient-reported outcomes and machine learning” (PI25/00466) will develop and validate AI/ML models to:

- Predict perioperative risk and complications.
- Estimate surgical times and optimize scheduling/waiting lists.
- Integrate PROMs (Patient-Reported Outcome Measures) into clinical practice.
- Implement digital tools to support clinical decision-making.

Work will be carried out with a large cohort of surgical patients, integrating clinical data, PROMs, and perioperative variables, with a focus on direct impact on patient safety, hospital efficiency, and health outcomes.

HOSTING ENVIRONMENT

IDIPAZ-LA PAZ UNIVERSITY HOSPITAL

The La Paz University Hospital Health Research Institute (IdiPAZ) is one of Spain's leading biomedical ecosystems, linked to La Paz University Hospital, the Autonomous University of Madrid (UAM) and the European University. It offers an exceptional environment for translational research with direct access to highly complex clinical practice and leading scientific and technical platforms. IdiPAZ integrates basic science, clinical science, and health technology, favoring projects with a real impact on patients, system efficiency, and healthcare innovation.

IdiPAZ has the next core facilities and platforms available:

- **Experimental Surgery and Animal Facility Service at IdiPAZ.** This infrastructure complies with current legal regulations regarding the protection of laboratory animals, enabling preparation and

perioperative care, instrumentation for animal surgery, and basic equipment for the rapid processing of samples.

- **Molecular Imaging and Immunohistochemistry Unit at IdiPAZ.** It is one of the support platforms for research groups that offers guidance and the supply of reagents, materials, and equipment to carry out various histological techniques on tissues or cells and their subsequent image analysis.
- **Flow Cytometry Laboratory.** It is one of the shared laboratories that has a variety of equipment allowing phenotypic analysis of different cellular subpopulations and the quantification of soluble factors in biological samples.
- **Laboratory and cryopreservation space.** On the one hand, there are spaces in -80°C ultra freezers for the storage and preservation of collected samples, as well as storage space at -20°C and 4°C for a wide variety of reagents. Within the laboratory space, there is a physical area for performing molecular biology techniques, equipped with dedicated materials (precision and multichannel pipettes, vortex, inventory storage for materials, among other items), in addition to a series of shared equipment (plate reader, exposure cabinet, qPCR reader, etc.) available to all researchers.
- **Workspace.** There is a personal workspace for carrying out office tasks and follow-up meetings.

THE RESEARCH GROUP

The Translational Research and Innovation Group in General and Digestive Surgery (GITIC) is an emerging multidisciplinary team (consolidated in 2021), made up of surgeons, anesthesiologists, biologists, and engineers, led by Dr. Constantino Fondevila Campo (Chief of Service) and affiliated with the consortium CIBER-EHD (CB06/04/0011). The group's mission is to bridge the gap between the laboratory and the operating room, generating evidence and tools that tangibly improve patient safety, decision-making, and clinical outcomes in general and digestive surgery.

Thanks to the extensive knowledge and skill set of its members, the projects developed by the GITIC group include basic science and experimental research, preclinical and translational surgical models, clinical research, analysis of post-surgical outcomes, and studies related to economic evaluation and the creation of mathematical models:

LINK: <https://www.idipaz.es/areasCientificas/CirugiaTrasplantes/InvestigacionTraslacionaleInnovacionCirugiaGeneralDigestiva>

The selected candidate will perform the following tasks within the project:

- Curation and analysis of clinical data and PROMs; design of variables and analytical pipelines.
- Development and validation of ML/DL models (risk, complications, times).
- Collaboration in the development of prototypes for digital clinical support tools.

In addition to project tasks, the candidate will have the opportunity to (if the candidate wishes) :

- **Technician in Experimental Surgeries.** The candidate will become familiar with the surgical environment, learning the fundamentals of sterility, surgical instruments, extraction and pre-processing of biological samples, and perioperative monitoring of the experimental subject.
- **Molecular diagnostic techniques.** The candidate will learn the basics for gene analysis by qPCR (for quantifying changes in RNA expression previously reverse-transcribed to DNA) or in situ hybridization.
- **Immunoassays.** The candidate will learn and apply the fundamentals for performing protocols based on the specific binding of antibodies to biomolecules to enable their evaluation. This spans from sample collection and its optimal preservation method to executing the protocol and obtaining results. Immunoassays will include Immunohistochemistry (for both optical and fluorescence microscopy), Western blot (for quantifying changes in protein expression), ELISA (for colorimetric quantification of different biomolecules), among others.
- **Omics techniques.** The candidate will learn the fundamentals of proteomics and metabolomics, the interpretation of results, and their application within the different projects carried out by our research group.

CANDIDATE PROFILE & REQUIREMENTS

We are seeking a highly motivated young scientist with strong interest in surgical research, data science for health and translational biomedical science.

The candidate must have:

- BSc in Biology, Biomedicine, Biotechnology, Bioengineering, Bioinformatics or related fields.
- Official MSc in one of the following areas (or equivalent): Bioinformatics, Biomedical Data Science, Artificial Intelligence applied to Health, Statistics/Biostatistics with a biomedical focus, Biomedical Engineering with a data analysis/AI track. Must qualify for access to a PhD program in Spain.
- Practical proficiency with at least one of these environments: Python (pandas, scikit-learn, PyTorch/TensorFlow), R (tidyverse, caret, tidymodels), and clinical data management.
- Good level of English (spoken and written).

It will be valued:

- Experience in data analysis/biostatistics and ML/AI techniques
- Management of datasets (cleaning, imputation, harmonization).
- Best practices in data science: version control, reproducible documentation.
- Laboratory experience (qPCR, ELISA, IHC, Western) and knowledge of omics.
- Participation in projects, internships, scientific communications, or publications.

LABOUR CONDITIONS

- Full-time position.
- Workplace: IdiPAZ-Instituto de Investigación Sanitaria del Hospital Universitario La Paz.
- 4 year PhD contract (P-FIS Fellowship) associated to the project “Adaptation of predictive models for risk assessment and surgical planning using patient-reported outcomes and machine learning” (PI25/00466)- Subject to eligibility/funding according to the terms and conditions of the call for applications.
- Gross annual salary: according to AES/P-FIS regulations and institutional salary scales.
- Starting date: end of 2026.

*Candidates must be eligible for admission or enrollment in an officially accredited doctoral program at a Spanish university for the 2024-2025/2025-2026 academic year, which may be verified after the application and until the end of the appeal period.

SELECTION PROCEDURE:

CANDIDATURES

Please submit a single PDF document including:

- CV (max. 2–3 pages)
- Cover letter (max. 1 page) stating your motivation for accepting the proposal.
- Academic records for BSc and MSc degrees
- Contact details for 1–2 referees

Email submission: cirugia.idipaz@outlook.com with the subject line “P-FIS GITIC-APPLICATION-[Your Name and Surname].”

Deadline: November 21, 2025; 23:59 (CEST)

SELECTION PROCEDURE

Screening of CVs: From November 22 to November 28.

- Verification of minimum requirements (degree, MSc, eligibility for PhD enrolment, and profile fit).
- Candidates meeting the requirements will advance to the interview stage.

Interview phase: From December 1 to December 5.

Technical and motivational interview with the GITIC team.

Assessment of fit with the research activities, development potential, and contribution to the group.