BSICoS
Biomedical Signal Interpretation
& Computational Simulation

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1 Predoctoral position (3-year PhD Scholarship)

Positions and project

The Biomedical Signal Interpretation and Computational Simulation (BSICoS) group at the University of Zaragoza (Spain) seeks 1 Predoctoral Researcher to work on the development of a biophysically detailed computational model informed with patient-specific, genetic, functional and structural data from MRI to investigate electrophysiological abnormalities and their signature on the ECG in cardiovascular disease.

The position is part of project *HORMONECG* (PID2023-148975OB-I00) from the Spanish National Call 'Proyecto Generación de Conocimiento 2023', led by Dr Julia Ramírez and Dr Ana Mincholé, funded by the Spanish Research, Innovation and Universities Ministry.

HORMONECG aims at identifying electrophysiological differences between males and females that explain the gap in cardiovascular disease prevalence and incidence in both groups using the ECG signal. We have access to different databases such as UK Biobank with ~500,000 participants, as well as clinical databases.

The candidate will be involved in 1) understanding the electrophysiological mechanisms underlying the relationships between the demographic, anatomical, functional, autonomic and hormonal factors and the ECG morphology of males and females and 2) understanding the different sex-specific electrophysiological mechanisms underlying the mean ECG waveforms in coronary artery disease and their association with SCD risk. As part of *HORMONECG*, the candidate will be involved in an international collaboration with Prof Patricia Munroe's team, Queen Mary University of London, London, United Kingdom.

Qualifications

The candidate must hold a BSc or MSc in Engineering, Statistics, Mathematics or Bioinformatics and an interest in developing expertise in biomedical signal processing, artificial intelligence, computational modelling and simulation. Strong oral and written communication skills in English are desirable.

The I3A Institute at University of Zaragoza

The Aragon Institute of Engineering Research (I3A), https://i3a.unizar.es/es, within the University of Zaragoza, comprises more than 500 researchers and a vibrant environment for multidisciplinary research. BSICoS group, https://bsicos.i3a.es/, is a leading group expert in the development of data science and, modeling and simulation of cardiac electrophysiology to aid in the diagnosis, prognosis and treatment of cardiovascular diseases and conditions.

Application

Applicants are required to send a cover letter and a 2-page CV to Dr Julia Ramírez (Julia.Ramirez@unizar.es) or to Dr Ana Mincholé (minchole@unizar.es).

The **closing date** for applications is January 24th 2025. Interviews are expected to be held in the week commencing on January 27th.

The candidate is expected to start on April 1st 2025, or as soon as possible thereafter.