

Predocctoral researcher at the Biomedical Signal Processing and Interpretation Research Group

Introduction to the vacant position:

The Biomedical Signal Processing and Interpretation (BIOSPIN) Group at the Institute for Bioengineering of Catalonia (IBEC) is looking for a PhD candidate to conduct her/his predoctoral training on the analysis of the respiratory pattern associated with moderate and severe COVID-19 pneumonia. Most patients with COVID-19 pneumonia exhibit a characteristic breathing pattern with deep inspirations, late rise in respiratory rate (RR) and severe hypoxia without dyspnea. The inspiratory effort could cause a worsening of lung injury. The study proposes the following hypotheses: Temperature changes around the mouth and nose allow to detect changes in respiratory phase (inspiration-expiration) and therefore the RR in patients with oxygen therapy, and to obtain the inspiratory-expiratory ratio. Monitoring these relations and the respiratory system behaviour could allow the early detection of breathing patterns related to worsening of patients with COVID-19 pneumonia. The main objective is to determine biomarkers of the breathing pattern as dynamic predictors of poor evolution in these patients, before requiring mechanical ventilation. The final result will be the implementation a non-invasive system for this purpose.

The contract will be within the framework of the Project 85/C/2021 – A novel non-invasive respiratory pattern monitoring tool in patients with severe COVID.19 pneumonia, funded by Fundació La Marató de TV3.

Main tasks and responsibilities / The successful candidate will develop research involving:

- To analyze different devices to record biomedical signals like ECG, respiratory volume and flow, blood pressure, and temperature related to the respiratory system
- To design and develop a database to collect clinical information and biomedical signals
- To process and analyze the database: definition and extraction of the respiratory pattern characteristics and of the clinical information
- To apply a multivariate analysis to the most relevant features to define optimal biomarkers to help on the diagnostic and treatment of these patients
- To define a non-invasive system that collects the results of this research

Requirements for candidates:

- Degree and Master in any field of Biomedical Engineering, Biotechnology, Electronic, Physical or similar areas
- Multidisciplinary qualifications (Physics/Math's, Physics/Engineering, etc.) and/or knowledge on devices implementation (specifically on biomedical signal devices will be a plus).
- Competencies and skills: Communication, Teamwork and collaboration, Commitment, Proactivity, Integrity, Critical and Analytical thinking.
- High level of English

We Offer:

- Number of available positions: 1
- Starting date: immediate
- Working conditions:
 - *Full time 3-year contract.*
 - *Very competitive salary.*
- Measures to reconcile work and family life (maternity and paternity leave, flexible schedule working hours, teleworking, 23 working days of paid holidays, 9 leave days for personal matters, among others).
- IBEC ensures equality of access to professional development opportunities irrespective of employment status, length at IBEC or other factors. The IBEC's yearly training catalogue offers a wide range of training in technical and transferable skills including mobility grants and a Mentoring programme.
- Stimulating, interdisciplinary research and high-quality international scientific environment.
- Induction programme to facilitate incorporation at IBEC and additional support is provided for foreigners to obtain Visa-working permit and to install in Barcelona.

How to apply:

Until November 21th an online application form is available through IBEC dedicated site:
<https://careers.ibecbarcelona.eu/>

Only those applications submitted before the deadline will be evaluated.

Reference: PhD-BG

If you have any further question regarding your application, please contact us at
jobs@ibecbarcelona.eu

Interested applicants should send their CV, cover letter and the contact of two referees to:
jobs@ibecbarcelona.eu before 21/11/2021 (Reference: PhD-BG).

Principles of the selection process:

IBEC is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit based Recruitment principles (OTM-R).

IBEC's Commitment on equal opportunity:

Our strength and excellence as an international transdisciplinary Research Institute are based on diversity. Being an equal opportunity employer, we are committed to diversity and inclusion, so that we support employees irrespective of their gender, nationality, religion, disabilities, age, sexual identity or cultural and socioeconomic background."

Protection of personal information:

IBEC guarantees that candidates' personal data are processed in accordance with the requirements of the EU General Data Protection Regulation (GDPR) and Law 3/2018 on Data Protection.

Personal data will be processed solely for the purposes of the selection process.



Who we are?

The Institute for Bioengineering of Catalonia, IBEC is an interdisciplinary research center focused on Bioengineering and Nanomedicine based in Barcelona. IBEC is one of the top research institutions named as a Severo Ochoa Research Centre by the Ministry of Science, Universities and Innovation, which recognizes excellence at the highest international level in terms of research, training, human resources, outreach and technology transfer.

IBEC's mission is to develop international high-quality interdisciplinary research that, while creating knowledge, contributes to making a better quality of life, improving health and creating wealth. A close link with key universities, reference hospitals and corporations, are assets that facilitate achieving the mission.

IBEC was established in 2005 by the Generalitat de Catalunya (Autonomous Government of Catalonia), the University of Barcelona (UB) and the Technical University of Catalonia (UPC).

IBEC is located within the Barcelona Science Park and is managing 3.800 square meters facilities, 22 research groups and a team of researchers and support services of 350 people from 30 different countries. www.ibecbarcelona.eu

