

Experienced Researcher for detection of respiratory diseases using biosensors and AI (TecniospringINDUSTRY Post-doc call)

Are you a postdoctoral researcher thinking about your next career move? Are you interested in healthcare and want to improve the way one of the deadliest diseases is diagnosed and managed? Join Breaz Medical SL and participate in the Tecniospring program, a Marie Skłodowska-Curie co-fund program, to give your career a boost by working abroad.

About Breaz Medical

BREAZ is an early-stage and fast-evolving medical device start-up with a clear mission: to detect breathing diseases early. Our project started inside a hospital in Barcelona in 2019, and we are focused on the development of novel medical devices with a strong focus on user-centric design. The startup is led by experienced researchers in physics, engineering and biology and we are collaborating with clinical partners and mentors to test our technology in real-life settings. We create new technologies combining physical sensor with the power of machine learning to provide easy to interpret results for quick disease diagnosis.

We are mainly looking for researchers joining our team in Barcelona with a potential short stay in Germany (INCOMING), but there might also be the option for the OUTGOING+RETURN modality.

What we offer:

- ★ Be part of an award-winning project with great ambitions in the world of healthcare.
- ★ Form part of an exciting diverse team where your voice counts.
- ★ Apply your expertise to a healthcare problem with real world impact.
- ★ Learn about the intricacies of healthcare start-ups

Project Description

The project aims to build on the existing prototype technology developed at the company. In the research we will seek to design, incorporate, test and analyze new sensor technology into our devices. The technology we are developing is based on the breathing patterns and exhaled breath analysis and has multiple disease targets, with one of our principal targets being chronic obstructive pulmonary disease. Some of the key tasks of the research on the project include:

- ★ Selection and incorporation of electronic sensor technology into working prototypes and lab testing.
- ★ Design and testing of flow sensor technology.
- ★ Filtering, processing and analysis of raw signal data.
- ★ Design of calibration system and testing of our technology.
- ★ Analysis of collected data and calculation of clinical metrics such as specificity and sensitivity.
- ★ Optimize electronic processing system and automatic event detection system.
- ★ Create external communication system and cloud storage interface.
- ★ Construction and development of machine learning algorithms for data analysis.

The expected results include: Production of a new sensor design interface. Signal processing protocol defined. Development of calibration system. A calibrated functional prototype ready for testing in humans. A connectivity system between hardware device and the cloud. Machine learning algorithm for data analysis.

Skills/Qualifications

We are looking for a candidate with a **PhD in Electronic Engineering, Mechatronics, Biomedical Engineering or related technical fields** of experience.

- ★ Knowledge in digital sensor signal acquisition (e.g. I2C), processing and filtering
- ★ Experience in embedded electronics systems (e.g. microprocessors, raspberry pi)
- ★ Hardware and electronics prototyping, CAD and 3D printing
- ★ Biomedical device experience and certification requirement knowledge
- ★ Strong programming skills (e.g. Python, C++)
- ★ Experience in big data analytics and machine learning/deep learning algorithms.

Additional skills:

- ★ Writing and presenting skills
- ★ Excellent communication skills
- ★ Team work
- ★ English professional proficiency
- ★ Spanish, Catalan or German will be a plus

The ideal candidate would have experience working with respiratory devices with experience in flow, pressure and gas sensing.

Embrace our company values of diversity, questioning everything and designing for the user. Bring energy and excitement to work in a young, multidisciplinary team with big ambitions!

Main characteristics of the program:

Researcher requirements: A PhD and two additional years of full-time research experience, or at least six years of full-time equivalent research experience.

Duration: two years with a strong future projection in the company.

Modalities: Incoming: 2-year contract in the company, Outgoing + return: 1st year of the project in an international tech-based company or R&D center (located outside Spain), and 2nd year in the company.

Mobility Requirements: Researchers must not have resided or carried out their main activity in the country of their 1st year host organization for more than 12 months in 3 years immediately prior to the deadline for the submission of applications. Exceptions will be made for candidates with justified career breaks.

See web page for more detailed information: <https://bit.ly/31wLmGJ>

How to apply:

1. Send a cover letter (in English) and your CV incl. academic record as well as two contacts for potential references to petra.stockinger@breaz.eu: **15 May 2021**.
2. Develop applied research project within the area of interest together with Breaz.
3. Joint project submission: **15 June 2021**
4. Potential starts of fellowship: **from October to April 2022**