

The Vall d'Hebron Institute of Oncology (VHIO) Seeks a “Research Physicist/Engineer”

Reference: Ref. 49-2021

Application deadline: 31/12/2021

Number of vacancies: 1

Job description:

The Radiomics Group at Vall d'Hebron Institute of Oncology's (VHIO), headed by Raquel Perez-Lopez (MD, PhD), is currently seeking to recruit a Research Physicist/Engineer to undertake a 3-year doctoral (PhD) degree in Magnetic Resonance Imaging (MRI). The successful candidate will be involved in the development of advanced MRI acquisition protocols and image analysis techniques, including artificial intelligence (AI), for oncological applications. He will be supervised by Dr Raquel Perez-Lopez (MD, PhD Radiology, primary supervisor) and Dr Francesco Grussu (PhD MRI Physics, secondary supervisor). The work will be done in close collaboration with the group of Dr. Manuel Serrano (Institute for Research in Biomedicine, Barcelona) with more than 25 years of experience in the study of cellular senescence in preclinical models.

This post is a great opportunity to be involved in cutting-edge MRI acquisition and analysis within the translational research environment of the Vall d'Hebron Institute of Oncology (VHIO), Barcelona (Spain). VHIO is a leading Comprehensive Cancer Centre dedicated to translational cancer research and one of the world-leading drug-development centres for cancer care.

The Radiomics Group at VHIO is focused on medical image processing and the extraction of imaging biomarkers for precision medicine towards improving cancer patients' care. Examples of research projects in which the candidate will be involved are listed below.

1) Development of MRI biomarkers for non-invasive senescence detection. Cellular senescence is a response to damage characterized by a stable cell cycle arrest and a potent secretion of proliferative, inflammatory and matrix remodelling factors. Senescence plays a key role in cancer recurrence and represents a valuable new target for drug development. The candidate will be involved in setting up advanced diffusion MRI acquisition and analysis protocols on a preclinical 9.4T scanner, with the aim of estimating cellular properties carrying a signature of senescence (e.g., cell size, iron concentration) non-invasively. The most promising preclinical protocols will be tested in clinical MRI settings at the Vall d'Hebron hospital.



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Vall d'Hebron Institute Oncology (VHIO) endorses the Requirements and Principles of the European Charter for Researchers, the Code of Conduct for the Recruitment of Researchers promoted by the European Commission and follows Equal Opportunities policies.

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2) MRI-histology comparisons. The candidate will have access to co-localised histology (e.g., digitised multiplex immunohistochemistry images) and clinical/preclinical functional and anatomical MRI data (e.g., time-dependent multi-shell scans), which will enable the validation of MRI biomarkers developed by the candidate against histological ground truth.

3) Design of MRI acquisition protocols based on computer simulations. The candidate will be involved in optimising the MRI acquisition protocols employed by the Radiomics group in clinical studies using numerical methods, such as Monte Carlo simulations.

The Radiomics Group at VHIO is committed to the continue training of their scientists and a personal training and development plan will be agreed with the candidate. As the group expands, the candidate will progressively acquire a supervision role over pre-doctoral students and other junior investigators.

We seek:

An organized and motivated, team-oriented individual with knowledge in MRI, computer science/machine learning and medical translational research.

The post-holder will be encouraged to initiate and lead research projects according to his/her interests in line with the group research strategy.

The candidate is expected to be highly proficient in spoken and written English. The candidate will progressively be involved in preparing grant proposals and scientific manuscripts.

Requirements:

- Degree in any of Physics, Biomedical Engineering, Mathematics, Computer Science, or related disciplines (Master's level)..
- Good Python programming and Unix shell scripting skills.
- Basic knowledge in MRI theory and machine learning.
- High proficiency in spoken and written English.

Additional information:

- Previous experience in MRI acquisition and/or analysis projects.
- Previous experience in machine learning projects.



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Application:

Potential candidates should submit a curriculum vitae and letter of intent via email addressed to Raquel Perez-Lopez: rperez@vhio.net

Review of applications will commence immediately.

About VHIO:

Under the leadership of Josep Taberero, the Vall d'Hebron Institute of Oncology (VHIO), has established itself as a comprehensive cancer center of proven excellence internationally. It is also thanks to VHIO's optimal organizational structure based on a purely multidisciplinary and translational model that VHIO talents continue to anticipate and tackle the many unresolved questions in combatting this multifaceted and heterogeneous disease.

Located within the Vall d'Hebron Barcelona Hospital Campus, our researchers closely collaborate and interact with Vall d'Hebron physician-scientists. Translational science and clinical research are therefore tightly connected which promotes superb interaction and teamwork which, in turn, accelerates the bench-bedside-bed cycle of knowledge. This privileged environment affords VHIO direct access to patients as well as the entire spectrum of oncology professionals who care for them, and a second-to-none appreciation of how cancer science can translate into more powerful, targeted treatments and better practice for the care of patients. VHIO's pioneering model and programs, coupled with its belief in combining strengths through cross-border collaborations, continue to spur advances in reversing cancer resistance, halting metastatic spread, and more effectively treating even the most undruggable tumor types.

VHIO's translation toward precision oncology: <http://www.vhio.net>



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