

Job Title and Brief Project Description

MRI scientist on the Project “Functional Plasticity in Pain-Related Circuits Upon Brain Radiosurgery in Patients with Refractory Chronic Pain”

We are seeking an MRI scientist to join our project, “Functional plasticity in pain-related circuits upon brain radiosurgery in patients with refractory chronic pain.” We would greatly appreciate your suggestions for potential candidates or sharing this information with those who may be interested.

The project aims to use MRI to investigate functional and structural changes in the brain circuits of patients with intractable and refractory chronic neuropathic pain undergoing thalamus or trigeminal nerve radiosurgery with Gamma Knife. The post-holder will collaborate with our research group to develop MRI acquisition methods, analyze signals, and apply these methods to study the human brain in healthy volunteers and patients with neuropathic pain. The project includes also the integration of human data (including imaging, neuropsychological, and clinical data) with preclinical data.

This position is ideal for researchers with a background in applied physics, engineering, or neuroscience, who are capable of developing a strong understanding of MRI.

The expected start date for this position is January 2025, with some flexibility depending on candidate availability. The project is scheduled to start in January 2025, will last for 3 years, and is based at the IRCCS Humanitas Research Hospital in Rozzano, Italy. The appointment will be within the Neuroradiology Unit directed by Prof. Politi. The unit collaborates closely with the Neurosurgery, Radiotherapy, Neuro-oncology and Neurology Units of the Hospital. A Siemens Naeotom Alpha photon-counting CT (installed in September 2024) and a Siemens 3T Cima.X MRI scanner (installation scheduled in March 2025) will be dedicated to clinical research, and the Unit is currently equipped with a Siemens 3T SkyraFit MRI scanner, four 1.5T scanners, and a 1T MRI scanner. The Unit also has high-performance computing and cloud processing resources. For more information about the unit and its research activities, visit <https://www.hunimed.eu/neuroradiology-research-group/>.

Compensation will be based on the candidate’s background and level of experience.

Interested candidates should contact Prof. Letterio S. Politi (letterio.politi@hunimed.eu) and Dr. Giovanni Savini (giovanni.savini@hunimed.eu) as soon as possible for informal discussions before applying.

Professional Profile and Responsibilities

Researcher

The selected candidate will:

- Perform processing and analysis of magnetic resonance images;
- Optimize human MRI protocols and assist in acquiring MR images for research studies;
- Conduct MRI quality assurance using phantoms;
- Write articles for scientific publications;
- Contribute to the research projects of the Neuroradiology Research Group.

Required Education

Master’s degree in physics, biomedical engineering, computer science, neuroscience, or psychology.

Technical Skills

- Strong programming skills for image and signal processing and statistical analysis (Python, Matlab, R, etc.);
- Familiarity with common brain imaging analysis toolboxes (FSL, SPM, MRtrix, etc.).

Preferred Qualifications

- PhD in MRI-related topics (MRI image acquisition and processing, pulse programming, etc.);
- Experience with clinical and/or preclinical MRI scanners;
- Experience with the XNAT platform;
- Expertise in diffusion MRI, functional MRI, perfusion MRI, relaxometry, and MR signal modeling;
- Strong scientific track record;
- Highly organized and reliably independent, with attention to detail and an eagerness to acquire new skills.