



European Research Council
Established by the European Commission

Post-doctoral position

Diffusion-weighted MR spectroscopy methods to measure brain metabolite diffusion

Job description: The present offer is for a **long-term post-doctoral position** funded by a grant from the European Research Council (LactaDiff project, PI: Julien Valette). It is available now and secured **until May 2024**. The post-doc will work on the development of **diffusion-weighted MR spectroscopy strategies** to measure brain metabolite diffusion *in vivo*. In particular, the post-doc will optimize **polychromatic radiofrequency pulses** and their incorporation inside dedicated **diffusion-weighted MRS sequences**, to characterize the **diffusion of brain lactate** with unprecedented precision.

Methods will first be developed in the healthy rodent brain at 11.7 T and evaluated in rodent models where the cellular compartmentation of brain lactate is expected to vary (work performed in MIRCen). Then, methods will be transposed on an 11.7 T clinical scanner to investigate potential variations of brain lactate compartmentation in various conditions in humans (work performed in NeuroSpin). Throughout the project, the post-doc will work in close collaboration with other members of the research team, including experts in diffusion modeling and neurobiology.

Location and environment: The work will be performed in two facilities from the French Atomic Energy Commission (CEA):

- MIRCen, the preclinical research center in the CEA site of Fontenay-aux-Roses (5 km south from Paris). MIRCen is equipped with state-of-the-art 11.7 T MRI scanner for rodents, and provides on-site expertise and access to confocal microscopes, gene transfer...
- NeuroSpin, the high field MRI research center in the CEA site of Saclay (10 km south from Paris). NeuroSpin is equipped with a 7 T clinical MRI, and soon operating the first 11.7 T clinical scanner.

The candidate will be primarily based in MIRCen but is expected to spend a significant fraction of his/her time in NeuroSpin, and to develop strong ties with researchers in both labs.

Candidate profile: The candidate should hold a Ph.D. in chemistry/biophysics/physics or equivalent. Salary will be commensurate with experience (past post-docs, etc...). He/she should be highly motivated, creative, and willing to collaborate with people having different backgrounds, in particular biologists and medical doctors. The candidate should be fluent in English or in French. The candidate should already have a solid background in MR physics, *in vivo* MRI/MRS, and expertise in pulse programming (Bruker or Siemens, and willing to learn). Knowledge of diffusion-weighted MR and radiofrequency pulses design (e.g. Shinnar - Le Roux algorithm) would be a strong asset.

Contact info: CVs and application letters, as well as requests for additional information, should be sent to Julien Valette by email at the following address: julien.valette@cea.fr