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Bettencourt
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UNIVERSITÉ
CAEN
NORMANDIE



2-Year post-doc position in Normandy, France

Imaging the immune system using immuno-MRI and photoacoustic imaging

Immuno-MRI is a novel molecular imaging method in which magnetic contrast agents—often large superparamagnetic particles—are conjugated to antibodies that specifically bind key immune or inflammatory markers (e.g., VCAM-1, MAdCAM-1, P-Selectin). By homing in on sites of active immune cell trafficking or endothelial activation, these targeted agents enable ultra-sensitive and highly specific visualization of early or ongoing inflammation. The new family of contrast agents that we have developed (Martinez de Lizarrondo et al., *Science Advances* 2022) can also be visualized by photoacoustic imaging, thanks to the presence of polydopamine in its inner structure. This allows revealing ongoing inflammation and immune system activation by multimodal imaging (MRI, MPI, and Photoacoustic imaging).

This project is funded by an Impulscience grant “MAPLE” from the foundation Bettencourt Schueller (2.3 M€ awarded to Dr. Maxime Gauberti, <https://www.youtube.com/watch?v=TYMG6Mj8gQY>) and involves *in vivo* experiments in rodent models of autoimmune diseases (DSS model of colitis, arthritis, multiple sclerosis, ...). The candidate will participate in contrast agent synthesis, experimental surgery, MRI (Bruker), MPI (Magnetic Insight) and Photoacoustic (Vevo LAZR-X, FUJIFILM VisualSonics) acquisitions, image analysis, and histology.

SKILLS / EXPERTISE

- Experience in conducting animal experiments, particularly with rodents, is expected.
- Knowledge in *in vivo* MRI acquisition (Bruker, Paravision) and/or photoacoustic imaging is appreciated.
- Skills in chemistry and contrast agent synthesis are not required.

WORK ENVIRONMENT

The candidate will work in a renowned laboratory in molecular MRI, focusing on experimental validation of an innovative contrast agent. The laboratory provides a supportive environment for cutting-edge research and international collaboration. Nestled in northwestern France, Caen in Normandy provides a dynamic yet affordable setting for high-impact research. Its strategic location—close to Paris by train and at 15 minutes from the sea—offers excellent connectivity without the high costs often associated with larger cities. Renowned for its strong academic culture and world-class research infrastructure (including specialized imaging platforms), Caen has fostered a vibrant ecosystem of innovation.

DURATION & LOCATION

24 months, Caen, Normandy, France. Our laboratory INSERM U1237 PhIND (<https://www.phind.fr/index.php/en/>) is hosted within the Blood and Brain Institute (<https://www.bb-c.fr/>) in the Cyceron Imaging platform (<https://www.cyceron.fr/index.php/fr/>)

CONTACT

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