

Postdoctoral position

Title: Exploring the effect of photobiomodulation on brain activity using fMRI and MEG

Validity: 1/01/2022 au 1/01/2025

Supervision: Pr John Mitrofanis

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Location: We are looking for one post-doctoral candidate to join our team at Clinatec, Grenoble, France. This department tests medical devices for biocompatibility and is involved in the design, development and validation of innovative diagnostic and treatment approaches.

Topic of the study: The series of experiments will focus on whether photobiomodulation, the use of red to near infrared light ($\lambda=600-1000\text{nm}$) on body tissues, can improve brain function in normal individuals, both young and older, with a view to it forming a preventative treatment for neurodegenerative disease, particularly Alzheimer's disease. The premise here is: by improving brain function in normal subjects, strengthening the functional connectivity between regions, the brain is in a healthier state and less likely to decline into dysfunction and disease with age. To these ends, brain function will be measured in individuals using fMRI (functional magnetic imaging) and MEG (magnetoencephalogram). A bespoke extracranial photobiomodulation device will be used, one based on a device that is currently in use for Parkinson's disease patients (Hamilton et al 2019; Photobiomod, Photomed and Laser Surg 37:615–622). The results generated will provide insight into whether photobiomodulation influences overall brain activity and whether there are any major differences in its effect on young, as compared to older neural systems. The results will also form a key template for future study on the effect of photobiomodulation on Alzheimer's disease patients.

Technical experience: The applicants should have experience in the use of fMRI and MEG use, particularly in the field of neuroscience and neurodegenerative disease. Some experience in photobiomodulation treatment would be an advantage.

Qualifications: Applicants must have a PhD in neuroscience, and preferably previous post doc experiences. Good written and verbal English communication skills are required and French practice would be appreciated. Preference will be given to candidates with an excellent track record of peer-reviewed publications.

Conditions: The candidate will have the opportunity to have an attractive 3-year post-doc grant.