

Coffey Lab: Audition, Sleep & Plasticity <u>www.coffeylab.ca</u>



Graduate student (MSc or PhD) <u>or</u> Postdoc in sleep-dependent memory consolidation music skills and auditory closed-loop stimulation in sleep using MEG

We seek a motivated individual who is interested in exploring the mechanisms of human memory, sleep, and musical skills. The work will be funded via an existing project, which is a collaboration between Dr. Emily Coffey at Concordia University and Dr. Robert Zatorre at McGill University. A first magnetoencephalography (MEG) experiment is planned, partly piloted, and has ethics approval, allowing for rapid progress. The successful applicant will be expected to lead completion of the first project (with guidance according to level), and then develop their own further projects in areas related to sleep, memory, and music, according to mutual interests and available tools (i.e. EEG, MEG, fMRI, DWI, MEG, closed-loop stimulation, TMS, and MRI-compatible musical interfaces).

Desired expertise and skills (note that expectations vary according to level of applicant):

- 1) knowledge of EEG and/or MEG
- 2) knowledge of sleep, memory, and/or experience-dependent neuroplasticity
- 3) interest in music and complex multisensory tasks
- 4) experience analyzing physiological data, signal processing, and coding (Matlab, Python, ML, etc.)
- 5) ability, interest, and willingness to troubleshoot equipment, and explore analysis techniques
- 6) a strong academic record

Desired personal qualities: openness to new experiences, curiosity about both areas, creativity, resilience, and the ability to work in a team and communicate well will people from different training backgrounds, and commitment to see projects through to their completion. This position is most suitable for someone wishing to pursue a career in human neuroimaging research. (People from underrepresented groups are encouraged to apply.)

Start date: a postdoc could start as soon as possible, pending official paperwork (e.g. international visa, if required). A graduate trainee would start in Fall 2021 as part of the next McGill Integrated Program in Neurosciences cohort.

Environment: the successful candidate will work in a stimulating interdisciplinary environment, and will have access to the resources and support of both laboratories and universities. Their main office would be in Coffey Lab: Audition, Sleep and Plasticity (<u>https://www.coffeylab.ca</u>) in the Department of Psychology at Concordia University, and they would be expected to attend lab meetings and participate in the laboratory, but the primary affiliation for would be with McGill University. Montreal is an international hot spot for neuroscience, as well as being a lively, interesting, and affordable city.

Notes: Note that due to federal regulation only applicants within 5 years of their PhD can be considered as a postdoc.

Application: Please submit your CV, cover letter, and the names and contact information of two referees to: emily [at] [lab website] .ca If shortlisted, graduate students would be expected to apply to McGill's IPN program: (https://www.mcgill.ca/ipn/prospective/admission-requirements)



Left to right: source modeling of auditory activity with MEG, our in-house sleep lab, closed-loop auditory stimulation to boost memory consolidation, an investigation of how brain activity predicts later learning on a complex task, field testing portable expedition equipment at a Mars analogue (MIST lab, Polytechnique Montréal) and the European Space Agency in the Canary Islands, Nov 2018.