

**Post Doctoral Fellowship  
Music and Sound Stimulation in  
Major Depressive Disorder and in Fibromyalgia**

**Sites:** University Health Network & Mount Sinai Hospital

**Department:** Music and Health Research Collaboratory, Faculty of Music, U of T

**Reports:** Supervisors

**Status:** Full-time, 2 year contract

The Music and Health Research Collaboratory (MaHRC) in the Faculty of Music at the University of Toronto has an immediate opening for a Postdoctoral Fellow to work with research teams at the University Health Network and at Mount Sinai Hospital. The UHN study will explore music with patients with Major Depressive Disorder. The Mount Sinai, Wasser Pain Management Centre study will use sound stimulation with Fibromyalgia patients.

**Background:**

Both Major Depressive Disorder (MDD) and Fibromyalgia (with its common comorbidity of depression) can be understood as related to dysregulation of neural circuits. Rhythmic Sensory Stimulation (RSS) with sound induces or enhances brain activity at the rhythm of stimulation. RSS is hypothesized to have the potential to re-regulate the brain dysrhythmias associated with medical conditions.

In MDD music and sound may play a role in several ways. Frontal brain asymmetry has been identified in MDD and music has been shown to contribute positively to the establishment of symmetry. The cognitive effects of music with perceived positive valence can reduce depression. Thalamocortical Dysrhythmia identifies a dysregulation of alpha and theta bands (increasing power in lower frequencies) and with attendant gamma frequency effects. Sound stimulation at 10 -14Hz and 40Hz is a potential treatment.

Fibromyalgia is a complex condition without general agreement as to cause, mechanism or treatment. Recent studies here at the University of Toronto seem to support a neural basis including intra-brain connectivity deficits as well as circuit dysregulation. A pilot study used RSS through somatosensory means with 40Hz sound and found significant positive effects.

**Post-Doctoral Fellow Research Plan:**

Major Depressive Disorder (50% of position)

The PDF will work with the Canadian Biomarker Integration Network for Depression

(CAN-BIND) headed by Dr. Sidney Kennedy, UHN, University of Toronto. The CAN-BIND study is a multicenter collaboration among the University of Toronto (University Health Network and Centre for Addiction and Mental Health), McMaster University, Queen's University, University of Guelph, University of Ottawa, McGill University, University of Calgary, and the University of British Columbia. The Ontario Brain Institute is a major sponsor and other agencies including the Canadian Institutes for Health Research have provided grant funding. The music study will be part of "CAN-BIND2" which is focused on neurostimulation.

The PDF will carry out studies exploring the effect of vibroacoustic stimulation, binaurally detuned auditory stimulation, and musical stimulation on a substantial set of outcome measures including EEG and fMRI.

Fibromyalgia (50% of position)

The PDF will recruit participants with Fibromyalgia at the Wasser Pain Management Centre at Mount Sinai Hospital and explore through RCT the potential effect of neural stimulation at 40Hz on a set of FM relevant clinical outcomes including qualitative indicators.

#### **Candidate Qualifications:**

The PDF candidate with a PhD in a neuroscience-related discipline should have worked with EEG or MEG and have a solid publication record. Experience in a clinical environment is an asset as is training and experience in rehabilitation and psychiatric conditions. Knowledge of music is essential.

The role of the PDF is to begin by planning studies pertinent to the goals of the project, recruit patients for the studies, perform the experimental procedures, analyze the data, and prepare publications. The realistic expectation is to get two journal publications completed.

#### **Project Supervision:**

The PDF will be supervised by Prof. Lee Bartel, Faculty of Music and MaHRC with depression study supervision by Dr. Sidney Kennedy, UHN, and pain study supervision by Dr. Allan Gordon, Mt Sinai.

**Stipend:** Stipend is competitive and commensurate with experience.

**To apply:** Please submit a CV, and a Statement of Research describing interests and relevant background. Also arrange to have three letters of recommendation sent to Dr. Lee Bartel, Acting Director of MaHRC, [lbartel@chass.utoronto.ca](mailto:lbartel@chass.utoronto.ca)

**Start Date:** Sept 1, 2014 or as soon as possible thereafter.