



PI / LAB HEAD & TEAM



Dr. Neomi Singer
Head, Music 2 Brain Lab,
Scientific Director, NeuroCognitive
Neurosurgery Group.

Research on the neural mechanisms of musical experience and their translation into clinical tools.



OUR TEAM

Team size 9

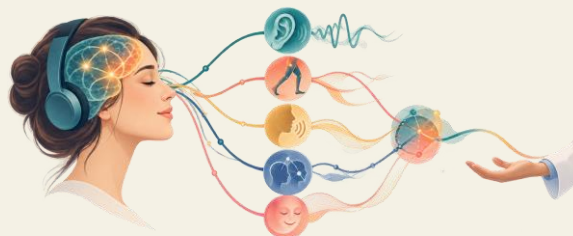
Students 5

Collaborations across
TASMC and TAU

WHAT PROBLEM ARE WE SOLVING

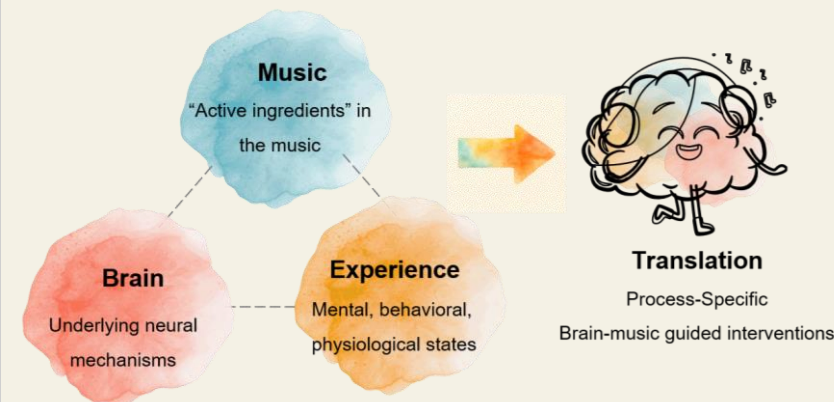
Music is universal. Enjoyed at every age, by people of all abilities. It moves nearly every part of the brain at once: how we hear, move, understand language, connect with others, and feel reward. We do not yet understand it well enough to turn this into precise treatments for brain and mental health.

We are working to close that gap.



How are we addressing the problem?

From Scientific Discovery to Translation



RESEARCH FOCUS

- Musical reward and individual differences
- Causal Mapping of Temporal predictability
- Overlap Music and language
- Music-inspired neuromodulation and clinical applications

WHY IT MATTERS

- Developing musical brain-informed treatments and clinical assessments
- Better understanding of how music engages cardinal brain processes

METHODS AND TECHNOLOGIES

- Non-invasive Neuroimaging: fMRI & EEG
- Non-invasive neuromodulation (Neurofeedback, TMS)
- Behavioural assessments, self reports, phys.
- Intraoperative mapping & Intracranial electrophysiology (Neurosurgery dep.)

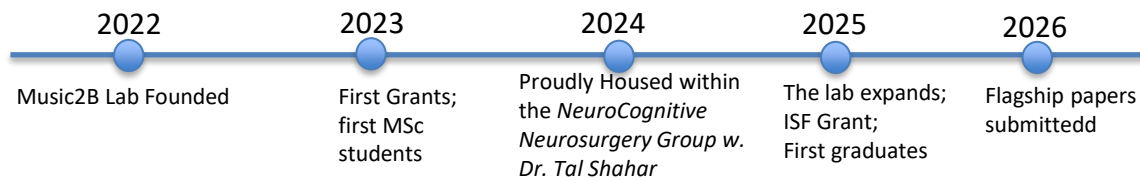
Highlights and impact Metrics

- We showed that musical surprises 'engage' the brain's reward circuitry
- Network Disruption in response to music in PD is unravelled (*under review*)
- Submitted to publication the largest musical neurofeedback study to date — N=80, 3 sham-controlled experiments (*under review*)

Grants



RESEARCH JOURNEY – TIMELINE OF MAJOR DISCOVERIES



30-SECOND TOUR SCRIPT

Music engages the whole brain: hearing, movement, language, reward, but we don't fully understand it well enough to treat with it. We study how, using fMRI, EEG, brain stimulation, and even the operating room – to close the loop between music, brain science, and clinical care.

Learn more & Connect



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