Dr. Francis Wayne Quan Memorial Prize 2024

The Mach-Gaensslen Foundation of Canada (https://mach-gaensslen.ca/) and *JPN* are pleased to announce the recipients of the Dr. Francis Wayne Quan Memorial Prize for the best research paper published in the journal in 2024. The prize was launched in 2022 to honour the contributions of psychiatrist and former editor Dr. Francis Wayne Quan to the foundation and the journal

The winning papers were judged by members of the editorial board. All research papers published in *JPN* in 2024 were eligible. *JPN* publishes papers that provide insights into the neural mechanisms involved in the etiology and treatment of specific psychiatric disorders. Thus, the winning papers were rated excellent in the following criteria: mechanistic insight, novelty of the findings, innovation of the approach, importance of the contribution, and clarity of the results and conclusions. Because of the number of outstanding candidates, the committee has chosen 3 recipients based on the rankings: gold ($2500), silver ($1500), and bronze ($1000).

Congratulations to the recipients!

Gold

Tuppurainen H, Määttä S, Könönen M, Julkunen P, Kautiainen H, Hyvärinen S, Vaurio O, Joensuu M, Vanhanen M, Aho-Mustonen K, Mervaala E, Tiihonen J. Navigated and individual α-peak-frequency–guided transcranial magnetic stimulation in male patients with treatment-refractory schizophrenia. *J Psychiatry Neurosci* 2024;49:E87-95 (https://www.jpn.ca/content/49/2/E87).

Previous research using repetitive transcranial magnetic stimulation (rTMS) to activate the dorsolateral prefrontal cortex (DLPFC) has shown promise in improving symptoms of schizophrenia. Tuppurainen and colleagues examined the effectiveness of 3 weeks of rTMS in a randomized, double-blind, sham-controlled trial as adjunctive therapy for medication-refractory schizophrenia in male patients. More interestingly, the treatment was individualized based on the peak electroencephalography α frequency (8–12 Hz) of different patients (i.e., αTMS). The patients were more rigorously screened and evaluated using MRI navigation, which resulted in a more uniform targeting of the left DLPFC in each study participant. The authors observed an increase in clinical global improvement in the treatment group compared with sham controls that was sustained for at least 3 months and improved positive symptoms at 3 months following treatment. These results indicate the promise of personalized α-peak-frequency TMS navigated to the left DLPFC in patients with treatment-refractory schizophrenia.

Silver

Simard S, Rahimian R, Davoli MA, Théberge S, Matosin N, Turecki G, Nagy C, Mechawar N. Spatial transcriptomic analysis of adult hippocampal neurogenesis in the human brain. *J Psychiatry Neurosci* 2024;49:E319-33 (https://www.jpn.ca/content/49/5/E319).

Simard and colleagues examined hippocampal neurogenesis in postmortem brain sections from a small cohort of human males using spatial transcriptomics and multiplex in situ hybridization. This dual approach provided the possibility to phenotype neurogenic cells based on their RNA profiles rather than relying on single RNA or protein markers like DCX, which is expressed in non-neurogenic cells (e.g., astrocytes). The authors also probed the exact location of these cells within the hippocampus (e.g., in the dentate gyrus) using multiple RNA markers. They found that markers of dividing cells were rare in the hippocampus, but remained stable from childhood to middle age. Interestingly, DCX-positive cells that represent immature neuronal cells were more abundant and mostly expressed markers of GABAergic (GAD1+) neurons. These findings on hippocampal neurogenesis in healthy humans provide a basis for further examining how neurogenesis might be altered by chronic stress, mental illness, or pharmacologic treatment.

Bronze

Tang J, Wu Q, Qi C, Xie A, Liu J, Sun Y, Yuan T, Chen W, Liu T, Hao W, Shao X, Liao Y. Widespread reductions in cortical thickness following ketamine abuse. *J Psychiatry Neurosci* 2024;49:E182-91 (https://www.jpn.ca/content/49/3/E182).

Low-dose ketamine and esketamine in particular have revolutionized acute treatment of people with major depression and suicidality, but can have dissociative adverse effects. Chronic use of high doses of ketamine as a "club drug" (or ketamine use disorder) results in reduced prefrontal cortex grey and white matter, and reduced connectivity. Tang and colleagues examined whether cortical thickness was altered in the brains of ketamine users compared with controls and found widespread reductions throughout the brain, especially in the prefrontal and parietal cortices, including the dorsolateral prefrontal cortex and precuneus. Importantly, the extent of ketamine use correlated with reduced thickness of the right inferior parietal and rostral middle frontal cortices. These actions of long-term ketamine misuse on specific brain regions may provide some insight into possible risks of its use as a long-term medication for depression.

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