Dear Study Participant,

Dr. Oury Monchi's PCAN Lab at the University of Calgary would like to thank you for your participation in the Transcranial Magnetic Stimulation (TMS) research project and give you an update on some results from the study.

Since starting recruitment for the TMS project in September 2016, 212 individuals with Parkinson's disease were screened and 43 met our eligibility criteria and were included in this study. In the end, 41 participants finished the study: 21 received real stimulation and 20 received sham stimulation. Participation in this project included nine in-person visits and included three double-sessions of TMS stimulation, two MRIs, neuropsychological testing before and after the stimulation as well as two blood draws.

For all of this, we thank you very much, as this important research would not be possible without your commitment and dedication.

***You were randomized by computer selection and received: **real or sham stimulation.**

The real stimulation group demonstrated temporary improved executive functioning and connectivity changes in the brain, specifically: planning and decision making at the one-month follow-up were improved compared to the sham group.

This was an important finding, however, ongoing research will determine the effectiveness of TMS as a therapy in PD.

We would like to point out a recently published study by Dr. Monchi with data from a similar trial conducted in Montreal. The results of this study suggest, there might be a *positive effect of TMS stimulation on attention and visuospatial abilities*. (Publication 1)

It is with great pleasure that we acknowledge our students (Mehrafarin Ramezani and Stefan Lang), postdoctoral fellow (Eunjin Yoon) and research associate (Liu Shi Gan) for their efforts on the TMS project. Stefan Lang has received several research awards for his work to further define brain networks, which might be involved in the different types of cognitive impairment experienced by people with Parkinson's disease.

The PCAN Lab is continuing its research activities to study brain networks involved in cognitive problems in Parkinson's disease. Besides the TMS study, the lab concentrates its efforts on a three-year study to look at the cognitive development over time comparing people with and without Parkinson's disease. *One finding from that study shows that disruptions in distinct regional brain networks are associated with two different cognitive syndromes in Parkinson's disease.* This knowledge might help us predict who might develop dementia in the future.

As the PCAN Lab is extending its efforts to create, not just the Calgary Parkinson Research Initiative (CaPRI), but also a national registry and database, the Canadian Open Parkinson Network (C-OPN), of which Dr. Oury Monchi is the director, it is possible that you might be contacted for other research opportunities in the future.

Best regards,

Oury, Monchi, PhD   Iris Kathol, PhD

Principal Investigator   Clinical Research Coordinator

oury.monchi@ucalgary.ca, 403-220-8048   ikathol@ucalgary.ca, 403-210-6830

Publication 1

Title: Transcranial magnetic stimulation improves cognition over time in Parkinson's disease.

Authors: Jessica Trung, Alexandru Hanganu, Stevan Jobert, Clotilde Degroot, Beatriz Mejia-Constain, Mekale Kibreab, Marie-Andrée Bruneau, Anne-Louise Lafontaine, Antonio Strafella, Oury Monchi

Published in: *Parkinsonism and Related Disorders* Publication year: 2019

Publication 2

Title: Network basis of the dysexecutive and posterior cortical cognitive profiles in Parkinson's disease.

Authors: Lang S, Hanganu A, Gan LS, Kibreab M, Auclair-Ouellet N, Alrazi T, Ramezani M, Cheetham J, Hammer T, Kathol I, Sarna J, Monchi O.

Published in: *Movement Disorders* Publication year: 2019

Publication 3

Title: Mild behavioural impairment is linked to worse cognition and brain atrophy in Parkinson's disease.

Authors: Eun Jin Yoon, Zahinoor Ismail, Alexandru Hanganu, Mekale Kibreab, Tracy Hammer, Jenelle Cheetham, Iris Kathol, Justyna R. Sarna, Davide Martino, Sarah Furtado, Oury Monchi

Published in: *Neurology* Publication year: 2019

Once again, on behalf on the PCAN team, thank you so much for your time and participation and we wish you all the best.

Sincerely,

PCAN Lab Team