# Instructions for the Matlab Live Script that accompanies the following paper:

Trujillo-Pisanty, I., Conover, K., Solis, P., Palacios, D., & Shizgal, P. Dopamine neurons do not constitute an obligatory stage in the final common path for the evaluation and pursuit of brain stimulation reward. PLOS ONE, 2020, 15(6): e0226722. https://doi.org/10.1371/journal.pone.0226722

Peter Shizgal
peter.shizgal@concordia.ca

The Matlab Live Script used in the simulations is available from the following GitHub repository:

https://github.com/ShizgalP/A-new-model-of-brain-reward-circuitry

This repository includes three files associated with the simulations:

- The Live Script: GBR_eICSS_oICSS_v10.mlx
- A non-executable HTML version of the Live Script that can be viewed in a browser.
- A .zip archive of the 17 graphics files that the Live Script will import: Imported_figures.zip

The setup of the Live Script is described in the section entitled “Preliminaries” and is implemented in lines 4-24.

The Live Script should run on any version of Matlab from R2018a onwards. The script hasn’t been tested on earlier versions, but it may run on versions as far back as R2016a.

Execution of the entire script can take several minutes on a reasonably fast system. It may prove most practical to work through it in sections via the “Run Section” and “Run and Advance” buttons of the Live-Script editor.

Most variables are cleared at the end of each major section. The ones that are required throughout are all defined before line 316 (“Moving the mountain: validation studies“). Once the script has run to that point, the user can navigate directly to sections of interest via the “Go To” button, e.g.

- line 599: “The significance of orthogonal shifts”
- line 870: “At what stage of processing does perturbation of dopaminergic neurotransmission alter reward seeking in eICSS?”
- line 878: “Optical intracranial self-stimulation of midbrain dopamine neurons”
- line 1030: “Dopaminergic modulation of subjective effort cost”
- line 1122: “The series-circuit model of eICSS and oICSS”
- line 1406: “The convergence model”