Data analysis project:

Neuronal activity from electrophysiological recordings in the globus pallidus of healthy and parkinsonian rats.

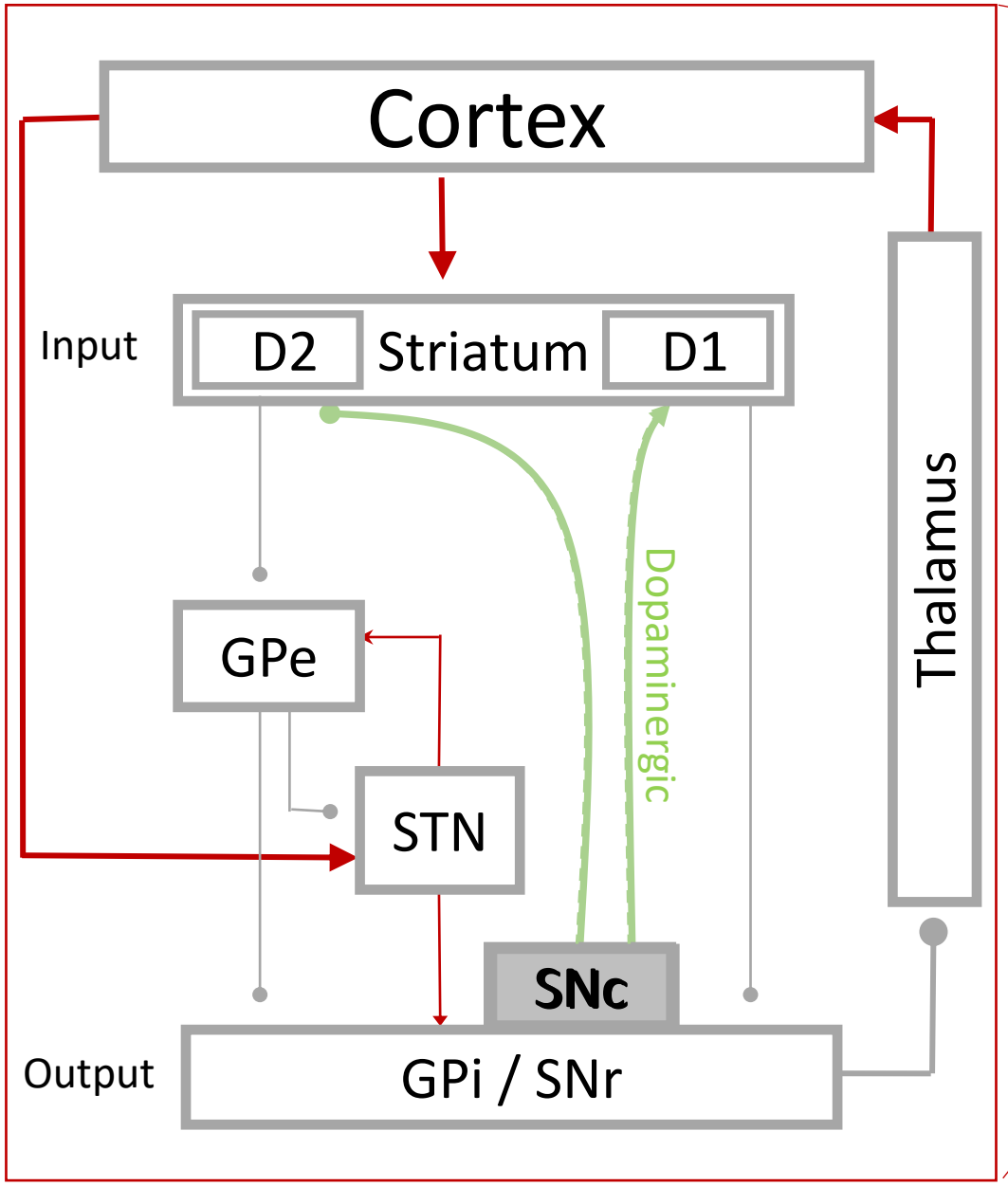
Goals:

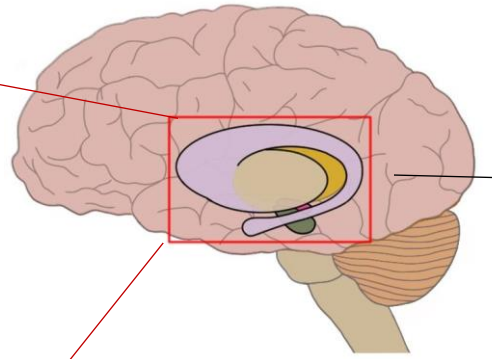
- Reveal the pathological oscillatory synchrony between GP neurons in the pathological condition
- Highlight the neuronal heterogeneity of the GP by separating 2 clusters of neurons based on their firing rate and the phase of their entrainment to pathological oscillations.

Dataset:

- Electrophysiological recordings in 4 ‘states’: 2 anaesthesia states (slow wave vs activated), 2 conditions (healthy vs parkinsonian)
- Each recording includes an EEG recording (cortical electro encephalogram) and several neuronal ‘units’ (68 units total over 4 states)

Introduction Les ganglions de la base





Basal Ganglia

Glutamate → excitatory
GABA — inhibitory
Dopamine — Exc / inh

Neuron
Article

Dichotomous Organization of the External Globus Pallidus

Nicolas Mallet,[1,*] Benjamin R. Micklem,[1] Pablo Henny,[1] Matthew T. Brown,[1] Claire Williams,[1] J. Paul Bolam,[1] Kouichi C. Nakamura,[1] and Peter J. Magill[1,*]
[1]Medical Research Council Anatomical Neuropharmacology Unit, Department of Pharmacology and Oxford Parkinson's Disease Centre, University of Oxford, Oxford OX1 3TH, UK
*Correspondence: np.mallet@googlemail.com (N.M.), peter.magill@pharm.ox.ac.uk (P.J.M.)
DOI 10.1016/j.neuron.2012.04.027

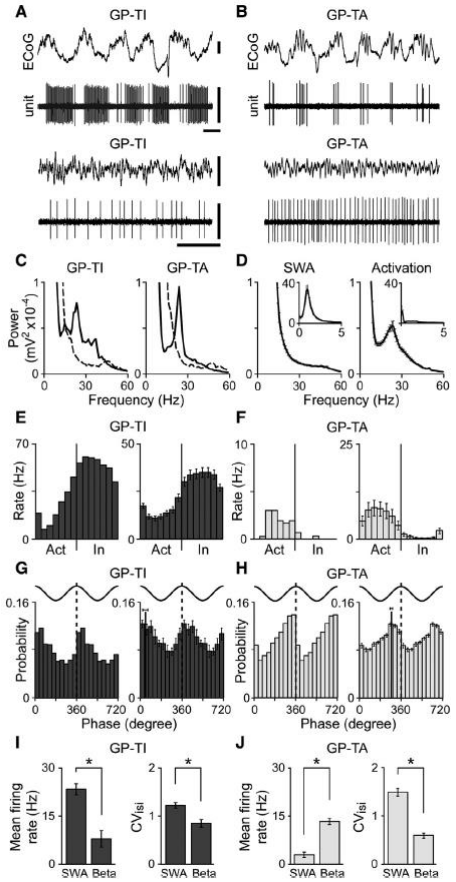


Figure 1. Dichotomous Firing Rates and Patterns of Identified Neurons in External Globus Pallidus