

BIO-482 Neuroscience: cellular and circuit mechanisms

Mini-project: Neurophysiological data analysis

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In the mini-project, you will use Matlab/Python to analyse a database of *in vivo* recordings of membrane potential during mouse behavior. The data are published:

Kiritani T, Pala A, Gasselin C, Crochet S, Petersen CCH (2023) Membrane potential dynamics of excitatory and inhibitory neurons in mouse barrel cortex during active whisker sensing. PLOS ONE 18: e0287174.
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0287174>

Kiritani T, Pala A, Gasselin C, Crochet S, Petersen CCH (2023) Data set for “Membrane potential dynamics of excitatory and inhibitory neurons in mouse barrel cortex during active whisker sensing.” [Data set]. Zenodo.
<https://doi.org/10.5281/zenodo.7833080>

Learn about the brain by yourself !

General organization

- 1) Download the **Data** and **Codes**, as well as the **Questions** from the Google drive:
<https://drive.google.com/drive/folders/0ALc1PlvbCTdKUk9PVA>
- 2) Install Matlab or Python and follow the instructions in *Miniproject 2024_ Questions* to run the codes.
- 3) Answer questions 1-3 using (some of) the figures produced by the codes
- 4) Devise your own question, write the code to perform the analysis and answer your question (can be done in group of 2-5 students).
- 5) Optional but recommended: Get some help from the TAs and Sylvain Crochet every Wednesday 13:15 – 15:00 in room CM 1105 and every Friday 13:15 – 15:00 in Room CE 1106.
- 6) Submit your **individual** report as a single pdf file by email to sylvain.crochet@epfl.ch by **Friday 20th December midnight**.
- 7) Miniproject report will count towards **1/3 of the final grade**