



Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Friday, March 3rd, 2023 11:00 – 12:00

The molecular logic of cerebellar diversity and assembly.

Prof Ludovic Telley

Département des neurosciences fondamentales - UNIL-CHUV - 1005 Lausanne

The cerebellum (CB) is one of the first brain structures differentiating during development, yet it is one of the latest to achieve maturity. It plays a major role in our daily activities, for instance by integrating sensory inputs coming from the periphery to control and fine-tune our movements and balance. The complex topographical organization of the CB serves as a foundation to the various cerebellar functions. Purkinje cells (PCs) and ultimately deep cerebellar nuclei (DCN) represent the sole output of the CB and are therefore essential to support cerebellar functions. Far from being a homogeneous population, the regional diversity of PCs was revealed by the heterogeneous expression of molecular markers and distinct functional circuits. To study these regional differences, we selectively labeled PCs and DCN cells using the FlashTag (FT) method and analyzed their identities through single-cell transcriptomics. We demonstrated an unexpected tight correlation between their birth date and their final location along the mediolateral and antero-posterior axis. Combining unsupervised clustering analysis and differential expression analysis, we identified distinct clusters of PC and DCN cell types, characterized by different genes expression. In combination with the birth date labeling of PCs and DCN, the spatial distribution of these markers was assessed, revealing a potential molecular code underlying the early cluster formation and connectivity between PCs and DCN during development.

Invited by nicolas.toni@chuv.ch

Selected recent publications:

Temporal patterning of apical progenitors and their daughter neurons in the developing neocortex. Telley, L1., Agirman, G1., Prados, J., Amberg, N., Fievre, S., Oberst, P., Bartolini, G., Vitali, I., Cadilhac, C., Hippenmeyer, S., Nguyen, L., Dayer, A., & Jabaudon, D. *Science*, 2019, Volume 364, Issue 6440, eaav2522

A mixed model of neuronal diversity Telley L, Jabaudon D *Nature*, 2018, Volume 555, 452-454, News and Views.

Sequential transcriptional waves direct the differentiation of newborn neurons in the mouse neocortex. Telley L1, Govindan S1, Prados J, Stevant I, Nef S, Dermizakis E, Dayer A, Jabaudon D *Science*, 2016, Volume 35, Issue 6280, 1143-1446

Dual Function of NRP1 in Axon Guidance and Subcellular Target Recognition in Cerebellum. Telley L1, Cadilhac C1, Cioni JM, Saywell V, Huettl R, Sarraïlh-Faivre C, Dayer A, Huber A, Ango F. *Neuron*, 2016, Volume 91, Issue 6, 1276-1291

**Salle de séminaire, 1^{er} étage CNP
Hôpital Psychiatrique de Cery-Site de Cery, CH-1008 Prilly-Lausanne**

Link for videoconference

<https://chuv.webex.com/chuv/j.php?MTID=md8d8e41ccc2192e2c208b3e1a83b9c71>