Master Biologie Moléculaire et Cellulaire 'BMC',
Université Paris Cité - *UFR Sciences du Vivant*

Parcours : **Biologie et Développement Cellulaires 'BDC'**
http://www.master2bdc.fr/
Fiche de Projet de Stage de M2, 2022-2023

Unité INSERM ou CNRS ou Université : Institut Jacques Monod, UMR7592 **Intitulé Equipe : Comparative Developmental Neurobiology** **ED d'appartenance : BioSPC** **Responsable de l'Equipe : Nikolaos Konstantinides**	**Responsable du Stage : Nikolaos Konstantinides** **Contacts** Adresse : 15 rue Helene Brion, Paris 75013 Email : nikos.konstantinides@ijm.fr Tel : 07 81 18 63 27

Titre du projet : ***Studying the effect of temporal series in the proliferative capacity of Drosophila neural stem cells***

Résumé du Projet de Stage (en 300 mots maximum, mots clés en gras)

Neurons are the most diverse cell types in the animal body. How this **neuronal diversity** is generated from neuronal stem cells (NSCs) is a very active area field of study. This diversity relies on the differential capacity of neural stem cells to generate neuronal types at different developmental stages, in a mechanism called **temporal patterning**. In the ***Drosophila* visual system**, a series of 11 transcription factors (termed **temporal transcription factors** - tTFs) are expressed sequentially in the neuroblasts and allow them to give rise to different neuronal types. While it has been shown that tTFs affect neuronal output, it is unclear how they influence neuroblast proliferation. For this project, the candidate will use the ***Drosophila* genetic arsenal** to generate mutant clones of tTFs and **immunohistochemistry** and **confocal microscopy** to address the effect of the mutations on neuroblast lifespan and proliferation capacity. In particular, they will try to answer whether neuroblasts divide faster or slower, how the temporal series is affected, and whether neuroblasts continue to proliferate aberrantly in pupal and adult stages.

Publications de l'équipe relatives au projet de stage (max 5)

1. **Konstantinides N.*,** Holguera I., Rossi A.M., et al. (2022) A complete temporal transcription factor series in the fly visual system. **Nature** 604(7905):316-322
2. Chen Y.C.*, **Konstantinides N.*** (2022) Integration of spatial and temporal patterning in the invertebrate and vertebrate nervous system. **Frontiers in Neuroscience** https://doi.org/10.3389/fnins.2022.854422
3. Simon F.*, **Konstantinides N.*** (2021) Single-cell transcriptomics in the *Drosophila* visual system: advances and perspectives on cell identity regulation, connectivity, and neuronal diversity evolution. **Developmental Biology** 479:107-122
4. Özel M.N., Simon F., ..., **Konstantinides N.*,** Desplan C.* (2021) Neuronal diversity and convergence in a developmental atlas of the visual system. **Nature** 589(7840):88-95
5. **Konstantinides N.*,** Kapuralin K., et al. (2018) Phenotypic convergence in the brain: distinct transcription factors regulate common terminal neuronal characters. **Cell** 174(3):622-635.