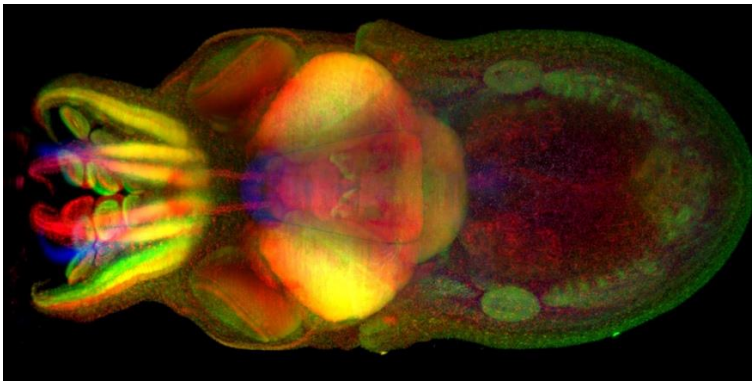
External seminars – Eve Seuntjens (KU Leuven)



Laboratoire de l'invité/Laboratory of the speaker
Lab of Developmental Neurobiology

Invité par/Invited by
Dec/Post-Doc College

Date 01/12/2025

Titre de la présentation/Title of the presentation

Embryonic development of an octopus brain

Résumé/Short abstract

The nervous system of *Octopus vulgaris* resembles mammalian nervous systems in terms of neuronal number and wiring complexity, but is differently organised. Coleoid cephalopods have evolved such a large nervous system independently from vertebrates. In that sense, they represent ideal animal models to investigate the molecular mechanisms essential to evolution of expanded nervous systems.
Octopus vulgaris spawns a large quantity of small eggs, and embryos develop over forty days into pelagic paralarvae that are visual predators. The paralarval brain already contains a large diversity of neural and glial cell types of which many are still maturing. Our research tries to unravel how and when these cell types are being generated in the embryo. We have shown that the brain arises from a neurogenic region around the eye placode that is spatially patterned, and neurons migrate long distances to their destination within the brain. Using single-nuclei RNA and ATAC sequencing, spatial gene expression and morphogen factor perturbation, we are trying to unravel the molecular determinants of cell type diversification during nervous system development.

Mini-CV/Short CV

Eve Seuntjens obtained her Ph.D. from KU Leuven, Belgium. In consecutive postdoctoral stays at the EMBL, Heidelberg, and at KU Leuven, UCL, and ULg, Belgium, she made contributions to our understanding of cerebral cortical development, interneuron migration and postnatal neurogenesis in mice.
Dr. Seuntjens started her independent career in 2015 at the department of Biology, KU Leuven, and has reoriented her research towards evolutionary developmental biology topics in non-model animals. Her lab has performed pioneering work on the cellular and molecular underpinnings of *Octopus vulgaris* nervous system development and neural cell type diversity. In addition, she is part of the KU Leuven KillAge team that uses the fast-aging African turquoise killifish to study neuro-regenerative capacity in an aging context.
Dr. Seuntjens is executive board member of the Faculty of Sciences and secretary of the Royal Belgian Society for Cell and Developmental Biology.