Neural crest in forebrain development: from embryology to pathophysiology

Par
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http://www.unice.cnrs-gif.fr/NEURO-PSI/DEV~EVO/EQUIPE09/ACCUEIL_09.html

http://oscar.univ-lyon1.fr/appliexterne/plan/plans/plan_campus_ouest.html
Abstract

In my group, we study the neural crest, a unique cell population that emerges from the primitive neural field and which has a multi-systemic and structural contribution to vertebrate development. Over the last decade, I have been dedicating myself to the cellular and molecular background of the observation I made in 2004, that the cephalic neural crest (CNC), exerts an autonomous and prominent control on forebrain development. This notion has broken the traditional view of how the brain develops. By using exquisite grafting experiments in combination with focal spatially and temporally controlled transgenesis, we have discovered the unexpected and potent “paracrine role that the CNC exerts on forebrain growth and patterning early in development and documented this mechanism at the level of cell interaction, signalling and gene expression. We are now following this exciting line of research, which revisits fundamental concepts in Neurosciences. This notion provides also a conceptual renewal, which is biomedically relevant. The mechanisms identified so far in our model are conserved across tetrapodes, but some social behavioural features are specific to amniotes. Our ongoing project and future directions are to explore the aetiology of neural disorders and behavioural impairments in Humans and in the light of CNC dysfunctions.

If you wish to meet Sophie Creuzet, please contact Valérie CASTELLANI (valerie.castellani@univ-lyon1.fr).

Selected publications: