

Special Issue

Gene Regulation in Brain Development and Physiology

Message from the Guest Editors

Cerebral functions in adulthood rely on proper establishment and maturation of the different cellular types populating the brain. These developmental events take place during early pre- and post-natal life thanks to the activation of transcriptional programs that dictate the fate of any cell, including neurons and glial cells. The refinement of each cell's fate requires the concerted regulation in time and space of different molecular mechanisms that affect each stage of development. Thanks to the refinement of approaches such as single cell assessments, the picture of how developmental dynamics lead to the maturation of specific cellular types is now much clearer compared to the past. Based on such knowledge it is possible to dissect how transcriptional events intrinsically regulated within each cell integrate with cues related to the environment, and thus predict how conditions such as maternal inflammation, stress and obesity can impact brain development in the offspring, and their consequences in adulthood. Eventually, this knowledge can shed new light on how differences in dynamics of brain development contribute to structural and functional differences between species.

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