

Functional heterogeneity of ependymoglia cells in adult zebrafish telencephalon

Speaker:

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Project description:

The ependymoglia cells in the zebrafish telencephalon act as adult neural stem cells, but also serve the supporting role of mammalian protoplasmic astrocytes and ependyma such as metabolic support, synapse enwrapping, etc. At present it is not clear if the same cell has both functions or if different populations provide different functions. We have prospectively isolated two ependymoglia populations and compared their transcriptomes. The transcriptome analysis suggests that one population could provide new neurons (neurogenic ependymoglia), while the other has the characteristics of the bona fide protoplasmic astrocytes (gliogenic ependymoglia). Within this grant, we will further characterize these two populations using the transcriptome and metabolic analysis. We will perform the genetic fate mapping of these two populations addressing their potential in the intact fish brain and assess their functional importance using the ablation experiments. Finally, we will address the origin of the two populations during the development and assess the molecular pathways specifying these two ependymoglia populations. Within this proposal, we will utilize the unique feature of the zebrafish telencephalon, the coexistence of the bona fide glial cells and stem cells in the same niche, to infer the emergence of neural lineages in vertebrates and provide the molecular and cellular basis for the further analysis in mammals.

Quelle:

<https://gepris.dfg.de/gepris/projekt/387481403?language=en>