E7, OPCs appeared in another site along the ventral midline of the third ventricle, just dorsal to the optic chiasm. DiI tracing in the organic culture and retinal denervation experiments reveal that OPCs dispersed bilaterally along the optic tract and then migrated to the optic tectum in the stratum opticum. In addition to these extrinsic OPCs, OPCs intrinsic to the tectal VZ were identified at later time points. A similar profile was found in the development of astrocytes; extrinsic astrocytes arose from the VZ of the third ventricle, dispersed bilaterally to the optic tract, and subsequently to the outer layer of optic tectum, while the intrinsic astrocytes from the tectal VZ appeared first in the ventral part of the optic tectum, and then in the lateral and dorsal tectum. Interestingly, the intrinsic tectal astrocytes closely associated with fascicles of vimentin-labeled radial glial cells, indicating a presumptive radial migration of astrocytes. These results suggest that heterogeneous populations of glial cells may arise from the different origins and routes of migration depending on the brain region.
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Mapping the frequency and distribution of neural stem and progenitor cells throughout the ventricular neuraxis of the adult mouse brain

Golmohammadi M GH, Azari H, Mardani M, Esfandiari E, Rietze R
Anatomy department, Ardebil University of Medical Sciences, Ardebil, Iran

Introduction: It is now clear that adult mammalian brain contains a population of neural precursor cells (neural stem and progenitor cells). Given the paucity of information regarding the distribution of neural precursor cells in the adult mammalian brain we employed three distinct assays, the neurosphere assay (NSA), neural colony forming cell assay (N-CFCA) and label retaining cell (LRC) approach, to compile a detailed atlas of the frequency and distribution of these cells along the

adult mouse brain ventricular neuraxis. We also sought to determine whether these three methodologies have the ability to detect similar populations of NSCs.

Materials and Methods: Brains were harvested and serially Vibratome and Cryo sectioned (400 and 14 µm/section respectively) starting at the level of the olfactory bulb. The periventricular region (PVR) was then microdissected from each section and transferred to neurosphere and N-CFCA culture conditions. The absolute number of neurospheres, Colonies and LRCs in each region were counted and plotted according to their rostral-caudal distribution.

Results: The NSA, N-CFCA, and LRC approach each detected precursor cells throughout the ventricular neuraxis, totaling 3730±276, 4275±124, and 5292±102 respectively. However, the number of precursors detected in individual 400µm sections varied from a minimum of 8 to a maximum of 891 depending upon the rostral-caudal coordinate assayed. More importantly, by employing the N-CFCA to enumerate NSC-derived colonies we now report that rather than occurring throughout the rostral-caudal neuraxis, NSCs are absent from four distinct regions.

Conclusion: In addition to mapping the frequency and distribution of neural precursor cells along the brain ventricular neuraxis, our results suggest that while each methodology detects equivalent numbers of neural precursor cells, both the NSA and LRC approach overestimates the number of endogenous NSCs. These results highlight the need for caution when employing these methodologies to detect NSCs in vitro and in vivo.

Anatomical localization of the cells of origin of afferent and efferent fibers in the laryngeal nerves of dogs: a HRP neuron tracing study

Ghanbari G, Mesbah Ardekani SF, Namavar MR, Khademi B, Karbalaydoust S.
Shiraz university of medical sciences, Shiraz, Iran.

Background: Vagus nerve that is mixed nerve, distributes on the widespread parts of body. Its laryngeal branches distributes to intrinsic muscles of the larynx that produce voice and mucous of larynx as well. The aim of this study was to localize their afferent and efferent nuclei.