Piriform cortex (PC) is a 3-layer paleocortex receiving primary afferent input from the olfactory bulb. The past decade has seen significant progress in understanding the synaptic, cellular and functional organization of PC, but PC embryogenesis continues to be enigmatic. Here, using birthdating strategies and clonal analyses, we probed the early development and laminar specificity of neurogenesis/gliogenesis as it relates to the organization of the PC. Our data demonstrate a temporal sequence of laminar-specific neurogenesis following the canonical "inside-out" pattern, with the notable exception of PC Layer II which exhibited an inverse "outside-in" temporal neurogenic pattern. Of interest, we found no evidence of a neurogenic gradient along the anterior to posterior axis, although the timing of neuronal migration and laminar development was delayed rostrally by approximately 24 h. To begin probing if lineage affected cell fate in the PC, we labeled PC neuroblasts using a multicolor technique and analyzed their laminar organization. Our results suggested that PC progenitors were phenotypically committed to reach specific layers early in the development. Collectively, these studies shed new light on the determinants of the laminar specificity of neuronal/glial organization in PC and the likely role of subpopulations of committed progenitors in regulating PC embryogenesis ¹.

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Martin-Lopez E, Ishiguro K, Greer CA. The Laminar Organization of Piriform Cortex Follows a Selective Developmental and Migratory Program Established by Cell Lineage. Cereb Cortex. 2017 Nov 9:1-16. doi: 10.1093/cercor/bhx291. [Epub ahead of print] PubMed PMID: 29136113.

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