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Regular Article

Neurogenin3 Participates in Gliogenesis in the Developing Vertebrate Spinal Cord

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Referred to by Jeffrey Lee, Yuanyuan Wu, Yingchuan Qi, Haipeng Xue, Ying Liu, David Scheel, Michael German, Mengsheng Qiu, Francois Guillemot, Mahendra Rao, Gerard Gradwohl

Erratum to “neurogenin3 participates in gliogenesis in the developing vertebrate spinal cord”

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Abstract

To study the role of basic helix–loop–helix (bHLH) transcription factors in gliogenesis, we examined whether bHLH transcription factors were expressed in glial precursor cells and participated in regulating oligodendrocyte and astrocyte development. As assessed by reverse transcription–polymerase chain reaction (RT-PCR), Neurogenin3 (Ngn3) was transiently expressed in bipotential glial cells fated to become either oligodendrocytes or astrocytes. Mice lacking Ngn3 displayed a loss of Nkx2.2 expression, a transcription factor required for proper oligodendrogliogenesis. Furthermore, a reduction in the expression of myelin basic protein (MBP), proteolipid protein (PLP), and glial fibrillary acidic protein (GFAP), markers for mature oligodendrocytes and astrocytes, was observed in the Ngn3 null mice. Overexpression of Ngn3 was sufficient to drive expression from the PLP promoter in transient cotransfection assays. Overall, the data suggest that Ngn3 may regulate glial differentiation at a developmental stage prior to the segregation of the oligodendrocyte and astrocyte lineage.

Keywords

bHLH; homeodomain; Ngn3; Nkx2.2; development; differentiation; oligodendrocytes; astrocytes; glia; spinal cord

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