

**Development/Plasticity/Repair**

## **Olig2 Directs Astrocyte and Oligodendrocyte Formation in Postnatal Subventricular Zone Cells**

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The subventricular zone (SVZ) in the neonatal mammalian forebrain simultaneously generates olfactory interneurons, astrocytes, and oligodendrocytes. The molecular cues that enable SVZ progenitors to generate three distinct cell lineages without a temporal switching mechanism are not known. Here, we demonstrate that the basic helix-loop-helix transcription factor Olig2 plays a central role in this process. Olig2 is specifically expressed in gliogenic progenitors in the postnatal SVZ and by all glial lineages derived from this structure. By expressing normal and dominant-interfering forms of Olig2 *in vivo*, we show that Olig2 repressor function is both sufficient and necessary to prevent neuronal differentiation and to direct SVZ progenitors toward astrocytic and oligodendrocytic fates. Although Olig2 activity has been associated previously with motor neuron and oligodendrocyte development, our findings establish a previously unappreciated role for Olig2 in the development of astrocytes. Furthermore, these results indicate that Olig2 serves a critical role in pan-glial versus neuronal fate decisions in SVZ progenitors, making it the first intrinsic fate determinant shown to operate in the early postnatal SVZ.

**Key words: SVZ; olig2; neurogenesis; gliogenesis; development; forebrain**

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Received May 13, 2005; revised June 28, 2005; accepted June 29, 2005.