**[P90]**

## Regionalisation of *Dlx*-expressing progenitors in the medial ganglionic eminence gives rise to distinct subtypes of cortical interneurons in the adult brain

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*Dlx* genes are required for the differentiation and migration of cortical GABAergic interneurons derived from progenitors located in the medial ganglionic eminence (MGE) and perhaps the caudal ganglionic eminence (CGE). It is not clear how the diversity of GABAergic interneuron subtypes is established and if it involves distinct progenitors in the MGE and CGE. We have identified three conserved enhancers, URE2, I12b and I56i in the *Dlx* gene loci of vertebrates. All three target expression in cells of the forebrain where endogenous *Dlx* genes are expressed but show differences in their regional and temporal activities. We examined if such differences in *Dlx* enhancer activity could be associated to different progenitor populations.

We compared the activity of the three enhancers in the MGE and CGE, and in migrating neurons derived from these regions between E11.5 and E13.5 using: (1) reporter lines under the control of each enhancer; (2) double immunohistochemistry on lines with two reporter genes driven by different enhancers. We compared the migration potential of progenitors found in different ventral structures using *DiI* labelling and co-transplantation experiments in vitro. We also co-labelled adult cortical interneurons in the URE2 and I12b lines, separately.

URE2, I12b and I56i displayed differential activities in the dorsal MGE, ventral MGE and CGE, and labelled distinct populations of tangentially migrating neurons at E12.5 and E13.5. We provide evidence that the dMGE and vMGE are distinct sources of tangentially migrating neurons at these ages. In the adult cortex, URE2 labelled the parvalbumin-, calretinin-, NPY- and nNOS-positive interneurons, whereas I12b was active in subpopulations of these groups and marked specifically the somatostatin- and VIP-positive interneurons.

*Dlx* gene regulation conferred by several enhancers provides molecular evidence that regional specification of progenitors located in subdivisions within the MGE and CGE generate different subtypes of cortical interneurons in the adult brain.

*Keywords:* Dlx; GABAergic interneurons; Differentiation; Migration

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**[P92]**

## Transcriptional regulation of the mouse doublecortin gene in differentiating neurons

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Doublecortin (DCX), a microtubule-associated protein, is transiently expressed in migrating and differentiating immature neurons in the developing and adult central nervous system. Whereas the temporal and spatial DCX expression patterns and DCX post-translational regulations are well known, *dcx* transcriptional regulation is still unclear.

To determine and analyse important regulatory sequences of the *dcx* promoter, we generated different fragments and deletion constructs of regulatory sequences upstream from the mouse *dcx* coding region and used them to drive reporter gene expression. Transient expression experiments using these reporter vectors revealed that activation of reporter gene expression was restricted to cells expressing endogenous DCX and that *dcx* regulation differed in CNS versus PNS. Moreover, we characterized the DCX promoter activity at different time points during neuronal differentiation. Further sequence comparison of *dcx* promoters across several species revealed the presence of a highly conserved region in the proximal region of the promoter and of several conserved, putative transcription factor binding sites. Further experiments will focus on the identification of the transcription factors involved in *dcx* gene regulation.

*Keywords:* Gene regulation; Doublecortin; Neuronal differentiation; Transcription factors

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**[P93]**

## Co-ordinate regulation of angiogenesis and neurogenesis in the embryonic telencephalon

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*Introduction:* The central nervous system (CNS) acquires its vasculature by angiogenesis, which begins early in CNS development and continues throughout life. Neurogenesis also begins early and continues throughout life—at least in some parts of the CNS. Majority of the research addressing interactions between CNS angiogenesis and neurogenesis has focused on the adult brain. However, angiogenesis and neurogenesis are significantly more robust in the embryonic CNS than in the adult. Indeed, the embryonic CNS is perhaps the only site (barring brain tumors) in which angiogenesis and neurogenesis are concurrently robust. Moreover, endothelial cell proliferation, migration and sprouting of new blood vessels occur in the embryonic CNS coincident and coordinate with neuroepithelial precursor cell proliferation