

1: [Genes Dev.](#) 2006 Jun 1;20(11):1511-24. Epub 2006 May 16.

[Links](#)

p27kip1 independently promotes neuronal differentiation and migration in the cerebral cortex.

[Nguyen L](#), [Besson A](#), [Heng JI](#), [Schuurmans C](#), [Teboul L](#), [Parras C](#), [Philpott A](#), [Roberts JM](#), [Guillemot F](#).

Division of Molecular Neurobiology, National Institute for Medical Research, The Ridgeway, Mill Hill, London NW7 1AA, United Kingdom.

The generation of neurons by progenitor cells involves the tight coordination of multiple cellular activities, including cell cycle exit, initiation of neuronal differentiation, and cell migration. The mechanisms that integrate these different events into a coherent developmental program are not well understood. Here we show that the cyclin-dependent kinase inhibitor p27(Kip1) plays an important role in neurogenesis in the mouse cerebral cortex by promoting the differentiation and radial migration of cortical projection neurons. Importantly, these two functions of p27(Kip1) involve distinct activities, which are independent of its role in cell cycle regulation. p27(Kip1) promotes neuronal differentiation by stabilizing Neurogenin2 protein, an activity carried by the N-terminal half of the protein. p27(Kip1) promotes neuronal migration by blocking RhoA signaling, an activity that resides in its C-terminal half. Thus, p27(Kip1) plays a key role in cortical development, acting as a modular protein that independently regulates and couples multiple cellular pathways contributing to neurogenesis.

PMID: 16705040 [PubMed - indexed for MEDLINE]