Evidence for the participation of the neuron-specific CDK5 activator p35 during laminin-enhanced axonal growth

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Cultures of cerebellar macroneurons were used to study the pattern of expression, subcellular localization, and function of the neuronal cdk5 activator p35 during laminin-enhanced axonal growth. The results obtained indicate that laminin, an extracellular matrix molecule capable of selectively stimulating axonal extension and promoting MAP1B phosphorylation at a proline-directed protein kinase epitope, selectively stimulates p35 expression, increases its association with the subcortical cytoskeleton, and accelerates its redistribution to the axonal growth cones. Besides, suppression of p35, but not of a highly related isoform designated as p39, by antisense oligonucleotide treatment selectively reduces cdk5 activity, laminin-enhanced axonal elongation, and MAP1b phosphorylation. Taken collectively, the present results suggest that cdk5/p35 may serve as an important regulatory linker between environmental signals (e.g., laminin) and constituents of the intracellular machinery (e.g., MAP