

cdk5 modulates β - and γ -catenin/Pin1 interactions in neuronal cells

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The cdk5/p35 complex has been implicated in a variety of functions related to brain development, including axonal outgrowth and neuronal migration. In this study, by co-immunoprecipitation and pull-down experiments, we have shown that the cdk5/p35 complex associates with and phosphorylates the neuronal β -catenin. Immunocytochemical studies of β -catenin and the cdk5-activator p35 in primary cortical neurons indicated that these proteins co-localize in the cell body of neuronal cells. In addition, cdk5 co-localized with β -catenin in the cell-cell contacts and plasma membrane of undifferentiated and differentiated N2A cells. In this context, we identified Ser191 and Ser246 on β -catenin structure as specific phosphorylation sites for cdk5/p35 complex. Moreover, Pin1, a peptidyl-prolyl isomerase (PPIase) directly bound to both, β - and γ -catenin, once they have been phosphorylated by the cdk5/p35 complex. Studies indicate that the cdk5/p35 protein kinase system is directly involved in the reg