Cables link CDK5 and ABL1

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

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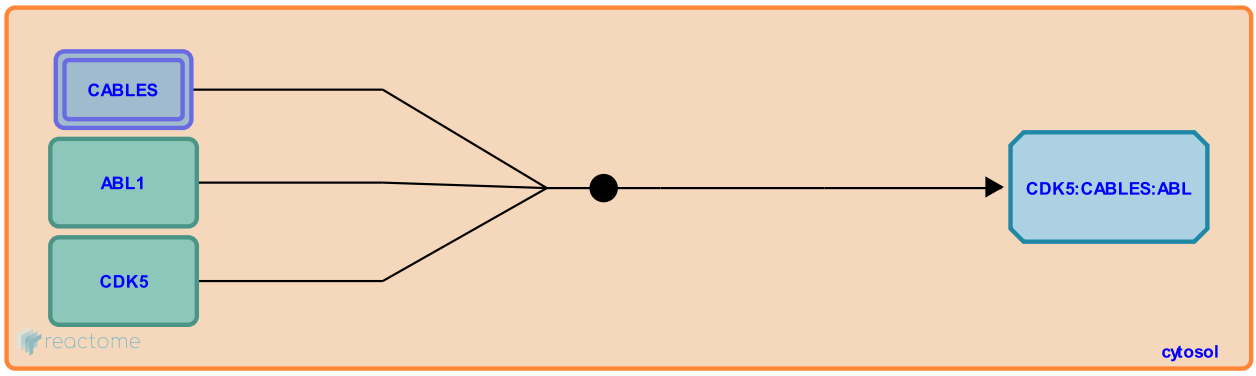
Stable identifier: R-HSA-1013833

Type: binding

Compartments: cytosol

Inferred from: Cables links Cdk5 and Abl1 (Mus musculus)



CDK5 and ABL1 enzyme substrate 1 (Cables1) is a negative regulator of cell proliferation. Loss of Cables1 function can lead to uncontrolled growth in vivo, observed in many human cancers, such as colon, lung and gynecological malignancies including ovarian and endometrial cancers (Sakamoto et al. 2008). Cables1 is up-regulated by progesterone and down-regulated by estrogen (Zukerberg et al. 2004). Cables1 is predominantly located in the nucleus of proliferating cells (Zukerberg et al. 2000, Wu et al. 2001) but some fully differentiated cells such as mature neurons have a significant proportion in the cytoplasm. Cables1 interacts with cyclin-dependent kinases (Cdk) 2, 3 and 5 (Wu et al. 2001, Matsuoka et al. 2000, Zukerberg et al. 2000). In neurons, Cables1 links Cdk5 and c-Abl, enhancing Cdk5 tyrosine-15 phosphorylation which results in increased Cdk5 activity, important in neurite outgrowth (Zukerberg et al. 2000). In proliferating cells, Cables1 links Cdk2 and Wee1, a dual specificity kinase. Phosphorylation of Cdk2 on tyrosine-15 by Wee-1 leads to decreased Cdk2 activity, Cables1 enhances this inhibitory phosphorylation (Wu et al. 2001). Cables1 has also been shown to interact with two regulators of apoptosis, p53 and p73. The physiological relevance of this interaction is not fully understood, but Cables1 augments p53-induced apoptosis in human osteosarcoma cells (Tsuji et al. 2002). Cables2 interacts with Cdk3, Cdk5 and c-Abl (Sato et al. 2002).

Editions

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