SANTA CRUZ BIOTECHNOLOGY, INC.

Cdk4 (97): sc-136241

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The Power to Question

BACKGROUND

Cell cycle progression is controlled in part by a family of cyclin proteins and cyclin dependent kinases (Cdks). Cdk proteins work in concert with the cyclins to phosphorylate key substrates involved in each phase of cell cycle progression. Another family of proteins, Cdk inhibitors, also plays a role in regulating the cell cycle by binding to cyclin-Cdk complexes and modulating their activity. Several Cdk proteins have been identified, including Cdk2-Cdk8, PCTAIRE-1-PCTAIRE-3, PITALRE and PITSLRE. Cdk4, in complex with D-type cyclins, is thought to regulate cell growth during the G_1 phase of the cell cycle. This association with a D-type cyclin upregulates Cdk4 activity, whereas binding to the Cdk inhibitor p16 downregulates Cdk4 activity. Activation of the Cdk4-cyclin complexes requires phosphorylation on a single threonyl residue of Cdk4, catalyzed by a Cdk-activating protein (CAK).

REFERENCES

1. Okuda, T., et al. 1992. PCTAIRE-1 and PCTAIRE-2: two members of a novel Cdc2/CDC28-related protein kinase gene family. Oncogene 7: 2249-2258.
2. Serrano, M., et al. 1993. A new regulatory motif in cell-cycle control causing specific inhibition of cyclin D/CDK4. Nature 366: 704-707.
3. Pines, J. 1994. The cell cycle kinases. Semin. Cancer Biol. 5: 305-313.
4. Kato, J.Y., et al. 1994. Regulation of cyclin D-dependent kinase (Cdk4) by Cdk4-activating kinase. Mol. Cell. Biol. 14: 2713-2721.
5. Matsuoka, M., et al. 1994. Activation of cyclin-dependent kinase 4 (Cdk4) by mouse MO15-associated kinase. Mol. Cell. Biol. 14: 7265-7275.
6. MacLachlan, T.K., et al. 1995. Cyclins, cyclin-dependent kinases and Cdk inhibitors: implications in cell cycle control and cancer. Crit. Rev. Euk. Gene Expr. 5: 127-156.
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8. Dirks, P.B., et al. 1997. Current concepts in neuro-oncology: the cell cycle—a review. Neurosurgery 40: 1000-1013.

CHROMOSOMAL LOCATION

Genetic locus: CDK4 (human) mapping to 12q14.1; Cdk4 (mouse) mapping to 10 D3.

SOURCE

Cdk4 (97) is a mouse monoclonal antibody raised against amino acids 1-303 representing full length Cdk4 of rat origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-136241 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

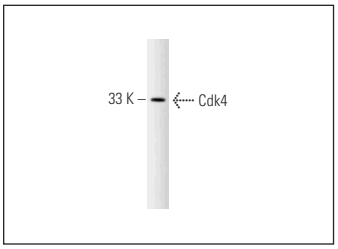
Cdk4 (97) is recommended for detection of Cdk4 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for Cdk4 siRNA (h): sc-29261, Cdk4 siRNA (m): sc-29262, Cdk4 shRNA Plasmid (h): sc-29261-SH, Cdk4 shRNA Plasmid (m): sc-29262-SH, Cdk4 shRNA (h) Lentiviral Particles: sc-29261-V and Cdk4 shRNA (m) Lentiviral Particles: sc-29262-V.

Molecular Weight of Cdk4: 34 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, K-562 whole cell lysate: sc-2203 or Ramos cell lysate: sc-2216.

DATA



Cdk4 (97): sc-136241. Western blot analysis of Cdk4 expression in RSV-3T3 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Basso, F., et al. 2014. Comparison of the effects of PRKAR1A and PRKAR2B depletion on signaling pathways, cell growth, and cell cycle control of adrenocortical cells. Horm. Metab. Res. 46: 883-888.
2. He, D.M., et al. 2017. Oncogenic activity of amplified miniature chromosome maintenance 8 in human malignancies. Oncogene 36: 3629-3639.
3. Lee, C., et al. 2017. Anticancer effects of an extract from the scallop *Patinopecten yessoensis* on MCF-7 human breast carcinoma cells. Oncol. Lett. 14: 2207-2217.
4. Hou, N., et al. 2018. Inhibition of microRNA-21-3p suppresses proliferation as well as invasion and induces apoptosis by targeting RBPMS through Smad4/ERK signaling pathway in human colorectal cancer HCT116 cells. Clin. Exp. Pharmacol. Physiol. 45: 729-741.
5. Henri, P., et al. 2020. Psoriatic epidermis is associated with upregulation of CDK2 and inhibition of CDK4 activity. Br. J. Dermatol. 182: 678-689.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures. Not for resale.