SANTA CRUZ BIOTECHNOLOGY, INC.

Cdk4 (DCS-156): sc-53636

SANTA CRUZ BIOTECHNOLOGY

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. Kato, J.Y., et al. 1994. Regulation of cyclin D-dependent kinase (Cdk4) by Cdk4-activating kinase. Mol. Cell. Biol. 14: 2713-2721.
4. Pines, J. 1994. The cell cycle kinases. Sem. Cancer Biol. 5: 305-313.

CHROMOSOMAL LOCATION

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

SOURCE

Cdk4 (DCS-156) is a mouse monoclonal antibody raised against amino acids 270-290 of Cdk4 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Cdk4 (DCS-156) 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.

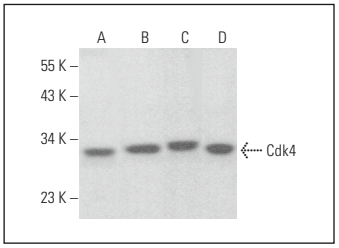
Molecular Weight of Cdk4: 34 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, Raji whole cell lysate: sc-364236 or NIH/3T3 nuclear extract: sc-2138.

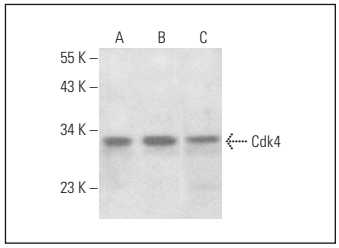
STORAGE

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

DATA



Cdk4 (DCS-156): sc-53636. Western blot analysis of Cdk4 expression in K-562 (**A**), Hs 181 Tes (**B**) and Raji (**C**) whole cell lysates and NIH/3T3 nuclear extract (**D**).



Cdk4 (DCS-156): sc-53636. Western blot analysis of Cdk4 expression in Hep G2 (**A**), IMR-32 (**B**) and MDA-MB-231 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Kamoshida, S., et al. 2004. Immunohistochemical analysis of thymidylate synthase, $p16^{INK4a}$, cyclin-dependent kinase 4 and cyclin D1 in colorectal cancers receiving preoperative chemotherapy: significance of $p16^{INK4a}$-mediated cellular arrest as an indicator of chemosensitivity to 5-fluoro-uracil. Pathol. Int. 54: 564-575.
2. Sun, Y., et al. 2013. Cyclin-dependent kinase 4 may be expressed as multiple proteins and have functions that are independent of binding to CCND and RB and occur at the S and G_2/M phases of the cell cycle. Cell Cycle 12: 3512-3525.
3. Patel, R., et al. 2020. Simultaneous inhibition of atypical protein kinase-C and mTOR impedes bladder cancer cell progression. Int. J. Oncol. 56: 1373-1386.
4. Guo, F., et al. 2020. MiR-508-3p suppresses the development of ovarian carcinoma by targeting CCNA2 and MMP7. Int. J. Oncol. 57: 264-276.
5. Chang, K.W., et al. 2020. Establishment of a p53 null murine oral carcinoma cell line and the identification of genetic alterations associated with this carcinoma. Int. J. Mol. Sci. 21: 9354.
6. Alcántara-Mejía, V.A., et al. 2024. Oxidative damage and cell cycle delay induced by vanadium(III) in human peripheral blood cells. Toxicol. Rep. 13: 101695.

RESEARCH USE

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