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SANTA CRUZ BIOTECHNOLOGY, INC.

Cdk7 (h7): 293 Lysate: sc-158371

BACKGROUND

Progression through the cell cycle requires activation of a series of enzymes designated cyclin dependent kinases (Cdks). The monomeric catalytic subunit Cdk2, a critical enzyme for initiation of cell cycle progression, is completely inactive. Partial activation is achieved by the binding of regulatory cyclins such as cyclin D1, while full activation requires additional phosphorylation at Thr 160. The enzyme responsible for the phosphorylation of Cdk2 on Thr 160 and also of Cdc2 p34 on Thr 161, designated Cdk-activating kinase (CAK), has been partially purified and shown to be comprised of a catalytic subunit and a regulatory subunit. The catalytic subunit, designated Cdk7, has been identified as the mammalian homolog of MO15, a protein kinase demonstrated in starfish and *Xenopus*. The regulatory subunit is a novel cyclin (cyclin H) and is required for activation of Cdk7. Like other Cdks, Cdk7 contains a conserved threonine residue required for full activity; mutation of this residue severely reduces CAK activity.

REFERENCES

1. Hunter, T., et al. 1994. Cyclins and cancer II: cyclin D and Cdk inhibitors come of age. Cell 79: 573-582.
2. Kato, J.Y., et al. 1994. Regulation of cyclin D-dependent kinase 4 (Cdk4) by Cdk4-activating kinase. Mol. Cell. Biol. 14: 2713-2721.
3. Matsuoka, M., et al. 1994. Activation of cyclin-dependent kinase 4 (Cdk4) by mouse MO15-associated kinase. Mol. Cell. Biol. 14: 7265-7275.
4. Levedakou, E.N., et al. 1994. Two novel human serine/threonine kinases with homologies to the cell cycle regulating *Xenopus* MO15, and NIMA kinases: cloning and characterization of their expression pattern. Oncogene 9: 1977-1988.
5. Pinhero, R., et al. 2004. A uniform procedure for the purification of CDK7/CycH/MAT1, CDK8/CycC and CDK9/CycT1. Biol. Proced. Online. 6: 163-172.
6. Lolli, G., et al. 2004. The crystal structure of human CDK7 and its protein recognition properties. Structure 12: 2067-2079.
7. Yu, J., et al. 2007. Gambogic acid-induced G_2/M phase cell-cycle arrest via disturbing CDK7-mediated phosphorylation of CDC2/p34 in human gastric carcinoma BGC-823 cells. Carcinogenesis 28: 632-638.

CHROMOSOMAL LOCATION

Genetic locus: CDK7 (human) mapping to 5q13.2.

PRODUCT

Cdk7 (h7): 293 Lysate represents a lysate of human Cdk7 transfected 293 cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

RESEARCH USE

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

APPLICATIONS

Cdk7 (h7): 293 Lysate is suitable as a Western Blotting positive control for human reactive Cdk7 antibodies. Recommended use: 10-20 µl per lane.

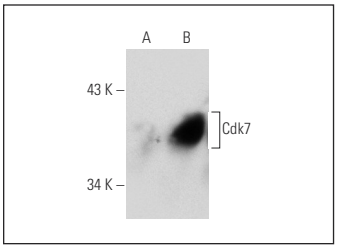
Control 293 Lysate: sc-110760 is available as a Western Blotting negative control lysate derived from non-transfected 293 cells.

Cdk7 (C-4): sc-7344 is recommended as a positive control antibody for Western Blot analysis of enhanced human Cdk7 expression in Cdk7 transfected 293 cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

DATA



Cdk7 (C-4): sc-7344. Western blot analysis of Cdk7 expression in non-transfected: sc-110760 (**A**) and human Cdk7 transfected: sc-158371 (**B**) 293 whole cell lysates.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.