SANTA CRUZ BIOTECHNOLOGY, INC.

Cdk7 (m): 293T Lysate: sc-119151

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The Power to Question

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. 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.
4. Matsuoka, M., et al. 1994. Activation of cyclin-dependent kinase 4 (Cdk4) by mouse MO15-associated kinase. Mol. Cell. Biol. 14: 7265-7275.
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.
8. Larochelle, S., et al. 2007. Requirements for Cdk7 in the assembly of Cdk1/cyclin B and activation of Cdk2 revealed by chemical genetics in human cells. Mol. Cell 25: 839-850.
9. Lewis, A.E., et al. 2008. Phosphorylation of steroidogenic factor 1 is mediated by cyclin-dependent kinase 7. Mol. Endocrinol. 22: 91-104.

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.

PROTOCOLS

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

CHROMOSOMAL LOCATION

Genetic locus: Cdk7 (mouse) mapping to 13 D1.

PRODUCT

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

APPLICATIONS

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

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

RESEARCH USE

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