SANTA CRUZ BIOTECHNOLOGY, INC.

p-Cdk7 (Thr 170): sc-130185

SANTA CRUZ BIOTECHNOLOGY

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. Phosphorylation of human Cdk7 at Thr 170 is required for Cdk7 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.

CHROMOSOMAL LOCATION

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

SOURCE

p-Cdk7 (Thr 170) is a rabbit polyclonal antibody raised against a short amino acid sequence containing phosphorylated Thr 170 of Cdk7 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

RESEARCH USE

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

APPLICATIONS

p-Cdk7 (Thr 170) is recommended for detection of Thr 170 phosphorylated Cdk7 of 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)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Cdk7 siRNA (h): sc-29266, Cdk7 siRNA (h2): sc-43678, Cdk7 shRNA Plasmid (h): sc-29266-SH, Cdk7 shRNA Plasmid (h2): sc-43678-SH, Cdk7 shRNA (h) Lentiviral Particles: sc-29266-V and Cdk7 shRNA (h2) Lentiviral Particles: sc-43678-V.

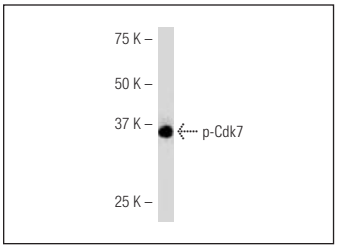
Molecular Weight of p-Cdk7 isoforms: 42/37 kDa.

Positive Controls: Ramos cell lysate: sc-2216 or human cancer tissue.

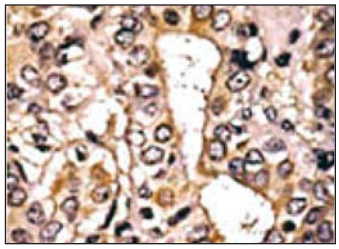
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2051 or ABC: sc-2018 rabbit IgG Staining Systems.

DATA



p-Cdk7 (Thr 170): sc-130185. Western blot analysis of p-Cdk7 expression in Ramos cell lysate.



p-Cdk7 (Thr 170): sc-130185. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cancer tissue showing cytoplasmic staining.

STORAGE

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

PROTOCOLS

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