

Cdk7 (SPM384): sc-56363

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. Nurse, P. 1994. Ordering S phase and M phase in the cell cycle. *Cell* 79: 547-550.
2. Sherr, C.J. 1994. G₁ phase progression: cycling on cue. *Cell* 79: 551-555.
3. Helchman, K.A., et al. 1994. Rules to replicate by. *Cell* 79: 557-562.
4. King, R.W., et al. 1994. Mitosis in transition. *Cell* 79: 563-571.
5. Hunter, T., et al. 1994. Cyclins and cancer II: cyclin D and Cdk inhibitors come of age. *Cell* 79: 573-582.
6. Kato, J.Y., et al. 1994. Regulation of cyclin D-dependent kinase 4 (Cdk4) by Cdk4-activating kinase. *Mol. Cell. Biol.* 14: 2713-2721.
7. Matsuoka, M., et al. 1994. Activation of cyclin-dependent kinase 4 (Cdk4) by mouse MO15-associated kinase. *Mol. Cell. Biol.* 14: 7265-7275.
8. 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.
9. Wu, L., et al. 1994. Molecular cloning of the human CAK1 gene encoding a cyclin-dependent kinase-activating kinase. *Oncogene* 9: 2089-2096.

CHROMOSOMAL LOCATION

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

SOURCE

Cdk7 (SPM384) is a mouse monoclonal antibody raised against amino acid 221 of Cdk7 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} 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

Cdk7 (SPM384) is recommended for detection of Cdk7 of human and rat 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) and flow cytometry (1 µg per 1 x 10⁶ cells).

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.

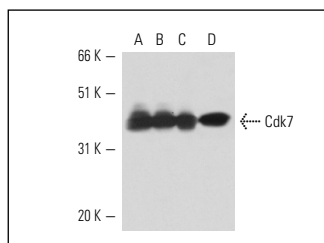
Molecular Weight of Cdk7 isoforms: 42/37 kDa.

Positive Controls: Cdk7 (h): 293 Lysate: sc-110468, K-562 nuclear extract: sc-2130 or HeLa nuclear extract: sc-2120.

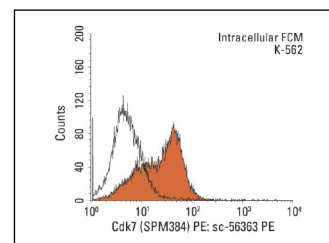
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



Cdk7 (SPM384): sc-56363. Western blot analysis of Cdk7 expression in K-562 (A), Jurkat (B) and HeLa (C) nuclear extracts and Cdk7-1 whole cell lysate (D).



Cdk7 (SPM384): sc-56363. Indirect, intracellular FCM analysis of fixed and permeabilized K-562 cells stained with Cdk7 (SPM384), followed by PE-conjugated goat anti-mouse IgG₁: sc-3764. Black line histogram represents the isotype control, normal mouse IgG₁: sc-3877.

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.