SANTA CRUZ BIOTECHNOLOGY, INC.

Cdk7 (C-4): sc-7344

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.

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.

CHROMOSOMAL LOCATION

Genetic locus: CDK7 (human) mapping to 5q13.2; Cdk7 (mouse) mapping to 13 D1.

SOURCE

Cdk7 (C-4) is a mouse monoclonal antibody raised against amino acids 1-346 representing full length Cdk7 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Cdk7 (C-4) is available conjugated to agarose (sc-7344 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-7344 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-7344 PE), fluorescein (sc-7344 FITC), Alexa Fluor® 488 (sc-7344 AF488), Alexa Fluor® 546 (sc-7344 AF546), Alexa Fluor® 594 (sc-7344 AF594) or Alexa Fluor® 647 (sc-7344 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-7344 AF680) or Alexa Fluor® 790 (sc-7344 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

In addition, Cdk7 (C-4) is available conjugated to TRITC (sc-7344 TRITC, 200 µg/ml), for IF, IHC(P) and FCM.

STORAGE

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

APPLICATIONS

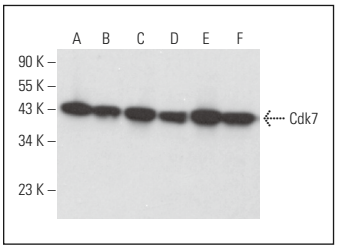
Cdk7 (C-4) is recommended for detection of Cdk7 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 (m): sc-29265, Cdk7 shRNA Plasmid (h): sc-29266-SH, Cdk7 shRNA Plasmid (m): sc-29265-SH, Cdk7 shRNA (h) Lentiviral Particles: sc-29266-V and Cdk7 shRNA (m) Lentiviral Particles: sc-29265-V.

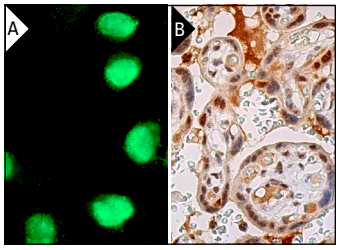
Molecular Weight of Cdk7 isoforms: 42/37 kDa.

Positive Controls: HUV-EC-C whole cell lysate: sc-364180, Caco-2 cell lysate: sc-2262 or Neuro-2A whole cell lysate: sc-364185.

DATA



Cdk7 (C-4): sc-7344. Western blot analysis of Cdk7 expression in HUV-EC-C (**A**), RPMI2650 (**B**), Caco-2 (**C**), T-47D (**D**), Neuro-2A (**E**) and C6 (**F**) whole cell lysates.



Cdk7 (C-4): sc-7344. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human placenta tissue showing nuclear staining of trophoblastic cells (**B**).

SELECT PRODUCT CITATIONS

1. Reshetnikova, G., et al. 2000. Disruption of the Actin cytoskeleton leads to inhibition of mitogen-induced cyclin E expression, Cdk2 phosphorylation, and nuclear accumulation of the retinoblastoma protein-related p107 protein. Exp. Cell Res. 259: 35-53.
2. Bian, J., et al. 2018. Discovery of Wogonin-based PROTACs against Cdk9 and capable of achieving antitumor activity. Bioorg. Chem. 81: 373-381.
3. Jiang, L., et al. 2019. Overexpression of CDK7 is associated with unfavourable prognosis in oral squamous cell carcinoma. Pathology 51: 74-80.
4. Greber, B.J., et al. 2020. The cryoelectron microscopy structure of the human CDK-activating kinase. Proc. Natl. Acad. Sci. USA 117: 22849-22857.
5. Choi, Y.J., et al. 2021. Discovery of a novel CDK7 inhibitor YPN-005 in small cell lung cancer. Eur. J. Pharmacol. 907: 174298.
6. Ge, H., et al. 2022. Pharmacological inhibition of CDK7 by THZ1 impairs tumor growth in p53-mutated HNSCC. Oral Dis. 28: 611-620.

RESEARCH USE

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