

cyclin T1 (E-3): sc-271348

BACKGROUND

Cyclin T1 was identified as a partner for Cdk9, an RNA polymerase II (RNAPII) transcription elongation factor. Cyclin T1 interacts with the transactivation domain of the HIV-1 Tat protein. The interaction of Tat with cyclin T1 enhances the affinity of Tat for the viral TAR RNA stem-loop structure, suggesting that Tat can recruit cyclin T1/Cdk9 to RNAPII through cooperative binding to TAR. The human positive transcription elongation factor b (P-TEFb) consists of a cyclin dependent kinase, Cdk9, paired with a cyclin T. Cdk9 may be paired with either cyclin T1 or cyclin T2, in a mutually exclusive manner. Two forms of cyclin T2, T2a and T2b, are due to alternative splicing. The binding of Tat to TAR was shown to be facilitated by human cyclin T1, but not by cyclins T2a or T2b. Cyclin T2 binds to Cdk9 but not to Tat, and cyclin T2 can inhibit cyclin T1-mediated Tat activity.

REFERENCES

- Herrmann, C.H., et al. 1995. Lentivirus Tat proteins specifically associate with a cellular protein kinase, TAK, that hyperphosphorylates the carboxyl-terminal domain of the large subunit of RNA polymerase II: candidate for a Tat cofactor. *J. Virol.* 69: 1612-1620.
- Yang, X., et al. 1997. TAK, an HIV Tat-associated kinase, is a member of the cyclin-dependent family of protein kinases and is induced by activation of peripheral blood lymphocytes and differentiation of promonocytic cell lines. *Proc. Natl. Acad. Sci. USA* 94: 12331-12336.

CHROMOSOMAL LOCATION

Genetic locus: CCNT1 (human) mapping to 12q13.11.

SOURCE

cyclin T1 (E-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 671-708 near the C-terminus of cyclin T1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-271348 X, 200 µg/0.1 ml.

cyclin T1 (E-3) is available conjugated to agarose (sc-271348 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271348 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271348 PE), fluorescein (sc-271348 FITC), Alexa Fluor® 488 (sc-271348 AF488), Alexa Fluor® 546 (sc-271348 AF546), Alexa Fluor® 594 (sc-271348 AF594) or Alexa Fluor® 647 (sc-271348 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271348 AF680) or Alexa Fluor® 790 (sc-271348 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-271348 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

cyclin T1 (E-3) is recommended for detection of cyclin T1 of human origin by Western Blotting (starting dilution 1:100, 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).

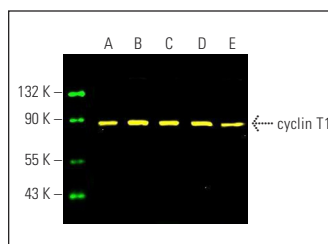
Suitable for use as control antibody for cyclin T1 siRNA (h): sc-35143, cyclin T1 shRNA Plasmid (h): sc-35143-SH and cyclin T1 shRNA (h) Lentiviral Particles: sc-35143-V.

cyclin T1 (E-3) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

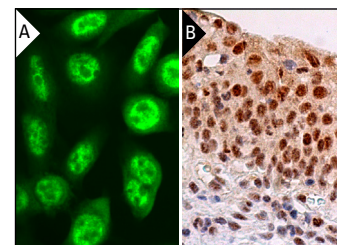
Molecular Weight of cyclin T1: 87 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, K-562 whole cell lysate: sc-2203 or HuT 78 whole cell lysate: sc-2208.

DATA



cyclin T1 (E-3) Alexa Fluor® 488: sc-271348 AF488. Direct fluorescent western blot analysis of cyclin T1 expression in HuT 78 (A), Raji (B), FHS 173We (C), K-562 (D) and Jurkat (E) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker MW Tag-Alexa Fluor® 680: sc-516730.



cyclin T1 (E-3) Alexa Fluor® 488: sc-271348 AF488. Direct immunofluorescence staining of formalin-fixed SW480 cells showing nuclear localization. Blocked with UltraCruz® Blocking Reagent: sc-516214 (A). cyclin T1 (E-3): sc-271348. Immunoperoxidase staining of formalin fixed, paraffin-embedded human urinary bladder tissue showing nuclear staining of urothelial cells (B).

SELECT PRODUCT CITATIONS

- Graf, L., et al. 2013. The cyclin-dependent kinase ortholog pUL97 of human cytomegalovirus interacts with cyclins. *Viruses* 5: 3213-3230.
- Steingruber, M., et al. 2019. Cyclins B1, T1 and H differ in their molecular mode of interaction with cytomegalovirus protein kinase pUL97. *J. Biol. Chem.* 294: 6188-6203.
- Yu, J., et al. 2020. Regulation of sister chromatid cohesion by nuclear PD-L1. *Cell Res.* 30: 590-601.
- Studniarek, C., et al. 2021. The 7SK/P-TEFb snRNP controls ultraviolet radiation-induced transcriptional reprogramming. *Cell Rep.* 35: 108965.

STORAGE

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

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