SANTA CRUZ BIOTECHNOLOGY, INC.

Cdc45 (G-12): sc-55569

The Power to Question

BACKGROUND

Cell cycle events are regulated by the sequential activation and deactivation of cyclin dependent kinases (Cdks) and by the proteolysis of cyclins. The cell division cycle (Cdc) genes are required at various points in the cell cycle. Cdc25A, Cdc25B and Cdc25C protein tyrosine phosphatases function as mitotic activators by dephosphorylating Cdc2 p34 on regulatory tyrosine residues. Cdc6 and Cdc45 are the mammalian homologs of *S. cerevisiae* Cdc6 and Cdc45, which are involved in the initiation of DNA replication. Cdc37 appears to facilitate Cdk4/cyclin D1 complex formation and has been shown to form a stable complex with HSP 90. Cdc34, Cdc27 and Cdc16 function as ubiquitin-conjugating enzymes. Cdc34 is thought to be the structural and functional homolog of *S. cerevisiae* Cdc34, which is essential for the G_1 to S phase transition. Cdc16 and Cdc27 are components of the APC (anaphase-promoting complex) which ubiquitinates cyclin B, resulting in cyclin B/Cdk complex degradation.

CHROMOSOMAL LOCATION

Genetic locus: CDC45 (human) mapping to 22q11.21; Cdc45 (mouse) mapping to 16 A3.

SOURCE

Cdc45 (G-12) is a mouse monoclonal antibody raised against amino acids 1-300 mapping at the N-terminus of Cdc45 of human origin.

PRODUCT

Each vial contains 200 µg IgG_3 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Cdc45 (G-12) is available conjugated to agarose (sc-55569 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-55569 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-55569 PE), fluorescein (sc-55569 FITC), Alexa Fluor® 488 (sc-55569 AF488), Alexa Fluor® 546 (sc-55569 AF546), Alexa Fluor® 594 (sc-55569 AF594) or Alexa Fluor® 647 (sc-55569 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-55569 AF680) or Alexa Fluor® 790 (sc-55569 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Cdc45 (G-12) is recommended for detection of Cdc45 of mouse, rat and 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Cdc45 siRNA (h): sc-35044, Cdc45 siRNA (m): sc-35045, Cdc45 shRNA Plasmid (h): sc-35044-SH, Cdc45 shRNA Plasmid (m): sc-35045-SH, Cdc45 shRNA (h) Lentiviral Particles: sc-35044-V and Cdc45 shRNA (m) Lentiviral Particles: sc-35045-V.

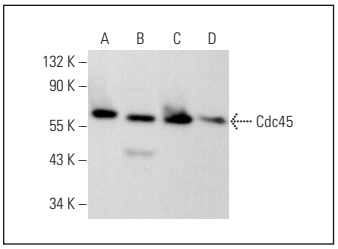
Molecular Weight of Cdc45: 60 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, Jurkat whole cell lysate: sc-2204 or HeLa whole cell lysate: sc-2200.

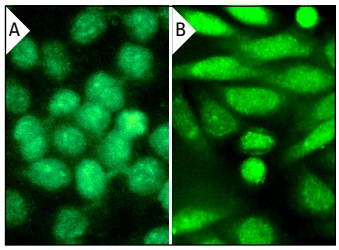
STORAGE

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

DATA



Cdc45 (G-12): sc-55569. Western blot analysis of Cdc45 expression in K-562 (**A**), HeLa (**B**), Jurkat (**C**) and HEK293 (**D**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



Cdc45 (G-12): sc-55569. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (**A**). Immunofluorescence staining of formalin-fixed SW480 cells showing nuclear and cytoplasmic localization (**B**).

SELECT PRODUCT CITATIONS

1. Chirino, Y.I., et al. 2010. PM_{10} impairs the antioxidant defense system and exacerbates oxidative stress driven cell death. Toxicol. Lett. 193: 209-216.
2. Beck, H., et al. 2012. Cyclin-dependent kinase suppression by Wee1 kinase protects the genome through control of replication initiation and nucleotide consumption. Mol. Cell. Biol. 32: 4226-4236.
3. Huang, H., et al. 2015. A unique binding mode enables MCM^2 to chaperone Histones H3-H4 at replication forks. Nat. Struct. Mol. Biol. 22: 618-626.
4. Fenwick, A.L., et al. 2016. Mutations in Cdc45, encoding an essential component of the pre-initiation complex, cause Meier-Gorlin syndrome and craniosynostosis. Am. J. Hum. Genet. 99: 125-138.
5. Hauge, S., et al. 2017. Combined inhibition of Wee1 and Chk1 gives synergistic DNA damage in S-phase due to distinct regulation of CDK activity and Cdc45 loading. Oncotarget 8: 10966-10979.
6. Zheng, G., et al. 2018. MCM2-7-dependent cohesin loading during S phase promotes sister-chromatid cohesion. Elife 7: e33920.
7. Nepon-Sixt, B.S., et al. 2019. Myc-driven chromatin accessibility regulates Cdc45 assembly into CMG helicases. Commun. Biol. 2: 110.
8. Ercilla, A., et al. 2020. Physiological tolerance to ssDNA enables strand uncoupling during DNA replication. Cell Rep. 30: 2416-2429.
9. Bostanabad, S.Y., et al. 2021. Overexpression of β-Arrestins inhibits proliferation and motility in triple negative breast cancer cells. Sci. Rep. 11: 1539.
10. Vipat, S., et al. 2022. The non-catalytic role of DNA polymerase ε in replication initiation in human cells. Nat. Commun. 13: 7099.

RESEARCH USE

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

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