SANTA CRUZ BIOTECHNOLOGY, INC.

p-Cdc2 p34 (Tyr 15): sc-7989

BACKGROUND

Cdc2, an evolutionarily conserved serine/threonine-specific protein kinase, is essential in the cell cycle transition from G_2 to M phase. Cdc2 is regulated by association with B-type cyclins and by reversible phosphorylation. Cyclin B binding facilitates the phosphorylation of Cdc2 p34 on three regulatory sites: Threonine 14, Tyrosine 15 and Threonine 161. In higher eukaryotes, Cdc2 is negatively regulated by phosphorylation of two residues located in the ATP-binding site, Thr 14 and Tyr 15. Cdc2 is positively regulated by the cyclin-dependent phosphorylation of Thr 161. Both phosphorylation and dephosphorylation at Thr 161 are required for progression through the cell cycle.

REFERENCES

1. Draetta, G., et al. 1987. Identification of p34 and p13, human homologs of the cell cycle regulators of fission yeast encoded by Cdc2+ and SUC1+. Cell 50: 319-325.
2. Brizuela, L., et al. 1987. p13SUC1 acts in the fission yeast cell division cycle as a component of the p34Cdc2 protein kinase. EMBO J. 6: 3507-3514.
3. Arion, D., et al. 1988. Cdc2 is a component of the M phase-specific histone H1 kinase: evidence for identity with MPF. Cell 55: 371-378.

SOURCE

p-Cdc2 p34 (Tyr 15) is available as either goat (sc-7989) or rabbit (sc-7989-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing Tyr 15 phosphorylated Cdc2 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-7989 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-Cdc2 p34 (Tyr 15) is recommended for detection of Tyr 15 phosphorylated Cdc2 of mouse, rat and human origin and correspondingly phosphorylated Cdk2 and Cdk3 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-Cdc2 p34 (Tyr 15) is also recommended for detection of correspondingly phosphorylated Cdc2, Cdk2 and Cdk3 in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of p-Cdc2 p34: 34 kDa.

Positive Controls: Saos-2 cell lysate: sc-2235, HeLa whole cell lysate: sc-2200 or K-562 whole cell lysate: sc-2203.

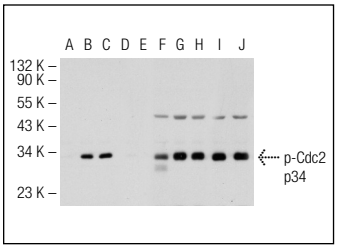
STORAGE

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

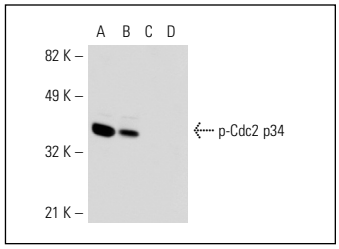
RESEARCH USE

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

DATA



Western blot analysis of Cdc2 p34 phosphorylation in untreated (**A**,**F**), Hydroxyurea treated (**B**,**G**), nocodazole treated (**C**,**H**), Hydroxyurea and lambda protein phosphatase (sc-200312A) treated (**D**,**I**) and nocodazole and lambda protein phosphatase (sc-200312A) treated (**E**,**J**) HeLa whole cell lysates. Antibodies tested include p-Cdc2 p34 (Tyr 15)-R: sc-7989-R (**A**-**E**) and p-Cdc2 p34 (PSTAIRE): sc-53 (**F**-**J**).



Western blot analysis of phosphorylated Cdc2 p34 expression in Saos-2 (**A**,**C**) and HeLa (**B**,**D**) whole cell lysates. Blots were probed with p-Cdc2 p34 (Tyr 15)-R: sc-7989-R (**A**,**B**) and p-Cdc2 p34 (Tyr 15)-R: sc-7989-R preincubated with its cognate phosphorylated peptide (**C**,**D**).

SELECT PRODUCT CITATIONS

1. Hapke, G., et al. 2002. Phosphorylation of Chk1 at serine-345 affected by topoisomerase I poison SN-38. Int. J. Oncol. 21: 1059-1066.
2. Jimenez-Macedo, A.R., et al. 2006. Effect of roscovitine on nuclear maturation, MPF and MAP kinase activity and embryo development of prepubertal goat oocytes. Theriogenology 65: 1769-1782.
3. 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.
4. Guardavaccaro, D., et al. 2008. Control of chromosome stability by the β-TrCP-REST-MAD2 axis. Nature 452: 365-369.
5. Gatti, G., et al. 2009. MYC prevents apoptosis and enhances endoreduplication induced by paclitaxel. PLoS ONE 4: e5442.
6. LaGory, E.L., et al. 2010. The protein kinase Cδ catalytic fragment is critical for maintenance of the G_2/M DNA damage checkpoint. J. Biol. Chem. 285: 1879-1887.
7. Yan, Y., et al. 2010. Protein phosphatase 2A has an essential role in the activation of γ-irradiation-induced G_2/M checkpoint response. Oncogene 29: 4317-4329.
8. D'Angiolella, V., et al. 2010. SCF(Cyclin F) controls centrosome homeostasis and mitotic fidelity through CP110 degradation. Nature 466: 138-142.