SANTA CRUZ BIOTECHNOLOGY, INC.

p-Cdc2 p34 (Thr 14/Tyr 15)-R: sc-12340-R

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 Cdc^{2+} and $SUC1^{+}$. Cell 50: 319-325.
2. Brizuela, L., et al. 1987. $p13^{SUC1}$ acts in the fission yeast cell division cycle as a component of the $p34^{Cdc2}$ 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 (Thr 14/Tyr 15)-R is a rabbit polyclonal antibody raised against a short amino acid sequence containing Thr 14 and Tyr 15 phosphorylated Cdc2 p34 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-12340 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-Cdc2 p34 (Thr 14/Tyr 15)-R is recommended for detection of Thr 14 and Tyr 15 dually phosphorylated Cdc2 p34, Cdk2 and Cdk3 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-Cdc2 p34 (Thr 14/Tyr 15)-R is also recommended for detection of correspondingly phosphorylated Cdc2 p34, Cdk2 and Cdk3 in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of p-Cdc2 p34: 34 kDa.

Positive Controls: Soas-2 + hydroxyurea cell lysate: sc-2286, HeLa whole cell lysate: sc-2200 or K-562 whole cell lysate: sc-2203.

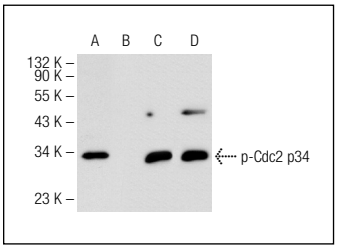
STORAGE

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

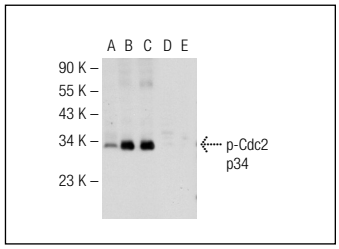
RESEARCH USE

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

DATA



Western blot analysis of Cdc2 p34 phosphorylation in untreated (**A**, **C**) and lambda protein phosphatase (sc-200312A) treated (**B**, **D**) Saos-2 whole cell lysates. Antibodies tested include p-Cdc2 p34 (Thr 14/Tyr 15)-R: sc-12340-R (**A**, **B**) and Cdc2 p34 (PSTAIRE): sc-53 (**C**, **D**).



p-Cdc2 p34 (Thr 14/Tyr 15)-R: sc-12340-R. Western blot analysis of Cdc2 p34 phosphorylation in untreated (**A**), Hydroxyurea treated (**B**), nocodazole treated (**C**), Hydroxyurea and lambda protein phosphatase treated (**D**) and nocodazole and lambda protein phosphatase treated (**E**) HeLa whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mansour, A., et al. 2004. Genistein induces G_2 arrest in malignant B cells by decreasing IL-10 secretion. Cell Cycle 3: 1597-1605.
2. Shi, P., et al. 2009. IGF-IR tyrosine kinase interacts with NPM-ALK oncogene to induce survival of T-cell ALK^{+} anaplastic large-cell lymphoma cells. Blood 114: 360-370.
3. Kreis, N.N., et al. 2009. Long-term downregulation of Polo-like kinase 1 increases the cyclin-dependent kinase inhibitor $p21^{WAF1/CIP1}$. Cell Cycle 8: 460-472.
4. Shi, P., et al. 2010. Inhibition of IGF-IR tyrosine kinase induces apoptosis and cell cycle arrest in imatinib-resistant chronic myeloid leukaemia cells. J. Cell. Mol. Med. 14: 1777-1792.
5. Pettazzoni, P., et al. 2011. Induction of cell cycle arrest and DNA damage by the HDAC inhibitor panobinostat (LBH589) and the lipid peroxidation end product 4-hydroxynonenal in prostate cancer cells. Free Radic. Biol. Med. 50: 313-322.
6. Vishwamitra, D., et al. 2011. Expression and effects of inhibition of IGF-IR tyrosine kinase in mantle cell lymphoma. Haematologica 96: 871-880.
7. Carrassa, L., et al. 2012. Combined inhibition of Chk1 and Wee1: *in vitro* synergistic effect translates to tumor growth inhibition *in vivo*. Cell Cycle 11: 2507-2517.
8. 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.