SANTA CRUZ BIOTECHNOLOGY, INC.

Plk (E-2): sc-55504

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Plk (for polo-like kinase) encodes a serine/threonine kinase that is closely related to polo and CDC5, genes that are required for passage through mitosis in *Drosophila* and *Saccharomyces*, respectively. Polo and Cdc5 both code for proteins that are involved in regulating the function of the mitotic spindle. Plk protein accumulates in the cell during the S and G_2 phases of the cell cycle; Plk protein content and catalytic activity peak at the onset of mitosis, followed by a rapid reduction after mitosis. Plk expression is detectable in mitotically active tissues such as colon and placenta, as well as in tumors of various origins. It has also been suggested that Plk may serve as a marker of cell proliferation.

REFERENCES

1. Sunkel, C.E. and Glover, D.M. 1988. Polo, a mitotic mutant of *Drosophila* displaying abnormal spindle poles. J. Cell Sci. 89: 25-38.
2. Kitada, K., et al. 1993. A multicopy suppressor gene of the *Saccharomyces cerevisiae* G_1 cell cycle mutant gene DBF4 encodes a protein kinase and is identified as CDC5. Mol. Cell. Biol. 13: 4445-4457.

CHROMOSOMAL LOCATION

Genetic locus: PLK1 (human) mapping to 16p12.2; Plk1 (mouse) mapping to 7 F3.

SOURCE

Plk (E-2) is a mouse monoclonal antibody raised against amino acids 261-412 mapping within an internal region of Plk 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.

APPLICATIONS

Plk (E-2) is recommended for detection of Plk 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 Plk siRNA (h): sc-36277, Plk siRNA (m): sc-36278, Plk shRNA Plasmid (h): sc-36277-SH, Plk shRNA Plasmid (m): sc-36278-SH, Plk shRNA (h) Lentiviral Particles: sc-36277-V and Plk shRNA (m) Lentiviral Particles: sc-36278-V.

Molecular Weight of Plk: 66 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, HeLa whole cell lysate: sc-2200 or Plk (m): 293T Lysate: sc-127352.

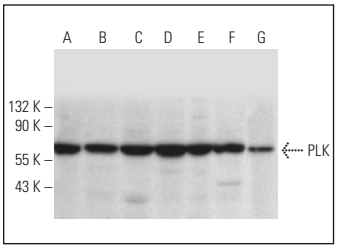
STORAGE

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

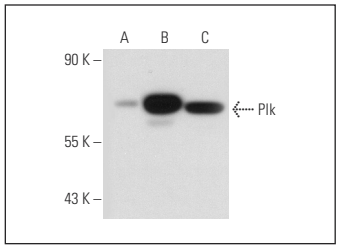
RESEARCH USE

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

DATA



PLK (E-2): sc-55504. Western blot analysis of PLK expression in HeLa (**A**), JAR (**B**), Jurkat (**C**), COLO 320DM (**D**), A549 (**E**), A-431 (**F**) and KNRK (**G**) whole cell lysates.



Plk (E-2): sc-55504. Western blot analysis of Plk expression in non-transfected 293T: sc-117752 (**A**), mouse Plk transfected 293T: sc-127352 (**B**) and K-562 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Zhang, W., et al. 2010. The scaffold protein TANK/I-TRAF inhibits NFκB activation by recruiting polo-like kinase 1. Mol. Biol. Cell 21: 2500-2513.
2. Tu, W.Z., et al. 2013. γH2AX foci formation in the absence of DNA damage: mitotic H2AX phosphorylation is mediated by the DNA-PK_{CS}/CHK2 pathway. FEBS Lett. 587: 3437-3443.
3. Choi, M., et al. 2015. Polo-like kinase 1 inhibitor BI2536 causes mitotic catastrophe following activation of the spindle assembly checkpoint in non-small cell lung cancer cells. Cancer Lett. 357: 591-601.
4. Ruf, S., et al. 2017. PLK1 (polo like kinase 1) inhibits MTOR complex 1 and promotes autophagy. Autophagy 13: 486-505.
5. Yuan, X., et al. 2017. USP39 regulates the growth of SMMC-7721 cells via FoxM1. Exp. Ther. Med. 13: 1506-1513.
6. Carrasco-Garcia, E., et al. 2018. PDGFR and IGF-1R inhibitors induce a G_2/M arrest and subsequent cell death in human glioblastoma cell lines. Cells 7: 131.
7. Colicino, E.G., et al. 2018. Gravin regulates centrosome function through PLK1. Mol. Biol. Cell 29: 532-541.
8. Colicino, E.G., et al. 2019. Chromosome misalignment is associated with PLK1 activity at cenexin-positive mitotic centrosomes. Mol. Biol. Cell 30: 1598-1609.
9. Yoshino, Y., et al. 2020. RACK1 regulates centriole duplication through promoting the activation of polo-like kinase 1 by Aurora A. J. Cell Sci. 133: jcs238931.
10. Ryu, J. and Kim, J.E. 2022. CCAR2 controls mitotic progression through spatiotemporal regulation of Aurora B. Cell Death Dis. 13: 534.

CONJUGATES

See **Plk (F-8): sc-17783** for Plk antibody conjugates, including AC, HRP, FITC, PE, Alexa Fluor® 488, 546, 594, 647, 680 and 790.