Qty: 100 µg/200 µL

Mouse anti-Plk1

Catalog No. 37-7100

Lot No.

Mouse anti-Plk1

FORM

This monoclonal antibody is supplied as a 200 µL aliquot at a concentration of 0.5 mg/mL in PBS, pH 7.4, containing 0.1% sodium azide. This antibody is highly purified from mouse ascites by protein A chromatography.

CLONE: 36-298 **ISOTYPE:** Mouse IgG_1-kappa

IMMUNOGEN

Full-length human Plk1 (polo-like kinase 1), which shares 93-94% amino acid sequence homology with mouse and rat Plk1.

SPECIFICITY

This antibody is specific for human Plk1. On Western blots, it identifies a band at ~63 kDa.

REACTIVITY

Reactivity has been confirmed with human HeLa S3 and U-2 OS cells by Western blotting and immunofluorescence, with human HeLa S3 and HEK293 cells by immunoprecipitation, and with mouse NIH3T3 and rat NRK cells by immunofluorescence.

Sample	ELISA	Immuno-precipitation	Immuno-fluorescence	Western Blotting
Human	ND	++	+++	+++
Mouse	ND	ND	++	0
Rat	ND	ND	++	0
Xenopus	ND	ND	0	ND
Immunogen	+++	ND	ND	ND

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable N/A, Not Determined ND)

Note: This antibody is recommended over Ms anti-Plk1, clone 36-206 (Cat. No. 37-7000) for immunofluorescence.

USAGE

Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following concentration ranges are recommended starting points for this product.

ELISA: 0.1-1.0 µg/mL
Immunoprecipitation: 5-10 µg/test
Immunofluorescence: 0.5-2 µg/test
Western Blotting: 2-3 µg/mL

STORAGE

Store at 2-8°C for up to one month. Store at –20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

BACKGROUND

Polo-like kinases (Plks) are important regulators of cell cycle progression during M-phase. Named after the *polo* gene of *Drosophila*, Plks are involved in the assembly and dynamics of the mitotic spindle apparatus and in the activation and inactivation of CDK/cyclin complexes. In mammalian cells, Plk1 activity levels increase as cells approach M phase, with the peak of phosphoylation activity reached during mitosis. Known substrates include Cdc25C phosphatase, cyclin B, a cohesion subunit of the mitotic spindle, subunits of the anaphase promoting complex, mammalian kinesin-like protein 1 (MKLP-1) and other kinesin related motor proteins. These substrates demonstrate the multiple roles of Plk1 in promoting mitosis.[1] Plk1 has a role in the regulation of tyrosine dephosphorylation of CDKs through activation of Cdc25C. These sites of phosphorylation are distinct from the site phosphorylated by Chk1 kinase, which inactivates Cdc25C. Activation of CDK1 leads to spindle formation and M phase entry. When vertebrate cells enter prophase, cyclin B1 translocates from the cytoplasm to the nucleus. Phosphorylation of cyclin B1 by Plk1 on a serine residue in the middle of the nuclear export signal sequence is essential for translocation.[2,3] During M-phase exit, Plk1 appears to be an important up-regulator of the ubiquitin-dependent proteolytic degradation machinery that controls passage through mitosis. The mechanism for this is not clear, but Plk1 can directly phosphorylate three subunits of the anaphase-promoting complex (APC), provided that Plk1 has been pre-activated by CDK1/cyclin B. Finally, through its role in phosphorylation of kinesin-like proteins, Plk1 may also be important for cytokinesis. Plk1 can transform rodent cells,[4] and it is frequently overexpressed in tumors, making it a potential marker for diagnostic or prognostic purposes.[5]

REFERENCES

1. Nigg EA, et al. *Curr Opin Cell Biol* 10(6):776-783, 1998.
2. Toyoshima-Morimoto F, et al. *Nature* 410(6825):215-220, 2002.
3. Nigg EA. *Nat Rev Mol Cell Biol* 2(1):21-32, 2001.
4. Smith MR, et al. *Biochem Biophys Res Commun* 234:397-405, 1997.
5. Knecht R, et al. *Cancer Res* 59:2794-2797, 1999.

RELATED PRODUCTS

Product	***Conjugate***	***Cat. No.***
Protein A	Sepharose® 4B	10-1041
rec-Protein G	Sepharose® 4B	10-1241

Conjugate	**ZyMAX™ Goat x Rabbit IgG (H+L)**	**ZyMAX™ Goat x Mouse IgG (H+L)**
Purified	81-6100	81-6500
FITC	81-6111	81-6511
TRITC	81-6114	81-6514
Cy™3	81-6115	81-6515
Cy™5	81-6116	81-6516
HRP	81-6120	81-6520
AP	81-6122	81-6522
Biotin	81-6140	81-6540

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