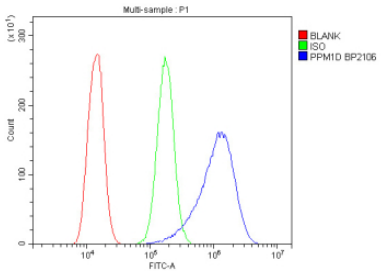
PPM1D Antibody / Protein phosphatase 1D / Wip1 (FY13402)

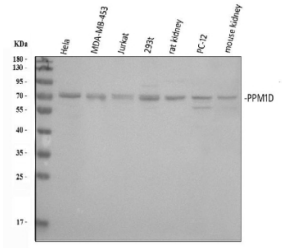
Catalog No.	Formulation	Size
FY13402	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4mg Trehalose, 0.9mg NaCl, 0.2mg Na2HPO4, 0.05mg NaN3.
UniProt	O15297
Applications	Western Blot : 0.25-0.5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This PPM1D antibody is available for research use only.



Flow cytometry analysis of fixed and permeabilized human A431 cells with PPM1D antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= PPM1D antibody.



Western blot analysis of human cell lines (HeLa, MDA-MB-453, Jurkat, and 293T), rat kidney, rat PC-12 cells, and mouse kidney tissue lysates using PPM1D antibody. A predominant band is detected just above 70 kDa, consistent with the reported electrophoretic mobility of PPM1D. Human samples show a faint doublet, likely reflecting post-translationally modified forms. An additional lower molecular weight band (~60 kDa) is observed in PC-12 cells, consistent with cell-type-specific processing or truncated PPM1D species.

Description

PPM1D antibody targets Protein phosphatase 1D (PPM1D), also known as Wip1, a serine-threonine phosphatase that functions as a key negative regulator of cellular stress response signaling. PPM1D belongs to the PP2C family of metal-dependent protein phosphatases and localizes primarily to the nucleus, where it modulates phosphorylation states of proteins involved in DNA damage response and cell cycle control. By dephosphorylating specific substrates, PPM1D acts as a feedback regulator that attenuates stress-induced signaling once damage has been resolved.

Functionally, PPM1D is induced in response to genotoxic stress and participates in shutting down DNA damage checkpoint pathways. It regulates signaling cascades involving proteins such as p53, ATM, ATR, and p38 MAPK by removing activating phosphate groups, thereby promoting recovery from cell cycle arrest and restoring cellular homeostasis. PPM1D expression is broadly observed across tissues, reflecting its general role in controlling stress signaling intensity and duration. A PPM1D antibody supports studies examining phosphatase-mediated regulation of DNA damage and stress response pathways.

PPM1D plays an important role in balancing cell survival and repair mechanisms. While transient activation of stress pathways is essential for maintaining genomic integrity, prolonged signaling can be detrimental to cell viability. PPM1D helps resolve these signals, allowing cells to resume proliferation following successful repair. Dysregulation of PPM1D activity can therefore alter sensitivity to stress and influence cell fate decisions. A PPM1D antibody enables analysis of PPM1D expression and localization under basal and stress-induced conditions.

From a biological and disease-relevance perspective, PPM1D has been extensively studied in cancer biology, where its overexpression or activating mutations are associated with impaired checkpoint control and altered DNA damage responses. Aberrant PPM1D activity can promote survival of cells with genomic instability by prematurely terminating checkpoint signaling. Beyond cancer, PPM1D also contributes to regulation of inflammatory and metabolic stress pathways, underscoring its broader role in cellular signaling control.

At the molecular level, PPM1D is encoded by the PPM1D gene and produces a protein of approximately 605 amino acids. The protein contains a conserved PP2C phosphatase domain that requires divalent metal ions for catalytic activity. Regulation of PPM1D occurs through transcriptional induction, protein stability, and interaction with upstream signaling components. A PPM1D antibody supports research applications focused on phosphatase signaling, DNA damage response regulation, and cellular stress control, with NSJ Bioreagents providing reagents intended for research use.

Application Notes

Optimal dilution of the PPM1D antibody should be determined by the researcher.

Immunogen

E.coli-derived human Protein phosphatase 1D recombinant protein (amino acids 18-605) was used as the immunogen for the PPM1D antibody.

Storage

After reconstitution, the PPM1D antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.