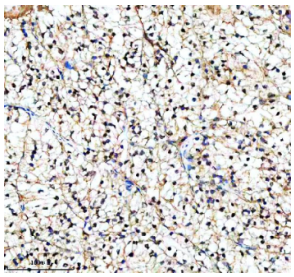
PIF1 Antibody / ATP-dependent DNA helicase PIF1 (FY12169)

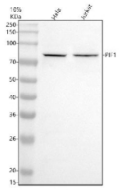
Catalog No.	Formulation	Size
FY12169	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

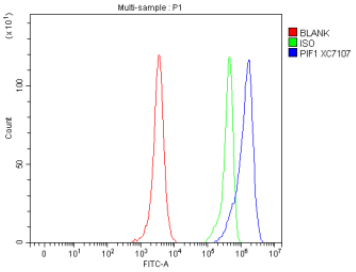
Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q9H611
Applications	Western Blot : 0.25-0.5ug/ml Immunohistochemistry : 2-5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This PIF1 antibody is available for research use only.



Immunohistochemical staining of PIF1 using anti-PIF1 antibody. PIF1 was detected in a paraffin-embedded section of human renal cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-PIF1 antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



Western blot analysis of PIF1 using anti-PIF1 antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human Hela whole cell lysates, Lane 2: human Jurkat whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-PIF1 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A specific band was detected for PIF1 at approximately 77 kDa. The expected band size for PIF1 is at 77 kDa.



Flow Cytometry analysis of HeLa cells using anti-PIF1 antibody. Overlay histogram showing HeLa cells stained with (Blue line). To facilitate intracellular staining, cells were fixed with 4% paraformaldehyde and permeabilized with permeabilization buffer. The cells were blocked with 10% normal goat serum. And then incubated with rabbit anti-PIF1 antibody (1 ug/million cells) for 30 min at 20oC. DyLight 488 conjugated goat anti-rabbit IgG (5-10 ug/million cells) was used as secondary antibody for 30 minutes at 20oC. Isotype control antibody (Green line) was rabbit IgG (1 ug/million cells) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.

Description

PIF1 antibody detects ATP-dependent DNA helicase PIF1, encoded by the PIF1 gene on chromosome 15q24. PIF1 antibody is widely used to study this multifunctional helicase, which unwinds DNA in both nuclear and mitochondrial compartments. PIF1 belongs to the RecD subfamily of helicases and is essential for maintaining genome stability by resolving DNA secondary structures, promoting telomere maintenance, and facilitating replication fork progression. It uses ATP hydrolysis to unwind duplex DNA and has a strong preference for G-rich sequences capable of forming G-quadruplex structures.

Structurally, PIF1 contains a conserved helicase domain with Walker A and B motifs for ATP binding and hydrolysis, as well as DNA-binding domains that allow recognition of G-quadruplexes. PIF1 is highly conserved from yeast to humans, underscoring its fundamental role in DNA metabolism. Alternative splicing produces isoforms targeted to the nucleus and mitochondria, allowing PIF1 to function in both genomic and mitochondrial DNA maintenance.

Functionally, PIF1 contributes to telomere length regulation by displacing telomerase from DNA ends, preventing uncontrolled elongation. It also suppresses genome instability by unwinding secondary DNA structures at replication forks and transcription units. In mitochondria, PIF1 ensures faithful replication and repair of mtDNA, protecting against deletions and rearrangements. Knockdown or mutation of PIF1 leads to increased DNA damage, replication stress, and mitochondrial dysfunction. Researchers use PIF1 antibody to explore DNA replication, telomere biology, and genome integrity mechanisms.

Clinically, PIF1 mutations are associated with cancer predisposition and mitochondrial disease. Rare germline variants have been linked to increased risk of breast cancer, while somatic mutations are detected in diverse tumor types. Loss of PIF1 function contributes to mitochondrial genome instability, which underlies certain neuromuscular disorders. PIF1's role in suppressing G-quadruplexes also makes it relevant to anticancer therapies, as stabilization of these structures can selectively kill tumor cells. NSJ Bioreagents provides PIF1 antibody as a validated reagent for cancer biology, telomere studies, and mitochondrial research.

Experimentally, PIF1 antibody is applied in western blotting to detect isoforms ranging from ~70-80 kDa, in immunofluorescence microscopy to study nuclear and mitochondrial localization, and in immunoprecipitation assays to isolate DNA repair complexes. These applications highlight its utility in analyzing DNA helicase activity and genome

maintenance pathways.

Application Notes

Optimal dilution of the PIF1 antibody should be determined by the researcher.

Immunogen

E.coli-derived human PIF1 recombinant protein (Position: Q31-R618) was used as the immunogen for the PIF1 antibody.

Storage

After reconstitution, the PIF1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.