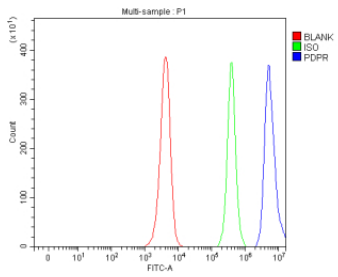
PDPR Antibody / Pyruvate dehydrogenase phosphatase regulatory subunit (FY13341)

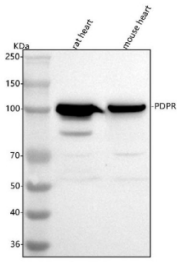
Catalog No.	Formulation	Size
FY13341	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

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 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q8NCN5
Applications	Western Blot : 0.25-0.5ug/ml Flow Cytometry : 1-3ug/million cells ELISA : 0.1-0.5ug/ml
Limitations	This PDPR antibody is available for research use only.



Flow Cytometry analysis of human JK cells using anti-PDPR antibody. Overlay histogram showing JK 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-PDPR 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 (Red line) was also used as a control.



Western blot analysis of PDPR using anti-PDPR antibody. Lane 1: rat heart tissue lysates, Lane 2: mouse heart tissue 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-PDPR 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 enhanced chemiluminescent. A specific band was detected for PDPR at approximately 99 kDa. The expected molecular weight of PDPR is ~99 kDa.

Description

PDPR antibody detects Pyruvate dehydrogenase phosphatase regulatory subunit, a mitochondrial matrix protein encoded by the PDPR gene located on chromosome 16q22.1. PDPR acts as a regulatory subunit of the pyruvate dehydrogenase phosphatase (PDP) complex, which controls activity of the pyruvate dehydrogenase complex (PDC) - a critical enzyme in carbohydrate metabolism that links glycolysis to the tricarboxylic acid (TCA) cycle. PDPR is highly expressed in metabolically active tissues such as liver, heart, skeletal muscle, and kidney, where it modulates energy production and metabolic flexibility.

PDPR functions by modulating the catalytic activity of PDP1 and PDP2 phosphatase subunits, facilitating dephosphorylation and reactivation of PDC. This regulation ensures efficient conversion of pyruvate to acetyl-CoA, thereby supporting ATP generation under nutrient-rich conditions. PDPR also influences glucose oxidation rates and metabolic adaptation during fasting, exercise, or insulin stimulation. Co-localization studies show PDPR associating with PDC and PDP1 in the mitochondrial matrix, maintaining dynamic control over carbohydrate flux.

Structurally, PDPR contains an N-terminal domain involved in protein-protein interactions and a C-terminal alpha-helical region required for complex stability. It belongs to the pyruvate dehydrogenase regulatory protein family, which fine-tunes mitochondrial energy metabolism. The proteinÃ¯Â¿Â½s structural motifs enable binding with PDP catalytic subunits and coordination with mitochondrial targeting sequences for correct localization.

Functionally, PDPR integrates metabolic and hormonal cues to maintain energy homeostasis. It plays a vital role in glucose utilization, mitochondrial respiration, and lipid oxidation balance. PDPR is regulated by insulin, glucagon, and nutrient availability, allowing cells to rapidly switch between carbohydrate and fatty acid metabolism. During embryonic development, PDPR supports energy demands of rapidly growing tissues, particularly cardiac and skeletal muscle. Pathway involvement includes the TCA cycle, oxidative phosphorylation, and insulin signaling pathways that coordinate energy metabolism.

Dysregulation of PDPR activity is linked to metabolic diseases, including diabetes, obesity, and mitochondrial disorders. Reduced PDPR function leads to impaired PDC activation, resulting in accumulation of pyruvate and lactic acid, while overactivation can alter glucose oxidation balance. Genetic variants in PDPR have been associated with altered fasting glucose levels and insulin sensitivity. Because of its role in mitochondrial regulation, PDPR has also been studied in cancer metabolism, where metabolic reprogramming supports tumor cell proliferation.

Immunohistochemical staining using PDPR antibody shows mitochondrial localization in liver, cardiac, and muscle cells. The PDPR antibody from NSJ Bioreagents is a valuable reagent for research on mitochondrial metabolism, energy regulation, and metabolic disease mechanisms.

Application Notes

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

Immunogen

E.coli-derived human PDPR recombinant protein (Position: E155-E655) was used as the immunogen for the PDPR antibody.

Storage

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

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