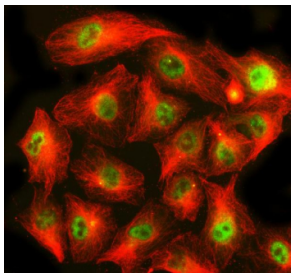
CHP1 Antibody / Calcineurin B homologous protein 1 (FY13335)

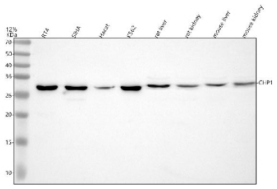
Catalog No.	Formulation	Size
FY13335	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

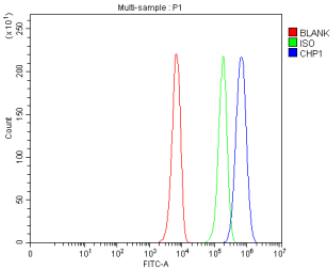
Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q99653
Localization	Nuclear, Perinuclear (Golgi), Cell membrane
Applications	Western Blot : 0.25-0.5ug/ml Immunocytochemistry/Immunofluorescence : 5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This CHP1 antibody is available for research use only.



Immunofluorescent staining of CHP1 using anti-CHP1 antibody (green) and anti-Beta Tubulin antibody (red). CHP1 was detected in an immunocytochemical section of human A549 cells. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5 ug/ml rabbit anti-CHP1 antibody and mouse anti-Beta Tubulin antibody overnight at 4oC. DyLight 488 Conjugated Goat Anti-Rabbit IgG and Cy3 Conjugated Goat Anti-Mouse IgG were used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37oC. Visualize using a fluorescence microscope and filter sets appropriate for the label used. Nuclear and perinuclear staining observed in human cell lines.



Western blot analysis of CHP1 using anti-CHP1 antibody. Electrophoresis was performed on a 12% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human RT-4 whole cell lysates, Lane 2: human SIHA whole cell lysates, Lane 3: human Hacat whole cell lysates, Lane 4: human K562 whole cell lysates, Lane 5: rat liver tissue lysates, Lane 6: rat kidney tissue lysates, Lane 7: mouse liver tissue lysates, Lane 8: mouse kidney 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-CHP1 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 predominant band is detected between approximately 30 and 34 kDa in all samples, running above the predicted ~22 kDa size but consistent with the known anomalous migration of the myristoylated Ca2 binding protein CHP1.



Flow Cytometry analysis of human K562 cells using anti-CHP1 antibody. Overlay histogram showing K562 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-CHP1 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

CHP1 antibody detects Calcineurin B homologous protein 1, a calcium-binding regulatory protein encoded by the CHP1 gene located on chromosome 15q15.1. CHP1 is a cytoplasmic and membrane-associated protein expressed in a wide range of tissues, including brain, heart, kidney, and skeletal muscle. It belongs to the EF-hand superfamily of calcium-binding proteins and functions as an essential regulator of sodium-hydrogen exchanger (NHE) activity, vesicle trafficking, and signal transduction. CHP1 acts as a molecular sensor of intracellular calcium levels, modulating transporter activity and contributing to pH homeostasis and cellular excitability.

CHP1 directly binds to the cytoplasmic tails of NHE1, NHE2, and NHE3 isoforms, stabilizing their conformation and enhancing plasma membrane localization. This regulatory role links calcium signaling to intracellular pH regulation and ion balance. CHP1 also associates with calcineurin and other phosphatases, influencing downstream signaling in calcium-dependent pathways. High expression in neurons and cardiac cells underscores its importance in excitable tissues where calcium fluctuations tightly control function and metabolism.

Structurally, CHP1 contains four EF-hand motifs, three of which bind calcium ions, and a myristoylation site that facilitates membrane association. Calcium binding induces conformational changes that alter its interaction with target proteins, providing a molecular mechanism for activity regulation. CHP1 belongs to the calcineurin B homologous protein family, which includes CHP2 and CHP3, all serving as modulators of NHEs and other transporters. CHP1 also co-localizes with NHE1 at the plasma membrane and Golgi apparatus, supporting its dual role in membrane trafficking and ion transport.

Functionally, CHP1 contributes to multiple cellular processes including cytoskeletal organization, vesicle transport, and cell migration. It stabilizes the actin cytoskeleton through NHE1-ERM protein interactions and participates in cellular stress adaptation. CHP1 is implicated in the MAPK and calcium signaling pathways that mediate growth, differentiation, and apoptosis. In neurons, CHP1 interacts with voltage-gated ion channels and regulates excitatory signaling, while in cardiomyocytes it influences contractility by fine-tuning calcium dynamics.

Dysregulation of CHP1 has been linked to neuropathies, cardiac dysfunction, and cancer. Mutations in CHP1 cause autosomal recessive ataxia, characterized by impaired motor coordination and Purkinje cell loss. Abnormal CHP1 expression can also contribute to altered NHE1 activity in glioblastoma and other tumors, affecting intracellular pH and invasive potential. Pathway analysis places CHP1 in ion transport regulation, calcium signaling, and cellular stress adaptation mechanisms.

Immunohistochemical staining using CHP1 antibody shows cytoplasmic and membrane localization, with prominent expression in neurons and cardiac muscle. CHP1 antibody from NSJ Bioreagents provides a powerful reagent for studying calcium signaling, ion transport regulation, and neurological or cardiac disease mechanisms.

Application Notes

Optimal dilution of the CHP1 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the N-terminus of human CHP1 was used as the immunogen for the CHP1 antibody.

Storage

After reconstitution, the CHP1 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.