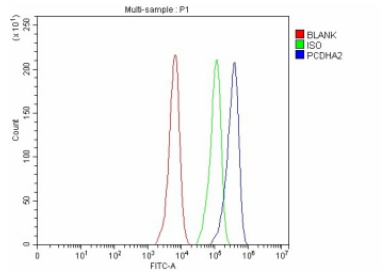
PCDHA2 Antibody / Protocadherin alpha 2 (FY13377)

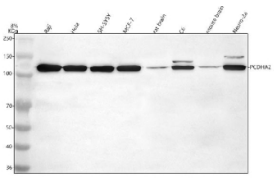
Catalog No.	Formulation	Size
FY13377	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

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	Q9Y5H9
Applications	Western Blot: 0.25-0.5ug/ml Flow cytometry: 1-3ug/million cells ELISA: 0.1-0.5ug/ml
Limitations	This PCDHA2 antibody is available for research use only.



Flow Cytometry analysis of Hela cells using anti-PCDHA2 antibody. Overlay histogram showing human HeLa cells stained with (Blue line). The cells were fixed with 4% paraformaldehyde and blocked with 10% normal goat serum. And then incubated with rabbit anti-PCDHA2 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.



Western blot analysis of PCDHA2 using anti-PCDHA2 antibody. Lane 1: human Raji whole cell lysates, Lane 2: human Hela whole cell lysates, Lane 3: human SH-SY5Y whole cell lysates, Lane 4: human MCF-7 whole cell lysates, Lane 5: rat brain tissue lysates, Lane 6: rat C6 whole cell lysates, Lane 7: mouse brain tissue lysates, Lane 8: mouse Neuro-2a 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-PCDHA2 antibody at 0.25 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 strong band was detected at approximately 120 kDa, which is higher than the predicted 102 kDa but consistent with the known heavy N-linked glycosylation of protocadherins. Minor mobility differences among species reflect expected variations in glycosylation.

Description

PCDHA2 antibody detects Protocadherin alpha 2, a calcium-dependent cell adhesion protein encoded by the PCDHA2 gene on chromosome 5q31.3. PCDHA2 belongs to the protocadherin alpha gene cluster, a group of neural adhesion molecules that mediate cell-cell recognition, axon targeting, and synaptic specificity in the central nervous system. It is expressed predominantly in neurons, where it contributes to the establishment and maintenance of precise neural connectivity patterns. PCDHA2 plays an essential role in neuronal identity and self-avoidance through its combinatorial expression with other protocadherins in the alpha cluster.

Structurally, PCDHA2 is a single-pass transmembrane glycoprotein composed of six extracellular cadherin repeats, a transmembrane domain, and a conserved cytoplasmic tail that interacts with intracellular signaling molecules. It belongs to the cadherin superfamily, which includes classical cadherins, desmogleins, and other protocadherin clusters (beta and gamma). The extracellular cadherin domains of PCDHA2 mediate homophilic adhesion through calcium-dependent binding, while the cytoplasmic region connects to the actin cytoskeleton via catenins and other scaffold proteins.

Functionally, PCDHA2 promotes cell adhesion specificity during neuronal development. It participates in establishing unique neuronal surface codes that guide synaptic pairing and axonal targeting. In mature neurons, PCDHA2 contributes to dendritic self-avoidance, ensuring that neurites from the same cell do not form redundant connections. It also supports synaptic stability by maintaining adhesion at postsynaptic densities. Co-localization studies show PCDHA2 localized to dendritic membranes and synaptic junctions, where it interacts with cytoskeletal and signaling partners.

PCDHA2 expression is developmentally regulated, with high levels during neural differentiation and synapse formation. Dysregulation or mutation of protocadherin alpha genes, including PCDHA2, has been associated with autism spectrum disorder, epilepsy, and schizophrenia, highlighting their importance in brain circuit organization. Pathway involvement includes cell adhesion, synaptic signaling, and calcium-dependent cell communication. Isoform diversity among protocadherin alpha genes allows neurons to generate individual identity codes critical for neural wiring precision.

The PCDHA2 antibody from NSJ Bioreagents is a valuable reagent for investigating neuronal adhesion, synaptic patterning, and brain development.

Application Notes

Optimal dilution of the PCDHA2 antibody should be determined by the researcher.

Immunogen

E.coli-derived human PCDHA2 recombinant protein (Position: S169-D345) was used as the immunogen for the PCDHA2 antibody.

Storage

After reconstitution, the PCDHA2 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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