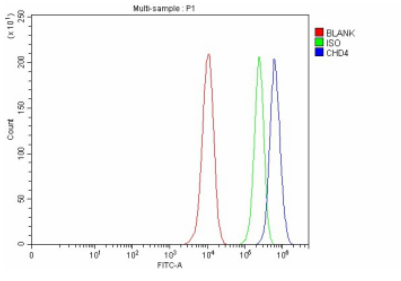
CHD4 Antibody / Chromodomain-helicase-DNA-binding protein 4 / Mi2-beta (FY13329)

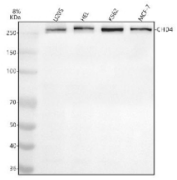
Catalog No.	Formulation	Size
FY13329	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

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	Q14839
Applications	Western Blot : 0.25-0.5ug/ml Flow Cytometry : 1-3ug/million cells
Limitations	This CHD4 antibody is available for research use only.



Flow Cytometry analysis of MCF-7 cells using anti-CHD4 antibody. Overlay histogram showing MCF-7 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-CHD4 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 CHD4 using anti-CHD4 antibody. Lane 1: human U20S whole cell lysates, Lane 2: human HEL whole cell lysates, Lane 3: human K562 whole cell lysates, Lane 4: human MCF-7 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-CHD4 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 predominant band is detected between an approximately 250 and 260 kDa in all samples, running above the predicted ~218 kDa size but consistent with the higher apparent molecular weight typically observed for the large nuclear chromatin remodeler CHD4.

Description

CHD4 antibody detects Chromodomain-helicase-DNA-binding protein 4, also called Mi2-beta, a nuclear ATP-dependent chromatin remodeler encoded by the CHD4 gene on chromosome 12p13.31. CHD4 is a member of the CHD family (chromodomain helicase DNA-binding proteins) and serves as the catalytic core of the nucleosome remodeling and deacetylase (NuRD) complex. This complex couples ATP-dependent chromatin remodeling with histone deacetylation to regulate gene transcription, DNA repair, and replication. CHD4 is highly expressed in proliferating cells, hematopoietic lineages, and neurons, where it orchestrates transcriptional repression and chromatin organization.

As a key nuclear regulator, CHD4 modulates chromatin accessibility and transcriptional silencing by repositioning nucleosomes and recruiting histone-modifying enzymes. It interacts with co-repressors, including MTA1-3 and HDAC1/2, within the NuRD complex to establish repressive chromatin states. CHD4's helicase and chromodomain motifs enable recognition of methylated histones and remodeling of nucleosomal DNA, linking epigenetic signals to transcriptional control. It functions in diverse pathways such as cell cycle progression, stem cell maintenance, and DNA damage repair.

CHD4 antibody identifies a protein that interacts with PARP1 and BRCA1 at sites of DNA double-strand breaks, coordinating chromatin remodeling and homologous recombination. Through this association, CHD4 contributes to the DNA damage response (DDR), facilitating repair factor recruitment and checkpoint activation. Mutations or misregulation of CHD4 impair genomic stability and can lead to carcinogenesis or developmental disorders. CHD4 also associates with replication protein A (RPA) and proliferating cell nuclear antigen (PCNA), supporting chromatin reassembly during DNA synthesis.

Structurally, CHD4 contains two N-terminal plant homeodomain (PHD) zinc fingers, tandem chromodomains for methylated histone recognition, an ATPase/helicase domain for chromatin remodeling, and a C-terminal region mediating protein-protein interactions. This modular structure allows CHD4 to integrate epigenetic marks with mechanical chromatin rearrangement. It is part of the CHD family of SNF2-like ATPases that also includes CHD3 and CHD5, all involved in transcriptional regulation and chromatin remodeling.

Dysfunction of CHD4 is linked to various diseases. Somatic mutations have been identified in endometrial carcinoma, chronic lymphocytic leukemia, and glioblastoma. Germline CHD4 mutations cause Sifrim-Hitz-Weiss syndrome, characterized by developmental delay, craniofacial abnormalities, and cardiac defects. Pathway analysis places CHD4 in the chromatin remodeling, DNA repair, and cell cycle regulation pathways. It also co-localizes with HDAC1/2 and MTA proteins in nuclear repressor complexes, reinforcing its central role in chromatin dynamics.

Immunohistochemical staining using CHD4 antibody shows strong nuclear localization in proliferating and stem-like cells. The CHD4 antibody from NSJ Bioreagents is a high-quality reagent for studying chromatin remodeling, epigenetic silencing, and DNA repair mechanisms.

Application Notes

Optimal dilution of the CHD4 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence at the N-terminus of human CHD4 was used as the immunogen for the CHD4 antibody.

Storage

After reconstitution, the CHD4 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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