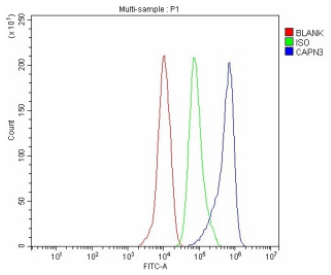
CAPN3 Antibody / Calpain 3 (FY13133)

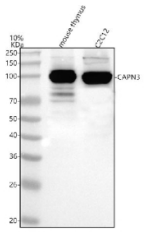
Catalog No.	Formulation	Size
FY13133	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human, Mouse
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	P20807
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This CAPN3 antibody is available for research use only.



Flow Cytometry analysis of THP-1 cells using anti-CAPN3 antibody. Overlay histogram showing THP-1 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-CAPN3 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 Calpain 3/CAPN3 using anti-CAPN3 antibody. Lane 1: mouse thymus tissue lysates, Lane 2: mouse C2C12 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-CAPN3 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 Calpain 3/CAPN3 at approximately 99 kDa. The expected molecular weight of Calpain 3/CAPN3 is at 99 kDa.

Description

CAPN3 antibody detects Calpain 3, a skeletal muscle-specific calcium-dependent cysteine protease involved in muscle remodeling and sarcomere maintenance. The UniProt recommended name is Calpain 3 (CAPN3). This enzyme belongs to the calpain family of proteases that regulate cytoskeletal dynamics and muscle protein turnover.

Functionally, CAPN3 antibody identifies a 821-amino-acid protease characterized by catalytic cysteine and histidine residues forming the proteolytic triad. Calpain 3 associates with titin in the sarcomere and modulates proteolytic remodeling during muscle contraction and regeneration. Its activity is tightly regulated by calcium binding and autolytic activation mechanisms unique to muscle tissue.

The CAPN3 gene is located on chromosome 15q15.1 and is expressed predominantly in skeletal muscle. Calpain 3 acts as a muscle-specific regulator controlling sarcomeric integrity and signaling pathways that respond to mechanical stress and injury. It is rapidly activated upon calcium influx, enabling dynamic structural adaptation.

Pathologically, mutations in CAPN3 cause limb-girdle muscular dystrophy type 2A (LGMD2A), an autosomal recessive disorder characterized by progressive muscle weakness and atrophy. Deficiency of Calpain 3 disrupts sarcomere homeostasis and impairs muscle repair. Research using CAPN3 antibody supports studies in muscle physiology, proteolysis, and dystrophic disease mechanisms.

CAPN3 antibody is validated for western blotting, immunohistochemistry, and immunofluorescence to detect muscle-specific proteases. NSJ Bioreagents provides CAPN3 antibody reagents optimized for studies in muscle biology, calcium signaling, and protein turnover.

Structurally, Calpain 3 consists of protease core domains (PC1 and PC2) flanked by unique insertion sequences IS1 and IS2, which confer muscle-specific regulation. This antibody aids investigation of CAPN3's enzymatic role in sarcomere remodeling and muscular dystrophy.

Application Notes

Optimal dilution of the CAPN3 antibody should be determined by the researcher.

Immunogen

E.coli-derived human Calpain 3/CAPN3 recombinant protein (Position: I42-D764) was used as the immunogen for the CAPN3 antibody.

Storage

After reconstitution, the CAPN3 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.