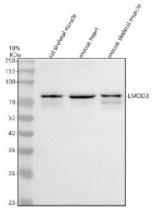
LMOD3 Antibody / Leiomodin 3 (FY12971)

Catalog No.	Formulation	Size
FY12971	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	Q0VAK6
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This LMOD3 antibody is available for research use only.



Western blot analysis of LMOD3 using anti-LMOD3 antibody. Lane 1: rat skeletal muscle tissue lysates, Lane 2: mouse heart tissue lysates, Lane 3: mouse skeletal muscle 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-LMOD3 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 at ~75 kDa with a weaker band at ~69-70 kDa is detected in skeletal muscle and heart. The upward shift relative to the ~65 kDa prediction and the paired bands are consistent with phosphorylation-dependent mobility differences and the known slower SDS-PAGE migration of LMOD3 due to its low-complexity regions.

Description

LMOD3 antibody detects Leiomodin-3, a muscle-specific actin-binding protein that regulates thin filament assembly and sarcomere organization. The UniProt recommended name is Leiomodin-3 (LMOD3), a member of the leiomodin and tropomodulin family of actin filament regulators. LMOD3 is predominantly expressed in skeletal and cardiac muscle,

where it acts as a potent nucleator and stabilizer of actin filaments critical for muscle contraction and structural integrity.

Functionally, LMOD3 antibody identifies a 579-amino-acid cytoskeletal protein that nucleates the formation of actin filaments by interacting with actin monomers and tropomyosin. Unlike tropomodulins, which cap the pointed ends of actin filaments to prevent elongation, LMOD3 promotes filament growth and organization, ensuring proper sarcomere length and alignment. Its C-terminal leucine-rich and WH2 domains bind actin directly, while an N-terminal region interacts with tropomyosin and other sarcomeric proteins. Through these interactions, LMOD3 maintains filament stability and alignment within the myofibrillar lattice.

The LMOD3 gene is located on chromosome 3p14.1 and encodes a protein essential for skeletal muscle development and maintenance. Mutations in LMOD3 cause nemaline myopathy type 10, a congenital disorder characterized by muscle weakness and the presence of nemaline bodies within myofibers. Defective LMOD3 leads to impaired thin filament elongation and disorganized sarcomeres, resulting in reduced muscle contractility and atrophy.

In normal muscle physiology, LMOD3 functions alongside leiomodin-1 and leiomodin-2, each serving tissue-specific roles in actin organization. LMOD3 localizes to the pointed ends of thin filaments near the M-line, complementing tropomodulin's capping activity at the same site. The balance between capping and elongation driven by LMOD3 and tropomodulin ensures optimal sarcomere structure and mechanical stability. In cardiac muscle, LMOD3 expression is induced during development and hypertrophic remodeling, indicating roles in both growth and adaptation.

LMOD3 antibody is commonly used to study muscle biology, sarcomere assembly, and actin cytoskeleton regulation. It is suitable for western blotting, immunofluorescence, and immunohistochemistry to detect LMOD3 expression in skeletal and cardiac tissues. Researchers utilize this antibody to investigate myopathies, cytoskeletal disorders, and mechanisms of muscle fiber regeneration. In vitro studies have shown that overexpression of LMOD3 enhances actin nucleation, while knockdown disrupts filament alignment and leads to myofibrillar disarray.

Structurally, LMOD3 contains a characteristic leiomodin family domain architecture with N-terminal tropomyosin-binding regions, central coiled-coil motifs, and C-terminal WH2 domains for actin nucleation. It also undergoes phosphorylation-dependent regulation that modulates its actin-binding affinity. NSJ Bioreagents provides LMOD3 antibody reagents validated for use in muscle research, cytoskeletal dynamics, and structural biology.

Application Notes

Optimal dilution of the LMOD3 antibody should be determined by the researcher.

Immunogen

E.coli-derived human LMOD3 recombinant protein (Position: D45-E558) was used as the immunogen for the LMOD3 antibody.

Storage

After reconstitution, the LMOD3 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.