

Troponin I (4): sc-130351

BACKGROUND

Actin is a highly conserved protein that is expressed in all eukaryotic cells. Actin filaments can form both stable and labile structures and are crucial components of microvilli and the contractile apparatus of muscle cells. Myosin is a hexamer of two heavy chains (MHC) and four light chains (MLC) that interacts with Actin to generate the force for diverse cellular movements, including cytokinesis, phagocytosis and muscle contraction. Troponin facilitates the interaction between Actin and Myosin by binding to calcium. Troponin is made up of at least two subunits, which are divergent in cardiac muscle, fast skeletal muscle and slow skeletal muscle. Structures of skeletal muscle troponin are composed of Troponin C (the sensor), Troponin I (the regulator) and Troponin T (the link to the muscle thin filament). Troponin C is dumbbell-shaped and has a hydrophobic pocket that increases the contractile force of muscle fibers. Troponin C has two isoforms: fast and slow. Fast Troponin C has two calcium binding sites, while slow/cardiac Troponin C has a single calcium binding site.

REFERENCES

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2. Koppe, R.I., Hallauer, P.L., Karpati, G. and Hastings, K.E. 1989. cDNA clone and expression analysis of rodent fast and slow skeletal muscle Troponin I mRNAs. *J. Biol. Chem.* 264: 14327-14333.
3. Ausoni, S., Campione, M., Picard, A., Moretti, P., Vitadello, M., DeNardi, C. and Schiaffino, S. 1994. Structure and regulation of the mouse cardiac Troponin I gene. *J. Biol. Chem.* 269: 339-346.
4. Potter, J.D., Sheng, Z., Pan, B.S. and Zhao, J. 1995. A direct regulatory role for Troponin T and a dual role for Troponin C in the Ca²⁺ regulation of muscle contraction. *J. Biol. Chem.* 270: 2557-2562.
5. Barkalow, K. and Hartwig, J.H. 1995. Actin cytoskeleton. Setting the pace of cell movement. *Curr. Biol.* 5: 1000-1002.
6. Baker, J.P. and Titus, M.A. 1998. Myosins: matching functions with motors. *Curr. Opin. Cell Biol.* 10: 80-86.
7. Squire, J.M. and Morris, E.P. 1998. A new look at thin filament regulation in vertebrate skeletal muscle. *FASEB J.* 12: 761-771.

CHROMOSOMAL LOCATION

Genetic locus: TNNI3 (human) mapping to 19q13.42; Tnni3 (mouse) mapping to 7 A1.

SOURCE

Troponin I (4) is a mouse monoclonal antibody raised against recombinant Troponin I of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Troponin I (4) is recommended for detection of Troponin I of human origin by solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Troponin I-C siRNA (h): sc-36738, Troponin I-C siRNA (m): sc-36739, Troponin I-C shRNA Plasmid (h): sc-36738-SH, Troponin I-C shRNA Plasmid (m): sc-36739-SH, Troponin I-C shRNA (h) Lentiviral Particles: sc-36738-V and Troponin I-C shRNA (m) Lentiviral Particles: sc-36739-V.

Molecular Weight of Troponin I: 29 kDa.

SELECT PRODUCT CITATIONS

1. Sharma, A., Han, C.H. and Jang, J. 2016. Rapid electrical immunoassay of the cardiac biomarker troponin I through dielectrophoretic concentration using imbedded electrodes. *Biosens. Bioelectron.* 82: 78-84.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.