

Troponin I-C (M46): sc-52277

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 composed of two heavy chains (MHC) and four light chains (MLC); it 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 comprises 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

1. Parmacek, M.S., et al. 1989. Structure and expression of the murine slow/cardiac Troponin C gene. *J. Biol. Chem.* 264: 13217-13225.
2. Koppe, R.I., et al. 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., et al. 1994. Structure and regulation of the mouse cardiac Troponin I gene. *J. Biol. Chem.* 269: 339-346.
4. Potter, J.D., et al. 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., et al. 1995. Actin cytoskeleton. Setting the pace of cell movement. *Curr. Biol.* 5: 1000-1002.
6. Baker, J.P., et al. 1998. Myosins: matching functions with motors. *Curr. Opin. Cell Biol.* 10: 80-86.
7. Squire, J.M., et al. 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-C (M46) is a mouse monoclonal antibody raised against amino acids 130-145 of cardiac Troponin I of human origin.

PRODUCT

Each vial contains 100 µg IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

RESEARCH USE

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

APPLICATIONS

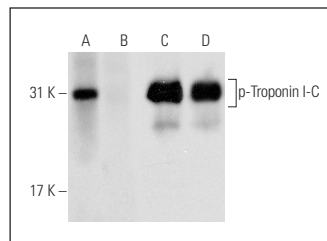
Troponin I-C (M46) is recommended for detection of free cardiac Troponin I and cardiac Troponin forming complexes with other Troponin components of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

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.

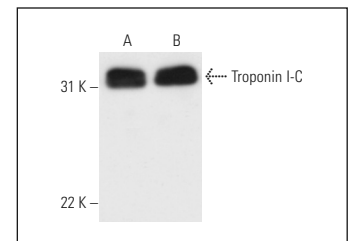
Molecular Weight of Troponin I-C: 30 kDa.

Positive Controls: mouse heart extract: sc-2254, rat heart extract: sc-2393 or human heart extract: sc-363763.

DATA



Western blot analysis of Troponin I-C phosphorylation in untreated (A, C) and lambda protein phosphatase (sc-200312A) treated (B, D) rat heart tissue extracts. Antibodies tested include p-Troponin I-C (1G11): sc-66159 (A, B) and Troponin I-C (M46): sc-52277 (C, D).




Troponin I-C (M46): sc-52277. Western blot analysis of Troponin I-C expression in rat heart (A) and mouse heart (B) tissue extracts.

SELECT PRODUCT CITATIONS

1. Ogbi, M., et al. 2013. An inhibitor of the δPKC interaction with the δ subunit of F₁F₀ ATP synthase reduces cardiac Troponin I release from ischemic rat hearts: utility of a novel ammonium sulfate precipitation technique. *PLoS ONE* 8: e70580.
2. Tiambeng, T.N., et al. 2020. Nanoproteomics enables proteoform-resolved analysis of low-abundance proteins in human serum. *Nat. Commun.* 11: 3903.

STORAGE

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



See **Troponin I (E-9): sc-365446** for Troponin I antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.