

musculin (4D7): sc-293482

BACKGROUND

Differentiation of myogenic cells is regulated by multiple positively and negatively acting factors. One well characterized family of helix-loop-helix (HLH) proteins, known to play an important role in the regulation of muscle cell development, includes Myo D, myogenin and musculin (also designated MyoR). Members of this group of transcription factors form heterodimers with products of a more widely expressed family of bHLH genes, the E family, which consists of at least three distinct genes: E2A, IF2 and HEB. Myo D-E or musculin-E heterodimers bind avidly to consensus E box motifs, which are functionally important elements in the promoter regions of many muscle-specific terminal differentiation genes. Myo D complexes potently induce transcriptional activation, while musculin complexes bind adjacent to Myo D DNA-binding regions to represses Myo D activity, which then results in the delayed expression of muscle-specific genes. musculin is highly expressed in undifferentiated and proliferating myoblasts in culture, and its expression is down regulated during myogenesis and at the onset of terminal differentiation.

REFERENCES

- Braun, T., et al. 1996. Myf-5 and Myo D genes are activated in distinct mesenchymal stem cells and determine different skeletal muscle cell lineages. *EMBO J.* 15: 310-318.
- Kong, Y., et al. 1997. Muscle LIM protein promotes myogenesis by enhancing the activity of MyoD. *Mol. Cell. Biol.* 17: 4750-4760.
- Robb, L., et al. 1998. Musculin: a murine basic helix-loop-helix transcription factor gene expressed in embryonic skeletal muscle. *Mech. Dev.* 76: 197-201.
- Lu, J., et al. 1999. MyoR: a muscle-restricted basic helix-loop-helix transcription factor that antagonizes the actions of MyoD. *Proc. Natl. Acad. Sci. USA* 96: 552-557.
- Robb, L., et al. 1999. Assignment of the human helix-loop-helix transcription factor gene musculin/activated B-cell factor-1 (MSC) to chromosome 8q21 and its mouse homologue (MSC) to the proximal region of chromosome 1. *Genomics* 57: 318-319.
- Zhang, J.M., et al. 1999. Evolutionary conservation of MyoD function and differential utilization of E proteins. *Dev. Biol.* 208: 465-472.
- Narumi, O., et al. 2000. OUT, a novel basic helix-loop-helix transcription factor with an Id-like inhibitory activity. *J. Biol. Chem.* 275: 3510-3521.
- Hishikawa, K., et al. 2005. Musculin/MyoR is expressed in kidney side population cells and can regulate their function. *J. Cell Biol.* 169: 921-928.
- Zhao, P., et al. 2006. Musculin isoforms and repression of MyoD in muscle regeneration. *Biochem. Biophys. Res. Commun.* 342: 835-842.

CHROMOSOMAL LOCATION

Genetic locus: MSC (human) mapping to 8q13.3.

SOURCE

musculin (4D7) is a mouse monoclonal antibody raised against amino acids 1-100 representing partial length musculin of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

musculin (4D7) is recommended for detection of musculin of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for musculin siRNA (h): sc-38066, musculin shRNA Plasmid (h): sc-38066-SH and musculin shRNA (h) Lentiviral Particles: sc-38066-V.

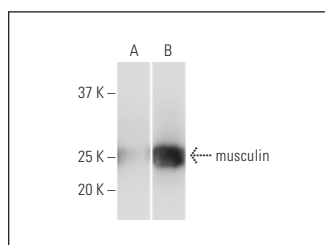
Molecular Weight of musculin: 22 kDa.

Positive Controls: musculin transfected 293T whole cell lysate.

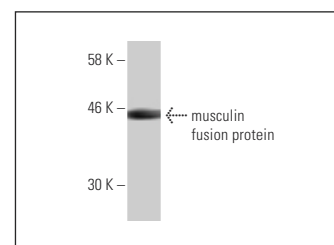
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

DATA



musculin (4D7): sc-293482. Western blot analysis of musculin expression in non-transfected (A) and musculin transfected (B) 293T whole cell lysates.



musculin (4D7): sc-293482. Western blot analysis of human recombinant musculin fusion protein.

SELECT PRODUCT CITATIONS

- Levels, M.J., et al. 2019. BOB.1 controls memory B-cell fate in the germinal center reaction. *J. Autoimmun.* 101: 131-144.
- Sun, X., et al. 2023. TRIB1 regulates liver regeneration by antagonizing the NRF2-mediated antioxidant response. *Cell Death Dis.* 14: 372.

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.