

Background

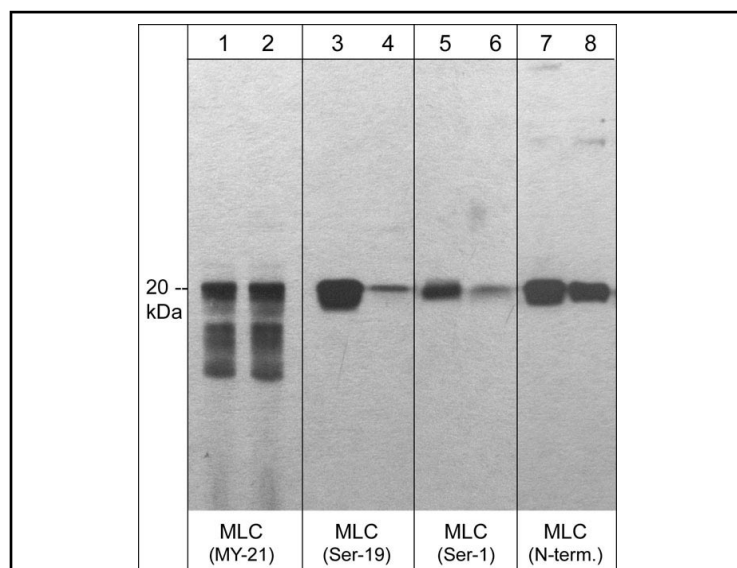
Both smooth muscle and nonmuscle myosin II activity is regulated by the phosphorylation state of the myosin regulatory light chain (MLC, MRLC, MLC20, MyI9). Phosphorylation of MLC at Thr-18 and Ser-19 activates myosin II motor activity and increases myosin filament stability. This activation has important roles in various cell motile processes. By contrast, other phosphorylation sites on MLC may inhibit myosin II activity. PKC phosphorylates Ser-1/Ser-2 and Thr-9 in MLC, and this phosphorylation decreases activated myosin II interaction with actin, as well as inhibits MLC interaction with the activation site kinase, myosin light-chain kinase. The Ser-1/Ser-2 region may be the major inhibitory site since Ser-1 is phosphorylated during PDGF-induced stress fiber disassembly and expression of unphosphorylatable MLC20 at the Ser-1/Ser-2 site suppresses this disassembly. Thus, inhibition of myosin II activity through phosphorylation of Ser-1/Ser-2 may have important roles in growth factor-induced reorganization of actomyosin filaments.

Background References

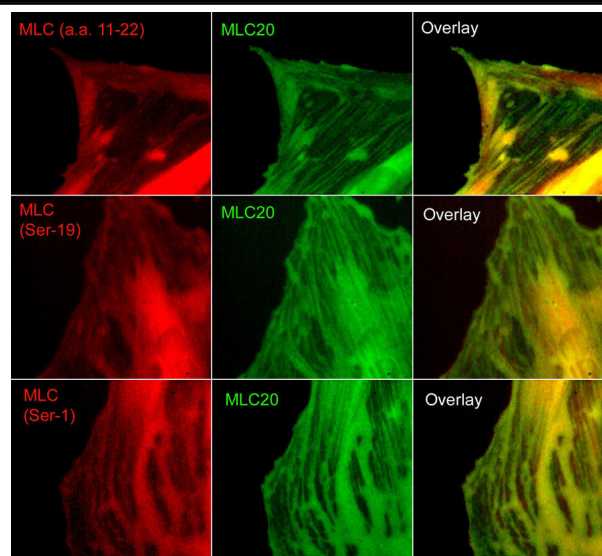
Sellers, J.R. (1991) *Curr. Opin. Cell Biol.* 3:98.
 Tan, J.L. et al. (1992) *Annu. Rev. Biochem.* 61:721.
 Komatsu, S. & Ikebe, M. (2007) *Mol. Biol. Cell* 18:5081.

Product Citations

Cao, Y. et al. (2018) *Exp Cell Res.* 373(1-2):119.
WB: human HeLa



Western blot analysis of C2C12 cells untreated (lanes 1, 3, 5, & 7) or treated with Lambda phosphatase (lanes 2, 4, 6, & 8). The blots were probed with monoclonal anti-MLC20 (clone MY-21) (lanes 1 & 2), polyclonal anti-MLC (Ser-19) phospho-specific (lanes 3 & 4), anti-MLC (Ser-1) phospho-specific (lanes 5 & 6), or anti-MLC (a.a. 11-22) (lanes 7 & 8).



Immunocytochemical labeling of phosphorylated MLC in paraformaldehyde fixed A7r5 cells. The cells were dual-labeled with anti-MLC (MM3441; middle) and anti-MLC (MP4201; top left), anti-MLC (Ser-19) (MP4221; middle left) and anti-MLC (Ser-1) (MP3461; bottom left). Goat anti-Mouse DyLight® 488 and Goat anti-Rabbit DyLight® 594 were used for detection of primary antibodies. The overlay of staining patterns are shown to the right.

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Immunogen

Uniprot ID: P19105

MLC (a.a. 11-22) synthetic peptide (coupled to KLH) corresponds to amino acid residues in the N-terminus of human myosin regulatory light chain 12A (Myl12A). This peptide sequence is highly conserved in human, rat, mouse, chicken, and zebrafish Myl12A, and in other smooth muscle and non-muscle MLCs.

Buffer and Storage

Rabbit polyclonal, affinity-purified antibody is supplied in 100µl phosphate-buffered saline, 50% glycerol, 1 mg/ml BSA, and 0.05% sodium azide. Store at -20°C. Stable for 1 year.

Applications

WB	1:1000
ELISA	1:2000
ICC	1:200

Species Reactivity

Hu, Rt, Ms, Ck

End user should determine optimal dilution for their particular applications and experiments.

Western blot membranes were incubated with diluted antibody in 5% non-fat milk, Tris buffer, 0.04% Tween20 for 1 hour at room temperature.

Abbreviations: E = ELISA, ICC = immunocytochemistry, IHC = immunohistochemistry, IP = immunoprecipitation, MS = mass spectrometry, WB = western blot
Hu = Human, Ms = Mouse, Rt = Rat, Ck = Chicken, F = Frog, B = Bovine

Specificity

This antibody was affinity purified using MLC (a.a. 11-22) peptide (without carrier). The antibody detects a 20 kDa* band corresponding to the molecular weight of myosin light chain in mouse C2C12, rat PC12, and human A431.

*All molecular weights (MW) are confirmed by comparison to MW standards and to western blot mobilities of known proteins with similar MW.

Native western blot utilizes non-reducing sample buffer (no mercaptoethanol or SDS), normal SDS-PAGE gel electrophoresis, and no methanol in transfer buffers.

Related Products

MP4221 Myosin Light Chain (Ser-19), phospho-specific Rabbit Polyclonal

MP3461 Myosin Light Chain (Ser-1), phospho-specific Rabbit Polyclonal

MM344 Myosin Light Chain (MLC20) Mouse Monoclonal

MX4205 Myosin Light Chain (a.a. 11-22) Blocking Peptide

MK6490 Myosin Light Chain Phospho-Regulation Antibody Sampler Kit

MK7730 Myosin Light Chain Phospho-Regulation Immunocytochemistry Kit

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