

Cofilin Phospho-Regulation

Antibody Sampler Kit

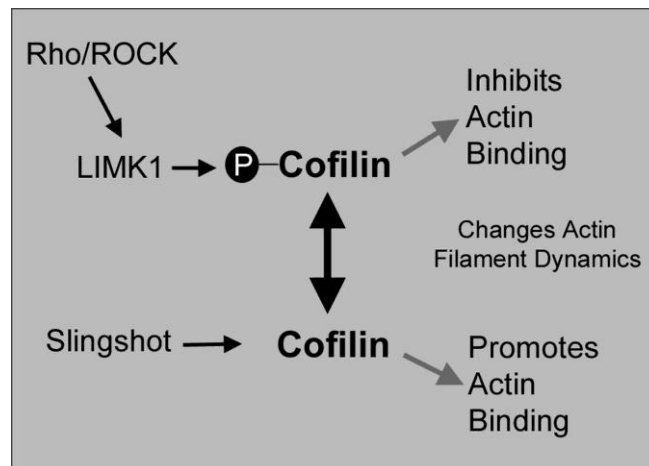
Catalog # CK6040

Synopsis:

The cofilin phospho-regulation antibody sampler kit can be used to monitor the level of phosphorylated cofilin relative to total cofilin expression. In addition, the kit provides reagents for examining the activity and expression levels of the cofilin kinase, LIMK1, and cofilin phosphatase, Slingshot.

Background:

Members of the actin depolymerizing factor (ADF)/cofilin family, cofilin 1, cofilin 2, and ADF are actin-severing proteins that regulate actin remodeling during cellular events such as cell migration, cytokinesis, phagocytosis, endocytosis, axon development, and immune cell activation. Regulation of cofilin activity can occur through phosphorylation of Ser-3 by LIMK1 or LIMK2. LIM kinases are involved in actin cytoskeletal regulation downstream of Rho-family GTPases, PAKs, and ROCK. PAK1 and ROCK phosphorylate LIMK1 or LIMK2 in the activation loop at Thr-508 or Thr-505 residues, respectively. This increases LIMK activity leading to phosphorylation of cofilin at Ser-3. This phosphorylation disrupts cofilin binding to actin *in vitro* and *in vivo*. Slingshot can dephosphorylate Ser-3 and activate actin binding. In mammals, the Slingshot family includes SSH1L, SSH2L, and SSH3L. SSH1L and SSH2L mRNAs are widely expressed, while SSH3L has high expression in epithelial tissues. SSH1L can associate with F-actin and may be the major phosphatase regulating cofilin activity. Thus, Ser-3 phosphorylation is tightly regulated by kinases and phosphatases to control cofilin activity and in turn actin filament dynamics.



References:

- Okano, I. et al. (1995) J. Biol. Chem. 270:31321.
 Edwards, D. C. et al. (1999) Nat. Cell Biol. 1:253.
 Bamburg, J.R. (1999). Annu Rev Cell Dev Biol. 15:185
 Maciver, S.K. & Hussey, P.J. (2002). Genome Biol. 3(5):3007.
 Niwa, R. et al. (2002) Cell 108:233.
 Endo, M. et al. (2003) J Neurosci. 23(7):2527.

Kit Components:

Catalog#	Description	Host	Size	Applications	Species Reactivity	MW (kDa)
CP1131	Cofilin 1 (N-terminus)	Rabbit pAb	50 µl	WB, E, ICC	H, R, M, C	19
CP1151	Cofilin (Ser-3), phospho-specific	Rabbit pAb	50 µl	WB, E, ICC	H, R, M, C	19
LP1831	LIMK1 (C-terminus)	Rabbit pAb	50 µl	WB, E	H, R, M	72
LP1891	LIMK1 (Thr-508), phospho-specific	Rabbit pAb	50 µl	WB, E	H, R, M	72
LP2431	LIMK1 (Ser-323), phospho-specific	Rabbit pAb	50 µl	WB, E	H, R, M	72
SP1711	Slingshot-1L (C-terminal region)	Rabbit pAb	50 µl	WB, E	H, R, M, B	150

Applications: WB = western blot, IP = immunoprecipitation, ICC = immunocytochemistry, IHC = immunohistochemistry, E = ELISA

Species: H = Human, R = Rat, M = Mouse, B = Bovine, C = Chicken

Buffers and Storage:

Rabbit polyclonal, affinity-purified antibodies are each supplied in 50µl phosphate-buffered saline, 50% glycerol, 1 mg/ml BSA, and 0.05% sodium azide. Store at -20°C. Do not aliquot. Stable for 1 year.

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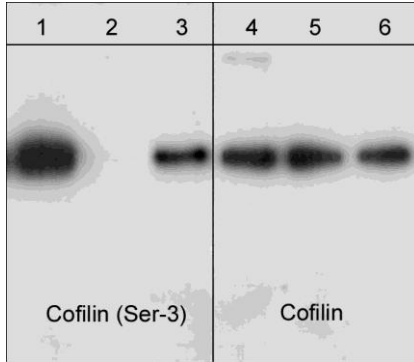
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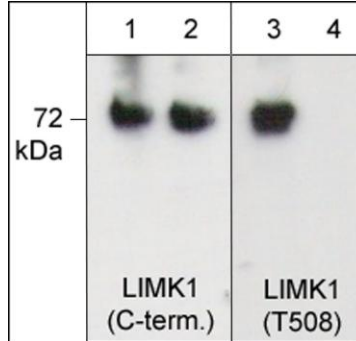
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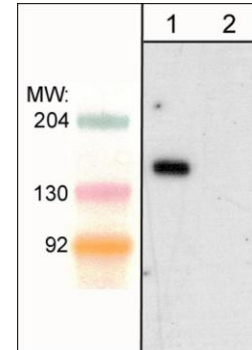
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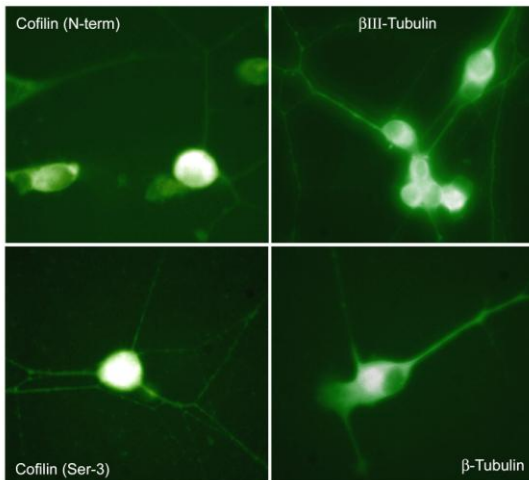
Western blot of Jurkat cells showing expression of cofilin 1. Blots were untreated (lanes 1 & 4) or treated (lanes 2, 3, 5 & 6) with lambda phosphatase for 1 hr at 37°C. In lanes 3 & 6, phosphatase treatments were performed in the presence of phospho-Cofilin 1 (Ser-3) peptide to block phosphatase activity. Blots were probed with anti-Cofilin 1 (Ser-3) (lanes 1-3; CP1151) or anti-Cofilin 1 (lanes 4-6; CP1131).



Western blot image of activated mouse recombinant LIMK1 untreated (lanes 1 & 3) or treated with lambda phosphatase (lanes 2 & 4). The blots were probed with anti-LIMK1 (C-terminus) (lanes 1 & 2; LP1831) and anti-LIMK1 (Thr-508) (lanes 3 & 4; LP1891).



Western blot of rat PC12 cells showing the expression of slingshot (SSH1L). The blot was probed with anti-Slingshot-1L (SP1711) in the absence (lane 1) or presence (lane 2) of SSH1L blocking peptide (SX1715).



Immunocytochemical labeling in chick dorsal root ganglion neurons using anti-Cofilin (N-terminus; CP1131), anti-Cofilin (Ser-3; CP1151), anti-βIII-Tubulin (C-terminus; TP1691) and anti-β-Tubulin (TM1541) antibodies. (Images provided by Dr. Diane Snow, Department of Anatomy & Neurobiology, University of Kentucky).

Related Products:

- CX1135 Cofilin (N-terminus) Peptide
- CX1155 phospho-Cofilin 1 (Ser-3) Peptide
- LX1835 LIMK1 (C-terminus) Peptide
- LX1895 LIMK1 (Thr-508) Peptide
- SX1715 Slingshot-1L (C-terminal region) Peptide
- CL7311 Cofilin 1 Lysate
- CL7321 Cofilin 1 + LIMK1 Lysate
- LL8051 LIMK1 (activated) Lysate
- LL8061 LIMK1 (activated) + LP Lysate

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