3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Anti-phospho-Cofilin (pSer^3)
produced in rabbit, IgG fraction of antiserum

Catalog Number **C8992**

Product Description

Anti-phospho-Cofilin (pSer^3) is produced in rabbit using as immunogen a synthetic phosphorylated peptide corresponding to amino acids 2-9 (pSer^3) of human cofilin, with a C-terminal added cysteine, conjugated to KLH. This sequence is identical in mouse, rat, and pig. Whole antiserum is fractionated and further purified by ion-exchange chromatography to provide the IgG fraction of antiserum that is essentially free of other rabbit serum proteins. The resulting IgG fraction is further purified by specific absorption on the corresponding non-phosphorylated cofilin peptide to remove undesired antibodies to non-phosphorylated cofilin.

Anti-phospho-Cofilin (pSer^3) recognizes human and mouse cofilin phosphorylated at Ser^3 by immunoblotting, ~19 kDa. Detection of phospho-cofilin by immunoblotting is specifically inhibited by the phosphorylated immunizing peptide and is not inhibited by the corresponding non-phosphorylated-peptide.

Cofilin is a small phosphoinositide-sensitive actin-binding protein capable of depolymerizing actin-filaments *in vitro*. Under certain conditions, it fragments the filaments and accelerates actin subunits dissociation from their 'pointed' (minus) ends. Cofilin binds stoichiometrically to monomeric G-actin and to actin protomers in filaments in an apparently pH-dependent, Ca^{2+}-independent manner. Actin-ADP is preferentially bound.[1-6] Cofilin intercalates between longitudinally associated actin monomers within the filament and distorts its helical twist. Cofilin is very similar to destrin/ADF (Actin Depolymerizing Factor), a related gelsolin-like actin filament-severing protein. Mammalian cofilin has non-muscle (NM-CF, CF-L1) and muscle (M-CF, CF-L2) isoforms. Cofilin is ubiquitous in tissues of eukaryotes and is especially abundant in neuronal tissues. It can shuttle between the cytoplasm and the nucleus in response to various stresses or signals, and may translocate from the cytoplasm to the plasma membrane in various cells.[2,4,7]

Cofilin is present together with destrin in 'Hirano bodies' in certain brain neurons of dementia patients. Cofilin is essential for viability and is important for many cellular processes involving actin remodeling such as motility at the leading edge of cells, polarized cell growth, endocytosis, phagocytosis, cellular activation, cytokinesis, and pathogen intracellular motility. *In vivo* activity of vertebrate cofilin is regulated through reversible phosphorylation and dephosphorylation at Ser^3.[8] The phosphorylated form is inactive and incapable of association with actin. Phosphorylation of cofilin is regulated in vertebrates by at least four protein kinases: LIM Kinase 1, LIM Kinase 2, Testicular Kinase 1, and Testicular Kinase 2. Its dephosphorylation is carried out by two cofilin-specific phosphatases: Slingshot and Chronophin. The dephosphorylation of cofilin enables its actin severing and depolymerizing activity and drives directional cell motility, thus providing a simple phosphoregulatory mechanism for actin reorganization.[9-11]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working dilution of 1:2,000-1:4,000 is recommended using whole extracts of HeLa human epithelioid carcinoma and NIH3T3 mouse cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

1. Nishida, E., et al., *Biochemistry*, **23**, 5307-5313 (1984).
2. Nishida, E., et al., *Proc. Natl. Acad. Sci. USA*, **84**, 5262-5266 (1987).
3. Moriyama, K., and Yahara, I., *EMBO J*., **18**, 6752-6761 (1999).
4. Bamburg, J.R., *Annu. Rev. Cell. Dev. Biol*., **15**, 185-230 (1999).
5. Carlier, M.F., et al., *J. Cell Biol*., **136**, 1307-1323 (1997).
6. Maciver, S.K., et al., *J. Cell. Biol*., **115**, 1611-1620 (1991).
7. Ohta, Y., et al., *J. Biol. Chem*., **264**, 16143-16148 (1989).
8. Suzuki, K.T., et al., *J. Biol. Chem*., **270**, 19551-19556 (1995).
9. Minamide, L.S., et al., *Nature Cell Biol*., **2**, 628-636 (2000).
10. Arber, S., et al., *Nature*, **393**, 805-809 (1998).
11. Huang, T.Y., et al., *Curr. Opin. Cell Biol*., **18**, 26-31 (2006).

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