

Background

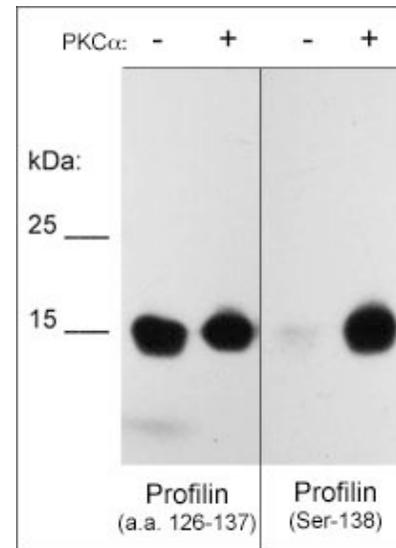
Profilins are small actin-binding proteins that have functions in cell motility, cytokinesis, gene transcription, endocytosis and neuronal plasticity. Four profilin isoforms have been identified in mammals. Profilin-1 (PFN1) and profilin-2a (PFN2a) isoforms are highly conserved in structure, but PFN1 is ubiquitously expressed while PFN2a is preferentially enriched in brain. In addition, there are two testis-specific profilins, PFN3 and PFN4, that significantly differ in primary sequence and function compared to PFN1 and PFN2a. Profilin is phosphorylated at both tyrosine and serine residues *in vivo*. Tyr-129 is phosphorylated in response to VEGF-A stimulation, and this promotes profilin actin binding and polymerization. Tyr-129 phosphorylation may be important for angiogenesis induced by injuries. Ser-138 is phosphorylated by ROCK and dephosphorylated by PP1. This serine phosphorylation inhibits G-actin binding, as well as decreases profilin's aggregation suppressor activity by inhibiting binding to huntingtin. Thus, Tyr-129 phosphorylation may activate while Ser-138 phosphorylation may inhibit profilin activity.

Background References

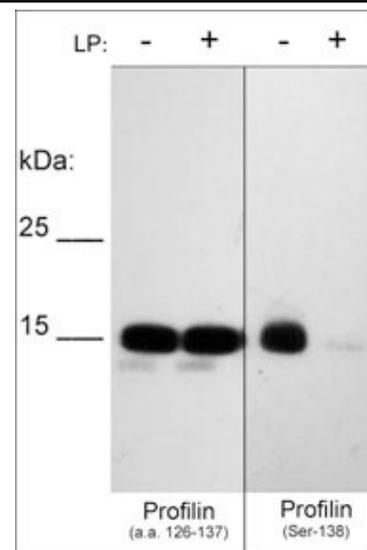
Shao, J. et al. (2008) Mol Cell Biol. 28(17):5196.
Shao, J. & Diamond, M.I. (2012) PLoS ONE 7(3): e32802.
Fan, Y. et al. (2012) Nat Cell Biol. 14(10):1046.

Product Citations

Stanslowsky N. et al. (2016) J Neurosci. 36(47):12027.
WB: human striatal medium spiny neurons



Western blot of human recombinant Profilin-1 control (-) or phosphorylated (+) *in vitro* with PKCα kinase. The blots were probed with anti-Profilin (a.a. 126-137) (left panel) or anti-Profilin (Ser-138) phospho-specific (right panel) antibodies at 1:1000.



Western blot of human recombinant Profilin-1 phosphorylated *in vitro* with PKCα kinase then untreated (-) or treated with lambda phosphatase (+). The blots were probed with anti-Profilin (a.a. 126-137) (left panel) or anti-Profilin (Ser-138) phospho-specific (right panel) antibodies at 1:1000.

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Immunogen **Uniprot ID: P07737**

Phospho-Profilin (Ser-138) synthetic peptide (coupled to carrier protein) that includes amino acids surrounding Ser-138 in human Profilin-1. This sequence is well conserved in rat and mouse Profilin-1. The serine site has some homology to the conserved site (Ser-138) in Profilin-2a and Profilin-2b, but the site is not conserved in Profilin-3 and Profilin-4.

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

Species Reactivity

Hu, Rt, Ms

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 cross-adsorbed to unphosphorylated Profilin (Ser-138) then affinity purified using Profilin (Ser-138) peptide (without carrier). The antibody detects a 15 kDa band corresponding to the apparent molecular mass of Profilin-1 in human Jurkat and A431 cells, as well as rat PC12 cells. The antibody also detects PKCα phosphorylated human Profilin-1 and this reactivity is removed by lambda phosphatase treatment.

*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

- PK6930 Profilin Phospho-Regulation Antibody Sampler Kit
- PP4751 Profilin (Tyr-129), phospho-specific Rabbit Polyclonal
- PP4801 Profilin (a.a. 126-137) Rabbit Polyclonal
- PP4821 Profilin (a.a. 132-140) Rabbit Polyclonal
- AK7600 Actin Filament Regulation Immunocytochemistry Kit
- AK6060 Actin & Tubulin Antibody Sampler Kit

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