SANTA CRUZ BIOTECHNOLOGY, INC.

Twinfilin-1 (h): 293T Lysate: sc-178100

BACKGROUND

Twinfilin is a highly conserved Actin monomer-binding protein that regulates cytoskeletal dynamics in organisms from yeast to mammals. Twinfilin is composed of two ADF-homology domains; it coordinates filament severing and monomer sequestering at sites of rapid Actin turnover, thus preventing assembly of the monomer into filaments. Twinfilin-1 is the mammalian homolog and is expressed in embryos and in most adult non-muscle cell types. Twinfilin-1 binds ADP-G-Actin and efficiently halts Actin filament assembly by inhibiting the nucleotide exchange on Actin monomers and directly interacting with the capping protein. Phosphatidylinositol (4,5)-bisphosphate inhibits the activity of Twinfilin-1. Rac1 and Cdc42, two small GTPases, induce the redistribution of Twinfilin-1 to membrane ruffles and cell-cell contacts, respectively.

REFERENCES

1. Goode, B.L., Drubin, D.G. and Lappalainen, P. 1998. Regulation of the cortical Actin cytoskeleton in budding yeast by Twinfilin, a ubiquitous Actin monomer-sequestering protein. J. Cell Biol. 142: 723-733.
2. Vartiainen, M., Ojala, P.J., Auvinen, P., Peränen, J. and Lappalainen, P. 2000. Mouse A6/Twinfilin is an Actin monomer-binding protein that localizes to the regions of rapid Actin dynamics. Mol. Cell. Biol. 20: 1772-1783.
3. Palmgren, S., Ojala, P.J., Wear, M.A., Cooper, J.A. and Lappalainen, P. 2001. Interactions with PIP2, ADP-Actin monomers, and capping protein regulate the activity and localization of yeast Twinfilin. J. Cell Biol. 155: 251-260.
4. Wahlström, G., Vartiainen, M., Yamamoto, L., Mattila, P.K., Lappalainen, P. and Heino, T.I. 2001. Twinfilin is required for Actin-dependent developmental processes in *Drosophila*. J. Cell Biol. 155: 787-796.
5. Palmgren, S., Vartiainen, M. and Lappalainen, P. 2002. Twinfilin, a molecular mailman for Actin monomers. J. Cell Sci. 115: 881-886.
6. Vartiainen, M.K., Sarkkinen, E.M., Matilainen, T., Salminen, M. and Lappalainen, P. 2003. Mammals have two Twinfilin isoforms whose subcellular localizations and tissue distributions are differentially regulated. J. Biol. Chem. 278: 34347-34355.
7. Falck, S., Paavilainen, V.O., Wear, M.A., Grossmann, J.G., Cooper, J.A. and Lappalainen, P. 2004. Biological role and structural mechanism of Twinfilin-capping protein interaction. EMBO J. 23: 3010-3019.
8. Rush, J., Moritz, A., Lee, K.A., Guo, A., Goss, V.L., Spek, E.J., Zhang, H., Zha, X.M., Polakiewicz, R.D. and Comb, M.J. 2005. Immunoaffinity profiling of tyrosine phosphorylation in cancer cells. Nat. Biotechnol. 23: 94-101.
9. Moseley, J.B., Okada, K., Balcer, H.I., Kovar, D.R., Pollard, T.D. and Goode, B.L. 2006. Twinfilin is an Actin-filament-severing protein and promotes rapid turnover of Actin structures *in vivo*. J. Cell Sci. 119: 1547-1557.

CHROMOSOMAL LOCATION

Genetic locus: TWF1 (human) mapping to 12q12.

PRODUCT

Twinfilin-1 (h): 293T Lysate represents a lysate of human Twinfilin-1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

APPLICATIONS

Twinfilin-1 (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive Twinfilin-1 antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.