

Profilin-4 siRNA (m): sc-152478

BACKGROUND

Profilin-4, also known as Profilin IV or PFN4 (Profilin family, member 4), is a 129 amino acid protein that belongs to the Profilin family and localizes to cytoplasm and cytoskeleton. Profilin-4 binds to Actin and plays a role in cytoskeleton structure. Encoded by a gene that maps to human chromosome 2p23.3, Profilin-4 is conserved in canine, bovine, mouse, rat and chicken. Multiple Profilin isoforms exist in mammals, with four known to be expressed in mammalian testis: Profilin-1, Profilin-2, Profilin-3 and Profilin-4. Similar to Profilin-3, testis-specific Profilin-4 may have a specialized role in spermatogenic cells distinct from known functions fulfilled by the "somatic" Profilins, Profilin-1 and Profilin-2. Conversely, the Actin-binding site of Profilin-3 is conserved and approximately half of the common poly-L-proline binding site is retained, while Profilin-4 has lost both polyproline and actin binding sites completely. Although Profilin-4 does not interact with actin or polyproline *in vitro*, it appears to be specialized for phospholipid binding and may provide cellular functions that are distinct from actin dynamics regulation.

REFERENCES

1. Ramachandran, S., Christensen, H.E., Ishimaru, Y., Dong, C.H., Chao-Ming, W., Cleary, A.L. and Chua, N.H. 2000. Profilin plays a role in cell elongation, cell shape maintenance, and flowering in *Arabidopsis*. *Plant Physiol.* 124: 1637-1647.
2. Sharma, A., Lambrechts, A., Hao, I.e. T., Le, T.T., Sewry, C.A., Ampe, C., Burghes, A.H. and Morris, G.E. 2005. A role for complexes of survival of motor neurons (SMN) protein with gemins and profilin in neurite-like cytoplasmic extensions of cultured nerve cells. *Exp. Cell Res.* 309: 185-197.
3. Obermann, H., Raabe, I., Balvers, M., Brunswig, B., Schulze, W. and Kirchhoff, C. 2005. Novel testis-expressed profilin IV associated with acrosome biogenesis and spermatid elongation. *Mol. Hum. Reprod.* 11: 53-64.
4. Polet, D., Lambrechts, A., Vandepoele, K., Vandekerckhove, J. and Ampe, C. 2007. On the origin and evolution of vertebrate and viral profilins. *FEBS Lett.* 581: 211-217.
5. Jockusch, B.M., Murk, K. and Rothkegel, M. 2007. The profile of profilins. *Rev. Physiol. Biochem. Pharmacol.* 159: 131-149.
6. Birbach, A. 2008. Profilin, a multi-modal regulator of neuronal plasticity. *Bioessays* 30: 994-1002.
7. Syriani, E., Gomez-Cabrero, A., Bosch, M., Moya, A., Abad, E., Gual, A., Gasull, X. and Morales, M. 2008. Profilin induces lamellipodia by growth factor-independent mechanism. *FASEB J.* 22: 1581-1596.
8. Behnen, M., Murk, K., Kursula, P., Cappallo-Obermann, H., Rothkegel, M., Kierszenbaum, A.L. and Kirchhoff, C. 2009. Testis-expressed profilins 3 and 4 show distinct functional characteristics and localize in the acroplaxome-manchette complex in spermatids. *BMC Cell Biol.* 10: 34.
9. Sun, X., Kovacs, T., Hu, Y.J. and Yang, W.X. 2010. The role of Actin and myosin during spermatogenesis. *Mol. Biol. Rep.* 38: 3993-4001.

PROTOCOLS

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

CHROMOSOMAL LOCATION

Genetic locus: Pfn4 (mouse) mapping to 12 A1.1.

PRODUCT

Profilin-4 siRNA (m) is a pool of 2 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Profilin-4 shRNA Plasmid (m): sc-152478-SH and Profilin-4 shRNA (m) Lentiviral Particles: sc-152478-V as alternate gene silencing products.

For independent verification of Profilin-4 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-152478A and sc-152478B.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Profilin-4 siRNA (m) is recommended for the inhibition of Profilin-4 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Profilin-4 gene expression knockdown using RT-PCR Primer: Profilin-4 (m)-PR: sc-152478-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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