

# parvalbumin $\alpha$ siRNA (h): sc-43350

## BACKGROUND

The family of EF-hand type  $Ca^{2+}$ -binding proteins includes calbindin (previously designated vitamin D-dependent  $Ca^{2+}$ -binding protein), S-100 $\alpha$  and  $\beta$ , calgranulins A (also designated MRP8), B (also designated MRP14) and C (S-100 like proteins) and the parvalbumin family members, including parvalbumin  $\alpha$  and parvalbumin  $\beta$ , also designated oncomodulin (OCM). Structurally and evolutionarily conserved, parvalbumin  $\alpha$  and OCM proteins are distinct in expression and function. Parvalbumin  $\alpha$ , also designated parvalbumin (PV), is most abundantly expressed in fast-contracting muscles with lower expression levels in brain and some endocrine tissues, including kidney and parathyroid. Research indicates that parvalbumin  $\alpha$  plays a significant role in muscle relaxation. OCM was originally thought to have expression restricted to neoplastic tissues, early embryonic cells and certain tumor cell lines. Recent research shows that OCM is also expressed and secreted by macrophages where, in the retina it binds to retinal ganglion cells (RGCs) and functions to promote axon regeneration. OCM has also been detected in the auditory sensory cells of the organ of Corti in mammals. In humans, two different loci on chromosome 7 have been identified as OCM and OCM-like (LOC4951). These genes encode proteins 109 amino acids in length which share 99% sequence identity.

## REFERENCES

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2. Kagi, U., et al. 1988. Developmental appearance of the  $Ca^{2+}$ -binding proteins parvalbumin, Calbindin D28K, S-100 proteins and Calmodulin during testicular development in the rat. *Cell Tissue Res.* 252: 359-365.
3. Muntener, M., et al. 1995. Increase of skeletal muscle relaxation speed by direct injection of parvalbumin cDNA. *Proc. Natl. Acad. Sci. USA* 92: 6504-6508.
4. Pauls, T.L., et al. 1996. The  $Ca^{2+}$ -binding proteins parvalbumin and oncomodulin and their genes: new structural and functional findings. *Biochim. Biophys. Acta* 1306: 39-54.
5. Cox, J.A., et al. 1999. Remodeling of the AB site of rat parvalbumin and oncomodulin into a canonical EF-hand. *Eur. J. Biochem.* 264: 790-799.
6. Hackney, C.M., et al. 2005. The concentrations of calcium buffering proteins in mammalian cochlear hair cells. *J. Neurosci.* 25: 7867-7875.
7. Yin, Y., et al. 2006. Oncomodulin is a macrophage-derived signal for axon regeneration in retinal ganglion cells. *Nat. Neurosci.* 9: 843-852.

## CHROMOSOMAL LOCATION

Genetic locus: PVALB (human) mapping to 22q12.3.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

## PRODUCT

parvalbumin  $\alpha$  siRNA (h) is a pool of 3 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see parvalbumin  $\alpha$  shRNA Plasmid (h): sc-43350-SH and parvalbumin  $\alpha$  shRNA (h) Lentiviral Particles: sc-43350-V as alternate gene silencing products.

For independent verification of parvalbumin  $\alpha$  (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-43350A, sc-43350B and sc-43350C.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at  $-20^{\circ}$  C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at  $-20^{\circ}$  C, avoid contact with RNAses and repeated freeze thaw cycles.

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

## APPLICATIONS

parvalbumin  $\alpha$  siRNA (h) is recommended for the inhibition of parvalbumin  $\alpha$  expression in human 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  $\mu$ M in 66  $\mu$ 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 parvalbumin  $\alpha$  gene expression knockdown using RT-PCR Primer: parvalbumin  $\alpha$  (h)-PR: sc-43350-PR (20  $\mu$ l). Annealing temperature for the primers should be  $55-60^{\circ}$  C and the extension temperature should be  $68-72^{\circ}$  C.

## RESEARCH USE

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