

# ZIP1 siRNA (h): sc-88210

## BACKGROUND

Zinc is an essential cofactor that is involved in cell growth and development, as well as in protein, nucleic acid and lipid metabolism. The transport of zinc across the cell membrane is crucial for correct enzyme and overall cell function. ZIP1, also known as SLC39A1 (solute carrier family 39 (zinc transporter), member 1), IRT1 or ZIRT1, is a 324 amino acid multi-pass membrane protein that localizes to both the cell membrane and the endoplasmic reticulum and belongs to the ZIP transporter family. Expressed ubiquitously in adult and fetal tissue, ZIP1 functions as a major endogenous zinc uptake transporter, effectively mediating the transport of zinc across the cell membrane. ZIP1, whose activity is inhibited by  $Ni^{2+}$ , may play an important role in zinc uptake within prostate cells, possibly effecting the development of prostate cancer.

## REFERENCES

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- Franklin, R.B., et al. 2003. Human ZIP1 is a major zinc uptake transporter for the accumulation of zinc in prostate cells. *J. Inorg. Biochem.* 96: 435-442.
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- Tang, Z., et al. 2006. Overexpression of the ZIP1 zinc transporter induces an osteogenic phenotype in mesenchymal stem cells. *Bone* 38: 181-198.
- Huang, L., et al. 2007. A di-leucine sorting signal in ZIP1 (SLC39A1) mediates endocytosis of the protein. *FEBS J.* 274: 3986-3997.
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- Kahmann, L., et al. 2008. Zinc supplementation in the elderly reduces spontaneous inflammatory cytokine release and restores T cell functions. *Rejuvenation Res.* 11: 227-237.
- Makhov, P., et al. 2009. Transcriptional regulation of the major zinc uptake protein hZip1 in prostate cancer cells. *Gene* 431: 39-46.

## CHROMOSOMAL LOCATION

Genetic locus: SLC39A1 (human) mapping to 1q21.3.

## PRODUCT

ZIP1 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 ZIP1 shRNA Plasmid (h): sc-88210-SH and ZIP1 shRNA (h) Lentiviral Particles: sc-88210-V as alternate gene silencing products.

For independent verification of ZIP1 (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-88210A, sc-88210B and sc-88210C.

## 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  $\mu$ 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

ZIP1 siRNA (h) is recommended for the inhibition of ZIP1 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.

## GENE EXPRESSION MONITORING

ZIP1 (F-2): sc-393345 is recommended as a control antibody for monitoring of ZIP1 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ZIP1 gene expression knockdown using RT-PCR Primer: ZIP1 (h)-PR: sc-88210-PR (20  $\mu$ l, 599 bp). 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.

## PROTOCOLS

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