



## TBR-1 siRNA (h): sc-44141

### BACKGROUND

A novel murine and human gene, TBR-1, encodes a putative transcription factor related to the Brachyury (T) gene that is expressed only in postmitotic cells. T-brain-1 (TBR-1) mRNA is largely restricted to the cerebral cortex, where, during embryogenesis, it defines different regions that give rise to the paleocortex, limbic cortex and neocortex. TBR-1, Pax-6 and Emx-1 are expressed in the mouse and chicken pallium. The pallio-subpallial boundary lies at the interface between the TBR-1 and Dlx-2 expression domains. Chicken genes homologous to these mouse genes are expressed in topologically comparable patterns during development, suggesting that mouse and chicken may have similar histogenetic specification processes and field homologies. CASK/LIN-2, a membrane-associated guanylate kinase, is required for EGFR localization and signaling. In adult rat brain, CASK is concentrated at neuronal synapses and binds to the cell-surface proteins. CASK can interact with TBR-1, which is involved in forebrain development. CASK enters into the nucleus and binds to a specific DNA sequence (the T-element) in a complex with TBR-1. Thus, CASK acts as a coactivator of TBR-1 to induce transcription of T-element containing genes, including *reelin*.

### REFERENCES

1. Bulfone, A., et al. 1995. T-brain-1: a homolog of Brachyury whose expression defines molecularly distinct domains within the cerebral cortex. *Neuron* 15: 63-78.
2. Shoguchi, E., et al. 2000. A starfish homolog of mouse T-brain-1 is expressed in the archenteron of *Asterina pectinifera* embryos: possible involvement of two T-box genes in starfish gastrulation. *Dev. Growth Differ.* 42: 61-68.
3. Puelles, L., et al. 2000. Pallial and subpallial derivatives in the embryonic chick and mouse telencephalon, traced by the expression of the genes Dlx-2, Emx-1, Nkx-2.1, Pax-6, and TBR-1. *J. Comp. Neurol.* 424: 409-438.
4. Hsueh, Y.P., et al. 2000. Nuclear translocation and transcription regulation by the membrane-associated guanylate kinase CASK/LIN-2. *Nature* 404: 298-302.
5. Mione, M., et al. 2001. Overlapping expression of zebrafish T-brain-1 and *omesodermin* during forebrain development. *Mech. Dev.* 100: 93-97.

### CHROMOSOMAL LOCATION

Genetic locus: TBR1 (human) mapping to 2q24.2.

### PRODUCT

TBR-1 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 TBR-1 shRNA Plasmid (h): sc-44141-SH and TBR-1 shRNA (h) Lentiviral Particles: sc-44141-V as alternate gene silencing products.

For independent verification of TBR-1 (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-44141A, sc-44141B and sc-44141C.

### 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

TBR-1 siRNA (h) is recommended for the inhibition of TBR-1 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

TBR-1 (G-5): sc-376258 is recommended as a control antibody for monitoring of TBR-1 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™ Molecular Weight Standards: sc-2035, UltraCruz® 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® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

### RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TBR-1 gene expression knockdown using RT-PCR Primer: TBR-1 (h)-PR: sc-44141-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.