



# PEN-2 siRNA (h): sc-45986

## BACKGROUND

Four proteins comprise the  $\gamma$ -secretase complex: Presenilin, nicastrin, Aph-1 and PEN-2. Together, these proteins mediate cell surface signaling pathways for a variety of type I membrane proteins, notably amyloid- $\beta$  precursor protein, a protein implicated in the development of Alzheimer's disease, via intramembrane proteolysis. The proteins assemble into a proteolytically active complex in the Golgi/*trans*-Golgi network (TGN) compartments. Assembly leads to autocleavage of Presenilin into two subunits to create the active site of  $\gamma$ -secretase, an important step in understanding the mechanisms involved in the etiology and possible treatment of Alzheimer's disease.

## REFERENCES

- Kimberly, W.T., et al. 2003. Identity and function of  $\gamma$ -secretase. *J. Neurosci. Res.* 74: 353-360.
- Baulac, S., et al. 2003. Functional  $\gamma$ -secretase complex assembly in Golgi/*trans*-Golgi network: interactions among Presenilin, nicastrin, Aph-1, PEN-2 and  $\gamma$ -secretase substrates. *Neurobiol. Dis.* 14: 194-204.
- Wolfe, M.S. 2003.  $\gamma$ -secretase—intramembrane protease with a complex. *Sci. Aging Knowledge Environ.* 11: PE7.
- Fortna, R.R., et al. 2004. Membrane topology and nicastrin-enhanced endoproteolysis of Aph-1, a component of the  $\gamma$ -secretase complex. *J. Biol. Chem.* 279: 3685-3693.
- Bergman, A., et al. 2004. PEN-2 is sequestered in the endoplasmic reticulum and subjected to ubiquitylation and proteasome-mediated degradation in the absence of Presenilin. *J. Biol. Chem.* 279: 16744-16753.
- Prokop, S., et al. 2004. Requirement of PEN-2 for stabilization of the Presenilin N/C terminal fragment heterodimer within the  $\gamma$ -secretase complex. *J. Biol. Chem.* 279: 23255-23261.

## CHROMOSOMAL LOCATION

Genetic locus: PSENEN (human) mapping to 19q13.12.

## PRODUCT

PEN-2 siRNA (h) is a target-specific 19-25 nt siRNA 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 PEN-2 shRNA Plasmid (h): sc-45986-SH and PEN-2 shRNA (h) Lentiviral Particles: sc-45986-V as alternate gene silencing products.

## 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

PEN-2 siRNA (h) is recommended for the inhibition of PEN-2 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

PEN-2 (1C12-G5): sc-293392 is recommended as a control antibody for monitoring of PEN-2 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 PEN-2 gene expression knockdown using RT-PCR Primer: PEN-2 (h)-PR: sc-45986-PR (20  $\mu$ l, 411 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Zhu, Z., et al. 2024. PEN-2/ErbB4 signaling regulates stemness of pancreatic ductal carcinoma. *Biochim. Biophys. Acta Mol. Basis Dis.* 1870: 167316.

## 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.