

# BACE siRNA (h): sc-37224

## BACKGROUND

Autosomal dominant Alzheimer's disease is caused by mutations in the gene encoding the  $\beta$ -Amyloid protein precursor (APP). Amyloid  $\beta$ -peptide (A $\beta$ ), the major feature of amyloid plaques in Alzheimer's patients, is the product of APP cleavage by  $\beta$ - and  $\gamma$ -secretases. BACE is the transmembrane protease which cleaves A $\beta$  from APP. BACE and the related protein Asp1 are both widely expressed in human tissue with the highest levels in the pancreas. BACE is localized within Golgi and endosomes.

## REFERENCES

1. Kang, J., et al. 1987. The precursor of Alzheimer's disease Amyloid A4 protein resembles a cell-surface receptor. *Nature* 325: 733-736.
2. Goate, A., et al. 1991. Segregation of a missense mutation in the amyloid precursor protein gene with familial Alzheimer's disease. *Nature* 349: 704-706.
3. Mullan, M., et al. 1992. A pathogenic mutation for probable Alzheimer's disease in the APP gene at the N-terminus of  $\beta$ -Amyloid. *Nat. Genet.* 1: 345-347.
4. Selkoe, D.J. 1998. The cell biology of  $\beta$ -Amyloid precursor protein and presenilin in Alzheimer's disease. *Trends Cell Biol.* 8: 447-453.
5. Yan, R., et al. 1999. Membrane-anchored aspartyl protease with Alzheimer's disease  $\beta$ -secretase activity. *Nature* 402: 533-537.
6. Vassar, R., et al. 1999.  $\beta$ -secretase cleavage of Alzheimer's amyloid precursor protein by the transmembrane aspartic protease BACE. *Science* 286: 735-741.

## CHROMOSOMAL LOCATION

Genetic locus: BACE1 (human) mapping to 11q23.3.

## PRODUCT

BACE 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 BACE shRNA Plasmid (h): sc-37224-SH and BACE shRNA (h) Lentiviral Particles: sc-37224-V as alternate gene silencing products.

For independent verification of BACE (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-37224A, sc-37224B and sc-37224C.

## 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

BACE siRNA (h) is recommended for the inhibition of BACE 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

BACE (61-3E7): sc-33711 is recommended as a control antibody for monitoring of BACE 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 BACE gene expression knockdown using RT-PCR Primer: BACE (h)-PR: sc-37224-PR (20  $\mu$ l, 500 bp). Annealing temperature for the primers should be 55-60 $^{\circ}$  C and the extension temperature should be 68-72 $^{\circ}$  C.

## SELECT PRODUCT CITATIONS

1. Sil, S., et al. 2020. HIV-1 Tat-mediated astrocytic amyloidosis involves the HIF-1 $\alpha$ /lncRNA BACE1-AS axis. *PLoS Biol.* 18: e3000660.
2. Sil, S., et al. 2021. Astrocytes & astrocyte derived extracellular vesicles in morphine induced amyloidopathy: implications for cognitive deficits in opiate abusers. *Aging Dis.* 12: 1389-1408.

## 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.