

# $\beta_3$ -AR siRNA (m): sc-39869

## BACKGROUND

$\beta_3$ -adrenergic receptors ( $\beta_3$ -ARs) bind catecholamines (epinephrine, nor-epinephrine) and primarily regulate lipolysis and thermogenesis in adipose.  $\beta_3$ -ARs are present in adipose tissues and heart, and in smooth muscle of bladder, colon, small intestine and stomach. The human corpus cavernosum exhibits basal  $\beta_3$ -AR-mediated vasorelaxant tone and activity is linked to inhibition of the RhoA/Rho-kinase pathway.  $\beta_3$ -AR interacts directly with the SH3 domain of Src through proline-rich motifs (PXXP) in the third intracellular loop and the carboxy-terminus.

## REFERENCES

- Danforth, E., Jr., et al. 1997. Obesity and diabetes and the  $\beta_3$ -AR. *Eur. J. Endocrinol.* 136: 362-365.
- Gros, J., et al. 1999. Expression of human  $\beta_3$ -AR induces adipocyte-like features in CHO/K1 fibroblasts. *J. Cell Sci.* 112: 3791-3797.
- Cao, W., et al. 2000. Direct binding of activated c-Src to the  $\beta_3$ -AR is required for MAP kinase activation. *J. Biol. Chem.* 275: 38131-38134.
- Dixon, T.M., et al. 2001. CCAAT/enhancer-binding protein  $\alpha$  is required for transcription of the  $\beta_3$ -AR gene during adipogenesis. *J. Biol. Chem.* 276: 722-728.
- Steinle, J.J., et al. 2003.  $\beta_3$ -ARs regulate retinal endothelial cell migration and proliferation. *J. Biol. Chem.* 278: 20681-20686.
- Cirino, G., et al. 2003. Involvement of  $\beta_3$ -AR activation via cyclic GMP- but not NO-dependent mechanisms in human corpus cavernosum function. *Proc. Natl. Acad. Sci. USA* 100: 5531-5536.

## CHROMOSOMAL LOCATION

Genetic locus: *Adrb3* (mouse) mapping to 8 A2.

## PRODUCT

$\beta_3$ -AR siRNA (m) 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  $\beta_3$ -AR shRNA Plasmid (m): sc-39869-SH and  $\beta_3$ -AR shRNA (m) Lentiviral Particles: sc-39869-V as alternate gene silencing products.

For independent verification of  $\beta_3$ -AR (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-39869A, sc-39869B and sc-39869C.

## 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

$\beta_3$ -AR siRNA (m) is recommended for the inhibition of  $\beta_3$ -AR expression in mouse 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

$\beta_3$ -AR (C-5): sc-515763 is recommended as a control antibody for monitoring of  $\beta_3$ -AR 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>TM</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  $\beta_3$ -AR gene expression knockdown using RT-PCR Primer:  $\beta_3$ -AR (m)-PR: sc-39869-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.

## SELECT PRODUCT CITATIONS

- Hiraike, Y., et al. 2017. NFIA co-localizes with PPAR $\gamma$  and transcriptionally controls the brown fat gene program. *Nat. Cell Biol.* 19: 1081-1092.
- Wu, Q.Q., et al. 2018. Aucubin protects against pressure overload-induced cardiac remodelling via the  $\beta_3$ -adrenoceptor-neuronal NOS cascades. *Br. J. Pharmacol.* 175: 1548-1566.

## 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.