SANTA CRUZ BIOTECHNOLOGY, INC.

PGC-1β siRNA (m): sc-62784

BACKGROUND

Transcription factors exert their effects by associating with co-activator or corepressor proteins. The co-activator complexes are thought to be constitutively active, requiring only proper positioning in the genome to initiate transcription. Co-activators include the steroid receptor co-activator (SRC) and CREB binding protein (CBP) families that contain histone acetyltransferase (HAT) activity, which modifies chromatin structure. PPARγ co-activator-1β (PGC-1β), also known as PERC or PPARGC1B, functions as a transcriptional activator for NRF-1 (nuclear respiratory factor-1), ERα (estrogen receptor α) and GR (glucocorticoid receptor). Through its interaction with various receptors, PGC-1β is involved in the regulation of mitochondrial biogenesis events such as energy expenditure and non-oxidative glucose metabolism. Expressed throughout the body with the highest expression in brain, heart and skeletal muscle, PGC-1β is induced by Insulin and repressed by saturated fatty acids. The gene encoding PGC-1β is polymorphic and variations in the expressed protein may contribute to the development of obesity.

REFERENCES

1. Kressler, D., et al. 2002. The PGC-1-related protein PERC is a selective co-activator of estrogen receptor α. J. Biol. Chem. 277: 13918-13925.
2. Huss, J.M., et al. 2002. Peroxisome proliferator-activated receptor co-activator-1α (PGC-1α) co-activates the cardiac-enriched nuclear receptors estrogen-related receptor-α and -γ. Identification of novel leucine-rich interaction motif within PGC-1α. J. Biol. Chem. 277: 40265-40274.

CHROMOSOMAL LOCATION

Genetic locus: Ppargc1b (mouse) mapping to 18 E1.

PRODUCT

PGC-1β 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PGC-1β shRNA Plasmid (m): sc-62784-SH and PGC-1β shRNA (m) Lentiviral Particles: sc-62784-V as alternate gene silencing products.

For independent verification of PGC-1β (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-62784A, sc-62784B and sc-62784C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

PGC-1β siRNA (m) is recommended for the inhibition of PGC-1β 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 µM in 66 µl. 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

PGC-1β (E-9): sc-373771 is recommended as a control antibody for monitoring of PGC-1β 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 PGC-1β gene expression knockdown using RT-PCR Primer: PGC-1β (m)-PR: sc-62784-PR (20 µl, 425 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Shi, L., et al. 2015. Dihydromyricetin improves skeletal muscle Insulin sensitivity by inducing autophagy via the AMPK-PGC-1α-Sirt3 signaling pathway. Endocrine 50: 378-389.
2. Chen, H., et al. 2016. PGC-1β suppresses saturated fatty acid-induced macrophage inflammation by inhibiting TAK1 activation. IUBMB Life 68: 145-155.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.