SANTA CRUZ BIOTECHNOLOGY, INC.

PGC-1β siRNA (h): sc-62783

BACKGROUND

Transcription factors exert their effects by associating with coactivator or corepressor proteins. The coactivator complexes are thought to be constitutively active, requiring only proper positioning in the genome to initiate transcription. Coactivators include the steroid receptor coactivator (SRC) and CREB binding protein (CBP) families that contain histone acetyltransferase (HAT) activity, which modifies chromatin structure. PPARγ coactivator-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 coactivator of estrogen receptor α. J. Biol. Chem. 277: 13918-13925.
2. Huss, J.M., et al. 2002. Peroxisome proliferator-activated receptor coactivator-1α (PGC-1α) coactivates 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.
3. Shiraki, T., et al. 2003. Activation of orphan nuclear constitutive androstane receptor requires subnuclear targeting by peroxisome proliferator-activated receptor-γ coactivator-1α. A possible link between xenobiotic response and nutritional state. J. Biol. Chem. 278: 11344-11350.
4. Andersen, G., et al. 2005. Evidence of an association between genetic variation of the coactivator PGC-1β and obesity. J. Med. Genet. 42: 402-407.
5. Staiger, H., et al. 2005. Fatty acid-induced differential regulation of the genes encoding peroxisome proliferator-activated receptor-γ coactivator-1α and -1β in human skeletal muscle cells that have been differentiated *in vitro*. Diabetologia 48: 2115-2118.

CHROMOSOMAL LOCATION

Genetic locus: PPARGC1B (human) mapping to 5q32.

PRODUCT

PGC-1β 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PGC-1β shRNA Plasmid (h): sc-62783-SH and PGC-1β shRNA (h) Lentiviral Particles: sc-62783-V as alternate gene silencing products.

For independent verification of PGC-1β (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-62783A, sc-62783B and sc-62783C.

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.

APPLICATIONS

PGC-1β siRNA (h) is recommended for the inhibition of PGC-1β 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 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 (6C3F6): sc-517279 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PGC-1β gene expression knockdown using RT-PCR Primer: PGC-1β (h)-PR: sc-62783-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Galmés-Pascual, B.M., et al. 2017. 17β-estradiol improves hepatic mitochondrial biogenesis and function through PGC1B. J. Endocrinol. 232: 297-308.

RESEARCH USE

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

PROTOCOLS

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