

## PGC-1 $\alpha$ siRNA (bovine): sc-270509

### 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 coactivator (SRC) and CREB binding protein (CBP) families that contain histone acetyltransferase (HAT) activity, which modifies chromatin structure. PPAR $\gamma$  co-activator-1 (PGC-1) is a transcriptional cofactor of nuclear respiratory factor-1 (NRF-1), PPAR $\beta$ , PPAR $\alpha$  and other nuclear receptors that is induced by exposure to cold temperatures and is involved in regulating thermogenic gene expression, protein uncoupling, and mitochondrial biogenesis. PGC-1 has a low inherent transcriptional activity when it is not bound to a transcription factor. Docking of PGC-1 to PPAR $\gamma$  stimulates an apparent conformational change that then enables PGC-1 to bind to and assemble into complexes, which include the additional cofactors SRC-1 and CBP/p300, and results in a large increase in transcriptional activity.

### REFERENCES

1. Onate, S.A., et al. 1995. Sequence and characterization of a co-activator for the steroid hormone receptor superfamily. *Science* 270: 1354-1357.
2. Torchia, J., et al. 1997. The transcriptional co-activator p/CIP binds CBP and mediates nuclear-receptor function. *Nature* 387: 677-684.
3. Puigserver, P., et al. 1998. A cold-inducible co-activator of nuclear receptors linked to adaptive thermogenesis. *Cell* 92: 829-839.
4. Xu, L., et al. 1999. Co-activator and corepressor complexes in nuclear receptor function. *Curr. Opin. Genet. Dev.* 9: 140-147.
5. Wu, Z., et al. 1999. Mechanisms controlling mitochondrial biogenesis and respiration through the thermogenic co-activator PGC-1. *Cell* 98: 115-124.
6. Puigserver, P., et al. 1999. Activation of PPAR $\gamma$  co-activator-1 through transcription factor docking. *Science* 286: 1368-1371.

### CHROMOSOMAL LOCATION

Genetic locus: PPARGC1A (bovine) mapping to 6.

### PRODUCT

PGC-1 $\alpha$  siRNA (bovine) 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 PGC-1 $\alpha$  shRNA Plasmid (bovine): sc-270509-SH and PGC-1 $\alpha$  shRNA (bovine) Lentiviral Particles: sc-270509-V as alternate gene silencing products.

For independent verification of PGC-1 $\alpha$  (bovine) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270509A, sc-270509B and sc-270509C.

### RESEARCH USE

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

### 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

PGC-1 $\alpha$  siRNA (bovine) is recommended for the inhibition of PGC-1 $\alpha$  expression in bovine 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.

### RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PGC-1 $\alpha$  gene expression knockdown using RT-PCR Primer: PGC-1 $\alpha$  (bovine)-PR: sc-270509-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.