

## ERR $\beta$ siRNA (m): sc-60605

### BACKGROUND

Estrogen and progesterone receptors are members of a family of transcription factors that are regulated by the binding of their cognate ligands. The interaction of hormone-bound estrogen receptors with estrogen responsive elements (EREs) alters transcription of ERE-containing genes. Estrogen receptor-related proteins (ERR $\alpha$ ,  $\beta$  and  $\gamma$ ) are orphan nuclear receptors. Like estrogen receptors, ERRs bind specifically to EREs to activate reporter genes. ERR $\beta$ , also known as steroid hormone receptor ERR2 or estrogen receptor-like 2, contains a DNA binding domain and is highly homologous to ER $\alpha$ . ERR $\beta$  is expressed during mammary gland development and is critical in embryo development. It is expressed in a subset of diploid trophoblast cells which make up the chorion. The loss of ERR $\beta$  results in severely impaired chorion formation leading to placental failure and embryonic death. This suggests that ERR $\beta$  may be necessary for the proper formation or function of the chorion. In addition, ERR $\beta$  potently represses the transcriptional activity of Nrf2.

### REFERENCES

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2. Hong, H., et al. 1999. Hormone-independent transcriptional activation and co-activator binding by novel orphan nuclear receptor ERR3. *J. Biol. Chem.* 274: 22618-22626.
3. Chen, F., et al. 1999. Identification of two hERR2-related novel nuclear receptors utilizing bioinformatics and inverse PCR. *Gene* 228: 101-109.
4. Greschik, H., et al. 2002. Structural and functional evidence for ligand-independent transcriptional activation by the estrogen-related receptor 3. *Mol. Cell* 9: 303-313.
5. Cheung, C.P., et al. 2005. Expression and functional study of estrogen receptor-related receptors in human prostatic cells and tissues. *J. Clin. Endocrinol. Metab.* 90: 1830-1844.
6. Gearhart, M.D., et al. 2005. Inhibition of DNA binding by human estrogen-related receptor 2 and estrogen receptor  $\alpha$  with minor groove binding polyamides. *Biochemistry* 44: 4196-4203.
7. Zhou, W., et al. 2006. Identification and characterization of two novel splicing isoforms of human estrogen-related receptor  $\beta$ . *J. Clin. Endocrinol. Metab.* 91: 569-579.
8. Zhou, W., et al. 2007. ERR $\beta$ : A potent inhibitor of Nrf2 transcriptional activity. *Mol. Cell. Endocrinol.* 278: 52-62.

### CHROMOSOMAL LOCATION

Genetic locus: Esrrb (mouse) mapping to 12 D2.

### 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.

### PRODUCT

ERR $\beta$  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 ERR $\beta$  shRNA Plasmid (m): sc-60605-SH and ERR $\beta$  shRNA (m) Lentiviral Particles: sc-60605-V as alternate gene silencing products.

For independent verification of ERR $\beta$  (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-60605A, sc-60605B and sc-60605C.

### 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

ERR $\beta$  siRNA (m) is recommended for the inhibition of ERR $\beta$  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.

### RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ERR $\beta$  gene expression knockdown using RT-PCR Primer: ERR $\beta$  (m)-PR: sc-60605-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.