SANTA CRUZ BIOTECHNOLOGY, INC.

DUOX1 siRNA (h): sc-60550

BACKGROUND

Dual oxidase 1 (DUOX1), a homolog of glycoprotein p91Phox, is expressed in airway epithelium and generates reactive oxygen species (Ros). DUOX1, also designated NADPH thyroid oxidase or large NOX1, is a multi-pass membrane protein predominantly expressed in thyrocytes and tracheal surface epithelial cells, as well as thyroid, trachea and bronchium. DUOX1 generates hydrogen peroxide, which is crucial for thyroid peroxidase and lactoperoxidase. It is also involved in thyroid hormone synthesis and lactoperoxidase-mediated antimicrobial defense in mucosa. DUOX1, which also plays a role in mucin expression, is widely expressed in fetal tissues.

REFERENCES

1. De Deken, X., et al. 2002. Characterization of ThOX proteins as components of the thyroid H_2O_2-generating system. Exp. Cell Res. 273: 187-196.
2. Geiszt, M., et al. 2003. Dual oxidases represent novel hydrogen peroxide sources supporting mucosal surface host defense. FASEB J. 17: 1502-1504.
3. Wong, J.L., et al. 2004. The oxidative burst at fertilization is dependent upon activation of the dual oxidase UDX1. Dev. Cell 7: 801-814.
4. Harper, R.W., et al. 2005. Differential regulation of dual NADPH oxidases/peroxidases, DUOX1 and DUOX2, by Th1 and Th2 cytokines in respiratory tract epithelium. FEBS Lett. 579: 4911-4917.
5. Wang, D., et al. 2005. Identification of a novel partner of DUOX: EFP1, a thioredoxin-related protein. J. Biol. Chem. 280: 3096-3103.
6. Ameziane-El-Hassani, R., et al. 2005. Dual oxidase 2 has an intrinsic Ca^{2+}-dependent H_2O_2-generating activity. J. Biol. Chem. 280: 30046-30054.

CHROMOSOMAL LOCATION

Genetic locus: DUOX1 (human) mapping to 15q21.1.

PRODUCT

DUOX1 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 DUOX1 shRNA Plasmid (h): sc-60550-SH and DUOX1 shRNA (h) Lentiviral Particles: sc-60550-V as alternate gene silencing products.

For independent verification of DUOX1 (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-60550A, sc-60550B and sc-60550C.

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

DUOX1 siRNA (h) is recommended for the inhibition of DUOX1 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

DUOX1 (H-9): sc-393096 is recommended as a control antibody for monitoring of DUOX1 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 DUOX1 gene expression knockdown using RT-PCR Primer: DUOX1 (h)-PR: sc-60550-PR (20 µl, 419 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yamaguchi, R., et al. 2022. IL-23 production in human macrophages is regulated negatively by tumor necrosis factor α-induced protein 3 and positively by specificity protein 1 after stimulation of the toll-like receptor 7/8 signaling pathway. Heliyon 8: e08887.

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.