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Nox3 siRNA (m): sc-45485

BACKGROUND

Nox3 (GP91-3, NADPH oxidase 3) is a plasma membrane-associated enzyme that catalyzes the production of superoxide by a one-electron reduction of oxygen, using NADPH as the electron donor. Nox3 contains six membrane-spanning regions, conserved flavin and pyridine nucleotide-binding sites, and histidines possibly involved in heme ligation. It functions together with p22phox as an enzyme constitutively producing superoxide. Nox3 expression promotes p22phox transport to the plasma membrane and can be inhibited by mutations in the p22phox binding sites (SH3 domains) of p47phox or Nox1. Nox3 localizes to the vestibular and cochlear sensory epithelia and to spiral ganglions and participates in otoconia formation in inner ears, which is required for perception of balance and gravity.

REFERENCES

1. Kikuchi, H., et al. 2000. NADPH oxidase subunit, gp91^{phox} homologue, preferentially expressed in human colon epithelial cells. *Gene* 254: 237-243.
2. Cheng, G., et al. 2001. Homologs of gp91^{phox}: cloning and tissue expression of Nox3, Nox4, and Nox5. *Gene* 269: 131-140.
3. Cheng, G., et al. 2004. Nox3 regulation by NOXO1, p47^{phox} and p67^{phox}. *J. Biol. Chem.* 279: 34250-34255.
4. Banfi, B., et al. 2004. Nox3, a superoxide-generating NADPH oxidase of the inner ear. *J. Biol. Chem.* 279: 46065-46072.
5. Ueno, N., et al. 2005. The NADPH oxidase Nox3 constitutively produces superoxide in a p22^{phox}-dependent manner: its regulation by oxidase organizers and activators. *J. Biol. Chem.* 280: 23328-23339.
6. Ueyama, T., et al. 2006. Involvement of Rac 1 in activation of multicomponent Nox1- and Nox3-based NADPH oxidases. *Mol. Cell. Biol.* 26: 2160-2174.
7. Hordijk, P.L., et al. 2006. Regulation of NADPH oxidases: the role of Rac proteins. *Circ. Res.* 98: 453-462.
8. Geiszt, M., et al. 2006. NADPH oxidases: new kids on the block. *Cardiovasc. Res.* 71: 289-299.

CHROMOSOMAL LOCATION

Genetic locus: Nox3 (mouse) mapping to 17 A1.

PRODUCT

Nox3 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Nox3 shRNA Plasmid (m): sc-45485-SH and Nox3 shRNA (m) Lentiviral Particles: sc-45485-V as alternate gene silencing products.

For independent verification of Nox3 (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-45485A, sc-45485B and sc-45485C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Nox3 siRNA (m) is recommended for the inhibition of Nox3 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 μ M in 66 μ 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 Nox3 gene expression knockdown using RT-PCR Primer: Nox3 (m)-PR: sc-45485-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, X., et al. 2006. Toll-like receptor 4 deficiency causes pulmonary emphysema. *J. Clin. Invest.* 116: 3050-3059.
2. Zhang, Y., et al. 2016. An endothelial Hsp70-TLR4 axis limits Nox3 expression and protects against oxidant injury in lungs. *Antioxid. Redox Signal.* 24: 991-1012.

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.