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band 3 siRNA (h): sc-42735

BACKGROUND

Band 3, also designated AE1, is an erythrocyte membrane glycoprotein that contributes to cell structural integrity and mediates exchange of chloride and bicarbonate across the phospholipid bilayer. The diverse functions of the approximately 900 amino acid protein are mediated by 2 distinct domains. The amino terminal domain, also known as cdb3 for cytoplasmic domain of erythrocyte membrane band 3, acts as an attachment site for the erythrocyte skeleton by binding ankyrin. The carboxy-terminal, membrane-associated domain carries out exchange transport of anions. Degradation of band 3 can generate an aging antigen known as senescent cell antigen, or SCA, which is expressed on old cells and marks them for removal by the immune system. An isoform of band 3, which lacks the first 65 amino acids and does not bind ankyrin, is expressed in kidney.

REFERENCES

1. Brock, C.J., et al. 1983. The human erythrocyte anion-transport protein. Partial amino acid sequence, conformation and a possible molecular mechanism for anion exchange. *Biochem. J.* 213: 577-586
2. Kollert-Jons, A., et al. 1993. Anion exchanger 1 in human kidney and oncocyoma differs from erythroid AE1 in its NH₂ terminus. *Am. J. Physiol.* 265: F813-F821.
3. Jay, D.G. 1996. Role of band 3 in homeostasis and cell shape. *Cell* 86: 853-854.
4. Motais, R., et al. 1997. Association of the band 3 protein with a volume-activated, anion and amino acid channel: a molecular approach. *J. Exp. Biol.* 200: 361-367.
5. Tanner, M.J. 1997. The structure and function of band 3(AE1): recent developments (review). *Mol. Membr. Biol.* 14: 155-165.
6. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 109270. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: SLC4A1 (human) mapping to 17q21.31.

PRODUCT

band 3 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 band 3 shRNA Plasmid (h): sc-42735-SH and band 3 shRNA (h) Lentiviral Particles: sc-42735-V as alternate gene silencing products.

For independent verification of band 3 (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-42735A, sc-42735B and sc-42735C.

PROTOCOLS

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

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

band 3 siRNA (h) is recommended for the inhibition of band 3 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

band 3 (A-6): sc-133190 is recommended as a control antibody for monitoring of band 3 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 band 3 gene expression knockdown using RT-PCR Primer: band 3 (h)-PR: sc-42735-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. Kurano, M., et al. 2017. Involvement of band 3 in the efflux of sphingosine 1-phosphate from erythrocytes. *PLoS ONE* 12: e0177543.

RESEARCH USE

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