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SANTA CRUZ BIOTECHNOLOGY, INC.

Na^+/K^+-ATPase β2 siRNA (m): sc-149789

BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na^+/K^+-ATPase) is an oligomeric plasma membrane complex that couples the hydrolysis of one molecule of ATP to the import of three Na^+ ions and two K^+ ions against their respective electrochemical gradients. As a member of the P-type family of ion motives, Na^+/K^+-ATPase plays a critical role in maintaining cellular volume, resting membrane potential and Na^+-coupled solute transport. Multiple isoforms of three subunits, designated α, β and γ, comprise the Na^+/K^+-ATPase oligomer. The α subunit contains the binding sites for ATP and the cations, while the glycosylated β subunit ensures correct folding and membrane insertion of the α subunits. The small γ subunit co-localizes with the α subunit in nephron segments, where it increases the affinity of Na^+/K^+-ATPase for ATP. The β subunit, but not the γ subunit, is essential for normal activity of Na^+/K^+-ATPase. Na^+/K^+-ATPase β2, also known as ATP1B2, is a 290 amino acid single-pass type II membrane protein that exists as a non-catalytic subunit of the active ATPase complex.

REFERENCES

1. Pagliusi, S., et al. 1989. Identification of a cDNA clone specific for the neural cell adhesion molecule AMOG. J. Neurosci. Res. 22: 113-119.
2. Malo, D., et al. 1990. Assignment of Na,K-ATPase β 2-subunit gene (Atpb-2) to mouse chromosome 11. Genomics 6: 697-699.
3. Gloor, S., et al. 1990. The adhesion molecule on glia (AMOG) is a homologue of the β subunit of the Na,K-ATPase. J. Cell Biol. 110: 165-174.
4. Hsieh, C.L., et al. 1990. Assignment of Amog (adhesion molecule on glia) gene to mouse chromosome 11 near Zfp-3 and Asgr-1,2 and to human chromosome 17. Somat. Cell Mol. Genet. 16: 401-405.
5. Stengelin, M.K. and Hoffman, J.F. 1997. Na,K-ATPase subunit isoforms in human reticulocytes: evidence from reverse transcription-PCR for the presence of α1, α3, β2, β3, and γ. Proc. Natl. Acad. Sci. USA 94: 5943-5948.
6. Avila, J., et al. 1998. Structure and expression of the human Na,K-ATPase β 2-subunit gene. Gene 208: 221-227.

CHROMOSOMAL LOCATION

Genetic locus: Atp1b2 (mouse) mapping to 11 B3.

PRODUCT

Na^+/K^+-ATPase β2 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Na^+/K^+-ATPase β2 shRNA Plasmid (m): sc-149789-SH and Na^+/K^+-ATPase β2 shRNA (m) Lentiviral Particles: sc-149789-V as alternate gene silencing products.

For independent verification of Na^+/K^+-ATPase β2 (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-149789A, sc-149789B and sc-149789C.

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

Na^+/K^+-ATPase β2 siRNA (m) is recommended for the inhibition of Na^+/K^+-ATPase β2 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 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

Na^+/K^+-ATPase β2 (N-13): sc-168700 is recommended as a control antibody for monitoring of Na^+/K^+-ATPase β2 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 (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Na^+/K^+-ATPase β2 gene expression knockdown using RT-PCR Primer: Na^+/K^+-ATPase β2 (m)-PR: sc-149789-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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