SANTA CRUZ BIOTECHNOLOGY, INC.

AKAP 3 siRNA (m): sc-60144

BACKGROUND

The type II cAMP-dependent protein kinase (PKA) is a multifunctional kinase with a broad range of substrates. Specificity of PKA signaling is mediated by the compartmentalization of the kinase to specific sites within the cell. To maintain this specific localization, the R subunit (RII) of PKA interacts with specific RII-anchoring proteins, designated A-kinase anchoring proteins (AKAP). AKAP 3, also known as AKAP 110, FSP95, PRKA3 and SOB1, binds both PKA and PDE4A and functions as a scaffolding protein in spermatozoa to regulate local cAMP concentrations and modulate sperm functions. Expression of AKAP 3 in normal tissues is restricted to the testis, where bicarbonate stimulates tyrosine phosphorylation of AKAP 3, thereby increasing its recruitment of PKA. AKAP-3 also exhibits high expression in patients with epithelial ovarian cancer (EOC). It demonstrates tumor-restricted expression and appears to be associated with worse overall survival, which make AKAP 3 a potential target for antigen-specific immunotherapy in EOC.

REFERENCES

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2. Niu, J., et al. 2001. Interaction of heterotrimeric G13 protein with an A-kinase-anchoring protein 110 (AKAP 110) mediates cAMP-independent PKA activation. Curr. Biol. 11: 1686-1690.
3. Turner, R.M., et al. 2001. Molecular genetic analysis of two human sperm fibrous sheath proteins, AKAP 4 and AKAP 3, in men with dysplasia of the fibrous sheath. J. Androl. 22: 302-315.
4. Hasegawa, K., et al. 2003. A-kinase anchoring protein 3 messenger RNA expression in ovarian cancer and its implication on prognosis. Int. J. Cancer 108: 86-90.
5. Lea, I.A., et al. 2004. Association of sperm protein 17 with A-kinase anchoring protein 3 in flagella. Reprod. Biol. Endocrinol. 2: 57.
6. Luconi, M., et al. 2005. Tyrosine phosphorylation of the a kinase anchoring protein 3 (AKAP3) and soluble adenylate cyclase are involved in the increase of human sperm motility by bicarbonate. Biol. Reprod. 72: 22-32.
7. Bajpai, M., et al. 2005. AKAP3 selectively binds PDE4A isoforms in bovine spermatozoa. Biol. Reprod. 74: 109-118.
8. Sharma, S., et al. 2005. A-kinase anchoring protein 3 messenger RNA expression correlates with poor prognosis in epithelial ovarian cancer. Gynecol. Oncol. 99: 183-188.

CHROMOSOMAL LOCATION

Genetic locus: Akap3 (mouse) mapping to 6 F3.

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.

PRODUCT

AKAP 3 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 AKAP 3 shRNA Plasmid (m): sc-60144-SH and AKAP 3 shRNA (m) Lentiviral Particles: sc-60144-V as alternate gene silencing products.

For independent verification of AKAP 3 (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-60144A, sc-60144B and sc-60144C.

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

AKAP 3 siRNA (m) is recommended for the inhibition of AKAP 3 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor AKAP 3 gene expression knockdown using RT-PCR Primer: AKAP 3 (m)-PR: sc-60144-PR (20 µl, 581 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.