SANTA CRUZ BIOTECHNOLOGY, INC.

PTα siRNA (h): sc-40892

BACKGROUND

Prothymosin α (PTα) is a nuclear protein that is widely expressed in mammalian tissues, including kidney, liver, spleen, normal lymphocytes, human T cell leukemia virus-infected T cells and myeloma cells. The human PTα gene maps to chromosome 2 and encodes a protein that exhibits punctuated nuclear distribution, which correlates to transcription sites. PTα is a chromatin-remodeling protein that was initially thought to mediate T lymphocyte maturation, but subsequently has been shown to be involved in cell cycle progression, proliferation and cell differentiation. PTα is thought to be transported into the nucleus by the karyopherin β1-Rch-1 complex, where it associates with Histones H2A, H2B, H3 and H4. Also, PTα is phosphorylated on Thr 7 and Thr 12 or 13 by Prothymosin α-phosphorylating kinase (PTαK) in a mitogen-activating pathway. The amino terminus of PTα is cleaved to produce a secreted, biologically active peptide thymosin α1, which may be used as an immunomodulator in cancer patients and patients with chronic active hepatitis, or as an immunoenhancer of vaccines in immunocompromised individuals.

REFERENCES

1. Eschenfeldt, W.H., et al. 1986. The human prothymosin α gene is polymorphic and induced upon growth stimulation: evidence using a cloned cDNA. Proc. Natl. Acad. Sci. USA 83: 9403-9407.
2. Barcia, M.G., et al. 1992. Prothymosin α is phosphorylated by casein kinase-2. FEBS Lett. 312: 152-156.
3. Naylor, P.H., et al. 1992. Identification of immunoreactive forms of thymosin α1 in serum and supernatants by combining HPLC and RIA. Int. J. Immunopharmacol. 14: 1267-1278.
4. Szabo, P., et al. 1993. Prothymosin α gene in humans: organization of its promoter region and localization to chromosome 2. Hum. Genet. 90: 629-634.
5. Perez-Estevez, A., et al. 1997. A 180-kDa protein kinase seems to be responsible for the phosphorylation of prothymosin α observed in proliferating cells. J. Biol. Chem. 272: 10506-10513.
6. Segade, F. and Gomez-Marquez, J. 1999. Prothymosin α. Int. J. Biochem. Cell Biol. 31: 1243-1248.
7. Vareli, K., et al. 2000. Nuclear distribution of prothymosin α and parathymosin: evidence that prothymosin α is associated with RNA synthesis processing and parathymosin with early DNA replication. Exp. Cell Res. 257: 152-161.
8. Freire, J., et al. 2001. Identification of nuclear-import and cell-cycle regulatory proteins that bind to prothymosin α. Biochem. Cell Biol. 79: 123-131.

CHROMOSOMAL LOCATION

Genetic locus: PTMA (human) mapping to 2q37.1.

PROTOCOLS

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

PRODUCT

PTα 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 PTα shRNA Plasmid (h): sc-40892-SH and PTα shRNA (h) Lentiviral Particles: sc-40892-V as alternate gene silencing products.

For independent verification of PTα (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-40892A, sc-40892B and sc-40892C.

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

PTα siRNA (h) is recommended for the inhibition of PTα 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PTα gene expression knockdown using RT-PCR Primer: PTα (h)-PR: sc-40892-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.