SANTA CRUZ BIOTECHNOLOGY, INC.

IL-5Rα siRNA (m): sc-40064

BACKGROUND

Interleukin 5 (IL-5) is a soluble T cell-derived factor, also known as T cell-replacing factor (TRF), that induces B cell and eosinophil growth and differentiation. IL-5 exerts its biological activity through the IL-5 receptor (IL-5R), which is composed of two chains: an α chain that binds IL-5 with low affinity and a β chain that does not bind IL-5, but together with the IL-5 α chain, constitutes the high affinity IL-5 receptor. The cytoplasmic domain of both the α and β chains is essential for signal transduction. Specifically, the membrane-proximal proline-rich sequence of the cytoplasmic domain of the IL-5R receptor α subunit, IL-5Rα, is critical for the IL-5 induced proliferative response, expression of nuclear proto-oncogenes and tyrosine phosphorylation of cellular proteins, such as JAK1 and JAK2. Alternative splicing of the IL-5Rα gene produces several isoforms, including a membrane-anchored isoform and a soluble isoform. The soluble isoform competes with IL-5 for binding to IL-5R and inhibits IL-5-mediated receptor activation and inflammatory mediator production, and, therefore, may be useful in treating asthma.

REFERENCES

1. Takatsu, K., et al. 1980. Antigen-induced T cell-replacing factor (TRF). I. Functional characterization of a TRF-producing helper T cell subset and genetic studies on TRF production. J. Immunol. 124: 2414-2422.
2. Tuypens, T., et al. 1992. Organization and chromosomal localization of the human IL-5Rα gene. Eur. Cytokine Netw. 3: 451-459.
3. Kikuchi, Y., et al. 1994. Biochemical and functional characterization of soluble form of IL-5 receptor α (sIL-5Rα). Development of ELISA system for detection of sIL-5Rα. J. Immunol. Methods 167: 289-298.
4. Takaki, S., et al. 1994. A critical cytoplasmic domain of the interleukin-5 (IL-5) receptor α chain and its function in IL-5-mediated growth signal transduction. Mol. Cell. Biol. 14: 7404-7413.
5. Kotsimbos, A.T., et al. 1997. IL-5 and IL-5 receptor in asthma. Mem. Inst. Oswaldo Cruz 92: 75-91.
6. Monahan, J., et al. 1997. Attenuation of IL-5-mediated signal transduction, eosinophil survival, and inflammatory mediator release by a soluble human IL-5 receptor. J. Immunol. 159: 4024-4034.

CHROMOSOMAL LOCATION

Genetic locus: Il5ra (mouse) mapping to 6 E1.

PRODUCT

IL-5Rα 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 IL-5Rα shRNA Plasmid (m): sc-40064-SH and IL-5Rα shRNA (m) Lentiviral Particles: sc-40064-V as alternate gene silencing products.

For independent verification of IL-5Rα (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-40064A, sc-40064B and sc-40064C.

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

IL-5Rα siRNA (m) is recommended for the inhibition of IL-5Rα 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 IL-5Rα gene expression knockdown using RT-PCR Primer: IL-5Rα (m)-PR: sc-40064-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.

PROTOCOLS

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