

## IL-12R $\beta$ 2 siRNA (m): sc-40034

### BACKGROUND

IL-12, a heterodimeric cytokine composed of two disulfide-bonded glycoprotein subunits, p35 and p40, has pleiotropic activities including stimulation of the proliferation of activated T and NK cells, induction of IFN- $\gamma$  production by PBMCs, enhancement of the lytic activity of NK/LAK cells and promotion of T-helper (Th) 1 cell responses. The T cell response to IL-12 is mediated through two receptor proteins, designated IL-12R $\beta$ 1 and IL-12R $\beta$ 2. The genes encoding human IL-12R $\beta$ 1 and IL-12R $\beta$ 2 map to chromosomes 19p13.1 and 1p31.3, respectively. Increased IL-12R $\beta$ 2 expression is crucial in regulating Th1 differentiation, whereas IL-12R $\beta$ 1 expression is less restricted. Inhibition of IL-12 activity may provide treatment for diseases associated with pathologic Th1 responses, such as multiple sclerosis or Crohn's disease, while administration of recombinant IL-12 may aid in the treatment for allergic disorders and asthma.

### REFERENCES

1. Gubler, U., et al. 1991. Co-expression of two distinct genes is required to generate secreted bioactive cytotoxic lymphocyte maturation factor. *Proc. Natl. Acad. Sci. USA* 88: 4143-4147.
2. Wolf, S.F., et al. 1991. Cloning of cDNA for natural killer cell stimulatory factor, a heterodimeric cytokine with multiple biologic effects on T and natural killer cells. *J. Immunol.* 146: 3074-3081.
3. Manetti, R.P., et al. 1993. Natural killer cell stimulatory factor interleukin-12 (IL-12) induces T helper type-1 (Th1)-specific immune responses and inhibits the development of IL-4-producing Th cells. *J. Exp. Med.* 177: 1199-1204.
4. Yamamoto, K., et al. 1997. Assignment of IL-12R $\beta$ 1 and IL-12R $\beta$ 2, interleukin-12 receptor  $\beta$ 1 and  $\beta$ 2 chains, to human chromosome 19 band p13.1 and chromosome 1 band p31.2, respectively, by *in situ* hybridization. *Cytogenet. Cell Genet.* 77: 257-258.
5. Kawashima, T., et al. 1998. Interleukin-12 induces tyrosine phosphorylation of an 85 kDa protein associated with the interleukin-12 receptor  $\beta$ 1 subunit. *Cell. Immunol.* 186: 39-44.
6. Gately, M.K., et al. 1998. The interleukin-12/interleukin-12-receptor system: role in normal and pathologic immune responses. *Annu. Rev. Immunol.* 16: 495-521.
7. Parrello, T., et al. 2000. Up-regulation of the IL-12 receptor beta 2 chain in Crohn's disease. *J. Immunol.* 165: 7234-7239.

### CHROMOSOMAL LOCATION

Genetic locus: IL12rb2 (mouse) mapping to 6 C1.

### RESEARCH USE

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

### PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

### PRODUCT

IL-12R $\beta$ 2 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see IL-12R $\beta$ 2 shRNA Plasmid (m): sc-40034-SH and IL-12R $\beta$ 2 shRNA (m) Lentiviral Particles: sc-40034-V as alternate gene silencing products.

For independent verification of IL-12R $\beta$ 2 (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-40034A, sc-40034B and sc-40034C.

### 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

### APPLICATIONS

IL-12R $\beta$ 2 siRNA (m) is recommended for the inhibition of IL-12R $\beta$ 2 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  $\mu$ M in 66  $\mu$ l. 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-12R $\beta$ 2 gene expression knockdown using RT-PCR Primer: IL-12R $\beta$ 2 (m)-PR: sc-40034-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.