

## Product Information

### Interleukin-4, human recombinant, expressed in *E. coli*

Catalog Number **I4269**  
Storage Temperature  $-20^{\circ}\text{C}$

Synonyms: IL-4, B cell stimulatory factor-1 (BSF-1),  
mast cell growth factor-2 (MCGF-2),  
T cell growth factor-2 (TCGF-2)

#### Product Description

Interleukin-4 (IL-4) is a pleiotropic cytokine that regulates diverse T and B cell responses including differentiation of naive T cells into the TH2 phenotype, promoting B cell proliferation, antibody isotype switching, and expression of other TH2 cytokines including IL-5 and IL-9.<sup>1,2</sup> IL-4 plays a critical role in the development of allergic inflammation and asthma.<sup>3</sup>

IL-4 binds to two distinct receptors; the type I receptor, a heterodimer consisting of the IL-4R $\alpha$  chain and the common gamma chain,  $\gamma\text{c}$ , and the type II receptor, a heterodimer of IL-4R $\alpha$  and IL-13R $\alpha$ 1.<sup>4</sup>

Naturally occurring IL-4 has a molecular mass of 12–20 kDa. Recombinant human IL-4 is a 14.9 kDa protein containing 129 amino acid residues. Human and mouse IL-4 share a 50% amino acid sequence homology, but their biological actions are species-specific.<sup>5</sup>

This product is lyophilized from a sterile-filtered solution without carrier protein.

Purity:  $\geq 98\%$  (SDS-PAGE)

ED<sub>50</sub>:  $\leq 0.4$  ng/mL

The biological activity of human IL-4 is tested in culture using a factor dependent cell line, TF-1.<sup>6</sup> The ED<sub>50</sub> is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

Endotoxin:  $\leq 1$  EU/ $\mu\text{g}$  protein

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Preparation Instructions

Reconstitute the contents of the vial using sterile water to a concentration of 0.1 mg/mL. This solution can be further diluted into other aqueous buffers and stored at  $2-8^{\circ}\text{C}$  for up to 1 week or at  $-20^{\circ}\text{C}$  for extended use.

#### Storage/Stability

Store the lyophilized product at  $-20^{\circ}\text{C}$ .

Reconstituted IL-4 should be stored in working aliquots at  $-20^{\circ}\text{C}$ . Repeated freezing and thawing, or storage in frost-free freezers is not recommended.

#### References

1. Paul, W.E., Interleukin-4: a prototypic immunoregulatory lymphokine. *Blood*, **77**, 1859-1870 (1991).
2. O'Garra, A., and Arai, N., The molecular basis of T helper 1 and T helper 2 cell differentiation. *Trends Cell Biol.*, **10**, 542-550 (2000).
3. Ryan, J.J. et al., Mast cell homeostasis: a fundamental aspect of allergic disease. *Crit. Rev. Immunol.*, **27**, 15-32 (2007).
4. Callard, R.E. et al., IL-4 and IL-13 receptors: are they one and the same? *Immunol. Today*, **17**, 108-110 (1996).
5. Yokota, T. et al., Molecular biology of interleukin 4 and interleukin 5 genes and biology of their products that stimulate B cells, T cells and hemopoietic cells. *Immunol. Rev.*, **102**, 137-187 (1988).
6. Kitamura, T. et al., Establishment and characterization of a unique human cell line that proliferates dependently on GM-CSF, IL-3, or erythropoietin. *J. Cell Physiol.*, **140**, 323-334 (1989).

EM,EB,RBG,KAA,MAM 08/11-1

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