

NF- κ B (c-Rel) CONTROL PEPTIDEProduct Number **N 6409**Storage Temperature $-20\text{ }^{\circ}\text{C}$ **Product Description**

NF- κ B c-Rel belongs to the Rel family of eukaryotic transcription factors. The Rel homology region comprises approximately 300 amino acid residues and is responsible for DNA binding and dimerization.¹ The NF- κ B c-Rel Control Peptide blocks specific interaction of anti-NF- κ B c-Rel antiserum with the c-Rel subunit. The use of 1 μg control peptide per 1 μl of antiserum is recommended.

Organisms must be able to respond rapidly and effectively to changes in their environment. Most types of signaling molecules induce cellular responses by binding to specific cell-surface receptors. These receptors respond to occupancy by undergoing structural or biochemical changes that can be transmitted to the interior of the cell. One of the most common responses to receptor ligation is the synthesis of new proteins through alteration of the pattern of gene expression. Consequently, the relatively few transcription factors that regulate inducible gene expression can be the targets for many distinct signal transduction pathways, triggered by a wide variety of stimuli.² One important transcription factor that plays a pivotal role in many cellular responses to environmental changes is NF- κ B, a heterodimeric transcription factor composed of p50 (50 kD) and p65 (65 kD) subunits. NF- κ B can be activated in many cell types and is thought to regulate a wide variety of genes.³⁻⁵ An extensive set of genes with putative NF- κ B-binding sites has been identified, and in many of these, the NF- κ B sites appear crucial to the regulation of transcription. A wide range of stimuli lead to translocation of NF- κ B from the cytoplasm to the nucleus, where it appears in an active form capable of binding decameric κ B sequences motifs.⁶ Putative cellular target genes are largely involved in the acute-phase response, inflammation, lymphocyte activation (specific and nonspecific immune responses), and cell growth and differentiation. These genes include cell-surface molecules involved in immune function such as immunoglobulin κ light chain, class I and II major histocompatibility complex (MHC), and cytokines such as interleukin-1 β (IL-1 β), IL-2, IL-6, interferon- β (IFN β), and tumor necrosis factor α (TNF α).⁶ Under normal conditions, NF- κ B is bound to an inhibitor protein, I- κ B, that sequesters NF- κ B in the cytosol. Activation of NF-

κ B involves its dissociation from I- κ B followed by translocation of the p50-p65 heterodimer to the nucleus, where it directly binds to its cognate DNA sequences.^{7,8} p50 and p65 are members of a larger NF- κ B/Rel family of transcription factors, that in vertebrates includes at least five members: NFKB1 (p50 and its precursor, p105), NFKB2 (p52 and its precursor, p100), p65 (RelA), c-Rel (Rel), and RelB.⁹ As dimers, all five proteins can form complexes with κ B DNA sequence motifs, and all have been shown to affect transcription of κ B reporter genes positively or negatively when assayed following transfection.⁶ c-Rel possesses a highly conserved N-terminal sequence and DNA binding properties.¹⁰ c-Rel has been implicated in cytokine regulation, T-cell response,¹⁰ and in proliferation, differentiation, and apoptosis in a stage- and cell-dependent manner.^{11,12} The high level of interest in Rel-based transcription factors is due to their broad role in inducing and coordinating the expression of genes of significant biomedical importance, such as those encoding inflammatory cytokines, chemokines, interferons, MHC proteins, growth factors, cell adhesion molecules, and viruses.

Reagent

NF- κ B (c-Rel) Control Peptide is supplied as an approximately 1 mg/mL solution containing 0.01% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

NF- κ B (c-Rel) Control Peptide is stable for at least six months when stored at $-20\text{ }^{\circ}\text{C}$. Avoid repeated freeze-thaw cycles. Should this product contain a precipitate we recommend microcentrifugation before use.

References

1. Muller, C.W., Harrison, S.C., *FEBS Lett.*, **369**, 113 (1995).
2. May, M.J., and Ghosh, S., *Immunol. Today*, **19**, 80 (1998).

3. Sen, R., and Baltimore, D., *Cell*, **47**, 921 (1986).
4. Grilli, M., et al., *Int. Rev. Cytol.*, **143**, 1 (1991).
5. Grimm, S., and Baeuerle, P.A., *Biochem. J.*, **290**, 297 (1993).
6. Sha, W.C., et al., *Cell*, **80**, 321 (1995).
7. Baeuerle, P.A., and Baltimore, D., *Cell*, **87**, 13 (1996).
8. Thanos, D., and Maniatis, T., *Cell*, **80**, 529 (1995).
9. Nolan, G.P., and Baltimore, D., *Curr. Opin. Genet. Dev.*, **2**, 211 (1992).
10. Kontgen, F., *Genes Dev.*, **9**, 1965 (1995)
11. Bushdid, P.B., et al., *Dev. Biol.*, **237**, 107 (2001)
12. Owyang, A.M., et al., *J. Immunol.*, **167**, 4948 (2001)

LMY 12/01

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.