

c-jun

Proto-oncogene, Transcription Factor Activator Protein-1

human, recombinant, Sf9 insect cells

Cat. No.	Amount
PR-772	5 μ g

For *in vitro* use only
Quality guaranteed for 12 months
Store at -80°C

Avoid freeze / thaw cycles

Form

Liquid. Supplied in 20 mM Tris-HCl pH 8.0, 100 mM KCl, 0.2 mM EDTA, 1 mM DTT, 20% glycerol.

Activity

100 ng are sufficient for a protein-protein interaction assay.

Application

c-jun has been applied in DNA and protein-protein interaction assays.

Purity

>95% by SDS-PAGE

Description

The transcription factor AP-1 (Activator Protein-1) is involved in cellular proliferation, transformation and death. AP-1 and nuclear factor B (NF- κ B) can be specifically targeted to prevent cancer induction in mouse models. AP-1 can be produced by 18 different dimeric combinations of proteins from the Jun (c-jun, JunB and JunD) and Fos (c-Fos, FosB, Fra-1 and Fra-2) families, including Jun homodimers and Jun-Fos heterodimers.

The Jun and Fos proteins contain a basic-region leucine zipper (bZIP) domain, and are capable of binding to other bZIP proteins including those from the ATF, MAF, CNC and C/EBP (CCAAT/enhancer-binding protein) subfamilies. Jun-Jun and Jun-Fos dimers bind with highest affinity to the 12-O-tetradecanoylphorbol-13-acetate (TPA) response element (TRE) [TGA(C/G)TCA], although many other 'AP-1-like sites' have been reported. Binding to any of these sites can be tissue-specific, or affected by neighboring sequences, and dependent upon interactions with other transcription factors or cofactors. Jun and Fos proteins can also dimerize with other bZIP proteins, allowing them to target other DNA binding sites, such as the cAMP response element (CRE), the antioxidant response elements (ARE), and half-sites composed of half of a TRE site and half of a MAF- or CNC-binding site. In addition, AP-1 proteins can interact with other proteins, including the p65 subunit of NF- κ B, CBP (CRE-binding-protein-binding protein) (p300), SMAD-3 and -4, and the retinoblastoma protein, further increasing the combinatorial potential of Jun and Fos proteins. AP-1 regulates a variety of cellular processes, including proliferation, differentiation and apoptosis, and contributes to both basal and stimulus-activated gene expression. It is activated by growth factors, hormones, stress, cytokines, ROS and ultraviolet radiation. Activation occurs both transcriptionally and post-translationally, and is signaled predominantly through the mitogen-activated protein kinase (MAPK) cascade. The combinatorial diversity of AP-1 proteins and other interacting factors appears to influence how specific cell types respond to a stimulus. The growth-promoting activity of c-jun is mediated by repression of tumor suppressors, as well as up-regulation of positive cell cycle regulators. Mostly, c-jun is a positive regulator of cell proliferation, whereas JunB has the converse effect.

Recombinant c-jun was expressed in a baculovirus system and purified by an affinity column in combination with FPLC chromatography.

The purified recombinant protein is greater than 90% homogeneous and contains no detectable protease, DNase,

c-jun

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and RNase activity.

Selected References:

- Curran *et al.* (1988) Fos and Jun: the AP-1 connection. *Cell* **55**:395.
- Rauscher *et al.* (1988) Fos-associated protein p39 is the product of the jun proto-oncogene. *Science* **240**:1010.
- Rauscher *et al.* (1988) Common DNA binding site for Fos protein complexes and transcription factor AP-1. *Cell* **52**:471.
- Chinenov *et al.* (2001) Close encounters of many kinds: Fos-Jun interactions that mediate transcription regulatory specificity. *Oncogene* **20**:2438.
- Angel *et al.* (1987) Phorbol ester-inducible genes contain a common cis element recognized by a TPA-modulated trans-acting factor. *Cell* **49**:729.
- Robinson *et al.* (1998) A constitutively active and nuclear form of the MAP kinase ERK2 is sufficient for neurite outgrowth and cell transformation. *Curr. Biol.* **8**:1141.