Data sheet

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Jena Bioscience

STAT3

Signal Transducer and Activator of Transcription 3

human, recombinant, *E. coli*

Cat. No.	Amount
PR-828	10 µg

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, 20% glycerol, 100 mM KCl, 0.2 mM EDTA and 1 mM DTT.

Molecular Weight
88 kDa

Purity
> 95% by SDS-PAGE

Description
Signal transducer and activator of transcription (STAT) proteins are a family of latent cytoplasmic transcription factors involved in cytokine, hormone, and growth factor signal transduction. Seven members of the STAT family of transcription factors have been identified in mammalian cells: STAT1, STAT2, STAT3, STAT4, STAT5a, STAT5b, and STAT6. STAT proteins mediate broadly diverse biologic processes, including cell growth, differentiation, apoptosis, fetal development, transformation, inflammation, and immune response. Receptor-recruited STATs are phosphorylated on a single tyrosine residue in the carboxy terminal portion. The modified STATs are released from the cytoplasmic region of the receptor subunits to form homodimers or heterodimers through reciprocal interaction between the phosphotyrosine of one STAT and the SH2 domain of another.
Following dimerization, STATs rapidly translocate to the nucleus and interact with specific regulatory elements to induce target gene transcription. Unlike all other members of the STAT gene family, ablation of STAT3 leads to embryonic lethality and it has been suggested that this protein might represent a primordial STAT protein. It evokes a number of distinct responses in different cells, including induction of an acute-phase response in hepatoma cells, stimulation of proliferation in B lymphocytes, activation of terminal differentiation and growth arrest in monocytes, and maintenance of the pluripotency of embryonic stem cells. Dysregulation of STAT signaling pathways, particularly STAT3 and STAT5, has been demonstrated to contribute to malignant cellular transformation. Constitutive activation of STAT1, STAT3, and STAT5 is associated with malignant transformation induced by various oncoproteins. Src kinase-mediated activation of STAT3 has been shown to be essential in prostate and ovarian carcinomas. In head and neck cancers, constitutive STAT3 activity with up-regulated epidermal growth factor receptor (EGFR) signaling plays an important role in malignant proliferation. Altering the cterminal domain of STAT3 induces constitutive activation and provides further evidence that STAT3 activation may be oncogenic by itself and is not just a consequence of tyrosine phosphorylation. Therefore, Stat3 may be a key player in the pathogenesis of diverse human cancers which makes this molecule a prime target for novel therapies.

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