Phospho-Stat3 (Tyr705) (B12) rabbit mAb SureLight®488 conjugate

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For Research Use Only. Not For Use In Diagnostic Procedures.

Applications	Detection	Clonality	Isotype
Flow Cytometry	N/A	Monoclonal	Rabbit IgGk

Format: SureLight 488

Cross Reactivity: Predicted to work with mouse, rat and other homologues.

Formulation: 1X PBS, 0.09% NaN3, 0.2% BSA

Preparation: Protein A+G

Reactivity: Human,Mouse

Recommended Usage: For flow cytometric staining, the suggested use of this reagent is 5 µL per million cells or 5 µL per 100 µL of staining volume. It is recommended that the reagent be titrated for optimal performance for each application.

Immunogen: A synthetic phospho-peptide corresponding to residues surrounding Tyr705 of human phospho Stat3

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Description:

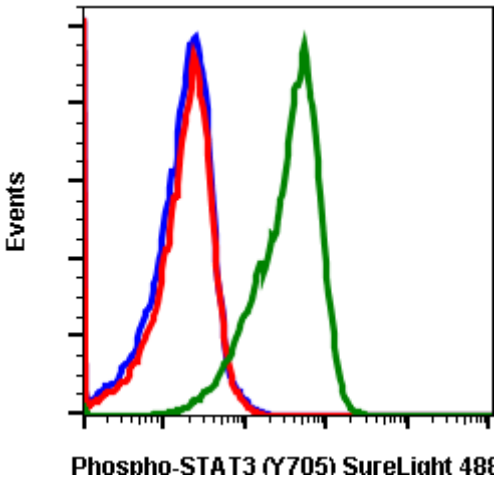
Signal transducer and activator of transcription 3 (STAT3) was initially showed to control acute-phase genes in response to interleukin-6 (IL-6) and epidermal growth factor (EGF) during inflammatory processes (1). STAT3 belongs to the STAT family of cytoplasmic transcription factors that induces cell membrane-mediated nuclear signal transduction in various cellular activities (2). STAT3 belongs to the STAT family which include seven members: STAT1, 2, 3, 4, 5a, 5b and 6. Each STAT protein consists of (i) an N-terminal domain for oligomerization, (ii) a coiled-coil domain for interaction with regulatory proteins, (iii) a DNA-binding domain for recognition of specific DNA sequences, (iv) a Src homology-2 (SH2) domain that promotes phosphorylation and dimerization after docking to phosphorylated receptors and (iv) a C-terminal transactivation domain with specific tyrosine (present in all STATs) and serine residues (absent in STAT2 and 6) that are phosphorylated upon transcriptional activation (3,4).

STAT3 plays role in early embryonic development, growth and differentiation of various adult tissues (4). In addition, STAT3 is shown to promote pathogenic roles in cancer initiation, progression, metastasis, chemoresistance and immunoevasion (5). Upon cytokine and growth factor stimulation STAT3, a transcription factor, is activated. STAT3 in turn induces both canonical and non-canonical signaling. Canonically, the binding of ligands to their cognate receptors leads to the recruitment and phosphorylation of tyrosine kinases, which in turn recruit and phosphorylate STAT3 at Tyr705 (4). Upon phosphorylation, STAT3 proteins dimerize and translocate to the nucleus where they bind to promoter elements of target genes and modulate their transcription (4). The dowstrean targets include cell cycle regulatory genes such as fos, cyclin D, c-Myc, pim1 and anti-apoptotic genes such as B-cell CLL/Lymphoma-2 (Bcl-2), Bcl-xL, survivin and X-linked inhibitor of apoptosis protein (XIAP) (6). Non-canonically, STAT3 may function independent of Tyr705 and nuclear localization. In addition ot Tyr705 phosphorylation, Ser727 is required for maximal activation although Tyr705 phopsohrylation plays a key activating role (7,8). Ser727 phosphorylation can also stimulate mitochondrial STAT3, where it may trigger oxidative phosphorylation (9), confer stress protection by reducing reactive oxygen species (ROS) accumulation and apoptosis (10,11) and support Ras-induced malignant transformation (12). It had been shown that STAT3 can also autoregulate its own transcription.

References:

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Flow cytometric analysis of Jurkat cells secondary antibody only negative control (blue) or untreated (red) or treated with IFNa IL4 and pervanadate (green) using Phospho-Stat3 (Tyr705) antibody Stat3Y705 B12-SureLight® 488 Cat. #1125.