Phospho-Stat3 (Tyr705) (B12) rabbit mAb

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Catalog: #1121

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Applications	Detection	Clonality	Isotype
Flow Cytometry	Anti-Rabbit IgG	Monoclonal	Rabbit IgGk

Format: Unconjugated

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

Formulation: 1X PBS, 0.02% NaN3, 50% Glycerol, 0.1% BSA

Preparation: Protein A+G

Reactivity: Human,Mouse

Recommended Usage: 1µg/mL – 0.001µg/mL. It is recommended that the reagent be titrated for optimal performance for each application. See product image legends for additional information.

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

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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4. Levy DE, and Lee CK, 2002, J Clin Investig, 109: 1143-1148.
5. Yu H, et al., 2007, Nat Rev Immunol, 7: 41-51.
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8. Heinrich PC, et al., 2003, Biochem J, 374:1-20.
9. Wegrzn J, et al., 2009, Science 323: 793-797.
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11. Cheng X, et al., 2107, Sci Rep 7:15388.
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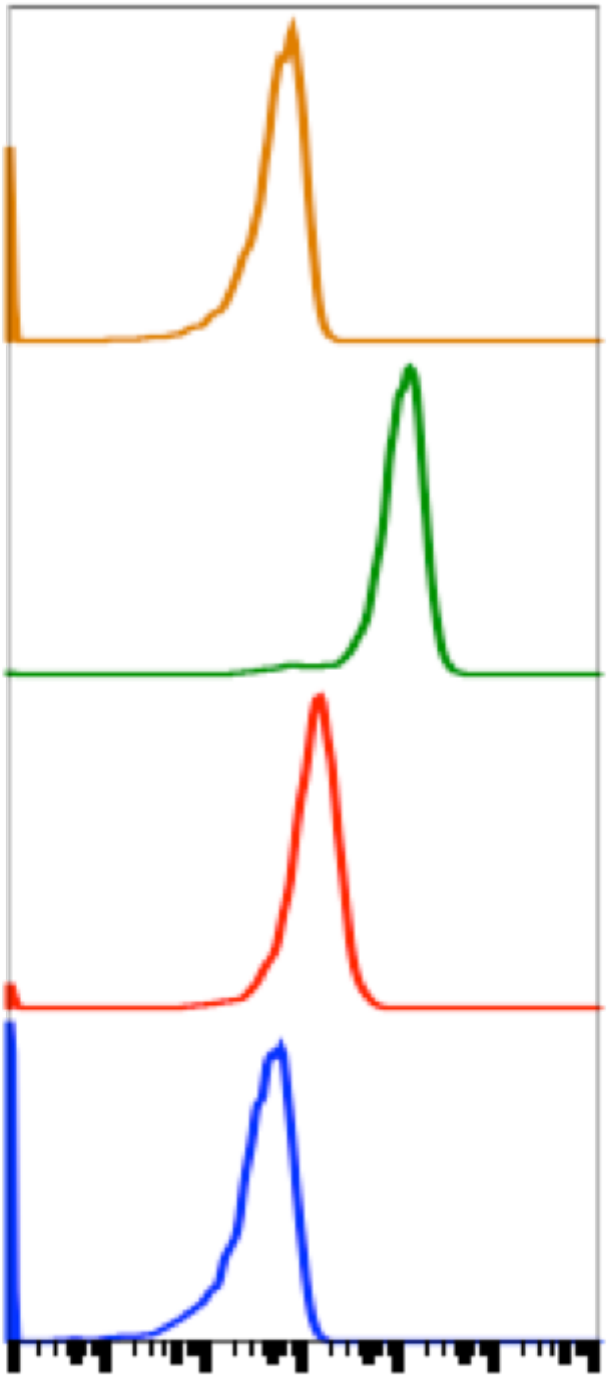
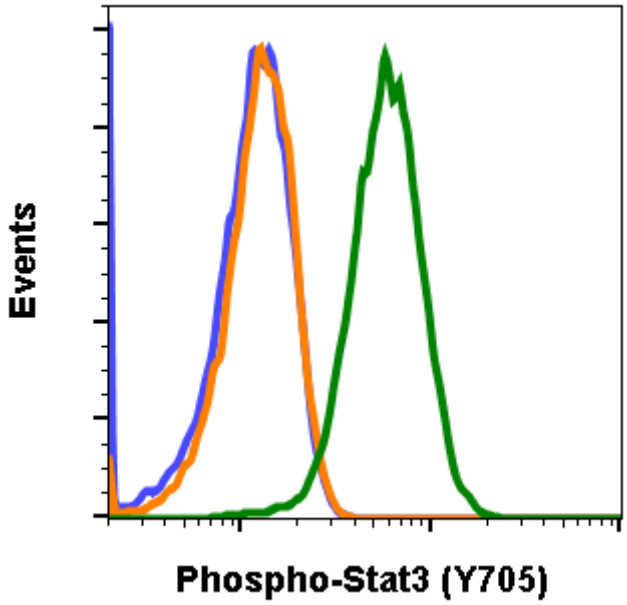


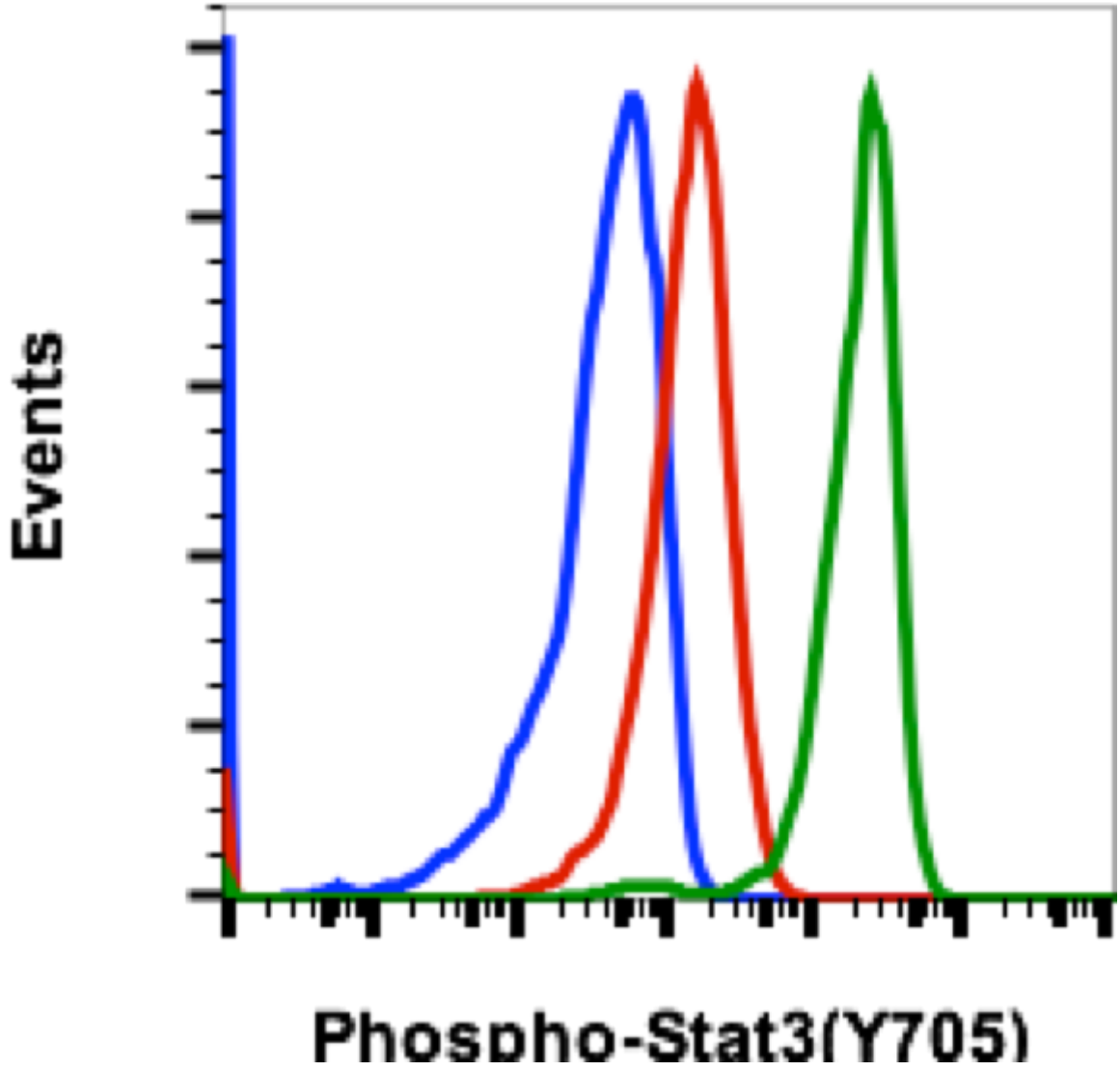
Phospho-Stat3(Y705)

	$WELLID	Treatment	Median : BL1-A
	B12 + PP	IFNa PV	572
	B12 0.005 ug/mL	IFNa PV	10438
	B12 0.005 ug/mL	Ctrl	1333
	2'Ab	Ctrl	373

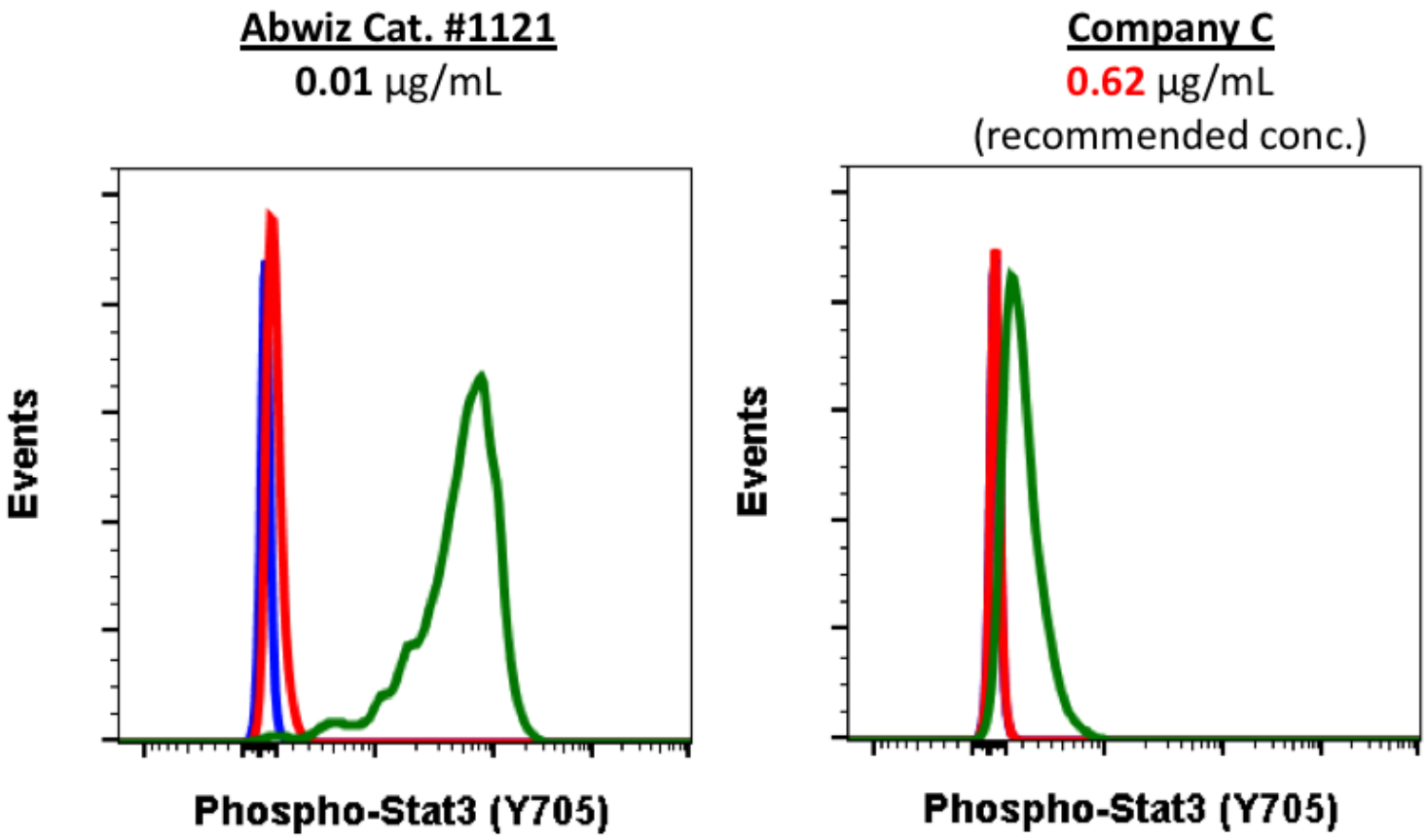
Flow cytometric analysis of Jurkat cells secondary antibody only negative control (blue) untreated (red) treated with IFNα IL-4 and pervanadate (green) treated + blocked with phospho-peptide (brown) using Phospho-Stat3 (Tyr705) antibody Stat3Y705-B12 (5 ng/mL) Cat. #1121.



Stat3Y705-B12 recognizes basal phosphorylation levels in mouse cells. Flow cytometric analysis of L929 cells secondary antibody only (blue) or 0.1 µg/mL of isotype control Cat. #2141 (orange) or of Phospho-Stat3 (Tyr705) antibody Stat3Y705-B12 (green) Cat. #1121.



Flow cytometric analysis of Jurkat cells secondary antibody only negative control (blue) or untreated (red) or treated with IFNα IL-4 and pervanadate (green) using Phospho-Stat3 (Tyr705) antibody Stat3Y705-B12 (5 ng/mL). Cat. #1121.



Flow cytometric analysis of Jurkat cells secondary antibody only negative control (blue) or untreated (red) or treated with IFNα + IL-4 + pervanadate (green) using Phospho-Stat3 (Y705) antibody Stat3Y705-B12 (Abwiz Cat. #1121) or Company C antibody at 0.62 µg/mL (manufacturer's recommended concentration).