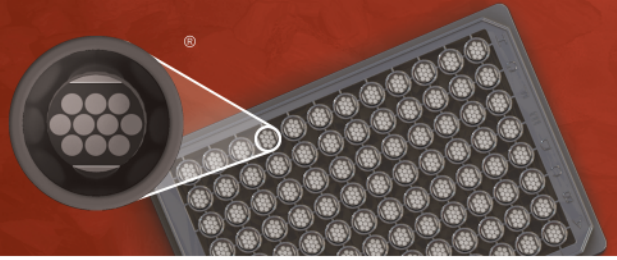
T-PLEX®

Phospho-STAT4 (Tyr693)



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Ordering Information

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This datasheet provides information for the T-PLEX® Phospho-STAT4 (Tyr693) v2 Kit.

Product Option	Format	Catalog Numbers			Description
		1-Plate Kit	5-Plate Kit	25-Plate Kit	
Phospho-STAT4 (Tyr693) v2 Kit	Singleplex	K150AXND-1	K150AXND-2	K150AXND-4	Detection of Phospho-STAT4 (Tyr693)

Phospho-STAT4 (Tyr693) can also be measured with the following kit:

Phospho-STAT Panel	Multiplex	K15758D-1	K15758D-2	K15758D-4	Detection of Phospho-STAT3 (Tyr705), Phospho-STAT4 (Tyr693), and Phospho-STAT5a,b

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Signal transducer and activator of transcription 4 (STAT4) is a transcription factor that transduces interleukin-12, interleukin-23, and type-1 interferon cytokine signals in T cells and monocytes.[1,2] Following exposure to cytokines, the cytokine receptor-associated Janus kinases (JAK) phosphorylate tyrosine residues present on cytoplasmic STAT4 proteins. STAT4 phosphorylation at tyrosine residue 693 allows homodimerization through src homology 2 domains.[3] Functional STAT4 dimers translocate into the nucleus and activate cytokine-responsive gene transcription, leading to Th1 cell differentiation, monocyte activation, and interferon-gamma production.[1,2] STAT4 contributes to autoimmune disorder pathogenesis and anti-viral immune responses.[4,5]

Phospho-STAT4 (Tyr693) Assay Kits

MESO SCALE DISCOVERY® T-PLEX assay kits provide a rapid and convenient method for measuring the levels of biomarkers within a single, small-volume sample. The T-PLEX Phospho-STAT4 (Tyr693) assay has the following characteristics:

- This kit measures phosphorylated human STAT4 (Tyr693). It can also be used to measure the corresponding phosphorylated STAT4 tyrosine residue in mouse and rat.
- Phospho-STAT4 (Tyr693) can be measured using the singleplex T-PLEX Phospho-STAT4 (Tyr693) v2 Kit or multiplex T-PLEX Phospho-STAT Panel Kit.
- The T-PLEX Phospho-STAT4 (Tyr693) v2 Kit is provided on 96-well plates.
- The SECTOR™ plates used for the Phospho-STAT4 (Tyr693) v2 Kit can be read on the MESO® SECTOR S 600, MESO SECTOR® S 600MM, MESO QuickPlex® SQ 120, and MESO QuickPlex SQ 120MM instruments.
- While this kit detects analyte in human, mouse, and rat lysates, the name specifies the phosphorylation site in the human protein. The phosphorylated amino acid number in mouse and rat orthologs may differ from human.

This datasheet outlines the performance of the assay.

Source

Information on capture and detection antibodies used in the Phospho-STAT4 (Tyr693) v2 Kit is listed below. The antibodies used in the Phospho-STAT4 (Tyr693) v2 Kit cross-react with human, mouse, and rat cell lysates.

Analyte	Phospho-specific Antibody	Capture Antibody	Detection Antibody	Assay Generation
Phospho-STAT4 (Tyr693)	Capture	Rabbit Monoclonal	Mouse Monoclonal	C

Typical Data

Representative results for the Phospho-STAT4 (Tyr693) v2 Kit are illustrated in Figure 1. The signal and ratio values provided are examples; individual results will vary depending upon the samples tested. Western blot analysis of each lysate type is shown for comparison.

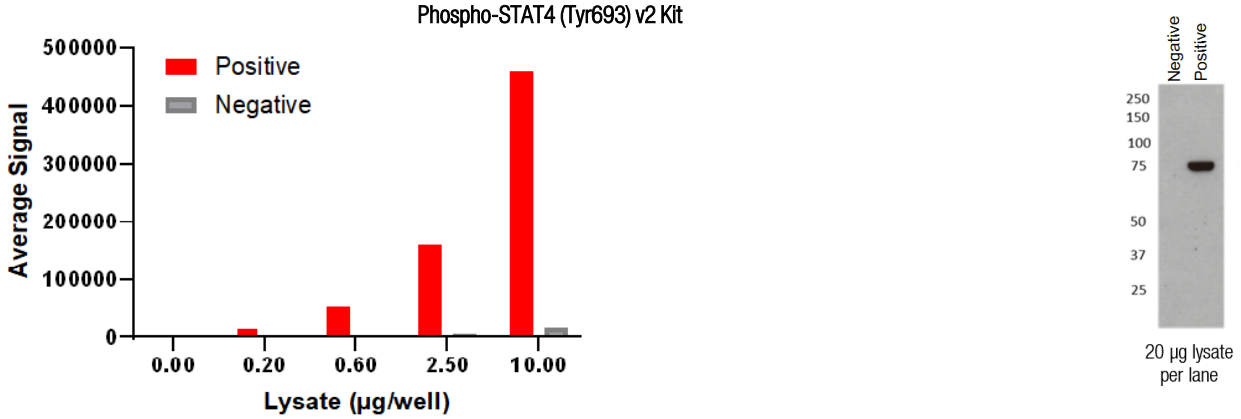

Figure 1. *Sample data generated with Phospho-STAT4 (Tyr693) v2 Kit.*
Growing human T cells were starved for 30 minutes (negative) or starved for 30 minutes then co-incubated with IL-12 (10 ng/mL) and interferon-alpha (1,000 U/mL) for 30 minutes (positive). Whole cell lysates (MSD catalog number C1202-1) were added to MSD MULTI-SPOT® plates coated with anti-Phospho-STAT4 (Tyr693) antibody on one of the ten spots in each well. Phospho-STAT4 (Tyr693) was detected with anti-total STAT4 antibody conjugated with MSD SULFO-TAG™ reagent. Increased signal is observed with the titration of the positive control lysate. Signal for the negative control lysate remains low throughout the titration. The Phospho-STAT4 (Tyr693) v2 Kit enables quantitative measurement as an alternative to traditional Western blotting.

Lysate Titration

Average signal for positive and negative control cell lysates and positive/negative ratio using the Phospho-STAT4 (Tyr693) v2 Kit are presented below.

Lysate (µg/well)	Positive	Negative	Positive/Negative
0.00	68	68	—
0.63	52,891	1,834	29
2.50	146,091	5,003	29
10.00	415,440	14,016	30

Dash (—) = not applicable.

References

1. Wurster AL, et al. The biology of STAT4 and STAT6. Oncogene. 2000;19:2577-2584.
2. Korman BD, et al. STAT4: genetics, mechanisms, and implications for autoimmunity. Curr Allergy Asthma Rep. 2008 Sep;8(5):398-403.
3. Visconti R, et al. Importance of the MKK6/p38 pathway for interleukin-12-induced STAT4 serine phosphorylation and transcriptional activity. Blood. 2000 Sep 1;96(5):1844-52.
4. Svensson A, et al. STAT4 regulates anti-viral gamma interferon responses and recurrent disease during herpes simplex virus 2 infection. J Virol. 2012 Sep;86(17):9409-15.
5. Cheng X, et al. Adiponectin induces pro-inflammatory programs in human macrophages and CD4+ T Cells. J Biol Chem. 2012 Oct 26;287(44):36896-904.