

# MSD<sup>®</sup> STAT Signaling Assays

For use with human, mouse, rat cell lysates



Alzheimer's Disease  
BioProcess  
Cardiac  
**Cell Signaling**  
Clinical Immunology  
Cytokines  
Growth Factors  
Hypoxia  
Immunogenicity  
Inflammation  
Metabolic  
Oncology  
Toxicology  
Vascular

## Ordering Information

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Email: CustomerService@mesoscale.com

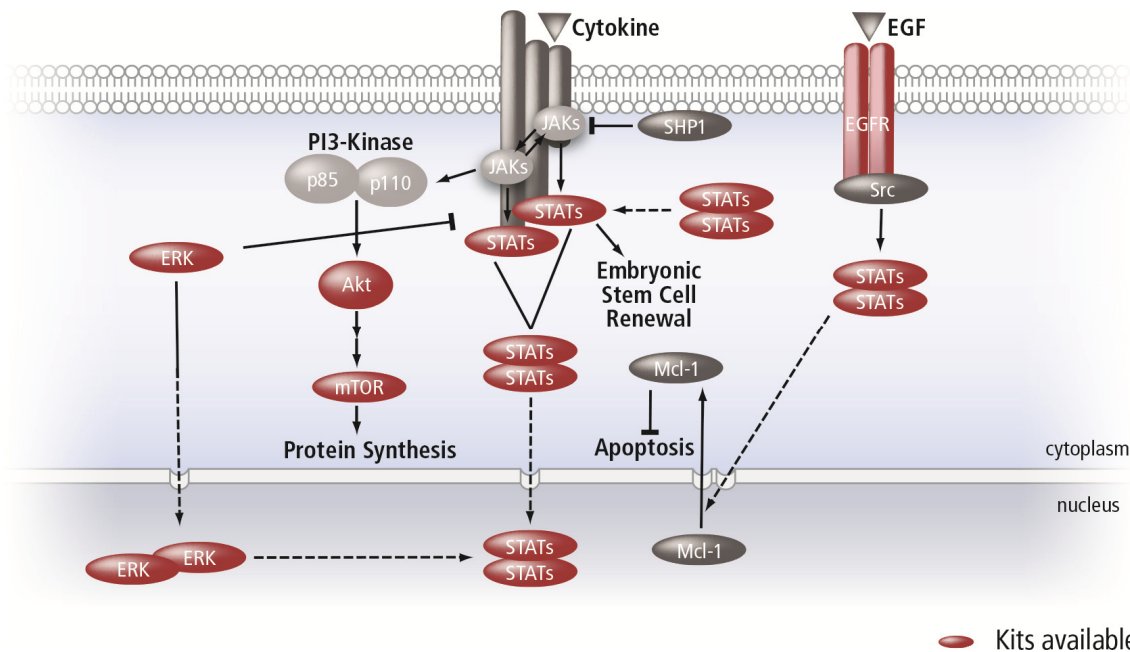
## Scientific Support

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## Company Address

MESO SCALE DISCOVERY<sup>®</sup>  
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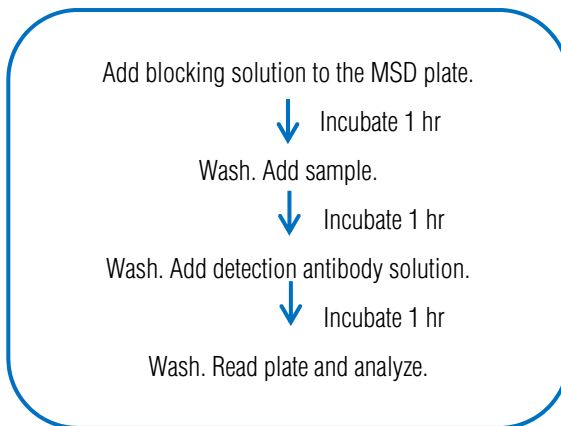


Regulation of signal transducer and activator of transcription (STAT) signaling pathways is an area of interest in many disease studies.

- STAT3: Constitutively activated in skin, prostate, lung, and breast cancers.
- STAT4: Associated with rheumatoid arthritis and systemic lupus erythematosus.<sup>1,2</sup>
- STAT5a and 5b: Involved in different types of cancer (including breast and prostate), inflammatory responses, and allergic reactions.<sup>3</sup>

## New MSD STAT Kits

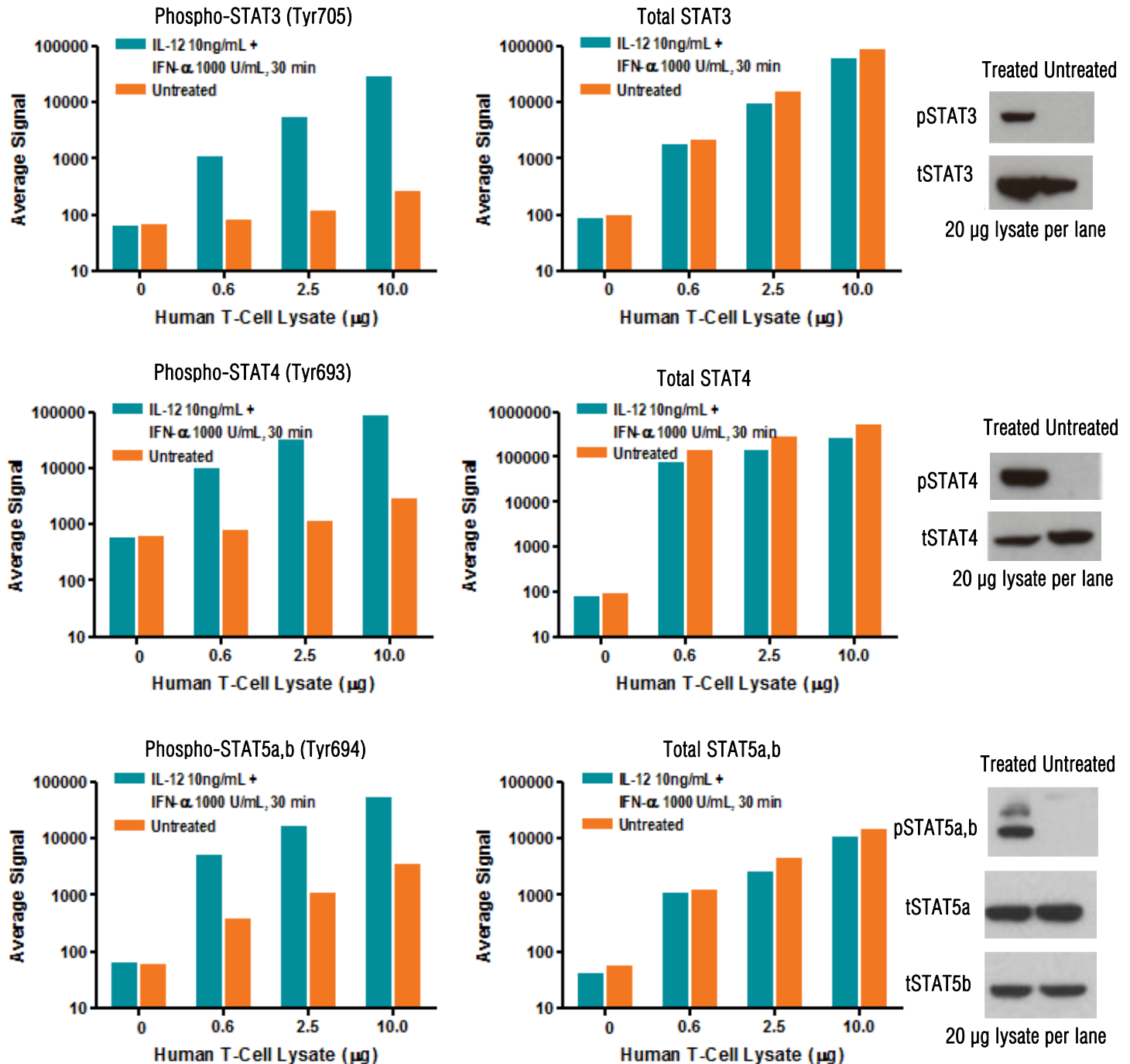
- Phospho-STAT Panel Kit measures:
  - Phospho-STAT3 (Tyr705)
  - Phospho-STAT4 (Tyr693)
  - Phospho-STAT5a,b (Tyr694)
- Phospho-STAT3 (Tyr705) Kit
- Total STAT3 Kit



# MSD Intracellular Signaling Assays

## STAT Assays

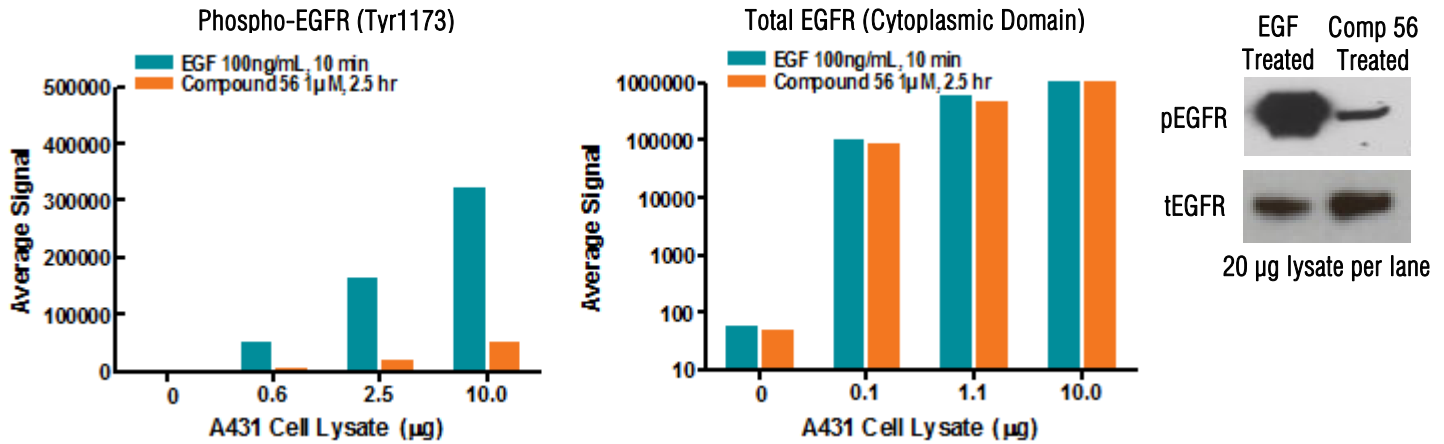
MSD offers a comprehensive selection of kits for measuring STAT signaling biomarkers. These kits include a Phospho-STAT Panel Kit, Phospho-STAT3 (Tyr705) Kit, Total STAT3 Kit, Phospho-STAT4 (Tyr693) Kit, Total STAT4 Kit, Phospho-STAT5a,b (Tyr694) Whole Cell Lysate Kit, and Total STAT5a,b Whole Cell Lysate Kit. The Phospho-STAT Panel Kit measures phosphorylated STAT3, STAT4, and STAT5a,b in the same well. The singleplex kits allow for measurements of phosphorylated and total levels of STAT3, STAT4, and STAT5,b and can be used to decipher compound effects on protein phosphorylation vs. protein expression.



# MSD Intracellular Signaling Assays

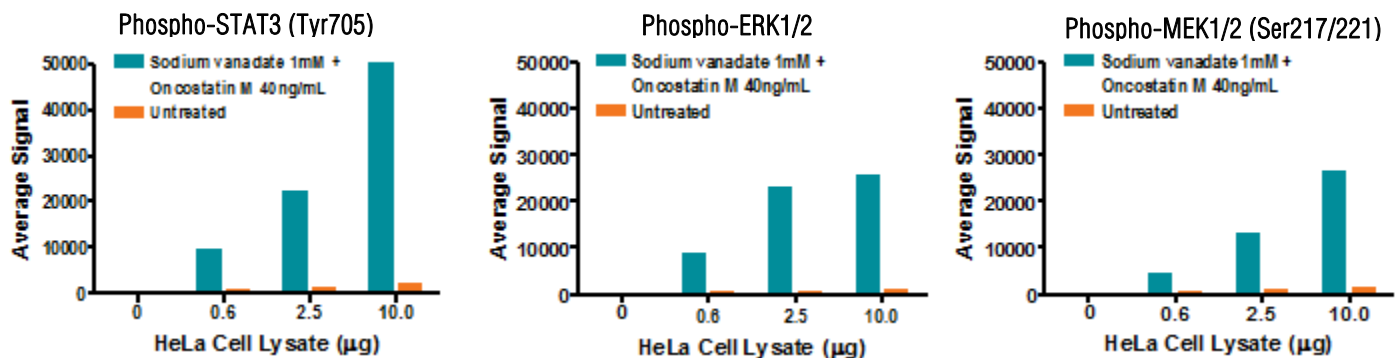
## EGFR Assays

STATs are downstream effectors of epidermal growth factor receptor (EGFR) signaling. EGFR overexpression and aberrant signaling is associated with many types of cancer, making EGFR an attractive target for chemotherapeutic drug development. MSD offers multiple kits for measurements of phosphorylated and total EGFR in cell lysates. The Total EGFR (Cytoplasmic Domain) Kit is a new kit which recognizes the intracellular (cytoplasmic) domain of EGFR and is not subject to interference with samples that include EGFR-targeted therapeutic antibodies.



## ERK-STAT3 Cascade Assays

Extracellular Signal-Regulated Kinase 1/2 (ERK1/2) activation in a cell can lead to its binding of several scaffold or adaptor proteins, such as signal transducer and activator of transcription 3 (STAT3). This leads to various subcellular and nuclear localizations and transactivation of critical regulatory genes.<sup>4,5</sup> MSD offers ERK-STAT3 Cascade Whole Cell Lysate Kits which measure Phospho-STAT3 (Tyr705), Phospho-ERK1/2 (Thr202/Tyr204, Thr185/Tyr187), and Phospho-MEK1/2 (Ser217/221) in a 25  $\mu\text{L}$  sample volume.



# MSD Intracellular Signaling Assays

## Kit Catalog Numbers

Kit Name	Analytes	Species	Catalog Number		
			1 plate	5 plate	20/25 plate
Phospho-STAT Panel Kit	pSTAT3 (Tyr705)	H, M, R	K15202D-1	K15202D-2	K1520SD-4
	pSTAT4 (Tyr693)				
	pSTAT5a (Tyr694) pSTAT5b (Tyr694)				
Phospho-STAT3 (Tyr705) Kit	pSTAT3 (Tyr705)	H, M, R	K150SVD-1	K150SVD-2	K150SVD-4
Total STAT3 Kit	STAT3	H, M, R	K150SND-1	K150SND-2	K150SND-4
Phospho-STAT4 (Tyr693) Kit	pSTAT4 (Tyr693)	H, M, R	K150PAD-1	K150PAD-2	K150PAD-4
Total STAT4 Kit	STAT4	H, M, R	K150OVD-1	K150OVD-2	K150OVD-4
Phospho-STAT5a,b (Tyr694) Whole Cell Lysate Kit	pSTAT5a (Tyr694) pSTAT5b (Tyr694)	H, M, R	K150IGD-1	K150IGD-2	K150IGD-3
Total STAT5a,b Whole Cell Lysate Kit	STAT5a STAT5b	H, M, R	K150IHD-1	K150IHD-2	K150IHD-3
Phospho-EGFR (Tyr1173) Whole Cell Lysate Kit	pEGFR (Tyr1173)	Human	K151CJD-1	K151CJD-2	K151CJD-3
Total EGFR (Cytoplasmic Domain) Kit	EGFR	Human	K150SPD-1	K150SPD-2	K150SPD-4
ERK-STAT3 Cascade Whole Cell Lysate Kit	pSTAT3 (Tyr705)	H, M, R	K15116D-1	K15116D-2	K15116D-3
	pERK1 (Thr202/Tyr204) pERK2 (Thr185/Tyr187)				
	pMEK1 (Ser217/221) pMEK2 (Ser217/221)				

We are continually expanding our portfolio by developing new and improved assays for disease-focused biomarkers. For the most up-to-date information and a complete listing of our products, visit [www.mesoscale.com/assays](http://www.mesoscale.com/assays).

## Supplemental Materials

Item	Description	Catalog Number
STAT Panel Whole Cell Lysate Set	Human T-cells serum that were serum deprived and then left untreated or treated with cytokines (10 ng/mL IL-12 and 1000 U/mL IFN- $\alpha$ ).	C1202-1
Phospho-EGFR Whole Cell Lysate Set	A431 cells (human carcinoma) that were serum deprived and then treated with 100 ng/mL EGF for 10 minutes or treated with 1 $\mu$ M Compound 56 for 2.5 hours.	C11CI-1
JAK-STAT Whole Cell Lysate Set	HeLa cells (human cancer) that were either left untreated or treated with 1mM sodium vanadate for 4 hours followed by treatment with 40 ng/mL Oncostatin M.	C10KQ-1

## References

1. Svensson A, et al. STAT4 regulates anti-viral gamma interferon responses and recurrent disease during herpes simplex virus 2 infection. *J Virol.* 2012;86:9409-15.
2. Cheng X, et al. Adiponectin induces pro-inflammatory programs in human macrophages and CD4+ T Cells. *J Biol Chem.* 2012;287:36896-904.
3. Morales JK, Falanga YT, Depczynski A, Fernando J, Ryan JJ. Mast cell homeostasis and the JAK-STAT pathway. *Genes Immun.* 2010;11:599-608.
4. Rubinfeld H, Seger R. The ERK cascade: a prototype of MAPK signaling. *Mol Biotechnol.* 2005;31:151-74.
5. Lim CP, Cao X. Structure, function, and regulation of STAT proteins. *Mol Biosyst.* 2006;2:536-50.

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