

MSD® Phospho-p38 (Thr180/Tyr182) Assay Whole Cell Lysate Kit

For quantitative determination in human, mouse, and rat whole cell lysate samples



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

Catalog Numbers

Phospho-p38
(Thr180/Tyr182) Assay:
Whole Cell Lysate Kit

Kit size

1 plate	K150CYD-1
5 plates	K150CYD-2
20 plates	K150CYD-3

Phospho-p38
(Thr180/Tyr182) Whole Cell
Lysate Set

200 µg	C11CY-1
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Ordering information

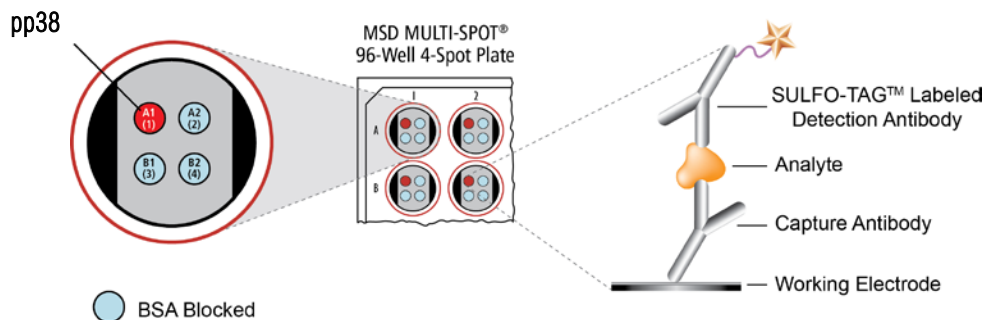
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Not for use in diagnostic
procedures.



The serine/threonine kinase **p38**, also known as RK, SAPK2A, and CSBP, is involved in mediating cellular responses to inflammatory cytokines and environmental stresses such as osmotic shock and UV light. Four isoforms (α , β , γ , δ) of p38 have currently been identified. Activation of p38 by phosphorylation of threonine 180 and tyrosine 182 is controlled by several upstream kinases including MKK3, MKK6, and MKK4 (SEK). Activated p38 in turn can phosphorylate MAPKAPK2, PRAK kinase, and the transcription factors ATF-2, MAX, CHOP, and MEF2. The p38 signaling pathway regulates various biological processes such as cytokine production, transcriptional regulation, cell proliferation and differentiation, and apoptosis.

The MSD Phospho-p38 (Thr180/Tyr182) Assay is available on 96-well 4-Spot plates. This datasheet outlines the performance of the assay.

Typical Data

Representative results for the Phospho-p38 (Thr180/Tyr182) Assay are illustrated below. The signal and ratio values provided below are example data; individual results may vary depending upon the samples tested. Western blot analyses of each lysate type were performed with phospho-p38 (Thr180/Tyr182) and total p38 antibodies and are shown below for comparison.

Growing HEK293 cells were treated with rapamycin (1 μ M; 3 hours) (negative) or Calyculin A (50 nM; 30 minutes) (positive). Whole cell lysates were added to MSD MULTI-SPOT® 4-Spot plates coated with anti-phospho-p38 (Thr180/Tyr182) antibody on one of the four spatially distinct electrodes per well. Phosphorylated p38 was detected with anti-total p38 antibody conjugated with MSD SULFO-TAG™ reagent.

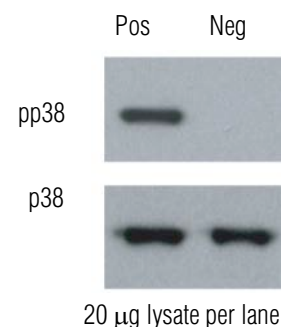
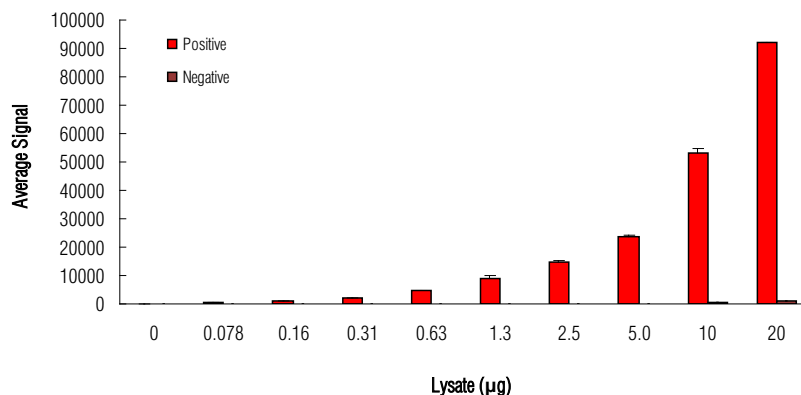


Fig. 1: Sample data generated with the MULTI-ARRAY® Phospho-p38 (Thr180/Tyr182) Assay. Increased signal for phosphorylated p38 was observed with only pp38 positive cell lysate. Signal for pp38 negative lysate remains low throughout the titration. The Phospho-p38 (Thr180/Tyr182) Assay provides a quantitative measure of the data obtained with the traditional Western blot.

MSD Phosphoprotein Assays

Lysate Titration

Data for pp38 positive and negative HEK293 cell lysates using the MULTI-ARRAY Phospho-p38 (Thr180/Tyr182) Assay are presented below.

Lysate (µg)	Positive			Negative			P/N
	Average Signal	StdDev	%CV	Average Signal	StdDev	%CV	
0	48	13	26.8	48	13	26.8	
0.078	574	45	7.8	51	1	2.8	11
0.16	1189	42	3.6	37	1	1.9	33
0.31	2077	87	4.2	53	4	6.7	40
0.63	4571	180	3.9	93	21	22.8	49
1.3	8688	1111	12.8	108	8	7.2	81
2.5	14571	577	4.0	146	2	1.5	100
5.0	23879	238	1.0	194	11	5.5	123
10	53145	1486	2.8	388	13	3.5	137
20	91956	113	0.1	858	25	3.0	107

MSD Advantage

- **Multiplexing:** Multiple analytes can be measured in one well using typical sample amounts of 25 µg/well or less without compromising speed or performance
- **Large dynamic range:** Linear range of up to five logs enables the measurement of native levels of biomarkers in normal and diseased samples without multiple dilutions
- **Minimal background:** The stimulation mechanism (electricity) is decoupled from the signal (light)
- **Simple protocols:** Only labels near the electrode surface are detected, enabling no-wash assays
- **Flexibility:** Labels are stable, non-radioactive, and conveniently conjugated to biological molecules
- **High sensitivity and precision:** Multiple excitation cycles of each label enhance light levels and improve sensitivity

For a complete list of products, please visit our website at www.mesoscale.com

References using MSD's platform for the measurement of phosphoproteins

1. Curtis AM, Wilkinson PF, Gui M, Gales TL, Hu E, Edelberg JM. p38 mitogen-activated protein kinase targets the production of proinflammatory endothelial microparticles. *J Thromb Haemost.* 2009 Apr;7(4):701-9. Epub 2009 Jan 22.
2. Gowan SM, Hardcastle A, Hallsworth AE, Valenti MR, Hunter LJ, de Haven Brandon AK, Garrett MD, Raynaud F, Workman P, Aherne W, Eccles SA. Application of meso scale technology for the measurement of phosphoproteins in human tumor xenografts. *Assay Drug Dev Technol.* 2007 Jun;5(3):391-401.

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