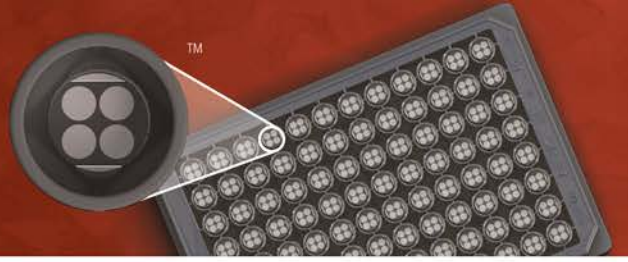
MSD® Phospho-MAPKAPK2 (Thr334) Assay Whole Cell Lysate Kit

For quantitative determination in human and mouse whole cell lysate samples



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

Catalog Numbers

Phospho-MAPKAPK2(Thr334) Whole Cell Lysate Kit	
Kit size	
1 plate	K150FVD-1
5 plates	K150FVD-2
20 plates	K150FVD-3

Phospho-MAPKAPK2(Thr334) Whole Cell Lysate Set	
200 µg	C10FV-1

Ordering information

MSD Customer Service
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Company Address

MESO SCALE DISCOVERY®
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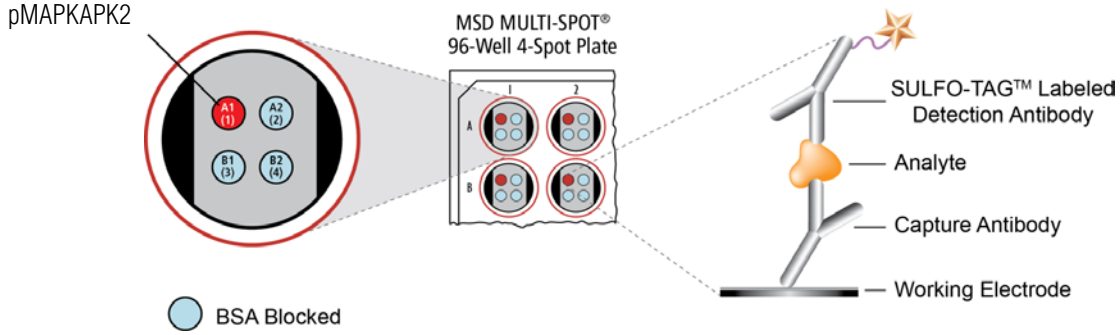
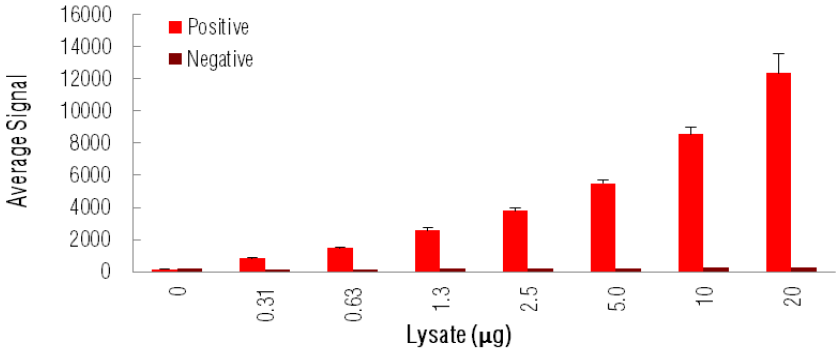


Mitogen Activated Protein Kinase-Activated Protein Kinase 2 (MAPKAPK2 or MK2**)** is a serine/threonine protein kinase that is activated via phosphorylation at Thr25, Thr222, Ser272, and Thr334 by p38MAPK.[1] The p38MAPK/MAPKAPK2 signaling complex is activated in response to many different types of stress, such as: heat shock, osmotic shock, radiation, reactive oxygen, cytokines, and DNA Damage.[2] p38α, one of six p38 isoforms, seems to be stably associated with MAPKAPK2 and is ubiquitously expressed throughout the body with highest levels in leukocytes, liver, spleen, bone marrow, thyroid, and placenta.[3] In response to UV irradiation, p38α /MAPKAPK2 once activated, can translocate to the nucleus and directly phosphorylate Cdc25 B/C generating a 14-3-3 protein binding site. The activity of p38α /MAPKAPK2 is directly responsible for the G1/S and G2/M checkpoint arrest caused by UV irradiation induced DNA damage.[4] In addition to direct DNA damage, the p38/MAPKAPK2 pathway is activated by certain viral infections, most notably HIV, and can trigger MAPKAPK2 mediated cell cycle arrest.[5] Additionally p38/MAPKAPK2 play a role in cell cycle arrest following DNA damage by chemotherapeutic reagents such as cisplatin and camptothecin and doxorubicin.[6]

The MSD Phospho-MAPKAPK2 (Thr334) Assay is available on 96-well 4-Spot plates. This datasheet outlines the performance of the assay.

Typical Data

Representative results for the Phospho-MAPKAPK2 (Thr334) 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-MAPKAPK2 (Thr334) and total MAPKAPK2 antibodies and are shown below for comparison. Growing HEK293 cells were treated with rapamycin (1 µM, 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-total MAPKAPK2 antibody on one of the four spatially distinct electrodes per well. Phosphorylated MAPKAPK2 was detected with anti-phospho-MAPKAPK2 (Thr334) antibody conjugated with MSD SULFO-TAG™ reagent.



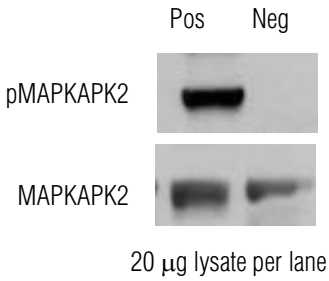


Fig. 1: Sample data generated with MULTI-ARRAY® Phospho-MAPKAPK2 (Thr334) Assay. Increased signal is observed with the titration of pMAPKAPK2 positive cell lysate. Signal for negative lysate remains low throughout the titration. The Phospho-MAPKAPK2 (Thr334) Assay provides a quantitative measure of the data obtained with the traditional Western blot.

Lysate Titration

Data for positive and negative HEK293 cell lysates using the MULTI-ARRAY Phospho-MAPKAPK2 (Thr334) Assay are presented below.

Lysate (µg)	Positive			Negative			P/N
	Average Signal	StdDev	%CV	Average Signal	StdDev	%CV	
0	156	3	2.0	182	9	4.9	
0.31	836	75	8.9	163	8	4.6	5.1
0.63	1490	37	2.5	170	15	8.9	8.8
1.3	2581	199	7.7	186	18	9.8	14
2.5	3780	187	5.0	197	15	7.6	19
5.0	5485	199	3.6	227	18	7.9	24
10	8542	457	5.4	258	14	5.5	33
20	12354	1216	9.8	247	28	11.4	50

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

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3. White A, Pargellis CA, Studts JM, Werneburg BG, Farmer BT 2nd. Molecular basis of MAPK-activated protein kinase 2:p38 assembly. Proc Natl Acad Sci U S A 2007 Apr 10;104(15):6353-8.
4. Lemaire M, Froment C, Boutros R, Mondesert O, Nebreda AR, Monsarrat B, Ducommun B. CDC25B phosphorylation by p38 and MK-2. Cell Cycle 2006 Aug;5(15):1649-53.
5. Bartz SR, Rogel ME, Emerman M. Human immunodeficiency virus type 1 cell cycle control: Vpr is cytostatic and mediates G2 accumulation by a mechanism which differs from DNA damage checkpoint control. J Virol 1996 Apr;70(4):2324-31.
6. Reinhardt HC, Aslanian AS, Lees JA, Yaffe MB. p53-deficient cells rely on ATM- and ATR-mediated checkpoint signaling through the p38MAPK/MK2 pathway for survival after DNA damage. Cancer Cell 2007 Feb;11(2):175-89.