MAPK11 (SAPK2B) [GST-tagged]

Kinase

Alternate Names: Mitogen-Activated Protein Kinase 11, PRKM11, p38-Beta, SAPK2

Cat. No. **66-0031-050**
Lot. No. **30310**

Quantity: 50 µg
Storage: -70˚C

FOR RESEARCH USE ONLY

NOT FOR USE IN HUMANS

Background

Protein ubiquitylation and protein phosphorylation are the two major mechanisms that regulate the functions of proteins in eukaryotic cells. However, these different posttranslational modifications do not operate independently of one another, but are frequently interlinked to enable biological processes to be controlled in a more complex and sophisticated manner. Studying how protein phosphorylation events control the ubiquitin system and how ubiquitylation regulates protein phosphorylation has become a focal point of the study of cell regulation and human disease. MAP kinases are serine, threonine, and tyrosine specific protein kinases that regulate proliferation, gene expression, differentiation, mitosis, cell survival, and apoptosis in response to stimuli, such as mitogens, osmotic stress, heat shock and pro-inflammatory cytokines. Cloning of human Mitogen Activated Protein kinase 11 (MAPK11 or SAPK2B) was first described by Jiang *et al.* (1996). An example of such interplay between phosphorylation ad ubiquitylation has been highlighted in a recent study providing direct evidence for p38α/p38γ (MAPK14/MAPK11) in mediating oxidative stress-induced autophagy-related genes, suggesting that these MAPKs regulate both the ubiquitin-proteasome and the autophagy-lysosome systems in muscle wasting (McClung *et al.*, 2010).

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Physical Characteristics

Species: human

Source: *E. coli*

Quantity: 50 µg

Concentration: 1.81 mg/ml

Formulation: 50 mM Tris/HCl pH7.5, 0.1 mM EGTA, 150 mM NaCl, 0.1% ß-Mercaptoethanol, 270 mM sucrose, 0.03% Brij-35, 1 mM Benzamidine, 0.2 mM PMSF

Molecular Weight: ~67.9 kDa

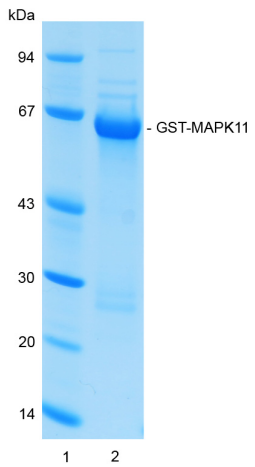
Purity: >95% by InstantBlue™ SDS-PAGE

Stability/Storage: 12 months at -70˚C; aliquot as required

Protein Sequence: Please see page 2

Quality Assurance

Purity:
4-12% gradient SDS-PAGE
InstantBlue™ staining
Lane 1: MW markers
Lane 2: 2.5 µg GST-MAPK11



Protein Identification:
Confirmed by mass spectrometry.

Activity Assay:
The specific activity of GST-MAPK11 was determined using the method described by Hastie *et al.* (2006) with the enzyme being assayed at several concentrations. GST-MAPK11 was incubated for 10 minutes at 30˚C in kinase reaction buffer in the presence of MBP substrate (0.333 mg/ml) and [γ-32P]ATP (100 µM). Duplicate reactions were stopped by spotting the assay mixture onto Whatman P81 paper – capturing the phosphorylated substrate.The radioactivity incorporated was measured on a scintillation counter and the enzyme's mean specific activity was calculated.

GST-MAPK11 specific activity:
238.1 Units/mg (430.9 Units/ml)

1 Unit = 1 nmole of phosphate incorporated into the substrate in 1 minute

Substrate: Myelin Basic Protein (MBP)

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Email **services@ubiquigent.com** for enquiries regarding compound profiling and/or custom assay development services.

Lot-specific COA version tracker: v1.0.0

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CERTIFICATE OF ANALYSIS Page 2 of 2

Background

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References:

Hastie CJ, McLauchlan HJ, Cohen P (2006) Assay of protein kinases using radiolabeled ATP: a protocol. *Nat Protoc* **1**, 968-71.

Jiang Y, Chen C, Li Z, Guo W, Gegner JA, Lin S, *et al.* (1996) Characterization of the structure and function of a new mitogen-activated protein kinase (p38beta). *J Biol Chem* **271**, 17920-17926.

McClung JM, Judge AR, Powers SK and Yan Z (2010) p38 MAPK links oxidative stress to autophagy-related gene expression in cachectic muscle wasting. *Am J Physiol Cell Physiol* **298**, C542-549.

Physical Characteristics

Continued from page 1

Protein Sequence:

MSPILGYWKIKGLVQPTRLLLEYLEEKYEEH
LYERDEGDKWRNKKFELGLEFPNLPYY
IDGDVKLTQSMAIIRYIADKHNMLGGCP
KERAEISMLEGAVLDIRYGVSRIAYSKD
FETLKVDFLSKLPEMLKMFEDRLCHKTYLNGD
HVTHPDFMLYDALDVVLYMDPMCLDAFP
KLVCFKKRIEAIPQIDKYLKSSKYIAWPLQG
WQATFGGGDHPPKSDLVPRGSPEF***M***SGPRAG
FYRQELNKTVWEVPQRLQGLRPVGSGAYGS
VCSAYDARLRQKVAVKKLSRPFQSLIHAR
RTYRELRLLKHLKHENVIGLLDVFTPATSIED
FSEVYLVTTLMGADLNNIVKCQALSDEH
VQFLVYQLLRGLKYIHSAGIIHRDLKPSN
VAVNEDCELRILDFGLARQADEEMTGYVATRW
YRAPEIMLNWMHYNQTVDIWSVGCIMAEL
LQGKALFPGSDYIDQLKRIMEVVGTPSPEV
LAKISSEHARTYIQSLPPMPQKDLSSIFRGAN
PLAIDLLGRMLVLDSDQRVSAAEALAHAYF
SQYHDPEDEPEAEPYDESVEAKERTLEEWKEL
TYQEVLSFKPPEPPKPPGSLEIEQ

Tag (**bold text**): N-terminal GST
Protease cleavage site: Thrombin (LVPR▼GS)
MAPK11 (regular text): Start ***bold italics*** (amino acid residues 1-364).
Accession number: CAA74792.1

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Lot-specific COA version tracker: v1.0.0