

## p38 delta/MAPK13 Protein, Human, Recombinant (GST), Activated in vitro

## General Information

Synonyms:	P38 $\delta$ /MAPK13;MAPK13;PRKM13;MAPK-13;p38 $\delta$ ;p38delta;mitogen-activated protein kinase 13;SAPK4
Protein Construction:	A DNA sequence encoding the full length of human MAPK13 (O15264) (Met1-Leu365) was fused with the GST tag at the N-terminus. Activated in vitro by MAP2K6 (10422-H20B1). Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	O15264
Molecular Weight:	68.4 kDa (predicted); 63.9 kDa (reducing conditions)

## QC Testing

Biological Activity:	The specific activity was determined to be > 30 nmol/min/mg using MBP as substrate.
Purity:	> 90 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/ $\mu$ g of the protein as determined by the LAL method.
Formulation:	Supplied as sterile 50 mM Tris-HCl, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EDTA, 0.1 mM PMSF, 25% glycerol, pH 7.5.

## Preparation and Storage

Reconstitution:	A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.
Stability & Storage:	It is recommended to store the product under sterile conditions at -20°C to -80°C. Samples are stable for up to 12 months. Please avoid multiple freeze-thaw cycles and store products in aliquots. <small>Actual storage temperature shall be subject to the COA.</small>
Shipping:	Proteins are shipped with blue ice.

## Protein Background

The p38 family of mitogen-activated protein kinases (MAPK) includes p38 alpha (SAPK2a, CSBP), p38 beta (SAPK2b), p38 delta (SAPK4), and p38 gamma (SAPK3/ERK6). p38 alpha and p38 beta are widely expressed p38 isoforms that are involved in the regulation of cell proliferation, differentiation, development, and stress response. p38 delta, also known as MAPK13, is a regulator of differentiation-dependent gene expression in keratinocytes and has been a regulator of surface epithelial differentiation and apoptosis. p38 delta protein is upregulated in Cholangiocarcinoma (CC) relative to hepatocellular carcinoma (HCC) and normal biliary tract tissues. p38 delta is important for motility and invasion of CC cells, suggesting that p38 delta may play an important role in CC

metastasis. p38 delta is expressed in the epidermis, suggesting a role for p38 delta in regulating differentiation. p38 delta is the major p38 isoform driving suprabasal involucrin gene expression and that p38 delta directly regulates ERK1/2 activity via the formation of a p38 delta-ERK1/2 complex. Recent emerging evidence suggests that the p38 stress MAPK pathway may function as a tumor suppressor through regulating Ras-dependent and -independent proliferation, transformation, invasion, and cell death by isoform-specific mechanisms. p38 delta has an important role in promoting cell proliferation and tumor development in the epidermis and may have therapeutic implications for skin cancer.

### Reference

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