

Recombinant Human M3K20 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50654

Size: 10ug, 100ug

Protein Name: Mitogen-activated protein kinase kinase kinase 20 (EC 2.7.11.25) (Human cervical cancer suppressor gene 4 protein) (HCCS-4) (Leucine zipper- and sterile alpha motif-containing kinase) (MLK-like mitogen-activated protein triple kinase) (Mitogen-activated protein kinase kinase kinase MLT) (Mixed lineage kinase 7) (Mixed lineage kinase-related kinase) (MLK-related kinase) (MRK) (Sterile alpha motif- and leucine zipper-containing kinase AZK)

Synonym: MAP3K20, MLK7, MLTK, ZAK, HCCS4

UniProt ID: Q9NYL2

UniProt Link: www.uniprot.org/uniprotkb/Q9NYL2/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 800 AA

Molecular Weight: 91 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MSSLGASFVQIKFDDLQFFENC GGGSFGSVYRAKWISQDKEVAVKKLLKIEKEAEILSVLSHRNIIQFY
GVILEPPNYGIVTEYASLGSLYDYINSNRSEEMDMDHIMTWATDVAKGMHYLHMEAPVKVIHRDLKS
RNVVIAADGVLKICDFGASRFHNHTTHMSLVGTFPWMAPEVIQSLPVSETCDTYSYGVVLWEMLTRE
VPFKGLEGLQVAWLVEKNERLTIPSSCPRSFAELLHQCWEADAKKRPSFKQIISILESMSNDTSLPD
KCNSFLHNKAWEWRCEIEATLERLKKLERDLSFKEQELKERERRLKMWEQKLTEQSNTPLLPSFEIGA
WTEDDVYCWVQQLVRKGDSSAEMSVYASLFKENNITGKRLLLLLEEDLKDMGIVSKGHIHFKSAIEK
LTHDYINLFHFPPLIKDSGGEPEENEKIVNLELVFGFHLKPGTGPQDCKWKMYMEMDGDGDEIAITYIK
DVTFTNTLPDAEILKMTKPPFVMEKWIVGIAKSQTVECTVTYESDVRTPKSTKHVHSIQWSRTKPQD
EVKAVQLAIQTLFTNSDGNPGSRSDSSADCQWLDTLRMRQIASNTSLQRSQSNPILGSPFFSHFDG
QDSYAAAVRRPQVPIKYQQITPVNQSRSSSPTQYGLTKNFSSLHLNSRDSGFSSGNTDTSSERGRY
SDRSRNKYGRGSISLNSSPRGRYSGKSQHSTPSRGRYPGKFYRVSQSALNPHQSPDFKRSPRDLH
QPNTIPGMPLHPETDSRASEEDSKVSEGGWTKVEYRKKPHRPSAKTNKERARGDHRGWRNF



3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant Mitogen-activated protein kinase kinase kinase 20 (EC 2.7.11.25) (Human cervical cancer suppressor gene 4 protein) (HCCS-4) (Leucine zipper- and sterile alpha motif-containing kinase) (MLK-like mitogen-activated protein triple kinase) (Mitogen-activated protein kinase kinase kinase MLT) (Mixed lineage kinase 7) (Mixed lineage kinase-related kinase) (MLK-related kinase) (MRK) (Sterile alpha motif- and leucine zipper-containing kinase AZK) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Stress-activated component of a protein kinase signal transduction cascade that promotes programmed cell death in response to various stress, such as ribosomal stress, osmotic shock and ionizing radiation (PubMed:10924358, PubMed:11836244, PubMed:12220515, PubMed:14521931, PubMed:15350844, PubMed:15737997, PubMed:18331592, PubMed:20559024, PubMed:26999302, PubMed:32289254, PubMed:32610081, PubMed:35857590). Acts by catalyzing phosphorylation of MAP kinase kinases, leading to activation of the JNK (MAPK8/JNK1, MAPK9/JNK2 and/or MAPK10/JNK3) and MAP kinase p38 (MAPK11, MAPK12, MAPK13 and/or MAPK14) pathways (PubMed:11042189, PubMed:11836244, PubMed:12220515, PubMed:14521931, PubMed:15172994, PubMed:15737997, PubMed:32289254, PubMed:32610081, PubMed:35857590). Activates JNK through phosphorylation of MAP2K4/MKK4 and MAP2K7/MKK7, and MAP kinase p38 gamma (MAPK12) via phosphorylation of MAP2K3/MKK3 and MAP2K6/MKK6 (PubMed:11836244, PubMed:12220515). Involved in stress associated with adrenergic stimulation: contributes to cardiac decompensation during periods of acute cardiac stress (PubMed:15350844, PubMed:21224381, PubMed:27859413). May be involved in regulation of S and G2 cell cycle checkpoint by mediating phosphorylation of CHEK2 (PubMed:15342622).; [Isoform ZAKalpha]: Key component of the stress-activated protein kinase signaling cascade in response to ribotoxic stress or UV-B irradiation (PubMed:32289254, PubMed:32610081, PubMed:35857590). Acts as the proximal sensor of ribosome collisions during the ribotoxic stress response (RSR): directly binds to the ribosome by inserting its flexible C-terminus into the ribosomal intersubunit space, thereby acting as a sentinel for colliding ribosomes (PubMed:32289254, PubMed:32610081). Upon ribosome collisions, activates either the stress-activated protein kinase signal transduction cascade or the integrated stress response (ISR), leading to programmed cell death or cell survival, respectively (PubMed:32610081). Dangerous levels of ribosome collisions trigger the autophosphorylation and activation of MAP3K20, which dissociates from colliding ribosomes and phosphorylates MAP kinase kinases, leading to activation of the JNK and MAP kinase p38 pathways that promote programmed cell death (PubMed:32289254, PubMed:32610081). Less dangerous levels of ribosome collisions trigger the integrated stress response (ISR): MAP3K20 activates EIF2AK4/GCN2 independently of its protein-kinase activity, promoting EIF2AK4/GCN2-mediated phosphorylation of EIF2S1/eIF-2-alpha (PubMed:32610081). Also part of the stress-activated protein kinase signaling cascade triggering the

NLRP1 inflammasome in response to UV-B irradiation: ribosome collisions activate MAP3K20, which directly phosphorylates NLRP1, leading to activation of the NLRP1 inflammasome and subsequent pyroptosis (PubMed:35857590). NLRP1 is also phosphorylated by MAP kinase p38 downstream of MAP3K20 (PubMed:35857590). Also acts as a histone kinase by phosphorylating histone H3 at 'Ser-28' (H3S28ph) (PubMed:15684425).; [Isoform ZAKbeta]: Isoform that lacks the C-terminal region that mediates ribosome-binding: does not act as a sensor of ribosome collisions in response to ribotoxic stress (PubMed:32289254, PubMed:32610081, PubMed:35857590). May act as an antagonist of isoform ZAKalpha: interacts with isoform ZAKalpha, leading to decrease the expression of isoform ZAKalpha (PubMed:27859413).

Subcellular Localization: Cytoplasm . Nucleus . Note=Translocates to the nucleus upon ultraviolet B irradiation.

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer-composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.