

Recombinant Mouse QKI Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51961

Size: 10ug, 100ug

Protein Name: KH domain-containing RNA-binding protein QKI (Protein quaking) (Mqkl)

Synonym: Qki, Qk, Qk1

UniProt ID: Q9QYS9

UniProt Link: www.uniprot.org/uniprotkb/Q9QYS9/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 341 AA

Molecular Weight: 38 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MVGEMETKEKPKPTPDYLMQLMNDKKLMSSLPNFCGIFNHLERLLDEEISRVRKDMYNDTLNGSTE
KRSALPDAVGPIVQLQEKLVPVKEYPDFNFVGRILGPRGLTAKQLEAETGCKIMVRGKGSMRDKK
KEEQNRGKPNWEHLNEDLHVLITVEDAQNRAEIKLKRAVEEVKKLLVPAAEGEDSLKKMQLMELAIL
NGTYRDANIKSPALAFSLAATAQAAPRIITGPAPVLPPAALRTPTPAGPTIMPLIRQIQTAVMPNGTPH
PTAAIVPPGPEAGLIYTPYEYPYTLAPATSILEYPIEPSGVLGAVATKVRRHDMRVHPYQRIVTADRAA
TGN

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 KH domain-containing RNA-binding protein QKI (Protein quaking) (Mqkl) 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: RNA reader protein, which recognizes and binds specific RNAs, thereby regulating RNA metabolic processes, such as pre-mRNA splicing, circular RNA (circRNA) formation, mRNA export, mRNA stability and/or translation (PubMed:10535969, PubMed:11297509, PubMed:11917126, PubMed:12467586, PubMed:15568022, PubMed:31868295, PubMed:36088389). Involved in various cellular processes, such as mRNA storage into stress granules, apoptosis, lipid deposition, interferon response, glial cell fate and development (PubMed:10535969, PubMed:11297509, PubMed:11917126, PubMed:12467586, PubMed:15568022, PubMed:31868295). Binds to the 5'-NACUAAAY-N(1,20)-UAAY-3' RNA core sequence (PubMed:16041388). Acts as a mRNA modification reader that specifically recognizes and binds mRNA transcripts modified by internal N(7)-methylguanine (m7G) (By similarity). Promotes the formation of circular RNAs (circRNAs) during the epithelial to mesenchymal transition and in cardiomyocytes: acts by binding to sites flanking circRNA-forming exons (PubMed:37272356). CircRNAs are produced by back-splicing circularization of pre-mRNAs (PubMed:37272356). Plays a central role in myelination via 3 distinct mechanisms (PubMed:10864952, PubMed:11917126, PubMed:12467586, PubMed:15568022, PubMed:20956316, PubMed:21253564). First, acts by protecting and promoting stability of target mRNAs such as MBP, SIRT2 and CDKN1B, which promotes oligodendrocyte differentiation (PubMed:10864952, PubMed:15568022, PubMed:28188285). Second, participates in mRNA transport by regulating the nuclear export of MBP mRNA (PubMed:12467586). Finally, indirectly regulates mRNA splicing of MAG pre-mRNA during oligodendrocyte differentiation by acting as a negative regulator of MAG exon 12 alternative splicing: acts by binding to HNRNPA1 mRNA splicing factor, preventing its translation (PubMed:11917126, PubMed:20956316, PubMed:21253564). Involved in microglia differentiation and remyelination by regulating microexon alternative splicing of the Rho GTPase pathway (PubMed:33045062, PubMed:33378678). Involved in macrophage differentiation: promotes monocyte differentiation by regulating pre-mRNA splicing in naive peripheral blood monocytes (PubMed:36088389). Acts as an important regulator of muscle development: required for the contractile function of cardiomyocytes by regulating alternative splicing of cardiomyocyte transcripts (PubMed:33397958, PubMed:36627242). Acts as a negative regulator of thermogenesis by decreasing stability, nuclear export and translation of mRNAs encoding PPARGC1A and UCP1 (PubMed:31868295). Also required for visceral endoderm function and blood vessel development (PubMed:11892011, PubMed:16470614). May also play a role in smooth muscle development (PubMed:14706070). In addition to its RNA-binding activity, also acts as a nuclear transcription coactivator for SREBF2/SREBP2 (PubMed:33942715, PubMed:34021134).; [Isoform QKI5]: Nuclear isoform that acts as an indirect regulator of mRNA splicing (PubMed:11917126, PubMed:29021242). Regulates mRNA splicing of MAG pre-mRNA by inhibiting translation of HNRNPA1 mRNA, thereby preventing MAG exon 12 alternative splicing (PubMed:11917126, PubMed:21253564). Involved in oligodendrocyte differentiation by promoting stabilization of SIRT2 mRNA (PubMed:28188285). Acts as a negative regulator of the interferon response by binding to MAVS mRNA, down-regulating its expression (By similarity). Also inhibits the interferon response by binding to fibrinectin FN1 pre-mRNA, repressing EDA exon inclusion in FN1 (By similarity). Delays macrophage differentiation by binding to CSF1R mRNA, promoting its degradation (By similarity). In addition to its RNA-binding activity, also acts as a nuclear transcription coactivator for SREBF2/SREBP2, promoting SREBF2/SREBP2-dependent cholesterol biosynthesis (PubMed:33942715, PubMed:34021134). SREBF2/SREBP2-dependent cholesterol biosynthesis participates to myelination and is required for eye lens transparency (PubMed:33942715, PubMed:34021134).; [Isoform QKI6]: Cytosolic isoform that specifically recognizes and binds mRNA transcripts modified by internal N(7)-methylguanine (m7G) (By similarity). Interaction with G3BP1

promotes localization of m7G-containing mRNAs into stress granules in response to stress, thereby suppressing their translation (By similarity). Acts as a translational repressor for HNRNPA1 and GLI1 (PubMed:10535969, PubMed:16198329, PubMed:20956316, PubMed:29021242). Translation inhibition of HNRNPA1 during oligodendrocyte differentiation prevents inclusion of exon 12 in MAG pre-mRNA splicing (PubMed:20956316). Involved in astrocyte differentiation by regulating translation of target mRNAs (PubMed:33750804).; [Isoform QKI7]: Cytosolic isoform that specifically recognizes and binds mRNA transcripts modified by internal N(7)-methylguanine (m7G) (By similarity). Interaction with G3BP1 promotes localization of m7G-containing mRNAs into stress granules in response to stress, thereby suppressing their translation (By similarity). Acts as a negative regulator of angiogenesis by binding to mRNAs encoding CDH5, NLGN1 and TNFAIP6, promoting their degradation (PubMed:32732889). Can also induce apoptosis in the cytoplasm (PubMed:11297509). Heterodimerization with other isoforms results in nuclear translocation of isoform QKI7 and suppression of apoptosis (PubMed:11297509). Also binds some microRNAs: promotes stabilization of miR-122 by mediating recruitment of poly(A) RNA polymerase TENT2, leading to 3' adenylation and stabilization of miR-122 (By similarity).

Subcellular Localization: Cytoplasm . Nucleus .; [Isoform QKI5]: Nucleus . Cytoplasm . Note=Localizes predominantly in the nucleus and at lower levels in cytoplasm (PubMed:10506177, PubMed:29021242). It shuttles between the cytoplasm and the nucleus (PubMed:10506177).; [Isoform QKI6]: Cytoplasm, cytosol . Nucleus . Note=Localizes predominantly in the cytoplasm and at lower levels in nucleus.; [Isoform QKI7]: Cytoplasm, cytosol . Cytoplasm, Stress granule . Nucleus . Note=Localizes predominantly in the cytoplasm and at much lower levels in nucleus (PubMed:11297509, PubMed:29021242). Shuttles between the cytosol and stress granules in response to stress (By similarity).

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.