

Recombinant Human MOTSC Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50679

Size: 10ug, 100ug

Protein Name: Mitochondrial-derived peptide MOTS-c (Mitochondrial open reading frame of the 12S rRNA-c)

Synonym: MT-RNR1

UniProt ID: A0A0C5B5G6

UniProt Link: www.uniprot.org/uniprotkb/A0A0C5B5G6/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 16 AA

Molecular Weight: 2 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MRWQEMGYIFYPRKLR

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 Mitochondrial-derived peptide MOTS-c (Mitochondrial open reading frame of the 12S rRNA-c) 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: Regulates insulin sensitivity and metabolic homeostasis (PubMed:25738459, PubMed:33468709). Inhibits the folate cycle, thereby reducing de novo purine biosynthesis which leads to the accumulation of the de novo purine synthesis intermediate 5-aminoimidazole-4-carboxamide (AICAR) and the activation of the metabolic regulator 5'-AMP-activated protein kinase (AMPK) (PubMed:25738459). Protects against age-dependent and diet-induced insulin resistance as well as diet-induced obesity (PubMed:25738459). In response to metabolic stress, translocates to the nucleus where it binds to antioxidant response elements (ARE) present in the promoter regions of a number of genes and plays a role in regulating nuclear gene expression in an NFE2L2-dependent manner and increasing cellular resistance to metabolic stress (PubMed:29983246). Increases mitochondrial respiration and levels of CPT1A and cytokines IL1B, IL6, IL8, IL10 and TNF in senescent cells (PubMed:29886458). Increases activity of the serine/threonine protein kinase complex mTORC2 and reduces activity of the PTEN phosphatase, thus promoting phosphorylation of AKT (PubMed:33554779). This promotes AKT-mediated phosphorylation of transcription factor FOXO1 which reduces FOXO1 activity, leading to reduced levels of MSTN and promotion of skeletal muscle growth (PubMed:33554779). Promotes osteogenic differentiation of bone marrow mesenchymal stem cells via the TGFB/SMAD pathway (PubMed:30468456). Promotes osteoblast proliferation and osteoblast synthesis of type I collagens COL1A1 and COL1A2 via the TGFB/SMAD pathway (PubMed:31081069).

Subcellular Localization: Secreted . Mitochondrion . Nucleus . Note=Translocates to the nucleus in response to metabolic stress in an AMPK-dependent manner.

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.