

Recombinant Rat ORAI1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP52472

Size: 10ug, 100ug

Protein Name: Calcium release-activated calcium channel protein 1 (Protein orai-1)
(Transmembrane protein 142A)

Synonym: Orai1, Cracm1, Tmem142a

UniProt ID: Q5M848

UniProt Link: www.uniprot.org/uniprotkb/Q5M848/entry

Species Source: Rat

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 304 AA

Molecular Weight: 33 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MHPEPAPPPNNSNPPLSGGSSTSGSRRSRRRSGDGEPTGAPPLPPPPAVSYPDWIGQSYSEVM
SLNEHSMQALSWRKLYLSRAKLKASSRTSALLSGFAMVAMVEVQLDTHDYPPGLLIVFSACTTVLV
AVHLFALMISTCILPNIEAVSNVHNLNSVKESPHERMHRHIELAWAFSTVIGTLLFLAEVVLLCWVKFL
PLKRQAGQPSPPTKPPTEPAVVANSSNNGGITPGEAAAIATAIMVPCGLVFIVFAVHFYRSLVSHKT
DRQFQELNELAEFARLQDQLDHRGDHSLTPGTHYA

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 Calcium release-activated calcium channel protein 1 (Protein orai-1) (Transmembrane protein 142A) 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: Pore-forming subunit of two major inward rectifying Ca^{2+} channels at the plasma membrane: Ca^{2+} release-activated Ca^{2+} (CRAC) channels and arachidonate-regulated Ca^{2+} -selective (ARC) channels (By similarity). Assembles with ORAI2 and ORAI3 to form hexameric CRAC channels that mediate Ca^{2+} influx upon depletion of endoplasmic reticulum Ca^{2+} store and channel activation by Ca^{2+} sensor STIM1, a process known as store-operated Ca^{2+} entry (SOCE). Various pore subunit combinations may account for distinct CRAC channel spatiotemporal and cell-type specific dynamics. ORAI1 mainly contributes to the generation of Ca^{2+} plateaus involved in sustained Ca^{2+} entry and is dispensable for cytosolic Ca^{2+} oscillations, whereas ORAI2 and ORAI3 generate oscillatory patterns. CRAC channels assemble in Ca^{2+} signaling microdomains where Ca^{2+} influx is coupled to calmodulin and calcineurin signaling and activation of NFAT transcription factors recruited to ORAI1 via AKAP5. Activates NFATC2/NFAT1 and NFATC3/NFAT4-mediated transcriptional responses. CRAC channels are the main pathway for Ca^{2+} influx in T cells and promote the immune response to pathogens by activating NFAT-dependent cytokine and chemokine transcription (By similarity). Assembles with ORAI3 to form channels that mediate store-independent Ca^{2+} influx in response to inflammatory metabolites arachidonate or its derivative leukotriene C4, termed ARC and LRC channels respectively (By similarity). Plays a prominent role in Ca^{2+} influx at the basolateral membrane of mammary epithelial cells independently of the Ca^{2+} content of endoplasmic reticulum or Golgi stores. May mediate transepithelial transport of large quantities of Ca^{2+} for milk secretion (By similarity).

Subcellular Localization: Cell membrane ; Multi-pass membrane protein . Basolateral cell membrane ; Multi-pass membrane protein . Note=Colocalizes with STIM1 in membrane punctate structures at ER-PM junctions.

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.