

Recombinant Mouse FFAR4 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51700

Size: 10ug, 100ug

Protein Name: Free fatty acid receptor 4 (G protein-coupled receptor 120) (G protein-coupled receptor GT01) (Omega-3 fatty acid receptor 1)

Synonym: Ffar4, Gpr120, O3far1

UniProt ID: Q7TMA4

UniProt Link: www.uniprot.org/uniprotkb/Q7TMA4/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 361 AA

Molecular Weight: 41 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MSPECAQTTGPGPSHTLDQVNRTHFPFFSDVKGDHRLVLSVVETTVLGLIFVVSLLGNVCALVLVAR
RRRRGATASLVNLFCADLLFTSAIPLVLVVRWTEAWLLGPVVCHLLFYVMTMSGSVTILTLAAVSLE
RMVCIVRLRRGLSGPGRRTQAALLAFIWGYSALAALPLCILFRVVPQRLPGGDQEIPICTLDWPNRIG
EISWDVFFVTNLNPLVPLVIVISYSKILQITKASRKRLTSLAYSESHQIRVSQQDYRLFRTLFLLMVSFF
IMWSPIIITILLILIQNFRQDLVIWPSLFFWVVAFTFANSALNPILYNMSLFRNEWKRIFCCFFPEKGAIF
TDTSVRRNDLSVISS

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 Free fatty acid receptor 4 (G protein-coupled receptor 120) (G protein-coupled receptor GT01) (Omega-3 fatty acid receptor 1) 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: G protein-coupled receptor for long-chain fatty acids (LCFAs) with a major role in adipogenesis, energy metabolism and inflammation. Signals via G protein and beta-arrestin pathways (PubMed:26873857, PubMed:27852822). LCFAs sensing initiates activation of phosphoinositidase C-linked G proteins GNAQ and GNA11 (G(q)/G(11)), inducing a variety of cellular responses via second messenger pathways such as intracellular calcium mobilization, modulation of cyclic adenosine monophosphate (cAMP) production, and mitogen-activated protein kinases (MAPKs) (PubMed:26873857, PubMed:27852822). After LCFAs binding, associates with beta-arrestin ARRB2 that acts as an adapter protein coupling the receptor to specific downstream signaling pathways, as well as mediating receptor endocytosis (PubMed:26873857, PubMed:27852822). In response to dietary fats, plays an important role in the regulation of adipocyte proliferation and differentiation (PubMed:17250804, PubMed:22343897, PubMed:27853148, PubMed:29343498, PubMed:31761534). Acts as a receptor for omega-3 polyunsaturated fatty acids (PUFAs) at primary cilium of perivascular preadipocytes, initiating an adipogenic program via cAMP and CTCF-dependent chromatin remodeling that ultimately results in transcriptional activation of adipogenic genes and cell cycle entry (PubMed:31761534). Induces differentiation of brown and beige adipocytes probably via autocrine and endocrine functions of FGF21 hormone (PubMed:27853148, PubMed:29343498). Contributes to the thermogenic activation of brown adipose tissue and the browning of white adipose tissue (PubMed:27853148, PubMed:29343498). Activates brown adipocytes by initiating intracellular calcium signaling leading to mitochondrial depolarization and fission, and overall increased mitochondrial respiration (PubMed:29343498). Consequently stimulates fatty acid uptake and oxidation in mitochondria together with UCP1-mediated thermogenic respiration, eventually reducing fat mass (PubMed:29343498). Regulates bi-potential differentiation of bone marrow mesenchymal stem cells toward osteoblasts or adipocytes likely by up-regulating distinct integrins (PubMed:26365922). In response to dietary fats regulates hormone secretion and appetite (PubMed:15619630, PubMed:24222669, PubMed:24663807, PubMed:24742677, PubMed:25535828). Stimulates GIP and GLP1 secretion from enteroendocrine cells as well as GCG secretion in pancreatic alpha cells, thereby playing a role in the regulation of blood glucose levels (PubMed:15619630, PubMed:24742677, PubMed:25535828). Negatively regulates glucose-induced SST secretion in pancreatic delta cells (PubMed:24663807). Mediates LCFAs inhibition of GHRL secretion, an appetite-controlling hormone (PubMed:24222669). In taste buds, contributes to sensing of dietary fatty acids by the gustatory system (PubMed:20573884). During the inflammatory response, promotes anti-inflammatory M2 macrophage differentiation in adipose tissue (PubMed:20813258). Mediates the anti-inflammatory effects of omega-3 PUFAs via inhibition of NLRP3 inflammasome activation (By similarity). In this pathway, interacts with adapter protein ARRB2 and inhibits the priming step triggered by Toll-like receptors (TLRs) at the level of TAK1 and TAB1 (PubMed:20813258). Further inhibits the activation step when ARRB2 directly associates with NLRP3, leading to inhibition of pro-inflammatory cytokine release (By similarity). Mediates LCFAs anti-apoptotic effects (PubMed:15774482). Mediates VLCFAs-dependent liver-to-adipose tissue signaling and adipose tissue thermogenesis.

Subcellular Localization: Cell membrane ; Multi-pass membrane protein . Endosome membrane ; Multi-pass membrane protein . Lysosome membrane ; Multi-pass membrane protein . Cell projection, cilium membrane ; Multi-pass membrane protein . Note=Sorted to late endosome/lysosome compartments upon internalization (By similarity). Specifically localizes to the primary cilium of

undifferentiated adipocytes. Ciliary trafficking is TULP3-dependent. As the cilium is lost during adipogenesis, moves to the plasma membrane (PubMed:31761534).

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.