

Recombinant Human LACC1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP50607

Size: 10ug, 100ug

Protein Name: Purine nucleoside phosphorylase LACC1 (EC 2.4.2.1) (Adenosine deaminase LACC1) (EC 3.5.4.4) (Fatty acid metabolism-immunity nexus) (Guanosine phosphorylase LACC1) (Isocyanic acid synthase) (EC 4.3.3.-) (Laccase domain-containing protein 1) (S-methyl-5'-thioadenosine phosphorylase LACC1) (EC 2.4.2.28)

Synonym: LACC1, C13orf31, FAMIN

UniProt ID: Q8IV20

UniProt Link: www.uniprot.org/uniprotkb/Q8IV20/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 430 AA

Molecular Weight: 48 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MAEAVLIDLFGLKLNSQKNCHQTLLKTLNAVQYHHA AKAKFLC IMCCSNISYERDGEQDNCEIETSNG
LSALLEEFEIVSCPSMAATLYTIKQKIDEKNLSSIKVIVPRHRKTLMKAFIDQLFTDVYNFEFEDLQVTFR
GGLFKQSIEINVITAQELRGIQNEIETFLRSLPALRGKLTITSSLIPDIFIHGFTTRTGGISYIPTLSSFNLF
SSSKRRDPKVVVQENLRRLANAAGFNVEKFYRIKTHHSNDIWIMGRKEPDSYDGITTNRQGVITIAAL
GADCIPIVFADPVKKACGVAHAGWKG TLLGVAMATVNAMIAEYGCSLEDIVVVLGPSVGPCCTLPR
ESAEAFHNLHPACVQLFDSPNPCIDIRKATRILLEQGGILPQNIQDQNQDLNLCTSCHPDKFFSHVRD
GLNFGTQIGFISIKE

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.

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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 Purine nucleoside phosphorylase LACC1 (EC 2.4.2.1) (Adenosine deaminase LACC1) (EC 3.5.4.4) (Fatty acid metabolism-immunity nexus) (Guanosine phosphorylase LACC1) (Isocyanic acid synthase) (EC 4.3.3.-) (Laccase domain-containing protein 1) (S-methyl-5'-thioadenosine phosphorylase LACC1) (EC 2.4.2.28) 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: Purine nucleoside enzyme that catalyzes the phosphorolysis of adenosine, guanosine and inosine nucleosides, yielding D-ribose 1-phosphate and the respective free bases, adenine, guanine and hypoxanthine (PubMed:31978345). Also catalyzes the phosphorolysis of S-methyl-5'-thioadenosine into adenine and S-methyl-5-thio-alpha-D-ribose 1-phosphate (PubMed:31978345). Also has adenosine deaminase activity (PubMed:31978345). Acts as a regulator of innate immunity in macrophages by modulating the purine nucleotide metabolism, thereby regulating the metabolic function and bioenergetic state of macrophages (PubMed:31978345). Enables a purine nucleotide cycle between adenosine and inosine monophosphate and adenylosuccinate that prevents cytoplasmic acidification and balances the cytoplasmic-mitochondrial redox interface (PubMed:31978345). The purine nucleotide cycle consumes aspartate and releases fumarate in a manner involving fatty acid oxidation and ATP-citrate lyase activity (PubMed:31978345). Participates in pattern recognition receptor (PRR)-induced cytokines in macrophages: associates with the NOD2-signaling complex and promotes optimal NOD2-induced signaling, cytokine secretion and bacterial clearance (PubMed:28593945, PubMed:31875558). Localizes to the endoplasmic reticulum upon PRR stimulation of macrophages and associates with endoplasmic reticulum-stress sensors, promoting the endoplasmic reticulum unfolded protein response (UPR) (PubMed:31875558). Component of L-arginine metabolism in activated macrophages supporting anti-inflammatory and antibacterial macrophage effector functions. Cleaves L-citrulline, a product of L-arginine metabolized via NOS2, to yield isocyanate, a reactive carbonyl species-like cytotoxin, and L-ornithine, a precursor in polyamine biosynthesis. Through L-ornithine controls cellular polyamine pools likely triggering polyamine-mediated proinflammatory cytokine suppression and autophagy stimulation (PubMed:35978195). Directly interacts with components of autophagy machinery to regulate macrophage metabolism and bacterial phagocytosis. Acts downstream of the energy sensor AMP-activated protein kinase (AMPK) to promote autophagy associated to lipid droplets generation providing fatty acids for mitochondrial respiration (PubMed:33606008). Does not show laccase activity (PubMed:27959965, PubMed:31978345).

Subcellular Localization: Cytoplasm . Nucleus . Endoplasmic reticulum . Peroxisome . Note=Upon stimulation of the pattern-recognition receptor (PRR) NOD2, localizes to the endoplasmic reticulum.

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.