

Recombinant Mouse NF2L1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51658

Size: 10ug, 100ug

Protein Name: Endoplasmic reticulum membrane sensor NFE2L1 (Locus control region-factor 1) (LCR-F1) (Nuclear factor erythroid 2-related factor 1) (NF-E2-related factor 1) (NFE2-related factor 1) (Nuclear factor, erythroid derived 2, like 1) [Cleaved into: Transcription factor NRF1]

Synonym: Nfe2l1, Nrf1

UniProt ID: Q61985

UniProt Link: www.uniprot.org/uniprotkb/Q61985/entry

Species Source: Mouse

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 741 AA

Molecular Weight: 82 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MLSLKKYLTEGLLQFTILLSLIGVRVDVDTYLTSQLPPLREILGPSSAYTQTQFHNLRNTLDGYGIHPK
SIDLDNYFTARRLLSQVRALDRFQVPTTEVNWLVRDPEGSVSGSQPNGLALESSSGLQDVTGP
DNGVRESETEQGFGELEDLGAVAPPVSGDLTKEDIDLILWRQDIDLGAGREVFYSHRQKEQDV
DKELQDGREREDTWSGEGAEALARDLLVDGETGESFPAQFPADVSSIPEAVPSESESPALQNSLLS
PLLTGTESPFDEQQWQDLMSIMEMQAMEVNTSASEILYNAPPGDPLSTNYS LAPNTPINQNVSLHQ
ASLGGCSQDFSLFSPEVESLPVASSSTLLPLVPSNSTSLNSTFGSTNLAGLFFPSQLNGTANDTSGP
ELPDPLGGLLDEAMLDEISLMDLAIEEGFNVPVQASQLEEEFDSDSGLSLDSSHSPSSLSSSEGSSSS
SSSSSSSSASSASSSSFFSEEGAVGYSSDSETLDLEEAEGAVGYQPEYSKFCRMSYQDPSQLSCLPY
LEHVGHNHTYNMAPSALDSADLPPSTLKKGSKEKQADFLDKQMSRDEHRARAMKIPFTNDKIINLP
VEEFNELLISKYQLSEAQLSLIRDIRRRGKNKMAAQNCRKRLDTILNLERDVEDLQRDKARLLREKVE
FLRSLRQMKQKVQSLYQEVFGRLRDEHGRPYSPSQYALQYAGDGSVLLIPRTMADQQARRQERKP
KDRRK

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 Endoplasmic reticulum membrane sensor NFE2L1 (Locus control region-factor 1) (LCR-F1) (Nuclear factor erythroid 2-related factor 1) (NF-E2-related factor 1) (NFE2-related factor 1) (Nuclear factor, erythroid derived 2, like 1) [Cleaved into: Transcription factor NRF1] 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: [Endoplasmic reticulum membrane sensor NFE2L1]: Endoplasmic reticulum membrane sensor that translocates into the nucleus in response to various stresses to act as a transcription factor (PubMed:20385086, PubMed:21536885, PubMed:23816881, PubMed:29149604). Constitutes a precursor of the transcription factor NRF1. Able to detect various cellular stresses, such as cholesterol excess, oxidative stress or proteasome inhibition (PubMed:20385086, PubMed:21536885, PubMed:23816881, PubMed:29149604). In response to stress, it is released from the endoplasmic reticulum membrane following cleavage by the protease DDIT2 and translocates into the nucleus to form the transcription factor NRF1 (PubMed:29149604). Acts as a key sensor of cholesterol excess: in excess cholesterol conditions, the endoplasmic reticulum membrane form of the protein directly binds cholesterol via its CRAC motif, preventing cleavage and release of the transcription factor NRF1, thereby allowing expression of genes promoting cholesterol removal, such as CD36 (PubMed:29149604). Involved in proteasome homeostasis: in response to proteasome inhibition, it is released from the endoplasmic reticulum membrane, translocates to the nucleus and activates expression of genes encoding proteasome subunits (PubMed:20385086, PubMed:21536885, PubMed:23816881).; [Transcription factor NRF1]: CNC-type bZIP family transcription factor that translocates to the nucleus and regulates expression of target genes in response to various stresses (PubMed:10601325, PubMed:11342101, PubMed:16872277, PubMed:21911472, PubMed:23144760, PubMed:23816881, PubMed:29149604). Heterodimerizes with small-Maf proteins (MAFF, MAFK or MAFK) and binds DNA motifs including the antioxidant response elements (AREs), which regulate expression of genes involved in oxidative stress response (PubMed:12808106, PubMed:15738389, PubMed:16872277, PubMed:21911472, PubMed:23144760, PubMed:23816881). Activates or represses expression of target genes, depending on the context (PubMed:12808106, PubMed:15738389, PubMed:16872277, PubMed:21911472, PubMed:23144760, PubMed:23816881). Plays a key role in cholesterol homeostasis by acting as a sensor of cholesterol excess: in low cholesterol conditions, translocates into the nucleus and represses expression of genes involved in defense against cholesterol excess, such as CD36 (PubMed:29149604). In excess cholesterol conditions, the endoplasmic reticulum membrane form of the protein directly binds cholesterol via its CRAC motif, preventing cleavage and release of the transcription factor NRF1, thereby allowing expression of genes promoting cholesterol removal (PubMed:29149604). Critical for redox balance in response to oxidative stress: acts by binding the AREs motifs on promoters and mediating activation of oxidative stress response genes, such as GCLC, GCLM, GSS, MT1 and MT2 (PubMed:10601325, PubMed:11342101, PubMed:12968018, PubMed:15738389, PubMed:18826952). Plays an essential role during fetal liver hematopoiesis: probably has a protective function against oxidative stress and is involved in lipid homeostasis in the liver



(PubMed:12808106, PubMed:15738389, PubMed:18826952, PubMed:22586274, PubMed:9501099). Involved in proteasome homeostasis: in response to proteasome inhibition, mediates the 'bounce-back' of proteasome subunits by translocating into the nucleus and activating expression of genes encoding proteasome subunits (PubMed:20385086, PubMed:21536885, PubMed:23816881). Also involved in regulating glucose flux (PubMed:25041126). Together with CEBPB; represses expression of DSPP during odontoblast differentiation (By similarity). In response to ascorbic acid induction, activates expression of SP7/Osterix in osteoblasts (PubMed:17510056).; [Isoform 2]: Transcription factor that binds the antioxidant response elements (ARE) consensus sequence on promoters and activates their expression.; [Isoform 3]: Transcription factor that binds the extended kappa 3 site of the TNF promoter after Fc gamma RIII stimulation and participates in the induction of this cytokine (PubMed:9580677).

Subcellular Localization: [Endoplasmic reticulum membrane sensor NFE2L1]: Endoplasmic reticulum membrane ; Single-pass type II membrane protein . Endoplasmic reticulum membrane ; Single-pass type III membrane protein . Note=In normal conditions, probably has a single-pass type II membrane protein topology, with the DNA-binding domain facing the endoplasmic reticulum lumen (By similarity). Following cellular stress, it is rapidly and efficiently retrotranslocated to the cytosolic side of the membrane, a process dependent on p97/VCP, to have a single-pass type III membrane protein topology with the major part of the protein facing the cytosol (By similarity). Retrotranslocated proteins are normally rapidly degraded by the proteasome and active species do not accumulate (By similarity). However, retrotranslocated protein NFE2L1 escapes degradation and is cleaved at Leu-104 by DDI2, releasing the protein from the endoplasmic reticulum membrane and forming the transcription factor NRF1 that translocates into the nucleus (By similarity).; [Transcription factor NRF1]: Nucleus . Note=Translocates into the nucleus following cleavage of Endoplasmic reticulum membrane sensor NFE2L1 by aspartyl protease DDI2.; [Isoform 2]: Cytoplasm . Nucleus .

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.