

Active Recombinant Human ApoE R2, CF

Cat. No. LRP8-64H **Lot. No.** (See product label)

SPECIFICATION

Product Overview	A DNA sequence encoding the signal peptide from human CD33 joined with the extracellular domain of human ApoE R2 sequence (Ala 32 - Lys 818) (Accession # Q14114, with one variant Val 262 replacing Ala 262) was fused with a 10X histidine tag at the carboxyl-terminus. The chimeric protein was expressed in a Chinese hamster ovary cell line.
Species	Human
Source	CHO
ProteinLength	32-818 a.a.
Description	ApoE R2, also known as LRP8, is an LDL receptor family protein that is involved in nervous system development and function. ^{1, 2} Human ApoE R2 has a 794 aa extracellular domain (ECD) and a 116 aa cytoplasmic region. The ECD contains seven LDLR class A repeats followed by two EGF-like repeats, five LDLR class B repeats, and a region rich in O-linked glycosylation. Alternatively spliced variants of human ApoE R2 have deletions of LDLR-A repeats # 4 - 7, the O-linked glycosylation region, or approximately half of the cytoplasmic domain. ³ Cleavage of ApoE R2 by γ-secretase, metalloproteases, and furin-like enzymes results in the liberation of the cytoplasmic, extracellular, and ligand binding domains. ^{4 - 6} The cytoplasmic NPxY motif binds to PTB domain-containing adaptor proteins. ^{7 - 10} Among these, FE65 and PSD95 couple ApoE R2 with APP or the NMDA receptor, respectively. ^{9, 10} ApoE R2 and NMDA receptor ligands modulate adaptor interactions, NMDA-mediated

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ion currents, and the proteolytic processing of both ApoE R2 and APP.^{9 - 12} ApoE R2 and the NMDA receptor also associate extracellularly.¹⁰ ApoE R2 binds ApoE-containing lipoproteins and the large modular protein, reelin.¹³ Reelin signaling through ApoE R2 is critical for neuronal migration and positioning in the developing brain.¹³ In the adult brain, ApoE R2 functions in hippocampal synapse maturation, synaptic plasticity, and memory formation.^{7, 11, 14, 15} ApoE R2 is also expressed at the neuromuscular junction but does not appear to participate in the development or function of that structure.¹⁶ Deficits in ApoE R2, reelin, and ApoE function have been linked to several cognitive and mood disorders.¹ Within the ECD, human ApoE R2 shares 89% aa sequence identity with mouse and rat ApoE R2. It shares 46% and 48% aa sequence identity with human LDL R and VLDL R, respectively

Bio-activity

Measured by its ability to compete with biotinylated rhApoE R2 for binding to rmReelin in a functional ELISA type binding assay. Optimal dilutions should be determined by each laboratory for each application.

Molecular Mass

Based on N-terminal amino acid sequencing, the recombinant human ApoE R2/His protein starts at Asp 35 and has a predicted molecular mass of approximately 87.5 kDa. As a result of glycosylation, the recombinant monomer migrates as a 140 - 150 kDa protein o

Endotoxin

< 1.0 eu per 1 µg of the enzyme as determined by the lal

Purity

>90%, as determined by SDS-PAGE and visualized by silver stain.

Storage

Samples are stable for up to six months at -70° C in a manual defrost freezer after the date of receipt. After receiving, this protein can be aliquoted and stored at above temperature for up to six months without a significant loss of activity.

GENE INFORMATION

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Gene Name	LRP8 low density lipoprotein receptor-related protein 8, apolipoprotein e receptor [Homo sapiens]
Official Symbol	LRP8
Synonyms	LRP8; low density lipoprotein receptor-related protein 8, apolipoprotein e receptor; low-density lipoprotein receptor-related protein 8; APOER2; ApoE receptor 2; MCI1; LRP-8; HSZ75190;
Gene ID	7804
mRNA Refseq	NM_001018054
Protein Refseq	NP_001018064
MIM	602600
UniProt ID	Q14114
Chromosome Location	1p32.3
Pathway	Hemostasis, organism-specific biosystem; Lissencephaly gene (LIS1) in neuronal migration and development, organism-specific biosystem; Platelet homeostasis, organism-specific biosystem; Platelet sensitization by LDL, organism-specific biosystem; Reelin signaling pathway, organism-specific biosystem;
Function	apolipoprotein E binding; calcium ion binding; protein binding; receptor activity; transmembrane signaling receptor activity; very-low-density lipoprotein particle receptor activity;

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