ApoE2 Human Active Protein

PRODUCT OVERVIEW

Product Name	ApoE2, Active Protein
Full Product Name	Human ApoE2
Product Gene Name	ApoE2 active protein
Product Synonym Names	Recombinant Human ApoE2
Sequence	MKVEQAVETE PEPELRQQTE WQSGQRWELA LGRFWDYLRW VQTLSE QVQE ELLSSQVTQE LRALMDETMK ELKAYKSELE EQLTPVAEET R ARLSKELQA AQARLGADME DVCGRLVQYR GEVQAMLGQS TEELRVR LAS HLRKLRKRLL RDADDLQKCL AVYQAGAREG AERGLSAIRE RL GPLVEQGR VRAATVGSLA GQPLQERAQA WGERLRARME EMGSRTRD RL DEVKEQVAEV RAKLEEQAQQ IRLQAEAFQA RLKSWFEPLV EDM QRQWAGL VEKVQAAVGT SAAPVPSDNH
Host	E Coli
Species Reactivity	Human
Form/Format	Lyophilized; 20 mM Sodium Phosphate, pH 7.8 + 0.5 mM DTT
Purity/Purification	> 90% by SDS-PAGE and HPLC analyses
Preparation and Storage	The lyophilized protein is stable at room temperature for 1 month and at 4 degrees C for 6 months. Reconstituted working aliquots are stable for 1 week at 2 degrees C to 8 degrees C and for 3 months at -20 degrees C to -80 degrees C. Avoid repeated freeze and thaw cycles.
Molecular Weight	34.3 kDa
Chromosome Location	Chromosome: 19; NC_000019.10 (44905782..44909393). Location: 19q13.2
OMIM	104310
3D Structure	ModBase 3D Structure for P02649
Active Protein Note	Protein activity can be an ambiguous term. Please refer to the data sheet or inquire with Technical Support to determine the definition of activity for this product.
Endotoxin Level	< 0.1 ng/ug of protein (<1EU/ug)
Length (aa)	300
Reconstitution	Centrifuge the vial prior to opening. Reconstitute in 20 mM Sodium Phosphate, pH 7.8 + 0.5 mM DTT to a concentration of 0.1-1.0 mg/mL. Do not vortex. This solution can be stored at 2-8°C. For extended storage, it is recommended to further dilute in a buffer (e.g. PBS) containing a carrier protein (example 0.1% BSA) and store in working aliquots at -20°C to -80°C.
Product Categories/Family for ApoE2 active protein	Cytokines & Growth Factors
ISO Certification	Manufactured in an ISO 9001:2008 Certified Laboratory.

Related Product Information for ApoE2 active protein	ApoE belongs to a group of proteins that bind reversibly with lipoprotein and play an important role in lipid metabolism. In addition to facilitating solublization of lipids, these proteins help to maintain the structural integrity of lipoproteins, serve as ligands for lipoprotein receptors, and regulate the activity of enzymes involved in lipid metabolism. Significant quantities of ApoE are produced in liver and brain and to some extent in almost every organ. ApoE is an important constituent of all plasma lipoproteins. Its interaction with specific ApoE receptor enables uptake of chylomicron remnants by liver cells, which is an essential step during normal lipid metabolism. It also binds with the LDL receptor (apo B/E). Defects in ApoE are a cause of hyperlipoproteinemia type III. ApoE exists in three major isoforms; E2, E3, and E4, which differ from one another by a single amino-acid substitution. Compared with E3 and E4, E2 exhibits the lowest receptor binding affinity. E2 allele carriers had significantly lower levels of total cholesterol, low-density lipoprotein cholesterol, and non-high-density lipoprotein cholesterol, as well as increased ApoE levels. Recombinant human ApoE2 is a 34.3 kDa protein containing 300 amino acid residues.
Other Notes	Small volumes of ApoE2 active protein vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for ApoE2 purchase	MBS691845 is an active protein targeting ApoE2. Also known as Human ApoE2. Reactive in Human. Host: E Coli.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for ApoE2. It may not necessarily be applicable to this product.

NCBI GI #	4557325
NCBI GeneID	348
NCBI Accession #	NP_000032.1
UniProt Primary Accession #	P02649
UniProt Secondary Accession #	Q9P2S4; B2RC15; C0JYY5
UniProt Related Accession #	P02649
GenBank Nucleotide #	NM_000041.2
NCBI Official Full Name	apolipoprotein E
NCBI Official Synonym Full Names	apolipoprotein E
NCBI Official Symbol	APOE
NCBI Official Synonym Symbols	AD2; LPG; LDLCQ5
UniProt Protein Name	Apolipoprotein E
UniProt Gene Name	APOE
UniProt Synonym Gene Names	Apo-E
UniProt Entry Name	APOE_HUMAN
NCBI Protein Information	apolipoprotein E; apo-E; apolipoprotein E3
NCBI Summary for ApoE2	Chylomicron remnants and very low density lipoprotein (VLDL) remnants are rapidly removed from the circulation by receptor-mediated endocytosis in the liver. Apolipoprotein E, a main apoprotein of the chylomicron, binds to a specific receptor on liver cells and peripheral cells. ApoE is essential for the normal catabolism of triglyceride-rich lipoprotein constituents. The APOE gene is mapped to chromosome 19 in a cluster with APOC1 and APOC2. Defects in apolipoprotein E result in familial dysbetalipoproteinemia, or type III hyperlipoproteinemia (HLP III), in which increased plasma cholesterol and triglycerides are the consequence of impaired clearance of chylomicron and VLDL remnants. [provided by RefSeq, Jul 2008]

UniProt Comments for ApoE2	Function: Mediates the binding, internalization, and catabolism of lipoprotein particles. It can serve as a ligand for the LDL (apo B/E) receptor and for the specific apo-E receptor (chylomicron remnant) of hepatic tissues. Subcellular location: Secreted. Tissue specificity: Occurs in all lipoprotein fractions in plasma. It constitutes 10-20% of very low density lipoproteins (VLDL) and 1-2% of high density lipoproteins (HDL). APOE is produced in most organs. Significant quantities are produced in liver, brain, spleen, lung, adrenal, ovary, kidney and muscle. Post-translational modification: Synthesized with the sialic acid attached by O-glycosidic linkage and is subsequently desialylated in plasma. O-glycosylated with core 1 or possibly core 8 glycans. Thr-307 and Thr-314 are minor glycosylation siteS compared to Ser-308. Ref.20Glycated in plasma VLDL of normal subjects, and of hyperglycemic diabetic patients at a higher level (2-3 fold).Phosphorylation sites are present in the extracellular medium. Polymorphism: Three common APOE alleles have been identified: APOE*2, APOE*3, and APOE*4. The corresponding three major isoforms, E2, E3, and E4, are recognized according to their relative position after isoelectric focusing. Different mutations causing the same migration pattern after isoelectric focusing define different isoform subtypes The most common isoform isE3 and is present in 40-90% of the population. Common APOE variants influence lipoprotein metabolism in healthy individuals. Involvement in disease: Hyperlipoproteinemia 3 (HLPP3) [MIM:107741]: A disorder characterized by the accumulation of intermediate-density lipoprotein particles (IDL or broad-beta-lipoprotein) rich in cholesterol. Clinical features include xanthomas, yellowish lipid deposits in the palmar crease, or less specific on tendons and on elbows. The disorder rarely manifests before the third decade in men. In women, it is usually expressed only after the menopause.Note: The disease is caused by mutations affecting the gene represented in this entry. The vast majority of the patients are homozygous for APOE*2 alleles. More severe cases of HLPP3 have also been observed in individuals heterozygous for rare APOE variants. The influence of APOE on lipid levels is often suggested to have major implications for the risk of coronary artery disease (CAD). Individuals carrying the common APOE*4 variant are at higher risk of CAD. Ref.16 Ref.26 Ref.27 Ref.29 Ref.39Alzheimer disease 2 (AD2) [MIM:104310]: A late-onset neurodegenerative disorder characterized by progressive dementia, loss of cognitive abilities, and deposition of fibrillar amyloid proteins as intraneuronal neurofibrillary tangles, extracellular amyloid plaques and vascular amyloid deposits. The major constituent of these plaques is the neurotoxic amyloid-beta-APP 40-42 peptide (s), derived proteolytically from the transmembrane precursor protein APP by sequential secretase processing. The cytotoxic C-terminal fragments (CTFs) and the caspase-cleaved products such as C31 derived from APP, are also implicated in neuronal death.Note: Disease susceptibility is associated with variations affecting the gene represented in this entry. The APOE*4 allele is genetically associated with the common late onset familial and sporadic forms of Alzheimer disease. Risk for AD increased from 20% to 90% and mean age at onset decreased from 84 to 68 years with increasing number of APOE*4 alleles in 42 families with late onset AD. Thus APOE*4 gene dose is a major risk factor for late onset AD and, in these families, homozygosity for APOE*4 was virtually sufficient to cause AD by age 80. The mechanism by which APOE*4 participates in pathogenesis is not known. Ref.16Sea-blue histiocyte disease (SBHD) [MIM:269600]: Characterized by splenomegaly, mild thrombocytopenia and, in the bone marrow, numerous histiocytes containing cytoplasmic granules which stain bright blue with the usual hematologic stains. The syndrome is the consequence of an inherited metabolic defect analogous to Gaucher disease and other sphingolipidoses.Note: The disease is caused by mutations affecting the gene represented in this entry. Ref.16 Ref.33 Ref.36Lipoprotein glomerulopathy (LPG) [MIM:611771]: Uncommon kidney disease characterized by proteinuria, progressive kidney failure, and distinctive lipoprotein thrombi in glomerular capillaries.Note: The disease is caused by mutations affecting the gene represented in this entry. Ref.16 Ref.30 Ref.32 Ref.37Familial hypercholesterolemia (FH) [MIM:143890]: Common autosomal semi-dominant disease that affects about 1 in 500 individuals. The receptor defect impairs the catabolism of LDL, and the resultant elevation in plasma LDL-cholesterol promotes deposition of cholesterol in the skin (xanthelasma), tendons (xanthomas), and coronary arteries (atherosclerosis).Note: The disease is caused by mutations affecting the gene represented in this entry. Ref.16 Ref.40 Sequence similarities: Belongs to the apolipoprotein A1/A4/E family.
Research Articles on ApoE2	**1.** APOE4 carrier state with moderate to severe sleep disordered breathing associated with poorer performance on cognitive tests of memory and executive function
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