

PRODUCT INFORMATION



ApoE2 (human, recombinant)

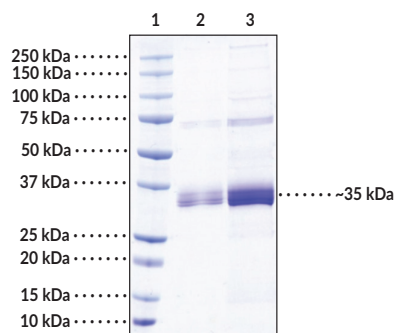
Item No. 37225

Overview and Properties

Synonym: Apolipoprotein E2
Source: Active recombinant human C-terminal His-tagged ApoE2 expressed in HEK293 cells
Amino Acids: 19-317
Uniprot No.: P02649
Molecular Weight: 37.6 kDa
Storage: -80°C (as supplied)
Stability: ≥6 months
Purity: ≥70% estimated by SDS-PAGE
Supplied in: 50 mM HEPES, pH 7.4, with 150 mM sodium chloride and 10% glycerol
Protein
Concentration: *batch specific* mg/ml

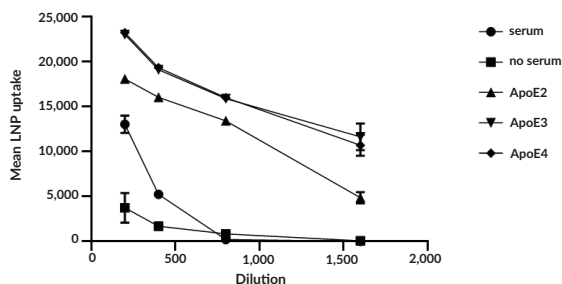
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images

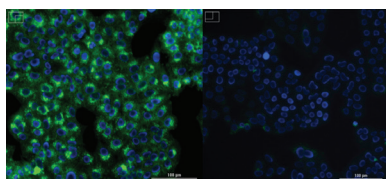


Lane 1: MW Markers
Lane 2: ApoE2 (2 µg)
Lane 3: ApoE2 (4 µg)

SDS-PAGE Analysis of ApoE2. This protein has a calculated molecular weight of 37.6 kDa.



Fluorescent lipid nanoparticles with SM-102 (LNP-102; Item No. 33474) were diluted in media with 10% serum, no serum, or different ApoE proteins (Item Nos. 37225, 37226, or 37227) at 1 µg/ml. A549 lung epithelial cells were incubated with diluted SM-102 samples, washed, and stained with Hoechst 33342 dye for nuclei. The cells were imaged on a Cytation V imaging plate reader and analyzed for mean per-cell BODIPY fluorescence, as a measure of LNP uptake.



ApoE2 (left) increases the uptake of SM-102 (LNP-102; Item No. 33474) compared with no serum (right)

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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Description

ApoE is a member of the superfamily of amphiphilic exchangeable apolipoproteins and a lipid carrier protein with a major role in lipid homeostasis.^{1,2} It is expressed in astrocytes, hepatocytes, monocytes, macrophages, and kidney cells and exists as three major polymorphic alleles, ApoE2, ApoE3, and ApoE4, which occur in the United States population with frequencies of approximately 7, 79, and 14%, respectively. ApoE is composed of an N-terminal domain, which contains sequences for binding to members of the LDL receptor family, and a C-terminal domain, containing the major lipid-binding region, linked by an unstructured hinge region, which facilitates domain mobility essential to protein function.² Upon lipid binding, ApoE undergoes a conformational change that orients the α -helices of the C-terminal domain perpendicular to the acyl chains of the bound lipids to stabilize the bound lipids and facilitates recognition and binding to LDL receptors by the N-terminal domain. ApoE isoforms vary at amino acids 130 and 176 (112 and 158, respectively, in the mature protein) with ApoE2 containing cysteine at 130 and 176, ApoE3 containing cysteine at 130 and arginine at 176, and ApoE4 containing arginine at 130 and 176. The lack of an arginine residue at position 176 prevents ApoE2 from binding to the LDL receptor.³ ApoE2 is associated with larger lipoprotein complexes, promotes more cholesterol efflux than ApoE3-containing lipoproteins, and is able to bind more lipid peroxidation products than ApoE4.^{4,5} Mice expressing human APOE2 develop type III hyperlipoproteinemia and atherosclerosis.⁶ Expression of APOE2 is associated with a decreased risk of Alzheimer's disease and a lower rate of age-related cognitive decline, however, it is also associated with risk of post-traumatic stress disorder (PTSD) and stroke.⁷ Cayman's ApoE2 (human, recombinant) protein can be used for cell-based assays.

References

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