

DESCRIPTION

Source Human embryonic kidney cell, HEK293-derived human Apolipoprotein E3/ApoE3 protein
Lys19-His318
Accession # P02649.1

N-terminal Sequence Analysis Lys19

Predicted Molecular Mass 34 kDa

SPECIFICATIONS

SDS-PAGE 34-40 kDa, under reducing conditions.

Activity Measured by its binding ability in a functional ELISA.
Recombinant Human Apolipoprotein E3/ApoE3 binds to Recombinant Human VLDLR Protein (Catalog # 8444-VL) with an ED₅₀ of 0.0250-0.300 µg/mL.

Endotoxin Level <0.10 EU per 1 µg of the protein by the LAL method.

Purity >90%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

Formulation Lyophilized from a 0.2 µm filtered solution in MOPS, NaCl and TCEP with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 200 µg/mL in water.

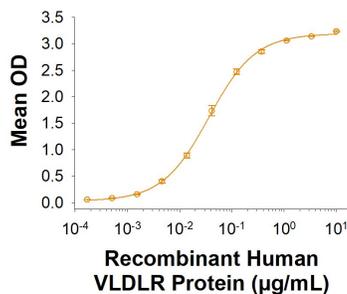
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

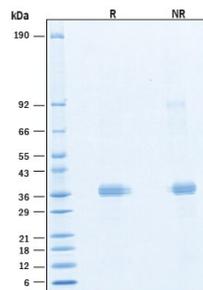
DATA

Bioactivity



Recombinant Human Apolipoprotein E3/ApoE3 Protein Bioactivity. Measured by its binding ability in a functional ELISA. Recombinant Human Apolipoprotein E3/ApoE3 Protein binds to Recombinant Human VLDLR Protein (Catalog # 8444-VL) with an ED₅₀ of 0.0250-0.300 µg/mL.

SDS-PAGE



Recombinant Human Apolipoprotein E3/ApoE3 Protein SDS-PAGE. 2 µg/lane of Recombinant Human Apolipoprotein E3/ApoE3 Protein (Catalog # 11781-AE) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 34-40 kDa, under reducing conditions.

BACKGROUND

Apolipoprotein E (ApoE) is a polymorphic lipid-transport protein with three major human isoforms—ApoE2, ApoE3, and ApoE4—differing by single amino acid substitutions at residues 112 and 158, which significantly alter their structure and function [1, 2]. All isoforms share a two-domain structure: the N-terminal domain mediates receptor binding, while the C-terminal domain facilitates lipid binding and oligomerization [2]. ApoE3 (Cys112/Arg158) is the most common and functionally neutral isoform, while ApoE2 (Cys112/Cys158) has reduced affinity for LDL receptors, often leading to type III hyperlipoproteinemia in homozygotes [1, 4]. ApoE4 (Arg112/Arg158) exhibits a more compact and less stable structure due to domain interaction, predisposing it to pathological effects in the brain [2, 5]. Functionally, ApoE isoforms differentially regulate neuronal metabolism: ApoE2 enhances glycolytic activity and hexokinase expression, promoting neuroprotection, whereas ApoE4 impairs these pathways, increasing vulnerability to aging and Alzheimer's disease (AD) [1]. Recent transcriptomic and epigenomic profiling of human microglia in an AD xenotransplantation model revealed that ApoE isoforms distinctly shape gene expression and chromatin accessibility. ApoE4 drives pro-inflammatory and neurodegenerative signatures, while ApoE2 supports homeostatic microglial states [3]. Clinically, ApoE genotyping is widely used to assess AD risk, with ApoE4 being the strongest genetic risk factor and ApoE2 offering relative protection [4, 5]. Therapeutic strategies targeting ApoE include isoform-specific modulation and gene editing. Additionally, ApoE isoforms are valuable tools in translational research for drug screening, biomarker discovery, and personalized medicine [4].

References:

1. Zhang X, *et al.* (2023) *Cells* **12**:410.
2. Horn JVC, *et al.* (2023) *Mol Cell Biochem* **478**: 173.
3. Murphy KB, *et al.* (2025). *Nat Commun* **16**:4883.
4. Mahley RW, *et al.* (2012) *J Lipid Res* **53**: 539.
5. Liu CC, *et al.* (2013) *Nat Rev Neurol* **9**: 106.