

Apolipoprotein AI (Apo-AI)

- Found in HDL and Chylomicrons.
- 70% of the protein moiety in HDL.
- 245 amino acids with molecular weight 28.3 kDa.
- Apo-AI shows a high content of α -helix structure.
- The amphipathic regions in the α -helix structure seem to be responsible for lipid binding capacity.
- Apo-AI activates lecithin-cholesterol (LCAT) acyltransferase, which is responsible for cholesterol esterification in plasma.
- Apo-AI levels may be inversely related to the risk of coronary disease.

Apolipoprotein B (Apo-B)

•Two major forms: **B-100** found in LDL, VLDL and IDL, **B48** found in Chylomicrons and chylomicron remnants.

Apo-B levels correlate with the risk of coronary disease.

- Apo-B100 is the major physiological ligand for the LDL receptor. Apo-B100 is a large monomeric protein, (MW 515,000).
- Apo-B100 is synthesized in the liver and is required for the assembly of VLDL. It does not interchange between lipoprotein particles, as do the other apolipoproteins, and it is found in IDL and LDL after the removal of the Apo-A, E and C.
- Apo-B48 is essential for the intestinal absorption of dietary lipids. Apo-B48 is synthesized in the small intestine. It comprises approximately half of the N-terminal region of Apo-B100 and is the result of posttranscriptional mRNA editing by a stop codon in the intestine not found in the liver

Apolipoprotein CI (Apo-CI)

- Found in VLDL, HDL and Chylomicrons. Apo-CI has been found to activate LCAT.
- LCAT functions to esterify cholesterol and is important in the generation of LDL from VLDL.

Apolipoprotein CII (Apo-CII)

- Found in VLCL, HDL and Chylomicrons. Apo-CII activates lipoprotein lipase.
- Lipase hydrolyzes fatty acids from triacylglycerols in chylomicrons.

Apolipoprotein D (Apo-D)

- Apo-D is a 29-kDa glycoprotein primarily associated with HDL.
- Apo-D has been found to bind cholesterol, progesterone, pregnenolone, bilirubin and arachidonic acid. However it has not been confirmed which of these may be natural ligands.
- Accumulation of Apo-D may be associated with increased risk of breast cancer and Alzheimer's disease.

Apolipoprotein E (Apo-E)

- Found in all but LDL.**

- Apo-E is a 34-37 kDa glycosylated protein.

- [Apo-E is involved with triglyceride, phospholipid, cholesteryl ester, and cholesterol transport in and out of cells and is a ligand for LDL receptors.](#)

- Apo-E has also been implicated in immune and nerve degeneration.**

- It has been found to suppress lymphocyte proliferation.*

- Late-onset familial and sporadic Alzheimer disease patients have been found to have a higher occurrence of one of the three common Apo-E isoforms, Apo-E4.*

- The Apo-E4 isoform has been detected in senile plaques and neurofibrillary tangles of Alzheimer disease patients. Apo-E4 is associated with rapid chylomicron-remnant clearance and increased total cholesterol levels.*