

# Scientist finds marker that predicts cholesterol level changes as people grow older

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It's known that cholesterol levels typically rise as people age and that high cholesterol levels are associated with increased risk of cardiovascular disease. What's less known is that cholesterol levels begin to decline the more a person ages. Recently, researchers from the University of Texas Medical Branch at Galveston and the University of Kentucky found that differences in one gene can influence a person's cholesterol levels from midlife to late life.

The study, published in the *International Journal of Environmental Research and Public Health*, analyzed data from the blood samples of more than 590 people from the Framingham Heart Study Original Cohort. The specific gene, APOE, encodes proteins involved in maintaining [cholesterol levels](#). People have different alleles, or variations, of APOE. Three of these alleles are APOE e2, APOE e3 and APOE e4. The APOE e4 allele is associated with an increased risk for several aging-related diseases, including Alzheimer's disease and cardiovascular diseases such as stroke and coronary heart disease. The APOE e2 allele, on the other hand, is associated with a decreased risk for these diseases.

"The [increased risk](#) for cognitive and cardiovascular diseases among [older adults](#) who carry an APOE e4 allele may be due, in part, to the fact that these individuals are predisposed to having higher total cholesterol and lower HDL cholesterol from midlife through late life, compared to people with the APOE 3 variant," said Brian Downer, lead author and UTMB Sealy Center on Aging postdoctoral fellow. "The decreased risk for these diseases associated with the APOE e2 allele may be due to the lower total cholesterol and higher HDL cholesterol across the life span. Further research is needed to determine if reducing total cholesterol and increasing HDL

cholesterol decreases the risk for cognitive and vascular diseases among adults who carry APOE e4 alleles."

Another surprising finding of the study is that higher cholesterol in older adults may be associated with longevity. The researchers observed that adults who lived past 90 years of age had higher total cholesterol during late life compared to adults who did not live past 80 or 90 years of age. This may have important implications for continuing the practice of prescribing cholesterol-lowering medications to older adults.

"The relationship between APOE, cholesterol and longevity is complex and it is important to continue conducting research in this area so that older adults know how to appropriately manage cholesterol levels during old age," said Downer.

One could argue that it may be harmful to prescribe medications to lower cholesterol based on evidence that [low cholesterol](#) and a decline in cholesterol in older adults is associated with increased mortality. However, further research will be needed to confirm whether a decline in cholesterol plays a direct role in mortality or if this decline is a result of changes that occur during the period of terminal decline prior to death.

"The findings from this study have important implications to [public health](#)," said Downer. "To efficiently modify cholesterol, and as a result, disease risk, it is important to consider how APOE allele status influences [cholesterol](#) levels from midlife through late life."

Provided by University of Texas Medical Branch at Galveston

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