

Genetic 'off switch' linked to increased risk factors for heart disease

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Risk of heart and blood vessel disease may increase when a particular gene is switched off, according to preliminary research presented at the American Heart Association's Emerging Science Series Webinar.

Two known biomarkers are high blood levels of certain fats – low-density lipoproteins ("bad" cholesterol) and high triglycerides. Another recognized biomarker is a protein called [adiponectin](#), which is made in fat tissue and helps regulate the process of turning food into energy. At low levels it is associated with increased disease risk.

Researchers examined these biomarkers in relation to a particular gene, called CPT1A in 888 patients from the Genetics of Lipid-Lowering Drugs and Diet Network study. The gene makes a [liver enzyme](#) that helps break down fat in food. They also monitored a biochemical process called methylation that switches off genes. During this process carbon and [hydrogen atoms](#) combine to form a compound called a methyl group, which binds to a portion of a gene and turns off its activity.

"Our results open the door to the development of new screening tools and a clearer understanding of the [biological mechanisms](#) that underlie heart disease," said Stella Aslibekyan, Ph.D., study lead author and assistant professor at the University of Alabama at Birmingham.

They found that patients who had methyl groups bound to CPT1A had significantly higher triglycerides and low-density lipoprotein levels, and

lower adiponectin.

Heart disease is the number one killer among adults in the United States, and researchers are trying to identify individual genetic differences that might increase risk. One way to do this is by studying subtle variations in indicators of disease, or biomarkers, to identify people who are at greatest risk for developing heart disease.

"This is one step on the road to personalized medicine," Aslibekyan said. "In the future, we may be able to screen for methylation of CPT1A to identify at-risk individuals."

Provided by American Heart Association

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