

# Blood lipid metabolites allow early identification of cardiovascular disease

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New circulating metabolites might allow early diagnosis of cardiovascular disease. A team of scientists from Uppsala University, Karolinska Institutet and Colorado State University have identified novel lipid-derived molecules associated with future coronary heart disease events. The study published in the journal *PLOS Genetics* has examined the metabolic profile of blood samples from more than 3,600 individuals that have been followed-up for up to 10 years.

Professor Erik Ingelsson and graduate student Andrea Ganna have used novel biochemical and bioinformatics approaches to identify small molecules that are the intermediate- or end-products of metabolism. This approach, called metabolomics, has identified two lipid metabolites, lysophosphatidylcholine and sphingomyelin that reduced the risk of developing [coronary heart disease](#) in three Swedish population studies. Another lipid metabolite, monoglyceride, was instead associated with increased risk of [coronary heart disease](#).

One of the strengths of this study was that all participants were profiled for both metabolites and genetic variants. Some of the metabolites showed strong association with genetic variants previously associated with coronary heart disease supporting a common underlying molecular mechanism. Another strength was that the results were replicated in studies with different follow-up time, blood partition, age and sex distribution, increasing the generalizability of the findings.

This study shows the advantages of integrating different -omics technologies in large epidemiological studies. The blood lipid metabolites identified could be useful in prediction of future cardiovascular disease. In vivo experiments are ongoing to investigate the potential causal role of these metabolites in the development of [cardiovascular disease](#). If confirmed, these findings could also point to new

therapeutic targets.

**More information:** *PLOS Genetics*, [www.plosgenetics.org/doi/pgen.1004801](http://www.plosgenetics.org/doi/pgen.1004801)

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