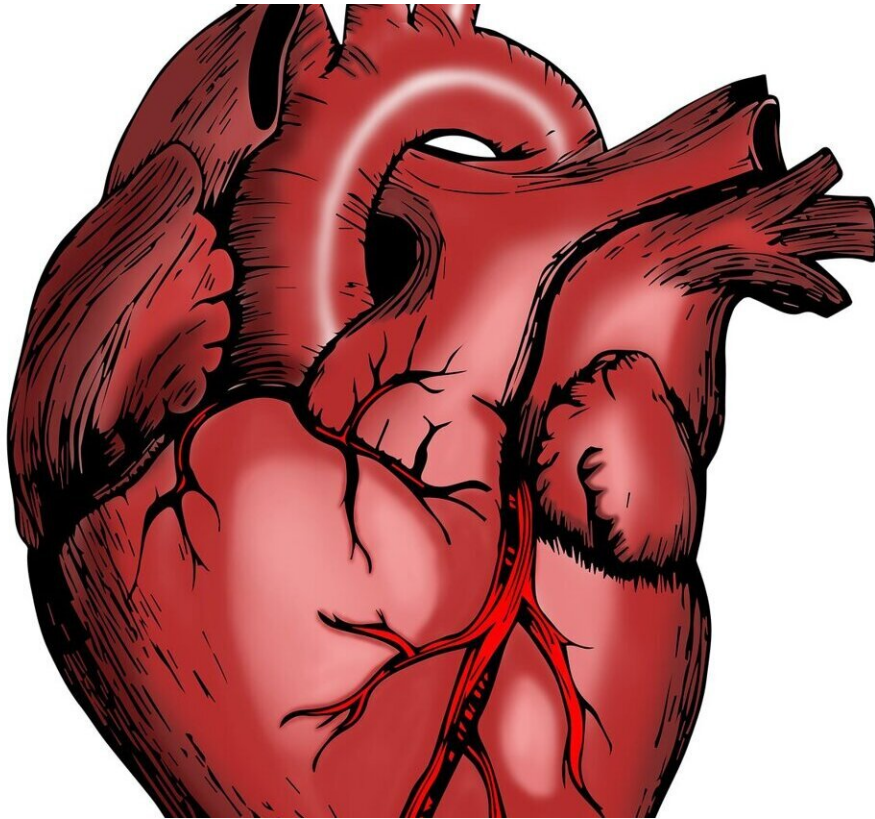# RNA biomarkers may one day help diagnose heart disease, study finds

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When patients begin to experience chest pain or shortness of breath while exercising, doctors may struggle to correctly diagnose whether the problem is caused by coronary artery disease. Classic symptoms of heart

disease such as chest pain and shortness of breath are nonspecific and may stem from other medical issues such as acid reflux, or a pinched nerve. People often don't know they have heart disease until they suffer a potentially lethal heart attack.

The current standard for diagnosing heart disease is a coronary angiography, either by invasive catheterization or computed tomography, yet 20%-40% of angiograms ultimately return a result of no blockage. Doctors and their patients may therefore benefit from additional diagnostic tools able to detect heart disease in a less invasive, more cost-effective way.

A new study published today in the *Journal of Molecular and Cellular Cardiology Plus* by Timothy A. McCaffrey, professor of medicine at the George Washington University School of Medicine & Health Sciences and INOVA Fairfax Hospitals, demonstrates how RNA biomarkers may be used to confirm heart disease. The study, which involves the largest analysis of blood RNA from patients with angiographically confirmed CAD, adds several novel dimensions to the current understanding of heart disease and could one day lead to a simple blood test that would help doctors diagnose heart disease in the physician's office.

The research team used cell type analysis of the differentially expressed genes and found they are related to decreasing abundance or differentiation state of T cells, especially T regulatory cells. The RNA changes are consistent with T cell-related changes in the immune synapse, which may help to define the precise cellular mechanisms of atherosclerotic lesion formation and suggest future optimal diagnostic and therapeutic targets. Combined with other evidence, the results suggest that CAD has an underappreciated component that is likely similar to other autoimmune diseases, such as lupus and psoriasis.

More information: Timothy A. McCaffrey et al, RNAseq profiling of

Provided by George Washington University