How genetic 'chips' could help to understand heart disease

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New research at the University of Leicester will use the latest genetic techniques to examine DNA from over 20,000 patients with heart disease.

The study will help to identify new genes and molecules responsible for Coronary Artery Disease (CAD). This, in turn may help to develop new diagnostic and treatment strategies.

The project is being undertaken by postgraduate researcher Paraskevi Christofidou, of the Department of Cardiovascular Sciences. Preliminary findings from her research will be presented at the University of Leicester on 24 June.

Miss Christofidou said: "Coronary Artery Disease - a disease causing narrowing of arteries in the heart - remains a major cause of death worldwide. Shockingly, in the USA on average one person dies of this disease every 34 seconds. In the UK it causes over 100 000 deaths a year, approximately one in five deaths in men and one in six deaths in women.

"Various risk factors such as high blood pressure, smoking, obesity and increased levels of cholesterol play a significant role in the progression of CAD. There is also evidence that familial predisposition is a strong risk factor. Indeed, your risk of CAD increases by almost 50% if one of your relatives has a history of heart disease. "

Miss Christofidou said a part of this genetic susceptibility to CAD is transmitted from one generation to another as a collection of small changes in DNA sequence called single nucleotide polymorphisms (SNPs).

She added: "The recent genetic revolution offers tracking of SNPs in human DNA on an unprecedented scale. With the use of new genetic tools called "chips" it is possible to track and characterise precisely up to 1 million SNPs in a subject.

"We anticipate that some of these variants occur more frequently in patients with CAD compared to healthy subjects and are responsible for genetic predisposition to CAD. It is likely that some of these variants are rare so large cohorts of subjects are needed to identify sufficient numbers for analysis."

This project will conduct analysis of human DNA from more than 20 000 patients with CAD and 60 000 healthy controls.

Provided by University of Leicester