

## Follow healthy lifestyle to overturn genetic predisposition to heart disease

When it comes to heart disease, lifestyle usually trumps genetics, says noted genetic research Dr. Robert Hegele, Heart and Stroke Foundation of Canada Lecturer at the Canadian Cardiovascular Congress 2009.

Dr. Hegele's work is unravelling the nature vs. nurture debate that has intrigued scientists for years. He says that for about 5% of patients, the effect of genetics is so strong there is little they can do, but that 95% of them can override our genes by following a healthy lifestyle.

"Even if you've been dealt a bad hand of genes, it's not a life sentence for most people," says Dr. Hegele, director of the Martha G. Blackburn Cardiovascular Genetics Laboratory at Robarts Research Institute.

"Simple actions - basic things like smoking cessation, following a healthy diet, and physical activity - are the key to overturning genetic predisposition."

Dr. Hegele tracks down unique gene mutations that predispose people to heart disease risk factors such as high cholesterol, Hypertension.aspx">high blood pressure, and diabetes in his lipid clinic patients in London, Ontario. He takes a particular interest in uncovering the genetic profiles of ethnic groups considered at higher risk to heart disease, such as Canada's Aboriginal populations.

"It's ironic that it took high tech findings from the Human Genome Project to point us to the simple low-tech solution of following the advice moms have been giving for years," he says. Dr. Hegele adds that while lifestyle is key, drug treatments can be very important for some. "The drugs of tomorrow will come from a genetic understanding of the pathways that contribute to heart disease and stroke."

### Can a drop of blood predict your future?

Dr. Hegele is on a quest to develop DNA testing to predict heart disease and stroke risk within the next 10 years.

"You can get your entire DNA code from a drop of blood, assemble it, and do a risk prediction of your susceptibility to heart disease and stroke," says Dr. Hegele, who likens his work to the detectives on CSI. But instead of hunting criminals, he's hunting genes. "We are looking at literally millions of base pairs of DNA and how to integrate them into a genetic test."

It's a quest that's close to his heart: a history of heart disease in his own family led the Heart and Stroke Foundation Career Investigator to the field of genetics 20 years ago. Since then, his laboratory has discovered the genetic basis of 12 diseases and more than 200 genetic mutations related to high cholesterol, diabetes, and heart disease.

He sees a trip to the doctor in the future combining an interview and full body scans with one's genetic profile taken from information found in that drop of blood to predict susceptibility to heart attack or stroke.

### The answers are usually simple

Being armed with your genetic profile doesn't mean the answer will be gene therapy. It will instead reinforce the importance of lifestyle choices. "No matter what all this high-tech stuff reveals," says Dr. Hegele "the answers are that simple for most people."

Dr. Robert Hegele will speak at the opening ceremonies of the Canadian Cardiovascular Congress in Edmonton this Sunday. Co-hosted by the Canadian Cardiovascular Society and the Heart and Stroke Foundation of Canada, it is Canada's largest scientific conference, attracting over 3500 heart-health professionals from across the country.

Attendees representing 19 different organizations, including surgeons, paediatric specialists, cardiologists, nurses, rehab professionals, and others learn about the latest science and cutting-edge research, and take back to their patients. The congress runs from October 24 to 28.

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