



Dr. Krishna Singh, Heart and Stroke Foundation of Canada/
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WHEN GOOD THINGS HAPPEN TO BAD GENES

Most often, when you hear about BRCA1, it's bad news. But this gene - which has been linked to cancer - may play a pivotal role in preventing heart disease and stroke.

BRCA1, in its non-mutated form, may provide the basis for a novel treatment for atherosclerosis, the build up of plaque (fatty substances) which causes blood vessels to narrow and is a leading cause of heart disease and stroke.

That's the possibility that motivates Dr. Krishna Kumar Singh of St. Michael's Hospital in Toronto. Under the mentorship of Dr. Subodh Verma, Canada Research Chair, Dr. Singh is investigating the intriguing possibility that the gene's known ability to repair damaged DNA may slow the progression of atherosclerosis.

"The role of BRCA1 as a gatekeeper of endothelial cell function hasn't been recognized before - that's completely new," says Dr. Singh.

Endothelial cells are the cells lining the inside of blood vessels. When these cells become damaged, fatty deposits, known as plaque, build up inside the vessel wall, causing blood vessels to lose the elasticity they need to function normally. This leads to the narrowing of blood vessels. Current treatments focus on the later stages of the disease and at present, there is no way to intervene early to ensure that arteries stay flexible.

Dr. Verma's group believes that BRCA1 protects blood vessel function, and that low levels of BRCA1 may be implicated in endothelial cell damage and death. If this is the case, then testing for BRCA1 could enable health care providers to intervene early in people who have low levels of this gene. Ultimately, Dr. Singh says, his research could lead to the development of a novel therapy to induce higher levels of BRCA1, thus preventing or providing early treatment for atherosclerosis.



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