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Researchers discover baldness gene: 1 in 7 men at risk

Scientists at McGill, King's College and GSK solve mystery of male pattern baldness

This release is also available in French.

Researchers at McGill University, King's College London and GlaxoSmithKline Inc. have identified two genetic variants in caucasians that together produce an astounding sevenfold increase the risk of male pattern baldness. Their results will be published Oct. 12 in the journal *Nature Genetics.*

About a third of all men are affected by male pattern baldness by age 45. The condition's social and economic impact is considerable: expenditures for hair transplantation in the United States alone exceeded $115 million (U.S.) in 2007, while global revenues for medical therapy for male-pattern baldness recently surpassed $405 million. Male pattern baldness is the most common form of baldness, where hair is lost in a well-defined pattern beginning above both temples, and results in a distinctive M-shaped hairline. Estimates suggest more than 80 per cent of cases are hereditary.

This study was conducted by Dr. Vincent Mooser of GlaxoSmithKline, Dr. Brent Richards of McGill University's Faculty of Medicine and the affiliated Jewish General Hospital (and formerly of King's College), and Dr. Tim Spector of King's College. Along with colleagues in Iceland, Switzerland and the Netherlands, the researchers conducted a genome-wide association study of 1,125 caucasian men who had been assessed for male pattern baldness. They found two previously unknown genetic variants on chromosome 20 that substantially increased the risk of male pattern baldness. They then confirmed these findings in an additional 1,650 caucasian men.

"I would presume male pattern baldness is caused by the same genetic variation in non-caucasians," said Richards, an assistant professor in genetic epidemiology, "but we haven't studied those populations, so we can't say for certain."

Though the researchers consider their discovery to be a scientific breakthrough, they caution that it does not mean a treatment or cure for male pattern baldness is imminent.

"We've only identified a cause," Richards said. "Treating male pattern baldness will require more research. But, of course, the first step in finding a way to treat most conditions it is to first identify the cause."

"Early prediction before hair loss starts may lead to some interesting therapies that are more effective than treating late stage hair loss," added Spector, of King's College and director of the TwinsUK cohort study.

Researchers have long been aware of a genetic variant on the X chromosome that was linked to male pattern baldness, Richards said.

"That's where the idea that baldness is inherited from the mother's side of the family comes from," he explained. "However it's been long recognized that that there must be several genes causing male pattern baldness. Until now, no one could identify those other genes. If you have both the risk variants we discovered on chromosome 20 and the unrelated known variant on the X chromosome, your risk of becoming bald increases sevenfold."

"What's startling is that one in seven men have both of those risk variants. That's 14 per cent of the total population!"

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