

STRICTLY EMBARGOED UNTIL 12TH OCTOBER 6PM

European Genome Scan reveals high risk Baldness Genes in one in seven men

Researchers from King's College London have coordinated a multicentre study where two genetic variants have been identified which, when present together in the same individual, increase the risk of male pattern baldness (otherwise known as androgenic alopecia) seven fold. These variants are present in one in seven Caucasian men and provide novel insights into the cause of this common and sometimes distressing condition.

Androgenic alopecia, the common form of hair loss is a highly heritable disorder of considerable social significance affecting around 40% of adult men and women. Both men and women with hair loss experience negative perceptions of body image. Moreover, the mechanisms involved in androgenic alopecia may be shared with several common medical disorders which co-segregate with baldness, such as coronary heart disease, hypertension, insulin resistance and dyslipidemia in men and polycystic ovarian syndrome and insulin resistance in women.

Professor Tim Spector, Head of the Department of Twin Research, who led the study at King's comments: *'Androgenic alopecia is a highly genetic condition, with heritability estimates of over 80 per cent. Genetic variants in, or in close proximity to, the X chromosome androgen receptor (AR) gene have been previously associated with male pattern baldness. However, since the inheritance pattern of this trait appears to be polygenic, we undertook a two-stage genome-wide association (GWA) study to look for other genes.'*

The results were published today in the Journal *Nature Genetics* and were the result of a collaborative effort led by Dr Brent Richards and Professor Tim Spector from King's College London and Dr Vincent Mooser and his team, from GlaxoSmithKline, together with colleagues from deCODE genetics, Iceland, CHUV University Hospital in Lausanne Switzerland and Nijmegen The Netherlands and the Wellcome Trust Sanger Institute.

A genome-wide association study including 1,125 men assessed for male pattern baldness was performed. The investigators found two genetic regions which substantially increased the risk of this condition. They then tested these findings in an additional 1,650 men and confirmed that the one in seven men who carry the variants in both of these genes have a seven fold increased risk of baldness.

The novel gene region identified is on chromosome 20 and is reasonably distant from any known gene. Further studies are required to understand how this region influences the risk of male pattern baldness. The second gene was the androgen receptor, previously implicated in male pattern baldness. These results were widely applicable to men from Caucasian populations in Switzerland, the UK, Iceland and the Netherlands. There was also a more modest effect in women, although more numbers were needed.

Professor Spector of King's College London and Director of the TwinsUK cohort stated: *'The strong genetic basis of hair loss is odd - as any evolutionary advantage is unclear. Clearly most men know if they are bald or not- but early prediction before hair loss starts may lead to some interesting therapies that are more effective than treating late stage hair loss.'*

'In summary, in the first Genome Wide Association study for androgenic alopecia we have provided evidence from four distinct European populations for a novel source which influences a common disorder of social importance. The risk genes at this novel source and the previously described androgen receptor gene are common in Europeans and show a relatively large risk for androgenic alopecia. Given the feasibility of gene therapy in human follicles, our results may point to an intriguing new potential target for the treatment of hair loss in men and possibly women.'

Notes to Editors

The study was undertaken in collaboration with:

- Department of Medicine, Jewish General Hospital, Faculty of Medicine, McGill University, Montréal, Québec, Canada
- Genetics Division, GlaxoSmithKline, King of Prussia, PA, USA
- deCODE Genetics, Reykjavik, Iceland.
- Department of Internal Medicine, CHUV University Hospital, Lausanne Switzerland
- Comprehensive Cancer Center IKO, and Department of Epidemiology and Biostatistics, Radboud University Nijmegen Medical Center, Nijmegen, The Netherlands.
- Department of Epidemiology and Biostatistics and Department of Urology, Radboud University Nijmegen Medical Center, Nijmegen, The Netherlands.
- Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton, UK

The unit is always looking for twin volunteers (identical or non-identical) aged over 15 years to participate in research. Look at the website www.twinsUK.ac.uk or phone 0207 188 5555 for details.

King's College London

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King's has a particularly distinguished reputation in the humanities, law, social sciences, the health sciences, natural sciences and engineering, and has played a major role in many of the advances that have shaped modern life, such as the discovery of the structure of DNA. It is the largest centre for the education of healthcare professionals in Europe and is home to five Medical Research Council Centres – a total unsurpassed by any other university.

King's College London and Guy's and St Thomas, King's College Hospital and South London and Maudsley NHS Foundation Trusts are working together to create a world-leading Academic Health Sciences Centre (AHSC). Our AHSC brings together an unrivalled range and depth of clinical and research expertise, spanning both physical and mental health. Our combined strengths will drive improvements in care for patients, allowing them to benefit from breakthroughs in medical science and receive leading edge treatment at the earliest possible opportunity. For more information, visit www.londonsahsc.org

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