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News Release

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Genes are a key to problem-solving powers, DNA study reveals

More than half of the difference in intelligence between people can be traced to their genes, a study suggests.

Scientists examined thousands of genetic markers in 20,000 people's DNA to determine the genetic signals associated with their intelligence.

Previous molecular genetic studies have not been able to provide an estimate of the effect that rare genetic variants may have on intelligence.

They found that the combined effect of rare genetic variants and common genetic variants explained 50 per cent of difference in intelligence.

This matched estimates from earlier twin and family studies that had been suspected to be overestimates, as previous molecular studies of the human genome concluded around 30 per cent.

The findings are the first to provide a measure of the influence that rare genetic variants have on intelligence.

The research carried out by the Universities of Edinburgh, Göttingen, and the Max Planck Institute for Human Development in Germany, used two statistical methods to work out how much effect rare genetic variants had on intelligence.

The team also found that rare genetic variants accounted for a disproportionate amount of intelligence compared to more common genetic variants.

Researchers say the findings shed light on how differences in intelligence evolved.

Dr David Hill, of the University of Edinburgh's Centre for Cognitive Ageing and Cognitive Epidemiology, who jointly led the research, said: "We used two methods to measure the effect that rare variants had on intelligence. By combining the effect of both rare and common variants, more than 50 per cent of the differences in intelligence between people could be traced to their genes."

The study used data from Generation Scotland, a resource of human biological samples and data which are available for medical research.

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It is published in the journal *Molecular Psychiatry* – link to paper:
<http://go.nature.com/2DEAKJb>

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