

Hundreds of genes linked to intelligence in global study

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A depiction of the double helical structure of DNA. Its four coding units (A, T, C, G) are color-coded in pink, orange, purple and yellow. Credit: NHGRI

More than 500 genes linked to intelligence have been identified in the largest study of its kind. Scientists compared variation in DNA in more than 240,000 people from around the world, to discover which genes are associated with intelligence. Researchers identified 538 genes that play a role in intellectual ability. They also found 187 regions in the human genome that are linked to thinking skills.

Scientists say the study sheds new light on the biological building blocks of people's differences in [intelligence](#). The research was carried out by the Universities of Edinburgh and Southampton, and Harvard University.

Genes found to be linked to intelligence also appeared to influence other biological processes, researchers say. Some genes linked to [intellectual ability](#) are also associated with living longer, scientists found. They also found that genes linked with problem solving powers were associated with the process by which neurons carry signals from one place to another in the brain.

Using these genetic discoveries, scientists next predicted seven per cent of intelligence differences in an independent group of individuals using their DNA alone. "Our study identified a large number of genes linked to intelligence. Importantly, we were also able to identify some of the [biological processes](#) that genetic variation appears to influence to produce such differences in intelligence, and we were also able to predict intelligence in another group using only their DNA," says Dr. David Hill.

"We know that environments and genes both contribute to the differences we observe in people's intelligence. This study adds to what we know about which genes influence intelligence, and suggests that health and intelligence are related in part because some of the same [genes](#) influence them," says Professor Ian Deary.

The study used data from the UK Biobank, a major genetic study into the role of nature and nurture in health and disease.

It is published in the journal *Molecular Psychiatry*.

More information: W. D. Hill et al. A combined analysis of genetically correlated traits identifies 187 loci and a role for neurogenesis and myelination in intelligence, *Molecular Psychiatry* (2018). [DOI: 10.1038/s41380-017-0001-5](https://doi.org/10.1038/s41380-017-0001-5)

Provided by University of Edinburgh

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