

World can chip in to find DNA for autism

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By Nigel Hawkes, Health Editor

A WORLDWIDE search for the genes that cause autism will begin today.

More than 170 scientists are collaborating in a study of 1,500 families, using a new technology to search for the 15 to 20 genes that are believed to be involved in the condition.

Diagnoses of autism have increased sharply, so that what was a rare condition 15 years ago is now found in about one in every 200 births.

The cause of the increase is unknown, although better recognition of the condition is a major factor. But autism and its milder form, Asperger's syndrome, tend to run in families.

"Understanding the cause is paramount to our ability to diagnose autism, develop treatments that help children and adults effectively manage the disorder and find a cure," said Prisca Chen Marvin, the mother of an autistic child, and chairwoman of the board of trustees of the US National Alliance for Autism Research, which is behind the study.

The key to the research is the development by Affymetrix, a company from California, of a DNA chip that can search for 10,000 genetic "markers" at the same time.

Samples of DNA will be provided by 1,500 families who have at least two autistic children. Both parents and children will provide DNA.

Affymetrix's DNA chip technology enables the samples to be tested to identify common markers along the genome. These changes in the sequence of the letters of the DNA alphabet called single nucleotide polymorphisms, or SNPs, are distributed throughout the genome.

If the study shows that a particular marker or markers is widely shared among the autistic families, it will indicate that a gene that contributes to the condition is located close to the marker, and is inherited along with it.

The study will not immediately identify the genes, but it will show where they are. Further studies of that region will then pinpoint them exactly.

"In the past, we were limited to searching for a few hundred markers," Greg Yap, of Affymetrix, said. "That gave us only a very low resolution scan. The new chip can look at 10,000 markers in a DNA sample in a single experiment. That means that we can search for SNPs in a much more cost-effective way."

The DNA samples will come from Britain, the US, Canada, France, Germany, Sweden and Denmark. Two British academics are involved in the project, Anthony Bailey and Anthony Monaco, both from Oxford University.

So quick is the technique that the first results are expected early next year.

The samples will also be scanned using microsatellite technology, by the US Centre for Inherited Disease Research.

The Affymetrix chip is likely to revolutionise searches of the human genome. This month it was used to search for the gene for a rare form of cot death, and found the answer in only five working days, using samples from four children and their parents.

The condition affects Amish families in Belleville, Pennsylvania, and has killed 21 children over two generations in nine families. A wide range of tests had failed to find any abnormalities in the children, who all died abruptly before the age of one of cardiac and respiratory arrest.

The team quickly identified a gene called TSPYL, which has functions in sexual development and the brain. They found that all the children had two copies of a defective version of TSPYL and that their parents were carriers.

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