Largest ever study of genetics of common disease just got bigger

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DNA samples from 120,000 people are to be analysed in a £30 million follow up to last year's Wellcome Trust Case Control Consortium (WTCCC), the largest ever study of the genetics behind common diseases. The seven-fold increase in the number of samples to be analysed will allow researchers to look at a 25 diseases as well as studying the genetics of learning in children and individuals' responses to statins.

Funded by the Wellcome Trust, this new series of genome-wide association studies will be one of the most ambitious initiatives ever undertaken, bringing together leading research groups from at least 60 institutions internationally (including over 20 from the UK). Over the next two years, working in collaboration with the WTCCC or independently, the research teams are expected to analyse as many as 120 billion pieces of genetic data in the search for the genes underlying diseases such as multiple sclerosis, schizophrenia and asthma.

Researchers will examine between 500,000 and 1 million variants (SNPs) per sample as well as a comprehensive set of copy number variants (CNVs). Both SNPs and CNVs are responsible of the individual variation in our genomes.

"We have now entered a new era of large-scale genetics unthinkable even a few years ago," says Professor Peter Donnelly from the University of Oxford, who will chair the consortium. "Breakthroughs in our understanding of the human genome and rapid advances in

sequencing technology mean that we are able to do very powerful analysis much faster and on a vastly bigger scale than ever before."

When the results of the WTCCC were announced in 2007, it was seen as a major breakthrough for medical science and was selected as one of the scientific highlights of the year by a number of the most prestigious scientific journals, including Nature and The Lancet. It identified a number of new genes and regions of the human genome which increase people's susceptibility to or protect them from particular diseases.

Dr Mark Walport, Director of the Wellcome Trust, says: "It is now possible to unlock the genetics of common diseases. Although genetics tells only part of the story of disease, it can provide valuable and often unexpected insights that offer the promise of developing new treatments for these often very complex diseases."

The research has been made possible by advances in progress in improved understanding of human genome variants, pioneered by the Wellcome Trust Sanger Institute at Hinxton, Cambridge. The Institute will devote a large part of its high-throughput genotyping pipeline headed by Dr Panos Deloukas to test many of the DNA samples. Most of the data analysis will be undertaken at the Wellcome Trust Centre for Human Genetics, University of Oxford.

"The Sanger Institute is bringing the power of its skills in genetic analysis to tackle common disease, to provide leadership, expertise and resources where they can make a difference," says Professor Leena Peltonen, who was appointed Head of Human Genetics at the Wellcome Trust Sanger Institute last year. "Our redefined strategy and joint expertise of human genetics faculty will ensure we deliver yet more ground-breaking results in clinically relevant areas."

Source: Wellcome Trust