

UK BIOBANK: A BILLION OPPORTUNITIES FOR HEALTH RESEARCH

UK Biobank is leading the way in providing key health information to support bold and exciting health research.

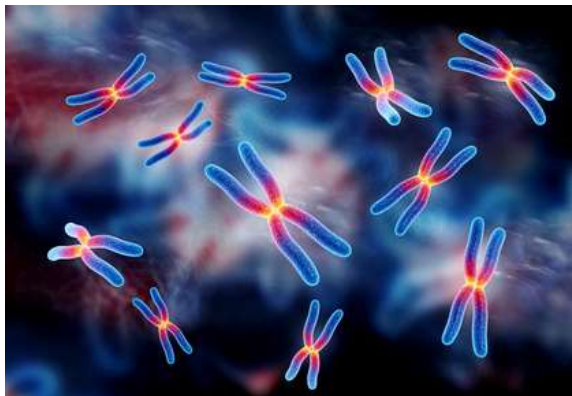


Billions of new pieces of health data are being generated from two blue riband projects currently underway – the analysis of genetic material from all 500,000 participants, and establishing a scanning project to image up to 100,000 participants.

Along with the health and lifestyle information you have already provided, these two leading-edge projects put UK Biobank in a powerful position to help research into a wide range of illnesses from dementia, arthritis and Alzheimer's to Parkinson's, cancer, heart disease, stroke and diabetes.

Added to this is information stored by GP practices. These data will provide evidence for a much better understanding of illnesses like depression, back pain, head aches, infections and diabetes which cause considerable pain and suffering but are less likely to result in hospital treatment.

Genetics offers new ways to tackle disease



Analysing the genetics of 500,000 participants is a big and expensive project. The source of the information is the genetic code (DNA) contained in blood samples donated by participants. The DNA is separated out from a very small sample of blood, and analysed on special machines that can read the order of the millions of blocks from which it is built.

This is allowing us to measure 800,000 key points on the 24,000 genes, and the material between them, that make up the human genome. Genes switch off and on at key moments to create proteins which underpin physiological processes.

In later life, errors in genes rarely cause illness on their own, but when linked to other lifestyle factors – like smoking, drinking, exercise and environment – they can be important risk factors.

Genetic variations may also account for the way in which people respond to treatments. This offers the chance of tailoring more specific treatments to individual patients.

The pace of recent advances in research means that now very much more information can be gleaned from the measurement of these 800,000 points on the genome. "Imputation", as it is

known, involves more than 50 million further changes in genetic information being estimated from the 800,000 measured values, and this figure could increase quite significantly if recent advances in technology continue.

Find out more by clicking this link: <http://www.ukbiobank.ac.uk/understanding-genetic-research/>

Memory study

Some UK Biobank participants have been undertaking a series of short cognitive tests, which will help scientists study dementia and other disorders of the brain, particularly those related to ageing. The tests are similar to those that you undertook at our assessment centre upon joining UK Biobank, and are quick, interesting and simple to complete.

The questionnaire took around 20 minutes to complete and included simple games like snap, and maths questions, some of which were designed to really stretch you. Participants' speed and accuracy was recorded and will be used to see how their responses change over time.

Changes in the brain may happen years before the onset of illnesses like dementia. The questionnaire is not a 'dementia test', but if it were possible to delay the onset of dementia by just five years it would halve the number of people with the condition.

“A reduction in brain activity is a normal part of the ageing process; we all begin to suffer from it,” said Professor Gallacher, from Oxford University who has developed the survey. “In some people it may be more pronounced than others and we'd like to find out whether this is a warning light for future disease and whether we can slow or reverse the process.”

There are likely to be other factors that play a role in dementia, such as genetic and lifestyle components, and this survey will support and enhance the range of studies currently underway, such as genotyping, imaging and occupational health. We are extremely grateful to all our participants for continuing to provide us with information which may help unravel, delay and better treat dementia and other disorders of the brain.

Dementias Platform UK

UK Biobank joined other world leaders in dementia research at the launch of the Dementias Platform UK, a powerful new tool for studying dementia, supported by senior government officials, including Prime Minister David Cameron.

This ground-breaking, multi-million pound collaboration between industry and academia has been established by the Medical Research Council (MRC) and bolstered by government funding of £53 million.

UK Biobank will be one of the key resources used to help scientists:

- Get a better understanding of who is at risk of developing dementia and why the progression of the disease varies from person to person;
- Explore the anatomy of the disease to help develop new medicines and enable more accurate diagnosis;

- Look into how existing drugs that are used to treat other conditions might help to treat the progression of dementia and improve symptoms.

Visit the Dementias platform website to find out more: <http://www.dementiasplatform.uk/>