

NHS Blood and Transplant / University of Cambridge
Department of Haematology

NEWSLETTER

SPRING 2010

Dear Donor

I would like to thank you for participating in one or more of the various studies that have been carried out at the Cambridge Blood Donor Centre. The tremendous response from blood donors to these studies demonstrates what special people you all are. Not content with donating blood to save and improve patients' lives, you have also given yet more samples and precious time filling in questionnaires. There is no doubt that these population studies are enormously powerful in unravelling the causes of some of the most common diseases. I continue to be humbled by the efforts you all go to on behalf of patients – so please accept an enormous thank you from me and all the research team for all your contributions. I hope you will find this newsletter interesting.

For further information please visit our website at www.haem.cam.ac.uk and for current and future Cambridge BioResource studies you may want to visit the new website at www.cambridgebioresource.org.uk.

Yours sincerely

Dr Lorna Williamson
NHSBT Medical and Research Director



The NHS Blood and Transplant (NHSBT) Cambridge BioResource - See Page 2

This ambitious project was initiated in 2007 as part of a number of research initiatives by the Cambridge Biomedical Research Centre. This was a follow up to the success of the Wellcome Trust Case Control Consortium study with the aims to better understand the relationship between differences in the genetic code and the risk of common diseases.

Phase 2 Studies by the Cambridge BioResource - See Page 3

Donors enrolled in the Cambridge BioResource have given their consent to be invited for participation in genotype (genetic makeup) and phenotype (physical or biochemical characteristics) association studies. Participants have taken part in a variety of local medical research studies so far.

Wellcome Trust Case Control Consortium leads the way in Human Genetics – See Page 3

The Wellcome Trust Case Control Consortium (WTCCC) comprising 50 research groups across the UK was established in 2005. The aims were to further the understanding of the link between differences in the DNA code and the risk of common diseases.

National Institute for Biological Standards and Control (NIBSC) – See Page 3

The NHS Blood and Transplant works closely with NIBSC to ensure that high standards are set and maintained. This is achieved by Quality Assurance schemes that test the proficiency of NHS and other laboratories. Many standards have been set up of which one example is to correctly determine the blood groups on platelets by simple DNA tests.

Bloodomics "Hope for Hearts" – See page 4

The aim of the platelet study was to identify the relation between variation in the genetic code and the function of platelets. Platelets are the second most abundant cell in blood and their role is to detect damage to the vascular wall and repair it to prevent bleeding. This type of research is important because, after the rupture of an atherosclerotic plaque in coronary arteries, platelets may trigger the formation of a blood clot, which is the key event that causes a heart attack.

The NHS Blood and Transplant (NHSBT) Cambridge BioResource

In 2007 and last year, a total of 8,000 donors agreed at the time of their normal blood donation to join the NHSBT Cambridge BioResource. On joining the panel, DNA, plasma and serum were deposited in the central repository at Cambridge. This, together with information about health and lifestyle also collected at the time of joining, provides an opportunity for the selection and recruitment of best matched volunteers to research studies.



NHS

Blood and Transplant

June – October 2007

Research Nurses attended blood donor sessions with the Cambridge Mobile Team and 4,000 blood donors agreed to join the BioResource (formerly known as the NHSBT Research BioResource in 2007). All donors gave an extra sample of blood at the session, which was then analysed and stored.



February - July 2009

Four thousand more donors joined when the BioResource recruitment staff worked with teams further afield at Huntingdon, Ipswich, Chelmsford and Thetford. For all but 242 donors, DNA was obtained from blood during their donation. For the remaining ones, DNA was obtained from a sample of saliva. The dedication of all donors to the project became clear when about 83% of donors completed the questionnaire about health and lifestyle. ***“This is an extraordinary achievement against the backdrop of a typical 50-60% response rate for this type of questionnaire”*** said Dr Jennifer Sambrook, coordinator of the NHSBT Cambridge BioResource. She added that joining the BioResource does not oblige anyone to take part in the so-called Phase 2 studies but the great response rate for the first recall studies shows the dedication of blood donors to health research.

The Cambridge BioResource



The Cambridge **BioResource**

Funding for the BioResource has been secured from the National Institute for Health Research and the Medical Research Council. This prompted a decision to combine the NHSBT Cambridge BioResource with the Cambridge BioResource of local volunteers under the title The Cambridge BioResource. There is a new logo and website that reflects this collaboration at

www.cambridgebioresource.org.uk. Here you can obtain information about the results of completed Phase 2 studies and new ones that are being undertaken in 2010 and beyond. ***“I am pleased to see that the two resources***

have come together under the umbrella of the NIHR Biomedical Research Centre. It provides a unique resource for researchers in Cambridge giving them access to 10,000 volunteers who have agreed that they can be contacted for their possible participation in studies that move the frontiers of medical science and will result in the long term in better treatments for NHS patients” said Dr John Bradley, a consultant in kidney diseases at Addenbrooke’s Hospital and Director of the NIHR Biomedical Research Centre.

Phase 2 Studies by the Cambridge BioResource

1. Cardiosome study 2008

The aim of this study was to discover differences in the genetic code between individuals and changes in the behaviour of one type of white blood cell called the monocyte. Monocytes are, together with platelets, important cells in the formation of clots in arteries which have plaques (hardened areas formed on the vessel wall). This important study is funded by the European Union and the objective was to enrol equal numbers of healthy volunteers from the Cambridge BioResource and individuals with a history of heart attack. Between February and October 2008, a total of 420 Cambridge BioResource donors were recruited to the study. We are very grateful to all donors who participated and we will contact some of you again during the next phase of this study.

2. Genes and Mechanisms in Type 1 Diabetes 2008 (ongoing)

In December 2007, the first of more than 600 volunteers were invited to donate a small blood sample for this research study. The study is ongoing but the recruitment effort to date has already led to some very interesting research being published: a link has been discovered between one of the many genes involved in diabetes, called IL-2RA, with the level of protein expression on the surface of immune white blood cells. This result has led to further research in the area, with some of the original volunteers returning to donate second and third blood samples. New volunteers are also still being recruited to the study.



3. Genetic Factors Affecting the Neural Coding of Emotional Signals in Humans 2009

The purpose of this study was to determine which areas of the brain are involved in the processing of specific emotions and how genetic factors affect these emotional signals in the brain. This study used functional magnetic resonance imaging (fMRI) to provide a more detailed analysis of these brain systems. A total of 34 blood donors took part and underwent fMRI scanning at the MRC Cognition and Brain Sciences Unit in Cambridge from May to September. The Unit would like to extend their thanks to those who took part in this study. It was appreciated that it took time and a degree of commitment from the donors in order to complete the study.

Other Phase 2 studies have been carried out and these are detailed on our website at www.cambridgebioresource.org.uk

Wellcome Trust Case Control Consortium

In order to identify genes that confer risk for diseases, researchers compared DNA samples from 3000 healthy individuals with DNA samples from 14,000 NHS patients including 2,000 samples for each of the seven diseases under investigation. The NHS Blood and Transplant, together with the Scottish National Blood Transfusion Service and the Welsh Blood Service, collected samples from blood donors to be used as controls. This group of anonymised DNA samples is known as the UK Blood Services collection of Common Controls (www.bloodomics.org).

The WTCCC initiative successfully led the way in identifying genes that play a role in the development of some of the most common diseases such as heart attacks, inflammatory bowel disease, rheumatoid arthritis, diabetes and others. It is already apparent that the WTCCC study is a scientific landmark in the global efforts to unravel the complex relationship between genes and the risk of common diseases. Following this undertaking, a new round of studies were funded in 2008 by the largest charity for the funding of medical research, the Wellcome Trust. For more information please visit www.wtccc.org.uk.

National Institute for Biological Standards and Control (NIBSC)



Every six months, four platelet donors are invited to participate in the platelet grouping Quality Assurance scheme. They are requested to donate a small sample of blood (50 ml) at a given time. This means that all the samples are taken almost simultaneously and sent that day to laboratories around Great Britain and also abroad. For more information, please visit the NIBSC website at www.nibsc.ac.uk.

BLOODOMICS STUDY

PART 1 2005

During the summer of 2005, a total of 512 participants enrolled in the Platelet Profiling Study at the Cambridge Blood Donor Centre with three quarters being platelet donors and the remaining ones being whole blood donors.

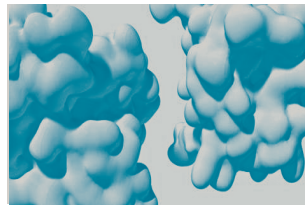
A quarter of the participants were recalled for a second time and some even for a third time to determine whether platelet function varies over time. This study identified 16 novel differences in the sequence of the genetic code between individuals that have an effect on platelet function. One of these is most likely a risk gene for heart attacks and this observation is now being further analysed in a new international collaborative study.

We would like to thank the group of people who took part in Bloodomics and who showed an enormous amount of commitment and goodwill by donating their samples and time on repeated occasions. For further information please visit www.bloodomics.org.

PART 2 2009

The results obtained from 2005 onwards prompted a decision to further increase the number of donors involved in platelet profiling. This decision was made to be able to answer two questions, one concerning the platelet transfusion care of cancer patients and the other about the risk of forming blood clots.

Bloodomics



In early 2009, about 800 platelet donors in the Cambridge Blood Donor Centre, who had not already taken part in the study, were invited to participate. When donors come for their appointment at the clinic they are asked if they would like to participate and, if so, a blood sample is taken for the study. So far, 215 donors have agreed and we aim to enrol a total of at least 500 by the summer of 2010.

If you are a platelet donor but have not yet been enrolled and are keen to participate please be reassured that the recruitment is ongoing. If you have any questions please feel free to contact Heather Lloyd-Jones on the Freephone number **0800 085 3650**. She is the Research Nurse responsible for recruitment into this study.

The Future

As you can see there are many exciting research studies taking place by Cambridge researchers and further studies are planned. ***“We are optimistic that results of research studies will benefit NHS patients suffering from various common conditions and hope that you, as a blood donor, can appreciate the enormous contribution you have made to the advancement in our understanding of these conditions”*** said Dr Willem Ouwehand, Honorary Consultant Haematologist at the NHS Blood and Transplant and Reader of the University of Cambridge.

We would like to thank all those of you who have participated. For information regarding publications related to different studies, please visit our website at www.cambridgebioresource.org.uk. Donors are often selected for studies either by genotype, age, gender and/or proximity to the Addenbrooke's campus. If you have not yet been invited to take part in a study please be reassured that many more studies are planned and there may be a chance that you will be contacted. We would also like to thank NHSBT staff from the mobile blood donation sessions and from the Cambridge Clinic for all their help and support in making these research studies possible.

If you have any questions about the research studies please feel free to contact a team member on the department Freephone number **0800 085 3650**. Alternatively you can email us at nhsbt@cambridgebioresource.org.uk. For issues regarding your blood donation please contact **0300 123 2323**. With regard to the latter we very much hope that you will be able to make your normal donation, which is used for patient care in the NHS, next time you receive an invitation.

