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New MRI Scanner at Glenfield Hospital

Building on Leicester's excellence in cardiovascular research the National Institute for Health Research awarded £2.2million for a dedicated 3 Tesla research scanner which was installed in a new build by the main entrance at Glenfield General Hospital in February 2011 and complements the previous investment in the Biomedical Research Unit.

The new scanner produces higher resolution images than the existing 1.5 Tesla scanner which has enabled researchers to successfully compete for additional research funds to the value of £1.7million already.

MRI scans use strong magnetic fields and radiowaves to create images of the inside of the body. It can image organs, tissue and bone. Unlike x-rays the process does

not involve the use of radiation at all. Extensive research has been conducted into whether the magnetic and radio waves that are used in MRI could pose a risk to the human body. No evidence that there is a risk has ever been found. This means that MRI is one of the safest medical procedures currently available.

The scanner will particularly be applied to cardiac imaging. MRI images of the heart

can be used for detecting illnesses like ischaemia & infarction, and assessing congenital heart disease, heart valve dysfunction and the presence of inherited diseases. Cardiac MRI is very safe and accurate, provides prognostic evidence, changes patient management and reduces the need for other investigations. In research cardiac MRI scans are used to measure the outcomes of interventions to assess if they are working or not, as well as to explore the usefulness of cardiac MRI scanning in the clinical setting in, for

“ The new 3T MRI scanner is an important resource to help us find out more about cardiovascular disease and the effect of treatments. The scanner dramatically enhances our ability to compete successfully for research funding by increasing research capacity and is complementary to the existing scanners. ”

example, screening for coronary illness in at risk groups or as a non-invasive alternative to assessing if a patient requires surgery.

Researchers at the BRU are delighted to have the opportunity to work with this new technology and bring the benefits of this resource to patients locally as a result of their pioneering research. Dr Gerry McCann is leading on much of the local research using the scanner, which is due to begin in the next few weeks.



Gerry McCann and the new Siemens Skyra 3 Tesla MRI scanner at Glenfield Hospital.



Industry Collaboration Award

Optima-Life has walked away with the Partnership with the NHS Award in this year's Medilink East Midlands Business Competition for partnership work with the Leicester Cardiovascular Biomedical Research Unit team. CEO Simon Shepard collected the prize on behalf of the company at the Innovation Day awards' evening held at the East Midlands Conference Centre.

Optima-Life specialises in technology and services for optimising health and performance in work, sport and everyday life and works with sports players and teams, fitness industry specialists, blue chip companies and leading organisations and individuals within the private and public healthcare sectors. The award recognises Optima-Life's recent collaboration with the Leicester NIHR Biomedical Research Unit at the University of Leicester and Glenfield Hospital, in assisting the evaluation of exercise capacity in chronic heart failure patients.

Simon said: "We are delighted to receive this award which recognises true three-way collaboration between ourselves, the NHS and Medilink East Midlands, whose support certainly helped to make things happen. We have been able to use technology to help not only patients, but also NHS staff working in a very challenging environment.



(L-R): Ben Grundy, BRU Chief Cardiac Physiologist; Dr Andre Ng; Dr Simon Wallace, Healthcare Director Optima-Life; Claire Peers, BRU Research Nurse; Simon Shepherd; Robyn Lotto, BRU Research Nurse; Cath Jones, BRU Healthcare Assistant; Bernie Stocks; Maggie McNerney, Optima-Life; Dr Ian Barr, Director of the Healthcare and Bioscience iNet.

Bernie Stocks for the award sponsor NHS East Midlands, said: "We are delighted that this local project has won this category. This is an innovative tool which assists greatly in giving NHS patients a more accurate exercise prescription and helping to prevent health deterioration. It is an excellent example of innovative good practice and we wish the team every success for the future."

Five companies won awards in their respective categories in this year's competition, further evidence of the East Midlands' impact and influence in the healthcare and bioscience business sector. The creativity and innovation shown by these companies has created jobs, profits and business growth which should contribute to the region's continued climb out of recession. They are also playing a major part in improving patient care, especially in the community, resulting in the

cost-effective delivery of healthcare services.

Speaking after the awards were announced, Dr Darren Clark CEO Medilink East Midlands said: "This evening has been a great showcase of the achievements of our sector and is a shining example of the strength and breadth of the Medilink East Midlands membership. These awards represent a fantastic opportunity for all those involved and we look forward to seeing much more of all the finalists in the future."

The five awards' categories each had individual sponsors; these were BioCity Nottingham (Best Start Up), Medilink East Midlands (Export Achievement), NHS East Midlands (Partnership with the NHS), Potter Clarkson LLP (Innovation) and Healthcare and Bioscience iNet (Outstanding Achievement).

This year's winners are automatically entered into the Medilink UK national awards which will take place in early 2012.

Further **Expansion** at Leicester Cardiovascular BRU

With the growth in research activity brought about as a result of support for research by the Leicester Cardiovascular Biomedical Research Unit, further expansion to provide more consulting rooms and office space to researchers has taken place on the Glenfield Hospital site.

The facility provides office space for 16 researchers, and a small meeting room upstairs, as well as 4 consulting rooms and

a laboratory downstairs. The expansion recognises the increasing demand for accommodation as researchers take on more projects with the support of the unit and as new researchers are attracted to our excellent facilities.

The Units data and tissue project (BRICCs) team, who collect information on a questionnaire and samples of blood and urine from people with a history or cardiovascular illness, have moved into the new office space as they have expanded to include an additional Research Nurse. Emma Beeston, the Research Nurse who leads this team says "The new facilities will mean that we can see more patients who volunteer to share their information

and tissue samples with us for purposes of research, and the more data we can collect, the more we can find out about cardiovascular illness.'

The Manager of the Biomedical Research Unit, Tim Skelton, said "It's great that demand for the facilities available through the Leicester Cardiovascular Biomedical Research Unit Translational Medicine Facility is such that we have had to expand to meet this demand. It demonstrates how successful we have been at attracting new research projects to the area, and also reflects on the positive contribution made by people living in the area who are so willing to give up their time to support research."

Participating in **research**

Ever wondered what it's like taking part in research? There are hundreds of research projects taking place at the University Hospitals of Leicester NHS Trust and the chances are that if you are a patient you will be invited to take part in at least one of them. There are lots of different research projects involving different levels of commitment from participating volunteers including:

Information studies

These involve giving a researcher permission to access your information, perhaps in your medical notes, or perhaps by completing a questionnaire or survey.

Tissue studies

These ask you to give us a sample of your blood or urine or tissue removed during a procedure or intervention that you had as part of your healthcare. The sample could be used in the laboratory in all sorts of ways (you'll usually be told what the sample is being used for when you give consent) for example, to find out what DNA can tell us about risk of cardiovascular illness, or perhaps to look at proteins in the blood.

Interventional research

These studies involve trying out an intervention like a new drug. Early interventional studies are usually about seeing how well people tolerate a new intervention, and what side-effects the intervention has. Further down the research process, there are studies about how effective an intervention is compared to standard treatments.

So what is involved in taking part in research? Let's ask a research volunteer.

Tell me about the study you volunteered for?

It was a study looking at genetics in heart disease called the British Heart

Foundation Family Heart Study. I was invited to take part because my grandfather had a heart attack. Most of my family agreed to take part.

Tell us about how you gave consent to participate?

Researchers are very careful about ensuring participants understand the research project and that they are taking part because they want to. The first part of the visit was to speak to the Professor running the study and find out what was involved. I was given a lot of information about the study, and also about things like compensation arrangements and who had reviewed the study. I'd been given an Information Sheet in advance with a lot of the information on and the researcher checked very carefully that I had understood everything. After we'd had a chat I agreed to sign a form recording that I had given consent. I could still change my mind at any time, but the researcher has to prove they have gone through the study information with me and that I agreed at that time I would volunteer.

What did the study involve?

I gave the researcher permission to get some information from my medical notes and to follow me up through my notes in the future to see if I developed any cardiovascular illness. The researcher did an ECG on me, which was really interesting, and took a sample of my blood for DNA analysis.

This was before the BRU was set up so we had to come to the hospital in the evening, outside of clinic times. I think it's great that participants can take part in research at more convenient times now.

Why did you volunteer?

I think research is really important. The healthcare we receive today is based on research people volunteered for five, ten, twenty years ago. I can help to improve healthcare for people just by giving up a bit of my time and a bit of blood. My grandfather had just been in hospital so I'd seen first-hand how important that healthcare is.

My brothers and my parents took part too. We discussed the project as a



family, and we all decided we thought it was important to take part. Doctors know that there is a genetic link to heart disease, so the research might save my life in the future.

Thanks for telling us about your experience as a research participant.

Want to receive the newsletter regularly and express your views on cardiovascular research?

Join our mailing list by emailing rp237@le.ac.uk.

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Leicester Cardiovascular
Biomedical Research Unit

Volunteer to join our research review panel.

Contact Rebecca on rp237@le.ac.uk for more information.

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Leicester Leads on **Cardiovascular** Genetic Research

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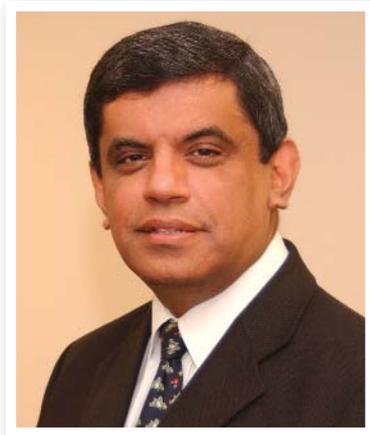
The largest-ever study of its type into coronary heart disease, involving scientists from the University of Leicester, has uncovered 13 new genes that increase risk of heart attacks.

Professor Nilesh Samani, British Heart Foundation Professor of Cardiology at the University of Leicester, based at Glenfield Hospital, who co-led the international research programme, called CARDioGRAM, said most of the genes identified were not previously known to be involved in the development of coronary heart disease, opening up the possibility of developing new treatments for this common disease.

The study involved over 167 clinicians and scientists from the UK, Europe, Iceland, USA and Canada and over 140,000 participants. The researchers assessed the genetic codes of people to search for variations in DNA that are more likely to be found in people with coronary heart disease.

Professor Samani said: "The most exciting thing about our study is that we have discovered several new genes not previously known to be involved in the development of coronary heart disease, which is the main cause of heart attacks. Understanding how these genes work, which is the next step, will vastly improve our knowledge of how the disease develops, and could ultimately help to develop new treatments."

Professor Samani added that the scale of the study showed the benefits of international collaboration in tackling major research questions of this type.



Professor Nilesh Samani

He said: "The study would not have been possible without the many patients right across Britain who participated in our British Heart Foundation Family Heart Study and others like them all round the world. This is a real tribute to their contribution."

Professor Peter Weissberg, Medical Director at the BHF, said: "As more and more large scale genetic studies are carried out we are beginning to identify genes that may play a significant, though small, role in the development of heart disease.

"Each new gene identified brings us a small step closer to understanding the biological mechanisms of cardiovascular disease development and potential new treatments. However, as the number of genes grows, it takes us further away from the likelihood that a simple genetic test will identify those most at risk of suffering a heart attack or a stroke."

The study is published in the leading journal, *Nature Genetics*.

The UK component of the study was funded by several leading research institutions including the BHF, the Wellcome Trust, the UK Medical Research Council and the National Institute for Health Research. CARDioGRAM also received funding from the European Union.

Researchers Explore **New Device** for Measuring Blood Pressure

BRU researcher Professor Bryan Williams has been working with colleagues in Leicester and at HealthSTATS

International, Singapore to test a device for calculating blood pressure in the aorta. Blood pressure is traditionally measured in the arm, but blood pressure in the aorta is likely to tell us more about how well a patient's treatment is working. Professor Bryan Williams said "The aorta is millimetres away from the heart and close to the brain and we have always known that pressure here is a bit lower than in the arm."

He said the device would "change the way blood pressure has been monitored for more than a century" and he expected the technology to be used in specialist centres soon, before being "used much more widely" within five years.

The Health Minister Andrew Lansley said the device is a "great example of how research breakthroughs and innovation can make a real difference to patients' lives".

The watch-like device is worn on the wrist and measures the pulse wave of the artery. This data, along with a blood pressure reading from the arm are fed into a computer to calculate the central aortic blood pressure. Initial findings are very promising and Judy O'Sullivan, senior cardiac nurse at the British Heart Foundation, said previous research had shown that measuring pressure close to the heart was a better indicator of the effectiveness of treatment for high blood pressure than the standard method. "However, further research is needed before we can be certain of its superiority in the doctor's surgery," she said.



University of Leicester



Leicester Cardiovascular Biomedical Research Unit

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