Twin Research & Genetic Epidemiology Unit

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NEWSLETTER WINTER 2007/8

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Welcome

Welcome to the 2008 Twin Research Unit Newsletter and I hope you all had an enjoyable Christmas and New Year. We decided to send you the newsletter in January this year so that we can reflect back on the whole of 2007 – and what an exciting and successful year it was for us, thanks to all of you.

We received a large grant from the Wellcome Trust to look at the genetic contribution to healthy ageing (see HATS study on page 2), which will involve many twins coming to the TRU for a visit over the next 3 years (those twins who have already visited describe it as a "health MOT").

Last year we published numerous papers in high profile scientific journals and gave talks at meetings worldwide. As a result, the TRU has gained an excellent international reputation and on page 2 we profile two researchers who have joined us from abroad to enhance their own research.

There has been a lot of hype in the press about people's personal DNA and health, so to clarify this issue we have explained all about your DNA on page 3.

Two exciting "twin" events took place last year. Firstly, in May, Dr Lynn Cherkas (our genetic analyst) and Victoria Vazquez (my PA) spent a lovely day with two very special ladies – Betty and Jenny from Cornwall - who turned 100 on January 1st 2008. These identical twins have started learning Spanish, both drive, and enjoy two glasses of sherry every day! - we all send them our warmest "Congratulations".

Then in December, "Dr Lynn" and Nilufer Rahmioglu (one of our PhD students) met Ryan and Dan Kowarsky – the new up and coming Canadian singers who are also identical twins. They recently released an album "RyanDan"- you may have even seen them on the Paul O'Grady show in early December when Lynn had to test whether Ryan and Dan, or Jon and Nick (roving reporters on the show) were "more identical". "It was a hard day's work, but someone had to do it" Lynn and Nilufer jokingly reported back!

We have many exciting studies underway, and on page 4 of the newsletter we outline a variety of studies in which you can be involved. Finally, we have included a questionnaire with this newsletter, which should only take 10-15 minutes to complete. We are always very grateful for your help and do hope you will continue to contribute to our valuable research.

Thank you and best wishes for a happy and healthy 2008.

Tim Spector

~ Our International Team ~

The TRU prides itself on attracting independent researchers from all over the world who come over to the UK to experience the unique research opportunities we provide. Two current research Doctors tell us about their experiences at the TRU and their love of England.

" Hello, my name is Dr Brent Richards and I am **Canadian**. I qualified in Canada as a doctor, and also have a Masters in epidemiology. I jumped at the chance to move to the UK nearly 2 years ago in order to focus on osteoporosis research at the TRU. We are excited that we are close to finding a new gene that causes osteoporosis and to understanding how the genes that we are born with interact with our life style and environment to cause this condition. In the summer I will return to Canada to practice medicine and continue my work in the field of osteoporosis.

The TRU is a great and inspiring place to work. I want to thank all of you twins for your time which has led to a huge amount of important data - a phenomenal resource. As for England, I will miss it. I love the sense of history, something that we do not have in Canada. But the best thing is that my wife and I are taking back with us our very own British-born baby! So we will never forget our time here! Thank you."

" Hello, my name is Dr Francis Carbonaro. Some of you may recognize me as I have been doing the eye tests for twins visiting the TRU for over a year. I am from **Malta** where I qualified as a doctor and started training in ophthalmology. Malta was part of the Commonwealth for 150 years, which is why we speak English and have a very similar health system to the UK, and is the reason that many doctors from Malta transfer to the UK. I came to the UK in 2003, and joined the TRU last year to take advantage of the great research opportunities. My research has shown that intraocular pressure - the pressure in your eye, - is highly dependent on your genes, and is something that is determined when you are born, and develops during your life. This is an important finding for determining who will go on to develop glaucoma and who needs treatment.

I am enjoying working in such a multicultural environment - with researchers, other doctors, nurses, laboratory and administrative staff, and PhD students from all over the world. As for London, it is a great city - it has everything you would want in it.

In addition, I really enjoy working with all of you twins - you are great to talk to, and very accommodating.

CURRENT STUDIES

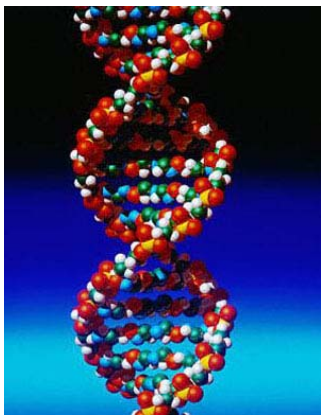
Healthy Ageing Twin Study (HATS)

We are very excited to have just started this new 3 year study, funded by The Wellcome Trust. Female twins over the age of 47, who came to the TRU for a visit between eight and 14 years ago are eligible to come for a HATS visit. The aim is to identify how changes within and between five body systems - eyes, muscles, bones, lungs, and heart - occur over time, to what extent these changes are caused by our genes and our life-style, and to identify genes that are involved in the process. If eligible, either Rob or Sol will call you to ask for your participation.

Rob and Sol

Fat Biopsy As part of the HATS study, some twins are being asked to volunteer for a fat biopsy so that we can investigate the genetics of obesity and diabetes. As June and Jean from Chatham told us "We were sceptical about the biopsy as we don't like needles, but it didn't hurt, even after the anaesthetic wore off, and it healed beautifully. Good luck with the research!"

YOUR DNA



These days everywhere you look, you see the word "DNA" or "Deoxyribonucleic Acid", a combination of 4 chemicals represented by the letters G,T,C,A.

So, what is DNA? DNA looks a bit like a string of tiny beads winding round and round, and exists in every cell of our body. It does in fact contain a precise set of instructions, called "genes" that tell our body how to function correctly, and what to repair. We have around 30,000 genes, half of which we inherit from our father, and half from our mother.

How does DNA affect our health? Everyone is born with subtle differences in their DNA which means that as we age some of us are more susceptible to certain diseases, e.g. glaucoma, osteoarthritis and diabetes. Rarely, people are born with a major change in their DNA that causes them to develop a genetic disease such as cystic fibrosis.

Are our genes solely responsible for our health? No! Identical twins (MZ) show us that this is not the case. MZ twins share 100% of their DNA but do not necessarily look exactly the same, have the same habits or preferences, or get the same diseases. This is because genes interact with lifestyle factors to determine our health.

So, what can we do to stay fit and healthy? Most of the work that we are doing now has shown that a sensible diet, taking exercise, moderate alcohol intake, and not smoking may be important in determining our health, in addition to the genes that we are born with. For this reason, the TRU is continuing to focus on identifying those factors that help us to age in a healthy way.

How do you look at DNA? Researchers extract DNA from blood cells and use high-tech machinery to read through the four chemicals that make up DNA.

What do you do with this information? We can compare, for example, the DNA of people who have osteoporosis with the DNA of people who don't, to look for differences in the group as a whole, **but not as individuals**. Because our health is made up of the interaction of thousands of genes with numerous life-style factors, currently we are unable to obtain any clinically useful information from just one person. Ultimately we hope to find the genes that may be responsible for many of our common diseases.

Please note that whenever we share data with collaborators we always use anonymous study numbers so that no individual can be identified.

Your Views

We may in the future hold discussion groups on what people can learn from genome information. If interested, please call Jodie on (0207)188 6741

YOUR TELOMERES

In our last newsletter, we explained all about telomeres - structures at the end of our chromosomes - and how the shortening of telomeres in our cells may be part of the ageing process. Our research has shown that the following factors might shorten our telomeres and be associated with accelerated ageing: cigarette smoking, obesity, osteoarthritis, osteoporosis, rheumatoid arthritis, insulin resistance, poor memory, low levels of vitamin D, low socio-economic status and lack of exercise.

The good news is that we can reduce the effect of many of these factors by living a healthy life-style, eating well and exercising!

A very good reason for keeping our New Year's resolutions!

P.T.O.

TRU RESEARCH-2007

In the last year we have published many new research articles, a few of which are summarised below (more information can be found on www.twinsuk.ac.uk)

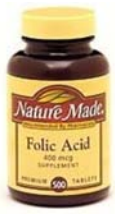
DIET We found that that genetic factors have an important influence in determining food choice and dietary habits.

OSTEOARTHRITIS We have identified genes that appear to be associated with osteoarthritis.

PAIN We found that sensitivity to a variety of experimental pain-producing stimuli has a genetic basis. We are continuing this research to try and identify the genes involved.

CURRENT RESEARCH

As well as the HATS study mentioned on page 2, we are currently recruiting twins for the following studies.



Are you interested in dietary supplements and health? We are searching for the genes that influence our response to dietary supplements. We are recruiting female or male twins who are in good health (with no history of diabetes or hypertension), to visit the TRU at St Thomas' twice in 6 weeks, and to take folic acid supplements. **If interested, please contact Ioana on (0207) 188 8543.**

Are you a male, interested in the benefits of dietary supplements? We are trying to identify the genetic factors which determine whether the herbal dietary supplement, St John's Wort, is beneficial. We are recruiting male twins who are in good health (with no history of chronic disease) to come for a single visit to the TRU, and to take St John's Wort supplements for two weeks. **If interested, please contact Nilufer on (0207) 188 8541.**

Do you have a mole you would like removed? We are interested to find out which genes influence the number and type of moles you have. Are you less than 50 years old, wish to have a mole removed and examined by a pathologist, as well as having all your moles checked by a dermatologist? (Please note, we cannot remove moles from the face or the upper back or upper chest).
If interested, please call (0207) 188 5555 or email dan.glass@kcl.ac.uk

As well as our own studies, we work with a wide range of collaborators, such as those listed opposite, which means that there are many exciting opportunities for you to be involved in research studies. However, please be assured that we do not give out your names or contact details to our collaborators, which is why we are asking you to contact them if you are interested in their study. Thank you!

Would you like a personality profile? **The Institute of Child Health at UCL** is researching the **genetics of personality** in same sex, identical or non-identical, adult twins. Participation requires a single visit to London to answer questionnaires and take part in computerized tasks lasting in total 4 hours. A basic familiarity of computers is required. Twins will get the chance to meet other twins, during either the week or at the weekend. All expenses will be covered and twins will be given their very own personality profile after the study, as well as being entered into a prize draw. **If you and your twin are interested please contact Andrea Du Preez on (0207) 905 2311 or email bbsuproj@ich.ucl.ac.uk**

Do you or your twin have manic depression (bipolar disorder), or schizophrenia?

Do you and your twin have no history of mental illness or drug misuse problems and are aged 25-65?

If you replied yes to either of the above questions and are a same sex, identical or non-identical twin, you have the opportunity to take part in a study designed to increase our understanding of mental illness and help inform future therapies. The research visit, at the Institute of Psychiatry, Kings College London, involves psychological tasks, and an optional brain scan. All expenses are paid and you will be entered into a prize draw. **If interested, please call Anna Georgiades on (0207) 848 0023 or email twinstudy@iop.kcl.ac.uk**