



Genetics of Obesity Study

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GOOS Newsletter Summer 2016

By the time you read this I hope that our summer has at last arrived!

What a few weeks it has been! At the risk of being political, the vote for "Brexit" has left us all feeling stunned in Cambridge, both in our Institute and in the hospital! The future of science in the UK has never looked so uncertain and the hospital relies heavily on staff from overseas. As for the £350 million promised by the "Brexiters" for the NHS: "if you tell a big enough lie and tell it frequently enough, it will be believed."

I'm not sure if you are aware of just how much financial support medical research in the UK receives from the EU: it is substantial! Also, many of the very best scientists and researchers are not unfortunately "home-bred!" Just looking at our own group, the majority of us were not born, bred and educated here. I really hope that sense will prevail in the end and our links with the EU can continue.

You will see from Professor Farooqi's news that she was involved in the "topping out" ceremony for our new building. I had visions of her having to don a hard hat and head up to the roof on the rather rickety looking lift that the builders themselves use! As for choosing the wall colouring, it all sounds very 1970's to me: purple and orange!

I hope you will find the "Research Highlights" of interest. I'm sure you may have read that lack of sleep can lead to weight gain. Over the last 30 years or so, the average amount of sleep we get has markedly decreased and there has been many studies showing that shorter sleep duration leads to an increased susceptibility to obesity. Our study looked at things from a different angle as we wanted to know whether manipulating the calories that we give to people can affect how well they sleep. Find out more over the page.

Finally, I just wanted to let you know that we have made a few changes to our website. Whilst doing this, I realised that we do not have many "personal experiences" from our patients and families. Please, if anyone would like to add their story, I would be delighted to hear from you (info@goos.org.uk).

Have a great summer everyone.

Julia



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News From The Professor

Advances in Clinical Research – a new building!

Today, I attended the topping out ceremony for our new Clinical Research building. Topping out refers to a tradition that builders have observed worldwide for centuries, where the last beam (or in our case, piece of concrete) is signed as a mark of the completion of the construction of a building. There is still quite a lot of work to do inside the building, but we are very excited about this milestone as this new building will transform our ability to undertake clinical research in Cambridge!



Clinical research is vital as it allows us to take new scientific discoveries made in labs, find out what they mean for real people and use that knowledge to develop new treatments. There is a lot of exciting clinical research going on in Cambridge where researchers work on conditions such as multiple sclerosis, cancer and arthritis as well as our work on weight problems. We are very fortunate that we can bring in people from around the country to undertake studies in a carefully controlled environment – the clinical research facility or CRF. Many of you have been to Cambridge to help with our work on weight problems and your involvement has helped us to move the field forward.

The new building will give us the capacity to do more research in people with weight problems and diabetes and to design a building that allows us to take advantage of new technologies and develop new ways of looking into the causes of weight problems. It has been exciting to contribute to all stages of the process from the design of the building to the colour of the walls! As a result of our work and the facilities we are establishing, some of the world's largest Pharmaceutical companies want to work with us on new treatments. This provides us with exciting new opportunities to be at the cutting edge of translating scientific research into benefits for people.

I heard from the builders today that they expect to finish everything by Christmas and then after some careful checks of the Facilities, we can move in a few months after that. Exciting times ahead!

Latest Research Highlights - Eating and Sleep Patterns

Over the past few years we've spent a lot of time working on a study looking into whether there is a link between the amount of food we eat and our sleep patterns and we're pleased to say that our findings from this study have recently been published.

Research over the past 30 years seemed to suggest a link between rising obesity levels and a decrease in sleep duration. In our study, we wanted to look in depth at sleep patterns and how controlling the amount of calories that a person eats can influence types of sleep.

For this study, our male volunteers were all of normal weight and they stayed with us on the Clinical Research Facility for 5 days and nights. During that time we gave them food containing different amounts of calories divided between breakfast, lunch and dinner.

To begin with, we gave them food that was calculated to be appropriate to their personal energy requirements: an amount that would see them neither gain nor lose weight when being fairly inactive. This was then followed by 2 days of providing only 10% of their calculated energy requirements. As you can imagine, this is not much, in fact about 200 calories: this roughly equates to 2 slices of bacon or half a jam doughnut! After the 2 days of restriction, we provided them with plenty of food and snacks and they could then eat as much as they wanted. This was to make sure that the volunteers had enough food for their bodies to make up for the lost calories from the previous 2 days.

Throughout the 5 study nights, the volunteers had to wear a 'Polysomnography' device, which carefully monitored their sleep, so that we were able to detect the duration of what is often referred to as light and deep stages of sleep. So we were able to see how our volunteers sleep might be affected by the amount of food that we gave them during the day.

We also gave them some specific questionnaires and computerised tasks to complete that allowed us to assess our volunteer's moods and feelings of sleepiness which we know can be affected by being hungry from lack of sufficient calories.

We also took blood samples every day and sometimes overnight as well. This was to look at various hormones that may change during the day and night and to see if these change even more when our food levels are reduced. One hormone we looked at in particular was leptin, which we know tells our brain when we are hungry.



So What Did We Find?

Our study showed us that only 2 days of calorie restriction was enough to alter a person's sleep patterns. There was an increase in the amount of time the volunteers spent in what is called "Stage 4" or the deepest stage of sleep. This effect was entirely reversed once they were allowed to eat freely and replenish those "missing" calories. As expected, there was also a marked change in some hormone levels.

Why are our findings important?

Little was known about the impact of energy balance and the sleep/wake cycle. We have found that just 2 days of food restriction can directly impact this cycle and is also very rapidly reversed on refeeding. We now consider that we have a framework to further investigate the association between sleep duration and the risk of obesity.

Thanks to Ms Sarah Kelway (Research Assistant in Human Nutrition)

Let us know what you want to see on our website and in our newsletters.

Visit GOOS at www.goos.org.uk to meet our team and learn more about our work.

Or email us at info@goos.org.uk to stay up-to-date with what we're doing and how you can get involved.

If you would like to know more about our new studies, contact us at info@goos.org.uk.



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