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Katie Carr inside the 'Bod Pod' at the NIHR Clinical Research Facility
Picture: Keith Heppell

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Pupils bring climate activism to city streets



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Darrin Disley: My next great adventure



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£23million Milton Road redesign earns approval

By Gemma Gardner
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banners and tying yellow ribbons around the trees.

Following public consultation feedback, the final design includes significant modifications to the bus lanes, cycleways and pedestrian paths.

It represents a success story for the GCP – and the residents.

The chairman of the Milton Road Residents' Association, Charles Nisbet, told the *Cambridge Independent*: "There was a lot of discussion of very fine detail but overall there is no doubt at all that this plan is a huge improvement on where we started two-and-a-half years ago."

The scheme even features a crossing painted to look like books

Revised plans to upgrade Milton Road have been welcomed by residents after major improvements were made to the design. The £23million proposals from the Greater Cambridge Partnership (GCP) aim to improve public transport, cycling and walking journeys and reduce congestion along the route. Initial versions of the redesign came in for heavy criticism from residents, who feared the loss of the trees and green verges that line the road. In 2016, there were protests, with demonstrators putting up

Inside Graphics of the design Plus Tributes to transport campaigner Simon Norton page 20



on the road, which will lead pedestrians to the newly-refurbished Milton Road library.

Mr Nisbet continued: "The GCP has listened.

"They put in an excellent project manager who listened and heard what we wanted, and talked to the consultants and ran through ideas about how they could

do this and that.

"They tried very hard indeed. The end product is not perfect but it's pretty good."

In July last year, the GCP approved the preliminary design for Milton Road for public consultation.

Almost 900 responses were received, which the GCP says were more supportive than critical.

"They've been very good and very committed because they want it to look as good as it can," Mr Nisbet said.

Fewer than 24,500 vehicles used the road every day in 2012, which rose to more than 27,000 in 2015. It is expected to continue increasing.

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Mark Steel: Laughing at Brexit and the absurd

Mark Steel is a comedian and actor. He is wearing a dark hat and a dark jacket over a blue shirt.



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Motors New reg special





Cambridge

Biomedical Campus

An 8-page special



CAMBRIDGE SCIENCE FESTIVAL ■ PSYCHOLOGY OF A PATIENT
RETURNING TO WORK ■ NEW ARRIVALS ■ THE ANTIBODY STORY

Katie Carr at the
NIHR Clinical
Research Facility

Pictures: Keith
Heppell



“From the moment they step in the door, everything is measured”

Katie Carr
NIHR Clinical Research Facility



Volunteers John and Eva with Katie Carr

A weighty problem

We all know that we should eat less if we want to lose weight, but why is it so difficult? **Craig Brierley** looks at how Cambridge researchers are trying to answer this surprisingly complex question.

Eva Li rolls up her sleeve to reveal a colourful plaster on her arm, illustrated with cartoon chickens.

The plaster covers the spot where she has just given a blood sample.

“You were very brave,” says her dad, John, proudly.

“It’s my birthday tomorrow,” she says. She will be 10 years old. Eva points to her chest, where she has to wear a heart monitor for three days. “It’s going to be funny because I’m going trampolining, so my heart’s going to go up and down!”

It’s mid-morning and Eva and her dad have just completed an overnight stay in the National Institute for Health Research (NIHR) Clinical Research Facility.

Fortunately, unlike almost everyone who spends the night in a bed at the hospital, there is nothing wrong with them.

Eva and her dad have been taking part in a study of healthy volunteers. The study is to collect data to help scientists and doctors understand how our bodies function – and in particular, how our metabolism works. Metabolism is your body’s way of burning fuel.

When you have a meal, it gets broken down in your body and some of it gets converted into energy to keep you going throughout the day. If you eat too much, some of it will be stored as fat for you to burn later.

The healthy volunteers study is just one of several under way at the facility. Volunteers ranging from ages six to 65 spend the night in the facility, where the team measure everything from body fat and bone density to fitness and sleeping heart rate.

Volunteers stay in one of the state-of-the-art ‘calorimeter rooms’. The rooms are airtight, allowing the team to accurately measure how much energy they burn by sampling the amount of oxygen and carbon dioxide in the room while the volunteers sleep, watch TV or exercise.

“From the moment they step in the door, everything is measured,” says Katie Carr, a metabolic nutritionist who runs the studies.

It’s very hands-on work for Katie and her team – they even have to cook meals for the volunteers.

“That way, we can control to the exact calorie how much they eat. For the children, we try and give them their favourite food, though we had one child in recently whose favourite food

was sushi, which made it a bit difficult!”

With more than a quarter of adults in the UK and one in five children classed as obese, clearly something is going wrong. The problem is that many of us eat far more than we need to and don’t exercise as much as we ought to, so we put on weight.

And as everyone knows, once we’ve put on a few pounds it can be very difficult to lose them again.

The solution to the obesity epidemic should be simple: eat less, lose weight. It turns out to be far more complicated than this.

You only need to look at the variety of research taking place on the Biomedical Campus alone to get an idea of quite how complex the problem is.

Next door to the NIHR facility sits the Wellcome-Medical Research Council Institute of Metabolic Sciences, part of the University of Cambridge, which is “dedicated to research, education, prevention and clinical care in the areas of obesity, diabetes and related diseases”.

The institute has researchers looking at everything from the signals sent by the gut to the brain to tell us we’re full to whether it is possible to change our ‘bad’ white fat into ‘good’ brown fat to how our mother’s diet – or even our grandmother’s diet – during pregnancy affects our weight.

Other researchers at the institute are trying to understand how the environment around us encourages us to eat more – and what we can do about it.

Does the size of your plate encourage you to eat more? Does the position of sweets in the supermarket mean you ‘impulse buy’ them when you’re waiting at the checkout? If there are a lot of takeaway outlets near your home, are you more likely to eat poorly?

The answers to these questions may seem obvious, but if you want national or

local government to take action – either to encourage or compel businesses to make a change – then you need to provide them with the evidence to back them up.

One of the researchers working at the institute is Dr Giles Yeo.

You may recognise Giles: he is one of the experts on BBC Two’s *Trust Me, I’m a Doctor*. The programme has seen him look at the causes of heartburn, ask if ‘man ‘flu’ really exists, and go vegan for a month. (Although he now eats meat again, he says the experience has had a dramatic effect on his behaviour – he’s just as happy to go for a cheese and onion sandwich at lunchtime as he is a meaty sandwich, something he would never have considered a year ago.)

In his day job, Giles’s research looks at “why we all behave differently around food”. It involves looking at how cells in the brain respond to hormones circulating in the blood, particularly those such as insulin that are produced in response to the food we eat.

His work makes use of tissue from the Cambridge Brain Bank, to which thousands of people have donated their brains since it opened in 1975.

If his research, and that of his colleagues at the institute, has taught him one thing it is that we are not really in control of how much food we eat. It seems like everything conspires against us.

“While you can argue that obesity is a disease of ‘choice’, in the sense that we can always say no, some people will always find it difficult to say no because they are more driven to eat,” he says.

“It’s in their genes or in cues from the environment around them. When it comes to finding a solution, there will be no one size that fits all.”

Giles feels passionately about the way society judges those who overeat, seeing attacks on people who are overweight as one of the last bastions of prejudice.

The problem, he says, is that we judge everyone else’s actions by what we know of ourselves.

“Our reaction is ‘I can say no to food, so why can’t you?’ Calling people out is awful. It’s like saying ‘Why are you so tall? Be shorter!’ or ‘Why are you breathing so much? Breathe less!’ We don’t take into account that everyone is different.”

■ If you are interested in volunteering to take part in studies at the NIHR Clinical Research Facility, visit cambridge.crf.nihr.ac.uk.

Dr Giles Yeo

Katie Carr in the Bod Pod



A fortnight of amazing science

With events from astronomy to zoology, Cambridge will be alive from March 11 to 24 with a fortnight of amazing science. Join us for fascinating talks and fun activities across the city.

The festival comes to the Cambridge Biomedical Campus on Sunday, March 24 and the site will be hosting activities at Cambridge Academy for Science and Technology, Cancer Research UK Cambridge Institute and at Biomakespace at the Clifford Allbut Building. Events run from 11am to 4pm and all are free to attend.

There will be lots of things to see and do for the young and old and everyone in between.

Discover how your body works, how cancer research is evolving and talk to the people whose research is saving lives every day.

Get hands-on with DNA and genetics, find out more about healthy diets and how blood donors save the lives of thousands of people every day.

There'll even be the chance to find out how you can contribute to research on the campus too.

■ For more information about the Cambridge Science Festival, and events on the Biomedical Campus, visit sciencefestival.cam.ac.uk.



“Some people will always find it difficult to say no because they are more driven to eat

Dr Giles Yeo
University of Cambridge