



## Research Focus

### Charles Perkins Centre



Stephen Simpson

Obesity and the diseases that are related to it are at the core field of Sydney's Charles Perkins Centre, led by a man whose first area of research was locust behaviour. Stephen Simpson says his own varied background shows why this research body is different.

Established in 2012 as part of the University of Sydney, the centre is named after an Aboriginal activist who graduated from the university in 1966. Perkins repeatedly challenged the prevailing system to seek equal rights for indigenous Australians, often creating waves in the process.

"He worked across sectors and he brought people together. He challenged prevailing views, and he had real impact and effected change", Simpson told *The Lancet*. "That was a set of characteristics that we wanted to aspire to."

Whereas Simpson's original field of interest was insects, he also worked in experimental psychology, nutritional biology, and as curator of a prominent natural history museum at Oxford University. His varied interests made him a good candidate to lead an institution that aims to give researchers the tools to answer their so-called dream research question, even if it has to be done in novel ways.

The centre's research is heavily focused on nutrition, obesity, and chronic diseases closely related to obesity such as diabetes and cardiovascular disease. Expertise of staff from across all areas of the university and overseas can be called upon when needed. The centre also houses a writer in residence, who has written a play about bariatric surgery.

Researcher David Raubenheimer's past work looked at spiders, birds, fish, grizzly bears, giant pandas, and snow leopards, as well as non-human primates such as gorillas, chimpanzees and orangutans. He is now applying his field of nutritional ecology to human

health, and says the centre's approach could let him point dietitians towards research pathways they might never have considered.

"You start with the question and you peel back what you need to address the question. I can work with economists, with law people. It enables me to bring a different approach, to collaborate with people who do have the relevant background", he said, in outlining the centre's approach.

His research applies lessons from animal feeding behaviour to nutrition in humans. The so-called protein leverage hypothesis was first tested in locusts but has since been found to apply across a range of animal species. This means that given a choice of mixed foodstuffs, many animals will target their diet towards meeting a certain requirement for protein. This has obvious implications for human nutrition, increasingly dominated by processed foods that are high in fats and carbohydrates compared with protein.

"We are facing a massive nutritional crisis. That has come about because the environment has changed", he said, citing processed foods as a particular issue. "There is a lot of evidence that these things are playing a role in the obesity epidemic. They are low in protein relative to fats and carbohydrates."

Margaret Allman-Farinelli, a dietitian, is involved in a new study, which has been undertaken at the request of Australian airline Qantas. It has recently started non-stop flights from Australia to the UK, the first time such a long single-sector flight has been flown commercially. This research project is on the impact of such a protracted flight on passengers' physiology, particularly focusing on the length of the flight, time difference and its effect on sleep patterns, and how, for example, feeding patterns on board the

aircraft can help passengers to enjoy their flight.

"We have started from flight one. Two Charles Perkins researchers were on the first flight and we have started collecting data", she said.

Epidemiologist Lisa Bero relocated to Sydney from California, and has previously worked with the Cochrane Collaboration. She is looking at bias in evidence on nutrition, applying similar strategies such as meta-analysis to those already used to quantify bias in studies on tobacco and pharmaceuticals. As in these two areas, a lot of the scientific evidence available in nutrition is based on industry-funded studies of one kind or another, often with a hidden agenda that revolves around using research data to promote and sell their own product, she said.

"The types of conflict of interest are quite varied. There are a lot of different financial interests in nutrition", Bero said. "When people are developing nutritional guidelines, we will know how to evaluate these biases and take them into account in the guidelines."

A lot of industry-funded studies have focused on a single nutrient, she said. This, for example, has led WHO to produce a guideline on sugar, partly on the basis of there being an adequate number of studies that address the issue of sugar. The number of studies looking at broader dietary patterns and mixtures of foods, she says, is relatively low, although this issue might ultimately be more important. She added that she hoped that the work of the Charles Perkins Centre would make lasting changes to nutrition policy.

"I have worked all my life with policy makers. What I would like to imagine is, 25 years from now, people will be thinking about nutrition in a very different way from the way they think about it now."

Chris McCall

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David Raubenheimer



Margaret Allman-Farinelli

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Lisa Bero

University of Sydney