



SIMON GROSE

DATA

Only one in every five Australians are genetically suited to run a marathon and all the rest are sprinters, according to research by Professor Kathryn North, of the University of Sydney, published in *Nature Genetics*. It's all about what kind of ACTN3 gene they have inherited. The most common version causes muscles to produce a protein called alpha-actinin-3 which powers explosive bursts of energy. The other version, found in 20 per cent of Australians, is common in endurance athletes and enables more efficient muscle metabolism. DNA from a small sample of people around the world found most Africans have the sprinter's version, but in European and Asian populations up to 40 per cent have the marathoner's gene.

www.medicalfoundation.usyd.edu.au/research/north.php

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Astronomers from Cambridge University and the California Institute of Technology claim their new "adaptive optics" system enables the venerable Mt Palomar Observatory in California to take pictures of stars which are twice as sharp as those taken by the Hubble Space Telescope. The new "Lucky" camera overcomes the distortion caused by the Earth's atmosphere with a light-sensitive chip that has very low electrical noise and software designed to factor out the distortion. It also follows the professional photographer's rule of taking lots of pictures and tossing out the duds. "An object is distorted by the haze most of the time," Dr Craig Mackay of Cambridge University said, "but every now and again there are moments when the haze drops and you can see it very clearly."

www.astro.caltech.edu/palomar/AO/

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The grains industry is pushing its pro-GM canola campaign as state and territory governments review bans on commercial GM plantings which expire before next year's planting season. Agrifood Australia says its latest report, *Delivering market choice with GM canola*, points out that GM canola was approved by the Office of the Gene Technology Regulator in 2003 and has been traded worldwide for more than a decade. Endorsed by 29 industry groups, the report has been provided to the review panels in South Australia, Victoria and NSW.

www.afa.com.au

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Farmers came before pigs – that's the message from research published in the US Proceedings of the National Academy of Sciences which compared the DNA of modern pigs with that extracted from bones of pigs found in European archaeological sites. A team that included Professor Alan Cooper, who heads the University of Adelaide's Australian Centre for Ancient DNA, reports that pigs from the Middle East – where agriculture began – were introduced into Europe 11,000 years ago. Evidence suggests agriculture moved into Europe via the Mediterranean coastline and along the Danube, and that pigs were part of that migration, rather than living wild in the region and being domesticated later.

www.adelaide.edu.au/acad/

Sharing views in bipolar picture

Michelle Banfield's personal experience with mental illness is guiding and helping her research in the area, **Emily Robertson** reports

Mental-health researcher Michelle Banfield describes herself as a "bridge" between academia and sufferers of mental illness, because she has occupied both worlds. Her experience as a mental-health consumer has given Banfield the capacity to conduct research that will help shed light on to what people with mental illnesses want from the scientific community.

Along with other researchers, she is heading a new movement of research that interweaves the subjective experience of mental-health consumers with more traditional and objective scientific methods.

"It's only recently that the importance of active consumer participation in any kind of health research has been properly recognised, especially by those in the health fraternity," Banfield said.

Following the 1999 Willms Review, which made recommendations that consumers be more actively involved in research, the National Health and Medical Research Council have made active consumer involvement in all research funding a prerequisite.

However, according to Banfield, "the actual uptake of the policy has been rather slow and tokenistic with mental-health research. The idea that people with 'a lived experience' of mental illness have expertise to offer in guiding research hasn't really caught on until now."

Banfield, 31, is doing her PhD at the ANU's Centre for Mental Health Research in the Depression and Anxiety Consumer Research Unit. Recently she received a substantial Rotary scholarship after spending many years living with undiagnosed bipolar disorder. The illness had a highly disruptive effect on her life: diagnosis and treatment gave her stability which led to a job as a research assistant with the centre, and then the scholarship.

"While I was working as a research assistant, I realised that while I had the bipolar under control I had the capacity to do what I'd always wanted to do – which is academia."

Bipolar disorder, which was previously known as manic depression, is a mood disorder that causes exaggerated mood swings between deep depression and manic highs. Sometimes it is accompanied by psychotic episodes, where the sufferer is disconnected from reality.

Banfield's research aims to determine what people who are suffering from bipolar and depression want from research.

"By talking to people who have personal experience of these disorders, you get a much better idea of what the research needs to be achieving."

The focus groups Banfield uses are composed of mental-health consumers. She found that many members of the focus groups were not aware of recent research into their particular mental illnesses, and some were unlikely to look up the reports. "What I want to do is

take this research, and hand it back so that people can read in plain language about themselves."

Her status as a mental-health consumer has also helped her to communicate with her focus groups. "The value of shared experience can't be emphasised enough. People seemed to appreciate the fact that when they were talking about how they had felt and what they had experienced that I also had first-hand experience of it and wasn't just an outside observer."

A mental-health disorder is subjective by nature, in that it changes the way the sufferer understands the world, and also changes their interactions with those around them. Such disorders influence emotions and perceptions, and often raise questions about the very essence of consciousness and self.

However, mental illness has a chemical, and perhaps even a genetic basis. Scientific research into mental health is therefore quite extensive, ranging from brain scans, to analysis of population patterns, to investigating trauma and social factors.

The first stage of Banfield's project is qualitative, she says, "which involves interviews and then sitting down and going through and drawing out patterns. This type of research is not very well accepted in the scientific community because it is subjective and not quantitative. It's quite hard to get qualitative research published in peer-reviewed articles that aren't about qualitative research."



Michelle Banfield: bipolar disorder had a highly disruptive effect on her life, but diagnosis and treatment gave her stability which led to a job mental-health research.

Picture: Karleen Williams

If I've got a passage from someone who discusses living with mental-health problems, it adds a richer layer to the research.

However, Banfield finds there is an advantage to qualitative research because it provides "a rounder picture".

"There's only so much numbers can tell you. Quotes from a participant give a context much more than a list of biological research. If I've got a passage from someone who discusses living with mental-health problems, it adds a richer layer to the research."

People living with the illness have a certain expertise in discussing it. Although still in the early stages of her research, she discovered people were interested in the issue of recovery.

"My own feeling is that research, particularly on bipolar might be very biological, but is that what people with bipolar think we should be focusing on, or

do they think that there is some other focus that will make the most impact? What will make most benefit people who haven't been diagnosed yet? And recovery is a theme that tends to come up."

The medical model for recovery from mental illness is based on assisting the consumer out of the crisis of an unmanaged disorder into medical treatment (which involves psychiatric drugs), then into rehabilitation and finally maintenance. In a way it's like fixing the car so the owner can drive it: the car being the brain and the brain chemistry; the owner representing the individual's sense of self.

The issue with the medical model is that often the "car" can't be fully repaired – medication regimes, for example, do not

always yield perfect results. For Banfield, recovery is more about accepting that the "car" may continue to have problems, but you can drive it anyway.

"Recovery is about living successfully despite having a mental illness. A lot of people would think of it as a cure. My psychiatrist calls it being in 'remission', which sounds like having cancer. I don't consider myself that way. Recovery is doing what I dreamed of, functioning like a 'normal' person and not having my mental health interfere with my life."

She feels that the medical model is not ideal for everybody – even though she believes it is very effective – and wants to know from other mental-health consumers what they want from recovery.

She considers that many people who develop a mental illness need to know what strategies to use to be able to become, as much as possible, functioning members of society. "It's not just about living with the mental illness, the question is, how do you live well? How do you function well? A lot of people asked, how can we contact people who do function well? It would be really interesting to do research with people who are out in the community and finding out what strategies they use in order to do that."

If you are interested in participating in research projects run by the ANU's Depression and Anxiety Consumer Research Unit visit www.anu.edu.au/cmhr/consumer.php

The head of the nation

By CARLA K. JOHNSON

Artists, sculptors and photographers knew President Abraham Lincoln's face had a good side. Now it is confirmed by science.

Laser scans of two life masks, made from plaster casts of Lincoln's face, reveal the 16th president's unusual degree of facial asymmetry, according to a new study.

The left side of Lincoln's face was much smaller than the right, an aberration called cranial facial microsomia. The defect joins a long list of ailments – including smallpox, heart illness and depression – that modern doctors have diagnosed in the United States Civil War-era president.

Most people's faces are asymmetrical, said Dr Ronald Fishman, who led the study published in the *Archives of Ophthalmology*, but Lincoln's case was extreme, with the bony ridge over his left eye rounder and thinner than the right side, and set backward.

Lincoln's appearance was mocked by his political enemies, historians say. The author Nathaniel Hawthorne, a Lincoln fan, wrote of the president's "homely sagacity" and his "sallow, queer, sagacious visage."

Hawthorne's description was deemed disrespectful and deleted by a magazine editor, said Daniel Weinberg, owner of the Abraham Lincoln Book Shop in Chicago.

Gutzon Borglum, the sculptor of Mount Rushmore – the South Dakota monument featuring the visages of several US presidents – described the left side of Lincoln's face as primitive, immature and unfinished. When Lincoln was a boy, he was kicked in the head by a horse. Laser scans cannot settle whether the kick or a developmental defect – or neither – contributed to Lincoln's lopsided face, Fishman said.

Life masks were in vogue in the 1860s, said James Cornelius, curator at the Lincoln Presidential Library in Springfield, Illinois.

Lincoln cooperated with sculptors to make them twice, probably for political purposes more than posterity, Cornelius said. "It's the equivalent of TV face time now," Cornelius said.

http://archopt.ama-assn.org/

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Without better scientific education, the blame game will continue

We've heard it all before: enrolments to science courses have dipped over the years in Australian universities, our kids are not sufficiently proficient in maths and the sciences even at the primary and secondary school levels, the government should do more to encourage science education.

The problem isn't just that innovation is at risk. There is also, and will continue to be, a general lack of appreciation of science and technology within the areas that affect our everyday lives: business, law and politics.

The appreciation is not just



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valuable for its own sake, but also a key component to actually moving forward with many of today's pressing issues.

For example, take global warming, science's current poster child in mainstream society. How many of us know anything about it beyond what Al Gore discussed during his 90 or so minutes on the silver screen? For those of us who've actually tried to keep up

with the issue of global warming and carbon emissions, how many of us have had that creeping suspicion that some of the "experts" who are weighing in have their own economic and political agendas beyond the conclusions from the straight facts that current science affords us?

To be sure, this is not a new problem. Talk about science and technology has always become politicised when the stakes are high. And by stakes, unfortunately the cynic in me fears it is more than not financial stakes that trigger interest.

Five years ago, biotechnology companies were under fire for overcharging us, and they hit back

by claiming that the research process is a lengthy and costly one. Going back a decade, it was the entertainment industry waging its crusade against file-sharing technologies. And 15 years ago it was the labelling of GM foods.

Politicised debate, as we all know, is usually a blame game – politicians blaming business leaders for polluting the environment, business leaders claiming ignorance and blaming the government for not putting in tighter measures, and scientists frustrated that both government and business don't listen to them.

At the end of the chain, the public is left confused.

By confused I don't just mean leaders and businesspeople don't understand the results the scientific community are presenting to them.

The problem goes much deeper: it's a clash of cultures. To understand a scientific fact does not just involve comprehending the result and its implications, but also appreciating the methodology and reasoning processes employed, and the assumptions held. On the other hand, business and political decisions are reasoning processes that result in a conclusion that holds true only within a certain context.

Interdisciplinary education is needed to solve this clash of

cultures. It is not enough to have the odd "Product Development 101" class in, say, a Pharmacy course or a "Managing Research and Development" class for a Commerce course.

Such courses more often reinforce stereotypes of the "other's" culture, but far from seen as a central part of the degree.

Furthermore, making conclusions about scientific or business culture from one course is akin to drawing conclusions about a culture after a two week holiday in that country.

Science, which tries to produce timeless conclusions, does not exist outside of society. Society,

however, changes all the time and businesses and politicians need to operate with that key premise in mind. Until both cultures can understand and truly appreciate that they're operating under vastly different premises, the blame game will continue.

The *Triple Helix*, an international undergraduate-run interdisciplinary journal, tries to address this problem at the grass-roots level. Publishing a print edition of the journal twice a year and a continual stream of shorter articles on the website, *TTH* aims to get students involved with science issues through the filters of economics, politics and law.

Articles are drawn from students'

work during the semester, but re-edited to address larger issues from other disciplines. With chapters in more than 23 universities across four continents, members are also given the opportunity to interact with students and engage with ideas from other universities. Finally, while the print journal remains the cornerstone of *TTH* activities, running an international organisation gives students invaluable management experience.

Herry Basuki is president of the Sydney University Chapter of the Triple Helix.

www.thetriplehelix.org

CSIRO SCIENCE CLUB

CSIRO's Double Helix Science Club is great for kids aged seven to 18. Visit www.csiro.au/18. Helix or call 6276 6643.



- 1) What is carphobia the fear of?
- 2) Who first proposed a heliocentric model of the solar system?
- 3) What is the name given to the study of individual human identification based upon one or more intrinsic physical or behavioral traits?
- 4) Clapper, suspension, swing and trestle are types of what?
- 5) True or false: are equine influenza and bird flu related?

1) Meat 2) Nicolaus Copernicus 3) Biometrics 4) Bridges 5) True. Equine influenza is caused by a strain of influenza virus that is related to, but differs from, the strain causing bird flu. A test developed for bird flu by CSIRO and the Australian Biosecurity Cooperative Research Centre is being used to test horses for equine influenza.