

# Biotechnology

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See page 3 for an important message from the publisher

## Mixed results in latest floats

RENATE KRELLE AND GRAEME O'NEILL

Australian investors' respect for medical device technology was backed up last week by the fortunes of three life science listings on the ASX.

Collectively, Sunshine Heart, Acrux and Proteome Systems have raised more than AUD\$60 million.

Sunshine Heart (ASX:SHC) listed on the ASX early in the week at \$0.60 – 10 cents above its issue price – before levelling out.

But Acrux (ASX:ACR) and Proteome Systems (ASX:PXL) made their long-awaited market debuts, on Wednesday and Thursday respectively, at discounts.

Within 30 minutes of opening, Proteome's shares dipped briefly to 83c from their opening price of \$1, and before steadying at 85c.

Founder and CEO Keith Williams was sanguine about the markdown,

attributing it to investors' unfamiliarity with Proteome Systems' business. The company is both a developer and manufacturer of proteomics tools and systems, as well as being involved in proteomics research and commercialising its own discoveries.

"At this early stage it is what it is," Williams said. "The market will judge, but the important question is where our share price will be in a year's time.

"For the next 12 months we're going to be very focused on our business and as we tell our story, investors will begin to understand what we do."

Proteome has developed an integrated suite of high-throughput robotics tools, including 2D electrophoresis gels and mass spectrometers, for purifying identifying and characterising proteins.

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## 'Open-source' initiative unveiled

GRAEME O'NEILL

Last week, an international movement was born – one that aims to loosen the grip of the world's biggest life science corporations on key enabling technologies and patents for biotech R&D.

The Biological Innovation for an Open Society (BIOS) initiative is the creation of US-born molecular geneticist Dr Richard Jefferson, founder and CEO of CAMBIA (Centre for the Application of Molecular Biology to International Agriculture) in Canberra.

BIOS is an attempt to establish an open-source technology movement in the biotechnology industry, similar to the computing industry's open-source software movement.

An editorial in *Nature* last week said the BIOS intellectual property database and its associated informatics "promise to bring more transparency to the opaque patent web and to provide tools to guide decision-



Jefferson

making when choosing technologies".

In practice, BIOS provides biotechnology with its own free 'operating system': a public-domain toolkit and associated patents, aimed at freeing researchers world-

wide to innovate without restriction, and without being forced into partnerships or unfavourable royalty agreements with the big corporations that currently dominate the pharmaceutical and agbiotech industries.

"In today's biotechnology industry, companies have to fight viciously just to get to the starting gate, before they even run the race, and it results in enormous amounts of money and goodwill being squandered," Jefferson said. "With BIOS, companies will be able to develop commercial products, but it will restore sensible competition at the level of the product." \*

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## Top researchers plea for funds

GRAEME O'NEILL

On the eve of the federal election, some of Australia's most famous medical researchers have signed an open letter to prime minister John Howard and opposition leader Mark Latham asking them to increase funding for medical research.

In a letter published in *The Australian* last Friday, 16 luminaries of medical research warned that despite a doubling of funding for medical and health research grants made by the National Health and Medical Research Council, Australia now lies at the lower end of the spectrum for medical research expenditure by OECD countries.

Signatories included Nobel laureate immunologist Prof Peter Doherty, bionic ear pioneer Prof Graeme Clarke, who won this

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# Unleashing open-source biology

**A new initiative, similar to IT's Linux movement, could be the vital spark to drive biotechnology innovation, reports Graeme O'Neill.**

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**■ If Australia backs BIOS, it has an opportunity to become a leader in biological innovation**

In practice, BIOS provides biotechnology with its own free 'operating system': a public-domain toolkit and associated patents, aimed at freeing researchers worldwide to innovate without restriction, and without being forced into partnerships or unfavourable royalty agreements with the big corporations that currently dominate the pharmaceutical and agbiotech industries.

For several years, CAMBIA researchers and IP experts have been working on what Jefferson describes as a "comprehensive work-around" to some of the key patents on enabling technology that form the core of biotechnology innovation. They have developed a core toolkit of patented techniques that will expand into a protected 'commons', protected by licenses and other contracts, as biotechnology researchers and agencies around the world contribute new ideas and refinements.

Jefferson, who developed the renowned GUS marker technology for highlighting patterns of gene expression patterns in plant and animal tissues, believes the use of biotechnology's core tools only for corporate profit rather than as a broad base for innovation, has stifled productive and creative innovation and impeded urgently needed solutions to agricultural, health and environmental problems in developing nations – and in much of the industrialised world.

He says BIOS recognises an important distinction between the tools for innovation, and the products of innovation.

The current system, Jefferson believes, has failed to address problems like the lack of sustainable food production, fragile rural economies, poor nutrition, environmental degradation, and poor public health practices and given insufficient attention to diseases and medical conditions of poor people in marginalised communities.

## Creativity

Jefferson says the discouraging lack of progress towards sustainable, local solutions stems from a structural and systemic failure in the way science is used as an instrument of economic and social development. He argues that BIOS will facilitate a bottom-up, rather than a top-down, approach to biotechnology innovation.

Disadvantaged nations or groups will be able to exercise their creativity to develop sustainable



solutions suited to their own circumstances, instead of having to accept or adapt products developed by large corporations that do not always suit their needs.

He argues that, instead of being privately owned and exploited for profit, the tools for innovation should be a 'commons': a shared, public resource, freely accessible to all researchers and businesses, with everyone contributing to their improvement.

It will also make it possible for researchers around the world to use the internet to initiate collaborative research projects for the common good, or for diverse, lower-margin business interests rather than exclusively for corporate profits.

Jefferson believes BIOS will evolve in a similar way to Linux. As more biologists contribute to the BIOS cause, the shared tools will improve to a point where they become superior to today's heavily protected, privately owned technologies. They will drive new innovation, which will require more new tools to be added to the 'commons' toolkit.

Individuals or companies will still be able to apply the tools for their own profit, but the BIOS initiative will require companies to contribute know-how and biosafety information towards improving the quality and relevance of the public resource.

"With the BIOS initiative, companies will be able to develop commercial products, but it will restore sensible competition at the level of the product. It will be good for companies, by freeing them to pursue entirely new models of business," Jefferson said.

## Opportunity

Jefferson said any multinational biotech and pharmaceutical companies that might perceive the BIOS initiative as a threat to their business should consider the experience of computing giant IBM, which embraced the open-source movement. "IBM has shown that even an enormous corporation can be extraordinarily nimble in pursuing new business models, and putting serious money into developing new products and relationships," he said.

Jefferson believes agricultural biotechnology will be among the major beneficiary of the BIOS initiative, and that Australia has a major role to play. "Agbiotech has been the runt of the biotech litter," he said. "Margins are lower, so investment has been slower.

"Yet it's the most profoundly important sector in terms of human well-being – hence the urgency of implementing this new public-good business model. If Australia decides to back the initiative, it has an opportunity to set up a completely new business paradigm, and to become a leader in creatively using all forms of biological innovation in agriculture – it's much more than just 'biotech business as usual'. We need to do it to leverage our skills in the area – it would be a marvellous thing."

Jefferson is close to delivering on his promise, made earlier this year, that CAMBIA would provide a "complete work-around" for agbiotech innovation: a set of techniques and public-domain patents that will enable small agbiotech companies or even public agencies to innovate and deliver their innovations without excessive obligation to the biotech barons.

He says CAMBIA will soon publish details of keystone technology – a turnkey gene-transfer technology for plants, that it has been developing and testing since 2001.

Jefferson predicts that, as researchers in the BIOS community become familiar with the new technology, and contribute their own improvements, it will drive innovation in new directions.

He said he is pleasantly surprised at the interest that IP and research managers in large corporations and public research agencies like Australia's CSIRO and the Rural Research and Development Corporations are showing in open-source biology – organisations which, given their investment in proprietary technologies, might have been expected to oppose the concept.

He believes that the interest reflects the growing awareness that the current innovation system and its obsession with ownership, rather than access, is not up to the task, and that collaboration may hold the key to progress. ✱