

# Risk

ENCOURAGING INNOVATION IN VICTORIA

A COMPONENT OF A MICRO-PUMP.  
SEE PAGES 8 AND 9 ON CREATING  
A MICRO/NANO MANUFACTURING  
INDUSTRY IN VICTORIA

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# AND e w a r d

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# The partnership approach

Linking with big pharmaceutical companies and collaborating with universities has helped AGT Biosciences through its start-up years. **Report by Kath Walters**

CASE STUDY

Through the early 1990s, Deakin University's then professor of health sciences, Greg Collier, watched many biotechnology companies collapse while others became multi-billion dollar enterprises.

Collier, who is now the chief executive of the publicly listed AGT Biosciences, says: "I looked at how the big biotech companies in America, like Millennium and Curagen, developed and progressed, and decided that was the strategy I wanted to follow." Partnering with pharmaceutical companies and collaborating with universities is at the heart of Collier's strategy for success. This approach has helped the company navigate the more difficult start-up years and is now showing results.

Collier formed his Geelong-based genetics research company with Professor Paul Zimmet, director of the International Diabetes Institute. AGT Biosciences, called Autogen until this year, got financial backing from mining figure Joseph Gutnick after Zimmet had a chance meeting with him. As a wholly owned subsidiary of Gutnick's listed company, Australia Wide Industries Ltd, Autogen raised \$8 million in 1997.

With money in the bank, Autogen pursued the strategy that sets it apart from many of its rivals, and past failures. Collier says: "Some biotech companies try to sell their core technology to various people, and build up cash to develop their own intellectual property. The problem is they get stuck providing services, and never raise adequate funds to do the research. We raised money initially, put that into making sure we generated intellectual property and then developed partnerships with key pharmaceutical companies."

Phillip Wing, executive director of Technology Venture Partners (TVP), says the market's available capital determines the strategy a biotechnology company uses to build its business. "There is a capital-intensive model [such as AGT's], or a non-capital intensive model, in which you build something and license it off early."

Companies that successfully commercialise their own intellectual property are worth more than those that license it. Wing says: "The big danger with other models is that you don't capitalise on your IP and the know-how around that."

AGT has had its share of start-up problems, despite its scientific achievements such as discovering new genes associated with depression and obesity. In July 2002 Gutnick sold his shares to listed investment group Charter Pacific Corporate, which became the major

shareholder. AGT has since cut costs, including administration charges slashed from \$7.2 million in 2001-02 to an expected \$2 million in 2002-03. Collier says: "We expect to be cashflow positive in 2003-04." Revenue in 2002-03 is expected to be \$5.5 million, up from \$4.7 million in 2001-02.

AGT seed-funded eight projects after its first capital raising, with amounts as low as \$250,000. It then whittled its projects down to three: one with the International Diabetes Institute in Melbourne, funding 12 researchers; a human genetics project at Deakin University's Geelong Campus, with 10 labs and 40 researchers; and a functional genomics and protein discovery facility in Texas, USA, with three people and access to a super computer for genetic analysis.

AGT makes money in two ways. It sells validated gene and protein drug targets to pharmaceutical companies, which screen them against their chemical libraries to develop new drugs. Collier provides an example. "We have identified that a novel protein in the brain is too high in obese animals — that is a 'pathway' involved in regulating food intake. We have patented that protein and pathway and sell it to



the pharmaceutical companies, who screen for chemicals that will blunt it a bit, so the stimulus to eat may be reduced."

AGT is also paid for research and development by its partners, which include French pharmaceutical company, Merck-Sante, which has committed more than \$37 million to its diabetes and obesity programs, paid when the company reaches research milestones.

A third source of income, as yet unrealised, is payment of royalties (of 5-7%) from the resulting products. There are billion-dollar pharmaceutical markets in areas such as diabetes, an illness in epidemic proportions worldwide. Collier says: "Everyone wants a blockbuster, but if you don't have a sustainable business structure, you won't be in business long enough to get there."

PHOTOGRAPH BY PETER GLENANE

# Report card on CRCs

Federal and Victorian reviews give CRCs a big tick and identify a few wrinkles that need attention. **Report by Amanda Gome**

Co-operative Research Centres are having a positive effect on the interaction between academics and industry, but the CRC program has inherent weaknesses. These include a lack of focus on the commercialisation of research, which should be addressed to improve their performance.

These are some of the conclusions from a review of Victorian CRCs, conducted for the State Government's Science, Technology and Innovation Initiative by accountants William Buck and Marsden Jacob Associates. Their findings were fed into the federal review of CRCs conducted by Howard Partners, released on August 22, which will be used to update the program.

CRCs were set up in 1991 to strengthen collaborative research links between industry, research organisations, government and education institutions. The CRCs undertake long-term collaborative research and are usually funded over seven years, although many apply for a second and third round of funding.

One of the objectives of the CRCs is the commercialisation of the collaborative research. The CRC program has produced some outstanding successes, such as those from the CRC for Cochlear Implant and Hearing Aid Innovation, and the Australian Photonics CRC, which in 2001-02 seeded one new start-up, licensed seven technologies and lodged 32 provisional patents.

However, the Victorian report found potential opportunities for commercialisation were being missed and that funds need to be made available for the commercialisation process. Mark Evans, senior manager of the consulting group at William Buck, says that when funding is allocated to CRCs, it goes to research and nothing is earmarked for commercialisation. "It is not a key focus in the set-up, so you either have to put funds aside at the beginning or have a separate fund for commercialisation."

Another key recommendation from the Victorian report was for clearer criteria to be established for the setting of success and performance objectives. The objectives set for CRCs are very broad. "They need to be far more specific to assist the CRC in its direction and to measure its performance, including government evaluation," Evans says.

Reporting should also be improved. Benefits from the CRC program are not easily quantifiable and performance indicators are not consistently applied and are questionable in their relevance.

Although the CRCs measure inputs, most do not measure the opportunities pursued or the revenue generated. "They look at papers published but not referenced by other researchers. They count spin-offs but not how many succeed and fail."

Another main finding of the Victorian review was that the composition of CRC boards in terms of numbers and skills could be more

clearly prescribed to improve performance. Evans says that by the time all the participants are represented there might be 20 people on the board, whose skills are not always appropriate.

The report recommends a joint venture structure be introduced to improve the management of intellectual property and technology transfer options. It also recommends improving the participation agreements to allow proper management structures to be implemented, to enable negotiations to take place during the commercialisation process.

Currently, Evans says decision-making can be blocked by one individual. A business might not want to pursue some promising research because it does not fit the company's long-term goals; a scientist might feel funding should be used for other research and block the use of funding for commercialisation.

The challenge of getting small and medium-size businesses to participate in CRCs must also be addressed, the Victorian report says. SMEs find the level of commitment required and the time period of the commitment (usually seven years) a big ask, given their limited resources, Evans says.



## THE RECOMMENDATIONS

### VICTORIA'S CRC REVIEW SUGGESTS

- Clearer criteria must be established to set success and performance objectives.
- All CRCs should report on performance measures.
- Funding should be set aside for the commercialisation phase of a CRC.

### HOWARD PARTNERS' RECOMMENDATIONS

- The CRC program has moved towards demand pull (research focused) and this needs to be redressed with monitoring and outcome requirements to reflect this.
- CRC bids should be like an investment proposal with proposed outcomes identified and quantified.
- CRC association should be provided with funding to develop standard tools to fast-track CRC administration.

## FOR MORE INFORMATION ON THIS

Tony Surtees, Tel: (02) 9555 4777; e-mail: tony@scgroup.biz,  
Christopher Prince, Tel: 9225 5281; e-mail: chris.prince@avalonsoftware.com.au  
Victorian Expatriates Network: www.innovation.vic.gov.au; e-mail: ven@innovation.vic.gov.au

# Master class for entrepreneurs

Tony Surtees assumes those attending his workshops know their business. His job is to help them understand the way of American markets. **Report by Lucinda Schmidt**

**T**echnology entrepreneur Nick Russell says he came away “shell-shocked” from a VCAP-organised trip to the United States last year. The cultural differences between Australians and Americans really floored him. “They will come straight up to you and say ‘What’s your 30-second spiel?’ You must be able to deliver it effectively and convincingly.”

Cultural differences were a major theme of a workshop that Russell attended in June, run by Tony Surtees, the director of the strategic marketing consultancy Santa Clara Group. The workshop, *Inside the Silicon Valley Mind*, was organised by the Victorian Expatriates Network (VEN), for eight technology start-ups that are in various stages of breaking into US markets.

Surtees, a founding vice-president of the Yahoo! Commerce Group, says he designed the workshop to have very different content to what most start-ups hear. Instead of rudimentary tips, he focused on how entrepreneurs must get their psychology and image right.

“I assumed that people had dealt with the basics of setting up their business — the IP, etc,” he says. “Instead I got them to focus on what the people they deal with are thinking — the mentality of the Silicon Valley decision-maker.”

Surtees says that the average level of entrepreneurial skill is much higher in the US than in Australia — and Australian entrepreneurs must take this into account when they are pitching to Americans. “US entrepreneurs get trained about the enterprise-creation process and the concept of wealth creation through business building. In northern California, particularly, the concept that being an entrepreneur is a good thing has almost reached a spiritual level.”

In contrast, Surtees says Australia is much more conservative, with a lower risk mentality. “People who emerge as entrepreneurs here do it by crashing through levels of indifference and other barriers. Silicon Valley culture is a meritocracy — possibilities turn into realities. Money-making is a consequence of successful innovation, but not the focus. There is a pooling together of very bright people who are highly motivated, all with a dream and a vision.”

He notes that despite the gloom and doom spread by much of the general media after the tech-wreck, Silicon Valley is far from dead — it is just in a new phase of development. “People have more sustainable approaches to building business models, bigger companies are acquiring the remnants of previous iterations, taking the best, adding to them and commercialising them. There’s a great deal of optimism.”

Surtees’ June workshop explored these psychological aspects through a two-hour question and answer session centred on 10 tips (see panel). The issues that emerged for the

participants could be grouped into three key themes: How do we get enough cash to survive and fund growth?; the state of the venture capital market in Australia and the US; and how do we get people to understand what we do?

Nick Russell founded the cartoon character messaging service Inchain (formerly e-clips) in 1999, and already 90% of the Melbourne-based company’s business comes from the US. He hopes to set up a US office by 2006, after moving into Asia next year. “The workshop made me realise that we are further away [from setting up in the US] than we thought, especially in terms of developing our personal network and working closely with our existing partners.”

Russell has already implemented one change, based on Surtees’ presentation: trying to be more “purposeful” with his existing US partners, talking to them more directly and effectively, with less “chit-chat”. Longer-term, he says the workshop emphasised the need for him

to develop a stronger personal network, better presentation skills and a greater understanding of the market and potential partners.

Chris Prince, a director of Avalon Software, also went to Surtees’ workshop. He hopes to take his knowledge management software to the US in about 12 months. The message for him was the importance of aligning marketing to product development, by identifying the target market, understanding customer requirements and using these to form a marketing plan. “A lot of marketing misses the mark,” says Prince, who has held senior marketing positions in large corporations. “Make sure that you’re spending your marketing dollar where you will really get traction.”

Another important lesson for Prince was to “get outside the building”. Surtees talks about working on your business, not in it. “You have to get out there, be in the market, so you can understand what the market wants,” Prince says.

PHOTOGRAPH BY NOEL BUTCHER



TONY SURTEES, FRONT, WITH WORKSHOP PARTICIPANTS

## TONY SURTEES’ TOP 10 TIPS

- 1 BE RELEVANT** Understand the needs of the marketplace by getting out there, rather than theorising about what customers want.
- 2 UNDERSTAND THE PSYCHOLOGY** Australia has a much more conservative attitude to entrepreneurs, and a lower risk mentality. In Silicon Valley, the support and encouragement for entrepreneurs is almost at a spiritual level — being an entrepreneur is a good thing.
- 3 FIND A REAL MENTOR IN THE RIGHT AREA** Australian venture capitalists tend to be former investment bankers or lawyers who have generalised knowledge across multiple sectors. Americans tend to know a lot about a narrowly focused vertical — look for someone who knows everything there is to know in your area, and who has credibility.
- 4 FORGET ABOUT BEING AN AUSSIE** No one cares that you are Australian. Are you relevant to their needs?
- 5 BE INTERNATIONAL** You have to look, feel and smell like a US company. It’s good to say you have expertise in other markets, including Australia, but don’t dwell on Australian clients — they probably don’t have much recognition in the US.
- 6 HAVE ‘FRONT’** You are there to network aggressively to try and achieve commercial objectives — don’t be as careful and as hesitant as you would be in Australia. Have an ‘elevator speech’ that gets your point across in the time the elevator takes to climb 10 floors.
- 7 NETWORK** You are at a disadvantage if you don’t constructively network with a purpose. Australian culture frowns on being seen to “use people” but everyone does this anyway.
- 8 DON’T BE AFRAID TO SHOW YOUR FAILURES** In Australia, it is not OK to fail. In the US, failure is seen as a necessary prerequisite to success. No one is taken seriously unless they have some failures and mistakes, and are able to articulate what went wrong, how it went wrong, the consequences and what they have learned.
- 9 BE THERE ON A REGULAR BASIS AND FOLLOW THROUGH** Go to the US every two or three months, and have a US address. If you’re not there you don’t exist.
- 10 WHO KNOWS YOU, NOT WHO YOU KNOW** A lot of people have their e-mail address book full of names and numbers. More important, however, is the capacity to get an important person to commit to a date in their diary.

## YOU’RE US-READY WHEN:

- The technology and business model are proven.
- You have a great team with the right skills.
- Your company sounds, looks and smells like a US firm.
- US partners are in place.
- Packaged to be attractive to a US-based financier.

FOR MORE INFORMATION ON THIS

www.bendigobank.com/communityenterprise

Andrew Cairns, Tel: (03) 5454 5000; e-mail: andrew.cairns@communitytelco.com.au

FOR MORE INFORMATION ON THIS

www.innovation.vic.gov.au

# United they prosper

First came the Community Banks. Now the Bendigo Bank has helped rural groups join to secure cheaper telecommunications and has a plan for energy. **Report by Amanda Gome**

**R**ural communities are fighting back. Fed up with the withdrawal of essential infrastructure and services from their towns, locals are banding together to strike better deals with infrastructure providers.

The initiative, called Community Enterprise Australia, has come from the Bendigo Bank. Five years ago the bank came up with a business model that put the community in control of their direction and capital flow. Local people raised capital to provide banking services. There are now 105 Community Bank branches nationally.

With the communities galvanised, the next logical step was to look at other main infrastructure needs. The bank started Community Enterprise Australia (CEA) to look at rolling out the business model to such services as telecommunications, e-commerce and energy.

Already two telecommunications pilots have been successful (in Bendigo, Victoria, and Ipswich, Queensland), and others are planned. Andrew Cairns, managing director of CEA, says: "Telecommunications suppliers focus on large markets, which means locals pay more and find it harder to access new services."

Cairns says three years ago the Bendigo community got together to gauge the level of support, pool demand and develop a feasibility study and financial projections for a local publicly owned company, Bendigo Community Telco.

They issued an information memorandum and raised the capital locally to cover the start-up

phase. The development of the back office support systems was underwritten by the Bendigo Bank.

AAPT won the tender. The pilot resulted in a reduction of 5–30% in core costs for telecommunications users and created 19 jobs in the community. "If you want something you have to do it yourself. Otherwise you are at the beck and call of others," Cairns says.

Leigh Watkins, manager, strategic markets group, at Bendigo Bank, says there is a great deal of interest from communities around Australia to set up telecommunications companies by issuing prospectuses. "Already we have \$20 million in demand for telecommunications and we plan to have 30–40 community telcos, which means we can pool up to \$100 million of demand. We are already putting this to major carriers."

CEA, which tenders for the services, is majority-owned by Bendigo Bank. CEA will sell franchises to the publicly listed Community Enterprise. A franchise can cost \$200,000.

Community Enterprise companies can be listed on the Bendigo Stock Exchange so shares could be traded at any time, which limits the maximum shareholding of an individual and prevents any one person gaining control.

"The bank wants to become more relevant to communities. If we can help them to be successful, we can be successful," Watkins says.

Another example of community enterprise at work is in Dunolly, in central Victoria. It has an ageing population of 650 and high

unemployment. A large proportion of the houses have wood fires for heating and cooking. When the State Government limited access to the Box Iron Bark Forest, people could not access firewood and the search for another source of energy became urgent.

Farmer and business consultant Ray Newdick says: "We were too small to get the attention of government so we got the community together and working along the metrology of Community Enterprise, we got a project proposal up."

The town wants a storage tank to provide reticulating LPG through the town and a gas cylinder filling station. Newdick hopes the cost would be shared with the Government through a joint venture. "They would pay half the costs and the community the rest through a shares subscription. The bank has a proforma prospectus and has offered \$150,000 in software and infrastructure."

Newdick says the benefits would be huge for those reliant on firewood and a reduction in costs for those using LPG. "It will also create employment in the town."

PHOTOGRAPH BY PETER GLENANE



ANDREW CAIRNS: "IF YOU WANT SOMETHING YOU HAVE TO DO IT YOURSELF"

## BENEFITS OF BANDING TOGETHER:

- Cheaper prices for essential infrastructure and services.
- The local company creates jobs.
- Profits are retained locally.
- Bendigo Bank receives franchise fees and margin.
- Bendigo Bank benefits from increase in local banking services.

# Winner's work in the cells

David Vaux's curiosity discovered the need for cells to die, which changed the course of medical research. The \$50,000 Victoria Prize will help him continue his work. **Report by Emily Ross**

**I**n just six years since the inception of the Victoria Prize and Fellowships, recipients have covered a lot of ground, from research into mining waste disposal, heroin overdose prevention and membrane technology, through to malarial parasites and helicopter gearbox fault diagnosis.

The awards aim to celebrate talent in the state's science, technology and engineering fields. Previous winners of the \$50,000 Victoria Prize include cochlear implant pioneer Professor



DAVID VAUX: THE SAME PROCESS THAT TURNS A CATERPILLAR INTO A BUTTERFLY IS ALSO AT WORK IN HUMANS

Graeme Clark, and Melbourne chemical engineer Professor David Boger for his work with fluid mechanics.

This year's recipient of the \$50,000 prize is cell researcher Dr David Vaux, a senior principal research fellow at the Walter and Eliza Hall Institute. Vaux has specialised for 15 years in the study of apoptosis: the when, why and how of cell death. (In all animals cells must die as new ones form, to maintain the correct number of cells.) For its support of Vaux's work, the Walter and Eliza Hall Institute received the Anne & Eric Smorgon Memorial Award of \$100,000 from the Jack and Robert Smorgon Families Foundation.

Vaux's 1988 study was the first to identify a specific gene, bcl-2, that controls cell death in mammals. Vaux found that the same process that allows a caterpillar to become a butterfly is at work in all animals, including humans. It has become the most widely referenced research paper by an Australian scientist for the past 25 years. The findings changed the course of research and potential treatments of cancer, stroke, heart attack and auto-immune disease. Previously cancer was thought of largely as a disease of excessive cell production, not one wherein cells were failing to die. Cells that avoid programmed death are subject to additional genetic mutations that can ultimately lead to a cancerous state.

His work today continues to centre on

## VICTORIA FELLOWSHIPS

Six Victoria Fellowship winners will each receive \$15,000 for overseas study in their chosen fields. They are:

**TANYA MEDLEY** a PhD candidate at Melbourne's Baker Heart Research Institute, who is investigating the genetic basis of large artery stiffening. Medley plans to visit the Institute for Stem Cell Research in Edinburgh to facilitate long-term collaboration.

**DR BARTEK WYDROWSKI** from the Centre for Ultra-Broadband Information Networks at the University of Melbourne. Wydrowski's doctoral studies have resulted in technology that significantly improves the performance of the internet and ensures the stability of its infrastructure.

**DAN BILLING** who is developing an in-shoe measurement system comprising of micro/nano sensors used to monitor the performance of track and field athletes. (See story, page 8.)

**SANDRA HAUKKA** who is looking at how research training in science and technology fields is linked to innovation. Her goal is

to devise practical strategies to encourage innovation outcomes for her fellow PhD students.

**DR ARNAN MITCHELL** is a research fellow with the Microelectronics Materials and Technology Centre at RMIT University. He plans to investigate the manufacture and packaging of photonic devices.

**TAM VUONG** a PhD candidate with the Victorian College of Pharmacy, is investigating the safe use of medicines, a critical area of policy and practice as medication-related problems are a serious health risk, as well as financial burden on the health system.

apoptosis, and the subsequent development of anti-cancer therapeutics. Vaux believes that the primary importance of the commercial biomedical sector is to translate discoveries to the bedside where they will help patients, not just for economic benefit. "Of course if jobs and income are generated, that is nice too," he says.

Vaux likens science in Australia to an orange grove. "We are spending just enough on juicing plants and fruit pickers, but we are not providing nearly enough fertiliser, water and sunshine," he says. "There needs to be much more support for basic, curiosity-driven research."

PHOTOGRAPH BY PETER GLENANE

FOR MORE INFORMATION ON THIS

www.nanovic.com.au  
 www.microtechnologycrc.com  
 www.minifab.com.au

# Micro/nano demands a rethink on manufacturing

Buying new equipment is just the start for manufacturers of the future. They need a whole new mindset, which begins with the design process, visiting experts say. **Report by Tim Thwaites**

**M**ention of manufacturing tends to conjure images of noisy factories, where machines clank, whirr and grind, and widgets move along production lines having parts added until they arrive to be packed. A better image of manufacturing for our times can be found in the plants that make computer chips. Here products are made quite differently: they are grown, layered and etched in batches of tens or hundreds of identical units on a wafer of silicon.

As we move into an age where micro and nanotechnology become more prevalent, the engineers who design our products are still being educated as if everything were assembled from component parts. That is one of the conclusions of two experts the Victorian Government has engaged to advise it on establishing a bio/micro/nanotechnology (Bio-MNT) industry in the state.

Dr Bob Mehalso from New York and Patric Salomon from Berlin both have wide experience in the Bio-MNT industries of the US and Europe respectively. They visited Melbourne in July to assess Victoria's Bio-MNT research, how best to use it and to suggest what is needed to foster industry.

Both are impressed with the quality of Victoria's research capabilities and

infrastructure, particularly in biotechnology. They have no doubt the state can churn out plenty of ideas to be commercialised. But it is in turning these ideas into products where Victoria falls down. And that's why they zeroed in on design, and the education of the engineers responsible for it.

Design is what turns a good idea into a useable product at a reasonable price. And the advent of Bio-MNT has led to a completely different approach. Microtechnology works on a scale of thousandths of a millimetre, and nanotechnology even smaller, at the molecular level. On this scale instead of making individual bits and pieces and putting them together to build more complicated systems all of the components and their connections have to be fabricated as one unit.

This makes the design process more complicated and demands different sorts of expensive manufacturing equipment. Instead of milling machines, lathes and moulds, the technology has such names as photolithography, ion deposition and excimer lasers. Operating it efficiently demands different sorts of skills.

But once a Bio-MNT product has been designed in the right way, the costs come down dramatically because it can be replicated very

cheaply in batches. "It all starts with design," Mehalso says. "All the steps in the process require design. Governments typically spend money on research, but that ends up being less than 10% of the whole agenda of getting to a product."

Mehalso and Salomon say Bio-MNT involves more than simply buying the right equipment, training people to use it, and setting them to work. It takes a whole new mindset, which demands new approaches to education. And, says Salomon, it doesn't stop with

## DESIGN OF A BIO-MNT PRODUCT DETERMINES HOW IT IS MADE

engineers. "You also need technicians and operators of the equipment."

For reasons of industry structure and natural conservatism, neither Mehalso nor Salomon expects existing manufacturing companies to be interested in investing in Bio-MNT. So that means starting from scratch with small entrepreneurial companies.

"You can do a lot of design, and simulation and prototype production and testing on a small scale," says Salomon, who has experience in putting together special design projects for the European Commission. It is not so expensive, he says, but involves a lot of networking to bring

together the right sorts of skills (see below for an example of collaboration).

The MiniFAB — a facility that brings together companies and research groups that have an interest in Bio-MNT with the technology and equipment to allow them to build and prototype their ideas — is just the sort of environment where this can happen. It opened last October in the Caribbean Park business estate in the south-eastern Melbourne suburb of Scoresby.

That's where another set of problems arises, says Salomon — in the manufacturing. It is important to note that Bio-MNT differs from conventional manufacturing in the very fact that the design itself determines its manufacture. "Design engineers must know how they are going to make the integrated product. That's part of the design," Mehalso says.

But Australia lacks any high-volume manufacturing facility to fabricate the products that emerge. Salomon believes this gap might be plugged initially by having products manufactured abroad by European or Asian partners. Then the profits could be ploughed back into establishing manufacturing facilities in Australia. After all, at that point local designers would already have demonstrated how successful and profitable their skills are. And, as Mehalso says: "The manufacturing playing field is level. No one has an advantage. Australia has just as good a chance as anywhere else."

## A data track to the Games

Olympic gold can be won by the tiniest of margins. And by recording every move athletes make, microtechnology might just give the edge. **Report by Tim Thwaites**

**J**ust outside the iconic dome at the Australian Institute of Sport (AIS) in Canberra, a metal force sensor plate is set into the athletics track. When an athlete's foot hits the plate, a series of measurements are recorded for later analysis. It may sound high-tech, but it's rapidly becoming antiquated.

A new microtech world of athletic performance monitoring is dawning, where the force plate is replaced by customised plastic insoles in running shoes. They are impregnated with a system of up to eight flat polymer sensors that connect to a data logger worn on the ankle. The logger receives measurements 100 times a second from each sensor (48,000 data points a minute from each foot) all from an athlete on the move.

The device is the result of a remarkable collaboration between the Co-operative Research Centre (CRC) for Microtechnology and the AIS. It is one of a series of devices built to allow coaches to monitor minutely the performance of elite runners, swimmers, rowers, and other athletes, and to fine-tune them for competition. The devices employ a variety of microsensors to gather information on a wide range of

biomechanical and physiological characteristics.

"It's the combination of what we're doing with hardware and the institute's knowledge of physiology that makes the systems very, very valuable," says Clive Davenport, chief executive of the Microtechnology CRC.

Just how valuable becomes more apparent when the developers begin to talk of the potential applications to medical rehabilitation, the fitness industry and safety. Athlete monitoring is one of the CRC's biggest research programs, and has involved more than 50 people over the past couple of years.

The researcher who has guided the development of the insole device, Dan Billing, is a good example of the nature of the collaboration. With a Bachelor of Applied Science in human movement, he worked as a sports scientist at the Victorian and Tasmanian institutes of sport before signing on to do a PhD at Swinburne University of Technology with the microtechnology CRC.

The project has required him to work with electronics engineers from Griffith University on the design of the shoe sensors; with materials scientists on what plastics are able to withstand the wear and tear of the moist environment



DAN BILLING: RACING AGAINST AN OLYMPIC DEADLINE

device to help adjust the gait of the athletes — how their feet land and take off, the length of their stride between hurdles, and how they time their footfalls. "We are delighted with the way it's going," says project manager Dr Chris Gore of the AIS. "We consider it world-leading stuff in a couple of fields."

Not that the project is finished. There are plenty more problems to solve. "The generalisation of the software analysis is one of the most difficult aspects, but probably

where we add the most value," says Gore. "It is especially difficult comparing athlete A with athlete B, who may be a junior athlete rather than elite and has a different technique."

If the technology does give Australian athletes an edge in Athens, the Games will provide a world stage for demonstrating its value, and a platform for launching microtechnology products to measure everything from the fitness of joggers and the progress of rehabilitation to the drowsiness of machine operators.

The profits could help finance the development of the next generation of devices to power Australia's Olympic bid for Beijing in 2008, and on into the future.

More important to him at present is the feedback from the coaches on the potential of the

underneath an athlete's foot; with biomechanists and athletics coaches from the AIS to understand what to measure; and with software engineers to come up with the programs to analyse the huge amount of data produced.

Billing had to become a bridge between all these experts. And there was a deadline. It would be of little use for training the national athletics team if the system were not ready at least a year before the Olympic Games in Athens.

The result has won him a 2003 Victoria Fellowship, one of series of six travel grants of up to \$15,000 awarded each year by the Victorian Government to researchers in the early stages of their work.

PHOTOGRAPH BY PETER GLENANE

**MORE INFORMATION:** [www.microtechnologycrc.com](http://www.microtechnologycrc.com); [www.ais.org.au](http://www.ais.org.au); [d.billing@swin.edu.au](mailto:d.billing@swin.edu.au)

FOR MORE INFORMATION ON THIS

www.usicom.com.au

Rowan Gilmore, Tel: (07) 3853 5225; e-mail: rowan.gilmore@usicom.com

Commercialise 2003, Tel: (03) 9651 9030

FOR MORE INFORMATION ON THIS

Justus Homburg: Tel: (03) 9362 5812; e-mail: j.homburg@chirogen.com

www.chirogen.com

Gareth Dando: e-mail: g.dando@uniseed.com

# New ideas, new impetus

The Australian Institute for Commercialisation is working on projects designed to reduce the barriers to market. **Report by Jan McCallum**

**D**r Rowan Gilmore has returned to Australia as chief executive of the Australian Institute for Commercialisation to find himself riding a wave of interest in commercialising scientific and technological innovation. Gilmore, an Australian who has lived and worked in the United States and Europe, believes there has been a shift in attitude in the past few years.

"There is a renewed emphasis on science and technology and an amount of goodwill and support for commercialisation and reaping the benefits of research," he says. "Governments on both sides recognise the need to move on from macro and microeconomic reform and increase the knowledge intensity of the economy."

"This is not to say there are not gaps in our processes, such as the lack of start-up management skills, and that more still needs to be done, particularly in supporting a culture of commercialisation."

The AIC was set up in June 2002 to drive commercial returns from Australian research and development by reducing the barriers to commercialisation. It is a national body supported by the Federal Government and all states and territories. Gilmore joined the AIC in May from the aeronautical information technology company SITA.

He says the institute is working to change the culture of commercialisation through policy recommendations to governments and by practical support to universities and the private sector.

It has developed a three-pronged strategy. The AIC's Know-How program works on raising skills, its Connect program establishes and uses networks to improve co-ordination of deal flows, and the Assess program is measuring research and development outcomes to help provide a better focus to how resources should be allocated. "They are big umbrellas and under each umbrella is a number of projects," Gilmore says.

As part of skill development, the AIC and Melbourne University Private have developed a course covering commercialisation and management of start-ups. Another course, being developed with Chartered Secretaries Australia, focuses on the requirements on the directors of small companies. Gilmore says business courses are often aimed at "the big end of town" rather than entrepreneurs wanting to start a business. These courses fill the gap.

The AIC plans to soon launch an electronic marketplace, aussieopportunities.com, which will be a web-based forum for universities and public institutions to lodge *ideas seeking funding* to progress to the product stage. The marketplace will bring together investors and researchers and also aims to improve the quality of proposals. "One of the issues raised by the venture capital

industry has been that a lot of the proposals they see are not 'investor ready,'" says Gilmore. "By forcing applicants to go through a structured process to register — we are talking about management milestones, deliverables, markets — the investor can see the elements of the business plan have been thought through."

The AIC is also launching a commercialisation brokerage aimed at smaller research institutions and co-operative research centres that may have only one staff member dedicated to commercialisation. The brokerage will support that often-stretched employee by matching them with service providers and the commercialisation arms of larger institutions.

Gilmore says the Victorian Government has brought to Australia one of Britain's foremost specialists in technology transfer, Dr John Sime, of the Imperial College in London, who will hold master classes around the country. His visit forms part of Commercialise 2003, a discussion series sponsored by the Victorian Government and promoted by the AIC. Also on the Commercialise 2003 agenda is a technology transfer workshop, a venture capital forum and boardroom briefings for executives involved in commercialising innovation.

PHOTOGRAPH BY PETER GLENANE

## SOME OF THE AIC'S INITIATIVES:

- Training for managers of small companies.
- Assessment of research and development outcomes.
- Building networks connecting the public and private sector.
- Establishing an electronic marketplace for ideas to be lodged.
- Launching a commercialisation brokerage.
- Showing the private sector opportunities to commercialise ideas.

ROWAN GILMORE: GOVERNMENTS ON BOTH SIDES RECOGNISE THE NEED TO MOVE ON



GARETH DANDO AND JUSTUS HOMBURG: "THE CHIEF EXECUTIVE IS THE BUSINESS"



## Chirogen's new 'engine'

Gareth Dando is confident his new chief executive will drive the technology company to its next phase — sales. **Report by Kath Walters**

THE WAY WE WORK

**S**ustaining a start-up company through the long haul from its first round of funding to winning its first customer demands special professional and personal talents. Gareth Dando, board chairman of technology company, Chirogen, recognised this when he engaged a recruitment company to conduct a worldwide search for Chirogen's chief executive. The successful candidate, Justus Homburg, arrived in Australia from Arizona in January this year.

Chirogen's technology is a faster, cheaper and better way to produce "chiral" molecules that have the right properties for fine chemical production. Chiral molecules are mirror images of themselves with differing properties from the original.

### Gareth Dando

I started Uniseed (the pre-seed and seed venture fund) in June 2002 with David Evans, its inaugural chief executive. I have been involved with Chirogen from its beginning, first as a director and since July as chair.

Uniseed was the most active investor in Chirogen's first investment round of \$1.7 million, which included Deakin University and a private investor. We have just closed the second round of \$1.6 million. Uniseed, Deakin University, and a venture-capital company, Sciventures are the investors.

We started looking for a chief executive about six months after the first round because we saw the technology would be ready for market sooner than expected, probably within 12 months. We needed someone who knew the fine

chemicals industry really well. The recruitment process was the hardest thing to live through with the company. We knew there were people out there and we knew what we wanted.

For Chirogen, the chief executive is the business; it is like betting the company on that appointment. Justus's job for the next 18 months is to turn the strong interest in our technology into purchases.

Chirogen has no customer base in Australia; the chemical and pharmaceutical companies are in the US and Europe. Justus has many years of experience in these industries. He has not done a start-up before, but has acquired and integrated businesses, and done a lot of growth deals. He speaks a handful of languages, and is easy to deal with. It is important to have someone who can bridge the commercial and research aspects. The inventors (Professors Carl Schiesser and Dainis Dakternieks) interviewed him personally. His enthusiasm is the main thing. For a small company, the chief executive is the engine room.

### Justus Homburg

For about 15 years, I have done nothing but create new opportunities around new technologies within the context of large corporations. In this

position you can ask for whatever resources are needed by just knocking on the right door. I have never had the excitement and challenge of a true start-up. It is more real. I consider it an honor to do this job. The considered risk the board took in going outside Australia to fill the position convinced me that they knew what they wanted and would let go control.

Coming to Australia was not a hurdle. I have lived in more countries than I can count. It takes a bit longer to get to other places from here, and I will be in the US and Europe every six weeks. Companies in Europe drive the chemical industry and there is always the need for personal contact to talk about this very innovative technology.

Getting the technology to market has its own challenges. It forces the organisation and its people (we have 13) to be market-oriented. I have to manage the shift from being driven by internal milestones to client demand.

The first sale is the hardest, but I don't think we will have to discount. We have demonstrated the applicability of the technology on a large number of different compounds at our own expense. That is a different model from our competitors.

The people involved are important. Gareth is a good critical thinker, very quick to understand issues and see relationships. His experience in consulting in Australia, which I don't have, will help in getting things done.

I put my own money into Chirogen because it is a great opportunity. I have made private investments half a dozen times, some successfully.

PHOTOGRAPH BY PETER GLENANE



VICTORIA PRIZE  
WINNER DAVID  
VAUX FOUND THE  
PROCESS OF CELL  
DEATH, WHICH  
HELPS TURN  
CATERPILLARS  
INTO BUTTERFLIES,  
IS AT WORK IN  
ALL CREATURES,  
INCLUDING  
HUMANS  
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## ▶ Resource Corner at CITC

The Centre for Innovation and Technology Commercialisation (CITC) at 257 Collins Street, Melbourne, now has a "resource corner" available for public use, particularly for regional innovators and technology commercialisation service providers visiting the city.

Feel free to come and read the journals, watch a video of an innovation story or just relax with a cup of coffee on the lounge (innovatively made of post-industrial/consumer resins).

The corner has Internet access to useful sites such as IP Australia and those of the commercialisation service providers located at the Centre. Also available is an Australian Technology Showcase kiosk where visitors can browse a large array of export-ready technology companies.

For more information please contact CITC manager Faye Schmidt on (03) 9663 2554.

## ▶ Grow Your Business

Grants of up to \$15,000 are available for companies to engage professional business services under the Victorian Government's Grow Your Business program.

The program helps businesses realise their growth potential by evaluating current operations, developing new business plans and identifying new practices. To be eligible businesses must be Victorian-based, financially viable, have the potential to export or for import replacement and a commitment to strategic planning and growth.

To find out more visit [www.business.vic.gov.au](http://www.business.vic.gov.au) or contact the Victorian Business Line on 13 22 15.

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**Contributors:** Amanda Gome, Jan McCallum, Emily Ross, Lucinda Schmidt, Tim Thwaites and Kath Walters.  
**Production:** Fine Print Australia, [risk@fpmedia.com.au](mailto:risk@fpmedia.com.au).  
**Managing Editor:** Ingrid Anderson.

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**Technology Partners Network Limited**  
ACN 096 229 122  
trading as TechNetwork

[www.technetwork.com.au](http://www.technetwork.com.au)  
e-mail: [info@iconyx.com.au](mailto:info@iconyx.com.au)

To phone TechNetwork, please contact  
Melanie Manton on (03) 9620 0922

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Comments or suggestions about the magazine are welcome.  
Send them to [riskandreward@iird.vic.gov.au](mailto:riskandreward@iird.vic.gov.au)

