Scientists need to know more about financing and marketing before they can tell whether their idea is robust enough for somebody to make and sell it. If you don't go to events like this, you won't understand that.

David Williams

A premier investment showcase held in Queenstown with access to 150 global investors.

MacDiarmid science flies with angel investors

MacDiarmid Institute materials science is making its way from the laboratory into the wider economic sphere. It's always been the goal of MacDiarmid scientists to influence New Zealand's prosperity through research, and 2015 was an outstanding year.

This year for the first time MacDiarmid scientists took their ideas to the world – literally – meeting with 150 investors from around the world at a technology showcase in Queenstown. The showcase saw MacDiarmid scientists giving three minute 'pitches' to angel investors at the Asian Business Angel Forum hosted by New Zealand in October.

The Asian Business Angel Forum is Asia's largest premier angel investor gathering for emerging and growing businesses. "Pitch on a Peak" was one of the key components of the event, a showcase of New Zealand technology investment opportunities, ranging from early-stage technologies, to companies seeking first round angel funding, to internationalising companies.

The MacDiarmid Institute was strongly represented with five of the projects showcased on the day, including four of the five early-stage technologies. These were AuramerBio, Milk-on-a-Disc, BioActive Silver, Medical Dosimeters and Engender Technologies.

Readying the researchers

The MacDiarmid Institute science teams received extensive input from Dr Ray Thomson, Chair of the MacDiarmid Institute's board, Richard Pinfold, the Institute's commercialisation developer, and (NZTE) officials. These people helped the scientists review their business growth plans, become investment-ready and deliver compelling pitches. "It was an opportunity to put some of our scientists in front of international and local investors, to get them out of the lab and into the commercial arena," says Dr Thomson, who has had extensive involvement with angel investment, including time as Chair of the NZ Angel Association. "And hopefully a chance for them to develop some connections, get advice from the investors who were there, and maybe get them interested in investing in them." As Mr Pinfold notes, the event attracted around 150 angel investors, some of them with billion dollar exit packages from their own companies behind them. "Obviously fairly switched on types, who had made good business decisions in the past. There were far bigger hitters than we were anticipating, which really bought some gravitas to the entire event."

"Their responses were overwhelmingly positive," says Quentin Quin, NZTE's General Manager, Capital, who helped coach the scientists and also surveyed the attendees to get their feedback on the event. "Over 90% of attendees said that the investment opportunities presented met their expectations. 98% thought that all or most of the companies were well prepared and articulated their proposition clearly. Here's an example – 'Great coaching – it was hard to differentiate the researchers/academics from the tech-transfer specialists, something I have not seen before,' said one attendee."

Taking diagnostics to the farm

Milk-on-a-Disc was presented by Associate Professor Cather Simpson, who developed the novel technology with Professor David Williams; both researchers are from the School of Chemical Sciences at the University of Auckland and both are Principal Investigators with the MacDiarmid Institute. Milk-on-a-Disc could also be described as a laboratory on a disc, designed to measure the composition of the milk. This can be done on every cow, in the cow-shed and at milking time, before the cow leaves the bail.

150

150 angel investors—some of them with billion dollar exit packages.

Milk-on-a-Disc provides farmers with information such as the protein content and fat content, but also has the potential to help farmers assess the health of the animal, such as whether the cow is pregnant, has mastitis, or her nutritional status. The technology draws on the tools used in the human medical diagnostic sector; Associate Professor Simpson describes it as taking "point of care to point of cow". "It allows farmers to find out things that they don't know they want to know, but which will allow them to make better decisions and therefore enhance their productivity."

Learning to pitch

Associate Professor Simpson had only three minutes to present Milk-on-a-Disc at Pitch on a Peak, a considerably tighter timeframe than scientists are used to. It was challenge, she says, but one that focused the mind. "Pitch on a Peak allowed us to hone our story," she says. "Milk-on-a-Disc is a project that we may not have done at all if there wasn't a commercial outcome for it. The science is fascinating, but trying to analyse a complex fluid like milk is a really big ask, and there's no point in developing a technology like this if nobody is going to buy it. Pitch on a Peak gave us a better sense of what kind of investor pool there might be, to bring this through to completion."

Several investors who attended the conference have since visited Associate Professor Simpson and her team at the Photon Factory at the University or Auckland, or followed up to express interest not just about Milk-on-a-Disc but other projects the team is and could be working on. "The event helped build a buzz around our technology. That was happening before, but with a lower case b. Now we have a Buzz with a capital B and gold flashes around it." The spin-out company Orbis Diagnostics has since been established and registered to develop the technology. "So we now have a company, rather than an idea for a company," says Associate Professor Simpson. "I think the catalyst for that was Pitch on a Peak."

Both Associate Professor Simpson and Professor Williams say university scientists hoping to commercialise their research can only benefit from such events. "It was a high voltage high energy session," says Professor Williams. "Your ideas are challenged, you meet people who know more than you do about the domain that you're working in, you get new ideas, on how to get stuff out of the lab and into the marketplace, and you get a whole different perspective on research. It's very challenging and it's fun. "If you have any kind of expectation that what you're doing might lead to something that can be made and sold, you have to appreciate the other end of the business. Scientists need to know more about financing and marketing before they can tell whether their idea is robust enough for somebody to make and sell it. If you don't go to events like this, you won't understand that."

Aptamers – the new antibodies

Another MacDiarmid Institute project presented at Pitch on a Peak was from AuramerBio, a new medical diagnostics start-up combining aptamers with nanomaterials to create new diagnostic tools.

Aptamers are like a tiny antibody; they're made of DNA, and can be designed to bind to very specific targets. But it gets better. They can be made in a lab (rather than extracted from animals), and can be produced quickly and at a fraction of the cost.

AuramerBio have managed to develop an aptamer that can target much smaller molecules than antibodies normally can, and with a much greater level of sensitivity to the targeted molecule. "Hormones are a good example," says AuramerBio's CEO, Jeremy Jones. "Relative to a protein, these molecules can be thousands of times smaller. Targeting these small molecules is where we shine and blow competitors in aptamer science out of the water."

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Milk-on-a-Disc is a project that we probably wouldn't be doing if there wasn't a commercial outcome for it.

Cather Simpson

Aptamers are poised to disrupt the 40 billion dollar market that antibodies currently have.

Jeremy Jones

buzz

The event helped build a buzz around our technology.

As Jones highlighted at Pitch on a Peak, there are many benefits that aptamers have over antibodies. "Antibodies can take 12 to 18 months to develop. For us to get to an equivalent point, it takes less than a month. This is going to revolutionise the way medical professionals diagnose and monitor the health of their patients," he adds. "Aptamers are poised to disrupt the 40 billion dollar market that antibodies currently have."

MacDiarmid collaboration

AuramerBio has emerged out of cross-discipline MacDiarmid collaboration between Professor Ken McNatty and Dr Shalen Kumar at Victoria University of Wellington's (VUW) School of Biological Sciences, Dr Justin Hodgkiss' team at VUW's School of Chemical Physical Sciences and Professor Jadranka Travas-Sejdic's team at the University of Auckland's School of Chemical Sciences. "So it was a combination of the biology, the development of synthetic antibodies, with engineering and surface chemistry, the development of the electrochemical device," says Jones. "It was in the two disciplines coming together that the magic happened." Until recently aptamers compared unfavourably to antibody technology, as the binding capacity was still weak. "But the work that Ken and Shalen have been doing in developing their aptamers, is allowing us to achieve a strength of binding that is far in excess of what people have seen before."

Already attracting investor interest

At the time of Pitch on a Peak, the company had already secured seed funding, with a 24-month runway to execute its business plan. "But for a start-up, capital raising is an ongoing cycle," says Jones "so it's important to get on the radar of new investors. And when it comes time for us to raise that next round of funding, they'll know who we are, those guys they saw at that Queenstown event, and be able to see how far we've come since then. It's about raising the profile among that community who could potentially invest in that next round. "There were a number of people who were in that room who were extremely experienced, international investors who had done what we're trying to do now with other products and companies. So I was hoping to tap into that experience." One of the highlights of the event was the chance to discuss the technology with Allan May, a life sciences investor who has worked with over 50 biotech and med-tech start-up companies. "His advice was invaluable helping to inform our strategies around our target markets." The contacts made and conversations that emerged at the event has also led to new opportunities. "One of the conversations was around drug testing, for illicit drugs. We've established our technology in relation to hormones, but it's a very small leap to go from that to illicit drugs, such as methamphetamine, or cocaine, or THC. They are in the same class of compounds that we've already been working with, and involves the same area of expertise. So that has led to us doing a bit of digging, sitting down with ESR [the Institute of Environmental Science and Research] to build a project, and we're now seeking funding to develop a product in that area."

Pitch on a Peak was held by New Zealand Trade and Enterprise (NZTE) in partnership with the Angel Association New Zealand and Callaghan Innovation.

Other MacDiarmid scientists who presented at the forum also sparked considerable interest among angel investors. Dr Carla Meledandri (BioActive Silver), and Dr Grant Williams (Medical Dosimeters) and their teams are in ongoing talks with investors about new MacDiarmid spin-out companies. Watch this space.