

# Firm prospers on scientific success

Jo Bailey

The global success of its Haemoglobin A1c (HbA1c) control for a diagnostic test assisting millions of diabetes sufferers worldwide, has seen Canterbury Scientific nominated for two prestigious International Business Awards run by New Zealand Trade and Enterprise.

The privately owned, Christchurch-based medical device company is a finalist in the Best Business with Revenue less than \$10 million, and in the International Success through Application of Innovation award categories.

Canterbury Scientific chief executive, Dr Neil Pattinson, says it is a "great thrill" for the company to be in the finals.

"It is a reflection of our long history, and the hard work and dedication that everybody has put in. Our success hasn't happened overnight – it is the result of decades of research and market development."

The HbA1c control is largely the brainchild of scientific director Dr Maurice Owen and Professor Robin Carrell, who were co-founders of Canterbury Scientific Ltd in 1985 with Bryce Hawkins.

Owen says he first took an interest in haemoglobin (red blood cell protein) around 40 years ago.

"From the 1980s we started to look more closely at haemoglobin with glucose attached at the HbA1c site. It was around this time that the potential of this test for the management of diabetic patients was realised."

By the 1990s he had developed his first HbA1c (diabetic level) control, a tool that ensures the correct measurement results for tests used by clinicians in hospitals, laboratories and medical clinics to determine the percentage of haemoglobin with glucose attached compared to the patient's total haemoglobin.

"The HbA1c assay is an extremely accurate diagnostic tool and the best single test to tell how well diabetics have been controlling their blood glucose over a period of two or three months," he says. "Haemoglobin circulates for around four months before it is replaced, so the beauty of this test is that it gives a good average over time, as opposed to the standard thumb prick glucose measure, which can vary significantly depending on the patient's diet or activities that day."

The accurate results provided by this "very smart tool" help to ensure the most appropriate clinical decisions around patient care can be made, he says.

"This is critical for Type 1 diabetics who are most at risk of developing debilitating complications from the disease. This tool can help to prevent secondary conditions such as renal or circulatory disease, improve patient's quality of life, and reduce health costs associated with surgery and therapy."

As well as being an important management tool, the HbA1c assay is also now used in the diagnosis of diabetes, a disease now affecting around 347 million people worldwide.

"This test is the fence at the top of the cliff rather than the ambulance at the bottom."

Like any haematology or clinical biochemistry



Dr Maurice Owen, left, and Dr Neil Pattinson - export success based on decades of research and market development.

test, quality controls are vital to ensure clinicians achieve an accurate result, which is where Canterbury Scientific comes into the picture.

Dr Owen and his team have developed two standard freeze-dried haemoglobin samples which are used as the controls for the HbA1c test – one is a non-diabetic sample while the second, is at pathological diabetic levels.

The challenge for the Canterbury Scientific team in the development of these controls was to produce highly reliable samples that behaved like fresh whole blood with enhanced stability and shelf life that produce consistently accurate results.

"A lot of innovation and unique science went into creating these controls, which also have to withstand being shipped around the world and handled in different labs and hospitals."

The team faced an additional dilemma – how to ethically collect blood from diabetic patients for the pathological control, when they had a potentially vested interest in their blood remaining high?

"Rather than relying on blood from the very people we are trying to help, we found a way to make the level 2 diabetic HbA1c control by in-vitro glycation, an in-tube method using healthy blood samples. We are still the only company in the world doing this."

A certain amount of serendipity and luck helped the company get its product to market.

Global company Bayer was in New Zealand

**◀ This test is the fence at the top of the cliff rather than the ambulance at the bottom.**

demonstrating a diabetic level machine it had developed, at a meeting attended by Dr Owen.

"I mentioned I had made controls for this sort of machine so they asked me to run them."

"They worked well on their machine giving the same results we had obtained on our research instrument," he says.

Neil Pattinson says Bayer had been experiencing some issues with its existing controls at the time, and once its Australasian sales staff was aware of the "good stable control" developed by Dr Owen, they became "champions on our behalf".

He says it still took around four years from Bayer indicating its willingness to partner before Canterbury Scientific started to achieve significant sales and revenues.

"There are huge lead times in science-based opportunities, so financially we have to be prepared to carry the financial burden before getting a return on our investment. The cost of customer acquisition can be really high."

Canterbury Scientific now exports 100% of its controls, which are sold through OEM partnerships with medical device manufacturers and global healthcare giants such as Siemens, Roche,

Panasonic and Beckman Coulter. Its market share is already estimated at 40 percent in the US and 10 percent in Europe.

The company is now putting significant focus on recruiting new partners in Asia, where China and India account for 44 percent of the world's total diabetic population. "We have a great relationship with NZTE which is helping us with these emerging markets," says Dr Pattinson.

Canterbury Scientific employs 15 staff, including several young scientists. It takes on an additional five summer students each year.

"We see this as part of our mission to support science and assist young scientists to make and take good career choices and options."

The company continues to research and develop other new diagnostic controls to monitor conditions such as pre-eclampsia, pancreatitis and the secondary complications of diabetes.

"Our greater goal has been to establish a successful model for the commercialisation of diagnostic research and we are not about to rest on our laurels. The next five to 10 years will be about continuing to grow and improve our catalogue of products."