



the
good
oil



August 1, 2012:

Qponics and UniQuest agree on exclusive algae license

Qponics Limited has reached a heads-of-agreement with UniQuest Pty Limited, the main research commercialisation arm of the University of Queensland (UQ).

The agreement is on terms to license UQ's new strains of algae for the commercial production of omega-3 oils and high-protein biomass. Qponics will also have from UniQuest a first-rights option to license other non-biofuel algal-derived products.

Qponics signed agreements with UniQuest in 2011 to access the extensive algae collection held by UQ for a defined research and development project. These agreements also provide Qponics with the

scientific services of **Associate Professor Peer Schenk**, in UQ's School of Agriculture and Food Science. Peer is a global leader in the biotechnology of algae and algae oil, as is his team.

Qponics' CEO and managing director, **Dr Graeme Barnett**, said: "We have progressed to the next stage in our partnership with UniQuest. The University of Queensland is one of Australia's most prestigious universities, recognised around the world for its high-quality research.

"I look forward to finalising the licensing agreement with UniQuest once the omega-3 rich algal strains required by Qponics have been selected and optimised by Associate Professor Schenk and his team."

Qponics aims to sell organically-produced eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) omega-3 oils

to a wider segment of the global market. This will present a more viable option to companies that use omega-3 in their products.

Also, consumers of these products will benefit when they look for sustainably-produced vegetarian alternatives to products derived from fish, krill or other marine animals.

"The algal biomass remaining after oil extraction will be sold as a high-protein animal feed containing residual DHA and EPA omega-3 oils. This will enhance desired omega-3 oils in farmed animals and fish, making them more valuable as a human food," he said.

Associate Professor Peer Schenk said the partnership with Qponics would result in new products to supply the unmet demand for vegetarian DHA and EPA-rich omega-3 oil.

"More than 10% of Australians now say they are vegetarians, and most are very aware of the adverse health-related consequences of avoiding marine animal-sourced omega-3 oils, which include neurological, cardiovascular and degenerative diseases," he said.

"Fish stocks worldwide are depleting at an unprecedented rate. My team is very pleased to be working with Qponics to develop a renewable local source of organic omega-3 fatty acids, palatable to both vegetarians and the general population," Associate Professor Schenk said.

"Also, we have collected Australian algae



From left, Associate Professor Peer Schenk and Dr Graeme Barnett.

strains from various freshwater and brackish water environments, and have developed methods to optimise their growth conditions and fatty acid yields.

"Therefore, working with Qponics is an excellent opportunity for the University to commercialise the output of its research to develop high quality products that aim to make a positive difference to the health of consumers."

Dr Barnett said Qponics' strategy was to access technologies required to organically-produce algal omega-3 oils for human consumption and high-protein biomass for animal feed.

This would be through strategic partnerships with other companies and research institutions, rather than expending precious time and capital on high-risk in-house R&D.

"Qponics will construct its first operational plant near Sydney in a unique facility that will integrate the cultivation of algae into a sustainable aquaculture-horticulture process, where the effluent from fish tanks provides the organic nutrients for growing algae," Dr Barnett said.

The good oil on Graeme Barnett

Dr Graeme Barnett is a founding director of Qponics Limited who also holds the positions of CEO and Managing Director.

"I was born and raised in Christchurch, the city devastated by earthquakes over the past two years. Many of my friends and family have been tragically affected by that disaster. My father was a Queenslander so, in a sense, ending up in Brisbane was like coming home."

Graeme attended Otago University in Dunedin, NZ.

"My undergraduate years were pretty wild as Dunedin is a small city dominated by the university, and the student social life there is legendary. Sometimes I wonder how I survived the experience and passed my exams.

"After four years at Otago, I took a research job at the Christchurch School of Medicine investigating methods of localising urinary tract infections in children, and completed my masters degree.

"I married at 22 and **Jennie** and I moved to Sydney for a holiday with the intention to travel on to Canada to start my PhD studies.

"But I secured a good microbiology job at the Royal North Shore Hospital, Sydney, so we stayed in Australia. We moved up to Newcastle where I worked as a Scientific Officer at the Mater Hospital.

"Newcastle is a wonderful place to live and bring up a family and we stayed there for 18 years.

"During this time I progressed my career and completed my PhD in medical virology."

Graeme completed his public hospital pathology career in 1996 holding the position of Scientific Director of Virology at the Hunter Area Pathology Service.

"During this phase of my career I developed a keen interest in creating new diagnostic technologies and tests for a wide variety of infectious diseases," he said.

"The 20 year period before the 1990s was an extraordinary time to be a medical scientist in microbiology departments at Australian teaching hospitals.

"These laboratories were excellent breeding grounds for PhDs specialising in a variety of infectious disease fields, and I am one of the last products of those times."

In 1996 he became an executive at Panbio Limited in Brisbane. At the time it

was a private biotechnology company that funded innovation and growth through retained earnings.

Panbio pioneered the commercial development of products that microbiology and virology laboratories use to diagnose Ross River virus and Dengue fever and many other diseases. These products detected antibodies to these microbes in the blood of patients.

"It was a privilege to work at Panbio as it became a beacon of creativity and innovation with first-class executive leadership," Graeme said.

During Graeme's tenure Panbio:

- Won the Australian Quality Award in 1997.
- Was voted by *Business Review Weekly* onto the 100 Fastest - Growing Private Companies list for the 7th consecutive year in 2000,
- Listed on the ASX in 2001.

"As Panbio's Vice President for research and development and new technologies, I led a team of 15 scientists including nine PhDs, and I frequently travelled to the UK and US to liaise with strategic partners," Graeme said.

"Nearly six years with Panbio provided me with the confidence and skills to move on to co-found and lead BioChip Innovations (BCI) in 2003."

BCI was a private company that developed technologies and tests to diagnose infectious diseases. BCI successfully developed a novel DNA test

for analysing all strains of influenza A virus, and a new test platform that rivalled the world's dominant method for detecting and analysing genetic material. BCI also worked on the development of sophisticated silicon nanowire biochips, used for automated detection and analysis of DNA samples, with partners in Singapore.

"Unfortunately the global financial crisis in 2008 totally dried up access to investment capital and BCI, like many other small-medium biotech companies, was forced to shut down.

"However, as the Chinese say, crisis creates opportunity, and this led me to co-found Qponics."

Graeme's other interests include writing software for automated futures trading and, when time permits, he enjoys creative writing. He completed his first novel under the pen name of "Ross Cossins" – writing '*The Diet Cola Scenario*'. It is a biotechnology thriller available on Amazon.com in paperback and Kindle format.

Study shows 37% of omega-3 users don't want it from fish

A recent Discovery Research Group survey revealed that 37% of consumers who want to take an omega-3 supplement are looking for an alternative to marine animal derived oil.

Questions were asked of a panel of consumers who took a multi-vitamin or

other nutritional supplement and indicated that they were interested in health and wellness and fitness.

The survey revealed that 48% of participants took an omega-3 supplement - for two main reasons, "general health" (64%) and "heart health" (58%).

Krill oil has toxic residues similar to fish oil

Krill oil is chemically slightly different to fish and algal oils. Krill is the common name given to a shrimp-like marine crustacean. These small invertebrates are found in all oceans of the world.

The harvesting of Antarctic krill for omega-3 oil is relatively new. The vast majority is harvested for fish feed with about 2 percent harvested for omega-3 oil human consumption.

Their DHA and EPA omega-3 fatty acids are attached to phospholipids, which some suppliers claim have superior absorption in humans.

However, several studies have shown toxic residues in krill, similar to those found in deep sea fish. Krill is probably the largest single biomass in the world. They are fundamental to the survival of almost every species of animal that lives in the Antarctic or sub-Antarctic waters.

In 1982, the United States, the United Kingdom, Australia, South Africa, New Zealand, Chile, European Community, Germany and Japan formed a treaty

organization to ensure that krill were being harvested sustainably. It is named the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR-pronounced camel-lahr).

Consequently, the krill fishery is considered by some scientists to be among the best-managed fisheries in the world, providing strict catch limits on licensed vessels - with scientific observers on board. Whether or not the krill oil industry proves to be sustainable in the long term currently remains uncertain.

Future growth opportunities in the algae industry

Production of human food and animal feed from algae is said to be about 5,000 times more efficient than current agriculture.

Algae as a source of DHA and EPA omega-3's for human and animal feed is well understood. However algae remain a largely untapped resource for a wide range of other high value food ingredient products. Two kinds of algae exist – macroalgae (seaweed) and microalgae (seen only with a microscope).

It is estimated that less than 10% of algal species have been identified and scientifically described.

Potentially there are millions of “undiscovered” algae living in the world’s oceans, rivers and lakes. Clearly as more species are discovered, the algal

biotechnology industry will produce an ever- increasing range of high-value biological compounds.

Microalgae produce high quantities of protein, approaching 50% by weight, thus algae are highly prized as a protein source in animal feed formulations. In addition to omega-3s, algae are also rich in other high-value bioactive compounds including vitamins C and D2, antioxidants such as astaxanthin, carotenoids such as beta-carotene and leutin, as well as iodine and other essential elements and minerals.

Australia’s oil-rich algae are an ideal start-point

Qponics’ scientific consultant **Associate Professor Peer Schenk** of the University of Queensland’s School of Agriculture and Food Science, has published a paper on Australia’s fresh-and brackish-water algae that have excellent potential for producing omega-3 oil and biofuel oil.

The full report is available at:

http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0040751?goback=.gde_4330487_member_134523553



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