Qponics The Good Oil

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Uniquest licensing will commercialise algae strains for omega-3 production

In 2011 Qponics Limited signed an agreement with Uniquest Pty Ltd., the commercial arm of the University of Queensland, to fund R&D projects in Associate Professor Peer Schenk's laboratory at the university. Qponics is now in final stages of negotiating terms with Uniquest, to license strains of algae selected by UQ for development.

Simon Tannock joins Qponics

Simon Tannock (pictured) has been appointed Vice President - Engineering & Technology of Qponics Limited.

Dr Graeme Barnett, CEO and Managing Director of Qponics said Simon would attend the company's weekly management team meeting, and provide leadership and expertise in planning the Company's unique aquaponic algal oil production system. "The position will start on a limited part-time basis because Simon is also working for **Professor Peer Schenk** at the University of Queensland, on algal bioreactor and biofuel oil extraction programs. I am sure that Simon will be a great asset to Qponics," Dr Barnett said. Simon has a bachelor of science degree (biochemistry) and a diploma in horticultural science from Lincoln University, plus a master of philosophy degree from Massey University, both universities being in New Zealand. Within the next two months he will submit his PhD thesis in environmental engineering to the University of Queensland in Australia.

In the late 1990's Simon was a franchise owner of "Hire a Hubby" in Nelson, New Zealand, and he was a microalgae research scientist from 1999 to 2006 with The Cawthron Institute, also in Nelson. This has provided Simon with a blend of small business and project management skills with experience in design, construction and maintenance of algae-related technology and equipment.

In 2006 Simon began PhD studies at the University of Queensland. His research has been based on anaerobic digestion and biological nutrient removal of wastewater and solid organic waste in a decentralised treatment system.
From 2011 he has been Project Engineer at the School of Agriculture and Food Science at the University of Queensland, designing and constructing micro-algae bioreactor and biofuels refinery systems.
Simon's flair for innovation has been demonstrated through his entries in UQ's Uniquest Trailblazer Innovation competition. In 2007 he was a finalist for a solar desalination system; in 2009 was awarded student first prize for a "gyroscopic energy generator" for its potential to improve energy transfer in wind turbines; and in 2010 was a highly commended student for a bio-fouling control system for zebra mussels.

Omega-3 oil market is changing.

There are more than 12 omega-3 fatty acids in foods humans eat. However the three important in human physiology are α-linolenic acid (ALA, 18 carbon atoms long), eicosapentaenoic acid (EPA, 20 carbon atoms), and docosahexaenoic acid (DHA, 22 carbon atoms). The term "omega-3" generally refers to all or any of ALA, EPA or DHA. Omega-3 oil is part of the world's essential poly-unsaturated fatty acids market, but omega-3 oil sources are about to undergo rapid change.
Current predictions of future market growth project the market to be well above the US$13 billion value predicted by analysts in 2011. According the North America's "Food Product Design" magazine: "In the U.S. market, 9% of grocery shoppers buy high omega-3 food or beverage products in a typical grocery shopping trip, and the percentage of adults who take fish oil supplements has jumped from 8% in 2006 to 17% in 2011." Australia is expected to have a similar pattern. The market is driven by:

- Expanding medical, governmental, and public awareness of omega-3 and its wide range of health benefits;
- Continued consumer receptiveness to functional food and supplement products;
- Positive mainstream and trade media reporting; and
- Increased market participation by mainstream processed food manufacturers.

New sources of omega-3s-ranging from EPA-and DHA-rich sources such as krill, green-lipped mussels, calamari and algae to ALA-richsources such as cranberry, chia seed and hemp are making it easier for manufacturers to market omega-3 products. Importantly, consumer organisations are predicting strong sustained growth of omega-3 oils derived from algae because this remains the only eco-friendly and vegetarian source EPA and DHA fatty acids.

We have to eat Omega-3 oils

EPA and DHA omega-3 oils are essential fatty acids that cannot be synthesized by the body but are vital for efficient and healthy metabolism.
While marine oils derived from fish and krill are expected to continue to dominate the global omega-3 fatty acids market, this is being challenged by several important factors:

1. Predicted shortages of omega-3 sourced from wild-catch fishing (as more omega-3 oil is purchased, and as wild-catch stocks decline).
2. Potential consumer backlash on harvesting of krill in Antarctic waters.
3. Continued growth of the algal omega-3 industry that offers a sustainable vegetarian alternative to fish and krill oil and vegetarian ALA oil.

Most companies entering the algal omega-3 industry establish large-scale open outdoor salt water production systems in remote regions. Few companies are harvesting omega-3 oils from freshwater tolerant algae.
Qponics Limited is an exception.
The Company is focused on the protected growth of algae using a modified aquaponic process - where fresh-water aquaculture is combined with the growth

of fresh water tolerant algae rather than horticulture. Aquaponic growth of algae, where the nutrient- and CO_2-rich aquaculture effluent provides for "organic" production of algae and the oil extracted from them.
In addition to supplying a sustainably produced alternative to fish and krill oil, Qponics has set its sights on the organic, vegan and vegetarian markets which currently seek out organic produce or reject EPA and DHA omega-3 oils derived from marine animals.
In 2011 many world authorities predicted that, among the various marine oils, fish oil concentrates were anticipated to witness significant growth, both in terms of volume and value. This year they are less certain that the marine industry can sustain this domination.

Functional foods expand

With expanding support from the medical industry the world's omega-3 market is anticipated to continue penetrating the functional foods sector as well as the traditional dietary supplements arena. Growth of the market has been largely attributed to the technological developments that have made possible the incorporation in food and beverages of originally-unpalatable marine oils. Food products containing omega-3 ingredients are increasing continually. Omega-3 ingredients have emerged as a vital functional ingredient delivering significant medical benefits, particularly those related to cardiac health. They are now among the most extensively researched and clinically-established functional ingredients available in the food and beverage industry.

Vegan market growing

Vegan Australia is likely to be set up in 2012 to promote the special needs of vegans – people who commit totally to vegetarian-only diets and avoid meat and meat-related foods.
Qponics Limited expects vegans to be a prime market for omega-3 DHA and EPA oils produced from algae.
Vegetarians, who now account for nearly 10% of the Australian population over 14 years of age (nearly two million people), are an additional marketing opportunity for Qponics' algal omega-3 oils.

Psychotherapist advocates omega-3 for children

Combining omega-3 fatty acid supplements with psychotherapy may be helpful for children who have symptoms of depression and a variation of bipolar disorder.
"These are two of the most promising treatments for children with mood disorders other than medication," said **Dr. Mary Fristad**, a clinical child psychologist and researcher at the Ohio State University Medical Center in the US. She is enrolling participants in the first studies to examine effects of combined psychotherapy and omega-3 in children.
"The modern diet does not provide children much of the essential nutrient omega-3 fatty acids. This adversely affects nerve cell membranes and cell communication, which are needed for an optimally functioning brain," she said.

Dr *Graeme Barnett* - *Managing Director and CEO.*

Further information:
www.qponics.com and
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