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AVRIO INSIGHT

WHAT'S NEW AT AVRIO

Welcome to the first edition of Avrio Insight, our new quarterly publication. To comment on this edition, please contact the editor at support@avrioventures.com. For the French version, [click here](#).



At the holiday season, our thoughts turn gratefully to those who have made our success possible. It is in this spirit we say thank you from all of us at Avrio, and we wish you and your families a very happy holiday and prosperous new year.

December 5, 2008

Avrio Ventures closes a Series A round with Biopharmacopae Inc. of Quebec City to pursue commercialization and further product development on a suite of plant-based active ingredients and products for the natural persona care and nutraceutical industries. The company owns a unique technology platform, eXcelerate™, that overcomes the traditional technical challenges associated with the discovery of health products derived from plants. [full story...](#)

FEATURE ARTICLE

Listeria Hysteria - an evaluation of food safety testing in Canada

Public outcry over the recent listeriosis outbreak has lead to the widespread belief that more frequent and rigorous Listeria testing will ensure a safer food supply. Many have blamed deregulation and the decline in environmental testing by the Canadian Food Inspection Agency (CFIA) for the recent Maple Leaf disaster, and have called for the reinstatement of CFIA as the primary watchdogs for the food industry. All this in spite of the fact that Maple Leaf Foods has a worldwide reputation as a leader in food safety, and has consistently exceeded every standard demanded by Health Canada and the CFIA.

Zero-tolerance approach not justified

The simple truth is that more testing will reveal more instances of Listeria contamination, in both the end-product and on the equipment used to prepare the food. It is virtually impossible to eliminate the bacteria completely, no matter what system of sanitation is used, as shown by the continued findings of positive Listeria swabs done at the Bartor Rd. plant even after the deep cleaning and sanitation of the equipment.



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“We can’t form a zero-tolerance approach to Listeria because it would be a waste of time and money. We need to focus on which strains are causing disease, and have a system of reporting that keeps track of which strains were involved in an outbreak,” says Dr. Chris Yost, Canada Research Chair, Microbes, The Environment and Food Safety at the University of Regina.

Listeria monocytogenes – a super bug in its own right

L. monocytogenes is an opportunistic pathogen that causes disease in people who have an impaired immune system, namely the elderly, the young, and the diseased. It is ubiquitous in the environment, and has a well-known reputation for being very difficult to get rid of once it has become entrenched in a system. It can grow in environments that would kill most other bacteria, forming tough biofilms that are resistant to cleaning agents. It is acid-resistant, salt-resistant, can grow at either cold or warm temperatures, with or without oxygen, and it is undetectable by odour or taste in food.

The bacteria can be killed by heat, but in the world of ready-to-eat meats and cheeses, *Listeria* may easily travel through the meat processing plant and into your sandwich without ever feeling an increase in temperature. Some researchers suggest that the average person unknowingly ingests *Listeria* every three to four days. Even Health Canada admits that up to 10% of all ready-to-eat foods currently on the market probably contain the bacteria.

All of which begs the question – if it’s so omnipresent, and so difficult to get rid of, why aren’t more people getting sick?

One of these strains is not like the other

According to Yost, the answer is obvious – he suggests that not all strains of *L. monocytogenes* can cause disease in humans, and that only a few may be responsible for causing the tragic fatalities seen with the Maple Leaf outbreak. Just like with *E. coli*, there are many strains of the same species that do not cause any problems in humans, but there are virulent strains, like O157:H7, that can cause mass devastation. The problem is, no one has yet identified which virulent strains of *Listeria* are responsible for causing disease in a food environment.

Yost suggests that Maple Leaf should be more open about their testing procedures and data collection, and whether they are looking at the identification of a virulent strain. He is concerned that Canada does not have a surveillance system to keep track of virulent strains of foodborne diseases like *Listeria*. In the US, *Listeria* has been a notifiable disease since 2001. The Centers for Disease Control works in conjunction with the Council of State and Territorial Epidemiologists to track all listeriosis outbreaks and to ensure that the organism responsible is submitted to the National Molecular Subtyping Network for Foodborne Disease Surveillance (PulseNet) for DNA fingerprinting. In this way, they are able to determine the exact strain that caused the outbreak and compare it to others to determine if the same bacteria infected every sick individual.

Information like this would be particularly important in light of recent findings of positive samples of *Listeria* found after the deep cleaning and sanitation efforts at Maple Leaf Foods. Are these positive samples the same strain that caused the disease outbreak? Or are these “run-of-the-mill” strains that are unlikely to cause problems?

Canada's food safety ranking

In fact, the lack of easily accessible information is one of the major criticisms of a recent report co-authored by Yost and Dr. Sylvain Charlebois, Associate Dean of the Kenneth Levine Graduate School of Business at the University of Regina. Together, they examined the performance of 17 OECD countries in 4 categories of food safety, namely Consumer Affairs, Biosecurity, Governance & Recalls, and Traceability & Management. Canada ranked 5th with a Superior grade, while the US ranked 7th with an Average grade. According to the 48 variables examined, Canada has one of the safest food supplies in the world.

Critics of the report suggest that Canada cannot possibly rank so highly because we have no system for reporting a food related illness. Currently, doctors are not required to notify any agency when they discover a case of foodborne illness, and no one in Canada is keeping track of the epidemiology of these diseases. There is no repository of information, so even finding information on the Walkerton outbreak of E. coli O157:H7 in 2000 is next to impossible.

Communication breakdown

In Canada, each government agency has its own mandate for research, and there is a constant battle for funding as available resources become stretched thinner every year. Communication is lacking between Ag Canada, Health Canada, CFIA and Public Health Canada, resulting in unnecessary delays and duplicated efforts.

In June of this year, public health officials recognized that there was a Listeria problem in Maple Leaf products, and yet it still took until August 17 before a recall was announced. On August 6, the public health notified the CFIA, who completed their own investigation of Maple Leaf. According to Charlebois, public health should have contacted CFIA as soon as they knew of a problem, and a recall issued right away. Confirmation of the data could have been completed after the public was notified of the danger.

HACCP certification is our best bet

Yost adds that both government agencies and food processors have become somewhat complacent over the years with regard to food safety due to the success of programs like Hazard Analysis Critical Control Point (HACCP). Encouraged by the CFIA, companies can become HACCP certified to enhance their safety programs but it is not mandatory, and there is no standardization for implementing a HACCP plan. Consultants may be hired to facilitate the process, but there is no government-approved accreditation program currently in place for either consultant training or putting the program into practice.

For some, that's just fine. Charlebois comments, "There is far too much regulation of food safety already. It's more difficult to start a new slaughterhouse than it is to build a new hospital."

Yost cautions that without constant vigilance, the bacteria will always win. With increasing centralization of food processing, like at the Bartor Rd. Maple Leaf plant, massive recalls due to contamination at a central point are much more likely in the future. For Listeria in particular, tracking and identifying which strains are actually causing disease should be the priority.

McCain himself says it best, “Canadians need to understand that the food supply is safer than ever, that it’s continuously improving, that the risks are infinitesimally low—but they’re not zero. I think it’s a travesty when I see this in the press get characterized as a broken system. This is about taking a system that is very strong and making it better.”

COMPANY PROFILE – AVRIO VENTURES (CALGARY)

Who we ARE

Avrio Ventures provides a collective 80 years experience with Canada's industrial life science venture capital sector. The Avrio team represents 40 investments and over 200 transactions as VC investors, entrepreneurs, operators and investment bankers. Principal partners Jim Taylor, Aki Georgacacos and Bud Kirchner combine a deep sector-specific knowledge with strategic guidance and access to industry relationships to provide outstanding support to the entrepreneurial life sciences sector.

Prior to Avrio, Jim Taylor developed and established Farm Credit Canada (FCC) Ventures, and was an active investor in growth stage companies in the industrial life sciences sector. Aki Georgacacos also comes from FCC Ventures as Managing Director, and led the majority of the fund's investments. Bud Kirchner has extensive experience in a wide range of industries including industrial life sciences, financial services, airlines and consulting.

What we DO

Avrio Ventures plays an active role in providing the best resources possible to Canadian-based ag-tech and food-tech companies that demonstrate a competitive advantage through proven science, proprietary intellectual property, or a strong brand franchise.

Portfolio companies have full access to Avrio's knowledge base and resources for advice, planning and execution of growth plans. Avrio helps to commercialize products, initiate product roll-outs, expand distribution and market presence, or fund growth. Avrio will invest up to \$7.5 million over the life of a single portfolio company, over investment horizons of 5-7 years.

Who we SERVE

Our current portfolio companies include:

[Origin Biomed Inc.](#) - bioactive solutions for pain management

[Siamons International](#) - natural antimicrobial polymers for industrial applications

SJ Irvine - manufacturers of innovative and healthy products for the private label food industry

[Botaneco Specialty Ingredients](#) - developer of natural-based ingredients for the personal care and OTC topical markets

[Biopharmacopae Inc.](#) - discovery and development of plant-derived products for the skin care, cosmeceutical, nutraceutical, and nutrition industries

BUSINESS BRIEFS

December 8, 2008

Pine Star Logging has started grinding wood waste for Pacific BioEnergy's wood pellet market after investing \$750,000 in a new wood grinding machine. [full story...](#)

December 8, 2008

BC Hydro announces four successful proposals in phase one of Bioenergy Call for Power. [full story...](#)

December 3, 2008

SemBioSys, a biotechnology company developing protein pharmaceuticals in crop plants, announced that it has initiated a phase I/II clinical trial of its plant-produced insulin with the first injection of its drug in humans. [full story...](#)

December 2, 2008

Monsanto Company completed its proposed acquisition of Cana Vialis S.A. and Allelyx S.A., both of which are based in Brazil. [full story...](#)

November 28, 2008

The British Columbia government is calling for applications and will invest \$10 million to support the production of liquid biofuels with demonstrated low greenhouse gas emissions. [full story...](#)

November 28, 2008

Valensa International and Parry Nutraceuticals have joined forces in a new agreement that will focus on developing new plant-derived nutritional products for foods and supplements. [full story...](#)

November 28, 2008

AGRIS Co-operative and Suncor Energy received \$50,000 from the Ontario government to evaluate the feasibility of constructing and operating a unique multi-oilseed plant. [full story...](#)

November 10, 2008

The Western Canadian Functional Food & Natural Health Product Network announced the winners of the 2008 Excellence Awards which recognize achievement, excellence, leadership and significant contributions by individual, corporate or associate WCFN members within the Functional Food & Natural Health Product Sector. [full story...](#)

November 10, 2008

Winners of the 2008 Canadian Agri-Food Awards of Excellence announced. Natunola Health Biosciences Inc. (formerly Sentex Systems Ltd.) won the innovation award for its unique flax products. [full story...](#)

November 6, 2008

Winners of the 2008 California Cleantech Open announced. [full story...](#)

October 28, 2008

US subsidiary of Lignol Energy Corporation signed a US \$30 million Cooperative Agreement with the U.S. Department of Energy. [full story...](#)

UPCOMING EVENTS

January 29-30, 2009

The National Algae Association announces its Algae Commercialization, Research and Business Networking Forum in Houston, TX, which will present leading-edge technologies for the commercialization of algae. A call for presentations and papers is currently underway.

[More information](#)

February 1-4, 2009

The National Biodiesel Conference and Expo in San Francisco, CA, will showcase 400 booths with the latest in biodiesel products and services.

[More Information](#)

February 10, 2009

Agri-Food Innovation Forum 2009 featuring Food, A Healthy Value Proposition: The Appetite Continues will take place in Toronto, Ontario.

[More Information](#)

February 18 - 21, 2009

The Natural Health Product Research Society of Canada will be holding the 6th Annual NHP Research Conference and Tradeshow in Vancouver, BC.

[More Information](#)

February 23-25, 2009

The 14th Annual National Ethanol Conference in San Antonio, TX will focus on the industry's impact on the US economy, environment, food prices, and the international market.

[More Information](#)

March 3 - 4, 2009

The 2009 Canadian Innovation Exchange (CIX) showcasing Canada's newest and most innovative technology companies will be held in Toronto, Ontario.

[More Information](#)

March 10-12, 2009

The Canadian Renewable Energy Workshop in Regina, SK, will focus on emerging technologies, operation practices and future development of Canada's ethanol and biodiesel industries.

[More information](#)

March 10 - 13, 2009

1st Annual Canadian Farm and Food Biogas Conference and Exhibition will be held in conjunction with the 3rd Annual Growing the Margins: Energy, Bioproducts and Byproducts Conference and Exhibition in London, Ontario.

[More Information](#)