

# NB BioTechnology A Year In Review

## The Atlantic Cancer Research Institute: What a Year!

This past year has been a banner year for the Atlantic Cancer Research Institute (ACRI), figuratively and literally. February saw the institute add to their research team with the recruitment of Dr. Anirban Ghosh, a research scientist whose focus is on finding abnormal molecular events happening in patients and examining how these events contribute to cancer progression, relapse and resistance to treatment. Dr. Ghosh's knowledge and experience will support the institute's current research in the area of clinical translation.

Later in the year, another two ACRI researchers were awarded over \$600K in CIHR (Canadian Institute of Health Research) grants. These grants will help to fund Dr. Stephen Lewis and Dr. Gilles Robichaud's research on understanding the cytoplasmic roles of hnRNP A1 in breast cancer, specifically the identification of molecular elements; and cell signaling pathways involved in processes that transform healthy cells into their cancerous counterparts respectively. Since the creation of the CIHR in 2000, there have only been a few New Brunswick based researchers who have obtained the prestigious New Investigator Awards. The addition of Dr. Lewis and Dr. Robichaud to the list of recipients brings scientific prestige to New Brunswick and the Atlantic region.

In November, the institute, in collaboration with the National Research Council's Institute for Information Technology (NRC-IIT), announced a major breakthrough in the development of potential detection and screening tests for prostate cancer. The U.S. Patent and Trademark Office had recently issued the collaborators' patent that describes the discovery of eight gene biomarkers that can identify prostate cancer from normal tissue much more accurately than current detection tools. This New Brunswick success story has potential implications worldwide with the possible development of tests that reduce the number of unnecessary biopsy procedures arising from current screening modalities while having very few false negative results. It could also identify more indolent or aggressive forms of the disease thereby making it possible to adapt treatment strategies accordingly.

**Highlights:** <http://www.youtube.com/user/ACRIARC#p/a/u/1/SY4FmpTE40Q>;  
<http://www.youtube.com/user/ACRIARC>



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## New Brunswick's Big BioGas Endeavour

Several partners lined up to launch a New Brunswick biogas endeavour - Laforge Bioenvironmental Inc. The plant will produce low carbon electricity and liquid fertilizer from organic waste. This endeavour is a partnership between several parties, notably Laforge Holstein Ltd., of St. André, NB and researchers at the Bio-energy and Bio-products Applied Research Lab in Grand Falls. The research team will be figuring out the mix of organic waste that produces the best quality output.

The plant is expected to produce 2.5 million kilowatt-hours of low-carbon electricity each year, enough to power the farm and 200 homes. The \$2.35-million project is supported by private funds, as well as funds from the New Brunswick Innovation Foundation and the New Brunswick Climate Action Fund.

The project also enhances New Brunswick's research capacity, helping to bolster expertise in fermentation, which is an extremely important biotechnology platform.

## NB Scientists Making Headlines this Year

2010 was a year that saw New Brunswick scientists making their mark on the scientific community. Works and awards of note include:

### The Ones to Watch

Dr. Anirban Ghosh

Dr. Stephen Lewis

Dr. Gilles Robichaud

Dr. Marc Surette

Dr. Suzanne Currie

Dr. Yahia Djaoued

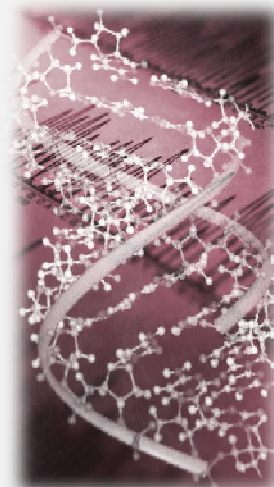
Dr. Thierry Chopin

Dr. Kecheng Li

Dr. Jacques Gagnon

Dr. Miroslava Cuperlovic-Culf

- Dr. Marc Surette of the Université de Moncton: Dr. Surette was awarded the 2010 New Brunswick Biosciences Achievement Award, presented at the Coastal Zones Research Institute in Shippagan, NB during a ceremony to celebrate the Institute's fifth year. Dr. Surette is also the Canada Research Chair in cellular lipid metabolism. He has worked extensively in biochemistry research and development, including the commercialization of Airozin<sup>®</sup>, which helps asthma sufferers control their condition through their diet. Before returning to New Brunswick in 2004, Dr. Surette held progressively senior positions in research with Pilot Therapeutics Inc., where he was Vice President of Research and Development. Since returning, Dr. Surette has secured, alone and in partnerships, over \$6 million in research funding commitments towards his research in New Brunswick. He is a key author in nine patents, and the recipient of more than 8 awards of distinction. He has been invited to present at more than 20 conferences and his written work includes more than 50 published papers, numerous book chapters, and countless abstracts.
- Three New Brunswick researchers were honoured at the NB Innovation Foundation's (NBIF) R3 Gala for recognizing research results:
  - Dr. Suzanne Currie, a biology professor at Mount Allison University, is researching the effects of fluctuating ocean conditions on marine life, and pioneering work on identifying fish specific antibodies for stress in fish.
  - Université de Moncton Shippigan campus chemist Dr. Yahia Djaoued was also honoured for his leading work to turn a coveted shrimp extract, astaxanthin, often used in salmon and trout feed, into a dietary supplement safe for human consumption.
  - Dr. Thierry Chopin, a marine biologist at the University of New Brunswick in Saint John, (UNBSJ) has done ground-breaking work on integrated multi-trophic aquaculture, a technique which recreates a more natural ecosystem within fish farms, by incorporating seaweed, mussels, and increasingly ground feeders into the farming "ecosystem".



## NB Scientists Cont'd

- Dr. Chopin, from UNBSJ, and Dr. Chui, from UNB Fredericton were awarded Strategic Network Grants by the Natural Science and Engineering Research Council of Canada (NSERC). They were two of only 11 Canadian researchers receiving awards in the amounts of \$5M and \$5.3M respectively.
- Four researchers from New Brunswick also received Research Technicians Initiative (RTI) funds from the NBIF to support the hiring of exceptional students to work with them on their projects:
  - S. Currie, D. Campbell and A. Cockshutt - Mount Allison University: received funds to hire a full time research associate to oversee the Instrumentation suite, to develop molecular protocols and to provide molecular biology services to private sector partners.
  - Bernard Hudgins - University of New Brunswick: received funds to permit the addition of a research prosthetics technician to the university's Institute of Biomedical Engineering.
  - Kecheng Li - University of New Brunswick: received funds to support a new research engineer in industrial technologies development who will play a key role in the optimization of a pre-treatment technology for wood pulp.
  - Jacques Gagnon - Coastal Zones Research Institute: received funds to support a new research technician who will work with Dr. Gagnon and his team to evaluate and characterize the presence and quality of natural nutritional components of shrimp, herring, sea cucumber and snow crab by-products for their bio-molecular properties, and develop and optimize the procedures required for manufacturing the various end products for the animal and human food industry.
- Dr. Miroslava Cuperlovic-Culf of the NRC-IIT and ACRI was named one of New Brunswick's Rising Stars, an annual award recognizing knowledge workers doing innovative work in the province. Dr. Cuperlovic-Culf is currently studying the treatment of breast and lung cancers, attempting to pin-point differences in the cancer cells.

*Everything is theoretically impossible, until it is done.*

*Robert Heinlein (1909-1998)*



### Inside Story Headline

*"The Atlantic Innovation Fund is an important catalyst for building research and development capacity in our region. This latest round of funding ensures that more research will continue to be undertaken, and more innovative ideas commercialized, so that Atlantic businesses continue to grow, adapt, diversify and become more competitive."*

The Honourable Keith Ashfield,  
Minister of National Revenue,  
Minister of the Atlantic Canada  
Opportunities Agency (ACOA) and  
Minister for the Atlantic Gateway.

## AIF Fund Continues to Build NB's BioScience Sector

New Brunswick's bioscience sector has been fortunate over the past year to be the recipient of over \$5M in funding from the Atlantic Innovation Fund (AIF).

Recipients of AIF funding in 2010 included:

- Soricimed Biopharma Inc.: A drug development company focused on novel therapeutics for cancer and chronic pain treatments. The supported project will focus on the development and commercialization of a diagnostic tool for early detection and treatment of ovarian cancer. With total estimated costs of \$5.1 million, the group will receive approximately \$2.9 million from the Atlantic Innovation Fund over a two-year period.
- The Atlantic Cancer Research Institute: ACRI is a non-profit organization founded in late 1998 and housed at the Dr. Georges L. Dumont Regional Hospital in Moncton. The supported project will focus on the development of a new technology to identify markers from shed cancer cells, in bodily fluids, that serve as early warning signals for cancer, that will help determine whether a patient should be included or excluded from follow-up treatments such as chemotherapy or surgery.

Additional projects related to biomedical devices and bio-resource technologies that received funding include:

- a portable tool-kit that can be used to perform routine, clinically accepted, assessments of muscle impairment and function outside the clinic (UNB's Institute of Biomedical Engineering); and
- technology aimed at creating more value-added opportunities for increasing pulp yield and strength as well as developing new technology for the production of conductive packaging materials (The Limerick Pulp and Paper Centre (LPPC) at UNB, in collaboration with AV Nackawic Inc., NB and KnowCharge Inc., NB).

The AIF encourages the commercialization of research in Atlantic Canada and has been a key driver for many Atlantic Canadian businesses, universities and research institutions. It has enhanced Atlantic Canada's reputation for innovation and, through the success of the projects it has funded. The AIF contributes significantly to the region's research and development capacity and its economic performance.

Also in this fiscal year, BioAtlantech received an investment of \$358,000 through ACOA's AIF to support the work of BioAtlantech over the next 1.5 years as it implements a program to help accelerate the commercialization of bio sciences in New Brunswick.

*The most exciting phrase to hear in science, the one that heralds the most discoveries, is not "Eureka!" (I found it!) but "That's funny..."*

*Isaac Asimov 1920-1992*

## Federal Budget Opens Door to Innovation

The federal budget, released earlier this year, included provisions to:

- Establish a post-doctoral fellowship program which will attract top level talent with fellowships valued at \$70K per year.
- Increase the combined annual budgets of Canada's research granting councils by an additional \$32M per year.
- Commit \$75M to Genome Canada
- Provide \$135M to the NRC's regional cluster programs
- Double the budget of the College and Community Innovation Program (CCI) by funding 11 new projects under the CCI Program. This includes New Brunswick's own College communautaire du Nouveau Brunswick, which received funding towards its commercialization and training center for bio-refinery and fermentation research and technology. The Grand Falls centre will receive \$500,000 in each of the first three years of project funding and \$400,000 in the final two years of the program. Other contributors include the New Brunswick Innovation Foundation and the Province of New Brunswick.

These enhancements along with the continued renewal of ACOA's AIF and administrative improvements to Canada's Scientific Research and Experimental Development (SR&ED) program are a welcome addition to the ways the federal government is supporting Canada's bioscience sector.

*Federal budget announcements are a welcome support to Canada's bioscience sector.*

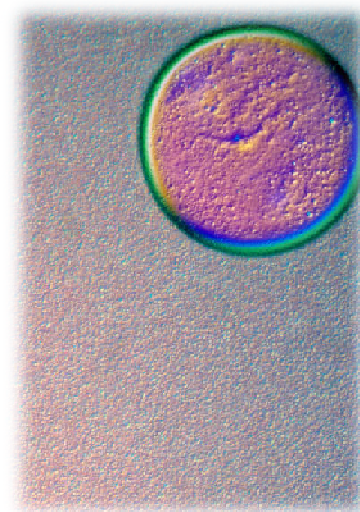
## New Brunswick Submissions Awarded Funding under AAFC's DIAP Initiative

Two New Brunswick submissions were awarded funding under Agriculture and Agri-food Canada's (AAFC) Developing Innovative Agri-Products Initiative (DIAP), a cost-shared program aimed at introducing innovation to Canada's agri-food sector. These projects are being administered by BioAtlantech.

1. **Developing Innovative Potato Protection Strategies** – a project aimed at using wild potato species to produce varieties with resistance to important insects such as Colorado Potato Beetles and aphids, with associated ramifications in reductions in virus transmissions – the partners include NB researchers, partners in France, and BioAtlantech, and involves up to \$564,000 in contributions.
2. **Developing Innovative Wild Blueberry Food Products, Processes and Information for Human Health** – a project aimed at capitalizing on the health functional properties of wild blueberries and the current interest in improving health through healthful foods and dietary products. The partners include a network of Canadian researchers, the Wild Blueberry Association of North America, and two commercial partners, with total contributions up to \$1.56M.

*I was taught that the way of progress was neither swift nor easy.*

*Marie Curie 1867 - 1934*



## Looking Forward to 2011

With 2010 behind us, we can look forward to 2011 with great optimism. The bioscience community in New Brunswick is alive and well and making waves on the international stage.

Gazing into the crystal ball, we can see:

- further advances in cancer diagnostics
- new health products from marine and plant resources
- new solutions for forest pests
- new biodiesel technology from our academic institutions
- bio-fuels from mixed sources

This year in review was produced by BioAtlantech: your lead agency for New Brunswick's bio-industries.

[www.bioatlantech.nb.ca](http://www.bioatlantech.nb.ca)

## NBIF Continuing to Support BioSciences

2010 saw the New Brunswick Innovation Foundation (NBIF) dedicate over \$1 Million to fund 70 student research positions through its Research Assistantships Initiative (RAI) and 8 new research positions through its Research Technicians Initiative (RTI) at 5 of the province's post-secondary institutions. Of these, 31 student and 4 research positions are directly related to biosciences.

Impacted research includes projects on marine co-products, biogas, bio-energy, disease control in farmed fish, forest tree genomics, bioinformatics, cancer biomarkers, bio-control of potato diseases, ecosystem health indicators, and a suite of projects targeting prosthetics.

## New Brunswick Dairy Farmers in the Spotlight

Late in 2010, Agriculture and Agri-Food Canada, through their Canadian Agricultural Adaptation Program awarded the Dairy Farmers of New Brunswick and Milk 2020 (a non-profit company established by New Brunswick dairy farmers and producers) \$313,000 to create new dairy opportunities in the province, including the potential for producing new specialty (artisanal) cheeses.

This initiative will allow dairy farmers and processors in NB remain competitive in the marketplace by taking advantage of premium products like artisanal cheeses in a market looking for new and innovative food.

## A New Partner Helping to Advance Innovation in NB

2010 saw the launch of the newly formed Tech South East, an organization for the technology and health and life science sector in South Eastern New Brunswick. Tech South East was formed in June 2010. It grew out of the Moncton Technology Planning Group with a specific mission in mind: to accelerate the growth of innovation-based entrepreneurship and economic development in South East New Brunswick.

Tech South East is now focused on aligning companies, assets and NB resources to work together on advancement and growth within the region. This group should prove to be a strategic partner in advancing innovation (both tech and health and life sciences) in New Brunswick.