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Latest News

Over 160 Companies Sponsor Strategic Projects Backed with \$55 Million from NSERC

Access to cutting-edge research and talent will give over 160 Canadian companies a strategic advantage, thanks to \$55 million in NSERC grants over three years. The winning applications for the [2010 Strategic Project Grants competition](#), announced January 20 in Waterloo, Ontario, cover a wide spectrum of industries and applications. More than [100 strategic projects](#) were approved ranging from automated pathogen detection systems and next-generation broadband wireless access, to novel adhesives for electronic packaging and photo-bioreactors for converting carbon dioxide to biofuels.

These early-stage project research grants aim to increase knowledge and training in targeted areas that could strongly enhance Canada's economy, society and/or environment within the next 10 years. The strategic projects are geared to generating new ideas and technologies with the strong potential to strengthen Canada's industrial base, generate wealth, create employment and/or inform public policy.



For the upcoming 2011 Strategic Project Grants competition, NSERC, in consultation with all stakeholders, has established a [new set of target areas](#) that align with the priorities of the Government of Canada's science and technology strategy.

Strategic Projects

- ABB Corporate Research
- Abbott Point of Care
- AB Sciex LP
- Acceleware Corp.
- Advanced Micro Devices
- AEF Global
- Agence de la Santé et des services sociaux de Montréal
- Agro Energie
- Alberta Plywood Ltd.
- Altera Toronto Technology Center
- ANC Timber Ltd.
- AQL Management Consulting Inc.
- Aquaculture Gaspésie Inc.
- Asani Technologies Inc.
- AS Composite Inc.
- Associated Engineering (BC) Ltd.
- Atomic Energy of Canada Ltd.
- A.U.G. Signals Ltd.
- Aurora Biomed Inc.
- Aurora NanoDevices Inc.
- Ausenco Sandwell
- Automotive Fuel Cell Cooperation
- Ballard Power Systems Inc.
- Bank of Canada
- BASF Corporation
- BC Hydro
- Bell Canada
- Best Cooking Pulses, Inc.
- BioNeutra Inc.
- British Columbia Transmission Corp.
- CAMECO Corp.
- Canadian Bioenergy Corporation
- Canadian Forest Products Ltd.
- Canadian Liquid Air Ltd.
- CATAAlliance
- Celestica International Inc.
- Ciena Canada Inc.
- Cinespace Film Studios



- CIS Scientific Canada Inc.
- CMC Microsystems
- Cobham Tracking & Locating Ltd.
- Computer Modelling Group
- Convergent Bioscience Ltd.
- Corinex Communications Corp.
- Custom Contact Lenses
- Dalsa Corporation
- Dalsa Semiconductor
- Dayton and Knight Limited
- DeltaGomma Inc.
- DNP Canada Inc.
- Dow AgroSciences Canada Inc.
- Drug Development Inc.
- DVS Sciences Inc.
- ÉEM Inc.
- Eion Inc.
- Elcan Optical Technologies
- ElectroMagneticWorks Inc.
- Electronic Arts Canada Inc.
- EmerGeo Solutions Inc.
- Enablence Inc.
- Engine Control Systems Limited
- Environmental Biodetection Products Inc.
- EPOD Solar Inc.
- E-Profile
- Ericsson Canada Inc.
- EXFO Electro-Optical Engineering
- Fauske & Associates, LLC
- FiberTech Optica Inc.
- FISO Technologies Inc.
- Gates Canada Inc.
- GDG Environnement Ltée
- GE Multilin
- Genetic Computation Ltd.
- Golder Associates Ltd. (CAN)
- Hatch Associates Ltd.
- Highbury Biofuel Technologies Inc.
- Huawei Technologies Canada
- Hydro One Inc.
- HydroQual Laboratories Ltd.
- Hydro-Québec
- IBM Canada Ltd.
- Impulse Accelerated Technologies, Inc.
- IMRIS Inc.



- Intel of Canada Ltd.
- IRphotonics
- ITF Labs
- Jennerex Biotherapeutics
- Kalgene Pharmaceuticals Inc.
- Kerber Applied Research Inc.
- Kintama Research Corporation
- LaCima Corporation
- Lanxess Deutschland GbMH
- LG Electronics Canada
- Lockheed Martin Corporation
- Lumerical Solutions Inc.
- Lunarix Inc.
- Martec Limited
- McMillan-McGee Corp.
- MDA Ltd.
- Metro East Anglers
- Micralyne Inc.
- Microbonds Inc.
- Microsoft Corporation
- Mikro-Tek
- Millar Western Forest Products Ltd.
- Ministère de l'Éducation, du Loisir et du Sport
- MREAC
- Nanometrix Inc.
- Networked Vehicle Association
- Nokia Canada
- NOVA Chemicals Corporation
- Nova Scotia Power Corp
- Novelis Inc.
- NVIDIA Corporation
- Oculus Information Inc.
- OPAL-RT Technologies Inc.
- Paradigm Environmental Technologies Inc.
- Pharma Laser
- Piramal Healthcare (Canada) Limited
- Plasmionique Inc.
- Powertech Labs Inc.
- Professional Loss Control
- Pulse Canada Ltd.
- QPS Photonics Inc.
- Quanser Inc.
- Rampart Partitions Inc.
- Research in Motion Limited
- Roche Ltée, Groupe-conseil



- Santur Corporation
- Sask. Mustard Development Commission
- Sentinelle Medical Inc.
- Sierra Wireless
- SMART Technologies ULC
- SMT Research Ltd.
- Solace Systems Inc.
- Solaris Chem
- Stanton Farms
- Star Solutions
- St-Jean Photochemicals Inc.
- Sundre Forest Products Inc.
- Supratek Pharma Inc.
- SymbioTech Research Inc.
- Syngenta Crop Protection (Canada) Inc.
- Targray Technology International Inc.
- Tavrira Canada Ltd.
- Teraxion Inc.
- The CableShoppe Inc.
- Tornado Medical Systems
- Trojan Technologies Inc.
- UHN Microarray Center
- Umicore
- v.1 Labs
- Vale Inc.o Limited
- Vernon Seed Orchard Co
- Vive Nano Inc.
- VOTI Inc.
- Western Forest Products Inc.
- Westport Innovations Inc.
- Weyerhaeuser Company Ltd.
- WiMatek Systems
- Wired Sun Inc.
- Xstrata Nickel
- Zarlink Semiconductor Inc.

Incentives Help Newfoundland and Labrador Companies Hire Postdoctoral Experts

Research and development (R&D)-performing businesses in Newfoundland and Labrador can now tap into a rich array of incentives to hire highly-qualified, postdoctoral fellows who can help solve technical challenges and develop innovative products and services. The incentives for companies to recruit industrial R&D fellows will be delivered through [a new three-way partnership](#) announced on February 1, 2011, by NSERC, Research &



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Development Corporation (RDC) of Newfoundland and Labrador and the Atlantic Canada Opportunities Agency (ACOA).

All three organizations have programs targeted at boosting the province's R&D-performing businesses, including providing financial aid to companies to supplement the cost of hiring recent postdoctoral graduates in support of in-house R&D activities. Under the new arrangement, NSERC and the RDC will each commit up to \$30,000 annually for fellowship awards of up to two years. Qualifying companies must provide a minimum of \$10,000 (plus benefits) per year. Additional support is available from ACOA, provided that the total value of government support does not exceed 75 percent of the salary and benefits paid to the industrial fellow.

More information about the program is available on the [NSERC Web site](#).

Interest Running High in New College Technology Access Centres

A total of 42 colleges across Canada have submitted letters of intent for funding under NSERC's new \$8.75-million pilot initiative in support of Technology Access Centres (TACs). By mid-March, 2011, after reviewing the letters of intent, NSERC expects to invite up to 15 colleges to submit full applications for TAC funding.

The TACs will focus on supporting innovation in areas of importance to local companies. The centres will help companies innovate by providing technical services, including specialized technical analyses or tests, technology development projects, advice on specific challenges and linkage (referrals) to other capabilities. The core management of each centre will be supported by a College and Community Innovation Program – Technology Access Centre Grant of up to \$350,000 annually for a period of five years. The grants will be awarded early next year.

The TAC approach is built on demonstrated success in Quebec, which maintains a network of College Centres for the Transfer of Technology. For more information, please see [NSERC's discussion paper on TACs](#).

Successful Partnerships

Project Ignites New Life in Old Oil Fields

Canada boasts the second largest oil reserves in the world, but its heavy oil deposits are difficult and expensive to extract. According to a [study by CIBC World Markets Inc.](#), only one-fifth of Western Canada's conventional crude has been pulled from the ground, leaving as much as 77 billion barrels behind that have been largely written off as impossible to get.



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Quadris Canada Corporation has forged a new partnership with experts at the University of Alberta that could be vital to its high-stakes quest to unlock billions of barrels of oil that cannot be economically recovered using existing extraction technologies. The relationship, supported by a three-year \$363,000 NSERC [Collaborative Research and Development](#) (CRD) Grant, was ignited by a \$25,000 [Engage Grant](#) that provides Quadris with access to new expertise in mechanical engineering. This knowledge will help advance its E2 EOR™ flooding technology—a promising technique for enhanced oil recovery (EOR).

Led by Subir Bhattacharjee, the researchers expect to shed new light on how the heavy oil, pore water and solid phases interact chemically within the porous structures of reservoirs that are considered depleted in terms of traditional extraction techniques. This will provide the partners with novel insights as to how to optimize E2 solvent formulations to maximize oil recovery.

Ross Lennox, Quadris's Chief Technology Officer, says he was surprised to learn that mechanical engineering was a strong fit with the company's business. "We normally deal with chemists and chemical engineers. It really never occurred to us that mechanical engineering could be relevant to our technology challenges."

Lennox connected with Dr. Bhattacharjee when he and three other researchers—Sushanta Mitra, David Nobes and Alidad Amirfazli—supported by a \$5,000 NSERC Interaction Grant, visited the company's Calgary labs in early 2010. That meeting quickly led to an Engage Grant project that was successfully completed in October 2010.

The Engage Grant, says Lennox, removed a lot of the up-front risk associated with new research relationships, enabling a simple idea to progress to proof of concept and demonstrating to both parties how well they could collaborate.

"The way Subir handled the Engage project really gave us the confidence to proceed to the next step—beyond proof of concept. When you embark on these projects, you have to be sure that the company and the researcher can work well together. In this case, the Engage Grant provided us with that assurance."

Lennox says Quadris is especially pleased that the follow-on CRD project is highly focused on student training. "We think that is key to retaining the students and hopefully discovering a few good ones that we can hire in the future."

Tembec's Success in China Rooted in R&D Partnership

Having an outstanding product is not enough when trying to tap into the lucrative Chinese market. Establishing a relationship with prospective clients—understanding their language, culture and particular technical needs—is equally critical.



Recognizing this, Tembec Inc.—the world's largest producer of high-yield pulp (HYP), has established a long-standing partnership with Yonghao Ni, professor of chemical engineering at the University of New Brunswick. This research partnership has not only led to breakthrough product and process innovations but also enabled the company to better understand and satisfy its Chinese customers' needs. The productive relationship has resulted in significantly increased sales into China for Tembec, estimated at almost \$600 million during the past decade.

"Dr. Ni has been a great help to us in China," remarks Bernard Guimont, Senior Vice-President of Tembec's Pulp Division. "He accompanied us on a business trip to help build confidence with our customers. He was able to speak their language and learn first-hand about the concerns of Chinese papermakers, which ensured the research project was highly customer-focussed."

Yajun Zhou, Tembec's Manager of R&D for HYP, is another key contributor to the firm's sales success, according to Guimont. "For industry to get the most out of these projects, you need a liaison person in the company to make the necessary links among marketing, operations and research. We are fortunate to have Dr. Zhou fulfilling that role."

In addition to enhanced working relations, Tembec has benefited from advances in R&D that respond to the specific needs of businesses in China, as well as other markets in Asia and Europe. Like all HYP producers, Tembec has been challenged to increase the brightness of its pulp to an International Standards Organization (ISO) optical rating of 90 or more. With conventional bleaching chemicals, companies can only achieve 85 ISO brightness. Faced with this conundrum, the company turned to long-time partners FPInnovations, of which Tembec is a supporting member.

FPInnovations experts, Xuejun Zou and Zhirun Yuan, worked closely with Drs. Ni and Zhou. Together, the researchers invented new high-yield pulp products with enhanced optical properties through the use of an Optical Brightening Agent (OBA) and dye-assisted peroxide bleaching technology.

"With OBA," explains Guimont, "we have been able to convince papermakers that they can displace Kraft pulp with HYP in high brightness paper products."

The benefits of the partnership do not end there. The innovative products also boost Tembec's "green" credentials, a major selling point in an increasingly environmentally conscious marketplace.

In contrast to the more common Kraft pulping process, HYP production is considerably more eco-friendly. HYP makes more efficient use of forest resources since it converts over 90 percent of wood into pulp compared to 45 percent using the Kraft process. The HYP process also consumes four times less water and does not emit chlorinated organics and odorous sulphur-containing volatile compounds.



The environmental benefits, says Guimont, will be a boon to Tembec as it seeks to double the amount of HYP content in coated fine paper from about 15 to 30 percent. "Having a more environmentally friendly product gives us an advantage in the market. It is a central part of our business strategy for the next five years.

Poultry Industry Eyes Millions in Revenues and Savings from McGill Partnership

Answering the proverbial question about whether the chicken or egg came first is a moot point if the eggs don't hatch—an all too common problem for poultry producers. Every year, a typical hatchery handles and incubates up to 20 million infertile eggs at great cost to producers.

A promising new technique to determine the fertility and hatchability of eggs, the product of \$43,000 NSERC [Collaborative Research and Development](#) (CRD) Grant project, holds the promise of big dividends for Canada's poultry industry. The one-year research initiative, spearheaded by Michael Ngadi at McGill University, is potentially worth millions of dollars to the sector according to Tim Nelson, Executive Director of the Poultry Industry Council, which sponsored the research.

The current method to identify and separate infertile eggs, called candling, uses a bright light placed behind the egg to observe details through the shell. It is only effective once the embryo is well developed.

"With candling, you have to wait until the embryo reaches a certain size before you can assess whether the egg will survive," explains Nelson. "The trouble is that, by the time the egg is determined to be infertile, it is pretty much worthless."

McGill University's new technique delivers a quick, non-destructive and accurate method of assessing the hatchability of eggs using hyperspectral imaging. The technology beams light through the eggshell allowing information to be gathered not only from the visible portion of the light spectrum, but also the invisible infrared and ultraviolet portions. Using the hyperspectral data, the researchers are able to detect the chemical profile of the egg and use it to calculate fertility with almost 100 percent accuracy.

Nelson says the beauty of the McGill University innovation is that it can predict fertility with greater accuracy at a much earlier stage, before long and costly incubation.

"With the McGill technology," Nelson notes, "there are potentially millions in extra revenues at stake." By not incubating infertile eggs, the hatchery industry will realize significant savings in space and heating costs. Eggs found to be infertile at that point may also be used for alternative markets, thereby generating new revenues.



"Any technology that can significantly reduce waste in this industry is bound to be a winner," he claims. "The industry is always looking for ways to reduce costs, and that's what this innovation is all about."

While the hatchery industry has shown significant interest in the technology, there is still more work to do before the technology is commercialized. Dr. Ngadi is now seeking an industry sponsor to automate the process and transfer the technology from the lab to full-scale commercial demonstration.

Longer term, the Poultry Industry Council hopes that Dr. Ngadi can apply hyperspectral imaging to the gender identification of eggs. The current manual inspection technique for gender identification is expensive, time-consuming and heart-wrenching, as male chicks are immediately destroyed in a macerator.

Nelson says the implications of early-stage identification are enormous. Egg producers would no longer spend half their resources hatching eggs that are worthless and it would greatly relieve the anguish associated with destroying a perfectly fit male chick. "If Dr. Ngadi can crack this challenge, he will have hit the jackpot in terms of industry impact."

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