GenomeAtlantic
Life Sciences. Life Solutions.

GENOTYPE

SPRING 2014

18 AND COUNTING

There's an interesting shift happening. Where we've often faced blank stares when we raise the topic of genomics as a tool for innovation, we're now seeing keen interest. And better yet, action to make it happen.

For example, since we started our Strategic Plan in April of 2012, we have connected with over 40 companies and organizations that we felt could benefit from 'omics-based technologies. To date, roughly 18 of those – almost half – have culminated in proposal opportunities that are in varying stages of completion.

To put it another way, this means that in just two years, we've seen 18 different business entities recognize the power of genomics to make them more productive, profitable or sustainable.

ORGANIZATIONS AROUND THE REGION HAVE BEEN TRUE 'PARTNERS' AND THE RESULT IS CREATING REAL BENEFITS FOR LOCAL STAKEHOLDERS.

This is incredibly inspiring. First, it's amazing to see the broad scope of genomics applications. Each group is doing something completely different, working with a range of species from cattle, plants and fish, to humans and microbes.

Second, these results reflect the enormous efforts of many people collaborating to help these businesses succeed. Organizations around the region have been true 'partners' and the result is creating real benefits for local stakeholders.

IN JUST TWO YEARS, WE'VE SEEN 18 DIFFERENT BUSINESS ENTITIES RECOGNIZE THE POWER OF GENOMICS TO MAKE THEM MORE PRODUCTIVE, PROFITABLE OR SUSTAINABLE.

These successes underscore the great potential for 'omics-related technologies to provide benefit. And it gives the team at Genome Atlantic even greater incentive to reach out to a range of industries. We are particularly excited about some opportunities to employ 'omics technologies in the oil and gas, mining and environmental sectors. These areas, along with food-related sectors like agriculture and aquaculture, will

be the focus of much of our sector engagement work over the next year, including some special presentations by 'omics experts like Casey Hubert, whose work on the role of microbes in the oil and gas industry is featured in this newsletter.

If you would like to explore the benefits of genomics for your company or sector, please contact us. We would be happy to help through our Genomics Opportunity Review Program or through one of the various funding programs such as Genome Canada's Genomic Applications Partnership Program which are both featured in this edition.

IN THIS EDITION

SAVE THE DATE(S)

NETWORKING EVENT

Genome Atlantic and the PEI BioAlliance will be co-hosting an information and networking session in Charlottetown on June 12, 2014. Please join us from 4-6:30 p.m. at the Delta Charlottetown for presentations on funding programs, and examples of genomics at work. Details will be sent by email in the coming weeks.

GENOMICS: THE POWER AND THE PROMISE

November 24-26, 2014 (Ottawa)

How does the environment impact human health and natural resources at the genomic level? How can genomics help leverage Canada's traditional resource sectors while preserving the environment? Explore these questions and more with world-renowned genomics experts and visionaries from academia, industry, government and media. Program details from Genome Canada coming soon.

DNA DAY: APRIL 29TH

Canada Research Chair in Agricultural Biodiversity, Sean Myles, took time out of his busy Dalhousie schedule to help students across the country learn about the role of genomics in plant and animal production. Sean's online chat was part of a national DNA Day effort organized by Let's Talk Science and various other organizations, including the regional Genome Centres. Although this initiative was designed for school age participants, the conversations produced a great array of information on a variety of applications of genomics. You can see the videos and read the Q&A at www.letstalkDNA.ca

HELP FOR COMPANIES PURSUING 'OMICS-BASED TECHNOLOGIES

Two great programs are designed to help companies and organizations leverage 'omics technologies.

Genome Atlantic's Genomics Opportunity Review Program

The Program provides up to $15,000 to support applicants in the identification, development and/or adoption of genomics tools that lead to increased productivity, profitability and sustainability.

Genome Canada's Genomic Applications Partnership Program

The Program is designed to fund downstream research and development (R&D) projects that are driven by challenges and opportunities facing users of genomics based technologies Funds from Genome Canada range from $100K to $2M to be matched on a 1:2 ratio by other partners.

CONTACT US TO LEARN MORE ABOUT THESE PROGRAMS.

HR CHANGES

We are pleased to announce Andy Stone as our new Director of Business Development.

Andy joined Genome Atlantic in January, 2013 as Business Development Officer, bringing a BSc and MBA (Management of Innovation) from McMaster University, and over 15 years' experience in technology development and commercialization. His success in quickly furthering our business development efforts through effective strategy and thorough execution was a key indicator of his ability to lead this aspect of our organization. Welcome aboard (again), Andy.

ON THE ROAD

Some of the things Genome Atlantic has planned in the next few months:

- Co-chairing the Genetic Technologies and Genomics Workshop at the Aquaculture Association of Canada 30th annual conference in St. Andrews, NB
- Hosting Casey Hubert at the Offshore Energy Research Association conference in Halifax, and meetings and presentations with the oil and gas sector in St. John's
- Attending the Atlantic Biorefinery Conference in Sydney
- Planning presentations and partnership facilitation sessions around the use of genomics in the environmental services, oil and gas, and mining sectors

Contact us to learn more or to suggest other opportunities to connect industry with genomics expertise.

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LEVERAGING THE BUGSTH ATF EASTO N OIL

Casey Hubert says that microscopic organisms known as microbes can play an important role in exploration, production and remediation within the oil and gas sector.

Hubert, a geomicrobiologist from the University of Newcastle upon Tyne, will be presenting at the Offshore Energy Research Association conference on May 21st in Halifax, explaining the role of microbes in the sector, and his research into what makes them tick.

From an exploration perspective, Hubert says certain microbes make a living by metabolizing hydrocarbons. The theory is, when you find these kinds of microbes, oil can't be too far away. So Hubert is particularly interested in the microbial communities around oil seeps – areas where oil reserves, under great pressure below the seabed, escape up and out into the ocean water. The goal is to compare the oil-loving microbes found around seeps with those found in other locations to augment existing exploration strategies.

HUBERT'S QUEST TO MARRY MARINE MICROBIOLOGY WITH OFFSHORE ENGINEERING IS GAINING INTEREST AS OIL COMPANIES SEARCH FOR INNOVATIVE SOLUTIONS TO MITIGATE RISK, IMPROVE PRODUCTION AND REDUCE COSTS.

On the production side, Hubert explains how different microbes are involved in the challenging problem of reservoir souring. Some microbes metabolize sulphate into hydrogen sulphide (H_2S) – a deadly gas that causes several problems. Not only does H_2S create a lethal hazard to oil and gas workers, it also downgrades the value of the product and contributes to corrosion of infrastructure. The practise of pushing cold ocean water into offshore reservoirs to produce oil creates a spa-like environment for these microbes, allowing them to flourish.

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"On the flip side," says Hubert, "microbiology offers a fairly elegant solution. If you are able to change the conditions slightly to promote the proliferation of nitrogen-metabolizing bacteria instead, engineers can reverse and prevent the production of H_2S."

Finally, Hubert explains the remarkably important role of certain microbes in cleaning up oil spills. This natural property has been relied upon in many significant spills, including the 1989 ExxonValdez and 2010 Deepwater Horizon disasters. Again, understanding how and why these organisms metabolize hydrocarbons can help us better manage other potential environmental concerns.

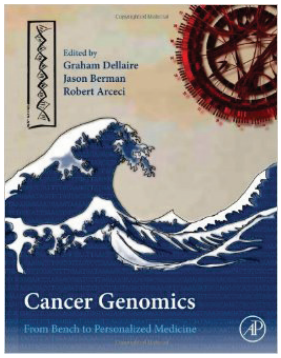
Casey Hubert is a geomicrobiologist who uses genomics to help us understand the role of microbes in oil exploration, production and remediation.

Hubert's quest to marry marine microbiology with offshore engineering is gaining interest as oil companies search for innovative solutions to mitigate risk, improve production and reduce costs. With powerful tools like genomics providing an increasingly comprehensive picture of the genetic blueprints of key microorganisms and entire microbial populations, the opportunities are practically endless.

"In oil and gas, the resource is fundamentally biological, and living organisms are involved in the process, so it makes sense that microbiology can be an exciting part of the solution to industry challenges."

INDUSTRY NEWS

ATLANTIC CANADIANS BEHIND BREAKTHROUGH CANCER GENOMICS BOOK



A new book, *Cancer Genomics: From Bench to Personalized Medicine*, provides a current snapshot of how genomics is being used in the fight against cancer.

Championed by Drs Graham Dellaire and Jason Berman, both from Halifax, and Robert Arceci from Arizona, a renowned leader in childhood cancer genetics, the book provides an important summary of how genomics is dramatically altering the fundamental ways we diagnose and treat a wide range of cancers.

"There's a tsunami of data available about the role of genomics in cancer," says Dellaire, Cameron Research Scientist in Cancer Biology and Associate Professor of Pathology at Dalhousie University. "We created this book to provide a succinct summary of the most important and up-to-date information available on cancer genomics and its impact on patient care both today and in the near future."

The book, designed for clinicians, researchers and graduate students, features chapters on genomic methodologies; cancer models; specific tumours, such as breast, colorectal, and prostate, from a broad range of international experts, including many Canadians.

"The calibre of contributors was crucial in this quickly evolving field," says Berman, Cancer Care Nova Scotia Peggy Davison Clinician Scientist and Associate Professor of Pediatrics at Dalhousie University. "It was critical to work with researchers who are collaborating closely with clinicians and patients to provide information that can be acted upon. We are fortunate that Canadian scientists have been pioneers in cancer genomics and continue to lead in this field."

Cancer Genomics includes a history of the use of genomics, updates on the incredible technological advances in the field, as well as the social impact of the technology.

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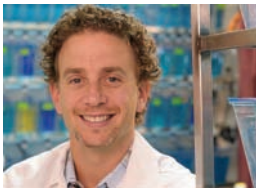
"It's important to acknowledge the ethical and legal implications that are unearthed by the enormous breadth and reach of genomics in research and clinical care," says Conrad Fernandez, Chief of the Division of Hematology/Oncology at the IWK Health Centre and Professor of Pediatrics at Dalhousie University, who co-authored the chapter on biobanking and ethics. "As this technology is advancing quickly, vigorous policy debate and development must keep pace."

Cancer Genomics: From Bench to Personalized Medicine is published by Elsevier Press, and is available at a variety of online book stores.



Drs Graham Dellaire and Jason Berman (right) of Halifax are editors of a new book that summarizes the latest applications of genomics in cancer research and treatment.

WHO WE ARE

Genome Atlantic is a not-for-profit organization with a mission to develop and lead a program of genomics research that delivers tangible economic, social and environmental benefits to Atlantic Canada.

Partnering with government, academic, industry and research institutions, it has enabled over $71 million in genomics research and development projects in topics ranging from agriculture to forestry, aquaculture and human health. It is one of six genome centres across the country, under the umbrella of Genome Canada.

GenomeAtlantic
Life Sciences. Life Solutions.