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Writing economic growth into the region's DNA

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At Genome Atlantic, "*we create great things from life.*"

Catchy slogan, but what does it mean? Here's where our story starts to get more complicated. For longer than a decade, our organization has been using its understanding of the building blocks of life – DNA coding – to support sustainable economic development across Atlantic Canada.

The Honourable Navdeep Bains, Canada's Minister of Innovation Science, and Economic Development, acknowledged the importance of this role on January 10th when he announced \$750,000 in business development funding for our organization through the Atlantic Canada Opportunities Agency (ACOA).

We would like to thank taxpayers, Minister Bains and ACOA for this investment, and for the recognition that genomics-based solutions are a key to Canada's innovation strategy, to the growth of its biosciences sector, and to its economic success.

How do genomics technologies work?

For many people, the concept of the human genome – our genetic blueprint – is associated with the development of more sophisticated and personalized pharmaceuticals along with an ability to detect disease earlier and more accurately. While that is true, our work at Genome Atlantic shows that genomics-based solutions have much wider applications as every organism on the planet has its own DNA instruction manual.

We are now working with partners in the private sector, research institutions and universities on a large number of projects, including:

- De-risking offshore oil and gas exploration by tracking microorganisms that cluster in areas where petroleum seeps from under the seafloor;
- Slowing down the development of rust on offshore energy platforms through our understanding of microbial organisms and their effect on corrosion;
- The selection of Atlantic salmon broodstock to combat the effects of climate change;
- The development of more environmentally-friendly clinical feeds for the aquaculture sector;
- Microbe-enabled cleantech applications in the mining industry; and
- Combatting the challenges of disease in potato agriculture.

In addition to the energy and aquaculture examples mentioned, ocean sector applications include environmental DNA (eDNA) and genomics-based sensors to help with ongoing monitoring of species at risk. Genomics can also help us identify novel value-added products from renewable marine sources.

Genome Atlantic employs a small group of dedicated people with diverse backgrounds, united by a passion to bring significant contribution to the Atlantic economy. To date, in collaboration with many private and public-sector partners, we have enabled more than \$90 million in applied genomics R&D, and over 1,500-person years of employment. In the last 3 years alone, Genome Atlantic has helped enable \$21 million of new applied R&D in Atlantic Canada.

Genome Atlantic's strategy is focused on the needs of industry and the development of genomics-based solutions for companies spanning seven different sectors (agriculture, aquaculture, energy, mining, environment, human health and forestry). The critical importance of genomics is being increasingly recognized by the private sector whose investment in Genome Atlantic projects has grown from 3% in 2008 to an average of 22% over the last three years.

While we have been acting locally in Atlantic Canada, it is important to recognize that our own organization's growth reflects a global trend. The Organization for Economic Co-operation and Development (OECD) predicts biotechnology could contribute over \$1.1 trillion (US) to OECD members' gross domestic product (GDP) by 2030. At our organization, we share Minister Bains' belief that genomics will be central to the development of the economy for the foreseeable future.

In closing, I would like to say that we are proud to be part of this story, to play a role in partnership with company leaders, innovators, scientists, entrepreneurs and others who are at the leading edge of the new economy.