

ANNUAL REPORT

2022-2023



GenomeAtlantic

Life Sciences. Life Solutions.



Genome Atlantic is a not-for-profit organization and a member of the Genome Canada Enterprise consisting of Genome Canada and six regional Genome Centres.

Established in 2000, our role is to help Atlantic Canada benefit from genomics technologies. We work with private and public-sector partners to address business and regional challenges in agriculture, forestry, aquaculture and fisheries, energy, the environment, mining, and human health.

Our work spans the four Atlantic provinces, and since 2000, we have been instrumental in generating more than \$160 million in applied R&D projects to help address our clients' needs and deliver tangible economic and social benefits.

How Genomics is Shaping our Future

Peter Drucker, the founder of modern management, once said, “The best way to predict the future is to create it.” Here at Genome Atlantic, we embrace this philosophy, dedicating ourselves to crafting a future for Atlantic Canada built on prosperity, sustainability, and well-being.

Natural resource industries are the backbone of Atlantic Canada’s economy, and Genome Atlantic works with private and public sector partners across the region to transform traditional industries like forestry, agriculture, and aquaculture by increasing their productivity and their resilience in the face of pressing challenges like climate change and new economic realities.

Through the precision of genomics-based environmental monitoring, we are pioneering cost-effective, accurate and non-invasive ways to survey wildlife including endangered species, in the vicinity of industrial developments.

Genome Atlantic supports human health research that is advancing our knowledge and treatment of conditions prevalent in our region. This includes gaining a better understanding of the genetic determinants of bipolar disorder and optimizing treatment strategies, as well as informing educational programs for better prevention and control of Lyme disease and developing superior tools for diagnosis.

This year, existing projects proceeded and new projects ramped up with enhanced vigor as our region emerged from the pandemic. At present, we are overseeing a portfolio of 27 active projects collectively supported by \$60 million in R&D funding. We are proud to help companies and industries attract these investments and leverage matching funding to advance biotech (and specifically genomics) solutions that will deliver tangible benefits and long-lasting impacts.

One-third of this investment continues to come from the private sector – a resounding testament to the commitment of regional businesses and industry sectors to the value and promise of genomics. Even through the pandemic when companies endured economic hardships, Atlantic Canada businesses continued to invest in genomics solutions to remain competitive and secure their future.

Genome Atlantic’s work would not be possible without the generous business development funding support of the Atlantic Canada Opportunities Agency (ACOA) and the governments of Newfoundland and Labrador, Nova Scotia, New Brunswick and Prince Edward Island, as well as the core operational funding provided by the Government of Canada through Genome Canada. We thank them for recognizing and investing in the power of genomics to help Atlantic Canada grow and prosper.

In this annual report, we are pleased to share with you stories of Atlantic Canadians who are harnessing genomic technologies to address challenges and optimize opportunities. Their successes are laying the foundation for a future that holds limitless potential.



Ron Keefe, K.C., FCPA, ICD.D
Chair, Board of Directors



Steve Armstrong, PhD
President & CEO



Genome Atlantic



Genomics is driving **sustainable economic growth** in Atlantic Canada's natural resources, **enhancing environmental stewardship**, **helping our industries adapt to climate change**, and **improving health outcomes**.

Genome Atlantic works hand in hand with the private sector, government, and academia across Atlantic Canada to **attract investments and leverage matching funding** for applied genomics R&D.



- Since 2000, **Genome Atlantic** has helped generate **\$160 million in applied genomics R&D**.
- Our current portfolio consists of **27 active projects** worth **\$60 million**.
- **Genome Atlantic** works in partnership with clients across Atlantic Canada to ensure that each project meets their needs and delivers tangible benefits with **long-lasting impacts**.
- **Genome Atlantic's end-user-led model** ensures that projects are **driven by the needs of clients** and are designed to **address real-world problems** identified by clients.
- **Private sector investment** makes up **one-third of the funding** in our current project portfolio. This investment comes from small, medium and large companies.
- Projects span **natural resource sectors**, the **environment** and **human health**, as well as emerging areas like **synthetic biology**.



Results-Oriented Partnerships

IMPROVING SPRUCE TREES

In partnership with J.D. Irving Woodlands, three provincial governments, and NRCan, we're developing commercial spruce trees that grow faster, are more resilient to climate change and are expected to yield a 10% increase in commercial production.



Simon Bockstette, N.S. Department of Natural Resources and Renewables, gauges tree growth (Photo: Truefaux Films)

Climate change is expected to lead to a reduction in the growth of softwood trees which are crucial to the pulp industry in Eastern and Atlantic Canada. A \$6.2 million partnership of Genome Atlantic, Génome Québec, Genome Canada, the governments of Nova Scotia, New Brunswick and Quebec, J.D. Irving Woodlands, Université Laval and Natural Resources Canada is taking pre-emptive action against the threat of climate change to the region's softwood lumber industry. FastTRAC 2 uses proven genomics technology to speed up breeding programs for more resilient, premium quality, faster-growing black and red spruce. The initiative scales up the earlier and highly successful FastTRAC 1 which was conducted on J.D. Irving test sites in New Brunswick, and which the company estimated could increase their softwood lumber production on the test sites by as much as 10%.

CLIMATE-PROOFING BLUE MUSSELS

In partnership with Prince Edward Island's mussel producers and provincial government, Genome Atlantic is developing a blue mussel selective breeding program to protect the Island's top-ranked place in North America's mussel market against climate change.



A plate of delicious blue mussels

Blue mussels are sensitive to changes in salinity and water temperature brought about by climate change. An \$800,000 Genome Atlantic Project aims to protect Prince Edward Island's valuable blue mussel industry from the impacts of climate change by developing a genomics selective breeding program to create more resilient and faster-growing shellfish. The initiative is predicted to double the Island's mussel production along with the industry's economic impact within 10 years. Prince Edward Island's blue mussel industry accounts for approximately \$60 million in direct economic growth, employs 1,500 Islanders and pays \$11 million in salaries.

Project partners include Genome Atlantic, Genome Canada, Atlantic Fisheries Fund, the Government of Prince Edward Island, Atlantic Aqua Farms, Prince Edward Island Mussel Farms, Prince Edward Aqua Farms, and the P.E.I. Marine Science Organization.

CLEANER SOLUTION TO SEA LICE

With Cold Ocean Salmon (a subsidiary of Cooke Aquaculture) and Memorial University, we're developing an industrial-scale selective breeding program for cleaner fish which are natural predators of sea lice and are much in demand by salmon aquaculture operations.



Cleaner fish like Lumpfish and Cunner are a useful tool in controlling sea lice, a scourge to the Atlantic salmon industry. Their high demand by salmon farmers as a green alternative has spurred an emerging cleaner fish industry in Newfoundland and Labrador, and Genome Atlantic is working with Memorial University's Department of Ocean Sciences to develop a selective breeding program for cleaner fish that will enable large-scale production of cleaner fish to supply this emerging industry. The \$840,000

initiative is supported by Genome Atlantic through Genome Canada's Regional Priorities Partnership Program (RP3). Additional project funders and partners include ACOA N.L., Cold Ocean Salmon, the Government of Newfoundland and Labrador, and Memorial University's Ocean Sciences Centre.

SMARTER CHRISTMAS TREES

Genome Atlantic is helping Nova Scotia Christmas tree growers to develop a commercialization roadmap for *SMART* balsam fir seedlings which yield 80-90% premium grade trees compared to a yield of only 10% from conventional-bred seedlings.



The Christmas tree industry in Nova Scotia is worth an estimated \$55 million annually. *SMART* balsam fir, a variety developed in Dalhousie University's Faculty of Agriculture, is expected to be a game changer for the industry. Eighty to 90% of *SMART* seedlings yield premium trees that fetch top dollar, compared to only 10% from conventional seedlings. *SMART* trees also offer

superior shape, longer needle retention, and great balsam fir colour and aroma. *SMART* seedlings remain in the field trial phase, but Genome Atlantic, working with the Christmas Tree Council of Nova Scotia and the *SMART* Christmas Tree Research Cooperative, is supporting the development of a commercialization plan.

TACKLING CHILDHOOD DISEASES

A research collaboration between Genome Atlantic, Dalhousie University and IWK Health aims to speed up diagnosis of rare diseases in children.



The Genome Canada-led All for One initiative is advancing precision health across Canada, increasing equitable and timely access to accurate, genomics-enabled clinical diagnosis for Canadians with serious genetic diseases. An Atlantic Canadian research team is leading one of six implementation projects located across Canada – a three-year, \$4.8 million Genome Atlantic project in partnership with Dalhousie University and IWK Health. The project focuses

on developing genomic tools to speed up diagnosis of rare diseases in children. Rare genetic disorders affect roughly one in every 15 Canadian children and make up 30 percent of the pediatric inpatient population. Some of these disorders are elusive and can take a long time to diagnose, risking the patient's health. By developing more accurate diagnostic tools, the project team hopes to ultimately cut wait times for anxious parents and pare down the cost of diagnosing rare diseases in Canadian children.

OFFSHORE ENERGY INSIGHTS

Genome Atlantic is working with the Government of Nova Scotia and scientists from the University of Calgary and Saint Mary's University to develop new genomic tools to identify and characterize methane seeps on the seafloor. These seeps give clues to the location of petroleum reserves and provide insights to inform the development of green energy development such as offshore wind structures.



Checking core samples from the ocean floor on a research vessel (Photo: N.S. Department of Natural Resources and Renewables)

Methane seeps naturally occur where methane gas is released from the seafloor into the water column. These seeps also provide information to inform geohazard assessments for subsea infrastructures like natural gas platforms, wind structures, and carbon capture underground storage. A \$6.2 million Genome Atlantic project is combining genomics, geophysics, oceanography and other disciplines to provide a comprehensive picture of the subsea ecosystem and geology. By studying methane seeps and their microbial communities, researchers hope to gain insights that will help guide the development of offshore energy projects that are environmentally sustainable and minimize the impact to the marine ecosystems.

BREEDING BETTER OYSTERS

New Brunswick's L'Étang Ruisseau Bar Ltd., the biggest oyster hatchery seed supplier in the Maritimes, is working with Genome Atlantic to create a faster growing, better quality, more disease resistant oyster seed that is expected to increase production by more than 60% and create longer-term employment in rural New Brunswick.



The rapid growth of the oyster industry in Eastern Canada cannot be sustained by relying solely on wild-caught oyster spat. L'Étang Ruisseau Bar Ltée (ERB) of Shippagan, New Brunswick, has teamed up with Genome Atlantic, Génome Québec, and Université Laval scientists on a \$3.8 million initiative using genomics to produce the first selectively bred Canadian strain of Eastern oyster. The breeding program will select for traits such as improved growth, better flesh quality and resistance to disease – traits that are difficult to improve using wild stocks and conventional methods. Selective breeding through genomics shortens production time by 20% and is expected to increase ERB's annual production by more than 60% by 2027.

COMBATTING SALMON GILL DISEASE

Complex Gill Disease (CGD) is a growing problem for salmon farming operations on Canada's east and west coasts. A \$4.7 million project co-led by Genome Atlantic and Genome British Columbia will create genomic tools for developing an early warning system for CGD.

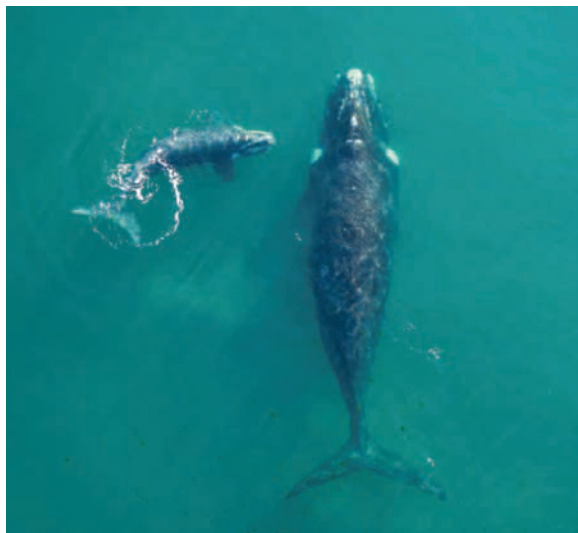


Dr Mark Fast, UPEI, is leading a project to promote gill health in farmed Atlantic salmon (Photo: UPEI)

For reasons unknown, farmed east coast salmon have so far escaped the costly rise of CGD experienced in net pens on the west coast and as far away as Norway and Scotland. Whether the east coast can remain largely unaffected by the disease is an open question. However, a research initiative co-led by Genome Atlantic and Genome British Columbia is aimed at checking CGD nationally and sparing the east coast industry the scale of the west coast problem. Other partners include Memorial University, Genome Canada, Grieg Seafood, Cargill, Fisheries and Oceans Canada, University of Prince Edward Island, Mitacs Canada, and the BC Salmon Farmers Association.

RIGHT WHALE CONSERVATION

An international collaboration of Genome Atlantic, scientists at Saint Mary's University and the New England Aquarium, and government agencies in Canada and the United States aims to shed light on factors affecting the low birth rate of the endangered North Atlantic Right Whale in hopes of aiding their conservation.



The number of critically endangered North Atlantic right whales continues to decline due to high mortality rates from vessel strikes, fishing gear entanglements, and by a low rate of reproduction. There are estimated to be fewer than 400 individuals left, including less than 100 breeding females. With inbreeding suspected as a major factor in the species' low birth rate, a Canadian-U.S. team of scientists is working on a \$6 million, four-year international collaboration to assess how genetic factors are hampering the right whale's recovery. The Genome Atlantic project, announced in 2021, received funding from Genome Canada, with other collaborators including Fisheries and Oceans Canada and the Canadian Whale Institute in Canada, along with the Georgia Department of Natural Resources, Duke University, and the National Oceanographic and Atmospheric Administration, all in the United States.

TACKLING BIPOLAR DISORDER

Research supported by Genome Atlantic is contributing to the development of ground-breaking tools to aid in the diagnosis and treatment of bipolar disorder, a genetic disease that affects 500,000 Canadians.



Bipolar disorder is a serious, chronic psychiatric illness that affects young people in their early 20s and recurs throughout their lifetime. Genetic factors influence who is at risk and how individuals respond to long-term treatments. Currently, because no two individuals are alike, choosing treatments that work best for individuals can take months and even years of trial and error. The risk of suicide is highest in the first years of illness – precisely when most treatment delays occur. A team of Nova Scotia health researchers is exploring the genetic factors that play a role in bipolar disorder with the aim of developing new clinical tools to better diagnose and treat the disorder. The \$975,000 project is supported by Genome Atlantic with funding from Genome Canada’s Regional Priorities Partnership program (RP3), Research Nova Scotia Trust (now Research Nova Scotia), Nova Scotia Health Authority, the Dalhousie University Department of Psychiatry and Dalhousie Medical Research Foundation.

In 2018 the Government of Canada announced the legalization of commercially-grown cannabis in Canada, with the industry now contributing \$140 million to Atlantic Canada’s economy. Genome Atlantic spearheaded a \$1.1 million research partnership between the Université de Moncton, ACOA, Organigram, and the New Brunswick Innovation Foundation to explore how the application of biotechnologies including genomics can lead to increases in yield, quality and sustainability. The project is contributing important knowledge about cannabis and establishing New Brunswick as an important cannabis research centre.

IMPROVING CANNABIS

A Université de Moncton research team supported by Genome Atlantic is exploring specific genetic traits to improve cannabis quality and productivity.



Future-proofing our Softwood Lumber Industry

Red, black, white and Norway spruce – mainstays of Canada’s softwood lumber industry – are threatened by climate change. Genome Atlantic is collaborating with forestry producers and three Provincial Governments to develop superior, fast-growing spruce that will adapt to our changing climate.



THE THREAT

A Natural Resources Canada study predicts if greenhouse gas emissions continue unabated, the rise in woodland temperatures could cause a 10-12% decline in softwood species compared with 2011 levels.

FastTRAC industry partner, JD Irving Ltd., predicts its spruce production could increase by 10% with genomics.

ADVANTAGES

Genomics allows growers to select trees with desirable traits as seedlings rather than wait until they grow into mature trees, reducing the time to breed, test and propagate new species by as much as 20 years.

THE FastTRAC SOLUTION

FastTRAC 2 uses genomic assisted selection to develop new varieties of red and black spruce, building on its predecessor, FastTRAC 1, that focused on Norway and white spruce. Private and public-sector investment in both projects total nearly \$10-million.

EXPECTED RESULTS

- An assured future supply of high quality commercial softwood.
- More jobs and economic development in forestry.

THE FastTRAC PARTNERSHIP

Genome Atlantic, Génome Québec, Genome Canada, Université Laval, Natural Resources Canada, J.D. Irving Limited (Woodlands), Government of Nova Scotia, Government of New Brunswick, Government of Quebec

STAKEHOLDER FEEDBACK

“Currently it takes us about 30 years to finish one rotation of breeding, testing and selection – and FastTRAC will cut that time down to as little as five years.”

— SIMON BOCKSTETTE
Government of Nova Scotia

Cleaner Fish R&D Helping to Spawn an Industry

North America's first commercial cleaner fish hatchery is slated for Marystown, N.L., to meet growing demand from Atlantic Canada's salmon farmers and capitalize on Memorial University's ongoing cleaner fish research.



THE CHALLENGE

Cleaner fish, like lumpfish and cunner, consume sea lice and offer a natural way to help control the parasite that costs Canadian salmon farmers \$18 million a year.

- Cleaner fish are susceptible to bacterial infections for which there are no commercial vaccines.
- Broodstock production is inadequate to support industrial-scale breeding.
- Demand outstripped supply after Memorial University began providing small-sized lumpfish to Cooke Aquaculture, Mowi Canada East and Grieg Seafood for research purposes.

THE SOLUTION

A \$840,000 Genome Atlantic initiative sequenced the genomes of lumpfish and cunner, a critical step for greater broodstock production, advanced selective breeding and efficient vaccine testing.

FUNDING PARTNERS

Funding is through Genome Canada's Regional Partnership Priority Program. Genome Atlantic's partners: Cold Ocean Salmon, ACOA N.L., the Government of Newfoundland and Labrador, Memorial University's Ocean Sciences Centre.

THE N.L. OPPORTUNITY

The emerging cleaner fish industry has substantial job-generating potential. The proposed hatchery could supply 3M lumpfish annually to Atlantic salmon farms. Marystown Marbase Cleanerfish Hatchery is in discussions with N.L.'s Miawpukek First Nation on a possible collaboration on the hatchery project.

STAKEHOLDER FEEDBACK

"From an institutional standpoint and as a researcher, being able to take a product and move it to commercialization in partnership with Genome Atlantic and Cold Ocean Salmon, is a win-win."

— Danny Boyce

Memorial University, St. John's, Newfoundland and Labrador

Supercharging PEI’s Blue Mussel Industry

An \$800,000 venture to create the genomic tools for a blue mussel selective breeding program will protect the shellfish against climate change & preserve Prince Edward Island’s dominance in the North American market.



80% of mussels sold in North America are from Prince Edward Island.

MUSSELS AND THE P.E.I. ECONOMY

- \$60 million in direct economic growth
- Employs 1,500 people
- \$11 million in salaries

Climate change will test the blue mussel’s biological limits, putting a lucrative industry at risk.

Blue Mussels are Canada’s top farmed shellfish product.

GENOMIC TOOLS

Genomic tools are critical to protect and sustain the industry:

- Selective breeding for disease & temperature resistance
- Faster growth (proven 12% growth gains in selectively bred aquatic species) for sustainable, increased production

PROJECT FUNDERS & PARTNERS

Genome Atlantic, Genome Canada, Atlantic Fisheries Fund, Government of Prince Edward Island, Atlantic Aqua Farms, Prince Edward Island Mussel Farms, Prince Edward Aqua Farms, PEI Marine Science Organization

Selective breeding through genomics could **DOUBLE** annual blue mussel production in P.E.I. within 10 years (from 50M lbs. to 100M lbs.)

STAKEHOLDER FEEDBACK

“We are interested in this project because we understand and recognize that innovation, especially in the fields of genetics and genomics, are key to the sustainable growth of this industry.”

— Dr. Tiago Hori
Atlantic Aqua Farms Ltd.

A SMART-er Christmas Tree to Recharge a Rural Industry

Nova Scotia Christmas tree growers anticipate their rural-based industry will rejuvenate and flourish when the SMART balsam fir tree, comes to market.



While not yet commercially available, the SMART tree, developed by Dalhousie University scientists, is in demand by growers throughout Atlantic Canada and Quebec. Genome Atlantic has been working with the Christmas Tree Council of Nova Scotia and the SMART Christmas Tree Research Co-operative Ltd. to develop the commercialization roadmap.

GREATER YIELD

80-90% of SMART Tree seedlings, versus 10% from conventional balsam fir seedlings, produce Premium Christmas trees that fetch top dollar.

THE ADVANTAGES OF SMART TREES

- Superior shape
- Greater resilience to pests and climate change
- Needle retention that lasts up to 72 days after harvest to survive distant travel and the festive season
- Attractive colour and unique fragrance

THE OPPORTUNITY

Today 90% of N.S. Christmas trees are sold outside the province; 45% of those sales are to other Canadians, while another 45% goes to foreign buyers—mainly U.S. but also to warm countries like Panama, Saudi Arabia and the Caribbean. SMART Trees could significantly expand these markets for N.S. growers and challenge demand for the artificial variety.

STAKEHOLDER FEEDBACK

“...[I]t was like turning on a light in the dark to have direction and guidance from Genome Atlantic...I believe the help from Genome Atlantic is what is going to take us to success.”

— **Jim DeLong**

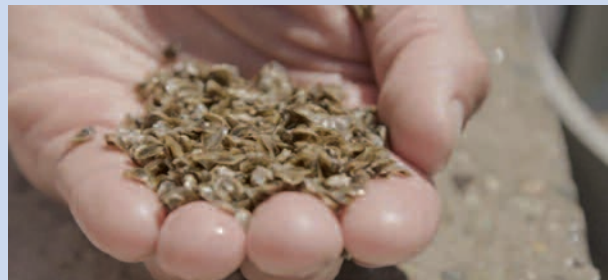
President, SMART Christmas Tree Research Cooperative, established by the Christmas Tree Council of Nova Scotia

Breeding Better Oysters

A \$3.8 million, four-year project puts a New Brunswick company at the forefront of oyster breeding technology & aims to increase profits for oyster farms in Atlantic Canada.



Selective breeding through genomics shortens production time by 20%.



Genomics will help L'Étang Ruisseau Bar (ERB) in Shippagan, New Brunswick, to increase their annual production of oysters by more than 60% by 2027.

AMBITIOUS TARGETS DEMAND A NEW APPROACH

- New Brunswick aims to increase oyster production by 10%/year.
- Having a reliable source of superior, faster-growing oyster seed is key to meeting those targets and will benefit the entire East Coast industry.

PROJECT FUNDERS & PARTNERS

Genome Canada, Genome Atlantic, Génome Québec, ERB, Ministère de l'Économie et de l'Innovation du Québec, Atlantic Fisheries Fund, Université Laval, University of Chile, Mitacs Canada, NRC-IRAP.

Genome Atlantic has worked with ERB to help shape the proposal, assemble the research talent, source the required funding, and manage the funded project.

STAKEHOLDER FEEDBACK

“Access to genomic technology and the opportunity to work with Genome Atlantic are crucial to the success of our program which has long term implications for both our company and the developing oyster industry.”

— Dr. Martin Mallet
L'Étang Ruisseau Bar, Shippagan, New Brunswick

Focus on Funding Programs

Innovation Accelerator Program



In 2022, Genome Atlantic launched a new service offering called the Innovation Accelerator Program (IAP).

The new funding program provides a bridge between small scale, pilot size projects such as those funded by the Genomics Opportunity Review Program (GORP) and larger scale funding programs such as Genome Canada's Genomic Applications partnership Program (GAPP).

IAP is intended to support opportunities on the order of \$100,000 (including co-funding) in areas of strategic importance to industries in Atlantic Canada.

Genomics Opportunity Review Program (GORP)

The Genomics Opportunity Review Program (GORP) has been in place for many years and was developed in response to the growing number of companies and organizations that recognize that genomics and other 'omics technologies can provide tangible benefits – yet are lacking the expertise or resources to identify and pursue these opportunities.

GORP provides small amounts of funding (\$10,000-\$15,000 with the requirement for matching funding) to help clients evaluate the ROI of potential genomics-based solutions. Small GORP projects have big impact – like testing the efficacy of environmental DNA in turbulent marine conditions adjacent to planned tidal power developments, to using genomic selection to breed Norway spruce resistant to white pine weevil. GORP funding often supports proof-of-concept with many projects scaling up into multi-million-dollar initiatives with industry-wide benefits.





SynBio Partnership with Verschuren Centre



Synthetic biology or SynBio, as it is also known, adds another tool to the genomics toolkit.

This emerging branch of genomics enables organisms to be redesigned with new capabilities to create new products such as medical ingredients, bioplastics, clothing fibres and meat substitutes.

An MOU with the Verschuren Centre will help Genome Atlantic support smaller start-up organizations in emerging fields like synthetic biology. (L to R): Dr. Beth Mason, President & CEO, Verschuren Centre; Dr. Steve Armstrong, President & CEO, Genome Atlantic; Dr. Kristin Tweel, Director, Sector Innovation, Genome Atlantic. (Photo: Kelly Clark)

“At Genome Atlantic we’re always on the lookout for opportunities to promote genomic developments that can expand our regional economy,” explained **Dr. Kristin Tweel**, Genome Atlantic’s Director of Sector Innovation. “So, we were delighted to sign a Memorandum of Understanding in 2023 with the Verschuren Centre Inc, based in Sydney, N.S. The Centre has forged partnerships with companies engaged in ground-floor initiatives that involve synthetic biology with significant market potential. Even more attractive to us,” said Dr. Tweel, “is the Verschuren Centre’s focus on clean technology partnerships for sustainability in energy and the environment. We want to be part of that. Our MOU enables us to support start-ups in new genomic fields like synthetic biology.”

Here are some of the bio-business start-up projects supported by the partnership between the Verschuren Centre and Genome Atlantic:

Material Futures Lab Inc. is working to develop synthetic biology technology to scale the production of purple pigment Violacein, a microbial pigment, to make the textile industry more sustainable. The company uses bio-based dyes that avoid the environmental and health issues connected with synthetic textile dyes. Their process is carbon neutral and renewable and has the potential to eliminate the water pollution associated with current dyeing methods.

Dispersa Inc. is using the power of microbes to develop palm-free, bio-degradable, and cost-effective alternatives to synthetic surfactants found in a wide range of household and industrial products. Biosurfactants disperse hydrocarbons into small droplets. The goal is to decarbonize the chemical industry. Specifically, Dispersa uses waste oil and sugars in the fermentation process to produce biosurfactant molecules called sophorolipids.

Liven Proteins Corp. is a start-up using synthetic biology and precision fermentation to transform



under-utilized plant-based materials in agriculture into valuable protein ingredients to enable a circular economy in the food industry. The company uses fermentation technology to develop animal-free protein ingredients (collagens and glycerine) that improve the functionality of plant-based formulations while using plant-based starches (pea starch) as feedstock.

INTAG Bio has developed a controlled all-in-one bioreactor system that creates a growing environment that accelerates plant growth, reduces waste, and lowers the cost of supplying nutrients, water and attaining environmental compliance. INTAG has been working on the metagenomic profiling of microbial communities in the vermin-effluent – the source of sustainable liquid plant nutrient in their bioreactor system – to access its potential as an organic amendment to agriculture. The effluent has greater potential than traditional solid-state compost for agriculture and offers a viable and sustainable alternative to chemical fertilizers.

NovoBind Livestock Therapeutics Inc. is developing next-generation biotherapeutic solutions to combat rising resistance to anti-infectives and their accumulating residue in the environment. Their approach uses nanobodies to target and neutralize specific intestinal ailment-causing bacteria, viruses and parasites in livestock, aquaculture and pets. It overcomes the key hurdle of conventional antibody biologics and can be produced with scalable, low-cost organic bio-production. The company is now working on demonstrating the commercial viability of their innovation. The NovoBind solution, a complementary alternative to conventional treatments, has potential to prevent economic losses in agriculture and aquaculture and to stop dangerous pathogens from entering the environment or reaching consumers.

Operational Model

PIPELINE DEVELOPMENT

- Industry Outreach & Technology Coaching
- Genomics Matchmaking
- Genomics Opportunity Reviews & Small-Scale Funding Initiatives

PROPOSAL ENHANCEMENT

- Opportunity Development & Road-Mapping
- Subject Matter Expert Review
- Impact Evaluation
- Funding Solutions

PROGRAM/PROJECT MANAGEMENT

- Milestone Measurement
- Budget Tracking
- Translation of Deliverables

EXTERNAL RELATIONS AND GENOMICS IN SOCIETY

- Communications & Public Outreach
- Public Policy Engagement

“One of our primary goals with the development of SMART Christmas tree research projects, is to take the average number of premium grade, top quality, Christmas trees from 10% per area to 80-90% per area. This would be an incredible profit margin boost. Along with our other research initiatives, it was like turning on a light in the dark to have direction and guidance from Genome Atlantic.”

– James DeLong, President, SMART Christmas Tree Research Cooperative

Our People

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*Financial Statements available on our website.
Documents available in French upon request.*



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Helping Atlantic Canada grow and thrive through genomics

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