

On the cutting edge

Genome Atlantic lets companies take advantage of leading technology **By David Pretty**

In 1990 the United States spearheaded the Human Genome Project, a world-wide effort designed to collate the human genetic blueprint. This massive global collaboration included key participation from England, Japan, France, Germany and China, but Canada was largely absent. This deficit was a key reason for the genesis of Genome Canada and regional genome centres such as Genome Atlantic back in 2000.

“The Human Genome Project was a key spark plug for Canada to get into the genetic, gene discovery and genomics game,” says Steve Armstrong, President and CEO of Genome Atlantic.

Genomics combines biology, genetics and cutting-edge computer technology to gain unparalleled insight into the DNA of all living things. A deeper understanding of human DNA has provided valuable new tools to detect and treat cancer, as well as infectious and inherited disease. Driving this forward is Genome Atlantic’s commitment to employ the latest technology to refine and improve the process.

“Exponential improvement of the technology and the associated decrease of the cost of doing DNA sequencing has been amazing,” Armstrong states. “To put that in perspective, the Human Genome Project ran for 12 years and the DNA sequencing alone cost somewhere in the neighborhood of \$500 million. Now a human genome can be sequenced in a few days at a cost that will soon be as low as a \$1,000. Since the technology is so much more accessible and affordable it can be applied to virtually any sector that you can describe — not just human health.”

For example, genomics can be used to drive sustainability, improve production and reduce waste in the realm of agriculture. Aquaculture can also be improved by developing hardier fish stocks and then using genomics to safeguard them from disease and parasites. Similarly, the delicate ecosystems inherent in forestry can be fortified by developing flora more resilient to climate change and producing more environmentally-friendly forms of pest control.

Genome Atlantic works with



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companies in agriculture, aquaculture, forestry and many other sectors across Atlantic Canada to develop innovative, genomics-driven solutions. Genomics is even being used to identify the presence of marine bacteria associated with hydrocarbons, which can indicate that oil is nearby. Integrating the genomics with geoscience maps and data can help pinpoint areas for exploration, reducing the associated exploration risks.

Armed with these unique insights, innovation and efficiency doesn’t have to come at the cost of social conscience.

“We want company CEOs to get a better night’s sleep by addressing their specific challenges,” Armstrong says. “Fortunately we have the tools needed to help companies deal with sustainability issues and that, in turn, will help them address the prominent social license challenges that we all need to be cognizant of.”

To do this effectively, Genome Atlantic has a three-step process set in place to help potential clients “explore opportunities, find potential partners and develop proposals”.

According to Armstrong, this is imperative to providing a “custom fit” for their business partners.

“We truly walk the talk of focusing on what the companies need,” he maintains. “They’re ‘driving the bus’ and determin-

ing the agenda. Then, through our 16 years of experience, we’re able to match their needs with specific areas of expertise that can address their challenges.”

But, as Armstrong points out, Genome Atlantic’s involvement doesn’t end with a quick consultation.

“If we determine that there is a genomics-based solution for a client we stay involved and literally work arm-in-arm with them,” Armstrong enthuses. “We develop nationally-competitive proposals, bring in experts to help package those proposals, help them raise the co-funding and then send it out for expert review to ensure that every bit of it is polished. Even after it’s funded we work with the host organizations to hire properly-trained project managers so that the execution is in line with the customer’s initial proposal.”

All of this adds up to a service that Armstrong characterizes as “very unique.”

“We’re focused on a technology that can help virtually any company and sector that exists in Atlantic Canada. There aren’t many companies that can say that. With approximately \$85 million of company-led research and development established in the region to date, we’re certainly very proud of that and appreciative of the many partnerships that have formed as a result.”