

LINK

Nova Scotia's Health & Life Sciences Magazine

Investing in Health Innovation

LINK'S
10TH
ISSUE

PRESCRIPTION FOR INNOVATION

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A Message from BioNova's **MANAGING DIRECTOR**

To our readers,

We're proud to bring you the tenth edition of LINK magazine. Through LINK, we're able to promote the value of the health and life sciences sector by sharing the success stories coming from our business community and highlighting the growing support



the sector has received through our government, universities and industry supporters.

This fall BioNova unveiled BioFuture 2030, a plan to grow Nova Scotia's health and life sciences sector. In this issue you'll find a sneak peek into one of the projects that's underway to support health innovation regionally. Healthcare Solutions 2020, a healthcare innovation project for Atlantic Canada, is led by a committee of Canadian healthcare innovators from both industry and government who will map out an approach to empower the healthcare system to adopt new technologies and transform it into an economic driver.

It's been a busy and productive season as BioNova has been gearing up to host the region's largest health and life sciences event, our 17th annual BioPort

conference on November 7th and 8th at the Halifax Convention Centre. This year's event will focus on the 'Future of Health' and features two compelling keynote speakers, panels and fireside chats on the hottest emerging trends in the industry and two captivating business pitch competitions!

As the health and life sciences sector evolves BioNova will continue to deliver the tools entrepreneurs need to commercialize life-changing research, attract investments, create jobs, access new markets, and improve the quality of life of Nova Scotians. I hope you enjoy learning more about our growing sector in this issue.

Sincerely,

Scott Moffitt
Managing Director, BioNova

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BIC JUNIOR

INSPIRING NOVA SCOTIA'S FUTURE CEOs

#BICjr2018

Live event
**BioPort
2018**
on
NOVEMBER 7TH

ABOUT BIC JUNIOR

BioNova's BIC Junior inspires Nova Scotia's high school and first year post-secondary students to create a business idea for the Health and Life Sciences sector that has real commercialization potential. Students pitch their business idea to a panel of judges during BioPort 2018.

WHY IS BIC JUNIOR IMPORTANT?

- Raises awareness among students, educators and the public about the value of the Health & Life Sciences sector
- Supports student learning and entrepreneurship
- Shapes and cultivates the next generation of leaders



BioNova's Prescription FOR HEALTH CARE INNOVATION

Like most provinces in Canada, Nova Scotia spends about 40 per cent of its budget on health care. This year the provincial health department's budget is \$4.37 billion¹. That's over \$1 million a day.

Yet our health care system is ailing with overcrowded emergency rooms, lengthy wait times, and over 50,000² Nova Scotians on a provincial list looking for a family doctor.

As our population ages, health care costs are projected to grow well beyond sustainable levels. So what can be

done to improve a situation that has, at times, been called a "crisis" by patients and clinicians?

Nova Scotia's Health Minister Randy Delorey said recently, in an interview with The Star Halifax, "... better health care is not always defined by throwing more money at it. You need to make sure that where you are investing the money are the right areas that are going to provide results."

Healthcare Solutions 2020 – Health Care Innovation Project
Rather than attempting to manage

an unsustainable health care system by cutting spending, BioNova – Nova Scotia's health and life sciences association – is proposing a different approach to support the system; one that facilitates the adoption of new medical technologies. Working in partnership with MEDEC, the association of Canadian medical technology companies, BioNova is spearheading Healthcare Solutions 2020, a health care innovation project for Atlantic Canada. The project is led by a committee of Canadian health care innovators from both industry and government.

¹ Nova Scotia Department of Health and Wellness budget 2018-2019
<https://novascotia.ca/budget/documents/Budget-2018-19.pdf>

² Nova Scotians on a provincial list looking for a family doctor. <http://www.nshealth.ca/need-family-practice-data>



Paul Bradley, Healthcare Solutions 2020
Project Manager

Paul Bradley is managing the health care innovation project. As a former vice president of strategic affairs at Johnson & Johnson Medical Products and the past chair of MEDEC, he is pleased to have assembled such an accomplished and diverse committee. "Having committee members who are embedded in our health care system and those representing the private sector brings a unique blend of perspectives," says Bradley.

This committee will map out an approach to empower the region's health care system to adopt new medical technologies and transform it into an economic driver. "Adopting made-in-Nova-Scotia innovations has the potential to both increase the quality of our health care and manage our costs," says Scott Moffitt, Managing Director of BioNova.

Potential of Our Health and Life Sciences Sector

As a sector, health is a booming industry world-wide. The Canadian Venture Capital & Private Equity Association recently posted that Nova Scotia's investment scene is also heating up, attracting \$38 million in venture capital in the first quarter of 2018.

Nova Scotia's world-class research facilities and incubator programs are already galvanizing a cluster of health and life science companies. Unfortunately, as long as the health care system is seen as a cost, and as

long as administrators fail to be early adopters of home-grown innovation, this region will fail to realize the economic potential of the global health revolution.

Barriers to Adoption of Innovation

There are multiple barriers affecting the adoption of new medical technologies into Canada's 13 individual provincial and territorial health care systems, from siloed budgets among hospitals and home care services to a procurement process that is price-based.

When it comes to the adoption of new medical technologies, Paul Bradley sees a broader, value-based process as the way forward. He describes a scenario of a company developing a new computer navigation technology for surgery that would enable the surgeon to use minimally invasive incisions. "It may mean spending more of the operating room's budget, but with fewer days in hospital and a shorter rehab, the savings are significant," he says. "Yet, because the hospital's budget is separate from the home care budget, it makes it tough to reconcile the value delivered by the new technology."

Yet, procurement is only one piece of the puzzle. Private sector innovation often enters the health care system through government-funded pilot projects. Unfortunately, once companies emerge from these pilot programs they often face the commercialization valley of death. Even if the pilot has a good outcome, there is no clear process to scale it and bring the new technology to market. This approach is not serving our health care system well.

Moving Towards Value-Based Health Care

To strengthen Nova Scotia's health and life science sector there needs to be stronger links between the research performed here, the companies that start here, and the public system that provides the majority of health

services. "When companies move beyond the pilot stage, not only does it have a positive impact on the economy, but patients gain access to breakthrough technologies that improve their quality of life," says Bradley.

The Healthcare Solutions 2020 committee envisions a value-based health care system that breaks down the budget silos and improves data collection so product or service performance is tied to patient outcomes. The committee is also reviewing what other jurisdictions have done to support the adoption health care innovation, including:

- creating a single point of entry for companies to pitch their technology,
- establishing the position of a Chief Health Innovation Strategist, a role that would facilitate connections between health care buyers and innovative vendors, and
- developing policies that support industry taking the lead in developing innovative solutions to defined public health problems.

"Our purpose is to create a roadmap that supports innovation adoption and better recognizes total benefits to health care," says Bradley.

Health Care Can Be an Economic Driver

Healthcare Solutions 2020 is about economic growth as well. By establishing a system that encourages local innovation adoption, startup companies gain access to clinical users, engage and learn from a first customer and receive international validation when the companies home jurisdiction adopts the technology – all of this is in addition to helping the healthcare system. "It's going to take all of us working together to build a health system that works and that is sustainable into the future," says Moffitt. ■

BRACING

FOR BIG IMPACT on Nova Scotia healthcare



Spring Loaded Technology is one of many made-in-Nova Scotia companies with an innovative health technology that could cut costs and improve healthcare for the province but has yet to be formally covered through Nova Scotia's healthcare. Guided by the input of hundreds of physiotherapists, orthopedic surgeons, and orthotists, the company was able

to launch Levitation - the world's first compact and powerful bionic knee brace - last year to a global market.

The Levitation knee brace uses liquid spring technology to store energy when the knee is bent and release it when the knee is straightened. For the wearer, the brace reduces the pressure on the knee, enhances stability, and prevents further damage to the joint.

"We've seen our product help patients in a wide variety of ways, including reducing pain, restoring strength and mobility, retaining independence and dignity, and even delaying or avoiding the need for surgery," said Chris Cowper-Smith, CEO of Spring Loaded Technology.

A global preference for non-invasive treatments has been driving Spring

Loaded's sales across North America. The company has seen its market broaden from helping athletes recover from injuries to helping people with mobility issues, especially those living with osteoarthritis.

According to the Arthritis Society of Canada, osteoarthritis is a degenerative health issue affecting nearly five million Canadians. One of the most difficult challenges for those living with osteoarthritis is to remain active, to slow the degenerative process.

Spring Loaded has met this challenge by adapting the Levitation knee brace specifically for patients living with osteoarthritis. So now, the brace not only reduces pain and pressure across the whole knee, it also provides better support and alignment so that people can get back to being active.

Additionally, the Levitation knee brace allows people to buy time before needing surgery and may even prevent it altogether, as Jane Grover, a grandmother with osteoarthritis, can attest. Grover explains in a Spring Loaded corporate video that when she found out she needed a knee replacement surgery; she opted for a Levitation knee brace instead. Today she continues to enjoy an active lifestyle that includes keeping up with her grandchildren.

"The last thing I wanted was more surgery. I was going to try out one of the braces that Spring Loaded Technology makes because we have experience with my granddaughter having it. (She) was diagnosed with muscular dystrophy and they've just been a miracle for her. I went and I got one and I already feel 20 years younger, and I really, really feel hopeful that I don't have to go through the surgery for a long time," said Grover.

Meanwhile, the number of Nova Scotians needing orthopedic surgeries is on the rise. Last year the Canadian

The Levitation knee brace could potentially have a large economic and health impact for the province, reducing future orthopedic surgery wait times.



Grover is able to work on her hobby farm thanks to the Levitation Knee brace.



Institute for Health Information released its annual report on wait times showing that Nova Scotians needing hip or knee replacements have the longest average wait time for patients in Canada.

The wait time crisis has been ongoing for years. In 2016 alone, over \$8 million was invested in orthopedic surgeries in the province in an attempt to shorten the wait list.

Offering the Levitation knee brace in Nova Scotia could potentially have a large economic and health impact for the province, reducing future orthopedic surgery wait times.

"Our braces are enabling people to be more physically active, productive, and lead healthier lives than they

could otherwise. The province should seriously consider a range of more cost-effective solutions for treating knee pain and mobility impairments," said Cowper-Smith.

In June of this year Spring Loaded Technology was awarded Nova Scotia's 2018 Exporter of the Year award. This came on the coattails of a funding boost they received from Atlantic Canada Opportunity's Agency to support their plans to expand their manufacturing capacity to keep up with demand and use customer relationship management and enterprise resource planning software to expand their reach.

Headquartered in Dartmouth, Nova Scotia, Spring Loaded Technology employs 30 people full time and plan to hire more as production increases. Spring Loaded Technology is proof of the success that can come from investing in life science, whether it is to create jobs, strengthen the economy, or change lives. ■



HEADLINE HIGHLIGHTS

MILESTONES

- **Adaptiiv:** Adaptiiv Receives FDA 510(k) Clearance to Market 3D Bolus Software
- **Appili Therapeutics:** Appili Therapeutics Completes Phase 1 Study for ATI-1501, Its Taste-Masked Oral Metronidazole Suspension, Demonstrating Significant Improvements in Taste and Palatability
- **BioVectra Inc.:** BioVectra Inc. and TUBE Biopharmaceuticals Sign Exclusive License for Microbial Fermentation Technology to Manufacture Tubulysins
- **BlueLight Analytics:** BlueLight Analytics is a significantly expanding its senior management team, with Theresa Lee (VP Business Development), Derek Leblanc (VP Technology), and Matt Cooper (VP Product and Marketing).
- **Densitas:** Densitas has received a 510(k) FDA clearance for their breast density software. The company signed a partnership with Leeds Teaching Hospitals to bring innovative, personalized breast screening technologies into their routine clinical workflow.
- **DGI Clinical:** DGI Clinical has launches new app, SymptomGuide

Dementia, that allows caregivers to track and manage symptoms of Alzheimer’s disease.

- **IMV Inc.:** IMV Inc. announced that its common shares have been approved for listing on the Nasdaq Capital Market under the symbol “IMV.”
- **TruLeaf:** McCain Foods Limited has completed a strategic investment in TruLeaf Sustainable Agriculture.
- **Truro Herbal Company:** Truro Herbal Company announced that it has received an investment of \$1.2 million from four separate, private investors.

FUNDING

- **ABK Biomedical:** ABK Biomedical has raised more than \$9 million in an over-subscribed round of equity funding.
- **Appili Therapeutics:** Halifax drug discovery company Appili Therapeutics Inc., has raised \$4.3 million in equity financing to further its operations and add to its number of drug candidates.
- **BioVectra Inc.:** The Government of Canada invested \$5,000,000 in BioVectra Inc. to help the biotechnology and pharmaceutical

ingredient manufacturing company expand its operations to Nova Scotia.

- **Precision Biologic Inc.:** Precision Biologic Inc. has received a \$500,000 investment from ACOA to develop new products.
- **Spring Loaded Technology:** The Government of Canada has provided Spring Loaded Technology with a \$460,458 repayable contribution to help it upgrade its manufacturing operations, increase productivity and improve the quality of life of more people affected by mobility issues.

AWARDS

- **BlueLight Analytics:** International Market Champion of the Year
- **ColourSmith Labs:** Spark Innovation Challenge Winner
- **Densitas:** EY Entrepreneur of the Year Finalist
- **MINDSENTINEL:** Spark Innovation Challenge Winner
- **Panag Pharma:** Spark Innovation Challenge Winner
- **Spring Loaded Technology:** Exporter of the Year, under \$5 million, EY Entrepreneur of the Year Finalist

It's time for a new Equity Tax Credit

Grant Thornton has teamed up with BioNova to propose a new Harmonized Innovation Equity Tax Credit (ETC) for Atlantic Canada, that will better incentivize investors and help our life science businesses source growth financing.

Unlike today's ETC programs, which differ by province, a regional approach would broaden the pool of investment opportunities and investors, simplify promotional efforts, and draw more attention to the region's growing tech economy. To achieve these goals, the Government would have to:

- Expand the investment pool to allow investment from outside Atlantic Canada;
- Expand the investment pool to include corporations and partnerships (both within and outside of Atlantic Canada);

- Regionalize tax credits:
 - Maximum credit of 40% of \$250,000 for individuals within Atlantic Canada
 - Maximum credit of 20% of \$500,000 for individuals, corporations, and partnerships outside of Atlantic Canada
- Make the credit available to all investments in innovation technology, regardless of sector, provided the businesses pay more than 50% of wages in Atlantic Canada; and
- Expand the format of the investment to include other forms of equity such as convertible debentures and preferred shares.

We've sent our proposal for a harmonized ETC, to the Department of Finance. If you agree with our recommendations, email Keith.MacIntyre@ca.gt.com to have your name added to the list of supporters.

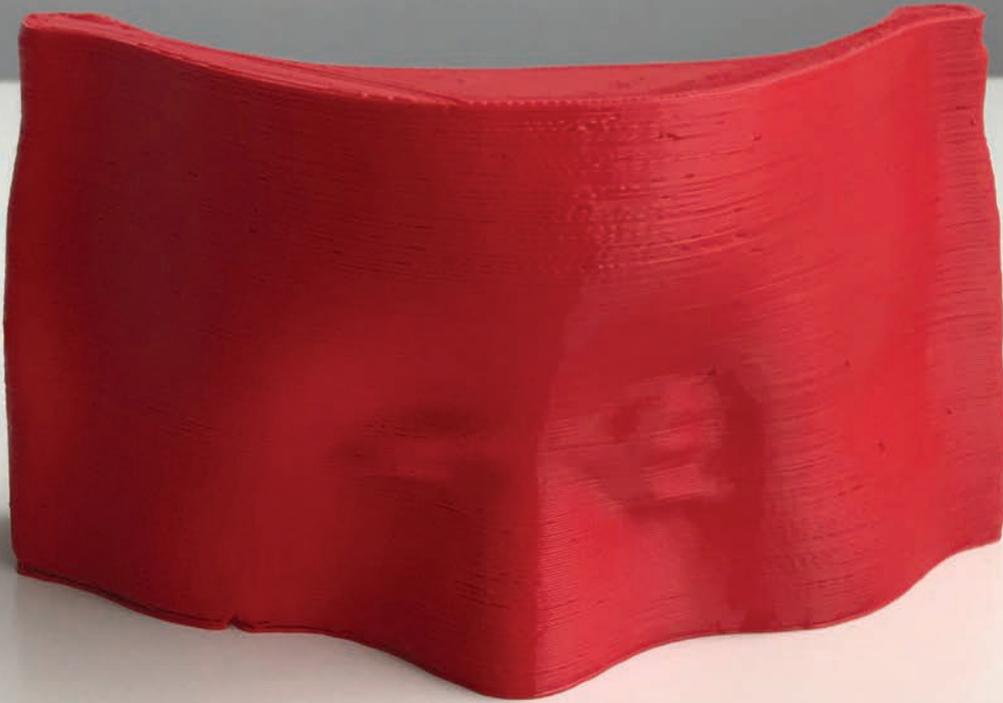


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Adaptiiv's software allows cancer patients to receive more precise radiation treatments

Innovation with Impact ①

Adaptiiv's 3D printing technology improves cancer treatments

Halifax-based company Adaptiiv, formerly known as 3D Bolus, is using advanced software to create personalized 3D-printing medical devices to help cancer patients receive more precise radiation treatments and improve their quality of care. Adaptiiv's customized medical devices have been well received by clinicians, with sales in six countries worldwide.

One of Adaptiiv's most revolutionary medical devices is their 3D-printed bolus. To improve the accuracy of

radiation treatment, a tissue-like material called a bolus is applied to the patient's body. Unlike traditional boluses, Adaptiiv's advanced software allows clinicians to design 3D-printed boluses using data from the patient's CT scans to create a personalized design, improving the patient experience. The boluses are cost effective and fit the contours of the patient, which allows for more accurate dosages in the areas that need it most and sparing healthy tissue during radiation therapy.



Adaptiiv's software creates customized 3D-printed boluses

Aside from improving the lives of cancer patients, Adaptiiv also provides high-quality jobs to Atlantic Canadians, stimulating the economy. With recent funding from Atlantic Canada Opportunities Agency (ACOA) and recently receiving FDA (510K) approval, Adaptiiv has big plans to upgrade their marketing strategy and bring their patient-specific solution to the global radiotherapy market. ■

Innovation with Impact ②

Sona Nanotech develops gold nanorods safe for human trials

Halifax-based company Sona Nanotech is manufacturing the first ever toxin-free gold nanorods that are safe for researchers to use in human trials to treat numerous diseases. The company, which began as a research project, is now working towards commercializing their innovative products while building key partnerships with distributors.



Sona is working to bring their gold nanorods to the global market



Rowles has over 15 years of experience working with gold nanoparticles

A gold nanorod is a microscopic rod-shaped particle that can be used in lateral flow assays, such as pregnancy tests, as well as to deliver medicine to specific areas of the body that require treatment. Gold nanorods have many applications in healthcare

including cancer treatment, liposuction, diagnostic imaging and location-specific drug and pain treatment. Before Sona's toxin-free gold nanorods, scientists would try to mitigate toxin exposure by coating the nanorods, rather than reconstruct them altogether.

Gold nanorods have many applications in healthcare including cancer treatment, liposuction, diagnostic imaging and location-specific drug and pain treatment.

Since Sona's breakthrough, the company has been busy working to bring their gold nanorods to the global market. The recently appointed President and CEO, Darren Rowles, has over 15 years of experience working with gold nanoparticles and has been leading the company's business development efforts. Sona recently announced a merger with Stockport Exploration, a move that has allowed them to focus solely on producing gold nanorods. They also received a funding boost from Atlantic Canada Opportunities Agency (ACOA), giving them the opportunity to focus on their global ambitions and build a quality team. ■



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