Mitacs and Acadia University: Accelerating Innovation for GLA

The story of Greenlight Analytical (**GLA**), a Nova Scotia-based startup, showcases how collaboration between academia and industry can lead to groundbreaking innovations. Through a strategic partnership with Acadia University, and with critical support from Mitacs, GLA overcame significant technical challenges to develop a revolutionary agricultural testing solution. This partnership not only accelerated product development but also highlighted how research-driven collaborations can transform ambitious ideas into market-ready solutions.

The Vision: Making Precision Testing Accessible

GLA's journey began with a bold vision: to democratize the precision of laboratory-grade **mass spectrometry** for agricultural testing. Traditionally, mass spectrometers are confined to laboratories due to two major barriers:

1. **Complex sample preparation**, which requires specialized skills.
2. **Sophisticated data interpretation**, typically handled by chemists with advanced training.

For growers and agricultural producers, these limitations meant relying on external laboratories, delaying insights critical to optimizing their operations. GLA sought to eliminate these barriers by creating a device that could be used **directly in grow rooms or greenhouses**. Their innovation was a device that required no specialized knowledge to operate, providing rapid, actionable insights.

The concept revolved around two key innovations:

1. **A novel sampling mechanism** to bypass labour-intensive preparation. Users could insert small samples—like cannabis flowers, corn kernels, or grains—into the device effortlessly.
2. **Machine learning-powered algorithms** to interpret complex spectrometry data and present meaningful results in simple terms, enabling users without a chemistry background to make informed decisions.

Collaborating with Acadia University

To turn this concept into reality, GLA required advanced expertise in **data analytics** and **chemistry**. With support from **Invest Nova Scotia (formerly NSBI)**, GLA connected with key researchers at **Acadia University**:

- **Dr. Danny Silver** and **Dr. Andrew McIntyre** from the Acadia Institute for Data Analytics.
- **Dr. John Murimboh** from the Department of Chemistry.

This collaboration proved instrumental in validating GLA's concept. The Acadia team brought extensive experience in artificial intelligence, machine learning, and chemistry to the table. Together, the teams:

- Developed **preliminary AI-driven data models** to interpret spectrometry outputs.
- Conducted testing using **simulated and real cannabis samples**.
- Refined the hardware and software to meet practical and scientific standards.

This initial phase demonstrated that GLA's vision was not only feasible but had significant market potential. The credibility and technical expertise provided by Acadia were crucial in attracting early investment, enabling GLA to advance its product development.

Scaling with Mitacs Support

While the partnership with Acadia University provided a strong foundation, the project truly gained momentum when **Mitacs** joined as a key funding supporter for the additional research required. Mitacs provided funding and support that expanded the scope of the project, allowing GLA to engage additional experts and refine its technology further.

Through the Mitacs Accelerate Program and support from **Acadia's Office of Industry & Community Engagement (ICE)**, GLA brought in **Dr. Matt McSweeney**, **Acadia University, Nutrition and Dietetics**, whose expertise bridged the gap between **chemistry and consumer preferences**. His contributions allowed GLA to:

- Identify how chemical profiles in agricultural products influenced **consumer preferences**.
- Optimize data analysis algorithms to help producers grow crops that met market demands, adding significant value to high-quality products.

By leveraging the combined expertise of Acadia University's team and Mitacs funding, GLA demonstrated its ability to deliver actionable insights to growers. This added value helped GLA's customers grow products that commanded higher prices, directly improving their profitability.

Expanding Applications Beyond Cannabis

Initially focused on cannabis testing, GLA's collaboration with Acadia University quickly revealed broader applications for their technology. For instance, **Dr. McIntyre's** work led to a partnership with the [National Research Council of Canada's Data Technology Research Centre](#), where GLA's data analysis techniques were further refined.

Meanwhile, work with Dr. Murimboh, [Acadia Department of Chemistry](#) opened opportunities to address challenges in other agricultural sectors. One significant outcome was a collaboration with [Agriculture and Agri-Food Canada](#)**,** supported by [NRC-IRAP](#), to tackle **mycotoxin detection in corn**. This application was critical for biofuel production, as detecting and managing mycotoxin levels improved the efficiency of ethanol production while ensuring food security and promoting sustainable fuel development.

These expansions highlighted the versatility of GLA's technology, proving its potential to transform multiple industries beyond cannabis cultivation.

A Model for Industry-Academia Collaboration

GLA's journey serves as a model for how small businesses can collaborate with academic institutions to drive innovation. Partnerships like this not only provide startups with access to cutting-edge research but also enable academic institutions to apply their expertise to real-world problems.

The success of this project underscores several critical factors:

1. **Expertise and Credibility**: Acadia University's contributions in data analytics, chemistry, and consumer preferences validated GLA's concept and demonstrated its viability to investors and stakeholders.
2. **Strategic Funding**: Mitacs' funding and support ensured the project could scale effectively, bringing in additional expertise and expanding the scope of research.
3. **Industry Impact**: The project provides actionable solutions for GLA's customers, which will enable them to grow higher-value products and improve their bottom line.

Mitacs: Enabling Research for Business Success

Mitacs played a pivotal role in bridging the gap between GLA's innovative ideas and the resources needed to bring them to life. Their support highlighted the importance of:

- **Flexible funding models** that allow startups to engage with academic institutions.
- **Focus on commercialization**, aligning research efforts with market needs to deliver impactful results.

Looking Ahead

The partnership between GLA, Acadia University, and Mitacs demonstrates how research-driven collaborations can accelerate innovation in small businesses. By leveraging expertise in data analytics, chemistry, and machine learning, GLA has created a product that transforms agricultural testing, offering growers new ways to optimize their operations.

The success of this project highlights the broader potential of industry-academia partnerships to solve complex challenges and drive economic growth. Whether in cannabis, biofuels, or other agricultural sectors, collaborations like this set a benchmark for innovation, sustainability, and success.

As GLA continues to expand its technology's applications, the foundation laid by this partnership will undoubtedly remain a cornerstone of its journey. Together, GLA, Acadia University, and Mitacs have not only advanced the company's mission but have also contributed to the broader goal of fostering innovation in Nova Scotia and beyond.