



# Created at Guelph

UNIVERSITY  
of GUELPH

RESEARCH  
INNOVATION

2019-21 Annual Report

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Cover: Bees from a colony being fed with a pollen substitute patty. Several “Disseminating Knowledge Through Interdisciplinary Conversations” projects (page 22) developed knowledge mobilization products to share bee research in a way that resonates with human values and emotions.

Cover Photo: Alvaro De la Mora Pena



# Welcome

The Research Innovation Office (RIO) at the University of Guelph is an adaptable, agile, dynamic and consultative unit that supports and adds value to the research enterprise by matching the needs of researchers to the needs of external stakeholders. RIO staff contribute to successful innovation management, corporate and community engagement, protection and licensing of inventions to companies, new venture creation and incubation, knowledge transfer and economic development.

**R**IO's strategic pillars are positioned to foster research excellence by facilitating industry and community partnership for the development, translation and adoption of U of G discoveries to generate intellectual, social and economic benefits that address complex global challenges.

## Technology Transfer

In 2021, U of G saw one of its most successful patents come to an end. Thanks to a disclosure made on



**Jessica Bowes, assistant vice-president (research innovation and knowledge mobilization).** Photo: Rob O'Flanagan

November 24, 1999 by Drs. David Evans, Xiao-Dan Yao, Paula Traktman and David Willer, a novel DNA joining technology was patented in Canada, Europe, the United States, Japan, France, Germany, Sweden, the United Kingdom and Switzerland. Over the lifetime of this patent, more than \$2.8 million in royalties were generated. This partnership was a resounding success and is an excellent example of the impact commercialization of innovation can have on the University community. Since

## Welcome

2019, the University has reported the generation of \$4.97 million in gross license income from 299 licenses and options. In addition, 21 new patents and trademarks have been issued, 538 other agreements have been signed and 361 new inventions have been reported.

### Industry Liaison

RIO continues to help companies create successful research partnerships on campus, participating in 59 successful partnered research projects over the past two fiscal years. The Industry Liaison team has

helped navigate new processes and partnerships which have contributed to the generation of more than \$12 million in research revenue. In addition to research partnership, RIO supports industry and community partnership in other ways. In 2020, the University partnered with

Mitacs to onboard Emily Gordon, a Business Development Specialist that is housed within RIO. Emily's position provides a bridge between

Mitacs programming, industry, and faculty and students in all colleges at the University.

### New Venture Creation

Through the Accelerator Guelph program, RIO has provided entrepreneurship training to researchers and graduate students interested in exploring commercial applications of their findings. Over the past two years 14 teams joined the incubation program: 11 of them starting new companies in veterinary health, biosurveillance and health research sectors. Since 2018, U of G start-ups involved in the Accelerator Guelph Program have raised investment five times and created more than 10 jobs. RIO will be welcoming a new Accelerator Guelph manager in the 2022-23 fiscal year to help refresh and rejuvenate the program.

### Knowledge Mobilization

The University of Guelph Policy Fellowship Program was launched in 2018. It helps to bridge the gap between science and policy or practice by connecting decision

**Since 2019, the University has reported generation of \$4.97M in gross license income.**



makers from government, industry and NGOs with U of G experts for focused conversations about issues in agriculture, food and biodiversity. Between May 2019 and April 2021, 22 fellows from three provinces have been invited to attend the program, participating in over 210 meetings.

**D**espite almost two years of change influenced by the COVID-19 pandemic, I am very excited about the continued growth and evolution of RIO. It is an honour to step into the AVP, Research Innovation and Knowledge Mobilization role. I want to thank my predecessor, Dr. Sherri Cox, for the work she did during her tenure as Executive Director and her passion for amplifying impact of U of G research. I have been very fortunate and grateful to have support from RIO leadership while transitioning into this role. I also want to acknowledge and thank my fellow Office of Research and related U of G colleagues for their inputs and efforts in navigating the past 19 months.

RIO continues to pivot and find

new ways of supporting U of G researchers and the broader innovation ecosystem. Together, RIO staff are adapting and optimizing activities and processes to meet the needs of U of G researchers, partners and stakeholders to maximize the impact of U of G research and improve life. We will work closely with internal stakeholders and external partners over the course of 2022–23 to draft a new strategic plan.

I am so grateful to be part of this incredible community and am looking forward to the year ahead to build on these achievements. In this report you will find some of the stories behind these numbers, covering a plethora of achievement in the fields of agriculture, food, health, engineering and the environment.

—Jessica Bowes,  
assistant vice-president  
(research innovation  
and knowledge mobilization)

**In the past four years  
22 fellows have been  
invited to attend the  
University of Guelph  
Policy Fellowship  
Program.**

# Key Metrics 2019–20

**26**  
new licenses/  
options  
signed

**\$715K**  
innovation grants  
**13**  
research projects

**\$2.58M**  
active license  
income

**13**  
patents  
issued

**3**  
new start-ups  
supported

**175**  
reported  
inventions

**289**  
active licenses/  
agreements

**1**  
On-Campus  
Cohort  
**4**  
Fellows

**\$162.2M**  
sponsored  
research at  
U of G

# Key Metrics 2020–21

**\$164.9M**

sponsored  
research at  
U of G

**\$760K**

innovation grants

**13**

research projects

**42**

new licenses/  
options  
signed

**\$2.39M**

active license  
income

**8**

patents  
issued

**8**

new start-ups  
supported

**186**

reported  
inventions

**2**

Virtual Cohorts

**18**

Fellows

**299**

active licenses/  
agreements



# Start-ups



**Sean Thompson,  
CEO, Psigryph.**

Photo: Richard Bain  
Photography

## Psigryph: The Cherry on Top

**Psigryph Inc.** uses sour cherries to create novel nanoparticles to better deliver bioactive molecules to living cells, with applications in agriculture, human and animal nutrition and pharmaceuticals. This technology was developed by Dr. Gopi Paliyath (Plant Agriculture, OAC) and his team with funding support from Mitacs and the Gryphon's LAAIR program, and a successful seed financing round in early 2021. According to company CEO Sean Thompson, "We are very excited by the potential of this technology to improve the health of animals, people and the planet. The Psigryph team is working diligently to bring these innovations to market."

## Avamab Pharma Goes Viral

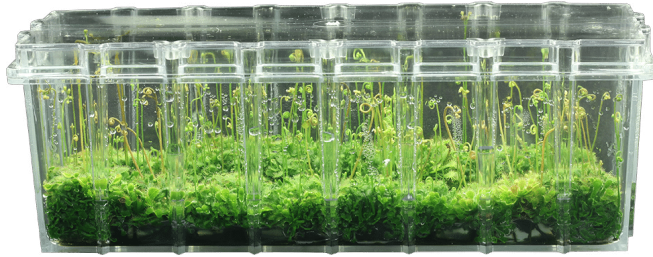
**Avamab Pharma Inc.**, a Canadian biopharmaceutical start-up company founded by Dr. Sarah Wootton (Pathobiology, OVC), recent graduate student Dr. Laura van Lieshout, and Dr. Brad Thompson, former CEO of Oncolytics Biotech Inc, is developing gene therapies to treat viral and bacterial hospital-acquired infections. Using a patented viral vector system, developed by Dr. Wootton and Dr. van Lieshout at U of G, the company hopes to provide solutions for difficult-to-treat diseases with a faster immune benefit than typical vaccines, which is ideal for combating new pathogen mutations as they emerge. These antibodies are particularly useful for treating drug-resistant infections in infants, seniors, and immunocompromised patients. Avamab has been funding research at U of G and other research institutions for the past three years and they are looking for partners and funding to accelerate into their first clinical trial as they advance their products to market.



**3D illustration of *Pseudomonas aeruginosa* bacterium.**

Photo: Shutterstock/Christoph Burgstedt





## Successful Exit for We Vitro Inc.

We Vitro Inc. commercialized a system for propagating plant tissue cultures to improve plant handling and reduce cost. Dr. Max Jones (Plant Agriculture, OAC) and his team at the Gosling Research Institute for Plant Preservation initially launched this system in the cannabis industry, but We Vitro products are now used by orchid, banana and other agricultural sub-sectors. The company was purchased in 2020 by Magenta LLC, a U.S.-based industrial manufacturer with a range of tissue culture products. We Vitro benefited both from the Gryphon's LAAIR program and from RIO's Accelerator Guelph programming.

## eQcell Inc. Leads the Charge for Horse and Dog Stem Cells

eQcell Inc., a Canadian regenerative medicine company founded by Dr. Thomas Koch (Biomedical Sciences, OVC) is racing to be the first approved stem cell manufacturing process for horses and dogs. Currently, eQcell is conducting clinical trials in horses at UC Davis and the Ontario Veterinary College to treat equine synovitis using stem cells, with potential future applications for human health. Over the past two years, eQcell has won grants totaling \$120K from the Gryphon's LAAIR Program, \$30K from the Accelerator Centre, Waterloo—JumpStart Program, \$15K from Ontario Agri-Food Technologies—Agri-tech Program and undisclosed seed funding from private investors.





**“eQcell has experienced tremendous support from subject-matter experts, inventors, investors and like-minded companies in the space of stromal cell technologies over the past year. The initial support eQcell received through the Research Innovation Office at the University of Guelph was critical to our success as was local funding for start-up creation and mentorship.”** — Dr. Thomas Koch

**Dr. Thomas Koch working in his lab.**

Photo: Karen Mantel



# Innovation of the Year 2020



Left to right: Dr. John Lindsay, Steve De Brabandere, director, technology transfer and industry liaison, Dr. Mahdiyeh Hasani, Dr. Keith Warriner. Photo: Rob O'Flanagan

Two University of Guelph technologies, a waterless disinfectant system and an advanced geospatial data analysis software, shared the University's Innovation of the Year Award for 2020 for their remarkable potential for changing the world and improving life.

Dr. Keith Warriner (Food Science, OAC) and post-doctoral researcher Dr. Mahdiyeh Hasani, developed a [waterless surface decontamination](#) method to disinfect fruits and vegetables using hydrogen peroxide, ultraviolet light and ozone. Drawn by the needs of health care providers during the COVID-19 pandemic, this process was optimized for the cleaning of N95 masks and other PPE. This innovation has been brought to market by [Clēan Works Corp.](#) and can be found in food processing facilities and hospitals where it continues to protect human health.

[WhiteboxTools](#), developed by Dr. John Lindsay (Geography, Environment & Geomatics, CSAHS), is a [Geographic Information System software package](#) that analyzes spatial data to solve large scale spatial problems. The open-source technology is used around the world for preservation of the environment and natural landscapes including wetlands mapping, landslide forecasting, soil erosion and ice cover modelling. Its use continues to evolve, with the software recently being utilized to model vegetation and landscape encroachment on sidewalks and evaluate its effect on the level of accessibility in these areas.



**Dr. Keith Warriner and Dr. Mahdiyeh Hasani place surgical gowns in a decontamination chamber.**

Photo courtesy of Dr. Keith Warriner



**Dr. John Lindsay and students with a model produced by the WhiteboxTools GIS software.** Photo courtesy of Dr. John Lindsay



# Innovation of the Year 2021

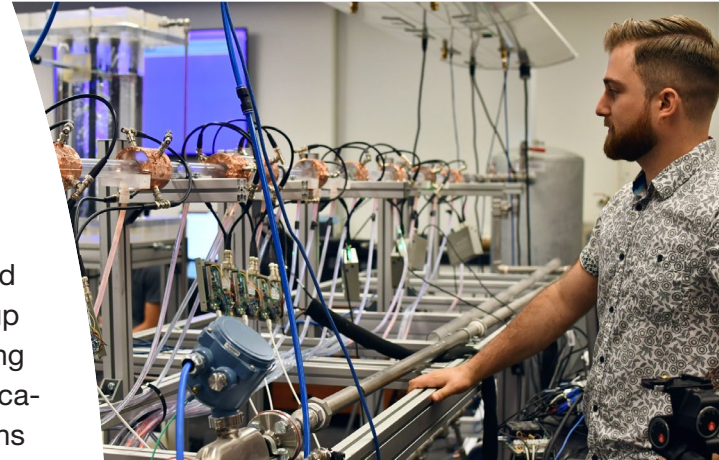


Left to right: Paul Subject, Jessica Bowes, assistant vice-president (research innovation and knowledge mobilization), Sherif Abdou, Dr. Wael Ahmed, Joshua Rosettani, Dr. George van der Merwe, Angus Ross, Nate Ferguson, Caroline Tyrawa, Richard Preiss, Steve De Brabandere, director, technology transfer and industry liaison. Photo: Rob O'Flanagan

**In 2021, two impactful University of Guelph technologies were recognized with Innovation of the Year Awards: an airlift pump and novel regional yeast strains for craft brewing.**

The airlift pump system, developed by Dr. Wael Ahmed (Engineering, CEPS) and brought to market by start-up company [FloNergia Inc.](#), does not contain any moving parts or require lubrication. This revolutionary modification has been optimized for multiple food applications and is currently in use at aquaculture facilities around the world where it significantly reduces energy and maintenance costs, creating more sustainable and economically viable practices.

Dr. George van der Merwe (Molecular and Cellular Biology, CBS) and his team have optimized local strains of yeast for brewing. [Escarment Laboratories](#) has commercialized this work into a diverse selection of specialized yeast strains for craft and industrial brewers alike, including wild Ontario yeast strains, which will improve the sustainability and economics of Canadian craft brewers who previously relied on imported yeast strains. The 2021 World Beer awards recognized several beers based on Escarpment Lab yeast strains with gold medals—cheers to that!



**Josh Rosettani monitoring systems in the Ahmed lab.**

Photo: Junelle Fisher



**Caroline Tyrawa prepares samples for testing in the van der Merwe lab.**

Photo: Junelle Fisher



# Innovation Highlights



**Research technician Tom Smith manipulates the small parts of a bean flower to cross-pollinate bean plants.**

Photo: M. H. Peppard

## **Breeding More Resilient Beans**

As world leaders in dry bean production, Canadian producers export dry bean varieties to over 70 countries. With funding through the Ontario Agri-Food Innovation Alliance, the federal government, and the Ontario bean industry, the [Dry Bean Breeding Program](#) at the University of Guelph is breeding new varieties with higher yields, better disease resistance and better product quality. Bean varieties like kidney beans, navy beans, cranberry beans, etc., are cornerstone products for many farms.

Led by Dr. Peter Pauls (Plant Agriculture, OAC) and research technician Tom Smith, the program develops and rigorously evaluates new dry bean varieties for yield, maturity, harvestability, cooking quality, specialty traits, and various types of disease resistance. Only after this extensive testing are the best varieties supported for registration in Canada and advanced to market.

U of G's Dry Bean Breeding program is responsible for important discoveries related to disease resistance, particularly common bacterial blight, and has



## U of G's First-Ever Crab Apple Variety Licensed

Dr. John Cline (Plant Agriculture, OAC) has released a new crab apple variety called Providence, which has a dark red flesh and crimson-coloured juice suitable for cider, jams and jellies. So far, the variety has been licensed to [Warwick Orchards & Nursery](#) of Egremont, Ontario, who are working hard to produce trees for interested growers.



**Dr. Peter Pauls stands with trial beans nearing ready for harvest.**

Photo: Junelle Fisher

commercialized 21 new varieties in the past 18 years including OAC Dynasty (a dark red kidney bean) and OAC Yeti (a white kidney bean), both of which were brought to market by Hensall District Co-operative Inc., and OAC Inferno (a light red kidney bean) brought to market by SeCan Association.



**Crab apples growing on a tree.**

Photo: Dr. John Cline



**Plant-based cheese that melts and stretches like dairy-based cheese.** Photo: Motif FoodWorks

## Perfecting Plant-Based Cheeses

Plant-based meat alternatives have gained popularity recently, especially burgers and sausages. However, adding plant-based cheese to that burger that will melt and stretch has been a difficult hurdle to clear.

Dr. Alejandro Marangoni (Food Science, OAC) and his team are using corn to create plant-based cheeses to melt and stretch like the real thing. The technology has been licensed to [Motif FoodWorks](#) to develop it into a commercially available product.

According to company CTO Michael Leonard, “The taste and texture of plant-based meat and dairy products are a well-known barrier to entry for consumers experimenting with animal-free options, and the future of the plant-based category depends on the industry finding innovative solutions to these experience gaps. Partnerships like these help us develop the ingredients and products that will bring consumers better plant-based options that they’ll want to buy again and again, especially as the plant-based food sector grows in interest.”





Dr. Andria Jones-Bitton and Briana Hagen discussing farmer mental health. Photo: Sam McReavy

## Getting Farmers “In the Know” About Mental Health

The [In the Know](#) training program, developed by Dr. Andria Jones-Bitton (Population Medicine, OVC), improves the mental health literacy of people living and working in the agricultural sector. This half-day online training program covers a comprehensive set of mental health topics to help farmers better identify, understand and cope with mental health challenges using farming-specific examples. With six active licenses for use issued across Canada, the program is raising awareness and encouraging more conversation around mental health in agriculture.



# Knowledge Mobilization



Policy Fellows (left to right) Robin Young, Frédéric Seppey, Diana Johnson and Henry Gordon-Smith, pictured with the U of G Gryphon statue at the start of their Fellowship experience in October 2019.

Photo: Shannon Brown



## University of Guelph Policy Fellowship in Agriculture, Food and Biodiversity

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Over the past two fiscal years, the University of Guelph Policy Fellowship has emerged as an innovative program—the only one of its kind in Canada—that supports knowledge exchange between science, policy and practice. With funding from Food from Thought, the Canada First Research Excellence Fund initiative at the University of Guelph, the program matches decision-makers from government, industry and non-governmental organizations with faculty experts for conversations about issues in agriculture, food and biodiversity.

After moving online in 2020, the program has tripled in size—now offering three cohorts per year, both virtually and in-person at the University of Guelph.

Since the program's inception over 50 decision-makers from five federal agencies, six provincial governments and numerous industry associations and other organizations have been connected with University of Guelph experts, yielding benefits for both Fellows and faculty.

**“The University of Guelph’s Policy Fellowship program provided an opportunity to have in-depth conversations with industry leaders including past fellows to gain incredible insight into policy development and how to influence policy. I would not have been able to access such breadth and scope in knowledge and experience and gain this understanding outside of the Fellowship.”**

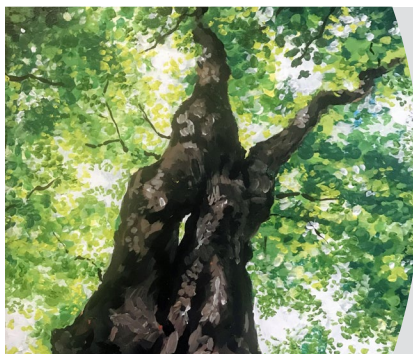
**—Heather Watson,  
Executive Director,  
Farm Management Canada**

**“The University of Guelph Policy Fellowship program was an invaluable opportunity to form relationships with faculty and learn about their work. Sitting down with researchers in a comfortable and informal environment and engaging in stimulating discussions was a richer experience than being one in the crowd during a seminar or conference.”**

**—David Hagarty, Director,  
Ontario Farm Products  
Marketing Commission**

## Knowledge Mobilization Grants

To help maximize the impact of the world-class research emerging from Food from Thought, several grants were offered to provide support for knowledge mobilization activities within existing projects. Several innovative initiatives received funding, including:



**Painting of the Warwick Forest Conservation Area. One of a series of immersive paintings of forests and wetlands of the Credit River Watershed developed through projects framed within the initiative “Disseminating knowledge through interdisciplinary conversations.”**

Art: Liane Miedema Brown

### Disseminating Knowledge Through Interdisciplinary Conversations

**Dr. Madhur Anand**  
Environmental Sciences, OAC

The [Guelph Institute for Environmental Research](#) (GIER) used interdisciplinary teams of researchers, end users, and artists to share Food from Thought research creatively. After an arts-based knowledge mobilization workshop presented by GIER, the teams produced [incredible products](#) to share research with the community, including a colouring book, educational materials, paintings and a clay design.

### Disseminating Knowledge on Genomic Indicators of Agro-Ecosystem Services

**Dr. John Fryxell**  
Integrative Biology, CBS

To raise awareness about the impact of agriculture on biodiversity and to help farmers make informed decisions about sustainable farming practices, this team developed three videos about the use of bio-monitoring and DNA barcoding on farms—featuring innovative research and interviews with farmers—to share information about biodiversity assessment on farms.





**Lysimeter  
infrastructure  
for soil health  
monitoring  
at the Elora  
Research  
Station.**

Photo: Cameron Ogilvie,  
Soils at Guelph

## **Mobilizing Soil Health Research Through Virtual Events at the Soil Health Interpretive Centre**

### **Dr. Kari Dunfield** Environmental Sciences, OAC

This project used videos to educate students, farmers and certified crop advisors about soil health and research at the University of Guelph. The team recorded interviews with farmers and virtual tours of the [Soil Health Interpretive Centre](#)—a state-of-the-art soil health monitoring station investigating how crop rotations, soil environments and climate change affect soil ecosystem services; these videos are now being used for virtual events and education.

## **Knowledge Mobilization Skills for Research Impact**

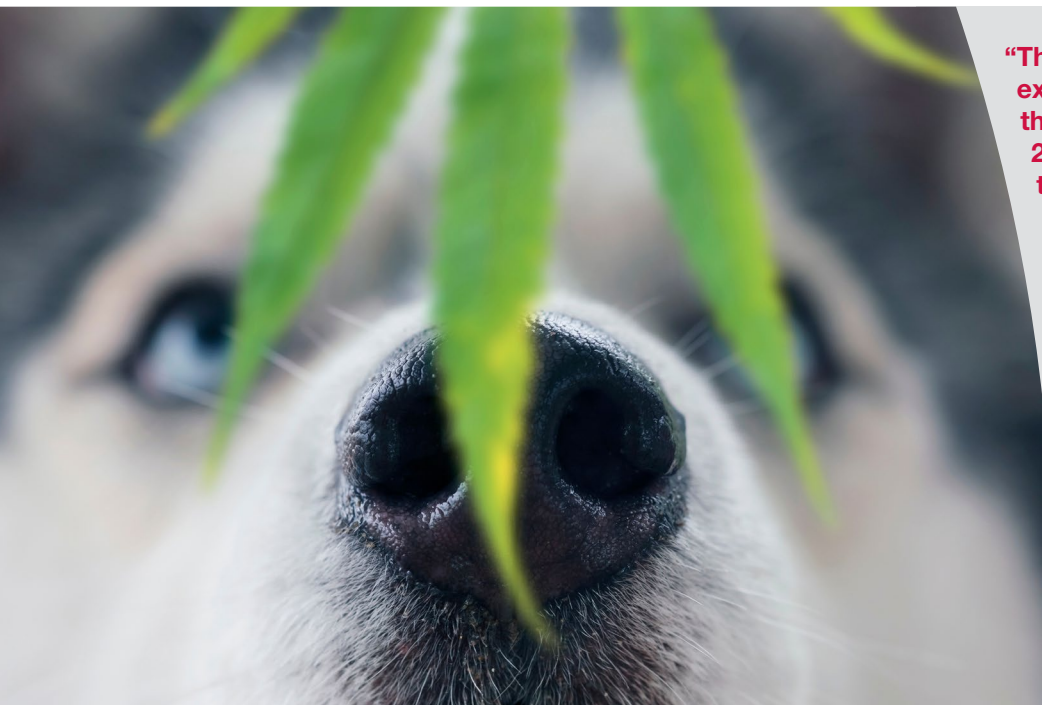


Illustration/design by Alex Sawatzky

Graduate students at the University of Guelph identified communication and knowledge translation as top skills required for their academic and professional development in a survey conducted by the Graduate Professional Skills Working Group—but almost 50% of students needed to turn outside of their curricular experiences for this training. To fill this gap, the Research Innovation Office partnered with the [Community Engaged Scholarship Institute](#) and the [Ontario Agri-Food Innovation Alliance](#) in 2019 to launch a new workshop series, [Skills for Research Impact](#).

This series of six to seven workshops builds capacity in foundational skills in knowledge mobilization for students, staff and faculty on campus—including developing a knowledge mobilization plan, clear language writing, stakeholder engagement, research dissemination, infographic design, and impact evaluation. The series attracted over 500 participants during the 2020–21 year and will be offered during the fall and winter semesters.

# Industry Liaison



**“This research is extremely timely with the new Cannabis 2.0 regulations and the increased risk for cannabis-induced toxicosis. I am thankful to NSERC and Avicanna for support of this important research that will have an impact in our understanding of the neurobiological underpinnings of, and provide novel treatment avenues to treat, adverse events related to high-dose cannabis exposures.”**  
—Dr. Jibrán Khokhar

**Pets are increasingly coming into contact with cannabis.**

Photo: Shutterstock / Anton Watman

## Treating Pets for Cannabis Toxicity

The legalization of cannabis in Canada, combined with changing attitudes toward cannabis, have resulted in increases in both intentional and unintentional exposures to cannabis in pets. The Industry Liaison (IL) team helped Dr. Jibrán Khokhar (Biomedical Sciences, OVC) and [Avicanna Inc.](#) secure an NSERC Alliance grant to deepen our understanding of the behavioural and neural activities related to cannabis-induced toxicosis and evaluate the potential use of cannabis-derived compounds and formulations for aiding the treatment of cannabis-induced toxicosis in pets.

## The Unexplored Bioactivity of Colostrum

Dr. Michael Steele (Animal Biosciences, OAC) and the [Saskatoon Colostrum Co. Ltd.](#) have a longstanding collaboration that demonstrates their strong commitment to the health of livestock and the dairy industry within Canada. For their current collaboration, the IL team at RIO worked alongside Dr. Steele and the company to help navigate new funding guidelines and contract discussions. Their NSERC Alliance grant will allow the continuation of this successful partnership.

This five-year project, which incorporates contributions from [Elanco Animal Health](#) and [Land O' Lakes Animal Health Solutions](#), looks to uncover the full potential of bioactive molecules within dairy cow colostrum to improve calf health by examining prepartum factors that impact the bioactivity of colostrum and exploring the role these bioactive compounds play in calf health and development. The project will develop strategies to optimize colostrum use—maximizing calf health, long term productivity, and improving the health and welfare of dairy calves in Canada.



**Dr. Michael Steele with Michael Chubb of the Saskatoon Colostrum Co. Ltd. feeding a dairy calf.**

Photo courtesy of Dr. Michael Steele





Biodegradability testing set-up in the Deiab Lab. Photo courtesy of Dr. Ibrahim Deiab

## Waging War on Waste

With increasing attentions to single-use plastics and global awareness of the environmental impact of plastic waste, the partnership of Dr. Ibrahim Deiab (Engineering, CEPS) and [Genecis Bioindustries](#) looks to optimize the physical properties of PHA polymer granules produced from food waste for injection molding and 3D printing applications. Working with the IL team, Dr. Deiab and Genecis have secured funding from NSERC Alliance that will support their efforts to utilize organic food waste derived PHA for the production of biodegradable plastic parts, which can degrade in aquatic and terrestrial environments in under a year. As organic food waste is also a cheaper alternative to traditional expensive PHA manufacturing feedstock sources, this research will reduce PHA production costs while supporting global efforts to reduce plastic waste pollution.

## Awakening Potentials

In current healthcare practices, medicinal compounds derived from mushrooms are used in anti-microbial, anti-tumoral, and anti-inflammatory treatments. Working in partnership with [Wake Network Inc.](#), a producer of fungi-based therapeutics, Dr. Jennifer Geddes-McAlister (Molecular and Cellular Biology, CBS) will study how immune cells and animal models respond to biological challenges while in the presence of fungi-extracted medicinal compounds. With the support of the IL team, this partnership has successfully obtained funding through the Mitacs Accelerate International program to identify opportunities to use medicinal mushroom extracts to regulate inflammatory responses.

**“The RIO Industry Liaison Office has been instrumental in fostering relationships between my research lab and industry partners by providing networking opportunities, tailored assistance with proposal, budget, and expectation development, along with recognition of successful partnerships through seminars and panel invites. This support is critical to the visibility on my research program and the success of our industry partnerships.”**  
— Dr. Jennifer Geddes-McAlister

**Graduate student Michael Woods working in the cell culture suite in the Geddes-McAlister lab.**

Photo: Arjun Sukumaran





# COVID-19

The COVID-19 pandemic brought the world to a standstill. During this challenging time, several U of G linked companies quickly and effectively pivoted to address national and global needs.

## Multiplex Genomics

A collaboration between [Multiplex Genomics](#) and LifeLabs significantly boosted COVID-19 testing capacity in Ontario by mid-2021. With expertise based on the Guelph Centre for Biodiversity Genomics, Multiplex Genomics provides rapid test results to identify several variants of COVID-19 in samples. Improved testing capacity and variant strains identification allows for better tracking of virus spread by public health agencies.

## Precision Biomonitoring

[Precision Biomonitoring](#) has a history of identifying organisms and pathogens. They adapted their TripleLock™ technology for COVID-19 swab testing. The testing kit was one of a handful of technologies fast-tracked for approval by Health Canada. It was used in community assessment centres, long-term care facilities, nursing homes and remote northern and Indigenous communities.

## PlantForm

[PlantForm Corporation](#), alongside international partners, developed a COVID-19 immunity test for people previously infected with COVID-19. The low-cost blood tests were developed as monitoring and surveillance tools to help determine the prevalence of COVID-19 and whether infected individuals gain a lasting immunity. PlantForm also explored the production of an antibody-based COVID-19 treatment option using the company's vivoXPRESS® manufacturing platform.

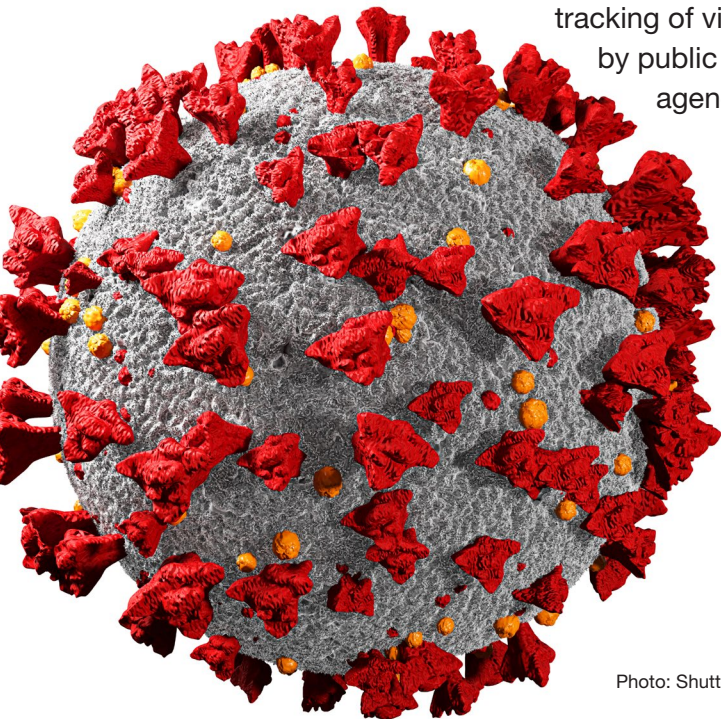


Photo: Shutterstock/Vector-3D

## Clēan Works

To support health care workers and their need for clean PPE, [Clēan Works Corp.](#) adapted their waterless produce sanitation system, which is based on ultraviolet light, hydrogen peroxide and ozone, to sanitize N95 masks and other PPE. The sanitation system continues to be adapted for post-pandemic needs; today you might see similar Clēan Works systems in place at your local grocery store, offering sanitation services for reusable shopping bags.

**A Clēan Flow Healthcare Mini used to sanitize N95 masks for front-line workers.**

Photo: Keith Warriner

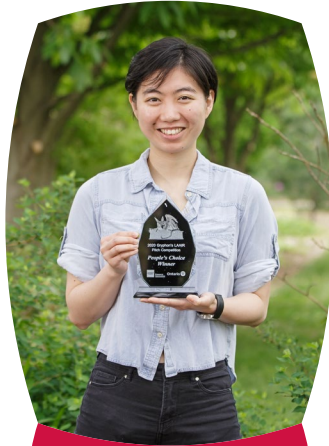




# Gryphon's LAAIR



**Chris Grainger,**  
president and CEO  
of Harvest Genomics  
Inc.



**Jane Ong, co-founder**  
of Neophyto Foods Inc.



**Ryan Appleby,**  
co-founder and Chief  
Veterinary Officer, Obi  
Veterinary Education  
Inc.



**Mohammad  
Khodabakhshi  
and Amir Namavar  
Jahromi, co-founders,  
DigiTrack Systems Inc.**

Photos: Kyle Rodriguez/Artifacts for Life

## Pitch Competitions

In each of 2020 and 2021, five University of Guelph start-ups looked to impress a panel of industry judges and the general audience in a new virtual format of the annual Gryphon's LAAIR pitch competition, funded by the Ontario Agri-Food Innovation Alliance.

### 2020

[Harvest Genomics](#), which offers a range of genetic testing and analysis for growers, including rapid testing for herbicide resistance and invasive pest identification, came out on top, winning the \$10,000 Grand Prize. [Neophyto Foods](#), which makes plant-based cheeses and meat kits, walked away with the \$7,000 People's Choice Award.

### 2021

Online veterinary education topped the podium, with [Obi Veterinary Education](#)'s professional development platform awarded the \$10,000 Grand Prize. [DigiTrack Systems](#), which develops cloud-based software for food and agricultural product recalls, won the \$2,500 People's Choice Award.

## Funding Awarded

Since 2019, the Gryphon's LAAIR Program has provided \$713K in grants to several projects to move innovative U of G research further along the path to commercialization.

Dr. Bonnie Mallard's (Pathobiology, OVC) team, alongside [Semex](#), is developing an improved bovine colostrum product with a higher concentration of immune molecules with improved activity that enhances calf health by providing to protect calves from disease during those vulnerable early weeks of life.

Dr. George van der Merwe (Molecular and Cellular Biology, CBS), a recent winner of the [2021 Innovation of the Year Award](#), is developing more resilient stress-tolerant yeasts with [Escarment Labs](#), for use in the craft beer brewing industry.

Dr. Keith Warriner (Food Science, OAC) is exploring commercial markets for his [2020 Innovation of the Year](#) pathogen decontamination device that uses ultraviolet light and hydrogen peroxide gas to neutralize viral and bacterial pathogens such as COVID-19.



**Dr. Gopi Paliyath working with sour cherries.**

Photo: Richard Bain Photography

Dr. Gopi Paliyath (Plant Agriculture, OAC), in partnership with [Psigryph Inc.](#), is developing new nanoparticles called Nanopect™ made from sour cherries that can be used in humans and animals to protect, stabilize and enhance new drug molecules from premature degradation by the immune system.



# Contacts

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**Steve De Brabandere**

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