



# Research & Innovation

## Annual Report 2023-2024







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## Land Acknowledgement

George Brown College is located on the traditional territory of the Mississaugas of the Credit First Nation and other Indigenous peoples who have lived here over time.

We are grateful to share this land as treaty people who learn, work and live in the community with each other.



## **About this report**

This document contains some of the research highlights from the Office of Research & Innovation at George Brown college and covers the fiscal period between 2023 and 2024. We would love your feedback!

Email us at [research@georgebrown.ca](mailto:research@georgebrown.ca)  
Learn more at [georgebrown.ca/research](https://georgebrown.ca/research)

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## **About George Brown College**

Toronto's George Brown College prepares innovative, adaptable graduates with the skills to thrive in a rapidly changing job market. With three campuses in the downtown core, the college blends theory with experiential learning, applied research, and entrepreneurship opportunities. George Brown offers 171 full-time programs and 200 continuing education certificates/designations across a wide variety of professions to more than 31,500 full-time students, including 27 percent international students, and receives more than 65,000 continuing education registrations annually. Students can earn certificates, diplomas, graduate certificates, apprenticeships, and degrees.

Learn more at [georgebrown.ca](https://georgebrown.ca)



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## Message from the President



In Canada's rapidly evolving economy, adaptability and agility are the cornerstones of competitive success. As new opportunities arise and challenges emerge, it is crucial for us as Canadians to rise to the occasion. Our central bank has underscored this imperative, urging us to boost national productivity through innovation in the wake of the COVID pandemic.

This call to action resonates across the spectrum—whether you lead a small business, a large corporation, or serve in government. Organizations of all sizes must prioritize investment in research and innovation to thrive in today's landscape.

At George Brown College (GBC), we are committed to fostering a vibrant knowledge economy in two pivotal ways. First, we equip our graduates with the skills and hands-on

training they need for successful careers. Second, we partner with institutions, businesses, and social innovators to achieve their productivity, competitiveness and research goals.

We take pride in supporting our partners to brainstorm, to learn from a range of experiences, and to forge new opportunities with minimized financial risk and to seize innovation gains.

This past year, we had the pleasure of working with entrepreneur Catherine Kerr to develop an online educational tool that transformed her consulting business. We also collaborated with Fitting Room Canada Inc. to create an innovative app that helps consumers find garments that perfectly match their style while shopping online, significantly reducing costly returns. These projects are just a glimpse into the impactful work we undertake.

Since the establishment of our Office of Research & Innovation in 2007, we have secured over \$105 million in research funding and partnered on 2,146 projects with 2,012 collaborators. Our efforts have also created 18,270 enriching student research experiences.

These impressive numbers reflect our significant capacity in research areas that are essential for stimulating economic and community development, both in Ontario and globally. At George Brown College, we listen to our partners' needs and strive to deliver tailored solutions. By doing so, we are actively advancing Canada's productivity and economic agenda.

Choosing George Brown College as your research partner opens the door to a wealth of resources and expertise. We look forward to the opportunity to collaborate and drive innovation together.

## Dr. Gervan Fearon

*President*

*George Brown College*



## Message from the Associate Vice-President, Research & Innovation



As we reflect on the remarkable journey of George Brown College's Office of Research & Innovation over the past 17 years, one thing stands out above all: our story is built on the power of people. Since our establishment, we have been dedicated to providing innovation space and support for Ontario companies and community organizations. But at the heart of every breakthrough, every innovation, and every positive change, are the passionate individuals who drive these ideas forward.

Our philosophy is simple yet impactful: we create these spaces and collaborations in support of people. Whether it's to lift up our partners, our students, our researchers, or deliver solutions for the people who will eventually go on to use the products, processes and services that our teams work on. The stories in this report, covering projects from April 1, 2023 to March 31, 2024, are testaments to the incredible things that can happen when we invest in people first.

The numbers speak volumes about the human impact of our work. In 2023/24, we engaged 156 partners on 148 collaborative projects, providing 1,064 student research experiences. More than 213 individuals found employment in paid research positions through our programs. But these numbers are only half of the story, because these aren't just statistics – they represent real people gaining real-world experience, contributing to meaningful projects, and shaping their futures.

Because at George Brown, we see each project we undertake as a living partnership that connects industry, community, researchers, and students. In fact, at George Brown College, we see the transformative power of this kind of experiential collaboration every day. By providing our students with opportunities to apply their knowledge beyond the classroom,

we're not just enhancing their education – we're empowering the next generation of innovative thinkers, and connecting them to the workforce in a way that feels dynamic.

Moreover, our history of collaboration has reinforced our belief that small and medium enterprises (SMEs) are the lifeblood of the Canadian economy. These businesses, run by dedicated entrepreneurs and skilled workers, are key drivers of job creation and innovation, and vital members of our economic community. Supporting them in their innovative thinking is supporting the communities they serve.

So we do this together. And as we look to the future, I am eager to see how together, we will make a difference. Together, we will continue to push the boundaries of innovation and tackle pressing challenges. Together, we will start the positive change within our communities that will resonate for generations. Together, we will tap into the power of people and the amazing things we can achieve.

### **Dr. Krista Holmes**

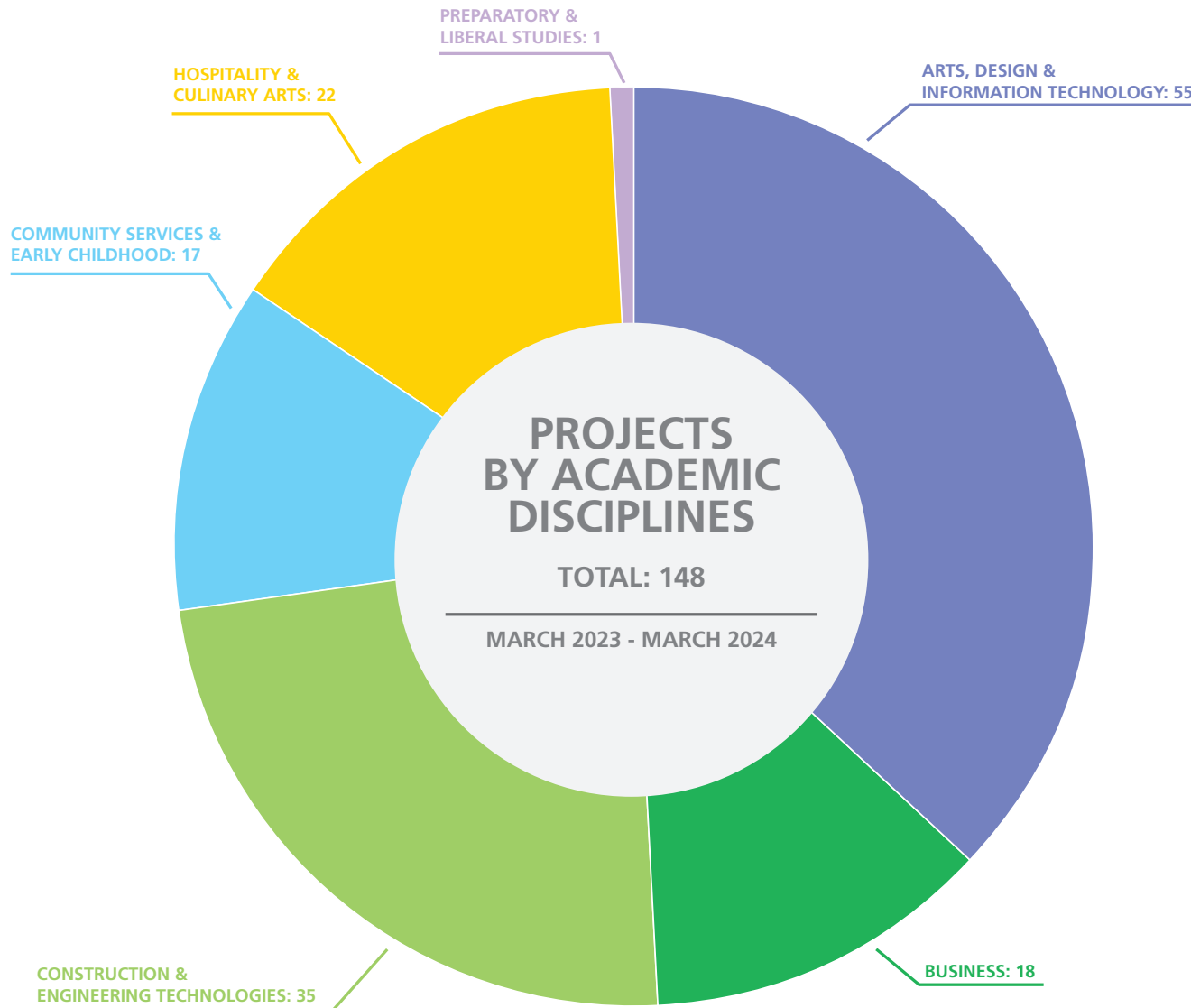
*Associate Vice-President,  
Research & Innovation  
George Brown College*







# Year in review | By the numbers



## IN 2023/24



## SINCE 2007







# Year in review | Our expertise

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This year marks 17 years of research and innovation at GBC, and our research programs are thriving. Since the college's Office of Research & Innovation was established in 2007, we have attracted over \$105 million in research funding and collaborated on 2,146 projects with 2,012 partners to provide 18,270 student research experiences.

We have built up significant capacity in research areas that are vital to stimulating and supporting economic and community development in Ontario and beyond. We listen to the needs and ambitions of our partners to find the best ways to serve them and promote Canadian innovation.

We have retooled and fine-tuned our program offerings to better serve our community and our collaborations.



## Future Living

Built Environments

Interactive & Experiential Design

Digital Transformation



## Product Development

Advanced Manufacturing & Prototyping

Fashion Innovation & Textile Technology

Food & Beverage Innovation



## Social Innovation

Community Development





## Year in review | The student experience



IN 2023/2024

**1,064**

student research experiences

SINCE 2007

**18,270**

student research experiences

For Canada's future workforce to have the capacity to innovate, we must equip them with the necessary skills and give them meaningful opportunities to practice them. That's why our research and innovation programs prioritize the student researcher experience – they enable experiential learning beyond the classroom.

Not only do these opportunities provide students with the opportunity to gain practical experience and enhance their skills in their area of study, but they provide students with marketable workplace skills and innovation literacy– that is, the ability to think creatively and apply problem solving skills to diverse and intangible issues within industrial problems and contexts.

All of our projects engage George Brown students, enabling direct pathways to employment that support applied learning in team-driven, innovation-focused environments.

**Throughout this report, you will hear from our students, as well as our researchers and partners. Here, we highlight a few in particular.**



## Moe Shammakh

*Civil Engineering Technology (T164)*

*Project: Segregation-Resistant Carbon-Microfibre Reinforced Self-Consolidating Concrete*

### **Q: How did you get involved in GBCs research & innovation program? What initially interested you about this project?**

I got involved in George Brown College's Research & Innovation program through my professor, Rasha AL-Attar. She invited me to join because she knew I had an interest in applying my theoretical knowledge to a real-life world. The project I worked on investigated the effects of carbon fibre and three chemical admixtures on the fresh properties of self-consolidating concrete (SCC).

### **What did you enjoy most about working on this project?**

What I enjoyed most about this project was the hands-on action! Watching how different chemicals and fibres could totally change concrete was pretty awesome. Designing and testing different concrete mixes was like seeing theory come to life, and that was super cool.

### **Do you feel the experience you gained participating in this research project will be helpful once you graduate?**

Absolutely! The skills and knowledge I learned in the research project will be very helpful once I graduate. This research was all real-world experience and helped me see how to use theories I learned in class.

## Nowreen Priyanka

*Fashion Management (F102) | Project: Comparative Analysis and Design Evaluation of Boat Fender Covers*

### **Q: Can you give a brief description of the project you worked on?**

I had the privilege of diving into a project that focused on evaluating different materials for boat fender covers. Our mission was to test various fabric samples for their durability, UV resistance, colorfastness, abrasion resistance, and drying rates under simulated marine conditions.

### **Q: What did you enjoy most about working on this project?**

What I enjoyed most was the seamless blend of creativity and science, and working with a team that always had my back. Designing tests that mimic real-world conditions was like solving an intricate puzzle!

### **Q: How did your experience complement what you learned in the classroom?**

Absolutely! This experience was the bridge between theoretical knowledge and real-world application. It enriched my classroom learning by providing practical context to concepts like material science and testing methodologies. The problem-solving and teamwork skills I developed during the project are directly transferable to any professional environment.

## Sedigheh Taghizadeh

*Fashion Techniques and Design (F113)  
Development of Welding Gloves and Welding Jacket for Women's Workwear*

### **How did you get involved in GBC's research & innovation program?**

I got involved in George Brown College's Research & Innovation program thanks to a recommendation from one of my professors, Ananda Sophie. They noticed my enthusiasm for fashion and design, along with my curiosity about applied research. I was so excited to gain some practical, hands-on experience in the field.

### **Can you give a brief description of the project you worked on?**

Women in various industries face the challenge of finding suitable workwear, and the welding industry is no exception. To address this issue, we collaborated with The Dirty Seahorse on a project dedicated to designing and developing innovative women's workwear gloves and jackets specifically for female welders.

### **What was your biggest learning or takeaway from your time working on this project?**

It was the realization of the profound impact that innovative design solutions can have on addressing real-world challenges. By incorporating safety, comfort, durability, and cost considerations into the development [process], I learned how fashion can play a crucial role in enhancing workplace functionality and overall well-being.





Year in Review | Events

# Research, Innovation & Entrepreneurship Showcase 2024

The Office of Research & Innovation and startGBC were proud to jointly host the first ever George Brown College Research, Innovation & Entrepreneurship Showcase (RIES). It was hosted on George Brown's beautiful Waterfront campus on June 25th, 2024.

Nearly 200 attendees – an audience made up of industry partners, students, alumni, and community members – gathered for an exciting day of panel discussions, knowledge sharing, networking opportunities, and a showcase of successful innovative research projects and entrepreneur support services.

This event highlighted the collaborative efforts of the Office of Research & Innovation and startGBC, offering participants a chance to engage with leading experts and discover groundbreaking projects.











Spotlight on...

## IGNITE Projects



*IGNITE Funding at George Brown provides support for GBC researchers to engage in original research and innovation activities, build research skills and capacity, and ultimately pursue external funding opportunities.*



# 8

projects in 2023/2024

# 9

researchers

# 24

student research experiences

## Explore the projects

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*Design for change: Understanding and demonstrating effective practices to enable and inform change within accommodation and accessibility in higher education*

**PI: Nastaran Dadashi**

*The use of co-research methodology for the development of a cookbook for youth and young adults with major depressive and generalized anxiety disorders*

**PI: Linda Gillis**

*The Get REAL Movement - Design development of a capsule wardrobe collection of niche clothing products geared towards the genderless maternity market project*

**PI: Ross Mayer**

*CAA – Safety Vest Design Optimization and Commercialization Support Project*

**PI: Kathy Mcgown**

*Exploring Artificial Intelligence-Driven Assessment and Evaluation in Design and Innovation Education: Unveiling Benefits, Challenges, and Possibilities*

**PI: Edouard Ratiarson**

*Meaford Memories: The Meaford Community History and Culture Project* | **PI: Viz Saraby**

*George Brown Food Learning and Grow Community Project*

**PI: Lori Stahlbrand**

*Food Waste Vapour Distillation Project*

**PI: Tammy Vaillancourt**

## Recognizing impact

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**Raj Khatri, Sharon Hauck, Sarika Narinesingh, Elena Chudaeva, and Anne Wonyoung Song** gave a presentation at the Society for Teaching and Learning in Higher Education (STLHE) 2023 Annual Conference in Charlottetown, PEI. The team presented their research paper “Exploring Universal Design for Learning Mindset in a Community College” and were awarded a SIG Exchange Grant.

**Linda Gillis** presented at a pre-conference event “Brain Health Nutrition in the Kitchen” organized with the Culinary Nutrition Group of the Dietitians of Canada, at

the GBC Chef School in Toronto. Linda presented her research project “The Use of Co-Research Methodology for the Development of a Cookbook for Youth and Young Adults with Major Depressive and Generalized Anxiety Disorders”

**Lori Stahlbrand** gave a presentation at the International Social Innovation Research Conference (ISIRC) in Guimaraes, Portugal. Lori presented her paper “Social Innovation and the Organic Campus Project: The Case of the George Brown Chef School” and was awarded a SIG Exchange Grant.

**Tammy Vaillancourt, Doris Miculan-Bradley, and Chris Bain** gave a recorded presentation at the Annual Colleges and Institutions Canada (CICan) Conference in Calgary, AB. The team presented their “Food Waste Vapour Distillation” project.

**Viz Saraby and Mikael Sandblom** gave several presentations at the Rotary Club, Graig Gallery, and Meaford Library in Meaford, Ontario. The team presented a visual showcase of virtual reconstructions of historic sites in the town of Meaford as part of their “Meaford Memories: The Meaford Community History and Culture Project.”





Principal Investigator  
Tammy Vaillancourt

***A research team and a local distillery banded together to turn food waste from George Brown classes into an innovative new spirit.***

**APRIL 2024** | George Brown College has one of the largest Culinary Schools in Canada, but with all that innovative learning comes a natural side effect: a large amount of food waste from its culinary learning environments, including in-class waste bins, the student-run restaurant operations, and culinary labs.

Food waste remains a huge problem across Canada, with estimates putting the country's wastage at over 50 million tonnes every year. Tammy Vaillancourt, a professor within the School of Hospitality & Tourism Management, saw possibility in these scraps.

Product development | Sustainability

## Sustainable with every sip

Principal Investigator: Tammy Vaillancourt | Co-Investigator: Doris Miculan-Bradley | Student Researchers: Ashish Sanjay Bendre, Johaan Cherian, Maneesh Shajan, Pantea Kouhpayeh, Pranay Tejash Vashi, Renuka Sai Babu, Santiago Escobar Nassar

"Our idea was to look at [food] waste produced at the college and see if we could divert it into an alcohol beverage product," Tammy says. "Sustainability is part of George Brown College's overall vision and strategy. And for our students, we thought the project would embed these ideas outside of theory and more into a practical hands-on approach."

Over her career, Tammy has worked in and around the food and beverage industry, from the retail side to catering to restaurant management, as well as her teaching portfolio at George Brown. But this would be her first research project. So she, along with co-investigator Doris Miculan-Bradley, applied for and received IGNITE funding in 2023.

Then it was time to find the right industry partner. "Reid's Distillery was right in our backyard," Tammy says, referring to the roughly 3 kilometers that separates the distillery and George Brown. "It wouldn't make sense to collect your waste and then take it somewhere far away, right? Those kind of 'aha!' moments happened throughout the entire project."

Run by the passionate Reid family, Reid's Distillery is a distiller of world class gin located in Toronto. "Sustainability is a pillar of our

business. We want to stay as local as possible and we do our own sourcing," says Calvin Reid. "We're a small business with a small production team. We handle everything ourselves, so we were already taking peeled citrus and juicing it for our bar. But when it was proposed we could do something with it, we became very intrigued." Tammy is a no stranger to innovative approaches in curriculum—she was a key member of creation and implementation of CHCA's Study Abroad program. So linking this project to student success meant that almost 200 students were involved, directly or indirectly: through the distillation process, focus groups and the inventory/collection process.

The project began with sourcing its waste. "We have a mixology course where students are working with different cocktails and mocktails and working with different garnishes and juices, and so it was strictly collected from that one lab, under Professor Christopher Bain," says Tammy.

The students stored over 100 lbs of citrus before transporting to be processed onsite at the Distillery. For the best flavour, the citrus peels were infused in three different ways: macerated (pulp and pith soaked in alcohol for around 30 hours); through a distillation process that used fresh peel and vapor distillation; and once the product was finished distilling, infusing it a final time with fresh peel.

The result was Citronino, a sustainable alcoholic beverage that represented the efforts of its research team. The product saw a launch event at the Chef's House that incorporated not only the innovative spirit but a hands-on VR experience.

The project started with a modest goal—the hope to produce 10 bottles. But when the project wrapped, they had produced 211 bottles of Citronino.

What's next for this collaboration? "Filling the space with passionate students meant a lot of youthful energy and excitement." Calvin says. "What started as a fun project...might have legs for multiple iterations."

Tammy agrees: "we're hoping to do this every year now. Continue and do a different name, a different product, but annually upcycle our waste and creating new product with Reid's Distillery."





From left to right pictured: sons Graham and Calvin Reid with founder Martin Reid.

Meet our partners

## Martin & Calvin Reid

*Reid's Distillery*

**The origin story of your company is so interesting, this idea of wanting to bring British gin to Northern American Shores. So, what inspired you to take that place in the market?**

**Martin Reid:** It was a visit to my daughter who was living in London, England. It was a holiday and she asked if we wanted to visit gin distilleries—in the UK, gin is basically a culture there, it's exploded over there. I started thinking that even if we brought a small part of that here to Canada, that would have been wonderful. That was really the motivation for starting this.

**And Reid's Distillery is a family business!**

**Calvin Reid:** It absolutely is, it's the whole family. My brother Graham and I used to brew beer, so the marriage of flavour and alcohol was always really interesting to us. We love the craft beer world here in Ontario, but seeing that creativity being explored within a different type of alcohol was what

made us go "Hey! you know Ontario and Canada we love our craft beers - we should want that same craft nature in our spirits as well." The further we dove into it, the more we seemed like our family could tackle it.

**You worked with quite a few students on this, how was that experience?**

**Calvin Reid:** It was really great to see the initiative. I know they wanted to have as many hands as possible...we'd have a couple students prepping the citrus, a couple involved in the actual distillation. It was awesome to be able to have as many hands touching a finished product bottle as possible. Normally at the distillery we're working with a fairly small team, a very productive team, so it was awesome to bring in as many passionate people as possible.

## Find them at [reidsdistillery.com](https://reidsdistillery.com)

**What's next for Citronino?**

**Calvin Reid:** We [originally] did it as a sort of as a one-off, just as an experiment, and since then so many different people have kind of sunk their teeth into it or been excited by it. So likely it will be something that we'll continue to repeat year after year, that we can improve upon, and that we can expand upon, so hopefully maybe even a bigger batch size. Maybe it is something that eventually ends up in another product or the LCBO.





Meet a student researcher

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## Santiago Escobar Nassar

*H132 Food and Beverage Management, Restaurant Management*

**Santiago Escobar Nassar is a recent graduate from the H132 Food and Beverage Management, Restaurant Management program. He joined the Food Waste Vapour Distillation Project as a student researcher.**

**How did you get involved in research and what initially interested you about the project?**

**Santiago:** My background is as an electronic engineer and I've always been interested in research and innovation. I worked in Colombia as a researcher as well. I spoke with Doris Miculan Bradley and I got really interested in it. It was about creating a product that people could enjoy from something that we would normally discard.

**Wow, that's a big career move!**

**Santiago:** Yes! My dream is to be able to become a restaurateur. I would like to have a restaurant, or more than a restaurant – like, a center of experiences, combining electronics, nanotechnology, food and beverage, restaurant management and molecular gastronomy!

**What was your biggest learning or takeaway from this project?**

**Santiago:** That you always have to think outside the box. Where people now see a product, they could have just seen waste. The goal is not to reinvent the wheel, but to find a better use for it.

**What advice would you have for other students looking to get involved in George Brown's Research projects?**

**Santiago:** The best advice I can give them is to always have an open mind and to always try to think outside of the box. Try to figure out: how can you innovate? How we can reduce our impact? Always think of bringing a good impact to your community through your research. Research is not only about creating a product, but helping to create more jobs and opportunities for people.

**I believe sustainability shouldn't be an option. It should be a standard. If we're able to think and innovate towards sustainability, it's like throwing a rock in a pond. It creates many waves. This is the rock.**









Spotlight on...

## Fashion Innovation & Textile Technology

*Textile recycling, smart textiles, wearables, digital design technology & more*



# 13

projects in 2023/2024

# 11

researchers

# 22

student research experiences

## Project highlights

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*Comparative Analysis and Design Evaluation of Boat Fender Covers*

**PI: Ananda Sophie Quadros de Andrade**

**Co-PI: Syed Naveed Rizvi**

**Partner: CMP Group**

*Development of Welding Gloves and Welding Jacket for Women's Workwear*

**PI: Ananda Sophie Quadros de Andrade**

**Partner: The Dirty Seahorse**

*The Intersection of Craft and Technology: Investigate and reimagine heritage craft techniques and methodologies through digital interplay and technological application of culture, identity and community.*

**PI: Anouk Natalya Willy**

*Living Industries/Industries Vivantes: Using Interactive Storytelling to Trace the threads of urban connectivity*

**PI: Car Martin**

*Brand collaboration pitch development*

**PI: Kathy McGown**

**Partner: Undu Wearables**

*An interpretation of the creative process of a black fashion designer and the fashion artists' contribution to cultural sustainability*

**PI: Leah Barrett**

*Design and Product Development of a waterproof all in one dog "onesie"*

**PI: Mana Mojaver**

**Partner: Roveralls**

*Optimizing Thermal Insulation for CDFC Duvets and Mattress Toppers: A Fill Amount and Ratio Analysis*

**PI: Syed Rizvi**

**Partner: Canadian Down & Feather Company (CDFC)**

*3D Body Scanning Software Fit Analysis*

**PI: Valentin Amon**

**Partner: The Fitting Room**

*The Salvation Army Thrift Store, National Recycling Operations (NRO)*

**PI: Vladimira Steffek**

**Partner: The Salvation Army**

## Recognizing impact

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**Rosa Francassa** gave a lecture at the 2023 Polytechnic Showcase called "The Ecology of Innovation in the Fashion Sector: Pioneering a Circular Fashion Brand Using Smart Sustainability." (May 2023)

**Berta Pavlov**, Professor of Fashion & Jewellery, presented the paper she co-authored, Three Eighteenth Century Men's Informal Chintz Gowns, Context, Cloth, Cut & Construction c.1700-1780, at the Patterns of Fashion Festival in London, England.

**Milan Shahani**, School of Fashion Studies, presented at the annual ITAA conference, held in Baltimore. Milan presented on her latest research "Creating affordable adaptive garments by extending the clothing lifecycle."



Data validation | Technology support

## The Next Evolution in Online Shopping

*The Fitting Room leverages AI and 3D deep tech to provide consumers the ability to know exactly which garment size will fit them best before buying, with 97% accuracy.*

**January 2024** | Based in Toronto, The Fitting Room Canada Inc. leverages 3D/ML/XR technologies to combat online apparel returns and overproduction within the fashion industry. With an eye on the meteoric rise of online shopping, The Fitting Room's API integration for apparel brands empowers consumers to create a hyper-realistic 3D avatar of themselves with just their smartphone, and then visualize in 3D how custom-fit garments will look on them before they are ever made. They came to George Brown College (GBC) and the Fashion Exchange (FX) to fine-tune the accuracy of their technology using data, improving the 3D avatar creation process.

PI Valentin Amon is a Professor within the School of Fashion. "The Fitting Room wants to end or slow down the waste in the fashion industry. And if you can get well fitting clothing the first time, then there's less likelihood of returns and more chance that clothing gets worn," he says. "Another thing lacking in the fashion industry is size inclusivity. And this data supports creating products that fit a more

diverse, inclusive range of bodies." The research team collected the data by gathering and comparing 39 different body measurement types to help improve the accuracy rate of the 3D body measurement Avatar app.

102 participants aged 19 to 55 (50 male, 52 female) were invited for body measurements using The Fitting Room's mobile app, FX's 3D body scan measurement equipment (Passen Booth), as well as manual measurements taken on site. The research team was able to produce and compile a comprehensive data set and researched report comparing the manual and 3D Body Scan measurements of 39 different body measurements for the 102 participants. This data will be used by The Fitting Room team as they continue to develop their app, ensuring the creation of more accurate and realistic 3D avatars.

### Project Essentials

**Principal Investigator:**

Valentin Amon

**Student Researcher:**

Zainab Yahaya

**Research Assistant:**

Aliyah Marino



Meet a researcher

## Valentin Amon

Faculty, Centre for Arts, Design and Information Technology

### What do you do here at the Fashion Exchange?

At the Fashion Exchange, I work here as a technical designer. So, people come in with their designs and I create patterns for them, I grade their designs, we do everything - from sketch down to finished product - and we can produce their final collections for them.

### What's your background?

I studied fashion at Casa Loma for the Fashion Techniques program. I'm also an instructor here and I teach the Women in Fashion Technology explorations class - so it's women, fashion, technology, exploration.

### You worked on The Fitting Room project, a collaboration that paired technology and fashion to create the perfect fit. Why was that mission important to you?

The Fitting Room wants to end, or at least slow down, the waste in fashion. Fashion is a very wasteful industry and if you can get well-fitting clothing the first time, then there's less likelihood of returns and you just get the product that you want. One of the things that is lacking in the fashion industry is size inclusivity. Proportions are not the same from a size two to a size sixteen--there are definitely differences in the ratios. [The Fitting Room] wants to create products that fit all size bodies.

### What does fashion technology mean to you as someone who's sort of dabbling in both worlds now?

Oh, I love fashion technology! As a technical designer, I did not know this job existed. Like, I think a lot of people don't realize that there's a whole architecture and a lot of geometry in creating flat pattern drafting and that we do everything by computers nowadays. This project really explored the different body types and created data sets that are specific to real people and not a mannequin.

There's a whole architecture and a lot of geometry in creating flat pattern drafting...we do everything by computers nowadays!







Spotlight on...

## Social Innovation

*Solutions for complex and challenging social, health, economic and environmental issues across many sectors*



**10**

projects in 2023/2024

**14**

researchers

**44**

student research experiences

## Explore the projects

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*Design thinking to optimize Pre-surgical Care (PEACE): using big data for holistic and integrated patient care*

**PI: Ana Rita Morais**

**Co-PI: Nastaran Dadashi, Xavier Masse, Christopher Pandolfi**

**Partner: Sunnybrook Health Sciences Centre**

*Job Talks Access: Innovative National Surveys and Video Series of Workers with Disabilities*

**PI: Jonathan Callegher**

**Partner: Q. I. Value Systems, QI Value Systems, The Career Foundation, Canadian National Institute for the Blind Foundation**

*A Roadmap for Digital Transformation of Ontario Museums*

**PI: Karen Sinotte**

**Partner: City of Toronto- Toronto History Museums, Ontario Museum Association**

*Finding Their Voices: A Study in Indigenous Archeological Architecture*

**PI: Steffanie Adams**

**Partner: Town of Deep River**

*Communal Lunch Project: Supporting Students Through Healthy, Social, and Sustainable Campus Food Programming*

**PI: Jennifer Mitsche**

*Nationally Harmonized School Food Programs: Examining Canadian School Food Models to Inform Decision-Making*

**PI: Gary Hoyer**

**Partner: University of Saskatchewan; Research Acceleration and Strategic Initiatives**

*Identifying and Implementing the Work-Integrated-Learning (WIL) Best Practices of the School of Design's International Post-Secondary Partners*

**PI: Paul Zanettos**

*Supporting Peer Work (CCSIF Epstein)*

**PI: Griffin Epstein**

**Partner: Toronto Drop-In Network, Working for Change**

*Learning from the Pandemic: Bridging the Digital Fluency Gap for Community Leaders*

**PI: Rusa Jeremic**

**Partner: Centre for Connected Communities**

*Designing and implementing environmental inquiry strategies in urban early years programs in Canada to support healthy development and environmental awareness (CCSIF McGlynn-Stewart)*

**PI: Monica McGlynn Stewart**

**Partner: University of Toronto, City of Toronto Children's Services, The Learning Enrichment Foundation**

## Recognizing impact

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**Monica McGlynn-Stewart** published several papers, including [“Learning From Indigenous Perspectives: Well-Being in the Early Years in Learning Landscapes”](#), and “It’s all about relationships: Indigenous perspectives on Land-based learning” in Play Outdoors Magazine

**Jennifer Mitsche** organized and moderated the Devour Campus Conference at Concordia University in Montreal, Quebec. The conference was a collaboration between Jennifer’s research project *the Communal Lunch Project* and the *Concordia Food Coalition*.

**Jon Callegher** gave a keynote address at numerous conferences including the Ontario Cooperative Education Association Conference in Toronto, The Concrete Ontario Annual Convention in Toronto, and the International Association of Heat and Frost Insulators and Allied Workers Annual Convention in Vancouver, BC. Jon presented his latest project “Job Talks: Access.”

**Griffin Epstein, Dawnmarie Harriott, Andre Hermanstyne, Suwaida Farah, Madelyn Gold, Lindsay Jennings, Michael Nurse, Maria Scotton** and **Julia Walter** published [the Supporting Peer Work Community Reports.](#)



**Principal Investigator:** Karen Sinotte | **Student Researchers:** Andrea Marin, Bhumika Khiyani, Bina Udeshi, Cheryl Blackman, Chi Yeung L. Barry, Daniver Chick, Hanzhang Li, James Matsuoka, Joseph Zachariahs Sunny, Leandro Victor Carvalho Monteiro, Maha Ghoneam, Maria Fernanda Vargas, Mariah Victoria Baysic, Mehrab Chowdhury, Mitra Farokhnia, Muge Zorlu, Oluyinka Ogundpie, Rishab Mahajan, Tyana Van Tang, Vaibhav Nangia, Viabhav Tyagi, Vidal Ramlagan, Yinglin Chen

**JUNE 2024** | For more than 600 small and medium-sized museums across Ontario, 'going digital' is a rare opportunity to enhance visitor experience and improve access to their collections. Despite their cultural importance, however, limited funding and resources present big challenges for museums when it comes to actually embracing digital innovation. The pandemic made these difficulties more present, as museums tried to find other ways to engage with visitors when physical visits weren't possible.

As a business professor at George Brown College and board member of the Toronto Railway Museum, Karen Sinotte saw opportunity in these challenges.

#### Digitization | Community Development

## Building a Roadmap for the Digital Transformation of Ontario Museums

Partnering with the Ontario Museum Association (OMA), Toronto History Museums, and Environics Analytics, Sinotte and a rotating team of 32 student researchers set out to create a common framework to measure the level of digitalization across Ontario museums and offer a roadmap to help improve their digital presence. In doing this, the project hopes to help museums advocate for increased government funding for digital initiatives.

"This project was an exciting one for me because it created an opportunity to help an underserved market:

museums that are significantly underfunded for what they need to do for digitalization," Sinotte explains. "It's kind of similar to small and medium sized businesses, but far worse in terms of having no legislative support for funding."

The research team began by identifying over 630 small and medium-

sized museums in Ontario based on the OMA's criteria and conducted an extensive inventory of their digital exhibits, social media activity, and educational programming. They quickly discovered inconsistencies in the language used to describe digital activities. A "virtual tour," for example, could be anything from a few photos to a fully virtual recreation of the museum. So the team designed a standardized terminology.

Hoping to better understand the needs of museum staff and visitors, the team hosted a design charette--bringing together George Brown College students, museum professionals, and experts from outside industries to envision the future of the museum experience. Meanwhile, the team conducted a visitor survey and used the Environics Analytics platform to gather detailed demographic and geographic data about museum visitors.

"Environics was an important component of our research because we wanted to get a deeper understanding of who the museum visitor was." Sinotte says, "Getting to the attitudes, the motivations, and some of the lifestyle and social values indicators."

Using this data, the team developed four unique personas representing Ontario museum visitors, offering significant insights into their motivations and attitudes surrounding digital engagement.

"I think our research was quite significant in proving that digitalization is a necessity for the museum experience," Sinotte says. "Even the idea of what is a 'traditional visit' [or] a 'traditional visitor' to a museum—you might think [this person] doesn't want digital enablement, but our research shows that that's not true."

The toolkits that the team developed will help museums make data-driven decisions to expand their digital presence and advocate for increased funding, putting them on the path to sustainable growth and a whole new era of outreach.





*In June 2024, following three years of work and data gathering, the team unveiled three toolkits for Ontario museum professionals:*

## **Ontario Museum Digitalization Index (OMDI):**

An interactive tool allowing museums to assess their digital maturity and outline steps for growth.

## **Online Audience Profile:**

A comprehensive segmentation of museum visitors into four personas, identifying preferences and motivations for visits, as well as ways to engage underserved communities.

## **Museum Dashboard:**

An interactive dashboard providing museums with detailed information about their surrounding area, including demographics, nearby schools, and transit stops, to aid in programming decisions.





We discovered that by building frameworks that empower students to prepare and eat good food together on campus, we create the conditions for community and food literacy to flourish.

-JENNIFER MITSCHÉ

Meet a researcher



Principal Investigator  
Jennifer Mitsche

## Jennifer Mitsche

Professor, Centre for Preparatory & Liberal Studies

College and university students have become a vulnerable population. They live on increasingly tight budgets, are time-poor, and have experienced the destructive impact of the global pandemic, making the already detrimental effects of the “student diet” much worse. Building on a previous 3-year CCSIF research project, the Communal Lunch project is developing communal food programming frameworks and networks that can be used on any Canadian campus to support student food literacy and build community.

**Tell us a bit about the Communal Lunch Project and how it started.**

I began teaching at George Brown College in the English and Communications Department, and I now teach Food Studies Research Methods in the Honours Bachelor of Food Studies program. I began researching in 2020.

The Communal Lunch project was born from a personal experience. I was diagnosed with cancer when my children were quite young, which was a bewildering experience for me and my family. When I returned to teaching, I looked at everything through a new lens. I looked at students’ habits during their post-secondary years – you know, the “not enough time, not enough money to take care of myself” repertoire that students find themselves in, and I saw a gap, a missed opportunity.

**What inspired you to focus in on the student population?**

Because so many students are struggling to afford basic needs, meet assignment deadlines, and meet work and other expectations, they are experiencing significant stress and at the same time they are reporting that they feel isolated. I wondered if there was some way to address some of these problems through an alternative campus food culture. As a result of my illness and recovery, I had experienced the benefits of nutritious food, communal eating, and strong community ties – I felt like it was important to share this learning with students.

### **How did that turn into the Communal Lunch Project?**

I returned to school to get an M.A. in Theatre and Performance Studies and Environmental Studies. As part of an independent study I conducted through York University in collaboration with Student Affairs at George Brown, I worked with 9 student co-creators and a chef collaborator, Amy Symington, to develop a “performance” of lunch. The students worked with the chef to plan a menu and cook a meal. On the day of the lunch, we set a beautiful table for 12 in the basement food court, and then we took turns wearing a red apron with the word ‘Lunch’ embroidered on it; its clowning effect allowed team members to approach students in the food court that day to ask them to join us for lunch.

### **How did you observe this shared meal initiative impact student community and engagement on campus?**

The pop-up space we created evoked a feeling of community and the comments from student creators and participants revealed that a shared meal can have a powerful impact on people. From this performance, we launched a weekly pilot project which involved breaking down a recipe and a small group of students each prepping an ingredient to contribute to a grain bowl. Then we met on campus, wiped down a food court table, set it with a tablecloth and tealights, and shared a meal.

### **How did it grow from there into its current incarnation?**

On the strength of this single-campus initiative and the reputations of both Joshna Maharaj and Meal Exchange because of the incredible work they had been doing for many years, we received a NSERC-CCSIF research grant to replicate this on campuses across Canada. However, we received the grant in March 2020, just when COVID-19 pandemic restrictions were being implemented. The first year required that we find new ways to support students, who were now more isolated than ever.

We realized, if everyone’s online, we could reach out to students

across Canada. We collaborated with Residence Life coordinators, Student Unions, and GBC Student Life to host virtual cook-alongs to help students improve their food knowledge and skills and connect with each other. We learned that even when it occurs in a virtual space, good food programming can help students develop food literacy and engage in a community and a culture of care.

### **What interesting collaborations have come out of this project?**

During the second year of our first research project (2020-2023), I met Erik Chevrier, a professor and researcher at Concordia University and one of the founders of the Concordia Food Coalition (CFC), a nonprofit organization that brings together students, faculty, staff and community groups to learn, teach and incubate food projects. I was inspired by the work they’ve done to create and support initiatives that not only feed students but also facilitate experiential education, create inviting community spaces, and stimulate student engagement.

The CFC team was interested in the programming we were delivering, so we decided we should work together, and we’re now partnering with them for our second NSERC-CCSIF funded research project (2023-2025). For this second research project, we are focused on building a mapping model and a training toolkit to support campus actors in connecting campus food initiatives through networks or coalitions.

### **What’s one of the biggest challenges the project has faced so far?**

We’ve discovered that there are so many food initiatives on campuses across Canada, but most campus food groups operate in silos, with little or no interaction among them. In fact, we discovered in our mapping initiative this year, that many are unaware of each other’s existence. We adapted the methods Erik Chevrier developed to map campus-community food systems at Concordia University to map the practices of each campus food group at GBC, with the goal of facilitating learning and collaboration among participants.

We also conducted a national survey, interviewing student union representatives across Canada to discuss the food issues that students are experiencing and the opportunities for food culture transformation on campuses. One of the most significant issues is rising food insecurity and student unions struggling to meet this increasing need. Our interviews also revealed a strong interest in developing campus food networks within each campus and among campuses across Canada to advance critical food literacy.

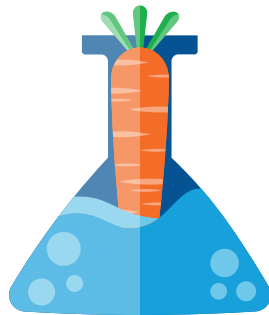
We ended the first year of this second research project by co-hosting our first-ever DevOur Campus research conference at Concordia University in June, which was exciting! We had an inspiring turnout of students, project coordinators, and food systems scholars from across the country. The mix of expertise and experience resulted in an amazing three days of teaching, learning, and networking. Our next year of research will build on this momentum and interest in building a national network.

### **What’s the next step at George Brown?**

Over the next year, we will build on the mapping initiative we conducted last year at GBC. Our goal is to bring all the campus food groups together for a Food Group Assembly and talk about ways in which we might build a campus network to collaborate and learn from each other’s work.

We are also launching a version of this project, which we piloted at GBC last year in the Center for Preparatory and Liberal Studies (CPLS). Susan Toews, Dean of CPLS, supported the initiative, understanding the many ways in which food can foster a sense of belonging after years of isolated online learning. We are collaborating with CHCA chef faculty, who are also interested in the program because it provides an opportunity for culinary students to experience and work in a community food setting. There’s still more work ahead, but we’re excited about the student and faculty responses to the program and the progress we’ve made!





Spotlight on...

## Food and Beverage Innovation

*Food science research and development services to support Canada's food and beverage sector*



# 36

client engagements in 2023/2024

# 7

researchers

# 11

student research experiences

## Project highlights

*Carbonated Energy Drink Development for Good Game Corporation*

**PI: Caroline Rebello**

**Partner: Good Game Corporation**

*Lunchbox Recipe Development for the Guelph Family Health Study*

**PI: Candace Mascarenhas**

**Partner: University of Guelph, University of Ottawa, Brescia University College**

*Functional Beverage Development for Advantage Health Matters*

**PI: Tolu Olutunfese**

**Co-PI: Candace Mascarenhas**

**Partner: Organic Traditions (Advantage Health Matters)**

*Scoopable Smoothie Development for Boreal Naturals Inc.*

**PI: Tolu Olutunfese**

**Partner: Boreal Naturals Inc.**

*Honey Sweetened Soda Beverage Development for Ontario Honey Creations*

**PI: Caroline Rebello**

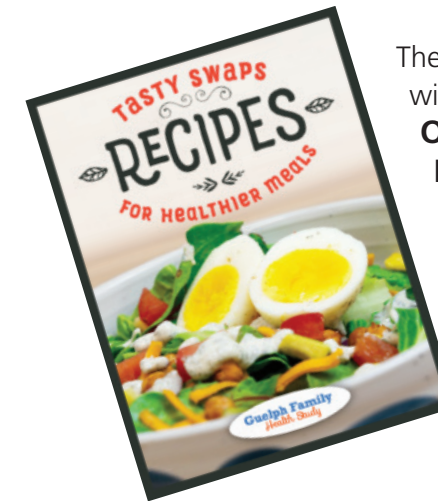
**Partner: Ontario Honey Creations**

## Recognizing impact



**EVENTS** | FIRSt held numerous outreach events, including the *Unlock Your Growth* series. The first event in the series, “Decoding Food and Beverage Industry Support” (November 2023) featured speakers from the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA), National Research Council Industry Research Assistance Program (NRC-IRAP), RBC, Grant Match, and Ontario Centre of Innovation (OCI) with a focus on R&D funding support for SMEs in the industry.

A second *Unlock Your Growth* event was held in June 2024 with Sheri Evans (Local Development Specialist, Sobeys) sharing her wealth of knowledge and expertise on what it takes to make it to grocery store shelves. Attendees learned about requirements, processes, and how to make their product stand out amongst a sea of options. Attendees also heard from the FIRSt technical team on how to navigate the complex and often daunting world of creating a product formulation.



The cookbook we developed with the **University of Ottawa and Guelph Family Health Study** — *Tasty Swaps: Recipes for Healthier Meals* — is available online: [guelphfamilyhealthstudy.com](http://guelphfamilyhealthstudy.com).

### Casale Creative (Balloon Water Inc.)

have launched the products FIRSt helped to develop, and are selling them through their own website: [balloonwater.com](http://balloonwater.com)







Product Optimization | Nutritional Facts Table

## A vegan patty with punch for Choose Life Foods

*Choose Life Foods is a Toronto-based business that provides plant-based Caribbean food options, sold across the Greater Toronto Area (GTA).*

Principal Investigator: Caroline Rebello  
Co-Investigator: Candace Mascarenhas  
Student Researchers: Leonardo Da Silva Saralegui, Vanessa d'Souza

Choose Life Foods is a Toronto-based business that provides plant-based Caribbean food options, known for their vegan patties, which are shipped and sold frozen. To ensure their product line is as strong as possible Choose Life Foods approached FIRSt to evaluate the sensory attributes of their Caribbean Curry Delight patty and punch up the flavour and texture.

The FIRSt research team, made up of Caroline Rebello, Food Science Technologist and Candace Mascarenhas, Lab Operations Manager, set out to optimize the current filling of the Caribbean Curry Delight patty, along with the ingredient options. All ingredients used had to be approved by Vegan.org, as the patties are certified Vegan. The team sourced ingredients for experimentation and prototyping, based on Choose Life's goals and guidelines. The prototypes for the new improved products were created and tested in the FIRSt lab.

When the project wrapped, FIRSt had developed a scalable formulation for the optimized Caribbean Curry Delight patty, along with a Nutrition Facts Table (NFT) and ingredient declaration provided to Client. Choose Life Foods is a Toronto-based business that serves the growing demand for diverse flavours in the plant-based market, and are now armed with a new flavour to add to their Jamaican patty offerings.

Meet a student researcher

## Vanessa D'Souza

*H316 Honours Bachelor of Commerce (Culinary Management)*

Vanessa D'Souza is a graduate from the H316 Honours Bachelor of Commerce (Culinary Management) program at George Brown College. She was a student researcher on the Choose Life and Something Better Snacks projects.

**How did you get involved in GBC's research & innovation program? What initially interested you about these projects?**

**Vanessa:** As a fan of the Bon Appetit test kitchen, I was always curious about the process of research, building new recipes and in particular, the "reverse-engineering" of dishes. Initially, I was interested in the same reverse-engineering and problem-solving aspect of developing products, and as time went on, I realized that using basic formulas for a product, a variety of new flavours and combinations can be made as well.

**What was your biggest learning or takeaway from your time working on these projects?**

**Vanessa:** My biggest takeaway was seeing the research and development process from a completely different perspective. As consumers, we are trained to be on the lookout for new and exciting products, that meets our personal nutrition and flavour needs. As a developer, we get to see the process behind ensuring that the best-quality product is put out on the shelves. I also learned that the product-compliance directory is incredibly vast and detailed, and that the standard for products to meet in Canada is difficult, but not impossible.

Working on research projects, my learning was immediately being applied in the workplace, and it was a boost to my abilities and confidence.

**Was there anything that surprised you when working on these projects?**

**Vanessa:** It was the time aspect of each project that surprised me the most! Some projects can go on for months and even years. I have learned that when presenting information to clients, you are required to present many options and variables, rather than one clear-cut solution. Variety is essential, and this takes a lot longer to produce than I was anticipating.

**What advice would you have for other students looking to get involved in George Brown's research & innovation programs?**

**Vanessa:** I would say, don't be afraid to put yourself out there. Your ideas can be as outrageously creative as you would like, since the world is so competitive. Keep reading, and immerse yourself in the food content out there and lastly, keep an open mind to learning and trying things out, even if it doesn't work out the first few times. The mentorship and tutelage I received at FIRSt was beyond compare. All the staff were supportive, encouraging and are masters at what they do.







Spotlight on...

## Advanced Manufacturing & Prototyping

*Designing, developing and manufacturing physical goods and services*



27

projects in 2023/2024

23

researchers

75

student research experiences

## Project highlights

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*Drug side effects studies for Canadian context using deep learning principles*

**PI: Albert Danison**  
**Partner: Ai Quest Inc**

*BLH Wig/App: Product Advancement*

**PI: Jigisha Patel**  
**Partner: Beauty Lives Here Inc.**

*Building a Digital Twin of the Pearson Airport*

**PI: Elmira Nezami Far**  
**Partner: GTAA (Greater Toronto Airports Authority)**

*Hydro Cool - Design of Hydrogen Powered Trailer Refrigeration Unit (TRU)*

**PI: Frank Naccarato**  
**Partner: H2CS Hydro Cool Systems Ltd.**

*Advanced Manufacturing for PPE Recycling*

**PI: John-Allan Ellingson**  
**Partner: MEA Health Corporation**

*Plastic Flux – Design and Fabrication of Mould and custom CNC router*

**PI: John-Allan Ellingson**  
**Co-PI: Andy Lau, Rajat Sharma** **Partner: Plastic Flux Studio Inc.**

*OmniaBio-Technology Development for Automating Critical Stages of the Cell & Gene Therapy (CGT) Biomanufacturing Process*

**PI: John-Allan Ellingson**  
**Partner: OmniaBio**

*Safecuffs*

**PI: Griffin Epstein**  
**Co-PI: Rajat Sharma**  
**Partner: Paratin Corporation / Safecuffs Ltd.**

*Unified Engineering: Chair Re-design Project*

**PI: Shayva Steinberg**  
**Co-PI: Rajat Sharma**  
**Partner: Unified Engineering Inc.**

## Recognizing impact

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**John-Allan Ellingson** (School of Mechanical Engineering Studies) was co-author on the paper “Design and build of a portable apparatus for measuring lace tension” [Current Issues in Sport Science Vol. 9 (3)]

**Dr. Ali A. Hussein** published the paper “The first distributed-mass high-performance programmable optoelectromechanical steerable motion-wave sensors focused on sophisticated biomedical applications” in SN Applied Sciences (2023) 5:346





Product development | Health tech

## Making health tech beautiful with Beauty Lives Here Inc.

Principal Investigator | Lukas Grapentine  
Co-Principal Investigator | Jigisha Patel  
Student Researcher | Christian Luke, Julius Dejon, Neema Brown

Beauty Lives Here (BLH) is a black-owned and operated brand dedicated to providing 100% virgin human hair extensions, premium accessories, and expert care tips. They saw the pressing need for individuals with alopecia and those in chemotherapy recovery to closely monitor their cortisol levels, but there's a lack of accessible and reliable tools for tracking and managing these biomarkers discreetly and reliably. They came to George Brown to design, develop and test a sensor-based wig that enables real-time tracking and monitoring of biomarker trends accessed through in mobile app.

The research team set out to identify the right sensors for the three biomarkers—cortisol, lactate, and glucose. The final prototype of the sensor-embedded wig was intended to pair with an Android application designed to display user-friendly health data. After testing both the sensor and Android mobile app to ensure functionality

and ability to track biomarker trends, the team then began the task of debugging and repairing issues. In a second phase, the team streamlined prototype design and integrated machine learning to help improve the interactive features.

The result was the creation of a minimum viable product (MVP) for a sensor-enabled wig, as well as an Android mobile app providing access to health data, a digital storefront and virtual “try-on” functionality. The research team also identified several other biomarkers worth exploring in future iterations, including temperature, moisture, electrical signal, GSR, body Impedance, and electroencephalogram (EEG) metrics. The sensor-enabled wig and mobile application will allow BLH to move forward with launching their product, with a mission to empower their customers’ informed health decisions to take proactive steps towards their well-being.



Meet our partners

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## Khalil Soule

*Owner, Beauty Lives Here Inc.*

### **Can you tell us a little bit about Beauty Lives Here?**

Yes. Beauty Lives Here is primarily a women's beauty company. We specialize in the retail sales and wholesale sales of hair extensions, wigs, hairpieces, etc. - all human hair products.

### **This project developed a 'smart wig'— where did the idea for this product come from?**

We wanted to disrupt the industry a little and add a health device/beauty tech method—[exploring] how we could use AI to cater to our customers as well as machine learning and AR experiences.

We started off by assessing what the needs of some of the most important users of wigs are, and that happens to be individuals who suffer from health-related hair loss disorder—for example, people who have gone through chemotherapy, individuals with alopecia, skin burn patients. From there we came up with a fashion friendly wearable, which we're calling the intelligent wig at the moment.

### **A wig is a very personal item to get the tech treatment!**

There's so many wearables out there - you could get an Apple Watch, you could get a Fitbit - there's very popular ones out there. But it's easy to leave your Apple Watch on your counter or on your night stand, but you're not going to leave your wig at home, right? it's a more of a necessity for the individuals so it just helps that the built in sensors can track all of your health data as well.

### **Can you tell us a bit about how your partnership with George Brown came about?**

Yes! I was actually referred to George Brown by my brother.

He has some history with George Brown. As time went on, we got into more detail to see if it was going to be a good fit. I basically broke down what deliverables I was looking for and made sure that the faculty and the students that he had in mind would be able to reach them. I was pretty pleased with the history of the faculty members and the students, as well as their experience, and I think it was very much aligned. Moving on to my experience, it was great. The communication was amazing back and forth...I like that they lightened my workload. My overall experience is that I was very impressed, and I let everybody know that as well, because I feel they exceeded my expectations.

### **How was the research process?**

We started from the ground for everything, because the hardware had yet to be created. I had the chips, but the chips that I had weren't going to work with what we needed to do, so then we had to find a new sensor. Looking at things like: which one is going to work best? How is the comfort level going to be if someone's wearing it on their head? Is it going to obstruct the cap?

### **So, what's next for BLH now that you've got the beta?**

Currently I'm looking to raise a seed round, so that's my next big thing. In between now and then, it's going to be beta testing.

I hope to be able to continue with George Brown to do some more research as there's always more that I would like to add.







Spotlight on...

## Built Environment

*Smart green technology research & development in the construction sector*



**3**

projects in 2023/2024

**7**

researchers

**7**

student research eXperiences

## Explore the projects

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*Sysconverge Inc: Modular Homes*

**PI: Alsaied Suliman Nisren**

**Partner: Sysconverge Inc.**

*Applying Rain Screen principles to the Window/Wall Interface*

**PI: Christopher (Paul) Timusk**

**Co-PI: Dahai Zhang, Shane Macinnes**

**Partner: SAWDAC Canada, Interface Productions, Fenestration Canada**

*Carbon Microfibre-Reinforced Self-Consolidating Concrete Including Portland Limestone Cement and Silica Fume*

**PI: Md. Safiuddin**

**Co-PI: Peter Tumidajski, Rasha Al-Attar**

## Recognizing impact

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**Md. Safiuddin, Peter Tumidajski, and Rasha Al-**

**Attar**, along with GBC student researchers **Fraser**

**Zenwirt, Moe Shammakh, and Baryalai Sharifi**

gave presentations at the 14th Annual International Conference on Civil Engineering in Athens, Greece, and the Advanced Materials Congress in Orlando, USA. The team presented their research project "Segregation-Resistant Carbon-Microfibre Reinforced Self-Consolidating Concrete"





Spotlight on...



## Digital Transformation

*Blockchain, artificial intelligence, extended reality, smart computing, emerging technologies & more*



**4**

projects in 2023/2024

**7**

researchers

**9**

student research experiences



8

projects in 2023/2024

7

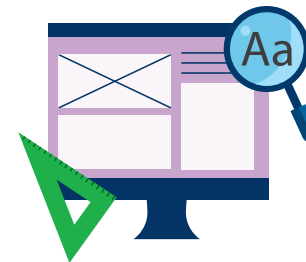
researchers

29

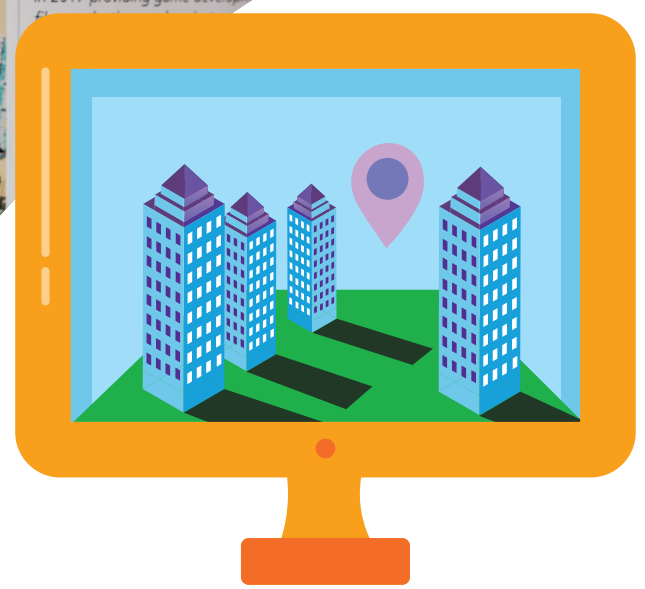
student research experiences

Spotlight on...

**Interactive and  
Experiential Design**  
*socially responsible service design  
ecosystems and user interfaces*







### Game Development | Product Optimization

## Riding the Heatwave with Valente Productions

*Valente Productions provides consulting and Project Management Services for business interests in the Greater Toronto Area and Abroad. Specializing in Game Design & Development, Content Creation & Film Productions.*

**Principal Investigator:** Jean-Paul Amore | **Student Researchers:** Karl Zingel, Mary Angela Abate, Julian Sangiorgio, Liam Richardson, Sinan Kolip, Vitaliy Karabanov, Peter Maliszewski, Gwyndolin Wakefield, Vivian Fu, Sagar Manoj Kulkarni

Valente Productions provides consulting and Project Management Services for business interests in the Greater Toronto Area and Abroad. Specializing in Game Design & Development, Content Creation & Film Productions. Sectors include Entertainment, Hospitality, Tourism, Sporting, Education, Corporate and Community Development. In collaboration with George Brown College (GBC), Valente Production seeks help to develop a new game named the Heatwave Volleyball Game, in support of Heatwave for SickKids.

The project was led by a PI, Jean-Paul Amore, Professor at School of Design, supported by a team of eight (8) Student Researchers focused on Game Programming and Game Art. The Valente team provided a prototype and all the necessary data and art assets for the Heatwave Volleyball Game. The George Brown team got to work expanding and optimizing concept development.

With the collaboration of George Brown College, Valente Productions now has a beta prototype for market testing and integration into the Heatwave for SickKids event property (29th Anniversary). Additionally, expanding for future investment opportunities that allows for community play via multiplayer, and AR/VR applications connecting the SickKids Hospital experience to Heatwave for SickKids supporters. The research team successfully transformed Valente's conceptual prototype into a beta iteration of the Heatwave Volleyball game. The project proved a great opportunity for both interdisciplinary collaboration between game development and art students from George Brown's School of Design to work together.



## Explore the projects

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*Exploring Artificial Intelligence-Driven Assessment and Evaluation in Design and Innovation Education: Unveiling Benefits, Challenges, and Possibilities*

**PI: Edouard Ratiarson**  
**Co-PI: Toni Allen**

*Hydro Cool – Intelligent Control System for TRUs and H2TRU*

**PI: Moe Fadaee**  
**Partner: H2CS Hydro Cool Systems Ltd.**

*Caliber – User-Centered Design of Cost Allocation Tool*

**PI: Toni Allen**  
**Co-PI: Ali Kokulu**  
**Partner: Caliber Group Ltd.**

*BWXT Visualization Project: End Fitting Refurbishment System*

**PI: Alsaied Suliman Nisren**  
**Co-PI: Emanuel Melo, Michael Nguyen**  
**Partner: BWXT Nuclear Energy Canada Inc.**

*Voila Learning: Creating a MetaVerse in WebGL Research Project*

**PI: Hooman Salamat**  
**Co-PI: Ahmet Kokulu**  
**Partner: Voila Learning**

*Think! Wireless Solutions- Development of Snow Clearing App Functionality*

**PI: Jean-Paul Amore**  
**Co-PI: Ahmet Kokulu**  
**Partner: Think! Wireless Solutions**

*Valente Productions 2 – Integration of Multi-player Gameplay in Heatwave Volleyball*

**PI: Jean-Paul Amore**  
**Partner: Water & Wood Wellness Spa Ltd. (Valente Productions)**

*Valente productions - Heatwave Volleyball Game Development*

**PI: Jean-Paul Amore**  
**Partner: Water & Wood Wellness Spa Ltd. (Valente Productions)**

*Design for change: Understanding and demonstrating effective practices to enable and inform change within accommodation and accessibility in higher education*

**PI: Nastaran Dadashi**  
**Partner: Abilities to Work, FedCap Canada**

*SSA (NRX): Development of a mobile digital application prototype*

**PI: Xavier Masse**  
**Co-PI: Michelle Desgroseilliers**  
**Partner: Susan Speigel Architect Inc.**

*Militex Literature Review*

**PI: John-Allan Ellingson**  
**Partner: Militex Coating Inc.**

## Recognizing impact

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**Marko Cigljar, Yefri Ventura, Christopher Pandolfi, Xavier Masse, Ana Rita Morais and Angela Jerath** gave a presentation at the International E-Health Conference in Budapest, Hungary. The team presented their paper “Using Design Methodologies to Explore a Pre-Surgical System” and won an award for “Best Paper Proceedings to Follow”





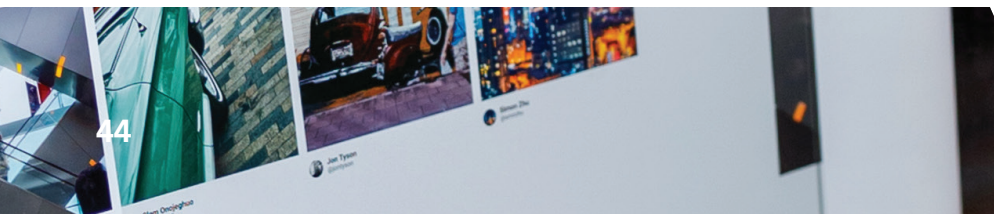


spotlight on...

## The MITACS Program

Since first administering Mitacs funding in 2020, The Office of Research and Innovation has helped industry access research and non-research Mitacs program streams to solve challenges by accessing students, graduates, faculty, and other college resources.

The Mitacs Accelerate program is open to for-profit and non-for profit corporations as well as select crown corporations and allows companies to solve research challenges and achieve their innovation goals. The Mitacs Business Strategy Internship (BSI) program companies to solve critical challenges and provide work-integrated learning and professional skills training to increase employability of post-secondary students.



## Explore the projects

**RDP Associates** | *Operational Efficiencies using AI and Other Automation Technology*

**Dandelion Networks** | *High-Speed Blockchain Project, Phase 2*

**Glo3D** | *Market research and advancements in new undercarriage photography technology.*

**Glo3D** | *Strategic Entry Into Brazil Market*

**Dandelion Networks:** | *High-Speed Blockchain Project, Phase 2 (2)*

**MLD Solutions** | *Analysis of existing practices and the design of a standardized framework*

**Greater Toronto Airport Authority** | *Building a Digital Twin for the Pearson Airport*

**Devant Inc** | *Bridging the Gap for International Students in Canadian Employment*

**Nuclear Innovation Institute (NII)** | *Bruce Power Banned Materials Artificial Intelligence Lookup (BMAIL)*

**Town of Deep River** | *Deep River Case Study Project using Circular Economy Principals*

**CrucialLogics** | *CrucialLogics Project Management Office Internship*

**Scispot** | *Developing LLM Chatbot to Bridge from Lab to Analysis*

**Counter Culture** | *Growth Strategies for DTC clients*

**Talant Bureau** | *Sales and Marketing Coordinator*

**Form Era Studios** | *Product and Pattern Development – Non-strech Curvy Jeans and Pants*

**Kerrageous:** *Warrior sales academy*

**Devant Inc** | *Devant Platform User Experience Research*

**BizBridge** | *BizBridge Dialogic Experience*

**CrucialLogics** | *CrucialLogics Project Management Office Internship*

**MLD Solutions** | *Innovative Digital Storytelling Content on Mozaik.Global Platform for Immigrant Integration and Support*

**Upgraded** | *Strategic Innovations in B2B Communication*

**22**  
projects in 2023/2024

**9**  
internships

**67**  
student research experiences

Meet our partners

## Catherine Kerr

CEO & Corporate Warrior Coach

With over 25 years of experience in sales, Catherine Kerr has a rather unique background and perspective on her business.

“I was an amateur fighter for 17 years. Combined with a master’s degree in education and a specialty in counseling psychology, I’ve also been in sales my entire life,” she says.

She combined these interests into the Warrior Sales Academy, a training and consultancy program that empowers employees through in-depth warrior workshops. After 15 years of traditional training programs, Catherine was ready to evolve her company to the next logical space: fully virtual.

“In the pandemic, I flipped my sales training sessions to virtual,” says Catherine. But she wanted to explore hosting an entire training program online. “As I dug into researching what it takes, I realized very quickly I needed help to do that right.”

She came to George Brown through the Mitacs program, which helps businesses invest in new knowledge through access to top researchers, flexible project plans, and co-investments in talent.

“I was looking to launch a program that was competitive, highly differentiated, extremely creative, and user friendly,” says Catherine. “The Warrior Sales Academy teaches participants how to be more tactical, more hyper focused, and ultimately how to be courageous. I needed an online program that leverages my existing content but flipped it into an asynchronous learning style.”

She was paired with PI Ahmet Kokulu and Mitacs intern Alina Vasilyeva. The project set out to create a viable and competitive digital training program for sales professionals. Digital training

programs are highly competitive, and it can be tricky to engage with an online audience in a compelling way that still support meaningful self-directed learning.

Alina, the student assigned to the project, really stood out.

“Alina went above and beyond—her background is actually in sales and marketing so when she gave me a SWOT analysis, I almost cried, I was so excited!” says Catherine. “Alina really is exceptional.”

Alina is currently enrolled in the Web Development – Front-End Design Program (Postgraduate)., “This project was a huge learning opportunity, allowing me to combine creativity with technical problem-solving,” says Alina. “I’m proud of what I’ve accomplished so far, including developing a custom solution for one of the key features Catherine requested—a chart that tracks user progress based on two assessments.”

The first phase of the project has produced a viable model for the virtual training, including pre-work assignments, coaching sessions and a “Warrior Development Plan” (for on-going skill development). Future phases are planned for 2025 to refine and develop the idea further, including the production of evergreen video modules.

“One of the biggest advantages of partnering with this program, and in particular with [the research team], is that they allowed me to find a way to be competitive in my business,” says Catherine. “That’s what the Mitacs program is about—giving you access to incredible resource support. If I met an entrepreneur or a business owner who wanted to do something similar, I’d tell them---go to George Brown College!”

Find them at  
[kerrageous.ca](http://kerrageous.ca)





Digitization | Community Development

## Finding Their Voices: A Study in Indigenous Archeological Architecture

*Funded by the NSERC College and Community  
Social Innovation Fund.*

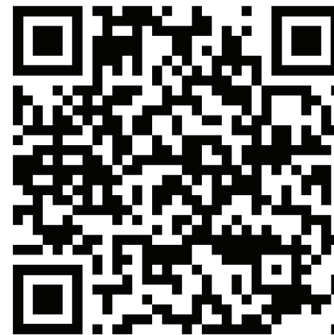
Scan with a QR reader to see what the research team has been working on.

### Research Process



Progress video on the project

### Reality Capture Photogrammetry



Photogrammetry and 3D  
mesh model using captured  
data

### 360 Cabin Video



VR Panoramic video able  
to experience from Mobile  
phone

### TwinMotion | Drone



Twin motion model render  
with comparison to captured  
drone footage

Last year we featured the Finding Their Voices project in the first year of its multi year project, led by Dr. Steffanie Adams. The project leads the groundbreaking digitization of the lost culture, heritage, and language of the Algonquin nation in partnership with the Algonquins of Greater Golden Lake First Nation (AGGL) through the medium of photogrammetric, laser and immersion technologies.

The focus of this digitization is a log cabin that sits in the Deep River area of Ontario, once the location of an Algonquin village. This research will create a permanent record of the palimpsest of natural, cultural and industrial heritage located in this area along the Ottawa River and give voice to a disappearing Algonquin culture with an opportunity to engage, educate and redevelop.

Here's an update on how the research is going.



## George Brown College Employee Achievement Awards | 2023



The Employee Achievement Awards is held every year and celebrates the incredible work of employees across George Brown College with our revitalized Employee Achievement Awards program. The innovation, adaptability and energy GBC employees show every day helps us achieve our bold vision for the future outlined in Strategy 2026 and Vision 2030.

This year, two researchers received the Distinguished Researcher Award: Dr. Jon Callegher and Dr. Md. Safiuddin. Lorenza Carandang, Finance and Admin Coordinator at FIRSt, received the Exemplary Service Award. Dr. Krista Holmes, Associate Vice-President Research & Innovation, received the Building Connections Community Engagement Award and the Leadership Award, GBC's top honour.





# Year in Review

2023-2024



## November 2023

**George Brown hosts a national conference on the future of nuclear power** | George Brown College's Waterfront Campus was host to the Disruptive, Innovative and Emerging Technologies in the Nuclear Industry (DIET23) conference. DIET23 focuses on how companies, academics, and governments are using and planning to use innovative technologies and methodologies in nuclear energy, medicine, regulation and more.

## December 2023

**Sensory testing ramps up at FIRST** | After a brief hiatus due to COVID restrictions, our food and beverage lab began the process of revamping and relaunching its consumer sensory research services. Industry demand grew as companies seek to tinker their products to best appeal to the market.

## February 2024

**George Brown College Survey of Over 900 Canadian Workers with Disabilities Reveals Key Insights into Workplace Experiences** | JobTalks Access, a multi-year CCSIF project, conducted a groundbreaking survey, engaging over 900 workers with disabilities across Canada, to delve into the challenges, perspectives, and firsthand experiences of individuals confronting the complexities of working while having a disability.





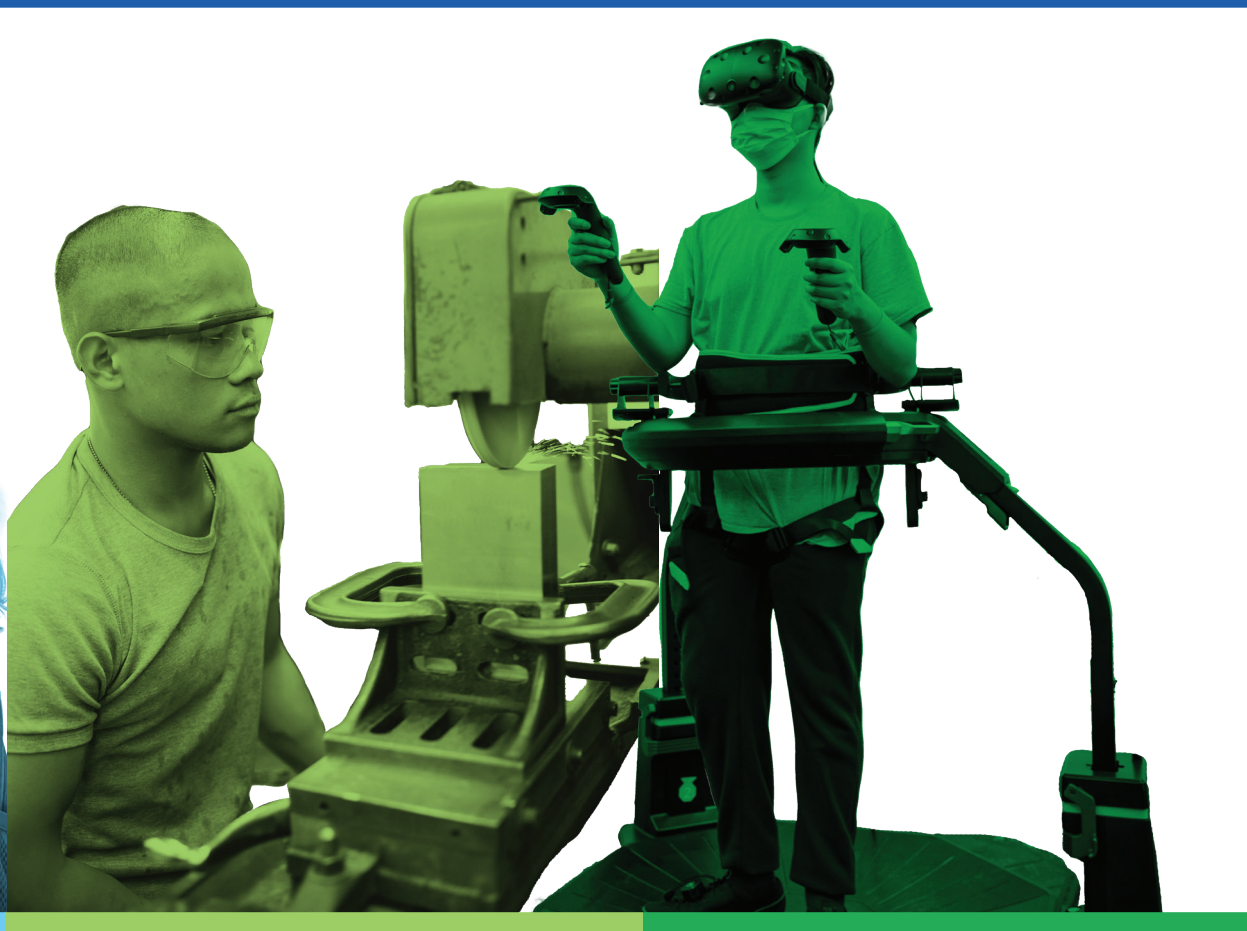
#### ■ March 2024

**George Brown College receives funding from Intellectual Property Ontario** | George Brown College (GBC) will receive \$250,000 to build college capacity to support innovation and commercialization. This will be a joint effort between GBC's Office of Research and Innovation (ORI) and startGBC, a physical and virtual hub connecting students, alumni and community partners with entrepreneurship support, programming and services.



#### ■ April 2024

**Citronino Product Launch** | George Brown College and Reid's Distillery launched Citronino, a sustainable alcoholic beverage resulting from a research project to repurpose 100 lbs of fruit waste. Read more on page 16.



#### ■ May 2024

**Innovative Product Partnership Wraps** | BWXT NEC partnered with Mohawk College's Additive Manufacturing Innovation Centre (AMIC) and George Brown College's Product Development Exchange (PDX) to develop a prototype and a video showcase of BWXT NEC's technology and George Brown College's PDX/AMP Labs.

#### ■ June 2024

**Collision, here we come!** | GBC showcased research innovation and entrepreneurship activities at Toronto's leading tech conference, showcasing how we support businesses and organizations in moving innovative ideas forward.

**RIES 2024** | startGBC and the Office of Research were proud to jointly host the first ever George Brown College Research, Innovation & Entrepreneurship Showcase (RIES)— an exciting day of panel discussions, knowledge sharing, networking opportunities and showcasing. Read more on page [XXX](#)

**New Social Innovation Funding** | The School Food Program Analysis: A Framework for Linking Implementation Strategies to Goals (PI: Gary Hoyer) receives funding from NSERC-CCSIF multi-year funding.



# Our Team

## **Dr. Eva Aboagye**

Senior Program Manager

## **Shahid Azhar, PhD**

Program Manager

## **Ryan Billinger**

Senior Manager, Mitacs

## **Jillian Butler**

Knowledge Transfer Coordinator

## **Lorenza Carandang**

Finance and Admin Coordinator, FIRSt

## **Daniel Caunter**

Manager, Industry Liaison & Business Development

## **Nuvi Dhaliwal**

Program Manager, IDx

## **Rosalina Declaro**

Manager, Research Budget, Reporting  
& Asset Management

## **Richard Derham**

Senior Business Development Manager

## **Ana Cristina Gigli**

Program Manager

## **Alexandra Hernandez, PhD**

Program Manager, Internal PROGRAMS

## **Dr. Krista Holmes**

Associate Vice-President

## **Erin Jones**

Information Architect

## **Arbab Khan**

Manager, Industry Liaison & Business Development, PDx

## **Michelle Kienitz-Henderson**

Manager, Business Development  
& Industry Liaison, FIRSt

## **Vjola Konomi**

Program Manager, MITACS

## **Alexis Lau**

Research Resource Coordinator

## **Baaba Lewis**

Administrative Assistant

## **Tolu Olutunfese**

Lead Food Scientist

## **Andrea Orazi**

IP Commercialization Manager

## **Syeda Munzareen Rahman**

FIRSt Research Project Officer

## **Candace Mascarenhas**

Lab Operations Manager

## **Caroline Rebello**

Food Science Technologist, FIRSt

## **Dan Reilly**

Director, FIRSt

## **Yuchen Sun**

Senior Program Manager

## **Walid Surve**

Business Development Manager

## **Victoria Trang**

Finance and Administrative Assistant

## **Morgan Watts**

Program Manager, IDx







# THE CITY IS OUR CLASSROOM



[georgebrown.ca/research](https://georgebrown.ca/research)



[x.com/GBCResearch](https://x.com/GBCResearch)



[youtube.com/ResearchGBC](https://youtube.com/ResearchGBC)

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