



McGill

Faculty of  
Agricultural and  
Environmental Sciences



A healthier,  
sustainable world

**MADE**  
by McGill

Audrey Wagner  
BSc(AgEnvSc)'19



At the core of human survival is the food we eat, the water we drink, and the land these resources are tied to. Now more than ever, the availability, safety and sustainability of these resources are under threat from a complex array of factors. By 2050, the demand for food worldwide will be 60% greater than it is today. **We have what it takes to face these challenges – and opportunities.**

For more than 110 years, McGill's Faculty of Agricultural and Environmental Sciences (AES) has been at the forefront of science innovation.

A true pioneer in the fields of agriculture, food, human nutrition and the environment, the Faculty engages the latest cutting-edge science to make food safer and more abundant, and the management of resources like water more sustainable.

Now, new technologies and innovative production methods must be developed to ensure long-term sustainable land use and allow producers and the global population to thrive. Agriculture sectors have to become more resilient and robust in the face of climate change, and more sustainable by addressing greenhouse gas emissions, water use and food waste.

[ Cover Photo ]

**Audrey Wagner**  
BSc(AgEnvSc)'19

Co-founder and Food System Coordinator of the Mac Regenerative Food Hub, Founder and President of the McGill Permaculture Club.

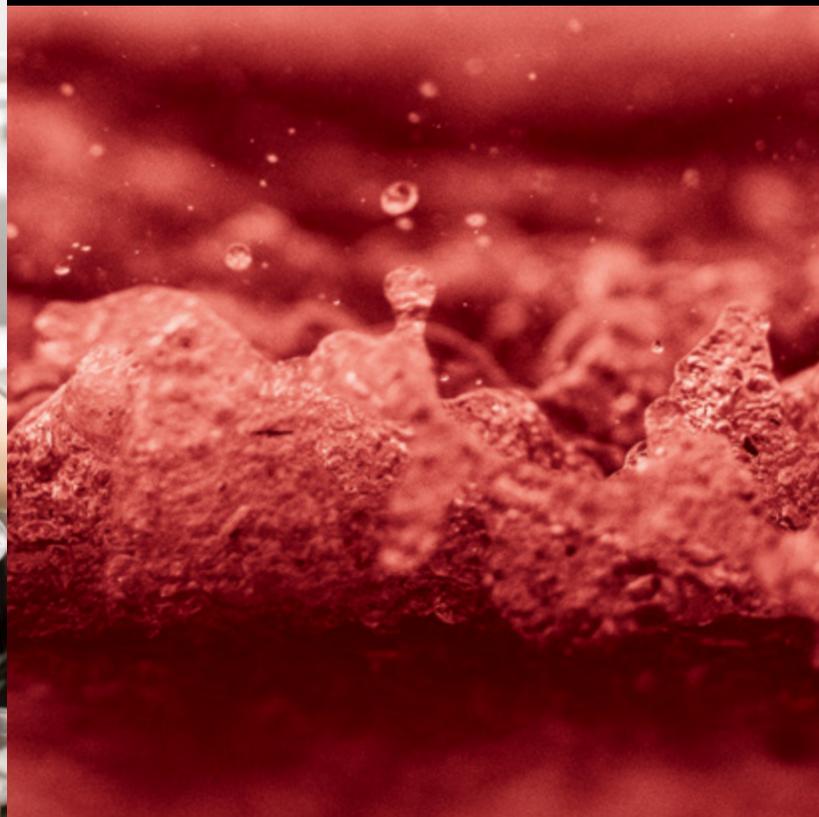
**We must deepen our understanding of the relationships between the land, the animals that live on it, and the people who rely on it.**



**AES is working** across disciplines and borders.



**Finding** new ways to re-envision our agricultural and environmental continuum.





**Training** a future-ready generation of experts.





# These are our strengths

Our Faculty brings singular strengths, proven capacity, and a creative new vision to help us break down barriers and find previously unexplored pathways to a better, healthier and more sustainable world.

We have the power to improve the health of our planet, our families, our societies, and of our children and grandchildren. We have the science, the expertise, the talent, and the collaborations to build teams that are ready to tackle the challenges of today and tomorrow.

## World-leading researchers across a breadth of disciplines

The **100+ AES faculty members**, supported by more than 600 graduate and postdoctoral students, are ideally placed to conduct the kind of sophisticated, deeply collaborative research that is needed to address the food, water, environmental, health and nutritional challenges that lie ahead. They are bolstered by McGill's global partnerships, culture of excellence, and complementary strengths in health and nutritional sciences, chemistry, agricultural practices, engineering and machine learning.

## Students with the passion to drive change

The **entrepreneurial spirit** has never been more present on Macdonald Campus. With the mentorship of faculty and industry experts, the Innovation and Entrepreneurship Program, and start-up financing from alumni-supported funds, students win international competitions and found successful start-ups.

## Partnerships that connect us to the world

Agriculture and environmental sciences are both **deeply local**, tied to the land and practices of a specific context, and **global in scope** and impact. Issues like climate change and biodiversity transcend borders. That is why the Faculty has forged important partnerships with the local community and schools, industry partners and international organizations.



## A unique physical environment at Macdonald Campus

AES is privileged to occupy McGill's venerable Macdonald Campus: 650 hectares of **research facilities, greenspace, fields and forests**, with the only operating dairy farm on the Island of Montreal. Macdonald Campus brings together a distinguished patrimony and a rich history of research and teaching with space that is ideally suited to evolve with our ambitions.

A portrait of Stéphanie Chevalier, a woman with short, dark, wavy hair, wearing black-rimmed glasses and a white collared shirt. She is looking slightly to the right of the camera with a gentle smile. The background is a soft, out-of-focus light green. The top-left corner of the image is cut off by a red diagonal shape.

**Breakthroughs in nutrition  
for an aging population.**

**Made by a passion for research.**

**Made by McGill.**

Stéphanie Chevalier  
Associate Professor and Graduate Program  
Director in the School of Human Nutrition

Associate Member of the Department of Medicine, Division  
of Geriatric Medicine at the Research Institute of the MUHC.

# This is our vision

Building on our distinctive strengths, AES has developed a focused vision for how we can lead in finding solutions to the most pressing food, water and health challenges of the coming decades, while training the kind of nimble, versatile thinkers who will shape our collective future.



**Our vision is organized around three key pillars:**

## **Creating a new hub to solve grand food and water challenges**

We will create an interdisciplinary hub to address different aspects of food and water security, safety and sustainability. Housed in the **Food and Water for the Future Centre**, the hub will aim to create a healthier and more equitable world through applied research. The new facility will include flexible spaces that foster participation and collaboration including a Simulation Centre, Interactive Engagement Spaces, and Smart Classrooms.

## **Conducting leading interdisciplinary research into food systems and environment**

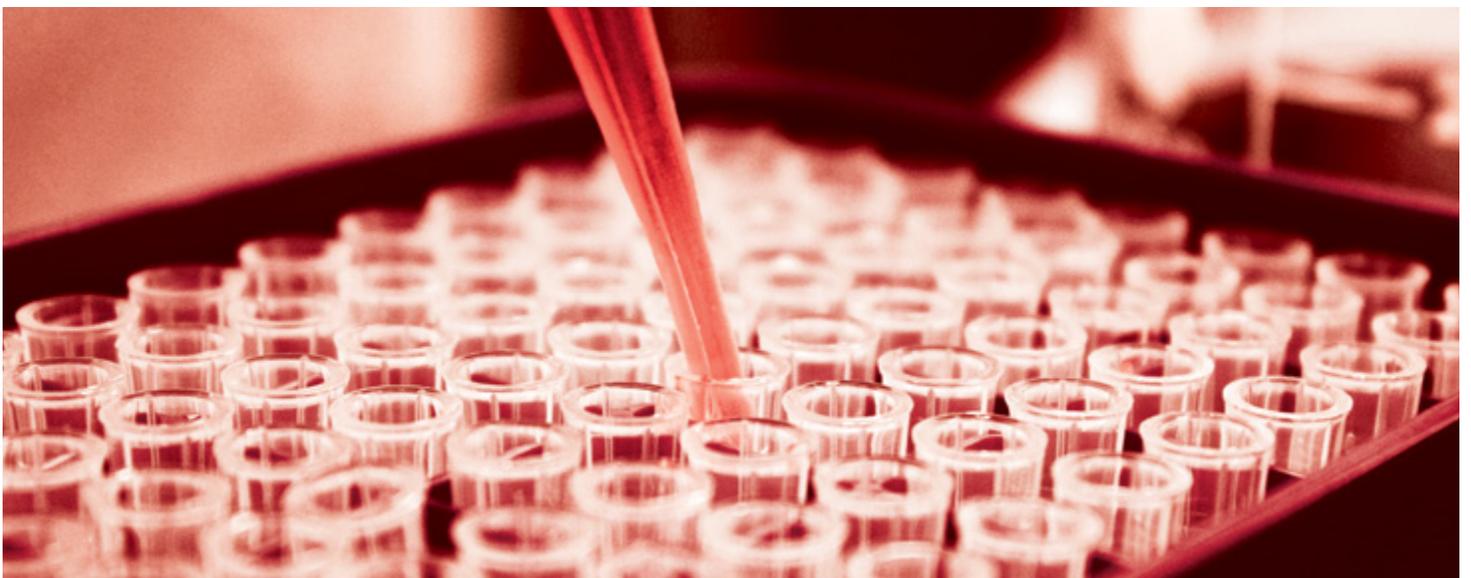
Comprehensive research around a constellation of focused themes, including food production and security, will build on our strengths and propel McGill to the forefront of results-oriented discoveries that change lives.

## **Enriching programs to train future-ready students**

We aim to offer a multitude of opportunities for our students to engage with the world around them and develop not just deep disciplinary knowledge, but agility, creativity and a sophisticated global perspective. Our learning programs will be deeply tied to the new **Food and Water for the Future Centre**, embedding creative learning into research and teaching programs that are at the forefront of knowledge and innovation.



# Creating a new hub to solve grand food and water challenges



Researchers and students at McGill make important contributions to a broad spectrum of food, water, environmental, and health challenges, and we aspire to amplify the impact to meet the challenges our society faces in the 21st century.

Our vision addresses the entire food continuum as a unified, dynamic, and highly integrated system comprising ecological, economic, health and social dimensions.

Our food system is too complex to be addressed piecemeal. Our solution:

## **The Food and Water for the Future Centre**

This innovative endeavour will bring together researchers and students from across academia and industry to drive integrated, impact-oriented research programs guided by leaders in relevant fields.

These activities will take place in a new, state-of-the-art facility featuring novel technologies, spaces designed to encourage collaboration and innovation, and learning environments that bring people and ideas together in new ways.

A new Food and Water for the Future Centre will be at the heart of the Macdonald Campus.

**The Centre will feature several unique physical environments strategically designed to propel our research and teaching forward. These include:**

› **Three Integrative Research Hubs in Translation, Incubation and Data Analytics.** These crosscutting environments will:

- provide dedicated lab space and technology to support the deepening of relationships with industry, government, and other stakeholders
- facilitate the development of commercializable research into technologies and businesses
- be the setting for the integration and analysis of large, complex data sets that are essential to many areas of research

› **A Simulation Centre**, designed to:

- bring together diverse academic colleagues, industry partners/representatives, health providers and government agencies
- engage these stakeholders in partnerships aimed at enhancing agricultural sustainability, nutrition knowledge, evidence-based policy and practice guidelines
- allow for high-capacity computing for interactive presentations of cutting-edge research, bringing the Centre's work to life for stakeholders



› **Interactive Engagement Spaces, Smart Classrooms and Knowledge Colliders.** The Food and Water for the Future Centre is an open system. These flexible spaces will:

- invite participation, shared knowledge and creative collaborations from all actors in the food ecosystem
- enhance training and research as well as provide a dynamic link between research, training, and public outreach
- be equipped with the latest technologies to host activities to improve public education
- offer courses to enable teaching and outreach between the campuses, with other institutions and remote stakeholders around the world, as well as conferences and media programming

The Centre will integrate rooftop garden space and have links to green activities and food security programming, our existing farm-to-fork market and student cafeterias, and nutritional advice for chronic disease states.

A portrait of Valérie Orsat, a woman with shoulder-length brown hair and red-rimmed glasses, wearing a red sleeveless top. The background is a bright, slightly blurred outdoor setting. The text is overlaid on the bottom left of the image.

Food security for  
a healthier future.

Made by combining  
food science and  
engineering.

**Made by McGill.**

Valérie Orsat  
BSc(AgrEng)'91, MSc(A)'92, PhD'99

Professor in the Department of Bioresource  
Engineering. Recipient of the Carrie M. Derick Award  
for Excellence in Graduate Supervision and Teaching.

# Conducting leading interdisciplinary research into food systems and environment



Supported by the new Food and Water for the Future Centre, we aim to embrace more accelerated paths to discovery, a more rapid translation of research from the lab to the field, farm or table, and even more meaningful contributions to some of the most significant challenges we face in Canada and around the world.



## How will we accomplish this?

Our efforts will be concentrated around **two high-profile, comprehensive research and training programs**, each led by a major figure in the field, building on domains where McGill has distinctive strengths:

- › **Sustainable Food Systems:** Integrated research around food production will link work related to crops and livestock, the effect they have on the environments that support them, the resources required, and the long-term sustainability of current and possible practices. Outcomes will include innovative methods for growing food in urban environments, and a deeper understanding of the dynamics of food production in cities, along with new approaches for improved human health.
- › **Indigenous Peoples' Food Systems:** Research will focus on local food systems, including the sustainable harvest of wild plants and animals, traditional methods of food production, and emerging opportunities for agricultural innovation. Research will be conducted in partnership with Indigenous communities, grounded in knowledge co-production approaches, and inclusive of Indigenous conceptions of food security, nature-people relationships, and sustainability.

Complementing this research will be a renewed focus on areas where the Faculty already has robust programs, including:

- › **Effective and Sustainable Food Systems:** meeting the dietary needs and food preferences required for an active, healthy life by ensuring physical and economic access to safe, nutritious and sufficient food, while finding new means to create equitable and effective food systems
- › **Leadership for the Ecozoic:** building new collaborations aimed at re-engineering our practices to promote enhanced relationships between human societies and the natural environment
- › **Innovation and Entrepreneurship:** promoting innovation and entrepreneurship opportunities for students and faculty members, to strengthen links to industry and accelerate the rate at which new ideas become businesses, products or practices

Our success will also rely on contributions to help us achieve a truly **distinctive** margin of excellence.

Our needs include:

- › **Research Chairs** to help us recruit top scientists to lead our core research themes and support their research efforts
- › **Professorships** to allow us to strengthen existing research domains
- › **Fellowships** to attract and support outstanding graduate and postdoctoral students

A portrait of Roberto Buelvas, a young man with dark, curly hair, looking directly at the camera. He is wearing a dark maroon V-neck sweater over a grey t-shirt. The background is a blurred outdoor setting with green foliage. The entire image is framed by a red border.

Planting the seeds for  
innovative agriculture.

Made by an  
entrepreneurial spirit.

Made by McGill.

Roberto Buelvas  
MSc'18

Bioresource Engineering PhD student. Co-founder  
of Observe Agriculture. Winner of 2019 Food and  
Agribusiness Convergent Innovation Prize.

# Enriching programs to train future-ready students

Contributing to a safer, healthier and more sustainable world is not just about the discoveries we make today. It is about training a new generation of leaders with the skills, experience, agility, and global perspective to find solutions to challenges that we cannot even imagine.

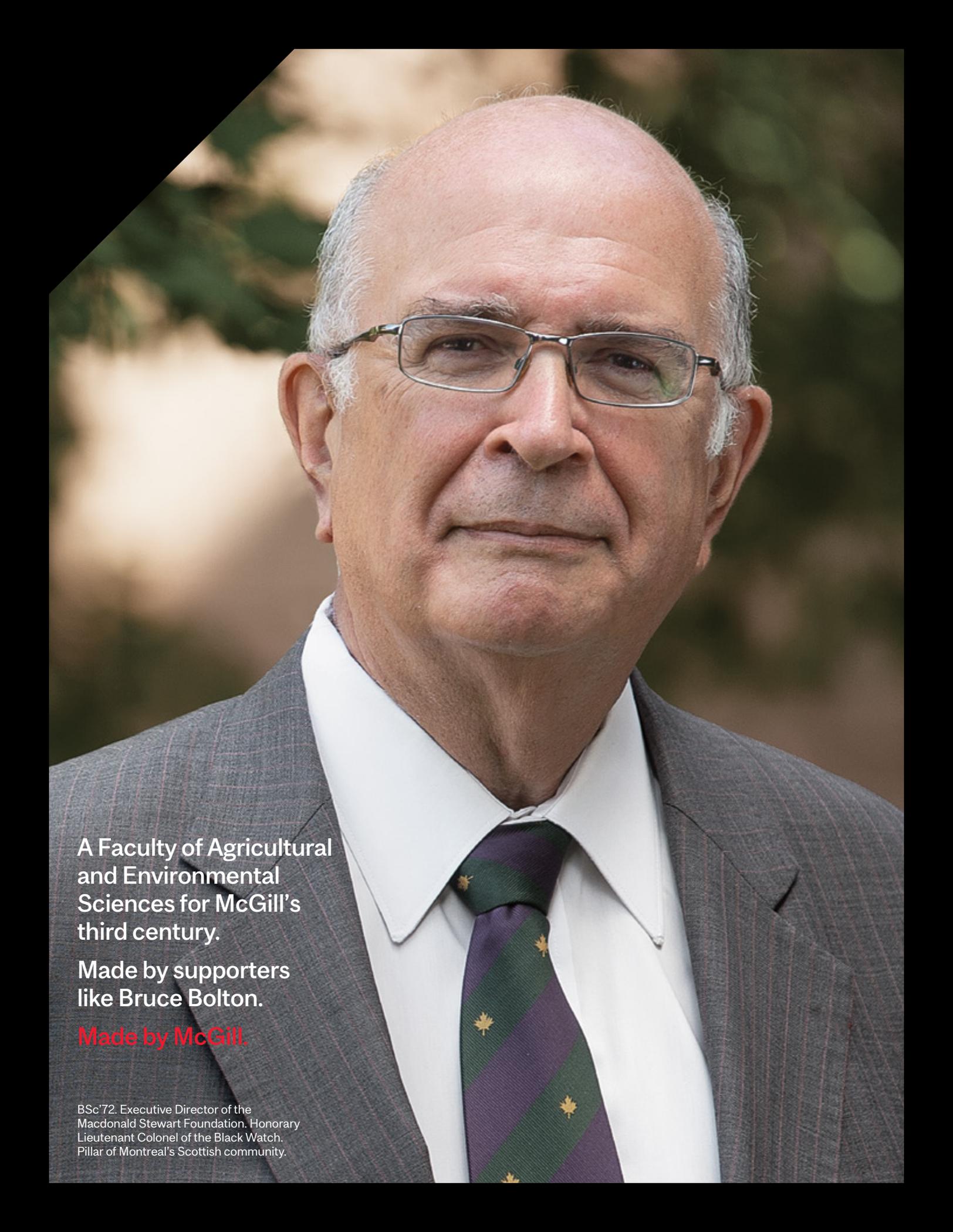


Both within the Food and Water for the Future Centre and across the Faculty, we are committed to putting in place programs that encourage our students to **think beyond boundaries**, to **test skills** in real-world settings, and to explore where their passions and strengths lie.

Whether they end up in industry, government, academia or other sectors like NGOs, we are providing them with the **tools to succeed**, as professionals and citizens in the world we all share.

A core goal of our campaign is to enrich the spectrum of opportunities that open doors for students to experience a **full and multidimensional education**. To achieve this, we are seeking funds for:

- › Enhanced experiential learning opportunities
  - field study semesters, internships and mobility training programs that give students immersive, hands-on experiences in contexts where their studies are put into practice
- › Leadership training
  - to help students sharpen the skills needed to excel in their academic careers and confidently step into leadership roles, whether in industry, government or elsewhere
- › Innovation and Entrepreneurship programming
  - designed to cultivate students' entrepreneurial spirit and skills by providing opportunities for entrepreneurship training and participation in the McGill Dobson Cup start-up competition and other international competitions

A close-up portrait of Bruce Bolton, an older man with glasses, wearing a grey pinstriped suit jacket, a white shirt, and a purple and green striped tie with gold maple leaves. The background is a blurred outdoor setting with green foliage. A black diagonal shape is in the top-left corner.

**A Faculty of Agricultural  
and Environmental  
Sciences for McGill's  
third century.**

**Made by supporters  
like Bruce Bolton.**

**Made by McGill.**

BSc'72. Executive Director of the  
Macdonald Stewart Foundation. Honorary  
Lieutenant Colonel of the Black Watch.  
Pillar of Montreal's Scottish community.

The Faculty of Agricultural  
and Environmental Sciences:  
**Feeding a world hungry for solutions.**

**Made by McGill: THE CAMPAIGN FOR OUR THIRD CENTURY.**



**McGill**

Faculty of  
Agricultural and  
Environmental Sciences