

# RETURN ON RESEARCH

ANNUAL REPORT 2015-2016





## IMPROVING LIFE IN SO MANY WAYS

Research at the University of Guelph is pushing human discovery forward and improving the world we live in. Continuous advancements in the scale, diversity and ambition of research projects across all departments have helped shape U of G into a leading research institution.

Research is intrinsically collaborative. Invaluable partnerships among researchers, external organizations, universities and governments have allowed studies and initiatives to flourish and extend well beyond campus.

The Ontario Ministry of Agriculture, Food and Rural Affairs-U of G Partnership is a sparkling example of a successful and long-lasting relationship. It provides opportunities to improve and promote research and strengthen the agri-food industry regionally and worldwide.

U of G values research that contributes to our greater understanding of society, how we think and what the world is made of. These big-picture ideas help promote critical thinking. At the same time, we produce practical applications and research innovations to mobilize knowledge to create jobs and grow the economy.

Fostering an inclusive and innovative community for all minds to develop and work at their highest level is what makes U of G unique. It's the catalyst that inspires us to continually advance research and improve life.

**Malcolm Campbell**  
Vice-President, Research

*Malcolm Campbell*

Photo credit: Michael Mucci

## U of G: A RESEARCH-INTENSIVE UNIVERSITY

**\$144,824,657** research revenue

**609** researchers

**1,825** projects

**286** funding sponsors

**2,100** graduate students



Members of the University's Centre for Cardiovascular Investigations study factors leading to heart failure, backed by a prestigious Catalyst Grant from the Canadian Institutes of Health Research. Their research may lead to new therapies for correcting heart problems and extending lives.

# FUNDING BOOST FROM NATIONAL AGENCIES

Research funds awarded from the Tri-Agencies\* and the Networks of Centres of Excellence were up 4.6% over 2014-15.

\*The Tri-Agencies are the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC).

This year, U of G received nearly \$5 million from the federal government for social sciences and humanities research, ranging from changing stereotypes about disabilities to investigating climate change, digital privacy, and spousal and parental relationships. More than half of that funding went to Prof. Carla Rice, Department of Family Relations and Applied Nutrition, and holder of the Canada Research Chair in Care, Gender and Relationships. Rice received a coveted \$2.5-million SSHRC Partnership Grant to bring together researchers and community partners to study ways to challenge misconceptions about disability and marginalized communities.

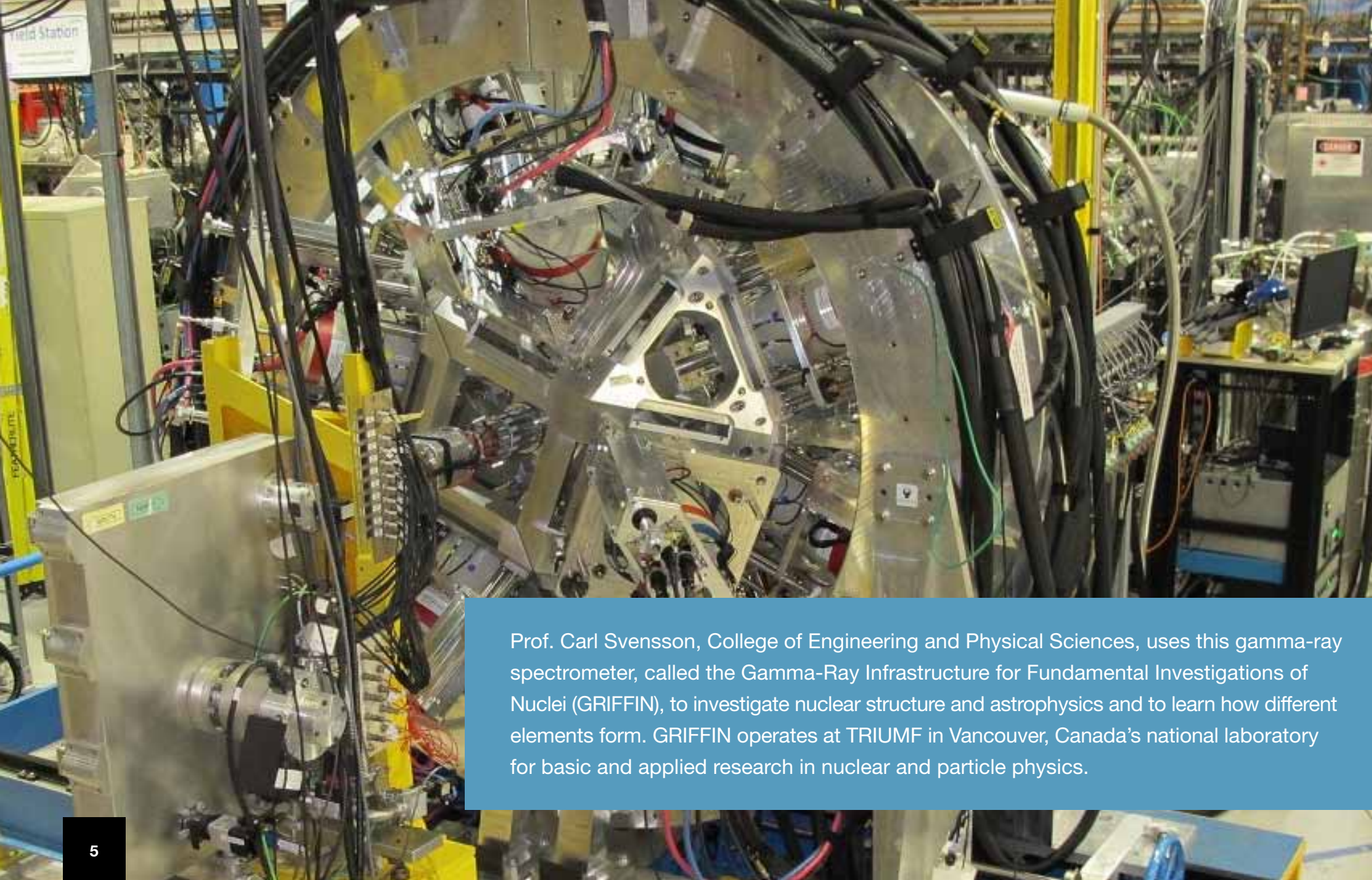
NSERC Research Tools and Instruments - **42% success vs. national average of 33%**

**TRI-AGENCIES RESEARCH AWARDS** up 4.6%

**NSERC AWARDS** up 6%

**SSHRC AWARDS** up 9%

NSERC Discovery Grants for Early Career Researchers - **82% success vs. national average 75%**



Prof. Carl Svensson, College of Engineering and Physical Sciences, uses this gamma-ray spectrometer, called the Gamma-Ray Infrastructure for Fundamental Investigations of Nuclei (GRIFFIN), to investigate nuclear structure and astrophysics and to learn how different elements form. GRIFFIN operates at TRIUMF in Vancouver, Canada's national laboratory for basic and applied research in nuclear and particle physics.

## RESEARCH INFRASTRUCTURE SUPPORT

Canada Foundation for Innovation and Ontario Ministry of Research, Innovation and Science Ontario Research Fund (Research Infrastructure) programs awarded almost \$7 million in 2015-16.

Funding from the Canada Foundation for Innovation and the Ontario Ministry of Research, Innovation and Science provides our researchers with cutting-edge lab facilities and equipment they need to push the frontiers of knowledge in all disciplines and to conduct research from discovery to technology development. Funded research at U of G improves health, ensures a cleaner environment, supports evidence-based policy-making and helps Canadian businesses to compete.

Canada Foundation for Innovation (CFI) funding up

**\$2,276,706** from  2015  
2014

Ontario Research Fund (Research Infrastructure) program funding from the Ontario Ministry of Research, Innovation and Science up

**\$1,776,706** from  2015  
2014



Latin America has traditionally been a Catholic and conservative region. Yet 80 per cent of Latin Americans today live in countries where gay marriage is legal. Jordi Diez, a professor in the Department of Political Science, looked at Argentina, Chile and Mexico to find out why, in the first comparative study of its kind. What he learned is the subject of his book called *The Politics of Gay Marriage in Latin America* (Cambridge University Press). It argues that much of the answer lies in the ability of advocacy groups to form alliances to inform the debate.

## MAJOR INCREASE IN INTERNATIONAL RESEARCH

The University of Guelph has a long-standing commitment to international development in dozens of disciplines. International research grew significantly in 2015-16.

The University of Guelph has a long-standing reputation as one of the most inventive universities in Canada. U of G research has led to global efforts to develop new vaccines to improve human and animal health, new crop varieties to improve farm yields and new biodegradable plastics to divert waste from landfills.

U of G faculty, students and staff collaborate with experts in other universities and research centres in Canada and abroad. Among all peer-reviewed journal articles written or co-written by U of G researchers, about one-third involve at least one international collaborator.





In 2012, Canada imported \$105-million worth of hazelnuts. Prof. Elliott Currie, College of Business and Economics, is developing cropping systems to grow them locally instead. Although it can take up to five years for orchards to fully develop, each hazelnut tree lives for up to 100 years—and that longevity could lead to stable jobs in Ontario.

## INVESTING IN AGRI-FOOD RESEARCH

Agri-food is a \$50-billion industry in Ontario. It's supported by the unique research partnership between the University of Guelph and the Ontario Ministry of Agriculture, Food and Rural Affairs.

The partnership funds a diverse research program that oversees Laboratory Services, a veterinary clinical education program, research stations and infrastructure, and a highly qualified personnel (HQP) program. The HQP scholarship program equips graduate students with specialized, practical training in agri-food business, research and innovation. The Undergraduate Student Experiential Learning (USEL) initiative strengthens the industry's competitiveness and sustainability by enhancing its human resources capacity.

SINCE 2010  
**125**

HQP scholars and their employers have benefited from knowledge sharing and workplace innovation.

SINCE 2010  
**35**

USEL students have conducted research under the mentorship of U of G faculty and OMAFRA specialists.



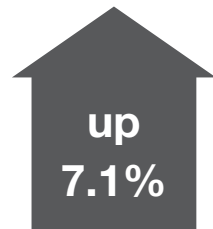
A look at our past starts with nineteenth- and twentieth-century rural Canada and Guelph's Rural Diary Archive project. For Prof. Catharine Wilson, College of Arts, the diaries provide insight into the social relationships of early rural Canadian neighbourhoods. Citizen historians from around North America have volunteered to transcribe hand-written diary pages into digital text. All pages are accessible for viewing.


## MOBILIZING KNOWLEDGE AND INNOVATION

The Catalyst Centre at U of G helps transform the University's world-class research into innovations that improve life.

U of G researchers make discoveries and mobilize knowledge to develop new products. In 2015-16, products of U of G research to reach the market were the PurPod100 coffee pod, Smart Green Technologies' green roofs and diagnostic testing for *Clostridium perfringens*. These advances demonstrate the University's commitment to improve life locally and globally.

Ontario Centres of Excellence  
**\$879,247**  
research funding awarded in 2015-16

Royalty revenues up 7.1% from last year to  
**\$2,643,725**   
up 7.1%

Active intellectual property  
licence agreements up  
29% from last year   
up 29%

New patent  
filings up 17.1%  
from last year   
up 17.1%

# LEADERSHIP

## Donor-supported research at the University of Guelph

### **Christine Baes**

*Semex – Canadian Dairy Network –  
Holstein Canada Professorship in Dairy Genomics*

### **Theresa Bernardo**

*IDEXX Chair in Emerging Technologies and  
Bond-Centred Animal Healthcare*

### **Jason Coe**

*Nestlé Purina PetCare Canada Chair in Communications*

### **Steve Crawford**

*Professorship in the Department of Integrative Biology –  
Saugeen Ojibway Nation*

### **Brady Deaton**

*Michael McCain Family Chair in Food Security*

### **Ian Duncan**

*Emeritus Chair of Animal Welfare*

### **James Fraser**

*Scottish Studies Foundation Chair*

### **Ryan Gibson**

*Libro Professorship in Regional Economic Development for  
Southwestern Ontario*

### **Dan Gillis**

*Professorship in the School of Computer Science –  
Saugeen Ojibway Nation*

### **Ernesto Guzman**

*Pinchin Family Chair in Bee Health*

### **Linda Hannah**

*Kinross Chair in Environmental Governance –  
Kinross Gold Corp.*

### **Alexandra Harlander**

*Burnbrae Farms Professorship in Poultry Welfare*

### **A. Max Jones**

*Professorship in Integrated Plant Production Systems for  
Vegetatively Propagated Horticulture Species*

### **David Kelton**

*Dairy Farmers of Ontario Dairy Cattle Health  
Research Chair*

### **Elijah Kiarie**

*McIntosh Family Professorship in Poultry Nutrition*

### **Gisèle LaPointe**

*Dairy Farmers of Ontario Professorship in Dairy  
Microbiology*

### **Donna Lero**

*Jarislowsky Chair in Families and Work*

### **Ralph Martin**

*Loblaws Chair in Sustainable Food Production*

### **Ali Navabi**

*Grain Farmers of Ontario Professorship in Wheat Breeding*

### **Lee Niel**

*Col. K.L. Campbell Chair in Companion Animal  
Welfare Science*

### **Nigel Raine**

*Rebanks Family Chair in Pollinator Conservation –  
W. Garfield Weston Foundation*

### **Neil Rooney**

*Professorship in the School of Environmental Sciences –  
Saugeen Ojibway Nation*

### **Praveen Saxena**

*Gosling Chair in Plant Preservation*

### **Cynthia Scott-Dupree**

*Bayer CropScience Chair in Sustainable Pest Management*

### **Adronie Verbrugghe**

*Royal Canin Veterinary Diet Endowed Chair in Canine  
and Feline Clinical Nutrition*

### **Tina Widowski**

*Col. K. L. Campbell University Chair in Animal Welfare  
Egg Farmers of Canada Chair in Poultry Welfare*

### **Catharine Wilson**

*Francis and Ruth Redelmeier Professorship in Rural History*

## Canada Research Chairs

### **Aaron Berg**

*Hydrology and Remote Sensing*

### **Susan Brown**

*Collaborative Digital Scholarship*

### **Myrna Dawson**

*Violence Prevention*

### **Monique Deveaux**

*Ethics and Global Social Change*

### **Trevor DeVries**

*Dairy Cattle Behaviour and Welfare*

### **Kari Dunfield**

*Environmental Microbiology of Agro-ecosystems*

### **John Dutcher**

*Soft Matter and Biological Physics*

### **James France**

*Biomathematics in Animal Nutrition*

### **Evan Fraser**

*Global Food Security*

### **Amy Greer**

*Population Disease Modelling*

### **George Harauz**

*Myelin Biology*

### **Paul Hebert**

*Molecular Biodiversity*

### **Nina Jones**

*Eukaryotic Cellular Signalling*

### **Allan King**

*Animal Reproductive Biotechnology*

### **René Kirkegaard**

*Risk Management and Regulation*

### **Joseph Lam**

*Cystic Fibrosis and Microbial Glycobiology*

### **Alejandro Marangoni**

*Food, Health and Aging*

### **Ed McBean**

*Water Supply Security*

### **Barbara Morrongiello**

*Child and Youth Injury Prevention*

### **Linda Parker**

*Behavioural Neuroscience*

### **Kathryn Preuss**

*Chemistry of Molecular Materials*

### **Carla Rice**

*Care, Gender and Relationships*

### **Sharada Srinivasan**

*Gender, Justice and Development*

### **Carl Svensson**

*Gamma-Ray Spectroscopy and Rare Isotope Physics*

### **Merritt Turetsky**

*Integrative Ecology*

### **Scott Weese**

*Zoonotic Diseases*

### **Chris Whitfield**

*Molecular Microbiology*

### **David Wright**

*Lipids, Metabolism and Health*

## Fellows of the Royal Society of Canada

### **Academy of the Arts and Humanities**

#### **Ric Knowles**

#### **John Leslie**

#### **John McMurtry**

#### **Judith Thompson**

#### **Elizabeth Waterston**

### **College of New Scholars, Artists and Scientists**

#### **Evan Fraser**

#### **Ryan Norris**

#### **Merritt Turetsky**

### **Academy of Science**

#### **Derek Bewley**

#### **Arend Bonen**

#### **Chris Gray**

#### **Paul Hebert**

#### **Gabriel Karl**

#### **Ken Kasha**

#### **Peter Kevan**

#### **Jacek Lipkowski**

#### **Larry Milligan**

#### **Bernhard Nickel**

#### **Larry Peterson**

#### **Bruce Sells**

#### **John Simpson**

#### **Chris Whitfield**

## NSERC Industrial Research Chair

### **Beth Parker**, Groundwater Contamination in Fractured Media

*Sponsor: The Boeing Company, Schlumberger, Syngenta*

## Pierre Elliott Trudeau Foundation

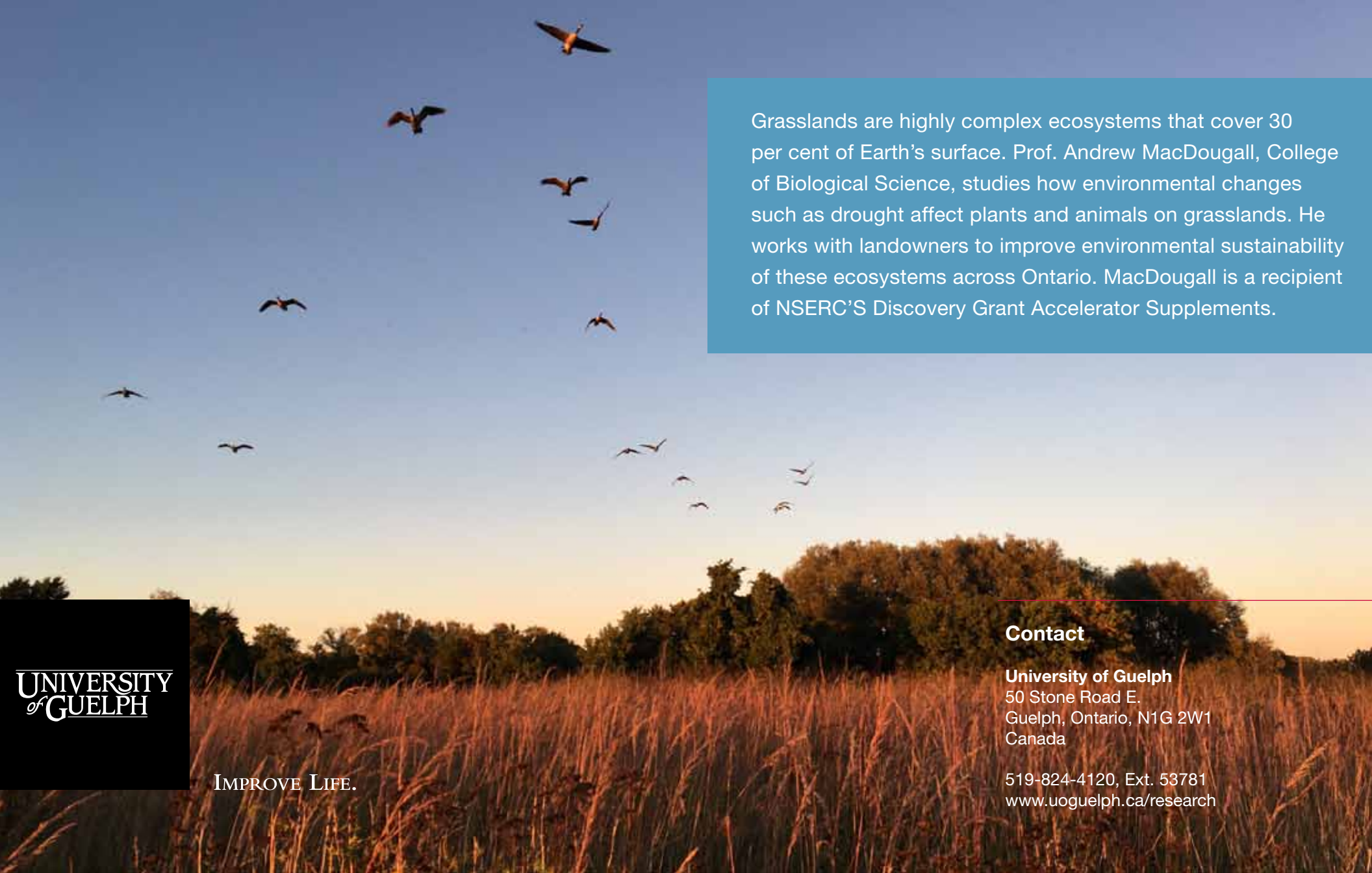
**Evan Fraser**, Fellow

## Premier's Research Chair

### **Amar Mohanty**, Biomaterials and Transportation

*Sponsor: Ontario Ministry of Agriculture, Food and Rural Affairs*



A large flock of birds, likely geese, is captured in flight against a clear blue sky that transitions to a warm orange glow near the horizon. The birds are scattered across the upper two-thirds of the frame. Below them, a dense line of green trees separates the sky from a field of tall, golden-brown grasses in the foreground. The overall scene is peaceful and natural.

Grasslands are highly complex ecosystems that cover 30 per cent of Earth's surface. Prof. Andrew MacDougall, College of Biological Science, studies how environmental changes such as drought affect plants and animals on grasslands. He works with landowners to improve environmental sustainability of these ecosystems across Ontario. MacDougall is a recipient of NSERC'S Discovery Grant Accelerator Supplements.

### Contact

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