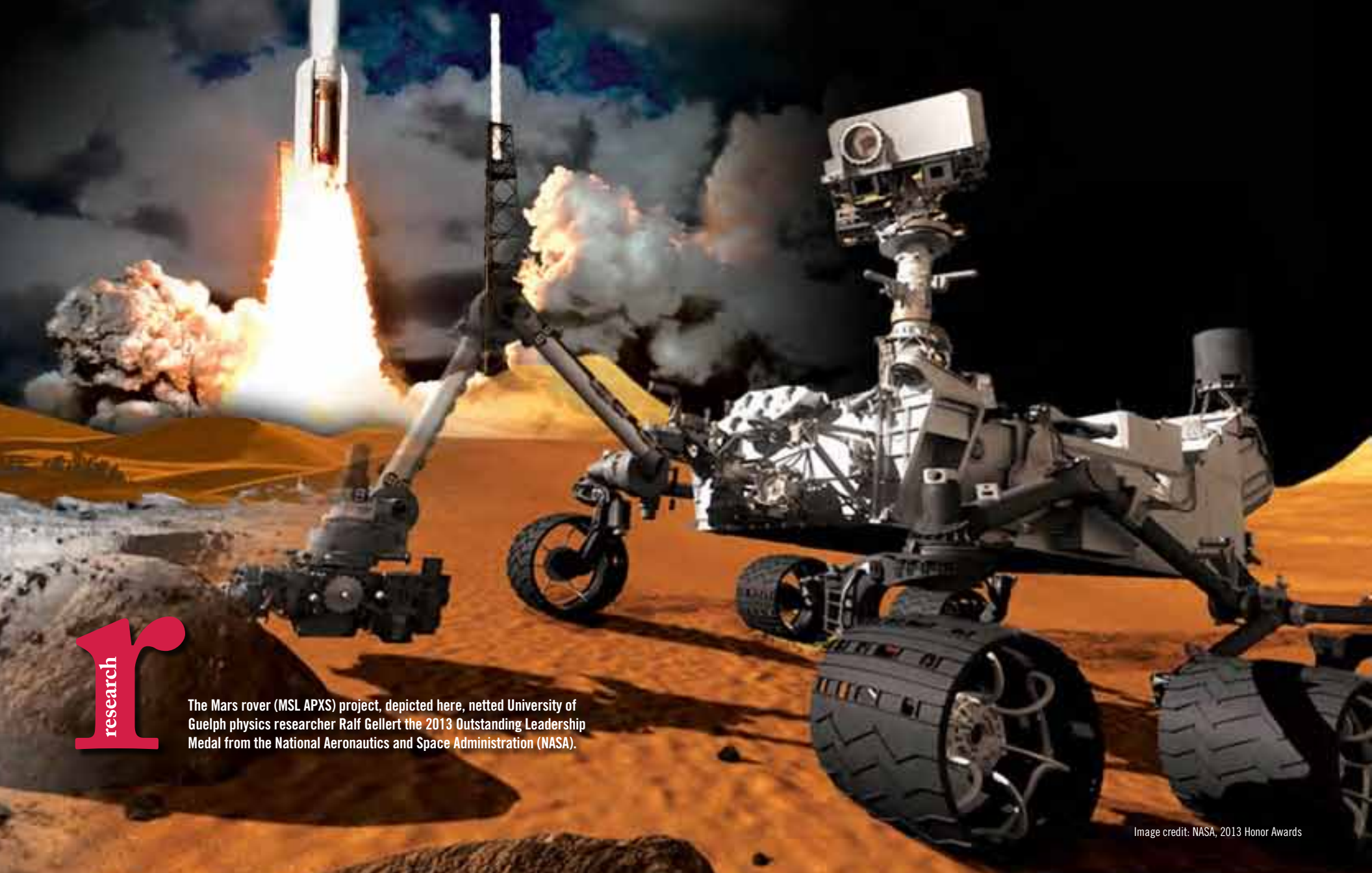


# ROR

RETURN ON RESEARCH

ANNUAL REPORT 2012 - 2013



The Mars rover (MSL APXS) project, depicted here, netted University of Guelph physics researcher Ralf Gellert the 2013 Outstanding Leadership Medal from the National Aeronautics and Space Administration (NASA).

Image credit: NASA, 2013 Honor Awards

# CONTENTS

---

- 3 **WELCOME:** From Kevin Hall, Vice-President (Research and External Partnerships)
- 5 **STRATEGY:** Advancing our research strengths through Guelph's strategic plan
- 7 **LEADING THE WAY:** Research revenue tops \$154 million, 2,000 projects, 700 researchers
- 9 **PARTNERS:** Five-year agreement with Ontario agriculture, food and rural affairs ministries is unique in Canada
- 11 **MOVING FORWARD:** Research revenues rise from tri-councils, federal departments
- 13 **COMMITTED TO SOCIETY:** Ontario government ministries' support up 30 per cent
- 15 **GLOBALLY CONNECTED:** Guelph faculty, staff and students are active in 70 countries
- 16 **LEADERSHIP:** Researchers are at the forefront of their academic fields

# ROR

---

## RETURN ON RESEARCH

---

### ANNUAL REPORT 2012-2013

---

# r research

The *Sapadrama citrina*, pictured here, is among the dozens of insects University of Guelph Prof. Steve Marshall has identified throughout his productive career. His many efforts netted him the 2013 Gold Medal from the Entomological Society of Canada, recognizing his outstanding contributions to insect studies in Canada.





# WELCOME

## Research committed to your health and wealth

*Focus on the health and wealth of people at home and abroad* – that's the big message coming from research sponsors today. Health is seen by governments at all levels as a key to greater economic prosperity. With health, wealth is indeed attainable. Without it, wealth is immaterial.

Guelph researchers have a long history of dedication to what matters most when it comes to health and prosperity. People's communities, environment and lifestyles – including the links between health and the entire food chain – all contribute to healthy individuals. This broad perspective requires the comprehensive approach to research for which the University of Guelph is widely recognized.

For example, in its annual Canadian University Report, the *Globe and Mail* ranked Guelph the top medium-sized university in Canada for research opportunities. *Maclean's* named us one of the top five comprehensive universities in the country. And Higher Education Strategy Associates cited us among the top five universities in this country for social sciences and humanities.

We're pleased with the recognition. Overall, our research revenues are at \$154 million. We do more with that funding than any other university, as shown by our efficiency ratings. According to the Impact Group, Guelph is Canada's most inventive and efficient research university. Every Guelph researcher has, on average, three projects on the go. And as an institution, we disclose more inventions per faculty member than the national average, while we spend a fraction as much on each disclosure.

Everyone has an eye on the return on investment in research. We think ours is making a difference to society, and I hope you agree.

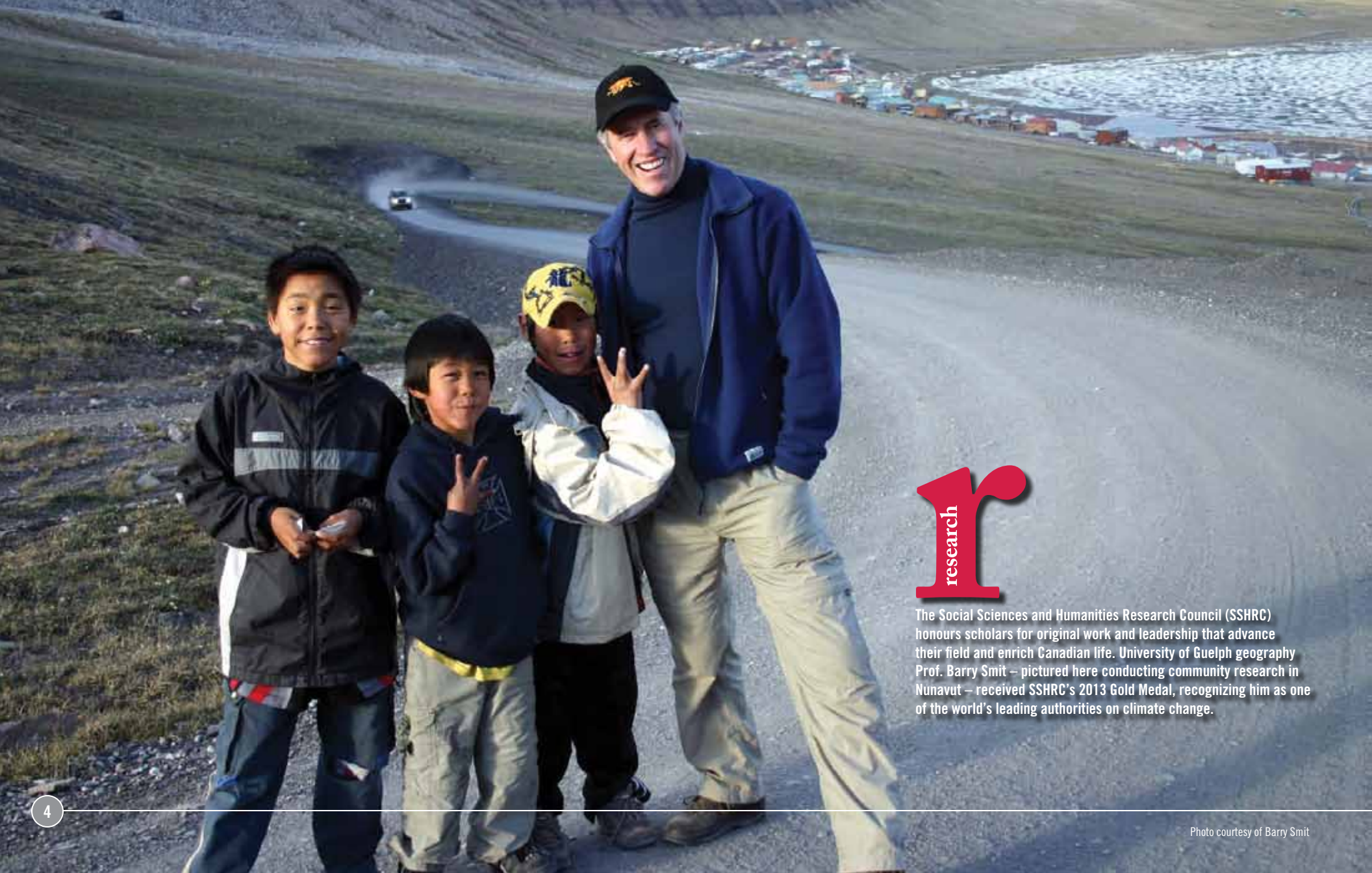
As always, I welcome your comments on this Return on Research report.



**Kevin Hall**  
Vice-President  
(Research and External Partnerships)







# r research

The Social Sciences and Humanities Research Council (SSHRC) honours scholars for original work and leadership that advance their field and enrich Canadian life. University of Guelph geography Prof. Barry Smit – pictured here conducting community research in Nunavut – received SSHRC's 2013 Gold Medal, recognizing him as one of the world's leading authorities on climate change.

# STRATEGY

## Promoting, encouraging and advancing research

---

The University of Guelph's Strategic Research Plan helps promote, encourage and advance strengths *in these areas* in which the University has built its reputation for quality and innovation.

The plan reflects the University's mission and its objectives, which include research intensity, internationalism and collaboration.

The University is proud of its heritage in agriculture and veterinary medicine, and its accomplishments and programs in science and engineering, social and applied human sciences, liberal arts, humanities, fine and performing arts, and economics and business.

Investment in research enhances student teaching and learning by incorporating research techniques and discovery into the curriculum, by involving students in research design and execution, and by mobilizing and transferring knowledge.

- Agriculture, food and the bioeconomy
- Health and well-being in humans and animals
- Economic management, governance and public policy
- Biodiversity, environment and ecology
- Human behaviour, cultural evolution, creative communities
- Technology and applied sciences
- Foundations of science

For more on Guelph's Strategic Research Plan, visit [www.uoguelph.ca/research/strategic-plan](http://www.uoguelph.ca/research/strategic-plan)





# r

research

One of Guelph's biggest newsmakers is Prof. Emma Allen-Vercoe, pictured front and centre, who has captured the media's imagination with her unique approach to what she calls "the most complex and hostile environment anywhere" – the human digestive system. The technology she and her research team created, called the Robogut, offers an inside-outside view of how antibiotics and antimicrobials affect gut performance. The Allen-Vercoe lab members are, pictured clockwise from left, Kathleen Schroeter, Julie McDonald, Chris Ambrose, Michelle Daigneault and Jackie Strauss.



# LEADING THE WAY

Guelph's research grows through public and private support

Over the past decade we've seen a significant rise in all research revenues from a diverse range of sources.

Our primary revenues come from the partnership agreement between the University of Guelph and the Ontario Ministry of Agriculture and Food and the Ministry of Rural Affairs; the Tri-Councils (Natural Sciences and Engineering Research Council, Canadian Institutes of Health Research and Social Sciences and Humanities Research Council); other federal and provincial departments and ministries; business and industry; and sources such as non-profits and charitable organizations.

These revenues help support the continuum of research expertise at Guelph, from the 1,800 graduate students we train to the 36 Canada Research Chair holders who make the University their home. In 2013, we filled the last of our Canada Research Chair vacancies with scientists who are leaders in their fields of population disease modelling and of gender, justice and development. Those appointments added further to our complement of expertise across many sectors.

**\$154 MILLION**  
**700 RESEARCHERS**  
**2,000 PROJECTS**





research

At this year's World Dairy Expo, a technology called High Immune Response – developed by University of Guelph Prof. Bonnie Mallard and her team – was named one of the top innovative products of 2013. Currently marketed by Semex as *Immunity+*, the technology improves the health of cattle worldwide. Pictured here with the highly coveted award is Mallard and Semex Vice-President Brad Sayles. Research sponsors for this technology include the Natural Sciences and Engineering Research Council, the Ontario Ministry of Agriculture and Food and the Ministry of Rural Affairs, and the Canadian Dairy Network.



# PARTNERS

Province and university serve the Ontario agri-food and rural sectors

The province has renewed its commitment with \$264 million over five years in research funding to the partnership between the Ontario Ministry of Agriculture and Food and the Ministry of Rural Affairs and the University of Guelph. The partnership ensures that the University remains at the forefront of innovation in agri-food and rural research.

This renewed commitment of research funding will support dozens of faculty working on priorities of interest to stakeholders in the Ontario agri-food and rural sectors. Between 2008 and 2013, 65 full-time equivalent faculty positions were supported by the OMAF and MRA – U of G Partnership, with 320 people working on projects supporting OMAF and MRA priorities.

Accelerating the transformation of research knowledge into application is a fundamental component of the OMAF and MRA - U of G Partnership. The renewed commitment to the research agreement will support efforts to mobilize knowledge across the agri-food and rural sectors.

# \$264 MILLION



In keeping with the value that the University of Guelph places on training highly qualified graduate students, the research initiative supported by the OMAF and MRA – U of G Partnership offers the unique and innovative Highly Qualified Personnel scholarship program to help prepare students for increasingly complex and dynamic careers.





The Royal Society of Canada promotes learning and research in the arts, humanities, and natural and social sciences. Being named a Fellow of the Royal Society of Canada is one of the most esteemed honours in Canada's science community. In 1982, plant physiologist Derek Bewley was one of the youngest scientists ever to be elected to the society – after just 12 years in the field. Bewley, now a University professor emeritus, was recently awarded the society's lifetime membership.



# MOVING FORWARD

## Researchers connect with a wide range of communities

As a comprehensive university, Guelph promotes individual and collaborative research, engaging with a wide range of communities.

One research community, NSERC-CANPOLIN, is addressing the growing problem of pollinator decline in agricultural and natural ecosystems in Canada. For the first time, leading experts in entomology, ecology, plant reproductive biology, genomics, prediction and economics have joined forces to explore the full scope of the issue.

Another community of researchers has addressed the problem of iron deficiency – a curable, nutrient-deficient disorder affecting 3.5 billion people worldwide. Their solution? Add a piece of iron the size of a human hand to boiling water used for cooking. The iron leaches out of the simple device, and with just 10 minutes of boiling, a litre of water can acquire 75 per cent of a person's daily iron needs.

And at the Centre for Biodiversity Genomics – a \$16 million expansion of the original Biodiversity Institute of Ontario – global leaders in DNA barcoding technology led by Prof. Paul Hebert are discovering, identifying and cataloguing more species than ever in their new state-of-the-art facility.

# \$52.2 MILLION

Revenues received from all federal government departments are up by close to two per cent from 2011-12

# \$25.8 MILLION

Revenues received from Tri-Councils (CIHR, NSERC, SSHRC) are up more than seven per cent from 2011-12

## HIGHLIGHTS

2012-13 \$52.2

2011-12 \$51.2

\$MILLIONS

2012-13 \$25.8

2011-12 \$24

\$MILLIONS



## r research

The Social Sciences and Humanities Research Council of Canada (SSHRC) has awarded a research team led by English professor and musician Ajay Heble, pictured here, a \$2.5-million Partnership Grant to launch the International Institute for Critical Studies in Improvisation. Following extensive peer review, Heble's initiative was ranked No. 1 among finalists for the grant, which was one of just 20 awarded nationwide. The new award builds on an earlier \$2.5-million SSHRC Major Collaborative Research Initiatives grant – the biggest grant of this kind ever awarded at a Canadian university.



# COMMITTED TO SOCIETY

## Research helps find solutions to complex problems

Research benefits the breadth of society, helping us understand complex problems, see the world more clearly, and make a difference where we live, work and go to school.

The key to preventing and dealing with violence in our communities is increasing the accessibility and number of resources available to victims and perpetrators of violence. Guelph researchers, led by Prof. Myrna Dawson at the Centre for the Study of Social and Legal Responses to Violence, are working with community and criminal justice organizations to help ensure that someone who experiences intimate-partner violence, for example, can access resources, legal advocacy and counselling.

What drives people to violence? Answering that is complex, but one approach involves understanding what's at work in people's brains. Guelph researcher Prof. Mark Fenske is looking at what he calls "the battle in the brain," a lifelong internal struggle waged between immediate emotional impulses and longer-term goals. How humans allocate attention can help determine which of these brain signals wins the competition to drive our thoughts and actions.



**UP 30 PER CENT**

Funds awarded from SSHRC are up almost 30 per cent since 2008



**UP 30 PER CENT**

Funds awarded from Ontario Government departments (other than Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs) are up almost 30 per cent since 2012

### HIGHLIGHTS

2012-13 \$3.6

2007-08 \$2.8

\$ MILLIONS

2012-13 \$4.3

2011-12 \$3.3

\$ MILLIONS



Algeria Argentina Australia Austria Bangladesh Barbados Belgium Benin  
Bolivia Botswana Brazil Cambodia Cameroon Canada Chile China Colombia  
Cook Islands Costa Rica Croatia Cuba Czech Republic Denmark Ecuador  
Egypt El Salvador England Equatorial Guinea Estonia Fiji Finland France  
French Guiana French Polynesia Georgia Germany Ghana Greece Greenland  
Guadeloupe Guatemala Guinea Guyana Haiti Honduras Hungary Iceland India  
Indonesia Iran Ireland Israel Italy Jamaica Japan Jordan Kenya Laos  
Madagascar Malawi Malaysia Martinique Mexico Morocco Netherlands  
New Caledonia New Zealand Nicaragua Nigeria Norway Panama  
Papua New Guinea Paraguay Peru Philippines Portugal Puerto Rico Qatar  
Romania Russia Samoa Scotland Serbia Sierra Leone Singapore South Africa  
South Korea Spain Sri Lanka Sweden Switzerland Taiwan Tanzania Thailand  
Trinidad and Tobago Turkey Uganda Ukraine United Arab Emirates  
United States Uruguay Vanuatu Venezuela Vietnam Wales Zambia Zimbabwe



# GLOBALLY CONNECTED

Guelph researchers go beyond traditional boundaries

It's easier to stay healthy in a society with a prosperous rather than a struggling economy. But not everyone is fortunate enough to live in a society with such an economy, so the University of Guelph is taking measures globally to help those facing challenges.

For example, chronic poverty characterizes most countries in the developing world, even though they receive almost \$1 trillion a year in foreign aid. The issue of aid effectiveness is causing many experts in development ethics, including those at the University of Guelph, to explore better approaches to poverty reduction, primarily by involving those at the grassroots level in program planning and delivery and by avoiding classic top-down channels.

And then there's the problem of chronic disease, such as malaria. Malaria continues to be a problem in nearly 100 countries, affecting more than 200 million people. No vaccine is available, but Guelph researchers are part of a global team working to stop the malaria parasite from maturing and reproducing.

Through still other initiatives, including affordable and practical approaches to dealing with contaminated water, Guelph researchers are addressing global needs.

**\$21** MILLION  
**70** COUNTRIES  
**190** PROJECTS

## Canada Research Chairs

Aaron Berg  
Dorothee Bienzle  
Milena Corredig  
Myrna Dawson  
Monique Deveau

Kari Dunfield  
John Dutcher  
Hermann Eberl  
James France

Evan Fraser  
Amy Greer  
Chris Hall  
George Harauz  
Paul Hebert

Nina Jones  
Allan King  
René Kirkegaard  
Vladimir Ladizhansky

Joseph Lam  
Jacek Lipkowski  
Alejandro Marangoni  
Georgia Mason  
Ed McBean  
Kevin McCann  
Barbara Morrongiello  
Linda Parker

Kathryn Preuss  
Carla Rice  
Barry Smit  
Sharada Srinivasan  
Carl Svensson  
Merritt Turetsky  
Scott Weese  
Chris Whitfield  
David Wright  
Rickey Yada

## University Research Chairs

Madhur Anand  
Dionne Brand  
Robert Enright  
Elizabeth Ewan

Daniel Fischlin  
Sky Gilbert  
Marion Joppe  
Paul McNicholas

Robert Mullen  
Ryan Norris  
Theo Noseworthy  
Steven Rothstein  
Thanasis Stengos

## NSERC Industrial Research Chairs

Milena Corredig, Dairy Technology  
*Ontario Dairy Council*

Mansel Griffiths, Dairy Science Microbiology  
*Dairy Farmers of Ontario*

Beth Parker, Groundwater Contamination in Fractured Media  
*Boeing, Syngenta*

Hongde Zhou, Advanced Wastewater Technologies  
*Zenon Environmental Inc.*

## Fellows of the Royal Society of Canada

Academy of the Arts and Humanities  
Ric Knowles  
John Leslie  
Elizabeth Waterston

Academy of Science  
Derek Bewley  
Arend Bonen  
Chris Gray  
Paul Hebert  
Gabriel Karl  
Ken Kasha  
Peter Kevan

Jacek Lipkowski  
John McMurtry  
Larry Milligan  
Bernhard Nickel

Larry Peterson  
Bruce Sells  
John Simpson  
Chris Whitfield



# LEADERSHIP

Researchers at the forefront of their academic fields

## Industry-sponsored Research Positions

**David Kelton**, Chair in Dairy Cattle Health  
*Dairy Farmers of Ontario*

**Warren Stiver**, NSERC Chair in Environmental Design Engineering

**John Srbely**, Canadian Chiropractic Research Foundation Professorship in  
Neurophysiology and Spine Mechanics

## Premier's Research Chairs

**Amar Mohanty**, Biomaterials and Transportation  
*Ontario Ministry of Agriculture and Food and Ministry of Rural Affairs*

## Endowed Research Chairs

**Jason Coe**, Nestlé Purina PetCare Canada Chair in Communications

**Ian Duncan**, Emeritus Chair of Animal Welfare

**George Greene**, Chair in Environmental Governance  
*Kinross Gold Corp.*

**Donna Lero**, Jarislowsky Chair in Families and Work

**Ralph Martin**, Loblaw Chair in Sustainable Food Production

**Lee Niel**, Col. K. L. Campbell Chair in Companion Animal Welfare

**Praveen Saxena**, Gosling Chair in Plant Preservation  
*The Gosling Foundation*

**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

**Nigel Raine**, Rebanks Family Chair in Pollinator Conservation  
*W. Garfield Weston Foundation*

# CHANGING LIVES IMPROVING LIFE

University of Guelph  
50 Stone Road East  
Guelph, Ontario, N1G 2W1  
Canada