

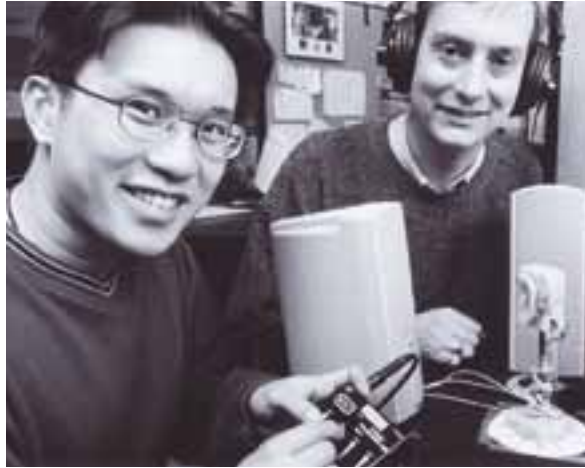
Research Facts

2001

THE COMPLETE SPECTRUM OF RESEARCH AT THE UNIVERSITY OF GUELPH

SNAPSHOT

A digital hearing aid that filters out background noise and focuses on key audio signals is being refined by Guelph engineering researchers to make it more powerful and adaptable to real-life situations than most standard hearing aids. Here, graduate student Edward Chau (left) and engineering professor Bob Dony are using microchip technology to find ways for the hearing aid to correct and improve incoming sounds.



OVERVIEW

The University of Guelph — ranked Ontario's #1 comprehensive university for 2000 by *Maclean's* magazine — has established research strengths that cover the complete spectrum, from basic and applied sciences to the social sciences and humanities. With research activity totalling more than \$92 million annually, Guelph is one of Canada's most research-intensive universities.

Together with its affiliated research and training organizations, the University aims to achieve the highest possible standard of excellence in its research endeavours.

The University of Guelph's net revenues from collaborations with industry and through royalty and licence income from inventions put it among the major technology-generating universities in Canada.

The Ontario Ministry of Agriculture, Food and Rural Affairs' (OMAFRA) \$37-million commitment to agri-food research makes it by far the largest single source of research funding at Guelph.

Funding increase broadens research

University of Guelph research funding per eligible faculty rose by 14 per cent in 2000 from the previous year, totalling more than \$92 million from all sources.

Guelph was awarded more than \$16 million worth of research infrastructure funding from the Canada Foundation for Innovation (CFI), the Ontario Innovation Trust and other partners in 2000. These awards will support research in the areas of marine science, electrochemistry and computing systems.

The Ontario Research and Development Challenge Fund (ORDCF) contributed \$6.7 million to the creation of the Ontario Centre for Agricultural Genomics, which will bring together 15 Guelph researchers and five from other Ontario universities to apply new genomics technology to agricultural research. Total funding, including private-sector and in-kind support, is \$20 million.

The Shared Hierarchical Academic Research Computing Network (SHARC-Net) received \$6.6 million from

CFI. This network of five universities, including U of G, and two colleges, will develop world-class supercomputing power to advance research in areas such as genomics and biocomputing, business and finance and engineering.

Since 1999, 15 U of G researchers have received the Premier's Research Excellence Award, each worth \$150,000. This award recognizes outstanding researchers with the potential to make a difference to the lives of Canadians.

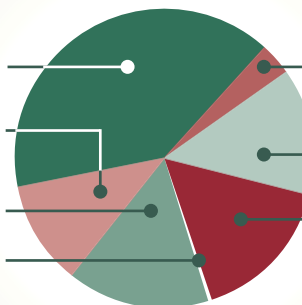
University of Guelph research funding (2000)

OMAFRA agreement:
\$36,916,100 = 39.8%

Ontario government:
\$10,406,918 = 11.2%

Federal government:
\$14,242,679 = 15.4%

Other governments:
\$327,456 = 0.4%



Non-profit organizations:
\$3,204,169 = 3.5%

Private industries:
\$12,747,657 = 13.7%

Granting councils:
\$14,715,611 = 15.9%

Percentages don't add up to 100 due to rounding.

Total: \$92,729,361

UNIVERSITY
of GUELPH

The raw data on Guelph

The University of Guelph was established in 1964 when three founding colleges — the Ontario Veterinary College (1862), the Ontario Agricultural College (1874) and Macdonald Institute (1903) — joined with a new college of arts and sciences. Today, there are six colleges in total, spanning the natural sciences, social sciences and humanities, three satellite agricultural colleges, at Ridgetown, Kemptville and Alfred, and the Horticultural Research Institute of Ontario (now part of the Department of Plant Agriculture). The main campus of more than 405 hectares includes a 165-hectare Arboretum and a 12-hectare Research Park.

14,500 students*

Largest employer in Guelph

Annual economic impact on city: more than \$400 million

*Approximately 13,000 undergraduates and 1,500 graduate students.

Research field stations dedicated to:

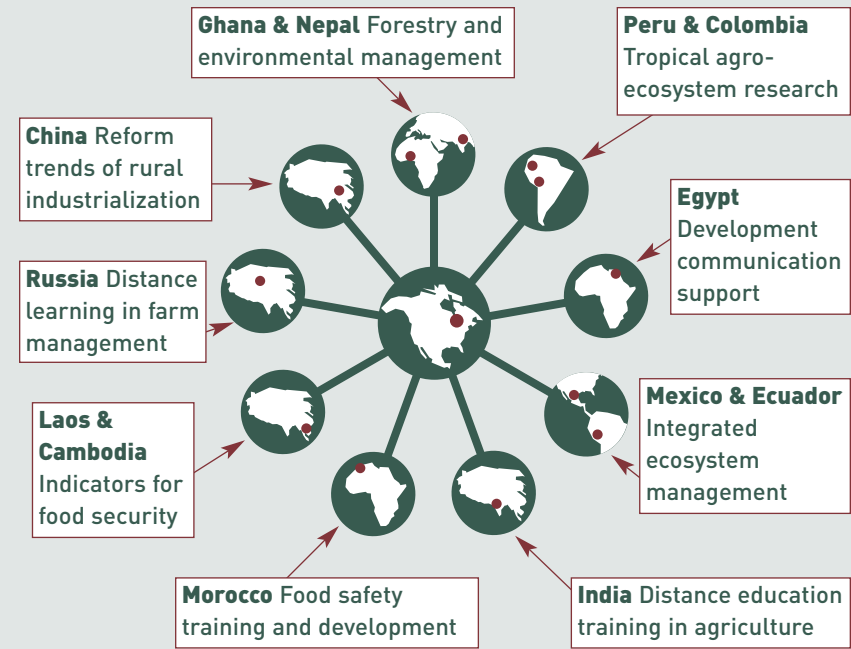
- Crop Science
- Horticultural Science
- Veterinary Science
- Agroforestry
- Environmental Engineering
- Turfgrass
- Engineering
- Animal Science
- Aquaculture

This research complement includes more than 2,200 hectares of corn, soybeans, alfalfa, cereals and pasture, as well as numerous plots at co-operator farms throughout the province; \$50 million in land and buildings; more than 150 employees; and \$30 million in machinery.

University of Guelph Research Park is home to offices and laboratories of:

- AgriTours Canada Inc.
- Agriculture and Agri-Food Canada
- Canadian Animal Health Institute
- Canadian Dairy Network
- Canadian Food Inspection Agency
- Elanco Animal Health
- The Fertilizer Institute of Ontario
- First Line Seeds Ltd.
- George Morris Centre
- Geosyntec Consultants International Inc.
- GSW Inc.
- GUARD Inc.
- Gustafson Partnership
- Health Canada
- James Richardson International
- Kahntact Marketing Incorporated
- Lipid Analytical Laboratories
- Matteis Realty
- Nanodesign Inc.
- Novartis Crop Protection Canada Inc.
- Ontario Dairy Herd Improvement Corporation
- Ontario Grain and Feed Association
- Ontario Problem Gambling Research Centre
- Semex Alliance
- Strategic Research Associates

International development connections



UPDATE

Research achievements

- Contributions to the space program through self-contained environments
- Therapeutic agent for polycystic kidney disease
- Production of an environmentally friendly transgenic pig
- Discovery of novel targets in bacteria for antibiotics
- More than 100 new crop varieties (barley, white beans, soybeans, alfalfa, oats)
- Extensive investigations into functional foods and nutraceuticals
- Transgenic plants: new agronomic advantages through biotechnology
- Development of soybeans with healthier oils
- Recognized hub of aquatic science research
- International journals relating to science and the humanities edited on campus

Research centres, institutes and groups

Animal Biotechnology Embryo Laboratory

Dedicated to introducing new reproductive technologies and making them more available to Canadian producers.
Ann Hahnel, Director,
519.824.4120 Ext. 8399

AquaNet – Aquaculture Network (Federal Network of Centres of Excellence)

Dedicated to increasing the efficiency of aquaculture production through species diversification, biotechnology and environmental sustainability.
Jim Ballantyne, Zoology,
519.824.4120 Ext. 2708

Arboretum Gene Bank

Preserves the genetic diversity of some of Ontario's rare woody plants and DED-resistant elm and produces seed for restoration work.
Alan Watson, Director,
519.824.4120 Ext. 2356

Axelrod Institute of Ichthyology

Promotes the development of graduate teaching and research, and supports international teaching and research, and editing and publishing activities relating to ichthyology.
Glenn Van Der Kraak, Director,
519.824.4120 Ext. 2593

Business Development Office

Evaluates new inventions for commercialization, develops business opportunities through research contracts, patenting and licensing, and transfers results of University of Guelph research to industry.
Constance Hearty, Director,
519.824.4120 Ext. 6471

K.L. Campbell Centre for the Study of Animal Welfare

Promotes the welfare of animals through research and education. Composed of more than 50 associated faculty with diverse interests and views.
Ian Duncan, University Chair in Animal Welfare,
519.824.4120 Ext. 3652

Canadian Arthritis Network Core Facility (Federal Network of Centres of Excellence)

Addresses fundamental questions about diagnosis and treatment of arthritis.
Mark Hurtig, Clinical Studies,
519.824.4120 Ext. 4028

Canadian Bacterial Diseases Network (Federal Network of Centres of Excellence)

A Canada-wide consortium of 53 researchers and laboratory personnel whose work focuses on bacterial disease. Headquartered at the University of Calgary.
Terry Beveridge, Microbiology,
519.824.4120 Ext. 3366

Canadian Co-operative Wildlife Health Centre

Maintains surveillance and diagnosis of diseases in wild animals as a collaborative activity of Canada's four veterinary colleges.
Ian Barker, Pathobiology,
519.824.4120 Ext. 4616

Canadian Institute for Food Inspection and Regulation

Guides collaborative projects in support of a range of educational, research, communication and other initiatives in food safety, animal disease and food regulation.
Jim Pettit, Director, 519.831.2076

Canadian Network of Toxicology Centres

Conducts environmental, health-related research to address Canada's need for timely, accurate and unbiased data on environmental health risks associated with metals and chemical agents.
Len Ritter, Executive Director,
519.824.4120 Ext. 2980

Canadian Research Institute for Food Safety

Fosters links among researchers, the food industry, consumer groups and regulatory agencies to bolster the Canadian agri-food sector through public protection, enhancement of trade and increased awareness.
Mansel Griffiths, Food Science,
519.824.4120 Ext. 2269

Centre for Cultural Studies

Supports a wide range of activities that connect interdisciplinary cultural analyses with the larger community.
Christine Bold, Literatures & Performance Studies in English,
519.824.4120 Ext. 6049

Centre for Educational Research and Assessment

Focuses on ways in which educational structures and processes produce positive learning outcomes, such as educational completion and transition to work.
Fred Evers, Director,
519.824.4120 Ext. 2196

Centre for Families, Work and Well-Being

Promotes individual and family well-being through research, consulting and community education.
Peter Hausdorf, Psychology,
519.824.4120 Ext. 3976

Centre for Food and Soft Materials Science

Conducts research in the use and development of soft materials such as food, polymers, biological membranes and proteins of critical importance to all sectors of Canadian industry.
John Dutcher, Physics,
519.824.4120 Ext. 3950

Centre for the Genetic Improvement of Livestock

Conducts genetic research for numerous animal industries, including aquaculture, beef, dairy, poultry and swine.
Jim Wilton, Animal and Poultry Science, 519.824.4120 Ext. 3647

Centre for Land and Water Stewardship

Encourages projects that examine the sustainability of land and water resources and serves as an umbrella for several research and extension projects at U of G.
Stewart Hiltz, Land Resource Science, 519.824.4120 Ext. 2702

Centre for Psychological Services

Provides psychological services to the University and local community and promotes the profession of psychology to students, the University and the community.
Brenda Kenyon, Director,
519.824.4120 Ext. 2578

Cliff Ecology Research Group

Uses a hierarchical approach to examine the physiological, population and community ecology of old-growth forests on limestone cliff ecosystems.
Doug Larson, Botany,
519.824.4120 Ext. 2679

Controlled Environment Systems Research Facility

Composed of academic researchers, industry leaders and government conducting multidisciplinary research and development in space and earth sciences, sponsored jointly by U of G and the Centre for Research in Earth and Space Technology (CRESTech).
Michael Dixon, Plant Agriculture,
519.824.4120 Ext. 2555

Sponsored research chairs

- Dairy Microbiology (NSERC/ Dairy Farmers of Ontario)
- Egg Materials Science (Ontario Egg Producers Marketing Board)
- Land Stewardship (OMAFRA)
- University Chair in Animal Welfare (OMAFRA/ Mona Campbell/The Eden Conservation Trust)

Couple and Family Therapy Centre

Serves a wide range of clients with diverse problems and provides students with research and clinical experience.
Anna Dienhart, Director,
519.824.4120 Ext. 6426

Electrochemical Technology Centre

Comprises a team of researchers from chemistry and physics (Guelph) and chemical engineering (Waterloo) who conduct research in a variety of areas of pure and applied electrochemistry.
Nigel Bunce, Chemistry and Biochemistry,
519.824.4120 Ext. 3962

Food System Biotechnology Centre

Carries out research built on emerging knowledge of animal and plant genetics and molecular biology to strengthen Ontario's agri-food system.
Alan Wildeman, Molecular Biology and Genetics,
519.824.4120 Ext. 2486

Geomatics for Informed Decisions (Federal Network of Centres of Excellence)

A Canada-wide network of 97 researchers with the common goal of promoting Canada's domestic geomatics industry.
Hugh Whiteley, School of Engineering,
519.824.4120 Ext. 3634

Please see next page

Research centres, institutes and groups (continued)

SNAPSHOT

Fresh food and friendly faces bring consumers such as U of G students Mike West and Crystal Norris to Ontario farmers' markets, which boost the province's economy by \$1.5 billion, according to a study by rural planning and development researchers. They found one of the most important features of the markets was the direct link between consumers and farmers. This research was sponsored by Farmers' Markets of Ontario and Agriculture and Agri-Food Canada through the CanAdapt program (administered by the Agricultural Adaptation Council).



GUARD Inc.

Specializes in creating and realizing commercial value out of new ideas and technologies arising from forefront research in universities.

Brian Cox, President and CEO,
519.767.2020 Ext. 26

Guelph Centre for Organizational Research Inc.

Composed of a group of specialists in the theory, research and practices of applied psychology, using the latest knowledge to provide practical solutions in human resources management.

Steven Cronshaw, Acting Director, 519.824.4120 Ext. 5071

Guelph Turfgrass Institute

Established in 1987 to conduct research and extension and to provide information on turfgrass production and management to members of the Ontario turfgrass industry.

Rob Witherspoon, Director,
519.824.4120 Ext. 6886

Hagen Aqualab

Provides space and state-of-the-art facilities for a broad range of aquatic research programs with practical applications in areas of aquaculture, conservation toxicology, physiology and environmental preservation of water quality.

Denis Lynn, Zoology,
519.824.4120 Ext. 2746

Health and Performance Centre

Multidisciplinary staff specializing in sports medicine and health promotion. Services available to the University and surrounding communities.

Cyndy McLean, Co-ordinator,
519.767.5011

Institute for Environmental Policy

Provides a framework for collaborative research and comment on policy issues related to environmental management.

Isobel Heathcote, Director,
519.824.4120 Ext. 2441

Institute for Robotics & Intelligent Systems (Federal Network of Centres of Excellence)

Develops intelligent systems that can perceive, reason and act in areas such as natural resources, health care, manufacturing and information technology.

Yang Xiang, Computing & Information Science,
519.824.4120 Ext. 2824

Laboratory Services

Offers high-end analytical, diagnostic and interpretive services (using advanced technology and quality systems) to a broad spectrum of government, university and industrial clients in the agricultural, agri-food and veterinary sectors, to ensure the quality and safety of Ontario's food supply from production to processing.

John Lynch, Marketing Manager,
519.767.6221

Landscape Research Group

Dedicated to understanding and promoting harmony between people and the landscapes that support them.

Nancy Pollock-Ellwand,
Landscape Architecture,
519.824.4120 Ext. 6577

Materials and Manufacturing Ontario (Provincial Centre of Excellence)

Develops new knowledge and technology relevant to the future needs of Ontario's materials and manufacturing industry.

Val Davidson, School of Engineering,
519.824.4120 Ext. 4367

Mathematics of Information Technology and Complex Systems (Federal Network of Centres of Excellence)

A Canada-wide network of 174 researchers that provides mathematical models and software tools to help Canadian firms in key sectors of the economy become more productive.

William Langford, Mathematics & Statistics,
519.824.4120 Ext. 3289

Meat Technology Group

Works together to solve problems, address concerns and offer leadership and direction in support of the technological needs of Canada's meat industry and meat-consuming public.

Howard Swatland, Animal and Poultry Science,
519.824.4120 Ext. 3670

Metals in the Environment Research Network

Administered by the Canadian Network of Toxicology Centres, this network conducts research on the impact of metals on ecosystems in Canada

Len Ritter, Co-ordinator,
519.824.4120 Ext. 2980

Ontario Centre for Agricultural Genomics

Applies new genomics technology to agricultural research.

Alan Wildeman, Molecular Biology and Genetics,
519.824.4120 Ext. 2486

Protein Engineering Network of Centres of Excellence (Federal Network of Centres of Excellence)

A Canada-wide network of 72 researchers focusing on both discovery and development of proteins, peptides and glycopeptides for application as products or services for medical, veterinary, bioinformatic and other applications.

Hung Lee, Environmental Biology, 519.824.4120 Ext. 3828

Research Programs (U of G/ OMAFRA enhanced partnership)

Further the long-term global competitiveness and sustainability of Ontario's agriculture and food system through excellence in research.

Dave Hume, Executive Director,
519.826.3800

Shared Hierarchical Academic Research Computing Network (SHARC-Net)

A multi-university, interdisciplinary institute for the development and exploitation of computational tools for research in critical areas of science, engineering and business.

Deborah Stacey, Computing & Information Science,
519.824.4120 Ext. 2651

Sudbury Neutrino Observatory

A worldwide collaboration of 50 researchers, including U of G participants, devoted to the detection of neutrinos (elementary particles produced by the sun's nuclear reactions).

John Simpson, Physics,
519.824.4120 Ext. 3982

University of Guelph Research Park

Dedicated to enhancing collaborative links with business, industry and other institutions.

Barbara Reid, Real Estate Division, 519.824.4120 Ext. 5003

Wild Bird Clinic

Provides treatment and rehabilitation for injured and orphaned birds, trains veterinary students, maintains a database, and educates the public.

Becky Atkinson, Manager,
519.824.4120 Ext. 4162