

# University of Guelph

## Strategic Research Plan Summary

### 1. Introduction

The University of Guelph (Guelph) has a rich history of global leadership in agricultural and veterinary research. Over the last 50 years other areas of important scholarly activity have emerged reflecting the expanding diversity of academic pursuits and research intensity commensurate with its place as a leading comprehensive university. Guelph has a tradition of responding to societal need for advanced training in arts, humanities, social sciences, life sciences, physical and engineering sciences. The University is proud of its heritage and is able to take full advantage of the collaborative and interdisciplinary nature of research in a climate of innovation, and global competitiveness.

One of Guelph's key strengths is its ability to form connections between the major areas of academic research and scholastic endeavor, which frequently traverse colleges and disciplines. The breadth of disciplines and the tradition of collegiality have promoted the development of research programs capable of carrying ideas from conceptual and laboratory stages of research through to field application and commercialization. The Strategic Research Plan (SRP) fully respects the mission statement of Guelph which identifies research intensity, learner-centeredness, internationalism, collaboration and open learning as broad strategic objectives. Of these, research intensity, internationalism and collaboration are particularly enhanced by the SRP. Guelph has a large number of successful partnerships with other universities, federal and provincial government agencies, industry and researchers nationally and internationally.

This plan captures not only those research themes for which Guelph has cultivated a deserved reputation, but also those where it can make a distinctive contribution to current research and those which it sees as emerging in the near future.

### 2. Major objectives of the SRP

Research at Guelph is undertaken within a framework of six guiding objectives:

**Research excellence** Research is taken to include all forms of scholarship that create new knowledge or new art. Guelph encourages research excellence in all fields of enquiry. Research excellence is sought in individual, interdisciplinary and collaborative research.

**Supporting creativity and diversity** There is widespread recognition that the university's vibrancy is reflective of its diversity and creativity. Guelph strives to be a recognized centre of discovery and advanced training and to be respectful of fundamental, discipline-based research. It is also recognized that Guelph's discovery-based research extends and evolves into distinct opportunities to address matters of importance to society. Indeed, societally-relevant or "applied research" is an important aspect of the research undertaken at Guelph, an increasingly recognized leader in knowledge mobilization, collaborations with external partners (e.g. industry, government and non-government organizations), and community engagement strategies.

**Innovation** Broadly defined, innovation includes advances in how knowledge is created and applied. Guelph researchers also play a key role in contributing to Canada's stock of innovative

products and methodologies. As such, Guelph research is expected to figure prominently in the proposed national expansion of the commercialization of university research. The expanding engineering programs and the establishment of the College of Management and Economics represent aspects of the important academic developments that will contribute to this goal. Guelph recognizes the requirement to foster innovation through opportunities to develop new interfaces to support growing interactions and collaboration between disciplines and with research partners.

**Public Policy** Research in policy rich areas such as animal and human health, culture, work, crime, poverty, language, agriculture, food safety, and environment (including water management and climate change) draws Guelph into the cross-section of critical debate and development of public policy, and the advancement of societies and governments. To effect policy development and change through research and scholarship is an important contribution Guelph will make in a variety of ways both within Canada and internationally.

**Training of highly qualified personnel** Research at Guelph is critical to the development of highly qualified personnel and it is the primary way in which we train graduate students. The several research clusters and centres at Guelph, many with significant federal funding through the Tri-Councils<sup>1</sup>, programs that support strategic and infrastructure programs<sup>2</sup> and provincial investment through the Ontario Ministry of Research and Innovation (MRI) programs<sup>3</sup>, are attracting excellent post-doctoral fellows and graduate students. As a particular objective, Guelph ensures that through its teaching requirements, Canada Research Chairholders and all of our leading researchers play an important role in both undergraduate and graduate programs. It is essential that research be integrated into the academic mission of Guelph.

**Collaboration** Although Guelph has a conventional structure in terms of academic units, there is a growing number of multidisciplinary teams of researchers. Guelph enjoys an effective system of interdepartmental communications, and had recently created a Research Services Council comprised of associate deans for research and key Office of Research staff, to provide more coordination of efforts and to find common ground among research interests and needs across campus. Further planning and development by Guelph is leading to the establishment of research institutes around specific areas where a combination of research resources, critical activity and opportunity, and collaborations exist.

### 3. Research themes

Guelph is a leader in responsible community engagement, in cultivating artistic creativity and in understanding the social cultural, economic and ecological context and constraints in which technological progress unfolds. Guelph makes unique and leading contributions to research in several distinct thematic areas of importance in Ontario, Canada and internationally. We

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<sup>1</sup> Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council, and Social Sciences and Humanities Research Council.

<sup>2</sup> Canada Foundation for Innovation (CFI), Genome Canada, and the Canada Research Chairs (CRC) program.

<sup>3</sup> Early Researcher Award, Ontario Research Fund-Research Excellence and Infrastructure Programs, and Ontario Centres of Excellence.

recognize that research is integrative and research programs often span more than one theme or sub-theme.

### **3.1 Environment, ecology and biodiversity**

Guelph has a broad research theme embracing the areas of environment, ecology and biodiversity that spans the entire campus. The sub-themes in which Guelph places particular emphasis are:

- **Aquatic environments**
- **Biodiversity and evolutionary ecology**
- **Water quality and management**
- **Global environmental change**
- **Controlled environments**
- **Human-environment interactions**

### **3.2 Agriculture, food and bioproducts**

Guelph has a long history of research in agriculture, especially in the production and use of foods. Traditional and more recently recognized aspects of agriculture in Ontario continue to represent areas of special responsibility for Guelph:

- **Agricultural products and the bioeconomy**
- **Agricultural systems**
- **Food safety**
- **Food and soft materials**

### **3.3 Physical and biological structures: function, dynamics and interactions**

At Guelph researchers from across campus are using, and developing, the techniques of modern science to understand, both experimentally and theoretically, the nature of structure and their interfaces at all scales. Sub-themes include:

- **Electrochemistry and interfaces**
- **Biological mathematics and computing**
- **Probing structure and function through physics and chemistry**
- **Dynamics of biomembrane interactions**

### **3.4 Promoting health and preventing disease**

Guelph is well-positioned to make significant and completely unique contributions to the improvement of human, animal and environmental health. Research is conducted in the following areas:

- **Health research**
- **Comparative biomedical sciences**
- **Public health and health services**
- **Individual and family well-being**

### **3.5 Cultural transformation and social change**

The arts, humanities and social sciences produce social change, reflect it, and critique it.

Guelph embraces innovative research in both foundational disciplines and transdisciplinary areas of study. Individual and collaborative research and creative practice build upon the following sub-themes:

- **Social and cultural transformation**
- **Creative and critical studies**
- **Family and community dynamics**
- **Public policy and governance**
- **World of work**
- **Globalization studies**
- **Information and communication technologies**

#### 4. Distribution of Chairs/CFI support by research area

Currently, Guelph is allocated 36 Chairs. These positions are allocated by granting council (CIHR, NSERC, SSHRC); by allocation year; and by level (Tier 1 and Tier 2). Guelph has received confirmation of its allocations up to, and including allocation Year 8.

The following table shows Chairs (both occupied and vacant) by research area and by granting council:

Research area	CIHR		NSERC		SSHRC		Total	
	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2
3.1 Environment, ecology and biodiversity			3	4	1	1	4	5
3.2 Agriculture, food and bioproducts			2	3			2	3
3.3 Physical and biological structures	1		3	3			4	3
3.4 Promoting health and preventing disease	2	1	3	4			5	5
3.5 Cultural transformation and social change					2	3	2	3

Guelph expects to deploy future CFI support across all of its research areas. The following table shows the distribution of current CFI projects by research area:

Research area	No. of projects
3.1 Environment, ecology and biodiversity	34
3.2 Agriculture, food and bioproducts	50
3.3 Physical and biological structures	26
3.4 Promoting health and preventing disease	47
3.5 Cultural transformation and social change	14
<b>Total</b>	171

#### 4.1 Gender representation in Chair nominations

In accordance with Guelph's equity goals, all faculty appointments endorse the principle of employment equity. Relative to national statistics, Guelph has a slightly higher proportion of female Chairs. Currently, 25% of Chairs at Guelph are female (17.6% of Tier 1 Chairs; 31.6% of

Tier 2 Chairs). Without reference to a specific quota, Guelph expects that female candidates will be nominated for most of the remaining Chairs, as well as for Chairs that become vacant.

Further, Guelph will monitor its progress in addressing equity amongst its Chairs according to the methodology suggested in the context of the equity agreement reached between the Canada Research Chair program and Canadian universities.

### **5. Institutional resources and collaborations**

Significant institutional facilities and networks which represent collaborations at the municipal, provincial, national and international level include, but are not limited to: the Hagen Aquablab; the Axelrod Institute of Ichthyology; the Alma Aquaculture Research Station; the Controlled Environment Systems Research Facility; the Limnotron; the Plant Growth facility within the New Science Complex; the Biotron; the Environmental Farm Plan Program; the Centre for Ecologically Sound Agriculture; the Advanced Analysis Centre; the Electrochemical Technology Centre; TRIUMF; the National Proton Microprobe Facility; the Canadian Light Source; SNOLAB; the Perimeter Institute; the Orlando Project; Linking Agricultural Research for Rural Radio in Africa; and the Institute on Critical Studies in Canadian Literature.

### **6. Assessment**

Guelph is committed to evaluating research performance and excellence, especially in the strategic areas of research identified above. While there is no single measure of research performance, promotion and tenure committees use a variety of metrics formally and informally. Research funding, quality and impact of peer-reviewed publications, prizes, awards, fellowships, conference proceedings, membership of significant national and international groups, and favourable reviews of exhibitions, books, art, plays are examples of such metrics. In the context of the SRP, these metrics will be assessed along the research areas identified above.

Further, Guelph will evaluate its progress in the training of highly qualified personnel and collaborations through Chairholder and CFI project annual reports.

### **7. Planning and approval processes**

Initially, Chairs were allocated to the colleges that had earned the positions and there was little attempt to make appointments in areas of Guelph's strategic emphases or to create opportunities for cross-college interdisciplinary chairs. Since 2003, the University has selected Chair candidates in areas of research relevant to its Strategic Research Plan (SRP) and has improved its record of equity among Chairs appointed.

As with all faculty appointments, requests for nominations must be accompanied by a recruitment report. The Provost and the Vice-President (Research) must be confident that equity issues, including gender equity issues, have been addressed in the report. Guelph's Validation Committee reviews prospective nominees and makes recommendations on the likelihood of a successful nomination. If the candidate is deemed not suitable for nomination, Guelph may reallocate the Chair to a different research area. The President provides final approval on nominations submitted to the CRC Program.