



# RESEARCH WITHOUT BORDERS

## Canada in the World

Society for Research Administrators International Seattle WA Oct 19, 2009

## To set the stage...

- 2007: \$29 billion invested in research in Canada
- private sector: \$13.8 billion or 47.8 % of Canada's overall research funding
  - \$881 million to university research
- federal government: \$5.4 billion (18.8 %)
  - \$2.8 billion to universities
- provincial governments: \$1.5 billion (5.1%)
  - \$1.1 billion to universities
- not-for-profit sector contributed \$850 million (2.9 %)
  - \$813 million in university research

## To set the stage...

- universities: \$4.8 billion in 2007 (16.4 %)  
allocated internally by universities themselves
- foreign sources for research accounted for an estimated \$2.6 billion in Canada (9 %)  
Canadian universities attracted \$127 million in funding from foreign organizations
- *federal government's spending on S&T is expected to reach \$10.7 billion in fiscal year 2009/2010 - approx double 3 yrs ago*

# The Tri Council in Canada

- Granting councils lead the major federal departments and agencies that will invest in S&T activities in 2009/10
- Natural Sciences and Engineering Research Council (NSERC) : \$1.1 billion
- Canadian Institutes of Health Research (CIHR) : \$966 million
- Social Sciences and Humanities Research Council (SSHRC) : \$689 million

# What is Research?

- According to international convention, science and technology activities are divided into two fields:
  - natural sciences & engineering (NSE)
  - social sciences & humanities (SSH)
- further divided into research and development (R&D) and related scientific activities (RSA)

# Common to NSE and SSH

## **Scientific research and experimental development (R&D)**

- Creative work on a systematic basis to increase scientific and technical knowledge and to use this knowledge in new applications
- Central to R&D is an appreciable element of novelty and of uncertainty - new knowledge, products or processes
- New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

# Common to NSE and SSH

An R&D project generally has three characteristics:

- (i) a substantial element of uncertainty, novelty and innovation
- (ii) a well-defined project design
- (iii) a report on the procedures and results of the projects

*Sound familiar?*

## **Related scientific activities (RSA)**

activities which complement and extend R&D by contributing to the generation, dissemination and application of scientific and technological knowledge

# Research: a global change agent

- Globally, there's a recognition that a strong domestic R&D system contributes not only to long-term economic growth and national prosperity, but also to education, health, the environment, culture and civil society
- in Canada and internationally, R&D has gone from being a component of countries' national competitiveness strategies to a central driver
- Most national R&D strategies follow a common pattern reflecting an international consensus on the key elements needed to compete and prosper, which includes:
  - (i) a focus on enhancing private sector innovation
  - (ii) recognizing the critical role universities play in national innovation systems, both as performers of basic and applied research
  - (iii) as providers of highly qualified personnel for all sectors

# Canadian universities and global research

- Several countries have set national GERD (gross expenditures on R&D) to GDP (gross domestic product) targets as part of their innovation strategies and use this indicator to measure the impact of their collective efforts
- in 2006 (the last year of internationally comparable data) Canada ranked 12th among the Organization for Economic Cooperation and Development (OECD) nations

[Australia](#), [Austria](#), [Belgium](#), [Canada](#), [Czech Republic](#), [Denmark](#), [Finland](#), [France](#), [Germany](#), [Greece](#), [Hungary](#), [Iceland](#), [Ireland](#), [Italy](#), [Japan](#), [Korea](#), [Luxembourg](#), [Mexico](#), [the Netherlands](#), [New Zealand](#), [Norway](#), [Poland](#), [Portugal](#), [Slovak Republic](#), [Spain](#), [Sweden](#), [Switzerland](#), [Turkey](#), [United Kingdom](#), [United States](#)

- the university sector is the second largest performer of research in Canada, performing an estimated 36% of R&D activities in the country
- This is significantly larger than the OECD average (17%) or than that of key comparator countries such as the U.S. (14%) or the U.K. (26%)

# Why do we do R&D?

Federal investments have focused on four interrelated, foundational elements:

(i) developing, attracting and retaining highly qualified talent  
**(people)**

(ii) putting in place and operating cutting-edge research infrastructure and facilities **(infrastructure and facilities)**

(iii) producing new ideas **(direct costs of research)**

(iv) providing institutional support for the research effort  
**(institutional costs of research)**

# How should we do R&D in the 21<sup>st</sup> Century?

- Policy makers, research administrators and research practitioners recognize that countries must heighten collaborative R&D activities across institutional, sectoral and geographic boundaries if they are to **compete** and **contribute** internationally
- Collaboration and partnerships have become features in nearly all national R&D strategies
- This trend is equally prevalent both in key competitor countries and emerging economies.

# Do Canadian universities “walk the talk”?

- 95% of Canadian universities’ strategic plans include an international dimension, including international research collaboration
- Canadian universities partner with other industrialized parts of the world, most notably the U.S., the U.K., the E.U. and Japan, as well as with emerging and developing countries
- In 2006, Canadian universities completed 2,092 international research contracts worth \$199 million
- Of this, 1,614 contracts and approximately \$150 million came from foreign businesses

# Do Canadian universities “walk the talk”?

- In 2006-07, more than 6,200 international researchers used Canada Foundation for Innovation (CFI)-supported infrastructure at Canadian universities, colleges and research hospitals
- Approximately half of these international researchers were from the U.S., with the balance coming from 76 different countries
- More than 650 researchers of a targeted 2000 have been recruited internationally and awarded Canada Research Chairs (CRCs) since the program was launched in 2000
- Canadian universities are also making significant progress on a number of contextual commercialization indicators including new patent applications, number of spin-offs, new licenses and value of industrial research contracts

# Do Canadian researchers “walk the talk”?

- While Canada accounts for only one half of one percent of the world’s population, its publications accounted for 4.7% of the world total in 2005, resulting in an 8th place ranking in the world
- For the period 1997-2007, Canada ranked 6th internationally for its cumulative number of citations, and 3rd among G7 countries for the number of citations per paper
- In Canada, the level of international co-authorship is double that of the world average, with more than 40% of academic publications having co-authors from other countries

# Do Canadian researchers “walk the talk”?

- In 2005, the U.S. accounted for more than half (52.1%) of Canada’s co-authored articles
- In recent years, Canadian researchers have significantly increased co-publication rates with emerging and developing countries (from 3.4% in 1992 to 6.4% in 2003)
- Recent international awards won by Canadian researchers as well as their appointment to prestigious foreign bodies provide some evidence of more frequent and more prominent recognition on the world stage

# RESEARCH WITHOUT BORDERS

## New initiatives in Canada

International Community-University Research Alliance  
program, or ICURA  
(June 2009 inaugural awards)

“The EU and Canada will strive to establish a matching funding mechanism for participants in the EU Seventh Framework Programme for Research and Technology Development.”  
(announced at the May 2009 Canada-EU Summit in Prague)

Emerging Leaders in the Americas Scholarship Program  
(announced at the April 2009 Summit of the Americas)

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## New initiatives in Canada

Mental Health and Addiction in Children and Youth  
(collaborative research agreement signed April 2009)

Canadian International Development Agency (CIDA) is  
developing a new approach to university partnership  
programming

(Feb 2009 meeting of Minister Bev Oda and AUCC  
representatives)

Canada and the U.S. to develop Clean Energy Solutions  
(Feb 2009 Clean Energy Dialogue: Stephen Harper and  
Barack Obama)

# International Community-University Research Alliance program, or ICURA

- will support strategic research, dissemination, networking and partnership around four broad themes:

Environment and Natural Resource Management  
Information and Communication Technologies for Development  
Innovation, Policy and Science  
Social and Economic Policy

- Four inaugural projects:

Managing Adaptation to Coastal Environmental Change:  
Canada and the Caribbean

Dan Lane, University of Ottawa, Ottawa, Canada

Patrick Watson, University of West Indies, Trinidad and  
Tobago

# International Community-University Research Alliance program, or ICURA

- Protected Areas and Poverty Reduction: A Canada-Africa Research and Learning Alliance

Grant Murray, Recreation and Tourism Management,  
Vancouver Island University

Kwasi Nsiah-Gyabaah, Sunyani Polytechnic, Ghana

- Pathways to Resilience: Formal Services and Informal Support Use Patterns among Youth in Challenging Social Ecologies

Michael Ungar, Maritime School of Social Work, Dalhousie  
University

Guo-xiu Tian, College of Politics and Law, Capital Normal  
University, China

Luis F. Duque, National School of Public Health, Universidad  
de Antioquia, Colombia

Petra Engelbrecht, Faculty of Educational Sciences, North-West  
University, Potchefstroom campus, South Africa

# International Community-University Research Alliance program, or ICURA

Santé mentale-Citoyenneté

Lourdes Rodriguez, École de service sociale, Université de Montreal

Rosana Onocko Campos, Faculdade de Ciências Médicas,  
University of Campinas, Brazil

## EU Seventh Framework Programme

- The Association of Universities and Colleges of Canada (AUCC) will emphasize:
  - (i) the importance of higher education and research cooperation as essential to an effective economic partnership agreement between Canada and the European Union
  - (ii) specifically, improved Canada-EU mobility for students and young researchers, support for the development of joint academic programs and increased funding for research collaboration with European partners
- The Department of Foreign Affairs and International Trade (DFAIT) said this announcement gives renewed impetus to its efforts to launch a new funding mechanism to support international research collaboration under its Global Innovation Strategy
- such a fund would be intended for collaboration in target countries outside Europe, as well as with counterparts in key EU countries and would thus complement the EU's seventh Framework Program funding

## Emerging Leaders in the Americas Scholarship Program

- \$18 million over the next four years (2009-2013)
- up to 1,600 new scholarships for student exchanges and research collaboration opportunities between Canadian postsecondary institutions and their counterparts
- scholarships will be available at vocational, undergraduate and graduate levels
- in addition, the program will fund study tours and collaboration missions by academic leaders from the region to promote partnerships with Canadian postsecondary institutions
- eligible disciplines and/or research themes are related to promoting good governance, prosperity and security
- eligible countries include Peru, Brazil, Colombia, Chile, Mexico and the Caribbean.

# Mental Health and Addiction in Children and Youth

- Parties The Academy of Finland, the CIHR, the Norlien Foundation, the Alberta Centre for Child, Family and Community Research, and the Alberta Heritage Foundation for Medical Research
- five priority areas of interest to both Finland and Canada to improve the evidence base necessary to optimize clinical practice and policy decisions affecting mental health and addiction in children and youth and access to health services:
  - Early origins of mental illness
  - Early origins of addiction
  - Early child care environment
  - Access to mental health, social, and educational services for children and youth with mental illness, addiction, and behaviour problems
  - Pharmacoepidemiology of psychotropic drug use in children and youth with mental illness and behavioural problems



# The Clean Energy Dialogue

- Sept 2009: joint Canadian-U.S. working groups presented an Action Plan for cooperation between Canada and U.S. in three areas to reduce greenhouse gases and to combat climate change
  - (i) Clean Energy Research and Development (R&D)
    - eg. Automotive Clean Energy Initiative
    - Expanded ENERGY STAR Harmonization
    - Measure It, Manage It (Building Energy Benchmarking System)
    - Managing the Load (Managing Building's Energy Needs in Response to Grid Demand)
  - (ii) Develop a more efficient electricity grid
  - (iii) U.S.-Canada Carbon Capture and Storage Collaboration



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## Ongoing Initiatives

SSHRC International Opportunity Fund

Development grant \$25K / 1 yr.; Full proposal \$75K / 1 yr.

NSERC Inter-American Collaboration in Materials Research

Full proposal \$180K for 3 yrs.; Argentina, Brazil, Canada, Chile, Colombia, Mexico and the United States

CIHR Summer program in Japan for graduate students

\$3000 for 8 wks plus supplements

Ontario Ministry of Research and Innovation International Strategic Opportunities Fund

\$150K for up to 3 yrs.; the United States, the United Kingdom, Germany, France, Japan, China and India

# Sources

Association of Universities and Colleges in Canada, Momentum 2008 report and primer on university research and knowledge mobilization

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International Development Research Centre

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Ontario Ministry of Research and Innovation

<http://www.mri.gov.on.ca/english/programs/MRI.asp>

Social Sciences and Humanities Research Council of Canada

<http://www.sshrc.ca/site/apply-demanded/faculty-professeurs-eng.aspx>

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Thank you!

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