Brain Migration, Knowledge Spillovers and the Ethics of Public-Private Partnerships

A Canadian Workshop in Conjunction with the European Regional Economic Forum 2009

May 7, 2009

Westin Hotel
11 Colonel By Drive
Ottawa, Canada

Organized by:

David Castle, Canada Research Chair in Science and Society, University of Ottawa
Kate Hoye, Research Associate, University of Ottawa
Vardit Ravitsky, Senior Ethics Policy Advisor, Canadian Institutes of Health Research
Peter B. Phillips, Professor and Head, Department of Political Studies
OVERVIEW

The migration of highly skilled people – brain-drain and brain-gain – is a well-known phenomenon with serious implications for the rising and falling fortunes of countries facing significant ‘brain migration.’ Stemming the tide of out-migrations as well as the development of programs to attract and retain highly skilled people, has become a concern of governments world-wide. For countries to gain or maintain their competitive edge, innovative activity must be fostered in knowledge-intensive sectors such as biomedicine, information and communication technologies, renewable energy and aerospace.

The challenge government faces is to support innovation by bringing highly skilled people into networks of institutions in which private and public sector actors create, diffuse and use new technologies. Both the private and public sectors have been investing in research and development clusters or knowledge parks to bolster regional innovation systems, or to provide networked centres of excellence to support nation-level innovation. These are coupled with other supports such as education and training, research funding, access to venture capital, banking and taxation systems that support innovation, risk-taking and entrepreneurship.

The ideal situation is one in which the creation of new knowledge is rapid and abundant, accompanied by low barriers to knowledge translation and commercialization resulting in wealth-creating products and services that benefit the public. The risk faced by all countries is that if the opportunities and inducements to foster innovation, risk-taking and entrepreneurship are mis-timed or incomplete, barriers internal to an innovation system will arise. High skills migration may result, and entrepreneurship will occur elsewhere.

This workshop provides an opportunity to consider the causes and effects of ‘brain migration’ in the context of innovation systems where knowledge spillovers resulting in entrepreneurial behavior are sought by public and private sector actors. Recent reports from the Conference Board of Canada, and the anticipated report of the Council of Canadian Academies, identify a need in Canada for policies and programs to stimulate innovation, particularly in the private sector which is known to be risk averse and is often described as failing to reach its potential. Internal barriers that cause this behaviour threaten Canadian competitiveness and are implicated in brain migration.

To focus the discussion on a topic of great significance to Canada, the workshop will concentrate on the impact of policies associated with innovation in the health sector in Canada. The health services for Canadians are the largest cost to the federal government, and extensive investments in biomedical science and technology continue. The workshop will examine the opportunities and barriers to innovation created through private-public partnerships that have become the norm in training, research, knowledge translation, technology transfer, and the diffusion and use of products and services in the health sector. Particular attention will be paid to eliciting ethically defensible guidelines for partnerships that succeed in attracting or retaining highly skilled people in institutions and networks that foster entrepreneurial activity.

The workshop will engage approximately 30 stakeholders, including experts from academe, industry, and policy makers who are engaged in research, training and programmatic initiatives in brain migration and partnerships. The results of the workshop, both a summary of the discussion as well as recommendations, will be prepared in advance of the European Regional Economic Forum meeting in Nova Gorica, Slovenia, June 8-9, 2009.
# AGENDA

## Welcome and Introductions

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<th>Time</th>
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<tr>
<td>0900</td>
<td>David Castle, University of Ottawa; Peter Phillips, University of Saskatchewan; Vardit Ravitsky, CIHR</td>
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<tr>
<td>0915</td>
<td>Boris Cizelj, European Regional Economic Forum 2009</td>
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## Why Knowledge Matters: Spillovers and Entrepreneurial Behaviour

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<th>Time</th>
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<tr>
<td>0945</td>
<td>Bjørn Asheim, Lund University</td>
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<td>1000</td>
<td>MaryAnn Feldman, University of North Carolina, Chapel Hill</td>
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<td>1015</td>
<td>Group introductions</td>
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## Health Sector R&D in Canada and the Potential for Brain Migration

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<tr>
<td>1115</td>
<td>Jean Marion, Rx&amp;D</td>
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<td>1145</td>
<td>Leonardo Piccinetti, Europe for Business</td>
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<td>Ivy Bourgeault, University of Ottawa</td>
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## Strengthening Canadian Health Sector R&D through Partnerships

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<tr>
<td>1330</td>
<td>Mary Beshai, CIHR Partnerships</td>
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<td>Karine Morin, University of Ottawa</td>
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## Round Table Discussion, Summary and Recommendations

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<td>1500</td>
<td>Rapporteur – Peter W.B. Phillips, University of Saskatchewan</td>
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ABSTRACTS

1. **Talents, knowledge bases and knowledge spillovers**

   **Professor Bjørn Asheim**, CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy), Lund University, Sweden

   Firms and city regions are increasingly exposed to and participate in a global competition for talents. Consequently, it has become more and more important to produce, attract and retain talents to stay competitive in the globalizing knowledge economy. Florida talks about the growing importance of the creative class to attract new economic activity and argues that people climate is becoming more important than business climate in order for city regions to securing innovativeness and competitiveness. We will question this general statement and argue that the creative class has to be differentiated along the dominating knowledge bases of their respective occupations. In this presentation we distinguish between analytical (science based), synthetic (engineering based) and symbolic (artistic based) knowledge bases. Secondly, we shall maintain the knowledge creation and innovation takes place in all types of economic activity, but in different ways depending on their knowledge bases. Thus, the high tech-low tech distinction is not useful in the globalizing knowledge economy. Thirdly, we shall question if the diversity of city regions (i.e. the urbanization economies) as such is sufficient to guarantee knowledge spillovers. Boschma argues that variety has to be related to secure a high degree of knowledge spillovers, which implies an optimal cognitive distance. These perspectives have important implications for firms and regions with respect to which talents to attract and retain, how and where.

2. **Canadian Professional Networks: A Survey of Highly Skilled Canadian Workers**

   **Professor Maryann Feldman**, S.K. Heninger Distinguished Chair in Public Policy, University of North Carolina, Chapel Hill

   The study of knowledge flows and spillovers, which to a certain extent take place through the mobility of highly-skilled labour, are increasingly important concerns on the agendas of public policy initiatives. Most current national policy measures only focus on the simple attraction of highly-skilled individuals, however, innovation is not a random phenomenon that takes place by chance, but is rather a collective process relying on the skills, and embedded in the social and professional networks, of individuals. By being embedded in a foreign network, the contribution to the Canadian knowledge network is almost by definition reduced. But there are also elements of brain circulation: Canadians abroad do seem to become involved in the Canadian knowledge economy when opportunities arise. Our empirical results indicate significant differences between Canadians at home and Canadians abroad, and imply that there may be an opportunity to improve Canada’s innovation system with public policies that enhance social and professional networks of highly-skilled Canadians through study programs and academic exchanges.

3. **Pharmaceutical Industry R&D in Canada: Activity, Funding and Future**

   **Dr. Jean Marion**, Director, Scientific Affairs at Canada’s Research-Based Pharmaceutical Companies (Rx&D)

   The presentation provides an overview of the pharmaceutical industry’s place as funder and performer of R&D in the health field in Canada. It looks at the industry’s spending in different areas of research and several types of extramural R&D investments. Overarching factors that encourage these extramural
investments are discussed, including the opportunity to carry out due diligence when considering project funding and openness on the part of academic researchers for interactive collaboration with industry scientists. The power of a broad range of regulations to impact innovation is also mentioned. Looking at the future, it is anticipated that advances in therapies and post-market safety and effectiveness will arise more and more from collaboration between researchers from industry and academia. Cross-sector knowledge exchange can also more readily address the challenge of advancing drug development science itself.

4. **EU-Canada S&T Cooperation in particular in research mobility and science society**

**Mr. Leonardo Piccinetti**, Managing Director, Europe for Business

Europe, its Member States (MS) and the countries associated (AC) to the European Framework Programme for Research and Technological Development (FP) are challenged by globalisation in research and development (R&D). EU-Canada S&T relations, are set to advance on several fronts as a result of the growing recognition by both sides of the value of trans-Atlantic cooperation, and also of the increasing number of areas of common interest and concern being pursued by both European and Canadian scientists. EU-Canada R&D cooperation currently being examined involves the EU’s recently (in 2003) launched European Researcher’s Mobility Portal.

Regarding the Science and Society the activities to be funded are the following:

- A more dynamic governance of the relationship between science and society
- Strengthening potential, broadening horizons
- Science and society communication

The new approach to international cooperation in FP7 aims to rise to these challenges by way of innovative mechanisms for promoting international research collaboration. In sum, it appears that S&T cooperation between the EU and Canada is poised for rapid growth in the coming years, to the benefit of the research community on both sides of the Atlantic.

5. **Obama’s Health Care Stimulus and the Potential for a Highly Skilled Nursing Brain Drain**

**Professor Ivy Bourgeault**, CIHR/Health Canada Research Chair in Health Human Resources Policy, University of Ottawa

As part of his recently economic stimulus package, U.S. President Barrack Obama has set forth an ambitious agenda to provide health care coverage for all U.S. citizens. These efforts, however, will be limited by the shortage of highly skilled nurse educators and researchers which limit the capacity to expand domestic nursing training. Specifically, it is difficult to recruit in the educational sector because highly trained RNs can make much more in practice than in educational roles. The American Association of Colleges of Nursing highlights the differential salary is on average $82,000 in practice roles compared to about $68,000 in teaching roles. Added to this, the US is also seeing a resurgence of Advanced Practice Nursing (APN) roles, many of which are critical to clinical and health service research activities. These developments in the U.S. raise concerns regarding our ability to retain highly trained APN and nurse researcher/educator roles in Canada. Instead of expansion of these highly skilled roles, we are witnessing ineffective utilization at best and ‘redundancies’ at worst in response to the current economic downturn. These ill-advised directions lay the groundwork for yet another outmigration of highly skilled nurses even more problematic than the one
we witnessed in the 1990s because not only will care be compromised, but so will established health research infrastructure.

6. **Public Private Partnerships at CIHR**

**Ms. Mary Beshai**, Senior Advisor, Partnerships, Canadian Institutes of Health Research

The Canadian Institutes of Health Research (CIHR) is Canada's federal funding agency for health research. Recognizing that it is only one player in the overall Canadian health research landscape, CIHR actively engages in partnerships to fulfill its mandate. The organization’s links to the private sector, while varied, help advance CIHR's pursuits to build talent and capacity, foster commercialization, and translate research into better health for Canadians. This presentation will provide an overview of private-sector partnerships at CIHR and will discuss some of the unique facets of PPPs in the health research domain.

7. **Ethical Public Private Partnerships PPPs: So What?**

**Ms. Karine Morin**, Research Associate, University of Ottawa

The Canadian Institutes of Health Research (CIHR) relies on Public-Private Partnerships (PPPs) as a means to advance its mission in health research. Recently, it has undertaken to develop ethical guidelines that would pertain to the creation and operation of PPPs. This presentation will explore briefly reasons behind this endeavor and will report on the work accomplished thus far. It also will review ethical principles which are being identified as a basis for ethical guidance for PPPs. The presentation will ultimately reflect on whether ethical guidance for PPPs may hold intrinsic value that would foster innovation in health and affect the mobilization of highly skilled workers.
List of Participants

- Dr. Howard Alper, Chair, Science Technology and Innovation Council
- Ms. Mary Beshai, Senior Advisor, Partnerships, Canadian Institutes of Health Research
- Dr. Bjørn Asheim, CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy), Lund University, Sweden
- Dr. Ivy Bourgeault, CIHR/Health Canada Research Chair in Health Human Resources Policy, University of Ottawa
- Mr. Peter Brender, President and CEO, BIOTEC Canada
- Dr. David Castle, Canada Research Chair in Science and Society, University of Ottawa
- Dr. Shurjeel Choudhri, Senior Vice President & Head, Medical and Scientific Affairs, Bayer Canada
- Dr. Boris Cizelj, Chair, European Regional Economic Forum Brussels Steering Committee; President, Slovenian Business & Research Association (SBRA)
- Dr. Tyler Chamberlin, Assistant Professor, Telfer School of Business, University of Ottawa
- Ms. Natalie Dakers, CEO, Centre for Drug Research and Development (CDRD)
- Ms. Leanna Dejneka, LL.B. Student
- Dr. Karen Dodds, Assistant Deputy Minister, Strategic Policy Branch, Health Canada
- Dr. Maryann Feldman, S.K. Heninger Distinguished Chair in Public Policy, University of North Carolina, Chapel Hill
- Ms. Kate Geddie, Doctoral Candidate, University of Toronto
- Dr. Shane Green, Director, Outreach, Ontario Genomics Institute
- Dr. Kate Hoyle, Research Associate, University of Ottawa
- Dr. Tom Koutsavlis, Medical Director, Abbott Laboratories
- Dr. Jean Marion, Director, Scientific Affairs at Canada’s Research-Based Pharmaceutical Companies (Rx&D)
- Dr. Andrew McQueen, Policy Analyst, Policy Analyst, Learning Policy Directorate, Human Resources and Skills Development Canada
- Ms. Karine Morin, Research Associate, University of Ottawa
- Dr. Peter B. Phillips, Professor and Head, Department of Political Studies
- Mr. Leonardo Piccinetti, Managing Director, Europe for Business
- Dr. Vardit Ravitsky, Senior Ethics Policy Advisor, Canadian Institutes of Health Research
- Dr. Jeffrey Reitz, Professor of Sociology, R.F. Harney Professor of Ethnic, Immigration and Pluralism Studies, University of Toronto
- Dr. Glen Roberts, Vice-President, Research and Development, Canadian Policy Research Networks (CPRN)
- Dr. Ingrid Schenk, Acting Director, S&T Policy Advice Directorate, Industry Canada
- Dr. Boštjan Šinkovec, Research Assistant, Slovenian Business Research Association (SBRA)
- Mr. Jac van Beek, Vice-President, Programs and Planning, Canadian Foundation for Innovation
- Mr. Bert van den Berg, Director, Knowledge and Technology Transfer Division, Natural Sciences and Engineering Research Council of Canada (NSERC)
- Dr. George Wielgosz, Associate Director, Clinical Affairs, Solvay Pharma Inc
Talents, knowledge bases and knowledge spillovers

Professor Bjørn Asheim, Deputy Director, CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy), Lund University, Sweden

Presentation at workshop on 'Brain Migration, Knowledge Spillovers and the Ethics of Public-Private Partnerships'; Ottawa, May 6th, 2009

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**Creative process**

- **Problem solving**

**Highly skilled people are exposed to global competition**

- **People climate complementing business policy – attracting talents (creative class)**

**Proactive and collaborative Triple Helix (RIS)**

- **Differentiated knowledge bases**

**Characterise the nature of the knowledge and talents of their work activities**

- **Attracting non-local capital, cooperation (regional government, university and business/industry) – attracting non-local knowledge**

**Stimulating modes of innovation**

- **Differentiated knowledge bases: A typology**

**Analytical science based**

- Synthesis or combinations
- Knowledge derived from scientific research
- Often tacit, not codifiable

**Synthetic engineering based**

- Problem-solving, customisation
- Knowledge derived from technical and engineering work
- Often codifiable

**Symbolic artistic based**

- Creating meaning, desire, aesthetic qualities
- Knowledge derived from artistic creativity

**Different modes of innovation**

- **How Europe’s Economies Learn. Coordinating Competing Models**: Different modes of innovation and forms of work organisation

**STI (Science, Technology, Innovation)** – high-tech (science push/supply driven)

**DUI (Doing, Using, Interacting)** – Competence building and organisational innovations (learning work organisation) – market/demand/user driven

- **Research has shown that a combination of the two modes of innovation improves the performance of firms**

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**CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy)**

- **New multidisciplinary centre of excellence in innovation system research at Lund University (July 2004)**

- **CIRCLE is financed by the Swedish Agency for Innovation Systems (VINNOVA), Lund University and Blekinge Technical University 2004-2010, and from 2006 for 10 years by the Swedish Research Council (Linnaeus grant)**

- **In autumn 2007 co-location of research and teaching in innovation and entrepreneurship together with LUIS (Lund University Innovation System) at LUCIE (Lund University Centre for Innovation and Entrepreneurship)**

- **Becoming one of the largest centres in Europe with 35 researchers**

- **http://www.circle.lu.se/**

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**Presentation at workshop on 'Brain Migration, Knowledge Spillovers and the Ethics of Public-Private Partnerships', CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy), Lund University, Sweden**

Bjørn Asheim, 2009

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**Differentiated knowledge bases (analytical, synthetic, symbolic)**

- **Characterise the nature of the critical knowledge which the innovation activity cannot do without (hence the term ‘knowledge base’ understood as an ideal type)**

- **Make it not relevant to classify some types of knowledge as more advanced, complex, and sophisticated than other knowledge (e.g., to consider science based (analytical knowledge) as more important for innovation and competitiveness of firms and regions than engineering based (synthetic) knowledge or artistic based (symbolic) knowledge). Knowledge bases should rather be looked upon as complementary assets**
The combination of the STI and DUI modes of innovation

- Cognitive distance has to be reduced to achieve such a combination
- All industries need to use the STI mode of innovation, which implies that it also includes synthetic and symbolic knowledge bases and not only analytical knowledge
- All industries need using the DUI mode of innovation, which implies that it also includes analytical knowledge based activities and not only synthetic and symbolic knowledge bases
- Needs both narrow and broad RIS to be implemented

Modes of innovation and knowledge bases

- The STI mode of innovation does not only represent basic research based on analytical (scientific) knowledge but also
- Applied research based on synthetic, engineering (and symbolic) knowledge base(s) as is carried out at technical universities. Engineering firms needs to collaborate with universities and R&D institutes, and cannot only rely on interactive learning in user-producer relationships with customers and suppliers as part of the DUI mode of innovation
- Analytical knowledge based activities also draws on synthetic knowledge and the DUI mode of innovation in phases of innovation projects

Drug development innovation project

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Research to understand human antibodies</th>
<th>Development of antibody library (platform technology)</th>
<th>Research to discover antibody based HIV drug</th>
<th>Pre-clinical and clinical trials</th>
</tr>
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<tbody>
<tr>
<td>Dominant mode of knowledge creation</td>
<td>Analytical</td>
<td>Synthetic</td>
<td>Analytical / Synthetic</td>
<td>Analytical</td>
</tr>
<tr>
<td>Actors involved</td>
<td>Local: various researchers at university department</td>
<td>Local: University and DBF</td>
<td>Local: DBF</td>
<td>Local: DBF</td>
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<tr>
<td></td>
<td>Local: DBF Global DBF</td>
<td></td>
<td>Global: PRO</td>
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Knowledge bases and proximity

- Differentiate between types of activities
  - A&S: idea generation and brainstorming is facilitated by F2F
  - S: Collaborative product development benefits from proximity for trial and error testing (large component of tacit knowledge)
  - A: Research collaboration can take place across distance due to high level of global standardization in laboratories (codified knowledge)
- Analytical knowledge: less sensitive to proximity
- Synthetic knowledge: more sensitive to proximity

Regional Innovation Systems (RIS) – narrow definition:

- A RIS is constituted by two sub-systems and the systemic interaction between them (and with non-local actors and agencies):
  - The knowledge exploration and diffusing sub-system (universities, technical colleges, R&D institutes, technology transfer agencies, business associations and finance institutions)
  - The knowledge exploitation sub-system (firms in regional clusters as well as their support industries (customers and suppliers))
  - STI (Science, Technology, Innovation) mode of innovation – radical innovations

RIS - broad definition:

- A wider system of organisations and institutions supporting learning and innovation, and their interactions with local firms
  - Developmental (creative) learning: learning work organisation
  - Reproductive (adaptive) learning: interactive learning (user-producer relationships) – inter-firm networks
  - A market/demand/user driven system mostly generating incremental innovations
  - DUI (Doing, Using, Interacting) mode of innovation
Roles of universities in RIS (narrowly defined):

- Third mission (after teaching and research): direct interaction between universities and society as key actor in the knowledge exploration subsystem of RIS
  - Creating high-tech firms
  - Consulting for local industry
  - Delivering advice for politicians
  - Informing general public debates
- Universities are increasingly of strategic importance for regional development in the knowledge economy by often being the only actor bringing global state-of-the-art science and technology into the region

Bjørn Asheim, 2009

LU involvement in the region’s industries

<table>
<thead>
<tr>
<th>Sector</th>
<th>Knowledge base</th>
<th>Governance form</th>
<th>Technology Status</th>
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<tbody>
<tr>
<td>ICT</td>
<td>Synthetic/analytical, creating spin-offs and upgrading existing firms</td>
<td>Well developed with wide range of supportive/dedicated BSOs</td>
<td>Mature high technology</td>
</tr>
<tr>
<td>Life science</td>
<td>Analytical: creating new growth firms in novel market areas</td>
<td>Aspirational, attempting to learn from existing structures</td>
<td>Disruptive technology</td>
</tr>
<tr>
<td>Food</td>
<td>Synthetic: upgrading an old industry, shifting its value composition</td>
<td>Old boys network, very traditional, potentially locked in</td>
<td>Mature technology</td>
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Life Science – From Local Integration to Global Visibility

- Long history of pharma and medtech in the region (Astra, Pharmacia, Gambro etc).
- Strong growth of biotech firms (DBFs) since early 1990s (today ~35 DBFs). Successful academic life science research. High quality health care.
- Medicon Valley Academy established in the mid 1990s as an Interreg initiative by Lund and Copenhagen Universities to promote knowledge transfer between companies, universities and health care organisations in the region.
- Early enthusiasm has decreased. Global collaboration proved indispensable. MVA strategy was revised. Less focus on local integration, more on global visibility (e.g. attract VC and research funds, link up with other CoE etc.).
- Other LU initiatives with similar rationale: BMC, Stem Cell Centre, Swegene, SCIBLU

Bjørn Asheim, 2009

Importance of people climate

- Attract talent (creative class) which in turn attracts and generates innovative, knowledge-based economic activity
- People do not follow jobs, but jobs follow people in high-tech and creative industries
- More important to produce, attract and retain talents to stay innovative and competitive
- Promoting people climate part of fostering an entrepreneurial culture
- Focusing on diversity, creativity and tolerance in large city regions

Bjørn Asheim, 2009

Do the Creative class all have the same priorities?

- The Creative class (30-40 % of the work force) belongs to different knowledge bases (analytical, synthetic and symbolic)
- Different preferences and trade-offs between firms, occupations and places
- Synthetic/engineering knowledge base: people follow jobs (business climate still most important)
- Analytical/science and symbolic knowledge bases: jobs follow people (people climate more important, especially for people working in symbolic, artistic based industries)

Bjørn Asheim, 2009

Theoretical relations

Business Climate

- Synthetic
- Analytical
- Symbolic

Peoples Climate
People climate, business climate and knowledge bases

- A tendency for places with the highest concentrations of synthetic knowledge base workers to get lower People Climate scores than places with the highest concentrations of analytical knowledge bases.
- The highest concentrations of symbolic knowledge base workers tend to co-exist with high concentrations of synthetic or analytical knowledge base workers.
- Correlations with job growth are higher with concentrations of symbolic then analytical knowledge base workers and higher with concentrations of analytical then with synthetic knowledge base workers.

Related variety (knowledge spillover effects)

- Urbanisation economies – diversity promoting creativity? However, can knowledge spillover take place between sectors that are unrelated (portfolio vs. knowledge spillover effects)?
- Related variety is defined as sectors that are related in terms of shared or complementary knowledge bases and competences.
- Human capital which displays related variety has a positive impact on firm’s economic performance.
- Related variety combines the strength of the specialisation of localisation economies and the diversity of urbanisation economies.
Canadian Professional Networks: 
A Survey of Highly Skilled Canadian Workers

Maryann P. Feldman
Dieter Kogler
Robin Cowen

Skilled labour as the mechanism of knowledge transfer
Temporary mobility is important for the exchange of tacit knowledge.
Knowledge augmenting graduate training: potentially a significant asset for the support of an innovative Canadian economy
Brain Circulation but requires return positions in Canada

Research Hypothesis
Citizens trained elsewhere may benefit their originating country by acting as a source of knowledge and connection to the international community.

Public Policy Frame: Innovation and Networks
Traditional focus: increased stock of knowledge will lead to innovation and thus, economic growth is a result of attracting highly-skilled individuals
INSTEAD...
Innovation as a collective journey.
Embedded social and professional networks of groups of agents work in a strategic fashion
Graduate work abroad increases later global connectivity

Research Questions
- What is the role of social and professional networks in facilitating international mobility of the highly skilled workers?
- What is the recent evidence in terms of intensity and activity of professional networks in Canada?
- How do highly skilled Canadians develop and use international networks?
- Are expatriate Canadians a potential source of knowledge inflows to Canada?

Data and Methodology
- Individuals with an advanced degree (e.g. Master and Doctorate Degrees) who were funded by Canadian Scholarships to study elsewhere
- Designed on-line survey to collect relevant empirical data.
- The focus was on the following motivations of highly skilled individual’s who work overseas:
  - history, or previous experience and social ties
  - current location and position and
  - where the scientific centre of gravity lies for the individual’s discipline
SSHRC provided a list of doctoral and postdoctoral fellowships held outside of Canada between 1992/93 and 2005/06 which contained 2,195 names:

- 1,653 Doctoral Fellowships
- 542 Postdoctoral Fellowships.

The study team searched for email addresses of doctoral fellowships award holders in the time from 1992/93 to 2000/01, which amounted to 1,094 individuals because:

- Considerably longer than postdoctoral fellowships, allowing for the isolation of more individuals in one specific discipline.
- Doctoral fellowship holders who received funding after 2000/01 are expected to still be in graduate school.

List provided by NSERC for postgraduate scholarships and fellowships for 1991/92 to 2004/05 (FY) contains 16,000+ names.

Relevant programs:
- Science and Engineering Scholarships
- Postdoctoral Fellowships
- Postgraduate Scholarships

Recipients who attended an educational institution outside Canada.

Scholarships and fellowships awarded in the 1992/93 to 2000/01, (results: 1,340 contacts from fifty disciplines).

Contact information in 23 of the fifty disciplines were retrieved.

Web-based search of 930 names of award recipients resulted in more than 400 email addresses.

Two international examples were used:
- Blume (1995): Comparative study on behalf the European Commission – mobility of doctoral students in EU countries
- Hansen (2004): Online survey – studied the importance of social and professional networks in the context of international mobility of highly skilled labour.

Almost 600 invitations were sent:
- 128 emails were undeliverable
- 467 highly skilled individuals received the survey
- 210 fully completed the questionnaire.
- 106 have their place of residence and place of work in Canada
- 104 reside outside Canada.

Subjects working in Canada are much less motivated by financial concerns (62 percent stated financial concerns were not important).

Personal reasons was main motivation for subjects living here (heritage, loyalty, the desire to live and raise families in Canada).

75 percent of those living broad pursued employment opportunities in Canada. Only one-third received bona fide job offers.

Brain drain may be driven by the absence of jobs or quality of jobs in the fields in which highly skilled individuals graduate.

Moreover, 42 percent of Subjects working domestically were offered job elsewhere but chose to stay in Canada.

One-third of Subjects found that studying abroad was essential for their professional development.

Possible reasons:
1. perceived quality of the education and teaching
2. the perception of being in an environment containing scholars and world class scientists, and the opportunities to participate in research projects that extended their professional networks.

Proximity makes it easier to maintain close ties — US Factor

Looser ties are still significant.
- Information transmission
- Lead to research and dissemination opportunities for scientists.
- Provide a direct link from Canada into the wider scientific community.

Our Subjects living abroad are participate in the Canadian knowledge economy, through conferences and collaborations more than would be expected if they had no historical ties to the country.

Our Subjects living locally engage more heavily in international networking and conference participation.
Many individuals working abroad indicated that they wanted to return to Canada but no jobs were available for them.

**Recommendation:** Additional outreach on research projects – strengthening Canadian connections

"When you ask for reasons why I am employed outside Canada you’re missing the point. I didn’t leave because of better opportunities abroad, I was forced to leave because I could not find a job in my field in Canada. If there had been a job I most certainly would have stayed (or returned). And note that I would have been willing to accept less money and a weaker research environment than I now have at my current institution in the UK" (Research Respondent).

Subjects who return home have weaker connections to their graduate schools than those remaining abroad.

**Recommendation:** Strengthening graduate school ties may be a way of reducing feelings of isolation for Canadians in Canada.

Support measures for international travel that facilitate temporary mobility, e.g. to attend conferences and to bring international speakers to Canada. This would strengthen links created during studies abroad and possibly create stronger international networks.

"With email and easy travel, my location is completely compatible with conducting quality research" (Research Respondent).
**Brain Migration, Knowledge Spillovers and Ethics of PPP**

*A Canadian Workshop in Conjunction with the European Regional Economic Forum 2009*

May 7, 2009
Ottawa, Canada

Pharmaceutical Industry R&D in Canada: Activity, Funding and Future

Jean Marion, Ph.D.
Director, Regulatory and Scientific Affairs
Canada’s Research-Based Pharmaceutical Companies

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**Canada’s Research-Based Pharmaceutical Companies**

- Canada’s Research-Based Pharmaceutical Companies (Rx&D) is the national association representing over 20,000 men and women who work for more than 50 research-based pharmaceutical companies in Canada

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**Presentation Overview**

- R&D in the Health Field in Canada
- Extramural R&D investments
- Elements in competitive placement of clinical research
- Facing challenges together - Outlook for Canada

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**Pharmaceutical R&D Spending in Canada Reporting Patentees by Type of Research**

- Source: Patented Medicine Prices Review Board (PMPRB) Annual Reports (excludes research in social sciences/humanities, R&D milestone payments as part of payments for acquiring rights and start-up biotechs with no patented medicine marketed in Canada)
- *Non-clinical: basic and pre-clinical research
**Clinical: Phases I-IV studies, bioavailability studies and submission preparation costs

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**International Ranking - Share of Clinical Trial Sites**

Estimate April 2007


Growth in shares 2002-2006
ARAGR = average annual growth rate

Data from ClinicalTrials.gov
Pharmaceutical R&D Spending in Canada
Reporting Patentees “Current Expenditures”

<table>
<thead>
<tr>
<th>Year</th>
<th>Extramural</th>
<th>Intramural</th>
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<tbody>
<tr>
<td>2006</td>
<td>$1.21B</td>
<td>$1.21B</td>
</tr>
<tr>
<td>2007</td>
<td>$1.33B</td>
<td>$1.33B</td>
</tr>
</tbody>
</table>

Note: current + capital expenditures $1.21B (2006); $1.33B (2007)
Source: PMPRB Annual Reports (excludes research in social sciences humanities, start-up biotechs and R&D milestone payments as part of payments for acquiring rights)

Types of Extramural R&D Investments
- Payments to third parties
  - universities, hospitals and research institutes or networks
  - scholarships, grants, research chairs…
  - investigator initiated studies that involve a company product
- Research contracts
  - directly with universities, hospitals, research institute or through Contract Research Organizations (CROs)
- R&D milestone payments to university spin-off companies

Elements in Competitive Placement of Clinical Research
- Science
  - Researchers/scientific personnel
  - Health research infrastructure
  - Characterized population (epidemiology data)
  - Drug regulatory and ethics requirements (internationally consistent)
- Efficiency
  - Time (study set-up, recruitment rate)
  - Quality
  - Cost (internal & external)
- Culture of Collaboration
  - Good communication between scientists in Academia and Industry
  - Openness to cross-sector scientific collaboration
- Business Climate (in comparison with other jurisdictions)
  - Intellectual property protection
  - Price regulations
  - Reimbursement regulations
  - Drug review efficiency
  - Tax incentives

Opportunity for Due diligence Prior to Partnering
- Key considerations for performing due diligence when deciding whether to allocate funds/resources to a partnered research project:
  - Good communication between the scientists of both communities
  - Option of early involvement in the development of the research initiative
  - Assessing potential collaboration against own strategic priorities and standards
  - Sufficient information for go/no go decision
  - Compatible timeline for project launch and conduct
  - Further involvement in the project with opportunity to evaluate and/or participate in its execution

Cross-Sector Scientific Collaboration
- Rx&D members both fund and perform research and can bring input from scientific experts in the global corporation
- Interactive collaboration
  - Collegial involvement of scientists in the public sector and industry leads to bi-directional exchange of knowledge and research synergies
- Reasonable ways to manage conflicts of interest
  - without discouraging interactive collaborations potentially beneficial to society
- Other Safeguards for ethical conduct of research
  - International and local norms (mutually consistent)
  - Research Agreements (publication/disclosure, authorship, compensation etc.)
  - Code of Ethical Practices

Facing Challenges Together
- Advances in biomedical research will arise more and more from collaboration between researchers in industry and academia
  - New therapies to meet medical needs
  - Enhanced post-market safety and therapeutic effectiveness
- Cross-sector knowledge exchange can more readily address the challenge of advancing drug development science itself
  - Earlier and more reliable predictability of efficacy and safety profile of candidate drugs
  - More efficient clinical trial designs to address difficult scientific questions increasingly posed by regulators
Outlook in Canada

- Can build on a good track record
- Fundamentals for partnering in place
- Maintain culture that encourages active collaboration, recognizing the expertise and professionalism of scientists in both public and private research communities
- Develop better understanding of differences in project management and decision making
- Leverage scientific expertise and financial resources toward common goals
- Pursue efforts to address structural regulatory factors in a comprehensive strategy with all relevant policies and regulations appropriately balanced

Thank you / Merci !
EU-Canada S&T Cooperation
specially in research mobility and science and society

Leonardo Piccinetti

Outline

- EU-Canada S&T Relations
- FP7 in Human mobility
- FP7 in Science and Society
- Information Sources to EU RTD Funding Programmes

EU-Canada S&T Relations

* Launched under umbrella of 1976 EC-Canada Framework Agreement for Commercial and Economic Cooperation;
* EU-Canada S&T Cooperation Agreement signed in 1995;
* Under FP6 good success rate of 20% was achieved by Canadian researchers.

EU-Canada S&T Relations

Main Objectives

- adding value to implementation of RTD Framework Programme (European Competitiveness);
- defining common interests and priorities;
- promoting European R&D;
- setting a frame for IPR and information exchange;
- providing room for policy dialogue and exchange of information between European Commission and Canada, thereby contributing to strategic implementation of international dimension of European Research Area (ERA).

Programme description | Number of projects | Percentage | Participants | Participant cost (€)
--- | --- | --- | --- | ---
Life sciences, genomics and biotechnology for health | 10 | 8.70 | 11 | 586217.76
Information society technologies | 23 | 20 | 26 | 115000
Renewable energy | 6 | 2.61 | 4 | 6300
Food quality and safety | 8 | 6.96 | 8 | 1500
Sustainable development | 19 | 16.52 | 21 | 199327.43
Citizens and governance | 2 | 1.74 | 2 | 40540
Policy-oriented research | 2 | 3.68 | 4 | 3150
Global research and mobility | 30 | 26.09 | 30 | 15138
Research and Infrastructures | 2 | 1.74 | 2 | 1200
Science and Society | 2 | 1.74 | 5 | 2700
Management of collective research | 1 | 0.87 | 3 | 10703
Reliability protection | 1 | 0.87 | 1 | 9
Environment and sustainability | 1 | 0.87 | 0 | 9

EU-Canada S&T Relations

Major Trends

- Trans-sectorial policy coordination: links to neighbourhood policy, external relations;
- Widening the focus: S&T as part of Cooperation and Partnership Agreements (i.e. Canada);
- More advanced joint funding instruments (coordinated calls);
- New momentum through BILAT Mechanism (FP7, "Capacity");
- Information dissemination on programmes and funding of joint activities;
- Promoting cooperation between EU and the specific partner country;
- Identifying and demonstrating mutual interest and benefit of S&T cooperation;
- Sharing best practices and presenting cooperation in particular fields;
- Enforcing the principle of reciprocity: ACCESS4EU (FP7, "Capacity").
FP7 Background
Why RTD policy at European level?

- Pooling and leveraging resources
- Resources are pooled to achieve critical mass
- Leverage effect on private investments
- Interoperability and complementarity of big science
- Fostering human capacity and excellence in S&T
  - Stimulate training, researchers mobility and career development
  - Improve S&T capabilities
- Stimulate competition in research
- Better integration of European R&D
- Create scientific base for pan-European policy challenges
- Encourage coordination of national policies
- Effective comparative research at EU-level
- Efficient dissemination of research results

7th EU RTD Framework Programme (FP7, 2007–2013)

Key Features:
- Already the Seventh Framework Programme for Research and Technological Development
- The main EU instrument for funding research in Europe between 2007 and 2013 (budget 53 bn €)
- FP7 supports research in selected priority areas
- It represents 41% budget increase from FP6 (at 2004 prices)

European R&D Challenges

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<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<tbody>
<tr>
<td>R&amp;D intensity (% of GDP)</td>
<td>1.65</td>
<td>2.66</td>
<td>3.18</td>
</tr>
<tr>
<td>Share of R&amp;D financed by industry (%)</td>
<td>14.9</td>
<td>13.7</td>
<td>15.8</td>
</tr>
<tr>
<td>Researchers (FTEs) per thousand labour force (1)</td>
<td>5.5</td>
<td>9.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Share of world scientific publications (%) (2003)</td>
<td>20.2</td>
<td>21.1</td>
<td>25.6</td>
</tr>
<tr>
<td>Scientific publications per million population (2003)</td>
<td>33.9</td>
<td>30.9</td>
<td>55.0</td>
</tr>
<tr>
<td>Share of world triadic patents (%) (2002)</td>
<td>31.5</td>
<td>34.3</td>
<td>26.9</td>
</tr>
<tr>
<td>Triadic patents per million population (2005)</td>
<td>30.5</td>
<td>31.4</td>
<td>24.0</td>
</tr>
<tr>
<td>High-tech exports as a share of total manufacturing exports (%) (2003)</td>
<td>19.7</td>
<td>20.5</td>
<td>28.5</td>
</tr>
<tr>
<td>Share of world high-tech exports (%) (2003)</td>
<td>70.7</td>
<td>78.5</td>
<td>18.0</td>
</tr>
</tbody>
</table>

Aims of International Cooperation in FP7

- Support competitiveness through strategic partnerships with third countries in selected fields of science
- Address specific problems facing third countries on the basis of mutual interest and mutual benefit
- Use S&T cooperation to reinforce the Community’s external relations and other relevant policies

Structure & Instruments of FP7
Specific Programmes

| Cooperation – Collaborative Research |
| Ideas – Frontier Research |
| People – Human Potential |
| Capacities – Research Capacity |

- JRC (non-nuclear)
- JRC (nuclear)
- Euratom

 FP7 - Structure
Structure & Instruments

Implemented through four types of tools and categories
- Collaborative Research
- Joint Technology Initiatives (Article 171)
- Coordination of national research programmes (Article 169)
- International cooperation

Collaborative Research

- Budget €32,365 million
- Collaborative projects
  - Large, medium and small scale projects
  - Networks of excellence
  - Coordination & support actions

International cooperation

- Opening of all activities in the thematic areas to researchers & research institutions from all third countries
- S&T excellent actors in countries like US, Japan, Russia
- Emerging economies/competitors such as Brazil & China
- Topic open for proposal will indicate whether there is a particular relevance or encouragement for the participation of third countries
- Specific International Cooperation Actions (SICA)
  - Basis of Mutual benefits
  - Problems of shared interest
  - Of Importance such as Energy Policies,

People – Human Potential

Mobility

- Total budget €4,217 million
- Existing Marie Curie actions - five action lines:
  - Initial training of researchers
  - Life-long training and career development
  - Industry-academia pathways and partnerships
  - The international dimension
  - Specific actions

PEOPLE
Marie Curie Actions in FP7

Initial training of researchers
- Initial Training Networks*
- Life-long training and career development
- Intra-European Fellowships / European Reintegration Grants
- Co-funding of regional/national/international programmes

Industry dimension
- Industry-Academia Partnerships and Pathways*
- International dimension
- Outgoing & Incoming* International Fellowships; International Cooperation Scheme; International Reintegration grants; Support to researcher 'diapora' *

Specific actions
- Mobility and career enhancement actions; Researchers’ nights; Excellence awards
PEOPLE

Initial Training of Researchers
Marie Curie Initial Training Networks

Objectives
- Strengthen and structure Early Stage Training at European level
- Improve career perspectives by broad skills development (including private sector needs)

Main features
- International network of participants - at least three participants established in at least three MS or Associated countries - Third countries organisations may participate if justified by the project
- Open to researchers from Third countries
- Training programme with (i) training through research (ii) complementary competences (structured training) modules
- Involvement of private sector
- Allowances for "early-stage" researchers (incl. first post-docs) and «visiting scientists » positions; Short training events (conferences, summer schools, training courses), also open to researchers from outside the network.

SiS Indicative Budget and Funding Schemes

- Total amount available
  - A total of € 330 million for SiS over duration of FP7 (2007-2013)
  - € 50.15 million for the current call (deadline 13 January 2010)
- Funding schemes
  - Collaborative research projects: • Small or medium-scale focused (EU contribution cap: €1m per project)
  - Coordination and Support Actions (CSA)
  - Special measure: equipment costs for SMEs
- Minimum conditions per funding scheme
  - Outlined in Work Programme

PEOPLE

Marie Curie Industry partnerships and pathways

Objective
Encourage, knowledge sharing, cultural exchange and sustainable cooperation between industry and academia (in particular SMEs)

Main features
- Longer-term co-operation between sectors ≥ 1 university/research centre + ≥ 1 private sector; ≥ 2 different Member States/Associated countries
- Open to researchers from Third countries
- Enhance sustainable cooperation between partners of both sectors in joint projects
- 2-way staff secondments / hosting of experienced researchers from outside the partnership
- Organisation of workshops/conferences, including for researchers from outside the partnership
- Special measure: equipment costs for SMEs

International dimension

- International Outgoing Fellowships (IOF)
- International Reintegration grants (IRG)
- International Incoming Fellowships (IIF)
- International Research Staff Exchange Scheme (IRSES) with countries covered by European Neighbourhood policy and countries with an S&T agreement
- Scientific diasporas

International Incoming Fellowships

Objectives
- To reinforce the scientific excellence of the Member States (MS) and the Associated Countries (AC) through knowledge sharing with incoming researchers from Third Countries (TC)
- To develop mutually beneficial research cooperation between Europe and TC

International Incoming Fellowships

Main features
- Experienced researchers from TC to carry out research in a MS or AC
- Possible return phase of max 12 months for researchers coming from International Cooperation Partner Countries (ICPC)
- Project duration: 12 up to 24 months (return phase: 12 months)
- Application submitted by researcher in conjunction with host organisation in a MS or AC
- Grant agreement to be signed with host organisation in MS or AC. In case of return phase in an ICPC Grant agreement to be signed with the host located in ICPC
PEOPLE
International Research Staff
Exchange Scheme

IRSES

Objectives
• To establish or deepen partnership between min. 2 research organisations within Member States/Associated Countries and one or more organisations in Countries covered by European Neighbourhood policy and Countries with S&T Agreement through a joint programmes of exchange of researchers

Countries with EC agreements on S&T:
- Argentina*, Australia, Brazil*, Canada, China*, Chile*, Egypt*, India*, Japan, South Korea, Mexico*, Morocco*, New Zealand, Russia*, South Africa*, Tunisia*, Ukraine*, United States

Countries of European Neighbourhood Policy (ENP):
- Eastern Europe & Central Asia (EECA) Armenia*, Azerbaijan*, Belarus*, Georgia*, Moldova*, Ukraine*

* International Cooperation Partner Countries (ICPC)

Exchange programme
- Multi-annual joint exchange programme (balanced & coordinated)
- Short term exchanges (up to 1 year per person in total)
- Researchers, management, technical staff
- Exchanges to/from Europe (not between EU/AS partners)
- Staff are seconded (maintain salary in institution of origin and have the right to return)
- Partner institutes select their staff for exchange
- No restriction for size of programme

Topics in 2010 Work Programme

Area 5.1.1 Relationships between science, democracy and law
• Topic SIS-2010-1.1.1.1 The role of Ethics under EU policy and law: EU policy in the making and the EU as a global actor

Area 5.1.2.2 Conditions for an informed debate on ethics and science
• Topic SIS-2010-1.2.2.1 Action to investigate ethics capacity-building methodology

Information Sources to EU RTD Funding Programmes
Conclusions

Barriers of international S&T cooperation:
- Deficits in the management and the protection of IPR in international cooperation schemes;
- Insufficient visa regimes and social security arrangements for scientists and their families;
- Difficulties with transferring scientific equipment and samples or with getting access to research sites;
- Incompatibility of legal frameworks for joint institutions and infrastructures;
- Lack of information on relevant S&T programmes.

Advantages of international S&T cooperation:
- Access to expert knowledge and networks of excellence;
- Access to additional RTD funding;
- Possibilities for exchange of researchers;
- Benchmarking own achievements at international level;
- Insight into research priorities and programmes undertaken in relevant foreign RTD establishments.

“Learning from practical experiences”
FP7 Training Workshop

Thank you!
Leonardo Piccinetti
Canada’s Nursing Brain Drain

- Nurses have always been attracted to the US from Canada
  - the can expect bigger signing bonuses and higher salaries.
  - there is often an improvement in personal lifestyle such as weather, improved educational opportunities
- many American hospitals support nurses’ pursuit of advanced education (Pink et al. 2004; Pringle 2004).
- In spite of that, many Canadian nurses still prefer to live and work in Canada.

Canada’s Nursing Brain Drain

- The brain drain from Canada to the US increased dramatically in the mid 1990s in response to health care cutbacks
  - Outmigration in 1995 was equivalent to more than ¼ of the new Canadian RN grads
- It has continued at a steady but limited rate
  - Although it does not cripple our health care system, it certainly poses ongoing challenges
- This challenge is arguably greater within the nursing profession than with any other group of professionals (Bernstein 2005).

Demographics of Nurse Migration

Main Source Countries for Foreign-trained Nurses in the US, 2004

- United Kingdom: 8.4%
- Canada: 29.2%
- Philippines: 50.3%
- Other: 21.2%


Demographics of Nurse Migration

New Licensed Foreign-Educated Nurses in U.S., 1994-2004

Nurses Moving Out

• Data from the Registered Nurses Database depicts exit rates by years since graduation.

  – On the surface, it appears that registered nurses (RNs) tend to leave the nursing profession and/or move the most at the beginning and the end of their career—possibly indicating a retention issue for new RNs.

  • Lack of a unique identifier

Obama’s Health Care Stimulus

• As part of his recently economic stimulus package, U.S. President Barrack Obama has set forth an ambitious agenda to provide health care coverage for all U.S. citizens.

• These efforts, however, will be limited by the shortage of highly skilled nurse educators and researchers which limit the capacity to expand domestic nursing training.

Barriers to Increasing Nursing Capacity

• It is difficult to recruit in the educational sector because highly trained RNs can make much more in practice than in educational roles.

  – The American Association of Colleges of Nursing highlights the differential salary is on average $82,000 in practice roles compared to about $68,000 in teaching roles.

Obama Against Foreign Nurse Recruitment

“The notion that we would have to import nurses makes absolutely no sense,” he said at a White House Forum on Health Care on March 5 when it was pointed out that America’s huge shortage of nurses may mount to over 500,000 in the next seven years.

• But, Canada is not seen as foreign.

  “And there are a lot of people who would love to be in that helping profession, and yet we just aren’t providing the resources to get them trained, that’s something that we’ve got to fix,”

Expanded Opportunities for Advanced Practice RNs

• The US is also seeing a resurgence of Advanced Practice Nursing (APN) roles, many of which are critical to clinical and health service research activities.

  • These developments in the U.S. raise concerns regarding our ability to retain highly trained APN and nurse researcher/educator roles in Canada.
**Canadian Stimulus??**

- Instead of expansion of these highly skilled APN roles, we are witnessing *ineffective utilization* at best and ‘*redundancies*’ at worst in response to the current economic downturn.

- These ill-advised directions lay the groundwork for yet another outmigration of highly skilled nurses even more problematic than the steady state or the one we witnessed in the 1990s — not only will care be compromised, but so will established health research infrastructure.

**What Would Make Nurses Come Back?**

  - Relocation Expenses (>65%)
  - Availability of Full-time Work (>65%)
  - Wages and Bonuses (~30%)

- Perhaps we need to ask, ‘what would prevent them from leaving?’
An Overview of Private Sector Partnerships at CIHR

Brain Migration, Knowledge Spillovers and the Ethics of PPPs
May 7 2009

Mary Beshai, M.Sc, MA, P.Eng
Senior Advisor – Private Sector Partnerships
Partnerships and Citizen Engagement Branch, CIHR

Why does CIHR engage in partnerships?

Partnerships often provide additional financial resources for research, but their importance goes far beyond money.

By working with partners, CIHR can:
• Build greater research capacity,
• Share knowledge more effectively,
• Build support for health research,
• Minimize redundant work, and
• Work collaboratively to influence the Canadian health-research agenda.

Based on CIHR Partnership Policy Statement (2007), and CIHR Framework to Improve Partner Relations (draft 2009)

Responsible and challenges of PPPs

Working in partnership has many benefits, there also are responsibilities to bear in mind. Partnerships must be:
• Based on the ethical principles that guide all CIHR activities, including conflict of interest issues;
• Consistent throughout the organization to ensure equal treatment for partners;
• Managed in a consistent manner to ensure common understanding and expectations by CIHR and partners; and
• Operated with managerial transparency, fiscal and public accountability.

Challenges can be faced when engaging in partnerships
• Perceptions and biases exist across sectors
• Partnership lifecycle and decision making
  − Identifying partners
  − Maintaining and fostering relationships
  − Engaging new domains/areas
• Organizational challenges
  − Complexity of CIHR and partner organizations
  − Lack of guidelines for CIHR and industry staff engaged in partnerships
  (e.g., ethics, partnerships with the private sector, commercialization)

How we engage in private sector partnerships

The Public Good
Improved health for Canadians
More effective health services and products
A strengthened Canadian health-care system

• Competition
  − Researcher or Research Project (Academic Institution, Research Hospital)
  − Knowledge Translation, including Commercialization
  − Talent/Research Capacity Building

• Event
  − Research Priorities
  − Knowledge Creation & Translation Activities
  − Networking
  − Financial support, and/or In-kind support

• Activity
  − Knowledge Translation

CIHR-led Initiative
Institutes & Branches

Partner-led Initiative
SME/MNE

About the Canadian Institutes of Health Research

CIHR
• Federal agency responsible for promoting and funding health research in Canada.
• CIHR’s budget for 2008-09 is $928.6 million

Mandate
• To excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health-care system.

The CIHR Act states that CIHR will achieve its purposes by:
• “fostering collaboration with the provinces and with individuals and organizations in or outside Canada that have an interest in health or health research”
• “creating health-research institutes that engage voluntary organizations, the private sector and others in or outside Canada with complementary research interests.”

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• Event
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  − Knowledge Creation & Translation Activities

• Network
  − Knowledge Translation

CIHR-led Initiative
Institutes & Branches

Partner-led Initiative
SME/MNE

CIIH programs (competitions) that encourage university-industry interactions

<table>
<thead>
<tr>
<th>Type of Partners</th>
<th>CIHR Funding Opportunity</th>
<th>Supported Funding Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition Partners (CA exists)</td>
<td>Biotech Canada</td>
<td>Grants and Awards</td>
</tr>
<tr>
<td>Applicant Partners**</td>
<td>Collaborative Research Program</td>
<td>Grants and Awards</td>
</tr>
<tr>
<td>Auxiliary Partners***</td>
<td>“Boutique” programs</td>
<td>Grants and Awards</td>
</tr>
</tbody>
</table>

* CA = Collaborative Agreement
** List of programs that require industry-applicant partners as part of their eligibility requirements
*** Other programs do include industry partners, but not as a formal requirement (e.g., PHSI, RPP)
Innovation and Industry

CIHR's University-Industry grants provided a venue to commercially develop the innovation and further her research. Without the relationship in place, the grant would not have been written.

About her experiences with university-industry interactions, Dr. Allen says...

CIHR’s Proposed Strategic Directions and alignment with S&T Strategy

1. Invest in World-Class Excellence
2. Set Health and Health System Research Priorities
3. Accelerate the Capture of Health and Economic Benefits of Health Research
4. Achieve Organizational Excellence, Foster a Culture of Ethics and Demonstrate Impact

S&T Strategy Principles

- Promoting world-class excellence
- Focusing on priorities
- Encouraging partnerships
- Enhancing accountability

Private Sector Partnership Landscape

CIHR’s Health Research Roadmap: creating innovative research for better health and healthcare (2009 - 2013)

- Clarity on ethical considerations
- Development of ethical guidelines for private sector partnerships
- Development of operational guidelines for private sector partnerships
- Ethics Policy for PPP

Consistency and Decision-making clarity leading to improved relationships and an increased number of beneficial partnerships between the private sector and CIHR.

Training, retaining and sustaining a healthy research foundation

- Providing capacity to attract and retain best researchers
- Breaking professional and sectoral barriers in health research
- Preparing young researchers for various labour markets

Selecting and sustaining research excellence

- Strengthening peer review quality in each of the four health research pillars
- Improving the breadth and quality of their peer review panels

Promoting interdisciplinary and international innovation

- Promoting international collaboration and Canadian leadership in international health research consortia
- Facilitating health research capacity-building in low- and middle-income countries

A Success Story: Dr. Theresa M. Allen

About Dr. Theresa Allen - Innovator

- Brain migrant herself (South → North)
- Presently at CDRI (UBC), previously U. of Alberta
- Recipient of numerous CIHR grants and awards (1999 – 2009)
- Inventor on 18 patents, several products
- Developed long-circulating Stealth™ liposomal anticancer drugs

CIHR’s University-Industry grants provided a venue to commercially develop the innovation and further her research.

Plans for improved partnerships at CIHR

Number of partnerships by sector (2007-2008)

Private Sector: 22%
Public Sector: 42%
Agricultural Sector: 9%
Academia: 19%
Voluntary Sector: 23%
Public Sector: 42%

Partnerships valued and encouraged across multiple sectors, in 2007-2008:
- 247 Partners, 311 Collaborative Agreements
- $83M in leveraged funds (excluding in-kind)

Private Sector Engagement
- ~ 20% are Competition Funding Partners
- ~ 5% are Formal
- ~ 25% are Informal
- ~ 5% are Collaborative Agreement Partners
- ~ 75% are Application/Industry Partners (National relationship w/ CIHR)

S&T Strategy Principles

- Promoting world-class excellence
- Focusing on priorities
- Encouraging partnerships
- Enhancing accountability
Strategic Direction 2: Set health and health system research priorities

- Promote patient-oriented research & target science and technology innovations to improve health outcomes and health systems
- Support a high quality, accessible & sustainable health care system
- Decrease health inequities in Aboriginal Peoples & other vulnerable populations
- Prepare & respond to existing & emerging global threats to health
- Promote health & reduce the burden of chronic disease & mental illness

Strategic Direction 3: Accelerate the capture of health & economic benefits of health research

CIHR will increase its impacts by:
- Facilitating and strengthening partnerships between researchers and knowledge users
- Supporting evidence-informed policy making to improve health and the health system at both the provincial/territorial and federal levels
- Implementing citizen engagement initiatives
- Facilitating commercialization by creating incentives for health researchers to work with private sector partners to translate health research into improved health products, technologies and tools for Canadians

CIHR will intensify knowledge translation by:
- Advancing the application of research and its evaluation
- Building capacity of both researchers and knowledge users to engage in KT
- Increasing the number of researchers to advance the science of KT.

Strategic Direction 4: Achieve organizational excellence, foster ethics & demonstrate impact

CIHR will ensure transparency and accountability by:
- Developing state-of-the-art human resource management practices
- Applying technology-based solutions
- Evaluating the overall success of CIHR
- Developing an annual implementation delivery plan

CIHR will foster a culture of ethics by:
- Ensuring compliance with Canadian legislation and ethical standards
- Fostering the discussion and application of ethical principles to health research

CIHR will access progress and impact by:
- Demonstrating impacts of CIHR investments in its 5 identified areas: (1) Advance knowledge (2) Build capacity (3) Inform decision-making (4) Improve health and health system, and (5) Contribute to the economy.

Future directions for private sector partnerships at CIHR

- Expansion in sector coverage
- Expansion in health research pillar coverage
- Enhancements
  - Programs involving private sector (e.g., commercialization, talent building)
  - Partnership process improvements (e.g., address key challenges)
- Improve clarity around partnerships with private sector
- Implementation of strategic plan recommendations
- Ethics-PP Guidelines

In concert with its private sector partners and other stakeholders, CIHR’s investment in health research in Canada could lead to positive outcomes in talent building, knowledge creation and translation, and innovation.

Let’s continue to work together to improve the Canadian health research landscape, thereby encouraging brain retention and innovation clusters.
Ethical PPPs: So What?

Karine Morin, LLM*

 Ethics – 101

The field of ethics (moral philosophy) can be reduced to concepts of right and wrong

- normative ethics seeks to reveal moral standards that regulate right and wrong conduct e.g.
  - articulating the good habits that we should acquire,
  - the duties that we should follow, or
  - the consequences of our behavior

PPPs – broadly

A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets public needs through the appropriate allocation of resources, risks and rewards.

OED: commitment to common goal through joint provision of resources and expertise, and joint sharing of risks

PPPs & global health

- mobilise additional resources & support for health in developing countries
- support from UN, WHO, Global Forum for Health Research, but also World Bank...


PPPs & health research funding: CIHR

Mobilizing Science and Technology to Canada’s Advantage - 2007

- Entrepreneurial Advantage
- Knowledge Advantage
- People Advantage
- Promoting world-class excellence
- Focusing on priorities
- Encouraging partnerships
- Enhancing Accountability

Health & related life sciences and technologies = key area
But Canada performs quite poorly in translating discoveries into commercial successes. Our major deficiencies here are the amount of R&D conducted in the private sector and, particularly, the clumsiness of our linkages between the private sector and publicly funded research, because this is where most successful recent innovations come from. Figuring out how to better engage the private sector in Canada’s R&D is the most significant challenge our country’s innovation system has yet to meet. 

Harvey Weingarten, Science, Technology and Innovation Council of Canada, Globe and Mail, May 1, 2009

Draft strategic plan (2009-2014)

- partnerships viewed a means
  - to achieve KT
  - to reap socio-economic benefits

Achieving effective collaborations by:

1. facilitating and strengthening partnerships between researchers and knowledge users and between CIHR and a variety of organizations to achieve impact;
2. facilitating innovation and commercialization by creating incentives for health researchers to work with private sector partners to translate health research findings into improved health products, technologies and tools for Canadians;

Why ethics in PPPs at CIHR

- ethics in biomedical research
- business ethics
- ethics in government
  - CIHR values
    - excellence
    - scientific integrity & ethics
    - collaboration
    - innovation
    - public interest

Developing ethics guidelines for PPPs

- Initial draft
  - according to stages
  - long list of (potentially relevant) ethical principles
- WG comments: 5 principles applied to various types of PPPs
- Revision
  - 2 overarching values
  - ethical elements / considerations

Key ethical principles that govern partnerships

- Public interest: ... served and safeguarded
- Accountability: ... partners’ respective organizations, relevant stakeholders, and society
- Openness and transparency: transparent policy and procedural frameworks, open process of deliberation, processes and outcomes that are documented and publicized, open to third party review
- Representation: ... governed by bodies that are representative

Key ethical principles to determine whether a partnership is appropriate / justified

- Harmonization: ... in harmony with national health priorities / integrated within the national health agenda; should not duplicate other initiatives
- Prudence: vigilance regarding potential risks (e.g. permitting special interests to exercise inappropriate influence)
- Innovation: identifiable need for partnering, to enhance health research, build capacity and promote innovation, while sharing the risks inherent in innovative approaches
Key ethical principles to select the right partner(s)

- Impartiality: impartial and objective selection; partners treated equitably
- Non-exclusivity: should not require / expect relationship to be exclusive; partners may choose to enter into additional partnerships; PPPs do not represent endorsement
- Congruency: shared objectives
- Social responsibility: private sector partners evaluated on basis of corporate record & efforts to improve health and welfare of society (not just investors)
- Commitment: willing to commit to the relationship (continuity, stability and credibility)

Key ethical principles to consider when negotiating & managing a partnership

- Trust: … establish trust as the foundation of their relationship
- Autonomy: … not undermine the autonomy of each partner
- Fairness: … fair and mutually beneficial
- Communication: … maintain open and honest communication with each other and with stakeholders
- Stewardship: the missions and goals of the partnership should be consistent with the requirements of the stewardship of resources
- Competence (excellence): … establish clear goals, roles, responsibilities, and decision-making structures; monitor and enforce decisions
- Efficiency: … use the most efficient means to achieve goals
- Management of conflicts of interest: … should be avoided or resolved in favor of the public interest, in a manner that can bear scrutiny

Key ethical principles to evaluate the outcomes of the partnership

- Beneficence: partnerships should benefit society (e.g. produce a public health gain) rather than the partners
- Equity: the benefits of partnerships should be distributed equitably

Modifications to initial draft

- Public interest
  - Trust
  - Harmonization
  - Social responsibility
  - Benefits to society
  - Efficiency

- Accountability
  - Communication
  - Efficiency
  - Openness & transparency

- Stewardship and commitment
  - Competence, resources

- Equity
  - Fairness

- Shared objectives
  - Autonomy
  - Congruence

Revised draft

VALUES
- Public Interest (why partner; what benefits; shared vision & goals)
- Innovation (need to partner to achieve more than otherwise could; to provide news means; complimentary; capacity building)

PRINCIPLES
- Stewardship (optimal use of resources)
  - Trust: strive to build it; an outcome of the partnership
  - Competence
  - Shared objectives: congruency in objectives of the partnership
- Accountability
  - Transparency and openness
  - Communication
  - Social responsibility (for private partner)
- Fairness
  - Impartiality in selecting partners
  - Equity / fairness in treatment of partners
  - Just distribution of benefits & risks among partners
  - Protecting the integrity of each partner
- Justice (fair and equitable distribution of outcomes to relevant populations / the public)

Final Thought

- where does ethics of PPPs fit in today’s workshop?
  - how do PPPs relate to spillovers
  - … to skilled workers

- what is the value of ethics?
*The views presented are mine and should in no way be construed as official policies of the Canadian Institutes of Health Research.