Day 2
COR-CII Joint Summer Meeting
June 26-28, 2023

Welcome, today’s session will start shortly.
Scan your name badge QR code for the Agenda
Thank you to our Sponsors

Host Institution:

Gold level sponsors:

University sponsors:
Engaging Indigenous Students and First Nations in Research

- **Simon Atkinson** (Moderator), Vice Chancellor for Research, University of Kansas
- **David Hanson**, Assistant Vice President for Research, University of New Mexico
- **Emmanuel Hernández Aguilar**, Academic Chief Officer, University of Guadalajara (University Center of the North), Mexico
- **Dawn Wallin**, Associate Vice-President Research, University of Saskatchewan, Canada

**Discussants:**
- **Griselda del Carmen de la Torre García**, Head of Unit, International Coordination, University of Guadalajara, Mexico
- **Meghna Ramaswamy**, Director of the International Office, University of Saskatchewan, Canada
Indigenous Students in Research

Simon Atkinson
University of Guadalajara
México
CUNORTE EXPERIENCE IN ENGAGING INDIGENOUS STUDENTS
Network System

Zona Metropolitana de Guadalajara, Jalisco

Estado de Jalisco, México
Challenges
Engagement with Wixarika communities
Academic Services Access Center (CASA)
Bachelor's Degree in Indigenous Education
Where do I start?.....Depends on your goals.

• **Involvement**
  - **Goals:**
    - Increase participation in a pre-defined area
    - Provide training for individuals
  - **Value:**
    - Diversify thought leaders
    - Learn new perspectives from participants
    - Build relationships

• **Engagement**
  - **Goals:**
    - Co-create solutions to common problems
    - Provide benefits to communities
  - **Value:**
    - Create new approaches
    - Develop sustainable solutions
    - Build trust
Engagement is the long game. Start with relationships.

**METALS Superfund Research Program**  
UNM Health Sciences Center  
PI: Johnnye Lewis, PhD  
https://hsc.unm.edu/pharmacy/research/areas/metals/

**New Mexico Tribal Entrepreneurship Enhancement Program**  
UNM Rainforest Innovations  
PI: Cecilia Pacheco  
http://loborainforest.com/tribal-entrepreneurship/

**Native American Studies**  
UNM College of Arts and Sciences  
Chair: Tiffany S. Lee, Ph.D.  
https://nas.unm.edu/
Listen and Learn

- Indigenous cultural training workshops for Western scientists
  - Indigenous approaches and ways of knowing

https://wearewater.colorado.edu/

Figure from “Diné Worldview and Futurism: A holistic perspective” by David Begay
Begin Co-Creation: RALI-WEST

RALI-WEST Semi-Finalist
NSF Regional Innovation Engine

PI: David Hanson, engageresearch@unm.edu

Clean water at every tap, and clean energy to every door.

Mallery Quetawki
Artist-in-Residence at UNM
https://efla.unm.edu/home/mallery-quetawki/

Kirena Tsosie
Community Water Specialist
Southwest Research and Information Center
http://www.sric.org/index.php

Zachary Ben
Owner, Bidii Baby Foods
https://www.bidiibabyfoods.org/
Engaging Indigenous Students in Research

Dr. Dawn C. Wallin
Associate Vice President Research

University of Saskatchewan

CII-COR Summer Meeting
June 2023
In Humble Appreciation…

• We acknowledge and honour the ancestors and the Elders of the Mi’kmaq who have been the custodians of the unceded territories of Mi’ma’ki since time immemorial. We are grateful for the stewardship of these beautiful lands that allows us to share this time together and to reflect on our collective responsibility to maintain sustainable relationships with the land, water and air that nourish us all—past, present, and future.

• I bring greetings from my home on Treaty 6 territory in the colonial landscape called Saskatchewan, Canada, the traditional homelands of the Néhiyaw, Saulteaux, Dene, Nakota, Dakota and Lakota First Nations and Métis people.
Canada Population: 
~37 million

Saskatchewan Population: 
~1.2 million

SK Indigenous Population: 
~188000 (17%)  
~ 122000 First Nation  
~ 63000 Métis  
~ 500 Inuit

651 900 km²  
(251 366 m²)
Gordon Oakes Redbear Student Centre
Engaging Indigenous Students and First Nations in Research

- **Simon Atkinson** (Moderator), Vice Chancellor for Research, University of Kansas
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  - **Meghna Ramaswamy**, Director of the International Office, University of Saskatchewan, Canada
Sustaining the Talent Pipeline

Gretchen Neisler
Vice Provost for International Affairs, University of Tennessee Knoxville

Karl Steiner
Vice President for Research & Creative Achievement, University of Maryland Baltimore County

Julie Taylor
Director of Academic Relations, IIE/Fulbright

Bernie Burrola
Vice President for International, Community & Economic Engagement, APLU
Converging Trends Impacting the University STEM Talent Pipeline

Bernie Burrola
Vice President for International, Community & Economic Engagement
Three Converging Trends

1. Change in where international students come from. Major shifts in countries of origins for international students

2. A shrinking pipeline? Decreases in domestic and international student enrollments

3. Expanding the pipeline. Pressure to produce more talent
Pressure to Produce Talent

- In the past decade, high-skilled job vacancies (professional, scientific, and technical services) have **tripled**

- By 2031, **10.8%** anticipated growth in STEM jobs (twice the growth rate as in non-STEM jobs)

Source: Bureau of Labor Statistics
Foreign-Born Individuals Make Up a Large Fraction of Knowledge- and Technology-Intensive Industry Workforce

Number of Employees

500,000 400,000 300,000 200,000 100,000 0 100,000 200,000

Nativity and Citizenship

- Computer, Electronic, and Optical Products
- Machinery and Equipment
- Scientific R&D
- Pharmaceutical
- Electrical Equipments
- Software Publishing

Source: National Science Board
Over Half of Doctorate Holders Employed in Academic Engineering and Computer and Information Sciences are Foreign-Born

Source: Nat’l Science Board
A Drying Pipeline?

2.2% decline in graduate enrollment in past year

Source: National Student Clearinghouse Research Center, May 2023
Undergraduate Enrollment Changes From Pre-Pandemic Levels

Foreign Language: -18.5%
Physical Sciences: -16.4%
Liberal Arts & Sciences: -16.2%
Math & Statistics: -14.4%
Engineering: -8.9%
Health Professions/Clinical Sciences: -5.4%
Biological/Biomedical Sciences: -4.2%
Business Management: -2.6%
Computer & Informational Sciences: +30.8%

Source: National Student Clearinghouse Research Center, May 2023
The Demographic Cliff

- Strong production of high school graduates for two decades
- Graduation rate increases mitigate contracting youth population
- Birth declines still predict long-term graduate declines

10% decline in domestic students by 2037

Source: Western Interstate Commission for Higher Education, Knocking at the College Door, 10th edition, 2020. See Technical Appendix for detailed sources of data through the Class of 2019; WICHE projections, Class of 2020 through 2037. (View states or regions)
International Enrollment: A Declining Trend

INTERNATIONAL STUDENTS, 1948/49 – 2021/22

12% decline in last 5 years

Source: IIE Open Doors Report
Five-Year Change in Where Students Come From

Source: IIE Open Doors Report
## Change in Where Students Come From

<table>
<thead>
<tr>
<th>Region</th>
<th>2016/17</th>
<th>2021/22</th>
<th>+/- %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. East Asia</td>
<td>459,284</td>
<td>372,378</td>
<td>-19%</td>
</tr>
<tr>
<td>2. South Asia</td>
<td>218,937</td>
<td>237,500</td>
<td>8%</td>
</tr>
<tr>
<td>3. Europe</td>
<td>92,820</td>
<td>83,240</td>
<td>-10%</td>
</tr>
<tr>
<td>4. MENA</td>
<td>100,014</td>
<td>53,104</td>
<td>-47%</td>
</tr>
<tr>
<td>5. SE Asia</td>
<td>56,088</td>
<td>48,791</td>
<td>-13%</td>
</tr>
<tr>
<td>6. S. America</td>
<td>43,146</td>
<td>43,655</td>
<td>1%</td>
</tr>
<tr>
<td><strong>7. Africa</strong></td>
<td>37,735</td>
<td>42,518</td>
<td>13%</td>
</tr>
<tr>
<td>8. Mexico/C.A.</td>
<td>25,158</td>
<td>23,525</td>
<td>-6%</td>
</tr>
<tr>
<td>9. Oceania</td>
<td>7,222</td>
<td>5,994</td>
<td>-17%</td>
</tr>
</tbody>
</table>

### Trend Projection by 2026/27

<table>
<thead>
<tr>
<th>Region</th>
<th>2026/27</th>
<th>2021/22</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. East Asia</td>
<td>301,916</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. South Asia</td>
<td>257,637</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Europe</td>
<td>74,649</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. Africa</strong></td>
<td><strong>47,907</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. S. America</td>
<td>44,170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. SE Asia</td>
<td>42,443</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. MENA</td>
<td>28,196</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Mexico/C.A.</td>
<td>21,998</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Oceania</td>
<td>4,975</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: IIE Open Doors Report*
Shifting Demographics: Population in 2050

Source: Brookings Institute, Foresight Africa Report, 2019
Shifting Geography: Rise of Africa

• Sub Saharan African population growth expected to **double** by 2050

• By 2050, **1 in 4** people will live in Sub Saharan Africa

• Need to create **18 million** jobs annually until 2035 to meet new entrants into workforce

• World Bank projects **100,000** more African PhDs will be needed over the next 10 years

Sources: World Bank, Brookings Institute
Shifting Geography: Rise of Africa (cont.)

Figure 1.4 Old leaders, young population

Africa has the youngest population globally but some of the world’s oldest leaders. The median African leader at 62 years old is 8 years older than the median OECD leader. Furthermore, the age gap between the region’s population and leaders is 42 years compared to only 12 for the OECD.

Africa: 42-year age gap

OECD: 12-year age gap

Sources: World Bank, Brookings Institute
Challenges for Universities

• Pressure to **EXPAND** the talent pipeline
• Entering an era of **DECLINE** – both domestic and international enrollments are declining.
• **SHIFT** in international students from East Asia/Middle East/Europe to Africa/South Asia/South America
• Potential of Africa for future **GROWTH**
Fulbright has served as a critical pipeline for international research talent for over 75 years

- Of the 63 Fulbright alumni who are Nobel Prize recipients, 25 came to the U.S. as Fulbright Foreign Students or Visiting Scholars.
- Many stayed after their fellowship or returned to the U.S. later in their careers.

Terrance Tao, UCLA Professor of Mathematics
Fulbright Foreign Student from Australia
Fulbright “in-bound” Programs

Fulbright is an international exchange program, funded by Congress and 140 partner countries and host institutions

• Brings over 4,000 foreign students annually to the U.S. for research or graduate study

• Brings over 900 Visiting Scholars primarily for research, but also teaching opportunities

• Any potential threats to the influx of students and scholars is a concern

• Example: Keeping an eye on campus reactions to unionization

   Will unionization result in less funding for graduate package “matches”? Might states pressure institutions to reserve more graduate funding for in-state students?
2. Support Your Faculty Going Abroad

- Fulbright U.S. Scholar is the largest fellowship program for U.S. faculty = **800+ awards** annually
- Fulbright is a **public diplomacy program** whose mission is forge long-lasting connections
- The U.S. State Department considers selectees to be diplomats representing their lived American experiences **AND** their **home institutions**
Supporting International Exchange, cont.

2. Support your faculty going abroad, cont.

• Allow leaves between sabbaticals and provide supplemental salary
• Equip scholars to represent your institution and help recruit students and explore longer-term partnerships
• Encourage them to invite faculty to your campus to continue collaborations

International exchange is the foundation on which international research and talent pipelines are built
APLU-COR & CII Summer Meeting
Halifax, NS – June 27, 2023
The Association of Public Land-Grant Universities (APLU) honored UMBC with its **2021 Gold Award in Leadership and Pervasiveness for Internationalization**. UMBC was the only North American university to receive the Gold Award in 2021, affirming the collective, intentional work behind UMBC’s global engagement strategy.

The award reflects two years of work engaging over 400 members of the UMBC community, who together envisioned the future of UMBC’s global interconnections.

In addition to faculty, staff, and other stakeholders in the UMBC community, contributors also include UMBC students.
UMBC Internationalization Strategy

- Our Center for Global Engagement has been leading the efforts to increase our international profile.
- In 2018, we embarked on a formal comprehensive internationalization initiative and joined the American Council of Education’s (ACE) Internationalization Laboratory.
- Upon completion of this ACE Lab process, we shifted toward implementing multiple new projects, programs, and services.
- We envision comprehensive internationalization as a strategy for enhancing the global engagement of our students, employees, and other community members as they participate in teaching and learning, research, and career development.
UMBC Undergrad Trends by Nationality

Total: 493 out of 10,225 UGs in Fall 2022
Change in Undergrads 2017-2022

UG Delta #
2017-2022

- India
- Sub-Saharan Africa
- Other
- Central America
- Canada
- Europe
- Asia Other
- South America
- China
- MENA
Grad Student Trends by Nationality

Grad Students from India:
Double 2017-2021
Double 2021-2022

Total: 1,738 among 3,366 GS in Fall 2022
Data Sciences, AI, and National Security
- Cybersecurity
- Artificial Intelligence and Autonomy
- Cognitive Computing & Big Data Analytics

Climate, Environmental, and Space Sciences
- Atmospheric Physics & Remote Sensing
- Impact of Climate Change on Polar Regions
- Earth & Space Sciences
- Ecology & Remediation

Health and Life Sciences
- Bio Sciences & Engineering
- Marine Biotechnology & Aquaculture

Community, Equity, and Social Justice
- Health Equity
- Public Policy

History, Identity, and Society
- Archival Research
- Culture & History

Creative Engagement
- Intercultural Communication
- Public Humanities & Arts
– International students contributed $45 Billion to the U.S. economy in 2018, according to the U.S. Department of Commerce.
  – In 2021/22 that number has shrunk to $34 Billion.
– In 2021/22 there were 948,000 international students enrolled in higher education in the U.S. – about 4.8% of the nearly 20 million college students in the U.S..
  – 16% of UMBC students (UG and GS) have international origin.
  – 10% of current UMBC students come from India.
– International students received 117,000 Master’s and Doctoral STEM degrees in 2019, almost half of all postgraduate degrees awarded.
The Optional Practical Training (OPT) program enables U.S. employers to hire international students, often filling critical R&D positions at home rather than having to look for talent, and possibly relocate jobs, abroad.

- STEM OPT is contributing a growing case load to our Center for Global Engagement, including the need to support them up to three years post graduation.

According to NSF, 77% of international students expressed intent to remain in the United States and work after the conclusion of their OPT. However, only 46% were able to do so.

- The study also found a significant level of concern among students about their ability to get an internship and a job in the US.
Most of our international graduate students are master’s students – most of them are not involved in the research efforts on campus. This is a missed opportunity.

Research Security, Foreign Influence, Export Control Policies, rapidly changing federal regulations impact areas in a growing number of research areas.

- This is limiting the labs that foreign students can freely interact with.

Some of the inherent challenges include:

- Language Barriers
- Discrimination
- Social and Cultural Differences
- Financial Difficulties
- Access to Campus IT Authentication (DUO, etc.) during summer or home visits

We are working hard to integrate our international students into the campus community.

- We have observed growth in student applications once earlier cohorts report back about their positive experiences.

Diversification of our international portfolio will be critical in the years ahead.
Sustaining the Talent Pipeline

Gretchen Neisler
Vice Provost for International Affairs, University of Tennessee Knoxville

Karl Steiner
Vice President for Research & Creative Achievement, University of Maryland Baltimore County

Julie Taylor
Director of Academic Relations, IIE/Fulbright

Bernie Burrola
Vice President for International, Community & Economic Engagement, APLU
APLU Recognition

Michael P. Malone Award
Commission on International Initiatives

Research Leadership Fellowship Program
Council on Research
Michael P. Malone Leadership Award

Michael P. Malone Award
For International Leadership
Presented to:

Dr. Aaron Wolf
2023 Winner

Michael P. Malone

Oregon State University

Association of Public & Land-Grant Universities
Healing the Enlightenment Rift: Rationality, Spirituality and the Pursuit of Science

Aaron T. Wolf, PhD
Professor of Geography
What is Water Conflict Management & Transformation?
How can disputes be mitigate or prevented?

What changes when a border is present?
What capacity do we need to address the change?

“Fierce competition for fresh water may well become a source of conflict and wars in the future.”
Kofi Annan
March 2001
Indicators of conflict are NOT:

- scarcity
- quality
- demand

…but rather:

- upstream countries building stuff that downstream countries don’t want

“Science without policy is science; policy without science is gambling.”

Prof. David Grey, University of Oxford
Four Worlds in Water:

- Mental
- Physical
- Emotional
- Spiritual
New Directions: Spiritual Aspect of Water

All things in the natural world have *mauri* (life force) and *wairua* (a spiritual dimension). Respect for the spiritual integrity of the environment and the *atua* (God) that created it will ensure that the *taonga* (treasure) can be protected and passed on to succeeding generations.

*NEW ZEALAND NATIONAL POLICY STATEMENT for Freshwater Management 2014*
Awards – COR Celebrates Cohort 5!

Steven (Steve) Broglio
University of Michigan

Kumar Das
University of Louisiana Lafayette

M. Cynthia (Cindi) Logsdon
University of Louisville

Christine Mallinson
University of Maryland Baltimore County

Brillian (Besi) Muhanja
James Madison University

Rick Paige
Miami University

Matt Smith
Boise State University

Danielle Swick
University of North Carolina Greensboro
Awards – COR Celebrates Cohort 6!

Robert Cunningham
University of Pittsburgh

Karen Eck
Old Dominion University

Nicholas ‘Nick’ Hagemeier
East Tennessee State University

Kristian O’Connor
University of Wisconsin – Milwaukee

Laura Regassa
Georgia Southern University

Brad Ritts
University of Idaho

Tanner Schaub
New Mexico State University

Heather Harris Wright
East Carolina University
Lunch

See you back here at 1:25 pm
Thank you Academic Analytics!
Proactive approaches to research security

APLU Council on Research & Commission on International Initiatives summer meeting
June 27, 2023 | Halifax, NS

Carol Whitacre, PhD
Former Senior Vice President for Research, The Ohio State University
Senior Advisor, Academic Analytics

Matthew Cooper
Strategic Engagement Manager, Academic Analytics
True Scenario: Research Security

- Endowed Professor of Civil Engineering with 18-year tenure at University
- Was a US citizen who grew up in China
- Renowned for his work with NASA on the 2003 and 2009 Mars missions
- In January 2014 submitted a $36M proposal to NASA for imaging work on the 2020 Mars mission, claiming he had no ties with Chinese scientists
- He had spent 2012 on sabbatical at Tongji University in Shanghai
- University internal investigation started.
- He was listed as director of center for spatial information in China and had served as chief scientist there for a project
- In February 2014, he withdrew from the Mars 2020 project and days later resigned from the University, all from China.
- University working with FBI - he had access to ITAR information with NASA and Raytheon
- In March 2014, DHS stopped his wife at airport and seized laptop, cell phone and thumb drives, all with restricted defense information
- **How could the University have been more proactive?**
# What is Academic Analytics?

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<tbody>
<tr>
<td>First annually updated inter-institutional comparisons of scholarly activity</td>
<td>Unit-level peer analyses and trends by academic rank</td>
<td>International collaborations and international funding</td>
<td>Research security</td>
</tr>
<tr>
<td>Tools for faculty equity and recognition</td>
<td><strong>Collaborative networks and expertise search</strong></td>
<td><strong>Global alumni location and employment</strong></td>
<td>Your current input needed</td>
</tr>
</tbody>
</table>

This document contains Academic Analytics’ confidential and proprietary, business trade secrets. This document may not be transferred or used by any other person or entity other than your organization. For internal use only. © 2023 Academic Analytics. All rights reserved.
Our goals:

• Empower your team to become more proactive in identifying foreign influence threats

• Increase the impact of your outreach, education, and compliance efforts
Faculty Information

Publications
- Journal articles
- Conference proceedings
- Books
- Book chapters

Funding
- US federal grant funding
- PIs and Co-PIs
- Foreign funding

Clinical trials

Unique expertise
- Semantic analysis
- Topic modeling

Prestige
- Honorifics
- Awards and prizes
  - US and international

Career progression
- History and trajectory
- Relative to peers
- Where were they trained?

Former students
- Current employment of doctoral trainees and post-docs

Technology
- Patents
- Co-inventors

Connections
- International collaborators
  - Current and historic
Unified data streamlines search efforts and enables proactive analysis.
Unified data streamlines search efforts and enables proactive analysis with additional threat intelligence.
LIVEWEBINAR

Aug. 2, 2023, 12:00 pm ET

PROACTIVE RESEARCH SECURITY

Academic Analytics

Scan the QR code to RSVP
Advancing Responsible International Research and Collaboration

- Rob Rutenbar (Moderator), Senior Vice Chancellor for Research, University of Pittsburgh
- Rebecca L. Keiser, Chief of Research Security Strategy and Policy, National Science Foundation (USA)
- Shawn McGuirk, Deputy Director for Research Security, Research Partnerships, Natural Science and Engineering Research Council (Canada)
Responsible Internationalization

Presentation to APLU North America
Rebecca Keiser
Chief of Research Security Strategy and Policy
June 27 2023
Rigor & Reproducibility

Values

Research Integrity

Responsible Conduct of Research

Research Ethics

Research Security
The **Global Context**

- From WWII through the 1990s, the **U.S. was the leader** in global S&T research and technology
  - Threats were focused on Cold War/military context
- The current **global geopolitical context** is vastly different
  - **Other nations** are investing heavily and making great progress in S&T
  - Some foreign governments are using **illicit means to interfere** with U.S. research, steal ideas and technology, and coerce researchers
  - **Risks** are far **greater**, more **diverse**, and constantly **evolving**
  - The historically **open and collaborative** international research environment is being **exploited by some but needs to be preserved**
Challenges Faced by Researchers & Institutions

Today’s complex geopolitical environment has created entirely new challenges for America’s researchers

• Should I collaborate with individuals from this foreign entity?
• Does THIS collaborating foreign university have problematic ties to a military?
• Is it OK to be funded by THIS foreign government?
• Does partnering with THIS foreign company pose a threat to my research?
• Can I have a dual appointment with THIS foreign institution?
• Can I talk OPENLY about my research at an international conference?
• Can my graduate student accept a scholarship from THIS foreign organization?
Challenges Faced by U.S. Funding Agencies

Federal grant funding agencies such as NSF face their own set of challenges

- Are any researchers on THIS grant proposal part of a malignant foreign talent recruitment program?
- Have researchers on THIS proposal disclosed their conflicts of interest?
- Has THIS U.S. proposing university properly disclosed its large foreign gifts?
- Has THIS researcher plagiarized material in a grant proposal from another pending proposal improperly obtained?
- Does THIS research potentially have dual civilian and military applications?
Interest and Actions by the **U.S. Government**

- **The White House**
  - Issued National Security Presidential Memorandum #33 (**NSPM-33**) and follow-on documents
    - Specific **guidance to agencies** regarding disclosure requirements, research security programs, researcher training in research security, and more

- **Congress**
  - **Great concern** – several studies, hearings, and proposed legislation
  - **Competition with China** is a key focus
  - **CHIPS and Science Act of 2022** contains numerous research security requirements for grant-making agencies, **including NSF**

- **Funding Agencies**
  - Have created **risk assessment frameworks, guidance** to researchers
Interest and Actions by Academia

- Some universities have established research security offices or programs but have little guidance about how to use them.
- MIT has developed a framework for collaborating with China that is being considered by many others.
- Cost is a major concern, especially for minority serving, emerging, and rural institutions – could range from $100K to more than $1 million per year.
- Concerns persist that the U.S. is perceived as not desiring international collaboration.
- Potential complexity of managing research security challenges is causing some researchers to forsake international collaboration.
JASON Study Questions

Specific questions to be addressed in the JASON study:

1. What are the general principles that NSF might use in developing lists of research/technology areas of concern?

2. What existing structure and guidance for federal Controlled Unclassified Information (CUI) might be applicable to identifying NSF-funded research/technology areas of concern.

3. What processes might NSF establish for annually reviewing its list of research/technology areas of concern?

4. Using one or more specific research/technology areas, as examples, what detailed evaluation criteria might NSF use for identifying research/technology areas of concern?

5. What are some of the potential impacts on the research community should some NSF-funded research areas be designated as areas of concern?

6. What processes and restrictions might be implemented to carry out research that falls within the NSF-designated CUI category?
Advancing Responsible International Research & Collaboration

Canada’s Approach to Research Security

Shawn McGuirk, PhD
Deputy Director, Research Security – Natural Sciences and Engineering Research Council of Canada (NSERC)
Table of contents

1. Canada’s approach to research security
2. Resources and tools for the research community
3. NSERC and the National Security Guidelines for Research Partnerships
4. New policy directions, and next steps
Canada’s approach to research security
Canada’s approach to research security

Research security & federal research funding – a timeline

- **2018** – The Government of Canada (GoC)–Universities Working Group is created.

- **2020** – *Safeguarding Your Research* portal published; Ministers task the federal funding organizations (NSERC, SSHRC, CIHR, CFI) to review their policies for research security.

- **Spring 2021** – Ministers task the GoC–Universities Working Group to develop the *National Security Guidelines for Research Partnerships* (the NSGRP), in 90 days.

- **Summer 2021** – NSGRP applied immediately as a pilot to NSERC’s Alliance program.

- **Spring 2022** – Canada invests in research security, via a federal Research Security Centre and funding for post-secondary institutions via the Research Support Fund.

- **Spring 2023** – Update to the *Agreement on the Administration of Agency Grants and Awards by Research Institutions*; Ministers request new policy measures.
Canada’s approach to research security

Canadian Key Principles

Canada’s research ecosystem needs to be as open as possible and as secure as necessary, so that it benefits Canada, Canadians, and the global good.

The Government of Canada, granting agencies, and research community have a shared responsibility to:

• Protect the integrity of our research ecosystem and to safeguard it from activities that undermine its principles of openness, transparency, merit, academic freedom, and reciprocity; and,

• Ensure that research security measures (new and existing) do not lead to discrimination against or profiling of any member of the community.

Dialogue and collaboration between all parties in the research ecosystem is critical, so that we can adopt clear and proportionate, and ensure that research security measures are:

• Well understood and implementable by researchers and institutions;

• Proportionate to the level of risk; and

• Balanced with existing, shared commitments (e.g., to open science and EDI).
Canada’s approach to research security

Research Security & Responsible Internationalization

- NSERC and Canada support research security and responsible internationalization through international initiatives founded on the principle of advancing research collaboration:
  - Canada’s co-chairing of the G7 Working Group on the Security and Integrity of the Global Research Ecosystem (SIGRE)
  - NSERC’s Chairing (2023-25) and founding membership in the Global Research Council
  - Contributing to OECD study on Integrity and security in the global research ecosystem
  - Participating in other multi-country dialogues, such as between Five-Eyes countries
- NSERC and Canada provides specific opportunities for international collaboration, including:
  - Alliance International Catalyst Grants & Collaboration Grants
  - New Frontiers in Research Fund
    2023 International Joint Initiative for Research in Climate Change Adaptation and Mitigation Competition
  - NSF Global Centers (GC)
    Addressing Global Challenges in Climate Change and Clean Energy
Canada’s approach to research security

G7 Common Values and Principles on Research Security and Integrity

• Research security actions **protect the integrity of research**, with emphasis on **protecting against threats to national and economic security**. This includes actions that protect against the theft and misappropriation of research, the unauthorized transfer of ideas, research outcomes, and intellectual property. As a set of activities, research security encompasses:

  • The **identification of possible risks** to research by states, militaries, and their proxies, as well as by non-state actors and organized criminal activity; and

  • The activities that **protect research** inputs and processes, research outcomes, and intellectual property (including sensitive research and personal data) from **interference & misappropriation**.

• Identifying and mitigating risks yields positive impacts by protecting and promoting research integrity and trust. Appropriate and risk-targeted measures can enhance the foundations of academic freedom, research integrity, open science, transparency, and trusted collaborations for mutual benefit.

• Disproportionate research security measures can lead to restrictions on scientific and academic freedom and openness (e.g., discouraging fruitful and positive collaborations). In worst cases, this can lead to **racial profiling** and may also **erode the benefits of international collaboration**. .
Resources and tools for the research community
Safeguarding Science
Promoting Awareness of Chemical, Biological, Radiological, and Nuclear Security Risks, and the Potential Proliferation of Dual-use Technology
Canada’s Research Security Centre

Roles of the RSC

- Source of Advice and Guidance (Safeguarding Science workshops, symposiums, bilateral engagements, etc)
- Conduit or entry point for the research community to access government services
- Implementation of the National Security Guidelines for research partnerships

Research Security Regional Advisors

- Victoria: Nigel Fitch
- Edmonton: Erin Dorgan
- Waterloo: Jennifer Weese
- Quebec City: Laurie-Ève Rioux
- Halifax: TBC
- Toronto Area: Todd Bielarczyk

Supporting Canada’s Research Community to protect research and intellectual property
Research security funding was announced in Budget 2022

Allocated through the RSF’s Incremental Projects Grants, as one of five IPG priorities.

Aims to build capacity within postsecondary institutions to identify, assess and mitigate the potential risks to research security, as

Total investments in research security: $125 million over five years, starting in 2023, in addition to the existing investments for the RSF & IPGs.

Funding per institution is calculated as % of institution’s

Eligibility is assessed annually.

To be eligible, institutions must receive over $2M in direct research funding.

Funding is awarded annually. Institutions must re-apply and meet all terms and conditions to
Safeguarding Research in Canada: 
A Guide for University Policies and Practices

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SecureScholar.ca

- Web application to help institutions evaluate research projects based on risks identified in the NSGRP.
- Database includes millions of public records from a variety of sources.
- Created by the U15 and made available as a private Beta to Canadian institutions.
- NSERC provided seed funding to advance delivery of this tool to Canadian institutions.
- Further development and features will be based on institutional and user feedback.
NSERC & the National Security Guidelines for Research Partnerships
Collaboration: Challenging research topics require collaboration with researchers both domestic and international, who bring a diversity of talents, capabilities, and perspectives. In tandem with the principles of academic freedom and institutional autonomy, research collaboration encourages the free flow of ideas and research. **Research collaboration must be encouraged and enabled between people, institutions, and organizations who share common research goals and values.**
The National Security Guidelines for Research Partnerships

Implementation of the NSGRP in NSERC’s Alliance grants program

- Since July 23, 2021, Alliance applications with a private sector partner organization must be submitted with a completed Risk Assessment Form.

- NSERC’s dedicated Research Security Team reviews the Risk Assessment Form as part of the administrative process, prior to merit review. This process includes ensuring completeness of the form as well as an administrative risk validation using open-source intelligence (OSINT) methods.

- Any application with possible or identified risks is referred to NSERC’s Risk Assessment Committee. The majority of applications are cleared by NSERC at this level.

- Where necessary (~4% of cases), NSERC requests national security risk assessment and advice. These are cases where:
  - the nature of the proposed research could be deemed sensitive and
  - the private sector partner organizations were identified from open-source information to be:
    - associated with, or originating from, countries/organizations under sanctions, and/or
    - associated with criminal or ethical concerns.
The National Security Guidelines for Research Partnerships

Implementation of the NSGRP in NSERC’s Alliance grants program

• On request by NSERC, Canada’s national security departments and agencies assess the risks associated with the research partnership, consider the proposed mitigations, and provide advice to inform NSERC’s funding decision.

• NSERC makes its funding decision by considering the results of the merit review and, where applicable, the national security advice received.

• If a research partnership proposal is assessed to present an unacceptable risk to Canada’s national security and/or where risks cannot be appropriately mitigated, research funding will be declined.

• When NSERC notifies applicants of its funding decision:
  • NSERC communicates new/relevant information from security agencies in the decision letter
  • Applicants are offered the opportunity to request a meeting (with NSERC & Public Safety)
  • In all cases, NSERC points applicants to resources on the Safeguarding Your Research portal
NSERC analyzed data from the pilot in Alliance (July 2021 – July 2022). As of March 31, 2023:

<table>
<thead>
<tr>
<th>Status of applications received with a Risk Assessment Form (RAF)</th>
</tr>
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<tbody>
<tr>
<td>7.7 % Applications rejected due to research security administrative review</td>
</tr>
<tr>
<td>0.6% Applications still under evaluation</td>
</tr>
<tr>
<td>57.9% Applications funded by NSERC without requiring national security risk assessment</td>
</tr>
<tr>
<td>29.8% Applications not funded due to program administrative or merit review</td>
</tr>
<tr>
<td>4% Applications referred to national security agencies for risk assessment and advice</td>
</tr>
</tbody>
</table>

- NSERC’s administrative risk validation adds on average 1-2 days to the processing time of ~96% of Alliance applications.
- Processing time was exceptionally delayed in the ~4% of cases where applications required advice from the national security departments and agencies; processes have improved, and clearer service standards will be set.
- Success rates for applications to the Alliance program have not changed, including for applicants who self-identified as a visible minority.
The National Security Guidelines for Research Partnerships

Impact of the NSGRP on NSERC’s Alliance grants program

NSERC’s Alliance program is undergoing an evaluation, where applicants responded to a survey with questions about the NS Guidelines and their impact on their decision to apply for funding.

In response, NSERC has increased promotion of the Safeguarding your Research’ (SYR) portal and support in completing the RAF:

- Return (no longer reject) applications to fix administrative errors on the RAF.
- Bilingual office hours for university research grant offices (RGOs)
- Institution-specific Q&A / best practices sessions
- New guidance on conducting open-source due diligence on the SYR portal
- New guidance on mitigating research security risks on the SYR portal

Most respondents requested additional training and resources to assist researchers and institutional staff in completing the Risk Assessment Form.
The National Security Guidelines for Research Partnerships

**Impact of the NSGRP on NSERC’s Alliance grants program**

- The **pilot stage** of the NSGRP in NSERC’s Alliance grants program is completed. Impact includes:
  - ~40% of grants funded with no risks identified
  - ~60% of grants funded with risks identified, appropriately mitigated by a **risk mitigation plan**
- Lessons learned and community feedback led to an updated Risk Assessment Form in March 2023. with increased **clarity** and **usability**, and with greater focus on EDI and **non-discrimination**.
- First annual **Progress Report** on the Implementation of the NSGRP will be published this Summer.
- The next phases of implementation will be **gradual, risk-based**, and **limited** to funding opportunities that support partnerships. Further details will be announced in funding opportunity literature.
- To date, the NSGRP were also introduced to the second stage of the joint **Canada Biomedical Research Fund and Biosciences Research Infrastructure Fund** competition.
New policy directions & next steps
New policy directions & next steps

New Research Security Policy

In February 2023, a new tri-ministerial statement on protecting Canada’s research requested new measures:

“Research grant applications proposing to conduct research in a sensitive research area will not be funded if any of the researchers working on the project are affiliated with a university, research institute or laboratory connected to military, national defence or state security entities of foreign state actors that pose a risk to Canada’s national security.”

The federal granting agencies (NSERC, SSHRC, CIHR) and the CFI are working in close collaboration, alongside Government of Canada partners and the GoC-Universities Working Group, to develop the requested policy approach and assess its impact on our processes.
New policy directions & next steps

New Research Security Policy

• Starting in March 2023, NSERC has notified researchers and institutions about the upcoming measures by appending a letter on enhancing Canada’s research security to all Notices of Decision (NODs) of research grant awards. The letter and a Frequently Asked Questions document have also been shared with research grant offices.

  • A similar approach is being followed by the other granting agencies.

• Significant work has been underway to develop a risk-targeted, science-appropriate, and transparent policy, with clear definitions, guidance, and lists for use by the research community.

• This policy is distinct from the NSGRP and has not yet been implemented.

• Clear guidance and timelines will be provided by the Government of Canada and by federal granting agencies to ensure that the research community can understand and comply with the new policy.
Questions?
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