Broadening Our Understanding of Research Integrity

2025 WE/MW Section Meeting Session T305, 27 March 2025, 11:30-12:30
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BLUF

- We tend to think of research integrity at the level of the individual
- Focusing instead on the integrity of our research ecosystem as a whole – we see new connections
- Research ethics, research security, and responsible conduct of research all reinforce the integrity of our research ecosystem
- The inverse is also true – threats to each of these weaken the integrity of the system
- Reciprocity, transparency, honesty, accountability, fairness are critical to safeguarding our research ecosystem
- Threats to national security are threats to these core principles and values and to the research ecosystem
- By broadening our understanding of research integrity and working collaboratively we can create a resilient and thriving research ecosystem

Part 1

Research Security Primer

What Is Research Security?

- Safeguarding the research enterprise against the misappropriation of research and development to the detriment of national or economic security, related violations of research integrity and foreign government interference (US National Science Foundation)

- The efforts to safeguard research and researchers against foreign interference or espionage activities. Unwanted knowledge transfers can also affect **the integrity of Canada's research ecosystem** by undermining established and shared research practices that include behaving honestly, accountably, openly, and fairly in the search for and in the dissemination of knowledge to the mutual and reciprocal benefit of all partners involved (Safeguarding Your Research)

Threat Vectors and Targets

Targets

- Foundational and applied research
- Infrastructure and institutions
- Data, datasets, blueprints
- Talent and know-how
- Technology
- Access and influence
- Positions, plans, and strategies
- Intellectual property

Vectors

- Partnerships, collaborations, agreements (formal and informal)
- Insider threats
- Donations, gifts, investments
- Talent Programs and scholarships
- Traditional intelligence operations
- Travel and conferences
- Cyber
- Supply Chain / procurement

Part 2

Research Security and Research Integrity

What Is Research Integrity?

- Scientific integrity is the adherence to professional practices, ethical behavior, and the principles of honesty and objectivity when conducting, managing, using the results of, and communicating about science and scientific activities. Inclusivity, transparency, and protection from inappropriate influence are hallmarks of scientific integrity (US National Science Foundation)
- The coherent and consistent application of values and principles essential to encouraging and achieving excellence in the search for, and dissemination of, knowledge. These values include honesty, fairness, trust, accountability, and openness.
- Research integrity means conducting research in such a way that allows others to have confidence and trust in the methods and the findings of the research. It relates both to the scientific integrity of conducted research and to the professional integrity of researchers (Council of Canadian Academies).

Responsible Conduct of Research

What is responsible conduct of research?

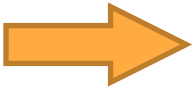
The behavior expected of anyone who conducts or supports research activities throughout the life cycle of a research project. It involves the awareness and application of established professional **norms,** as well as **values and ethical principles** that are essential in the performance of all activities related to research. These values include **honesty, fairness, trust, accountability, and openness.** (Responsible Conduct of Research Framework 2021)

Key elements: rigour, recordkeeping, accurate referencing, authorship, acknowledgement, conflict of interest management.

Society places a trust in university scholars and researchers not only to pursue knowledge, but to do so in a manner that respects and promotes fundamental values of honesty, fairness, beneficence and freedom from exploitation. (University of Alberta Research and Scholarship Integrity Policy)

Research Security – Element of Research Integrity

Core aspects of research integrity and responsible conduct of research

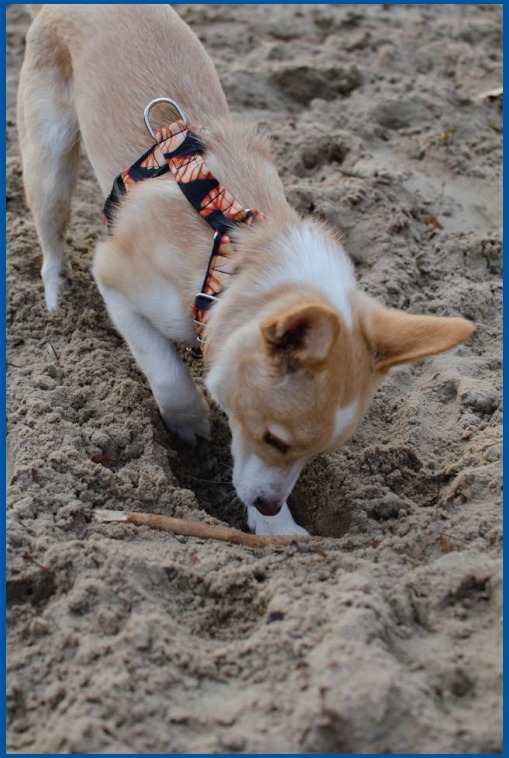


- Trust
- Honesty
- Fairness
- Accountability
- Openness
- Shared norms, values, ethics

- These are undermined by threats to research security
- Foreign interference and espionage threaten the integrity of our research ecosystem

Part 3

Case Studies & Scenarios



Scenario: Access to Confidential Biodata

Red Genes: Assessing WuXi AppTec's Ties to the Party-Army-State in China

The Washington Post

U.S. officials caution companies about risks of working with Chinese entities in AI and biotech

JDSUPRA

The BIOSECURE Act: Proposed New Legislation Could Affect U.S. Companies' Plans to Contract With Chinese Biotechnology Companies

FACT SHEET: President Biden Issues Executive Order to Protect Americans' Sensitive Personal Data

China's gene giant harvests data from millions of women

SRA INTERNATIONAL

Discussion

- What are the implications of these scenarios for research integrity?
- What would the research ethics team at your institution consider?
- Which policies or procedures might apply?
- What steps could be taken to continue engagement while reducing ethical and security risks?
- What are the connections between research security and research integrity demonstrated here?

Scenario:
Talent Plan Participation and Conflict of Interest

- Researchers in malign foreign talent plans may be required to:
  - Engage in unauthorized transfer of data, materials, research
  - Hire certain individuals for graduate or post-graduate work
  - Publish or patent in the jurisdiction of the foreign state supporting the plan
  - Keep confidential from their primary institution their involvement in the plan
  - Conduct research in a foreign state and possibly create a 'shadow lab'

- Case study:

Ex-Harvard Professor Sentenced in China Ties Case

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Scenario: Sensitive or Dual Use Research

- AI for drug discovery, misused to create biochemical weapons
- Genetic weapons

Other food for thought:

- Horsepox case
- 'Superblood' (universal donor blood and battlefield)
- 'Supersoldiers' and neural implants
- Genetic-level surveillance

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Part 4

Connection Points and Opportunity to Collaborate

Core Concepts

Key Aspects of Research Ethics

- Conflict of interest
- Public good
- Privacy and confidentiality
- Use and disclosure of personal information
- Free and informed consent
- Compliance with ethical, legal, regulatory requirements
- Consider vulnerability, rights, welfare of participant populations

Key Aspects of Research Security

- Know Your Research: Consider impacts and applications of research. As open as possible, as secure as necessary.
- Know Your Partner: Transparency, reciprocity, disclosure

Areas for Exploration

- Working collaboratively – nationally and internationally to integrate research security into research integrity frameworks.
- Finding intersections – opportunities to consult with colleagues and integrate research security into broader ethical discussions and decision making.
- Research on research security - applying the lens of research integrity.
- Collaborative efforts to shore up integrity and resilience across all aspects of the research ecosystem.

Thank You!

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