

Responsible Conduct of Research

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Seminar for Undergraduate Researchers
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**What are the ethical issues
facing researchers?**

**What is Responsible
Conduct of Research (RCR)?**



Research integrity:

Conducting research in ways that follow or exemplify the standards established by professionals and society.

Research misconduct:

Behaviors that significantly compromise the accuracy of the research record or the proper professional conduct of research.

Research misconduct

The three most common practices are:

1) **Falsification** – the practice of omitting or altering research materials, equipment, data, or processes in such a way that the results of the research are no longer accurately reflected in the research record.

Research misconduct

The three most common practices are:

1) Falsification

2) Fabrication - the practice of inventing data or results and recording and/or reporting them in the research record.

Research misconduct

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1) Falsification

2) Fabrication

3) Plagiarism – appropriating the work of another individual and presenting it as if it were one's own or without credit to the originator

Research misconduct

The three most common practices are:

- 1) Falsification
- 2) Fabrication
- 3) Plagiarism

Questionable Research Practices -little things that we sometimes do that we think won't be particularly harmful, but when taken all together, erode the integrity of the research process.

COMMENTARY

Scientists behaving badly

To protect the integrity of science, we must look beyond falsification, fabrication and plagiarism, to a wider range of questionable research practices, argue **Brian C. Martinson**, **Melissa S. Anderson** and **Raymond de Vries**.

Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)

| Top ten behaviours | All | Mid-career | Early-career |
|--|------|------------|--------------|
| 1. Falsifying or 'cooking' research data | 0.3 | 0.2 | 0.5 |
| 2. Ignoring major aspects of human-subject requirements | 0.3 | 0.3 | 0.4 |
| 3. Not properly disclosing involvement in firms whose products are based on one's own research | 0.3 | 0.4 | 0.3 |
| 4. Relationships with students, research subjects or clients that may be interpreted as questionable | 1.4 | 1.3 | 1.4 |
| 5. Using another's ideas without obtaining permission or giving due credit | 1.4 | 1.7 | 1.0 |
| 6. Unauthorized use of confidential information in connection with one's own research | 1.7 | 2.4 | 0.8 *** |
| 7. Failing to present data that contradict one's own previous research | 6.0 | 6.5 | 5.3 |
| 8. Circumventing certain minor aspects of human-subject requirements | 7.6 | 9.0 | 6.0 ** |
| 9. Overlooking others' use of flawed data or questionable interpretation of data | 12.5 | 12.2 | 12.8 |
| 10. Changing the design, methodology or results of a study in response to pressure from a funding source | 15.5 | 20.6 | 9.5 *** |

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| Other behaviours | | | |
| 11. Publishing the same data or results in two or more publications | 4.7 | 5.9 | 3.4 ** |
| 12. Inappropriately assigning authorship credit | 10.0 | 12.3 | 7.4 *** |
| 13. Withholding details of methodology or results in papers or proposals | 10.8 | 12.4 | 8.9 ** |
| 14. Using inadequate or inappropriate research designs | 13.5 | 14.6 | 12.2 |
| 15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate | 15.3 | 14.3 | 16.5 |
| 16. Inadequate record keeping related to research projects | 27.5 | 27.7 | 27.3 |

Note: significance of χ^2 tests of differences between mid- and early-career scientists are noted by ** ($P < 0.01$) and *** ($P < 0.001$).



Michigan Technological University
Department of Biological Sciences

Commonly Accepted Practices

Institutional Standards

Government Standards

Personal Ethics

Professional Standards

Singapore Statement on Research Integrity

...principles and responsibilities
for research worldwide...

Home

Statement

Translations

Coverage

Next Steps

🌐 Preamble

The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

🌐 Principles

Honesty in all aspects of research
Accountability in the conduct of research
Professional courtesy and fairness in working with others
Good stewardship of research on behalf of others

<http://www.singaporestatement.org/>

Michigan Tech

Michigan Technological University
Department of Biological Sciences

RESEARCH

Research > Integrity and Compliance > Misconduct

OUR RESEARCH

ADMINISTRATION

VP for Research Office

Integrity and Compliance

Conflict of Interest -

Export Controls and Foreign -
Nationals

IRBNet -

Misconduct -

Occupational Safety and -
Health Services

Responsible Conduct of -
Research

Review Boards -

Sponsored Programs

Innovation and Industry
Engagement

Misconduct


Michigan Tech strives to promote an atmosphere of honesty and integrity among its faculty, students, and staff, and requires all research to be carried out in a manner reflective of these principles. Misconduct in research is a matter of concern to the University, individual scientists, sponsors of research, and the general public.


"Misconduct" or "Misconduct in Research" means fabrication, falsification, plagiarism, deception, misrepresentation, arbitrary selection of data in proposing, performing, reviewing research, or reporting research results. It does not include honest error or honest difference in interpretations or judgments of data. All allegations of research misconduct undergo inquiry, investigation and hearing phases as needed.


ARRA Whistleblower Protection Notification

The University has been awarded funding for research, student support, or other needs from the American Recovery and Reinvestment Act of 2009 (ARRA). In order to accept ARRA funding, employers must have in place procedures prohibiting retaliation against employees who make good faith reports of misconduct. The University already has such procedures, and will provide appropriate support to reporting employees to protect against retaliation and respond to concerns of retaliation or unfair treatment linked to the employee's reporting.


RESOURCES

Misconduct in Research,
Scholarly, and Creative
Endeavors 

Procedures for Responding to
Allegations of Misconduct in
Research, Scholarly, and
Creative Endeavors 

Ethics Internet Sites 

Types of Plagiarism in Research

Introduction to the Responsible
Conduct of Research 

Graduate School RCR

WHISTLEBLOWER

Ethics Point

<http://www.mtu.edu/research/administration/integrity-compliance/misconduct/>

Scenarios

- **Discuss the following:**
 - **What is the cause for concern (either an action or inaction)?**
 - **Who or what might be affected and how?**
 - **Are there any laws or regulations that might apply? (e.g. Singapore Statement)**
 - **What actions might be taken?**
 - **How could this situation have been avoided?**

Best Practices for Student Researchers

- Research time
 - On time, prepared, engaged, stay for duration
- Equipment use
 - Learn proper procedures to obtain meaningful results, ensure safety
- Recording
 - Record research activities and results in laboratory notebook so that your work can be replicated by somebody else
- Ask questions
 - About anything you don't understand
- Share your results
 - To facilitate the growth of collective wisdom of group and field
- Respect
 - By listening to ideas, accepting help, helping others and sharing credit
- Acknowledge personal limitations
 - Own up to limitations, not creating, manipulating, erasing or in any manner altering data
- Confronting acts of misconduct





Questions?
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