



# Responsible Conduct of Research

## USM Graduate Student Research Symposium

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# Why is This Important?

"Science is inherently **a social enterprise** ... With few exceptions, scientific research **cannot be done without drawing on the work of others or collaborating with others.**"

*"On Being a Scientist: Responsible Conduct in Research" (1995)  
National Academies of Science*



# Defining Ethics

- Ethics are rules and/or norms for conduct that distinguish between right and wrong, and between acceptable and unacceptable behavior
  - The Golden Rule ("Do unto others as you would have them do unto you")
  - The Hippocratic Oath ("First of all, do no harm")
  - The Ten Commandments ("Thou shalt not kill...")

*David B. Resnick, "What is Ethics in Research & Why is It Important?"  
Feb. 23, 2007, NIEHS web site*



# Research Ethics

"Research Ethics is a kind of **applied or practical ethics**, meaning that it attempts to resolve not merely **general issues** but also **specific problems** that arise in the conduct of research. ... It aims to establish practical moral norms and standards for the conduct of research."

*Lucinda Peach, "An Introduction to Ethical Theory" in  
Research Ethics: Cases and Materials, Robin Levin Penslar (Ed)  
(1995) Indiana University Press*



# Federal Definition of Research Misconduct

"Misconduct means fabrication, falsification, or plagiarism in proposing or performing research funded by NSF, reviewing research proposals submitted to NSF, or in reporting research results funded by NSF." *45 C.F.R. §689.1*

Research misconduct does **not** include **honest error** or differences of opinion.

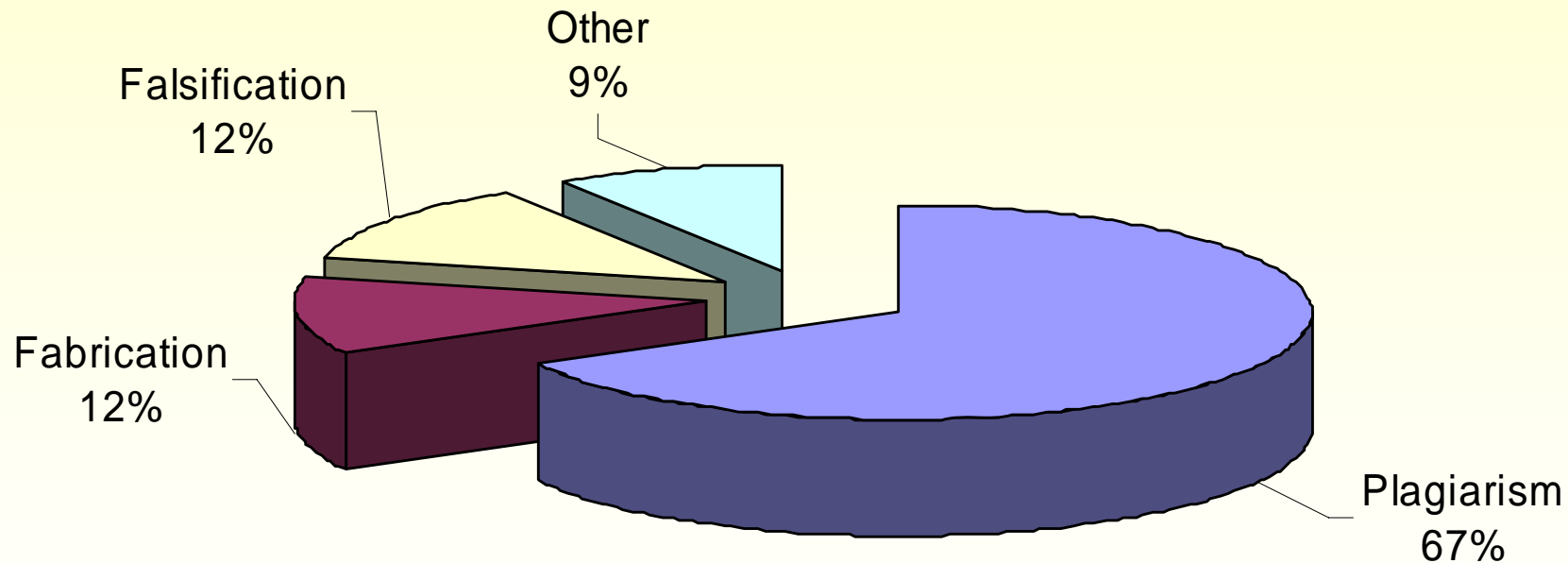


# Research Misconduct

- **Fabrication:** making up data or results and recording or reporting them.
- **Falsification:** manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.
- **Plagiarism:** the appropriation of another person's ideas, processes or words without giving appropriate credit.



# Research Misconduct Findings NSF, FY 2000





# Plagiarism Cases

- Professor at university in Oregon reviews proposal for NSF, then plagiarizes from it into his own proposal
- Professor at university in New York plagiarizes extensive text from multiple sources in NSF proposal, two NSF-funded publications—blames post-doc
- Professor at a university in Texas resigns from his tenure-track position after a university investigation concluded that he had plagiarized text into CAREER proposals submitted to NSF



## Other Misconduct Cases

- Recent Ph.D. submits proposal seeking funds for already completed research
- PI claims several manuscripts were "submitted" when they were not—~40 misrepresentations in 7 proposals to 5 different entities
- PI received grant to facilitate an international collaboration, then repeatedly falsifies project reports, reporting a non-existent relationship with a foreign scientist
- Graduate student falsifies and fabricates data in four manuscripts (three of which were published) because of "a combination of lack of motivation, laziness and a lack of interest in the work (especially experiments)."



# How NSF Handles Research Misconduct

- Allegations are investigated by the Office of the Inspector General (OIG), which makes recommendations on findings and actions to NSF's Deputy Director, who makes final decision
- A finding of misconduct by NSF requires:
  - A significant departure from accepted practices;
  - That the act was committed knowingly, willingly or recklessly; and
  - Support for the allegation is proven by a preponderance of the evidence



# What are the Consequences?

- Criminal cases (involve fraud, false statements) can result in fines, jail time
- Administrative cases have variety of outcomes:
  - Letter of reprimand sent only to the subject
  - Letter of reprimand sent to institution
  - Require certifications from researcher and/or assurances from researcher's Dean or Department Chair on future submissions
  - Debarment from receiving federal funds (1-5 years)
- Jobs can be lost, degrees can be rescinded



# Useful Tips to Avoid Research Misconduct

- Copyright permission/public domain doesn't absolve one of plagiarism
- Plagiarism includes copying text or ideas
- Even paraphrasing requires citation
- "NSF expects strict adherence to the rules of proper scholarship and attribution" for the *whole* proposal
- All authors share the credit or allegation equally unless evidence shows otherwise



# Useful Tips to Avoid Research Misconduct

- Avoid “cleaning up” the figures
  - If the editor requires it, get it in writing
  - Report the “enhancements” in the paper/proposal
- Review your students'/postdocs' data
- Keep good records/notebooks
- Keep raw data



# Other Ethical Issues

- Conflicts of Interest
  - Balancing and disclosing financial and commitment conflicts
- Research using Human Subjects
  - Federal regulations based on ethical principles outlined in Belmont Report (1979):
    - Respect for Persons (informed consent)
    - Beneficence (to individual and to society, risk vs. benefit)
    - Justice (fairness in distribution, access)
  - Institutional Review Board
- Animal Welfare
  - Institutional Animal Care and Use Committee



# Other Ethical Issues

- Data Selection
  - Full disclosure, "cleaning", falsification, fabrication
- Merit Review
  - Confidentiality
  - Conflicts of Interest
- Sharing and Using Ideas
  - Seminars and meetings
  - Sharing manuscripts, proposals
  - NSF policy on sharing



# Other Ethical Issues

- **Authorship and Acknowledgements**
  - What merits authorship or acknowledgment (people, funding)?
  - How should authors be ordered?
  - Who owns the intellectual property? Who is responsible for content?
- **Collaborations**
  - Consider written agreements on work, authorship, proprietary nature, subsequent use
- **Student/Advisor Relationship**
  - Appropriate attribution for ideas
  - Who "owns" the data/notebooks?



# Encountering a Dilemma

- What policy covers the case?
- What would you do?
- Who would you talk to?



# Know Your University's Policies

- ❑ Conflicts of Interest
- ❑ Research Misconduct
- ❑ Scope (Definition)
- ❑ Who is your contact point?
- ❑ What is the grievance process?
- ❑ Who is the decision-maker and manager of process?
- ❑ Federal Policies govern in absence of University policies, and may supplement existing University policies



**You only have one reputation!**

**Guard it well.**