

Responsible Conduct of Research



Content

- Ethics
- Conflicts of Interest
- Scientific Misconduct
- Responsible Authorship



What is Ethics?

- Can any of you give me a brief statement of what ethics or being ethical means to you?
- Ethics can have different meanings to different people and in different situations



Some Definitions

- “Ethics is what my feelings tell me is right or wrong.”
- “Ethics has to do with religious beliefs.”
- “Being ethical is doing what the law requires.” and
- “Ethics are standards of behavior our society accepts.”

Velacquez, Andre, Shanks & Meyer 2008



Scholarly Codes of Ethics

Scholarly and professional societies and associations have published codes of ethics and conduct

Schools and universities also generally have codes of conduct for students and faculty.



Research & Professional Ethics

There is an important difference between:

Codes of Ethics –
guiding principles and

Codes of Conduct –
rules/regulations



Legal Doesn't Make it Ethical

Can you think of some action that would be considered unethical but not necessarily illegal?



Embellishing a Resume or CV, an ethical Violation?



"Right. But that's not my current CV. That's what my CV might be 'in the future.'"



Conflict of Interest

What comes to mind when you think of *Conflict of Interest*?

Can you give me an example of situations or actions in your work that you think might be a conflict of interest?



**In the academic and scholarly world
what kinds of things might constitute a
Conflict of Interest?**



What About

- Accepting a gift from a student or the parents of a student?
- Tutoring one of your students student after class?
- Accepting payment to tutor a student in one of your classes?



- Hiring a relative or close friend even if they are well-qualified?
- Accepting a gift from a firm doing business with your institution? or
- Having a financial interest in a firm that does business with your institution?



Conflict & Misconduct

- A conflict of interest does not necessarily constitute misconduct.
- Undisclosed and/or unresolved conflicts can lead to allegations of misconduct.



Ways to Avoid Conflicts

- Disclose
- Create a 3rd party responsible entity
- Other?



Conflicts of Interest

- **University policy (and Federal Regulations in the case of sponsored research) dictates that all employees must disclose all significant financial interests, including those of the employee's immediate family (EP 5.214)**
- **Even the appearance of a conflict of interest or bias, whether in research or some other pursuit normally conducted within the University's range of activities, can undermine the public's trust in the institution (EP 5.214)**



Typical Conflicts of Interest

Undisclosed financial interests



- Awarding a contract to a firm in which you have a financial interest.
- Accepting a reward or finders fee for facilitating a contract award.



Not all Conflicts involve money

- Disputes of ownership of intellectual property
- conflict over authorship
- Disagreement over when to publish



Scientific Misconduct

The Federal Definitions

(2Fs & a P)



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, results, or words without giving appropriate credit.”

Note: Differences of opinion or interpretation are not misconduct



Plagiarism

Not Just in Academic Papers

Southern Illinois University Chancellor forced to step down after faculty panel concluded that his new strategic plan contained material he “lifted” from a plan he wrote for his previous employer.



Scientific Misconduct

In addition to FFP, the following generally constitute misconduct:

- Violation of standard codes of scholarly conduct
- Violation of ethical standards in use of human and animal subjects
- Violation of norms of responsible authorship
- Misuse of federal resources



Other Areas of Potential Scientific Misconduct

- Suppression / non-publication of data,
- Failure to keep data for future examination,
- Ghost authorship,
- Not making a reasonable attempt to check findings submitted to for publication, and
- Photo / image manipulation

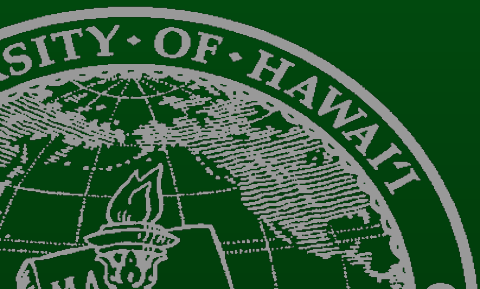


Image Manipulation

- Photo manipulation
 - Splicing together different images to represent a single experiment
 - changing brightness and contrast to leave only the most intense signal
 - Using clone tools to hide information
 - Showing only a part of the photograph so that additional information is not visible



Authorship

Authors must have been involved in:

- Data collection
- Writing of the paper
- Design of the research
- Approval of the final draft

Must be able to defend the Results and conclusions



American Psychological Association Code of Ethics

Principal authorship and other publication credits accurately reflect the relative scientific or professional contributions of the individuals involved, regardless of their relative status





“I didn’t exactly write the article, but ...
well, I didn’t exactly do the research, either.”

From *American Scientist*, Sept-Oct 2004



Responsible authorship



David Zinn

David Zinn



What does not justify authorship?

- Securing funding
- General supervision of the research group
- Securing funding
- General supervision of the research group
- Seniority or outstanding credentials

International Committee of Medical
Journal Editor, 1997, 2001



To be Considered Misconduct, Actions Must :

- Represent a “significant departure from accepted practices”;
- Have been “committed intentionally, or knowingly, or recklessly”; and
- Be “proven by a preponderance of evidence.”



Data Ownership/Management



Researchers generally don't own their data and may not automatically be able to take it with them



Data Ownership and Use

- Federal awards are made to institutions, not individual researchers.
- Institutions claim ownership rights over data collected with federal funds.
- PIs are stewards of federal grants and custodians of research data.



- The PI or the lab is simply the custodian of data.
- Data should be made available for responsible use and the results should be published.
- Use by one individual should not necessarily preclude use by other individuals.



When to Publish?

- Federal agencies wants data generated on research it funds to be published.
- Researches and/or private sponsors sometimes and to wait for additional or better results before publication
- Postdocs and graduate students need publications to jump start their career





Misconduct is a Global Problem

**Cases reported in the following
countries:**

Australia

Canada

China

Denmark

Poland

Finland

Germany

Israel

Japan

Norway

South Africa

South Korea

Sweden

India



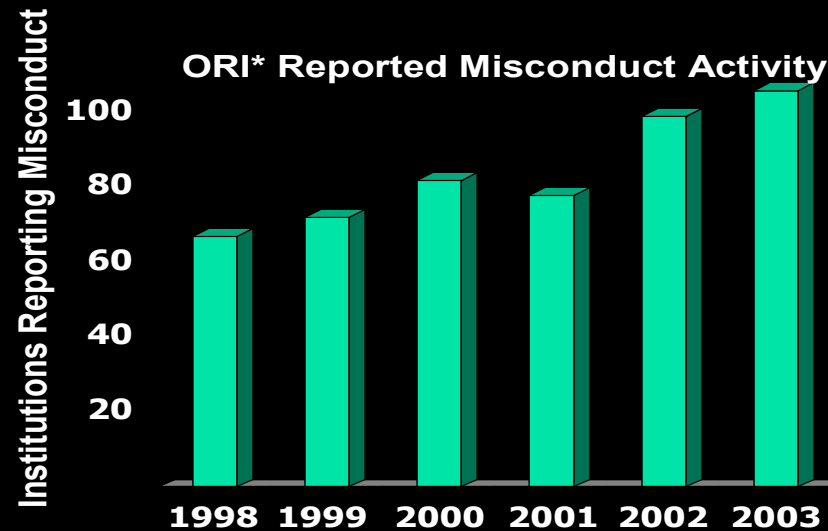
Global Impact

Many countries are making efforts of promote responsible conduct of research

- Requiring formal approvals for foreign researchers to work in the country
- Developing policies / procedures for handling scientific misconduct



How Common is Scientific Misconduct?

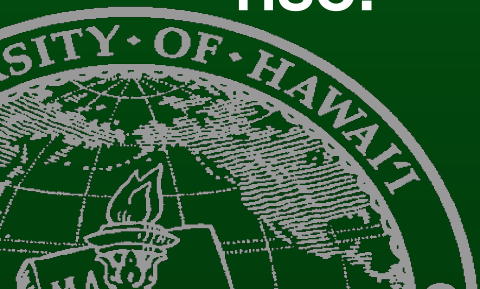


Office of Research Integrity (ORI) established by PHS and NIH in 1992 to respond to allegations of misconduct and promote integrity in research.



How Common is Scientific Misconduct?

- Currently Approximately 3% of the over 3,000 universities and research institutions that report to the ORI have indicated cases of misconduct
- With increased scrutiny and federal accountability the number of cases is on the rise.

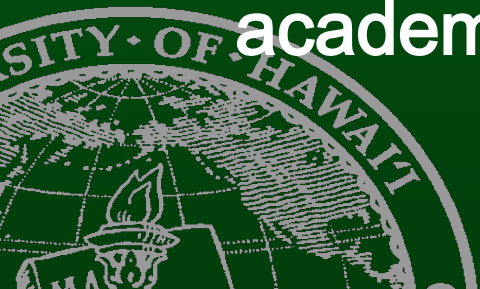


What happens research misconduct become public?



What happens when misconduct become public?

- Major newspapers publish stories with headlines like “Researcher goes to jail for scientific fraud”
- People begin to question whether indeed science is a self-correcting process.
- High profile cases cast public doubt on academic departments and universities.



Recent cases that have received national and international attention

- June 28, 2006

A former University of Vermont professor of medicine was jailed for 1 year and fined for using false data to obtain federal grants.

- March 20, 2006

A South Korean biomedical scientist was dismissed from Seoul National University after he fraudulently reported success cloning of human embryonic stem cells.



- 2005

A former GWU Professor of Engineering was convicted of embezzling \$900,000 from federally funded projects and sentenced to 38 months in prison.

- 2000

Misconduct was alleged in a study of the Yamamano people of Brazil that may have involved manufacturing of data and actions that set off a fatal measles epidemic.



There's a lot of misbehaving going on

“Scientists aren’t saints. Although few falsify results, the field is so competitive that many misbehave in other ways.”

David Goodstein (2002)
Vice Provost and Professor of Physics
California Institute of Technology



According to a 2005 survey with 3,247 respondents conducted for ORI by the University of Minnesota:

- 15.5% Acknowledged changing a study under pressure from sponsor.
- 15.3% Admitted to dropping data based on a gut feeling.
- 12.5% Overlooked other's use of flawed data.
- 10.8% Withheld details of methodology or results
- 7.6% Circumvented minor rules protecting human subjects
- 6.0% Failed to present data that contradicted their own previous research.

Source: Anderson and deVries, 2005



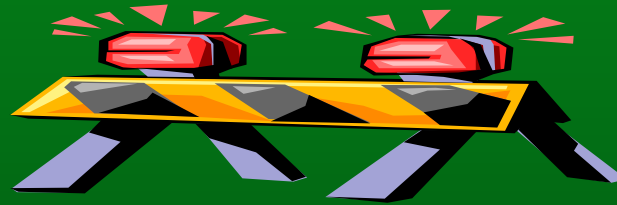
Motivations for Scientific Misconduct

- Career pressure
- Knowing the right answer
- Ability to get away with it
- Greed (opportunity for financial gain)

David Goldstein, 2002



When is the line Crossed



**between an ethical lapse
and Scientific misconduct?**



- NSF uses peer review and special software to identify plagiarism in research proposals and project reports.
- NIH uses forensics statistics and other tools to screen data sets when there is reason to suspect falsification or manipulation.
- ORI employs forensic tools to examine scientific images if it suspects alteration.

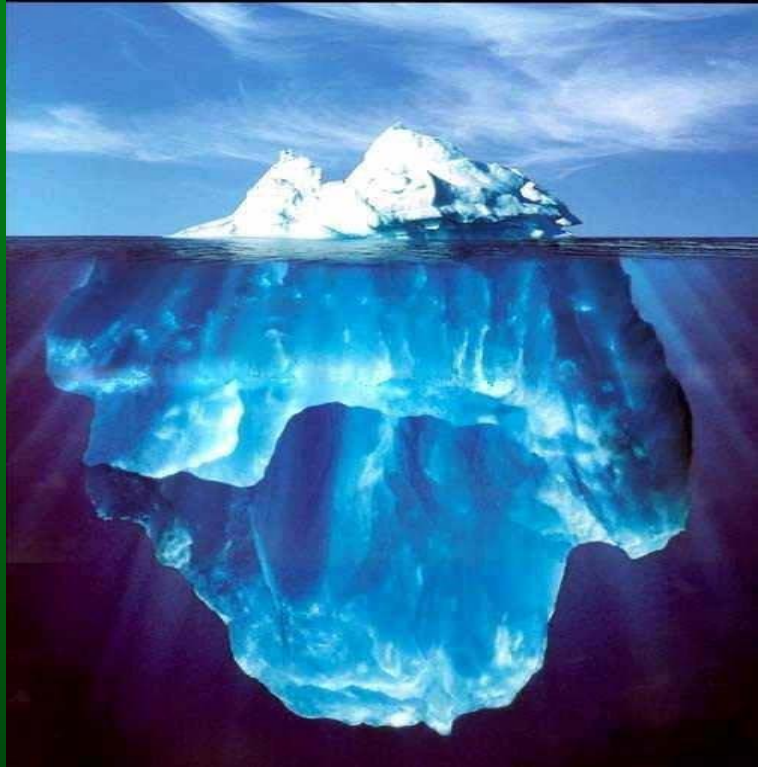


Don't Forget

Big Brother is Watching



This is just the tip of the iceberg

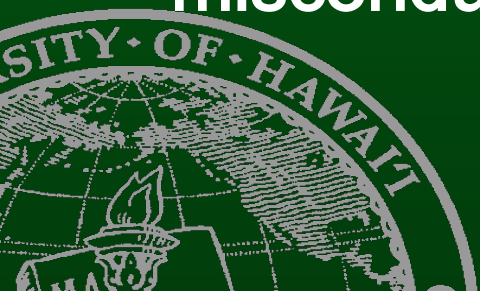


Demand for accountability at the national, state and University level is increasing each year.

Big Brother is getting bigger!



- Universities are now required to have a Research Integrity Officer (RIO) who is responsible for handling allegations of misconduct involving biomedical or behavioral research training supported by the Public Health service.
- Detailed policies and procedures have been developed to guide research institutions in responding to and investigation allegations of misconduct



New tools to detect data manipulation

Statistical techniques are available to detect strange patterns in data including, but not limited to, techniques for studying outlier, inliers, over dispersion, under dispersion and correlations or lack thereof...

These techniques rest upon the premise that it is quite difficult to invent plausible data, particularly highly dimensional multivariate data.”

Source: Marc Buyse, et al, 1997



Consequences

Plagiarism:

- institutional sanction, removal of degree, loss of federal funds, loss of job.

Falsification of data:

- loss of federal funds, loss of job and/or criminal prosecution.

Improper use and/or treatment of research

Subjects:

- loss of all federal funds

Misallocation of funds:

- loss of job and/or criminal prosecution



How to Avoid Problems

Responsible Conduct of Research is “good citizenship applied to professional life.”

- Always report your credentials and your research work honestly, accurately, efficiently and objectively.
- Avoid even the mere perception of a conflict of interest. When in doubt, disclose.
- Agree on roles, responsibilities and authorship with mentors and colleagues before beginning the research.



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