Ethics and the Responsible Conduct of Research

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Director of Research Compliance

What are the rules? Who oversees ethical research?

Regulatory requirements

RCR Sources

Research Ethics

- Professional bodies
- Governmental agencies
- Advocacy groups
- Licensure boards
- Bioethicists
- Legal scholars

Compliance

- Regulations
- Statutes (state laws; U.S. Code)
- Court cases (state; federal, including U.S. Supreme Court)
- U.S. Constitution

Who manages ethics in academia?

- Colleges
- Departments
- Advisors
- Colleagues
- Federal Agencies
- Compliance Offices
- Public

State Ethics Laws

- Different states, different laws.
- These are especially critical if you remain in academia at a public institution.
- These apply to all employees, not just researchers

The "Federal" Responsible Conduct of Research Areas

- Publication Practices and Responsible Authorship
- Data Acquisition, Management, Sharing and Ownership
- **Mentor/Trainee Relationships**
- **Peer Review**
- **Animal Use**
- **Human Subject Use**
- Conflicts of Interest and Commitment
- Collaborative Science
- Research Misconduct

Are graduate students held responsible?

What is my responsibility?

The goal of research

- "The object of research is to extend human knowledge of the physical, biological, or social world beyond what is already known. But an individual's knowledge properly enters the domain of science only after it is presented to others in such a fashion that they can independently judge its validity."

*Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, & Institute of Medicine, 1995, p. 3.

Ethics

- What is right (or wrong) conduct?
- What are our duties (obligations) to others?
- What is appropriate to do in a specific context or situation?
- Derived from moral values about what is good (or bad) for society

Compliance

- "Cooperation or obedience:

  Compliance with the law is expected of all."

(www.dictionary.com)

In science

Ethics + Compliance

=

"Responsible Conduct of Research" (RCR)

(Applies to individuals and institutions)

Responsible Conduct of Research

Responsible conduct of research is defined as the practice of scientific investigation with integrity. It involves the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research.

NIH Notice Number NOT-OD-10-019, 11-2009

Ethical Research

- Requires attention during the planning of a project, the conduct of the work, and the reporting of the results.

- Know the federal regulations pertaining to your project, know local policies, and know the state ethics laws.

Conflict of Interest

- Financial conflict of interest "means a significant financial interest that could directly and significantly affect the design, conduct, or reporting of PHS-funded research."

Promoting Objectivity in Research, 42 CFR s50.603

See Ohio University Policy 19.058 (2012)

Additional Conflicts

- Conflict of commitment (time/effort devoted to primary employer versus outside interests)

- Professional conflict of interest (concern with career advancement; high impact publications; reputation)

Conflict of Interest

- Conflicts should be disclosed (federal rule: $5,000 or more).
- Conflicts can be managed (compliance office will help investigators write conflict management plans).
- Goal: minimize bias (actual or perceived) in the conduct of research.

Case Number 1

- Major research university
- Prominent geneticist
- Head of a large gene therapy institute
- The PI had shares in a biotech company
- Conflict of interest committee told the PI: "Avoid direct participation in the conduct of clinical studies" *

*(R. F. Wilson, 2010, p. 314)

Case Number 1 (cont.)

- Enrolled a young man (he had the disease, but it was well-managed with diet and Rx).
- Consent form did not reveal prior animal deaths.
- Team did not obey adverse event stopping rules.
- Young man's blood levels were outside the limits established by the protocol.
- Changes were made to the consent form without approval by the IRB or FDA.

Case Number 1 (cont.)

- Young man's liver was injected with the experimental gene via adenovirus; he suffered a massive immune system response and died within hours.
- The PI had not isolated himself from the conduct of the trial as directed.*
- FDA stopped the trial.
- Lawsuit (settled).
- The PI lost his role as director of the institute.
- Harm to gene therapy science.

*(R. F. Wilson, 2010, p. 316; J. M. Wilson, 2009, p. 154)

Case Number 1: from the PI, ten years later

"It is absolutely critical that the investigator view the protocol as a document that must be strictly adhered to" (p. 154).

"Upon reflection, I realize . . . The potential for financial conflicts of interest in my role as a sponsor [of the trial] were indeed legitimate" (p. 155).

"My conclusion is that the influence of financial conflicts of interest on the conduct of clinical research can be insidious and very difficult to rule out" (p. 155).

Wilson, J. M. (2009). Lessons Learned. *Molecular Genetics and Metabolism, 96, 151-157.*

Planning

- Do I have special concerns (human subjects and / or animal subjects)?
- What about other controls? Controlled substances, export controls, etc.?
- What are my professional society standards?

Conduct

- Am I aware of supervisory requirements?
- Am I collaborating with another area, do I understand their disciplinary requirements?
- Do I have a data management plan of action?

Reporting

- There are four foundation blocks for reporting research:
  - Honesty
  - Accuracy
  - Efficiency
  - Objectivity

A key component of good science

Data management

Data Management

- Good data management supports good science.

- Understand data responsibilities, requirements and permissions.

Data Management

Scientific Recordkeeping

- Must be: Systematic, accurate, reliable, de-identified and secure.

See Macrina, F. L. (2005). Scientific Record Keeping. In F. L. Macrina *Scientific integrity* (3rd ed., pp. 269-296). Washington DC: ASM Press.

Data problems in publications

- Failing to include # of eligible participants
- Reporting missing data points inaccurately
- Failing to report all pertinent data
- Failing to report negative results
- Allowing research sponsors to influence reporting of results
- Labeling graphs inappropriately
- Reporting percentages rather than actual numbers
- Reporting results of inappropriately applied statistical tests
- Reporting differences when statistical significance is not reached
- Reporting no difference when power is inadequate
- Performing multiple comparisons without correction
- Splitting data into multiple publications
- Reporting conclusions not supported by the data
- Inflating research results for the media

(Marco & Larkin, 2000, pp. 692-693)

Manage your data from the initiation of your project

- Will you have publishing rights?
- Will you have ownership rights?
- What are your responsibilities during data collection of large projects?
- Written agreements at the start can help you avoid problems later.

Avoid Data Privacy Violations

- Store consent forms and data separately
- Keep a tight inventory of who has what data, and where
- Secure identifiable materials and data in double-password protected accounts and locked files
- De-identify data
- Be compliant with FERPA, HIPAA, and IRB.

Ownership

- External funds belong to Ohio University.
- Know the difference between work that is your IP and work that is your mentor's IP.
  - Working on a project does not automatically convey ownership or the right to take data with you when you leave.

Grant or Contract?

- Grants usually allow research data to remain under control of the institution.
- Contracts usually require you to deliver a service or work on a project.
- Your rights to publish and use results are very different under these two scenarios.

The most common RCR complaint

Authorship

Author versus Responsible

- Concept and/or design of a research project
- Data collection and interpretation
- Drafting a manuscript
- Approval of the final version of the manuscript

Authorship

- "Honorary Authorship"
  - Inclusion of names not meeting the requirement for authorship
- Authorship Order
  - Know the requirements of the journal

Case Number 2

- A U.S. professor in the United States collaborated with a renowned scientist in South Korea.
- They reported that they had created “disease-specific cell lines, which had been derived using stem cells from cloned human embryos.”

Case Number 2 (cont.)

- The stem cell data had been fabricated.
- The University of Pittsburgh scientist was first author, but later renounced his lead-author role.
- The paper in *Science* was ultimately retracted.
- The University of Pittsburgh conducted an investigation.

Case Number 2 (cont.)

- “The university panel said there is no evidence that [the scientist] falsified anything or that he was aware of any misconduct. However, it comes down hard on him for “shirk[ing]” his responsibilities when it came to assuring the veracity of the manuscript.”
- Led astray by his “desire for “reputational enhancement.”

Holden, C. (2006, Feb. 17). KOREAN STEM CELL SCANDAL: Schatten: Pitt Panel Finds 'Misbehavior' but Not Misconduct. *Science, 311*(5763), p. 928 . Available http://www.sciencemag.org/content/311/5763/928.full

Case Number 2 (cont.)

- Dr. Woo Suk Hwang, Seoul, South Korea
- Dr. Gerald Schatten, University of Pittsburgh
- Reputations damaged
- Stem cell science harmed

Publication Practices

Peer reviewers and editors are expected to:

- Have sufficient expertise
- Review with impartiality
- Criticize constructively and candidly
- Maintain confidentiality
- Detect misconduct?

ICMJE (2013, December). *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*. Available from http://www.icmje.org/

National Institutes of Health (n.d.). *Confidentiality in NIH Peer Review*. Available from: http://grants.nih.gov/grants/peer/confidentiality_peer_review.htm

Intellectual Property

- Patent (novel and useful inventions)
- Copyright (creative expression)

Council on Governmental Relations (2011, August 1). *A tutorial on technology transfer in U.S. colleges and universities*. Washington, DC: Author.

National Institutes of Health, Division of Extramural Inventions & Technology Resources (DEITR). (n.d.). Intellectual Property Policy. Available from: http://grants.nih.gov/grants/intell-property.htm

U.S. Patent & Trademark Office. Available at: http://www.uspto.gov/

U.S. Copyright Office. Available at: http://www.copyright.gov/

What is a patent?

- The law vests ownership (and royalties) in the inventor.
- Goal: Market useful products to improve society.
- If the science was federally funded, the inventor and university must comply with laws designed to speed transfer of the inventions to the public (entailing patent sharing, licensing and royalty agreements).

U.S. Patent Act of 1952 (USC Title 35)
Bayh-Dole Act of 1980 (Pub. L. No. 96-517)
Federal Technology Transfer Act of 1986 (Pub. L. No. 99-502)

What is a copyright?

- The law vests ownership in the person who created an “original work of authorship.”

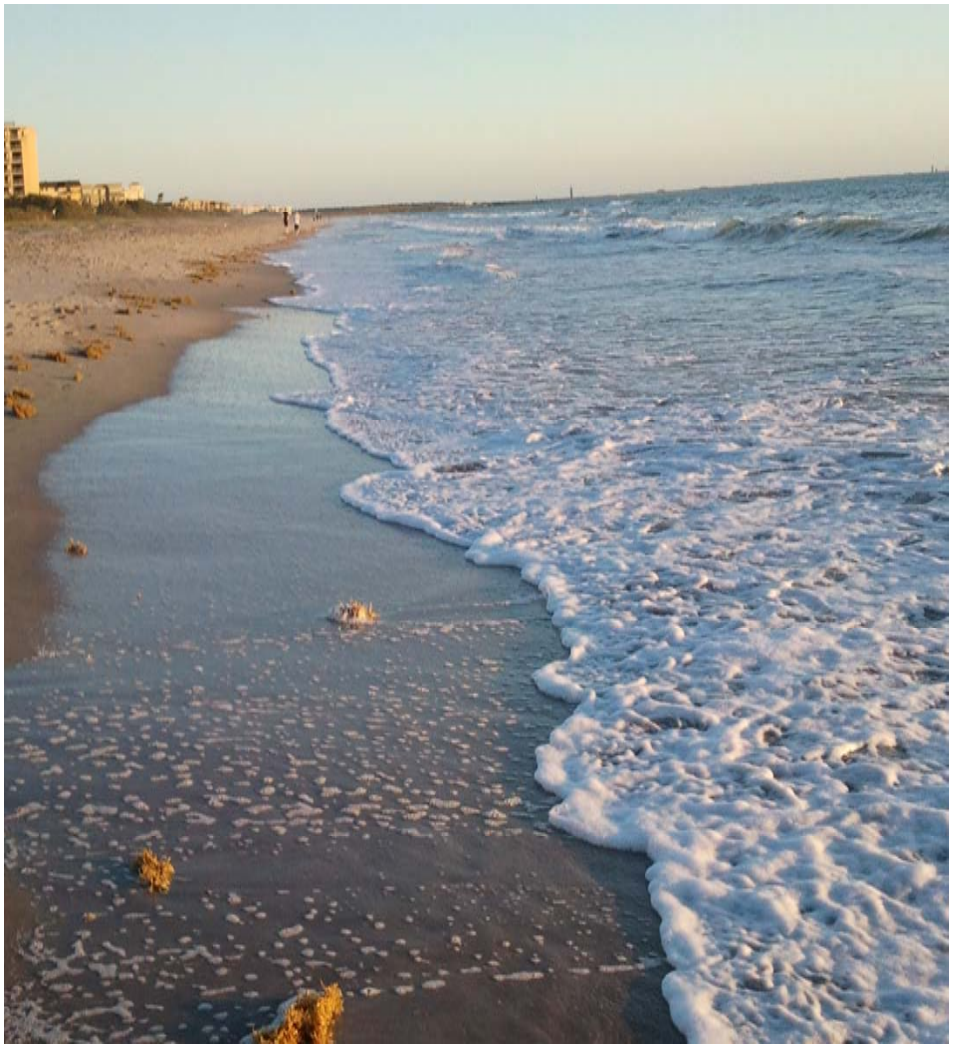
- Goal: Incentivize innovation in science and the arts through dissemination and sharing of creative ideas (while protecting the property interests of creators).

U.S. Copyright Act. Available at: http://www.copyright.gov/title17/

U.S. Copyright Office. (2012, May) *Copyright Basics* [Circular 1]. Available from http://www.copyright.gov/

Copyright Violations

- Without your permission:
  - reproduces the work
  - prepares derivative works based upon your work
  - distributes copies of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending
  - performs the work publicly
  - displays the work publicly
- If you have registered your work with the Copyright Office, you may sue for infringement.
- Only author or co-authors may transfer copyright (in writing) (e.g., to a publisher).



Avoiding the problem

Research Misconduct

Misconduct or Bad Science?

- The federal definition of research misconduct applies to only these areas:
    - Fabrication
    - Falsification
    - Plagiarism
- Bad science can impact your career too.

Research Misconduct

"Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results."

(a) "**Fabrication** is making up data or results and recording or reporting them."

Research Misconduct (cont.)

(b) "**Falsification** is 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."

Research Misconduct (cont.)

(c) “**Plagiarism** is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.”

Research Misconduct (cont.)

(d) “Research misconduct does not include honest error or differences of opinion.”

U.S. Public Health Service. (2005, May 17). Policies on research misconduct. *Federal Register, 70*(94), 28384-28400. Code of Federal Regulations, Title 42, Part 93 available at: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title42/42cfr93_main_02.tpl

Plagiarism

- A concern for everyone.

- There is increased awareness at not only the federal level but at all levels of society.

Plagiarism

- The U.S. Office of Research Integrity "considers plagiarism to include both the theft or misappropriation of intellectual property and the substantial unattributed textual copying of another's work."
- "It does not include authorship or credit disputes."

Office of Research Integrity. (1994, December). *ORI policy on plagiarism*. ORI Newsletter, 3(1). Available from: http://ori.hhs.gov/ori-policy-plagiarism

Plagiarism is misconduct

- The Office of Research Integrity (ORI) closed 2016 with seven cases of misconduct involving plagiarism, falsification, and or fabrication.

ORI, Monday, August 28, 2017

“Fair Use” Doctrine

- “When you use information in a paper or presentation for a class, you're following the “fair use” doctrine, and you don't need to get permission from the copyright holder. You do, however, need to properly cite the source for any text, images, or other media you use in a class project in order to avoid plagiarism.”

http://www.libraries.psu.edu/psul/lls/students/using_information.html Downloaded 11/2/09

What counts?

- Posters (ISMB International Conference, January 2009; “the entire abstract for this poster was obtained by plagiarizing text from …”)
- Abstracts, grant proposals, etc.
- Unpublished work

Intelligent Systems for Molecular Biology

http://ori.hhs.gov/content/case-summary-visvanathan-mahesh

If you aren't primary author, you can still be held liable

- In one recent case ORI found that a person was responsible because they approved publication of articles they knew contained significant amounts of plagiarized text without correct attribution or citation.

Who has been accused?

- Martin Luther King (including the “I have a dream” speech)
- Jack London (Call of the Wild vs. Egerton Young’s My Dogs in the Northland)
- T.S. Eliot was known for selling his own story plots

BOSTON GLOBE

Fraud in a lab coat

August 21, 2011 | By Gareth Cook, Globe Columnist

NEWS

Embattled Harvard professor resigns

July 20, 2011 | By Carolyn Y. Johnson, Globe Staff

NEWS

UConn's account of research flaws should be a model for others

January 27, 2012

Are there penalties for failure to adhere to ethical research? What are they?

What are the consequences?

BUSINESS

1. **Top cardiologist criticizes Merck behavior at Vioxx trial**

December 4, 2005 | Associated Press

Administrator and database manager

- Made up enrollment data on a human subjects project
- Was caught on a no cost extension to a grant
- What is this?

Oregon Health Sciences faculty member

- Provided “results” for a pilot study that had not yet been conducted when the grant was submitted

- What is this?

Harvard faculty member

- Did not accurately portray the coding for responses on a behavioral assessment in an animal study.
- Misrepresented figures in a paper (used a previous figure to represent current data)
- What is this?

University of Pittsburgh faculty member

- Word for word copying of the description of the test instrument without citation
- Manipulated references to try and hinder the detection software
- What is this?

Is it bad science or misconduct?

- Different routes for different issues
  - Policy violations
  - Academic Misconduct
  - Scientific Misconduct
  - Criminal Behavior

What Would You Do?

- Would you report misconduct?
- When? What evidence would you need?
- Is there a different threshold for plagiarism versus fabrication versus falsification?

What about?

- Dropping data points?
- Substituting graphs that “show the same thing” even if it isn’t the real one?
- Being co-author on a paper you didn’t contribute to?
  - Why would someone ask you to do this?

I’m just a Graduate Student (or Technician, or Post-Doc)

- Most misconduct is reported by technicians, graduate students and post-docs.

Can you do jail time for scientific misconduct?

- *Dr. Eric Poehlman, an expert on menopause, aging, and metabolism, became the first person to be sent to jail for scientific misconduct after admitting to falsifying data in 15 federal grant applications.*

[Dahlberg, John E. and Christian C. Mahler. “The Poehlman Case: Running Away from the Truth.” *Science and Engineering Ethics* 12.1 (January 2006) 153-173.]

Ethics failure

- Disrupts or ends promising and established careers
- Can result in serious sanctions and/or penalties, including criminal charges
- Corrupts the research record

What if you suspect something is wrong?

- If you have a “knot” in your stomach, step back and evaluate what you see and how to handle the situation.
- Gather facts and act accordingly.
- Be responsible and do the right thing yourself!

Where do you report concerns?

- Ombudsman
- Research lab director (the “PI”)
- The College’s associate dean for research
- Office of Research Compliance
- Office of Research and Sponsored Programs
- Dean of the Graduate College and Vice President for Research
- Office of Legal Affairs

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QUESTIONS?
http://www.ori.dhhs.gov/
“The Lab”