

# Research Ethics

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1 Introduction

2 Research Ethics

## Outline

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2 Research Ethics

## Minnesota Requirements

The University wants you to learn about

- 1 Authorship
- 2 Plagiarism
- 3 Peer review
- 4 Intellectual property
- 5 Conflict of interest
- 6 Fiscal management
- 7 Data management
- 8 Animal/human subjects
- 9 Social responsibility

## More on requirements

Some of these are clearly ethics; others more like policy or etiquette.

Still, you need to know this in a research environment.

Refer to [www.research.umn.edu/ethics](http://www.research.umn.edu/ethics) for much more information and links to University policies.

Material from this lecture comes from there, often verbatim.

## Outline

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## Authorship



It's publish or perish baby, and you have to get your name on articles to survive.

This can lead to all kinds of hijinx.

"Surely you were aware when you accepted the position, Professor, that it was publish or perish."

## Authorship issues

- Who qualifies as an author?
- Who is responsible for content of paper?
- Order of authorship?
- How are other contributions acknowledged?
- Least publishable unit?

## Who qualifies as an author?

Different journals or fields may have specific guidelines. Generally

- ① All authors must make a significant contribution to research, e.g.
  - Conceptualization and design
  - Collection of data
  - Analysis and/or interpretation of results
- ② All authors must contribute to drafting and/or revising the manuscript
- ③ All authors must have final approval of the manuscript and accept responsibility for its integrity

Everyone who does 1,2,3 should be an author, and all authors should do 1,2,3.

## First and/or senior author

In statistics, senior author is usually mentor.

In lab sciences, senior author usually overall investigator in charge of lab.

Senior author may or may not be first author.

When not first, senior is usually last.

First and senior authors decide who else is author, and in what order.

Ideally, authorship and order decided before writing (or even research) begins.

## Order of authorship

(The sound you are hearing is knives being sharpened.)

Order of authorship is generally

- Alphabetical, or
- Meaningful

When meaningful, first author is the main author, e.g., has major ideas, collects most data, proves more theorems, writes first draft.

First author is the big cheese.

First authorship is a big deal.

## Plagiarism

Many forms:

- Word for word copying without quotation or citation.
- Stitching together random bits from various sources without careful identification.
- Paraphrase without acknowledgement of the original.
- Casual repetition of great term or phrase.

Martin, Ohrman, Wheatley.

## Plagiarism everywhere?

Many examples in science, academia, and journalism.

Very easy to do in a click-and-drag internet age (see examples below :-)).

However, only about 20 cases a year get reported to NSF and NIH.

## Peer review ethics

- Don't review when you're not an expert.
- Don't review when you're involved in a dispute.
- Review quickly.
- Keep all materials and correspondence confidential.
- **Do not appropriate ideas/work from a manuscript or grant that you are reviewing.**
- No "Matthew effect", ie, "To him that hath, shall be given."

## Peer review

Manuscripts don't get published until accepted by editors.

Editors don't accept until advised by associate editors.

Associate editors don't advise until advised in turn by peer reviewers.

Similarly, granting agencies don't give money until advised by peer reviewers.

## Intellectual Property a la Minnesota

*Any invention, discovery, improvement, copyrightable work, integrated circuit mask work, trademark, trade secret, and licensable know-how and related rights. Intellectual property includes but is not limited to, individual or multimedia works of art or music, records of confidential information generated or maintained by the University, data texts, instructional materials, tests, bibliographies, research findings, organisms, cells, viruses, DNA sequences, other biological materials, probes, crystallographic coordinates, plant lines, chemical compounds, and theses. ...*

## Intellectual Property at Minnesota

*... Intellectual property may exist in a written or electronic form, may be raw or derived, and may be in the form of text, multimedia, computer programs, spreadsheets, formatted fields in records or forms within files, databases, graphics, digital images, video and audio recordings, live video or audio broadcasts, performances, two or three-dimensional works of art, musical compositions, executions of processes, film, film strips, slides, charts, transparencies, other visual aid/aural aids or CD-ROMS.*

University of Minnesota Intellectual Property Policy

## No Claim on Academic work

University does not claim ownership rights to

*Intellectual property created by a student for the sole purpose of satisfying course requirements unless the student assigns ownership rights in the intellectual property to the University in writing or assignment of such ownership rights to the University is made a condition of participation in a course.*

## Types of IP

- Copyright** A copyright protects the tangible expression of an idea, not the idea itself (e.g., a book, a research article, or a videotape).
- Patent** A patent protects the idea and gives the creator the right to exclude others from using the idea. To receive a patent, the creator must disclose in detail how to make his invention work and its use.
- Trademark** A trademark identifies and distinguishes an idea, written words, pictures, or products from those of competitors (e.g., golden arches).
- Trade Secret** A trade secret refers to information that is not publicly known, that produces economic benefit to the owner, and that the owner maintains as secret.

## No Claim on Academic work

University does not claim ownership rights to

*Regular academic work product: any copyrightable work product that is an artistic creation or that constitutes, or is intended to disseminate the results of academic research or scholarly study. Regular academic work product includes, but is not limited to, books, class notes, theses and dissertations, course materials designed for the web, distance education, and other technology-oriented educational materials, articles, poems, musical works, dramatic works, pantomimes and choreographic works, pictorial, graphic and sculptural works, or other works of artistic imagination. Software specifically needed to support a regular academic work product or that is designed to disseminate the results of academic research and scholarly study is also considered a regular academic work product.*

## Otherwise, they own you

*The University owns all intellectual property created through the use of University resources or facilities, supported directly or indirectly by funds administered by the University, developed within the scope of employment by employees, assigned in writing to the University, or agreed in writing to be a specifically commissioned work. In the case of intellectual property created in the course of sponsored research or under contract with external parties, ownership is determined in accordance with the terms of the University's agreement with the funding agency or external party and applicable law. The same applies to intellectual property created under outside consulting or service arrangements.*

## Other employment

Many employment contracts, including consulting, contain IP ownership clauses.

**Read and check the terms of employment carefully!**

If you are a SAS programmer for a drug company and you write the next great statistics package at home in your spare time, the drug company may still own it.

**Do not try to sell what legally belongs to your employer!**

Disclose IP to its owner.

## Conflict of interest

*A conflict of interest occurs when Academic Employee compromises his/her professional judgment in carrying out University teaching, research, outreach, or public service activities because of an external relationship that directly or indirectly affects the Financial Interest of the Academic Employee, and Family Member, or any Associated Entity.*

## Examples

- A major interest in a private firm by a faculty member who also has the decision-making responsibility in awarding a contract to that firm.
- Sponsorship of research by commercial firms in which the faculty member has a significant interest.
- Nepotism.

## More Conflicts

**Scientific** Participation in review/referee panels regarding the allocation of resources or the publication of papers. Usually handled by excusing the person with the potential conflict.

**Academic** Utilization of the name and/or the resources of the University for personal gain.

**Commitment** Spending too much time on non-University activities (consulting, service, etc) leading to a significant decrease in the time and effort devoted to the employer.

## What to do?

**Disclosure, Disclosure, Disclosure.**

All potential conflicts must be disclosed to appropriate parties (e.g., supervisors).

There may be no problem, but make sure in advance.

## Data management

Data take many forms:

- measurements
- images
- interviews
- recorded behaviors
- medical records
- school records
- physical artifacts
- etc

## Data topics

- Reliability
  - Records should indicate what, why, who, when.
- Maintenance
  - Records should be permanent and err on the side of thoroughness.
- Retention
  - PI in charge of keeping data
  - But ...
- Access
  - Protect private records
  - Satisfy contractual requirements
  - May be subject to litigation

## Human Subjects

### Principles:

- Respect
- Beneficence
- Justice

which is more or less

- Informed consent
- Reasonable risk/benefit ratio
- Equitable selection of treatments

## Human Subjects continued

### Research design must

- Balance benefits against harm
- Use efficient, correctly sized designs
- Maximize information extracted from subjects
- Consider interim analysis
- Avoid placebo-controlled testing when the condition is harmful
- Respect privacy

## Institutional Review Board

Federal funds & human subjects → IRB

IRB protects rights and welfare of human subjects.

**IRB must approve any project with human subjects.**

## Investigator must

- Possess skills needed for the research
- Design research that meets risk/benefit criteria
- Submit research plans to IRB
- Ensure prior informed consent
- Protect vulnerable populations
- Train personnel
- Adhere to high ethical standards
- Ensure privacy
- Keep records/make reports
- Comply with all regulations



## IRB will

- Weigh risks and benefits
- Deny substandard designs
- Provide oversight through completion

## Social Responsibility

As a scientist

- To keep an open mind. Report honestly what you see.
- To seek evidence and not accept things at face value.
- To exercise due diligence and not be sloppy.
- To make full disclosure to the extent possible.
- To stay within the limits of your expertise.

## Social Responsibility

As a member of society

- To use resources wisely.
- To credit sources and acknowledge priority.
- To deal fairly with colleagues and subordinates.
- To act on ethical breaches by others.