

The Ethics of Research

What is meant by ethics.

Ethics can usually be defined as **norms for conduct** that distinguish between acceptable and unacceptable behavior.

Norms promote the aims of research

1. Prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and avoid error.
2. Ethical standards promote the values that are essential to collaborative research.
3. Many of the ethical norms help to ensure that researchers can be held accountable to the public and also help to build public support for research.

<http://www.niehs.nih.gov/research/resources/bioethics/whatis/>

The Ethics of Research

- **Ethics of honestly presenting the results.**

Did you really do the experiment THREE times as reported and are showing the average of all three experiments?

Are you reporting the results of all the samples not just those that fit your hypothesis?

- **Ethics of record keeping.** In many cases of research misconduct the laboratory notebook and computer records can be brought in as evidence of the research. It is important that there is a written record of if research misconduct is suspected.

- **Ethics of dealing with human subjects.** The right to inform any human subjects of their rights and the purpose of your research.

This is a very complicated subject in **providing informed consent** for any research involving humans as subjects or human samples.

Research Misconduct

- **Fabrication** is making up data or results and recording or reporting them.
- **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.
- **Plagiarism** is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

The *Three Sins* of Publishing

There is so much pressure to publish these days that many researchers feel that there is increased issues with poor ethics in publishing.

Errami and Garner note there are “three major sins of modern publishing: **duplication, co-submission and plagiarism.**”

Errami and Garner, Nature, 451, 397-399 (2008)

Plagiarism

“Plagiarism includes both the theft or misrepresentation of intellectual property and the substantial unattributed textual copying of another's work.” (Office of Research Integrity, National Institutes of Health, USA)

If you write exactly as someone else did before you **MUST** give the reference and use quotes.

If you “paraphrase” someone else you must provide reference without quotes.

Need references if you use an idea you obtained from another source.

The challenge of avoiding plagiarism

When you are first writing you will often need to get information from other sources. But as much as possible you must learn to use your own voice. **This is a BIG challenge to all writers.**

There are cultural differences. For some students copying a senior expert (such as the textbook author) seems proper or a form of flattery.

Not repeating your words is a constant challenge for anyone who writes.

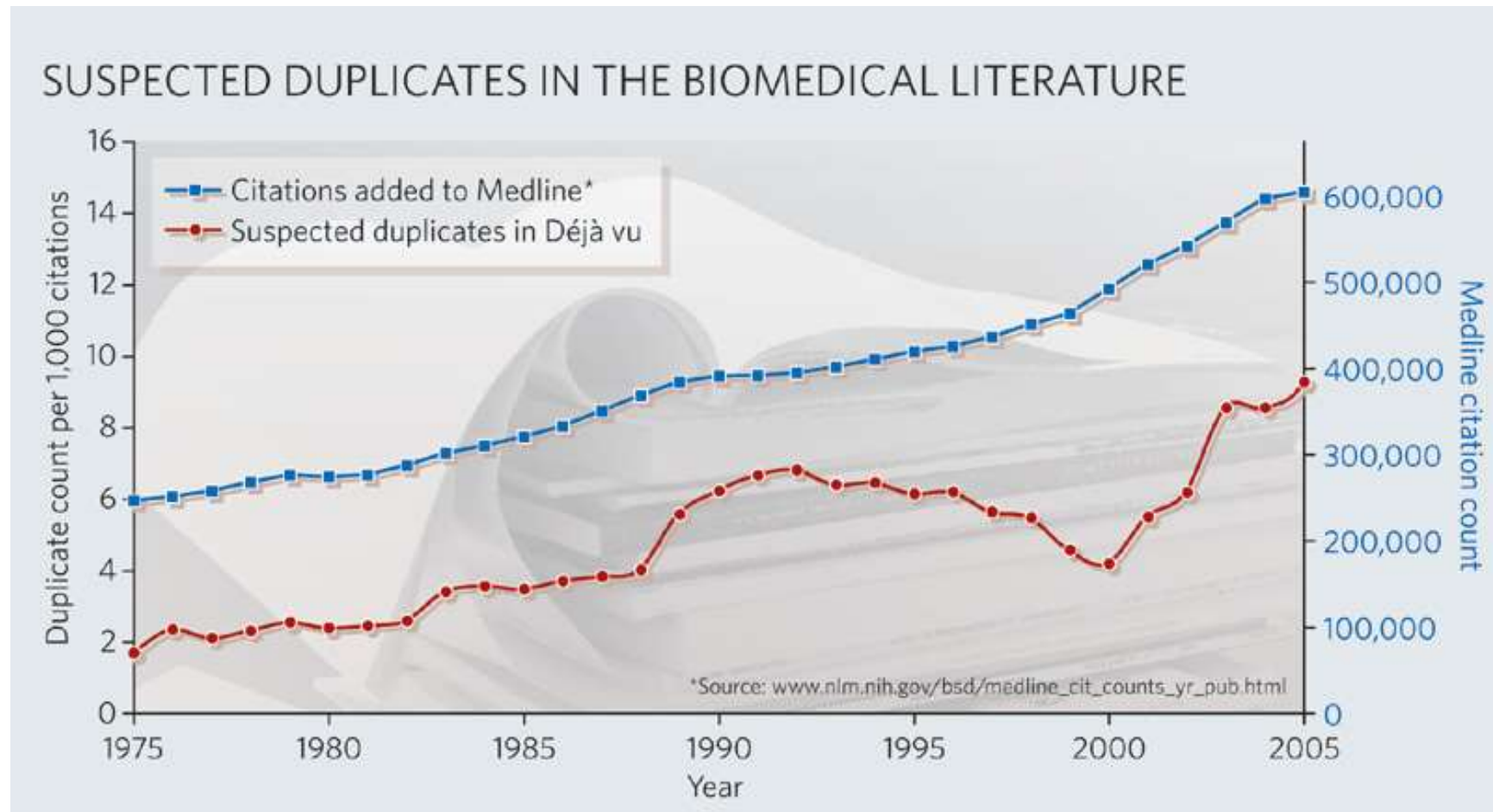
Self-Plagiarism

Duplication of Data

Self-plagiarism is when a scientist uses his/her own language or data TWICE or more in different publications.

This is less of a problem with Methods sections but very bad to repeat language for Introduction /Discussion and completely wrong to duplicate Figures and Results.

Self-Plagiarism or suspected duplicates have increased with increased number of publications



Errami study found that authors published TWO separate papers using same data within SIX months.

Errami and Garner, *Nature*, **451**, 397-399 (2008)

Submitting to one journal at a time

Journals request a statement that **while** your manuscript is **under review** at that journal you **will not** submit **any part** of the data in another publication.

If an editor or reviewer learns that you are submitting to two different journals it could be very damaging to you and your department/institution.

Ethics around data

Any research project requires a certain amount of creativity and the ability to think independently.

This means you must make decisions about what is ethical when analyzing your data.

Part of this process is deciding when the data is authentic or false.

All data requires controls

- The most effective way to convince yourself, your boss AND your readers about your data is to include controls.

As much as possible it is beneficial to publish the data with the controls shown.

- If you have samples or experiments that you cannot use then best to explain why.

Ethics around data

Examples of ethical issues with data

1. Averaging triplicates. If you run the experiment three times but cannot get statistically significant data can you just do a fourth time?

Is this a technique issue or just the assay or a problem with hypothesis?

2. Serum collection. Serum samples from humans were collected over 4 years (2006-2009) for a study and kept in -20° C and then run in 2010. Testing samples collected in different years should be fine.

BUT if 5 samples were collected in 2006, 18 in 2007, 85 in 2008 and 7 in 2009 can you say that your results apply to all 4 years?

Ethics around data

Examples of ethical issues with data

3. Freezer breaks down. RNA samples collected in 2007-2009 were kept in -20° C. 30% were tested in 2009 and the other 70% were tested in 2011. But freezer thawed samples for 2 days in 2010.

What can you do to make sure your data is accurate?

4. Participants do not finish questionnaire or intervention.

You have asked subjects to complete questionnaires before intervention and after intervention. But if SOME participants do not finish the 2nd questionnaire, can you use the answers from their first questionnaire?

Personal misbehavior

versus

Scientific fraud

Personal misbehavior. If a young scientist makes a poor decision to discard outlying samples from the analysis.

If a senior professor sends samples to a collaborator to test for influenza and the collaborator tested the samples for antibodies to HIV which was not agreed upon.

These would be misbehavior but not fraud.

Scientific Fraud. A senior professor purposefully uses the same data in an engineering publication that was published in an chemistry publication. Fraud.

If a young scientist specifically says the samples were negative when the positive control also was negative, this would be fraud.

Intellectual Property

You sign away “publishing rights” to the journal when you publish. This usually means that even though it is "YOUR" article the journal actually owns the copyright.

Materials covered by Intellectual Property must be requested before they are published elsewhere.

Sometimes when finishing YOUR PhD thesis, you must request permission from a journal to include YOUR data if you have published in an article.

Financial Disclosures

All sources of financial support and affiliations with companies that represent a potential conflict of interest should be fully disclosed at the time of presentation or publication.

Many drug companies will pay for clinical trials to be done by "objective" clinics or research labs. This must be disclosed in any publication of results.