

## *Outline of an Introduction to Integrity in Research*

### 1. **What is integrity in the context of scientific research?**

Getting things right, and reporting the truth about facts and procedures  
Honesty and carefulness; obviously, avoidance of fraud or fabrication  
Ethical treatment of research subjects, students, employees, and colleagues.

Ethical authorship practices

sharing credit, citing previous work,  
not seeking or granting gift co-authorship

Ethical relationships to industry

avoiding bias, disclosing conflicts of interest (to be defined later)

### 2. **Where do practical problems arise?**

Data:

recording, replication (cutting corners)  
selection and analysis  
sharing, ownership

What are the rights of a student or collaborator to data?

Results:

exaggerating significance (public or scientific deception)  
statistical carelessness  
self-deception (“mythical thinking”), cynicism  
preliminary use in grants  
anticipatory use in abstracts  
other deceptions in grantsmanship

Publication:

academic practices that reward long bibliographies  
journal practices that favor short, positive papers  
redundant or premature reports  
pushing for positive versus negative results  
credit comes with responsibility and vice versa  
collaboration and authorship

Other Problems:

sidestepping regulations on human or animal research  
conflicts with mentors or colleagues  
allowing conflicts of interest to influence your work  
working under pressure

3. **What is the boundary between research practices and research ethics?**

Distinguish scientific error from culpable error.

Practices at the margin or threshold:

- rushing results into print
- failing to try to replicate either expected or unexpected results
- ignoring sources of bias
- keeping poor research records
- carelessness
- unthinking acceptance of collaborators' results

Distinguish deliberate "error" {misrepresentation} from scientific error.

Practices at the margin or threshold:

- improper selection or exclusion of results
- deceptive use of graphs and statistics
- misleading description of materials and methods
- gift co-authorship
- omission of colleagues who contributed
- using others' ideas or data without giving credit
  - using data before publication without permission
  - failure to cite previous work

What is research misconduct and what is research fraud?

why we can't call a spade a spade (historical explanation)

4. **Things to avoid**

The worst:

- fraud
- petty deception, including plagiarism
- coverups
  - it's OK to make mistakes, but not to lie about them
  - it's OK to have conflicts of interest, but not to hide them

These are bad, too:

- taking credit for someone else's work or ideas
  - accepting credit for work you didn't do
- ignoring suspicions of error, deliberate or accidental
- breaking collaborative research agreements
- letting your personal interests influence your objectivity
  - it's OK to make money, but not from biased results
- promising more than you can deliver, especially to the public
- assuming that institutional regulations are made to be ignored

5. **Questions and answers**

- What exactly is a conflict of interest?  
and a conflict of commitment?  
How can a C of I promote misconduct?
- How do you learn what's right?  
Mentorship, free discussion of research results  
Structured courses and discussions, case studies  
Read "On being a scientist", "Honor in Science",  
"Betrayers of the Truth", campus policies
- How and when to express criticism and doubts  
A scientist must be skeptical  
Can you distinguish being hard-nosed from cynicism?
- To whom should a trainee turn for advice?  
What are the risks of raising questions?  
the ombudsman as a confidential advisor

6. **Research training and supervision**

- What are the responsibilities of the research mentor?  
teach the art of research  
demonstrate the ethics of research  
make research ethics issues explicit
- What should an institution do?  
establish a climate of honesty and rigor  
develop and disseminate appropriate procedures  
demand that trainees be supervised and treated fairly  
remember that quality is more important than quantity  
reward researchers for their mentoring work