Research Integrity – The Institutional Perspective

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Outline

- Cause for Concern – State of Affairs
- Institutional Challenges to RCR training in Higher Education
- CGS RCR Projects – CGS, NSF, ORI-NIH initiatives
- Approaches and Solutions
Are RCR, values and ethics "critical issues" in graduate education?
Survey of 2,000 doctoral candidates and 2,000 of their faculty in chemistry, microbiology, civil engineering and sociology

- Approx. 50% of faculty and 44% of students had “exposure” to misconduct or misbehaviors
- Nearly 43% of the faculty knew of peers making inappropriate assignment of authors
- Almost 50% of students and faculty either observed or had direct knowledge of faculty exploiting others
- Marked disciplinary differences were observed among the misbehaviors and misconduct as well as the ways in which these problems were dealt with.
Examined status of APS (40,000 total members) related to issues of ethics and professional integrity

39% of Junior members who responded reported:
- that as graduate students or post-doc fellows they had observed or had personal knowledge of:
  - Falsification, Fabrication and Plagiarism (FFP)
  - Questionable Research Practices (QRP):
    - Excluding appropriate/including inappropriate authors
    - less than truthful reports
    - not citing prior work
    - delaying referee reports;
  - experiencing pressure from supervisors to “overlook data that did not conform to expectations.”
  - abuse by supervisors and being treated as labor and merely as vehicles for publication
1,768 Mid-Career and 1,479 Early Career NIH funded scientists:

- 12.5% have overlooked others’ use of flawed data or questionable interpretation of data.
- 15.5% admitted to changing design, methodology or results of study in response to pressure from a funding source.
- 15.3% had dropped observations or data points from analyses based on a gut feeling they were inaccurate.
- 27.5% had inadequate record keeping related to research projects.
- Overall, 33% of respondents said they had engaged in at least one of the top ten “mis-behaviors” in the past three years.
Misconduct and Questionable Research Practices

Is Higher Ed Effectively Training our Graduate Students in Ethics & RCR?

*Teaching Research Ethics: An Institutional Change Model*, Dave Hartmann and Megan Mullins, June 2003 (Western Michigan University, unpublished)

- 71% of full-time faculty & department heads but only 39% of graduate students from all disciplines indicated they regularly or sometimes discussed research ethics with students/faculty.
- 70% of graduate students indicated having NO discussion with faculty in past year on the RCR topics.
- 32% of graduate students and 37% of faculty strongly agreed or agreed that training and support on research ethics was inadequate.
ODU RCR Project - Assessment of Attitudes & Practices

- 222 faculty and 534 graduate students responded to a web-based survey

- In several of the 9 core RCR areas:
  - 25-35% of students had received no training whatsoever
  - 85-90% of faculty said they were providing training in several RCR areas

- 51% of students vs 73% of faculty said they were engaged in a mentoring experience

- Only 8% of students and 8% of faculty have a clear agreement on authorship, ownership and use of data, etc.
“My strong opinion is that there is absolutely no need for special RCR training for our graduate students. They receive proper education on RCR in their contacts with their advisors.”

“Not all graduate degrees are research oriented, and some students may not need additional training.”

“Great for sciences, not necessarily applicable to social sciences.”

“I’m a graduate student in education. I don’t see a need for RCR training in my field.”

“I believe that the issue of responsible research applies differently to different departments...it would be unfortunate for Arts majors to be required to sit through discussion of the moral and ethical question contained in responsible human or animal research and the like that applies only to the sciences.”
“Needs more attention/recommend training. Seems like a good idea/important.”

“Should be mandatory for all disciplines.”

“Do not want or need additional training.”

“Not all graduate degrees are research oriented, and some students may not need additional training.”

“There should be no mandatory training.”

“Could be a waste of time/not needed.”

“Great for sciences, not necessarily applicable to social sciences.”

“I’m a graduate student in education. I don’t see a need for RCR training in my field.”
Summary

- Misconduct is not “rare”, estimated 0.1-1.0% frequency.
- Misbehaviors or Questionable Research Practices (QRPs) are more prevalent, estimated 10-50% frequency.
- Undergrad, graduate and post-docs are exposed to and participate in FFP and QRP.
- Confusion and disagreement between faculty and students regarding the need, frequency, type and effectiveness of RCR training.
Challenges Facing Higher Education

- What is Responsible Conduct of Research?
  - Knowledge of rules and regulations
  - Compliance with rules and regulations
  - Ability to make morally responsible & ethical decisions

- What are the Goals and Outcomes of RCR Education?
  - Reducing FFP, QRPs
  - Teach values-driven ethical decision making
  - Creating positive attitudes & reinforcements for responsible research and behavior
  - Empowering individuals to make ethical decisions

- Which Training method(s) are most effective?
  - Courses, seminars, mentoring, combinations
1,479 NIH-funded Early Career & 1,768 NIH Mid-Career Scientists

- Training in research ethics was positively associated with self-reported cooking, dropping, overlooking or failing to present contradictory data among early career scientists
- Mentoring increased the odds of certain QRPs and decreased the likelihood of other QRPs.

Conclusions:
- Effectiveness of current training in RCR is questionable
- Mentoring can both increase and decrease the likelihood of QRPs
- More research is needed to determine root causes and most effective interventions.
Challenges Facing Higher Education

How to address disciplinary & cultural differences?

- Biomedical
- Life Sciences
- Physical & Math Sciences
- Social Sciences
- Humanities
- Business
- Law
- Ethnic, Social, Cultural, Gender factors

Chron Higher Ed, 2004
Challenges Facing Higher Education

Where do we find the resources to?

- Conduct studies of underlying causes of FFP and QRPs and to test the effectiveness of interventions
- Train adequate numbers of RCR instructors and faculty mentors
- High cost to develop new curriculum, courses, modules, etc.
- Include RCR, ethics, professional standards in the curriculum, or the faculty’s & students’ schedule
Challenges Facing Higher Education

Department, College and University Culture

"I find it harder and harder to get any work done with all the ethicists hanging around."
Challenges Facing Higher Education

Department, College and University Culture

- Pressures to publish, get external funding, promotion/tenure, increasing the reputation and ranking of department, college and university
- Whistle-blowing
- Denial and ignorance of the problems and need for change
- Research environment and enforcement of policies
Council of Graduate Schools – RCR Project – begun in 2004 with funds from NSF and ORI involving over 35 Universities:
- to develop a core of graduate dean leaders in RCR on CGS member campuses.
- to generate information about what works in ethics-RCR training of graduate students.
- to document the results of the projects in a monograph on best practices

ORI - NIH “Research on Research Integrity” grants
To study “the effectiveness of self-regulation, the societal, organizational, group, or individual factors that affect integrity in research, both positively and negatively, or the impacts of non-adherence to accepted codes of conduct. The proposed project must challenge existing paradigms, be developed around an innovative hypothesis or address critical barriers to progress in understanding the multiple factors that underlie deviation from research integrity.”
Approaches & Solutions

- University RCR Education Committee – Supported by the Provost and Chief Research Officer

- Two-tiered:
  - University (Grad School, Research VP, Grants & Contracts)
  - Department/School/College

- Establish formal university-wide programs that:
  - Assess & discuss current RCR practices and attitudes
  - Cover a wide range of regulatory, professional, financial and ethical topics
  - Involves faculty and students from different disciplines
  - Promote widespread sharing of effective tools and resources
  - Use a variety of delivery methods (one size does not fit all)
    - Formal courses
    - Seminars & workshops
    - Web-based tutorials
    - Lecture series
Strong emphasis on Mentoring, the Research Environment and Culture:

- Establish a clear set of expectations of what mentors are to accomplish
- Establish clear set of policies and procedures for dealing with FFP, QRPs, and “whistleblowers”
- Expose students and post-docs to more than one mentor
- Responsibility is shared among instructors, mentors and administrators
- Provide training programs for RCR instructors and for faculty mentors (PFF, PFP)
Conclusions

- Higher Education is just beginning to realize the need to focus on RCR education.
- Fostering attitudes and creating environments that promote ethical decision making are critical.
- RCR Education must be supported at all institutional levels and in ways that address the diversity of disciplines, cultures, and organizational needs.
- Progress has been made and more is needed to arrive at a set of goals and methods for “successful” RCR education.
Suggested Resources


An Exercise and a Survey

- Break into groups of 4-8
- One individual serves as the group’s reporter
- Rate which of the following QRPs are the top five based on:
  - Your observed frequency
  - Those you consider most detrimental to research integrity
  - Those you consider the most difficult to change
QRPs - from Anderson et al., Acad Med 82:853-860, 2007

- **Data**
  - Falsifying or “cooking” research data
  - Dropping observations or data points from analyses
  - Overlooking others’ use of flawed data or questionable interpretation of data

- **Methods**
  - Using inadequate or inappropriate research designs
  - Inadequate record keeping related to research projects
  - Withholding details of methodology or results in papers or proposals

- **Policy**
  - Ignoring major aspects of human-subjects requirements
  - Circumventing certain minor aspects of human subjects requirements
  - Ignoring minor details of animal care policies
  - Ignoring minor details of materials handling policies
  - Publishing the same data or results in two or more publications

- **Cutting Corners**
  - Using organizational resources for outside consulting work or personal needs
  - Using funds from one project to get work done on another project
QRPs - from Anderson et al., Acad Med 82:853-860, 2007

- **Outside Influence**
  - Not properly disclosing involvement in firms whose products are based on one’s own research
  - Unauthorized use of confidential information in connection with one’s own research
  - Changing the design, methodology or results of a study in response to pressure from funding

- **Peer Review**
  - Inappropriate or careless review of papers or proposals
  - Using funds from one project to get work done on another project

- **Credit**
  - Using another’s ideas without obtaining permission or giving credit
  - Inappropriately assigning authorship credit
  - Trying to get by on the work of others
  - Questionable relationships with students, research subjects or clients

- **Cutting Corners**
  - Inadequate monitoring of research projects because of work overload
  - Cutting corners in a hurry to complete a project
  - Signing a form, letter, or report without reading it completely
Exercise #2

In your same groups, discuss and arrive at a consensus answer to the following:

What is the relative effectiveness of training that focuses on adherence to regulations vs the values of ethical and morally responsible decisions?