II BRISPE
Second Brazilian Meeting on Research Integrity, Science and Publication Ethics
IBqM/UFRJ & COOPE * FIOCRUZ * USP * PUCRS
Rio de Janeiro, São Paulo, Porto Alegre (May 28 - June 1, 2012)
Research Integrity In Science & Technology: International Panorama

II Brazilian Meeting On Research Integrity, Science And Publication Ethics – II BRISPE
28 May – 01 June 2012

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Director, Research Ethics and Integrity Program, MICHRI
Professor Emeritus of History
University of Michigan
Q: Why the interest in “research integrity”?  
A: There is room for improvement!  
- Some researchers engage in misconduct  
- More researchers cut corners and engage in questionable practices

Who cares? 
- Researchers – misbehavior compromises reliability of research  
  – loss of respect and support for research  
- Public – wastes money invested in research

Talk today: What is going on internationally to address this situation?
THE PROBLEM?
How research functions

Funding
- Government
- Institutional

Regulation
- Government
- Institutional

Application
- Public
- Private
- Personal

Design ➔ Conduct ➔ Publish

Foundation
What can go wrong?

- **Design**
  - Poor design
  - Design bias
  - No approval
  - Unmanaged conflicts of interest

- **Conduct**
  - Fabricate
  - Falsify
  - Incomplete records
  - Rules violations

- **Publish**
  - Plagiarism
  - Honorary authorship
  - Ghost authorship
  - Duplicate publication
Frequency

Irresponsible 1% 20-50% Research Misconduct

Questionable Research Practices

Research Integrity ??%

Responsible
Impacts all levels of research

High School Science Fair

A survey of one Kentucky high school's science fair participants found that 65% of respondents had falsified data. Source: Flickr, DrBacchus
## Impacts all levels of research (survey data)

<table>
<thead>
<tr>
<th>Level</th>
<th>Issue</th>
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<tbody>
<tr>
<td>High School</td>
<td>65% falsified data</td>
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<tr>
<td></td>
<td>20% altered hypothesis after finishing their study</td>
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<tr>
<td></td>
<td>33% abused the scientific method</td>
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<tr>
<td>College</td>
<td>60% admit to cheating in college</td>
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<tr>
<td></td>
<td>16.5% did not regret cheating</td>
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<tr>
<td></td>
<td>85% think cheating is essential</td>
</tr>
<tr>
<td></td>
<td>95% don’t get caught</td>
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<tr>
<td>Graduate</td>
<td>15% select or omit data to get paper published</td>
</tr>
<tr>
<td></td>
<td>27% select or omit data to improve grant</td>
</tr>
<tr>
<td></td>
<td>32% add undeserving author</td>
</tr>
<tr>
<td></td>
<td>95% don’t get caught</td>
</tr>
<tr>
<td>Researcher</td>
<td>1% engaged in misconduct</td>
</tr>
<tr>
<td></td>
<td>10% violate research regulations</td>
</tr>
<tr>
<td></td>
<td>40% don’t keep proper records</td>
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</tbody>
</table>
Public face of misbehavior

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Diederik Stapel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Field</td>
<td>Social psychology</td>
</tr>
<tr>
<td>Misdeed</td>
<td>Falsified evidence in studies over many years</td>
</tr>
<tr>
<td>Impact</td>
<td>Lost position, students and colleagues have had to retract papers</td>
</tr>
</tbody>
</table>
## Public face of misbehavior

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Dipak Das</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>US, University of Connecticut</td>
</tr>
<tr>
<td>Field</td>
<td>Medicine, cardiovascular</td>
</tr>
<tr>
<td>Misdeed</td>
<td>Falsified evidence of the benefit of drinking red wine</td>
</tr>
<tr>
<td>Impact</td>
<td>10,000s of women given wrong medical advice</td>
</tr>
</tbody>
</table>
Public face of misbehavior

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Yoshitaka Fujii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Japan, Toho University</td>
</tr>
<tr>
<td>Field</td>
<td>Anesthesiology</td>
</tr>
<tr>
<td>Misdeed</td>
<td>193 publications suspected of fabrication; violation of ethics rules</td>
</tr>
<tr>
<td>Impact</td>
<td>Journals and universities major expense verifying validity or misconduct</td>
</tr>
</tbody>
</table>
# Public face of misbehavior

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Maurice Agis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>UK, independent artist</td>
</tr>
<tr>
<td>Field</td>
<td>Art</td>
</tr>
<tr>
<td>Misdeed</td>
<td>Violated safety rules in experimental art project</td>
</tr>
<tr>
<td>Impact</td>
<td>2 people killed, 38 injured</td>
</tr>
</tbody>
</table>
Public face of misbehavior

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Craig B Thompson</th>
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</thead>
<tbody>
<tr>
<td>Country</td>
<td>US, Sloan-Kettering Cancer Center</td>
</tr>
<tr>
<td>Field</td>
<td>Cancer treatment</td>
</tr>
<tr>
<td>Misdeed</td>
<td>Took data from former employer (University of Pennsylvania) without permission</td>
</tr>
<tr>
<td>Impact</td>
<td>$1,000,000,000 law suit</td>
</tr>
</tbody>
</table>
Research integrity is a global challenge
Institutional response ~ widely relied upon

<table>
<thead>
<tr>
<th>Self-regulation</th>
<th>Researchers replicate and review the work of colleagues</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Misbehavior is detected and reported</td>
</tr>
<tr>
<td></td>
<td>No need for further regulations</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>Research is seldom replicated exactly</td>
</tr>
<tr>
<td></td>
<td>Researchers do not carefully review the work of colleagues</td>
</tr>
<tr>
<td></td>
<td>40% who suspect misconduct do not report</td>
</tr>
<tr>
<td></td>
<td>Institutions sometimes ignore allegations</td>
</tr>
<tr>
<td>Lesson</td>
<td>Relying solely on institutional response is not effective!</td>
</tr>
</tbody>
</table>
Government response ~ growing in importance

What can governments do to respond?

- Define misbehavior / misconduct
- Set standards for responding / investigating
- Require institutions to respond to misbehavior / misconduct
- Conduct their own investigations
- Set up research integrity offices

What have governments done?

- Nothing ~ exception, most governments have done something
- “Re-invented the wheel” ~ national differences, no global harmonization

Examples:
Decentralized: UK

- Institutiona l policies
- Research Integrity Concordan t
- Wellcome Trust
  - Guidelines Good Research Practice
  - COPE
  - Codes & Best Practices

- Codes of Conduct
- Research Integrity Concordan t
- Independent Advisory Office
  - Code of Practice
  - Procedures for Investigation
  - Education

Summary
- Different codes
- Different procedures
- Divided authority
- Limited accountability
Centralized: Canada

Summary

- Common Code
- Unified procedures
- Centralized authority
- Moderate accountability
**Summary**

- Common definition
- Common general procedures
- Different specific procedures
- Some accountability
FOSTERING INTEGRITY

✓ Definitions
✓ Codes of Conduct
Definitions ~ US narrow definition

1986 HHS

• (1) serious deviation, such as fabrication, falsification, or plagiarism, from accepted practices in carrying out research or in reporting the results of research; or (2) …

1987 NSF:

• (1) fabrication, falsification, plagiarism, or other serious deviation from accepted practices in proposing, carrying out, or reporting results from research; (2) …

2000 OSTP

• Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results
• [must be a] significant departure from accepted practices of the relevant research community
Researchers are responsible for using grant or award funds in accordance with the policies of the Agencies, including the Tri-Agency Financial Administration Guide and Agency grants and awards guides; and for providing true, complete and accurate information on documentation for expenditures from grant or award accounts.

Breaches of Agency policies include, but are not limited to:

- Fabrication, Falsification, Destruction of research records, Redundant Publications, Invalid authorship, Inadequate acknowledgement, Mismanagement of conflict of interest
- Misrepresentation in agency applications and award funds
- Breaches of agency policies
Canadian Tri-Council Code of Conduct

Using a high level of rigour in proposing and performing research….

Keeping complete and accurate records of data, methodologies and findings …that will allow verification or replication of the work by others.

Referencing and, where applicable, obtaining permission for the use of all published and unpublished work….

Including as authors, with their consent, all those and only those who have materially or conceptually contributed to, and share responsibility for, the contents of the publication ….

Acknowledging, in addition to authors, all contributors and contributions to research, including writers, funders and sponsors.

Appropriately managing any real, potential or perceived conflict of ….
# Australian Code for the Responsible Conduct of Research

## Part A: Principles
- General Principles
- Management of Data
- Supervision of Trainees
- Publication
- Authorship
- Peer Review
- Conflict of Interest
- Collaborative Research

## Breaches of the Code
- Misconduct
- Definitions
- Responsibilities
- Resolving Allegations
European Code of Conduct for Research Integrity

Principles

- **HONEST** in presenting goals and intentions…
- Research must be **RELIABLE**…
- **OBJECTIVITY** requires facts capable of proof…
- Research should be **INDEPENDENT** and **IMPARTIAL**
- All researchers have a **DUTY OF CARE** for humans, animals…
- …must show **RESPONSIBILITY FOR FUTURE GENERATIONS**…

Misconduct:

- Fabrication, Falsification, Plagiarism and Failure to meet clear ethical and legal requirements

Minor misdemeanours

- … should be corrected by teachers and mentors
Global: Singapore Statement

Preamble:

The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

Principles:

- **HONESTY** in all aspects of research
- **ACCOUNTABILITY** in the conduct of research
- **PROFESSIONAL COURTESY AND FAIRNESS** in working with others
- **GOOD STEWARDSHIP** of research on behalf of others
Responsibilities

- **Global summary**
  - Common elements
  - No consistency between codes
  - Wide variation in definition of misconduct
  - Goal: raise awareness and set basic standards
  - Must be taught, adopted and followed to be effective
FOSTERING
EDUCATION & TRAINING

✓ Online
✓ Courses, seminars and lectures
Assumptions about RCR Training

BASIC PRINCIPLES (From US requirement)

• An integral part of all research training programs
• Appropriate to the career stage of the individuals receiving training
• Trainees should assume personal responsibility for RCR instruction
• Faculty should participate in ways that allow them to serve as role models
• Should include face-to-face discussions by course participants and faculty
• Carefully evaluated in all NIH grant applications

CHALLENGES:

• Faculty often are not best role models or qualified RCR instructors
• Face-to-face instruction is inconsistent and effectiveness not confirmed
• Asking learners to design their own training may not be the best approach
Web training

Globally used
- 9 languages including Portuguese
- 30+ courses
- 1,000+ institutional members
- 1,000,000+ courses taken

Online training
- Primarily text
- Minimum interaction
- Basic tests
International RI Course (Epigeum)*

- Interactive Main content on line
  - Interact rather than read
  - Links to additional reading
  - Suggestions for additional learning

*Epigeum course, Steneck lead advisor
Blended/Active Web-based

Assumptions

• Web is best way to assure consistent, comprehensive coverage
• Web training can be made engaging and rewarding
• Web can be linked to and enhance additional training

Methods

• Created by Authors (6) and Development Group (23)
• Design to be delivered on university learning management systems (LMS)
• New international RCR course available in July 2012

Assessment

• Short quizzes at the end of sections
• Evaluation of in-person learning an options
• Creating a “Research Integrity Self-Assessment Text”

*Epigeum course, Steneck lead advisor
Screen Design

Why research integrity (RI)?

Why is responsibility in research important? For the simple reason that responsible behavior is a fundamental component of quality research. Research integrity is not something you go back and consider when everything else is done, nor is it a set of bureaucratic hoops to jump through. Sound, reliable research begins with knowing and meeting your responsibilities as a researcher.

Our goal in writing this course is to provide you with a basic overview of your responsibilities. It is then up to you to meet them. By the end of the course, you should be able to:

- Know and explain the key responsibilities you have as a researcher
- Identify the challenges you could face in meeting those responsibilities
- Be aware of strategies for dealing with pressures and difficult situations.

Screen challenge
In brief – why a course on research integrity?

有用信息

你会找到这种类型的弹出框，贯穿课程的始终...

点击查看更多

额外的学习

内容/活动

导航
Interactive
Most standards (rules, regulations and other guidelines) are on the web, but you have to search for them. Look for links throughout this course, or go to the ‘Resource bank’ and ‘Guide to research policies and guidelines’ screens at the end of the course for a list of the different standards covered.

Contents

Government standards . . . 4
Institutional standards . . . 6
Professional standards . . . 8
Commonly accepted practices . . . 10
Personal ethics . . . 11
Government standards

government standards set out society's expectations for responsible research. They can be local, state or regional, national and even international.

Areas covered by government rules and regulations*

Research misconduct
Use of human and animals subjects in research
Conflict of Interest
Data protection and sharing
Laboratory management
Laboratory safety
Employment practices
Intellectual property

* Rules and regulations vary by country and level of government.
Areas covered by institutional rules and regulations*

Research integrity/misconduct
Laboratory management and safety
Employment practices
Intellectual property
Consulting
Academic freedom

* Individual institutions may have only some or no rules governing research.
Professional standards

Most professional research organizations set some standards for membership. Those with a strong service component usually have 'codes of conduct'. Those that publish journals have policies on publication practices.

Areas covered by professional standards

- Membership qualifications
- Codes of conduct
- Authorship and publication
- Peer review
- Expert opinion and advocacy
Commonly accepted practices

Some research practices are 'commonly accepted' but backed by no official authority. They can be local, institutional or professional. They are not necessarily in line with responsible practice. Check with an independent authority before doing something just because it is "commonly accepted".

Personal ethics

Your own sense of right and wrong is also an important standard. Use the 'in-the-news' check to weigh decisions: would you make the same decision if you knew your choice would receive front-page coverage the following day?
### In person for postdoc (example)

| Assumptions          | Most postdocs have already had basic RCR instruction  
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<tbody>
<tr>
<td></td>
<td>Will learn best if training is relevant to their research</td>
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<tr>
<td></td>
<td>Goal: a) learn RCR and b) become an RCR mentor</td>
</tr>
<tr>
<td>Methods</td>
<td>Four sessions: Introduction, Define Project, Research Project, Present</td>
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<tr>
<td></td>
<td>3 test sites, 2 control sites</td>
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<tr>
<td>Assessment</td>
<td>Pre/post-course test of knowledge</td>
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<td>Post-course survey</td>
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<td></td>
<td>Instructor focus groups and research team meeting</td>
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Problems & projects

Data Sharing

MICHR: Responsible Conduct of Research (RCR) for K-Awardees

Emily M. Fredericks, PhD
Division of Child Behavioral Health
Department of Pediatrics

February 2012

RCR: THE ETHICS OF ANIMAL USE IN RESEARCH

RESEARCH RECORDKEEPING:
CHALLENGES OF THE MODERN LABORATORY ENVIRONMENT

Steneck, 3 RCR Training Experiments
Global status of education & training

Varies by country

- Required in US
- Recommended in a few countries
- Not formally provided in most countries

Benefit of training has not been demonstrated

- Quality varies, content is not reliable
- Often not valued
- If taught as a competitive skill, can have negative consequences

Importance will likely increase
Misconduct can be “justified”

- Attitudes to responsible conduct of research:

<table>
<thead>
<tr>
<th>Norms</th>
<th>Counternorms</th>
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</thead>
<tbody>
<tr>
<td>Share</td>
<td>Secret</td>
</tr>
<tr>
<td>Empirical</td>
<td>Personal</td>
</tr>
<tr>
<td>Advance science</td>
<td>Self-interest</td>
</tr>
<tr>
<td>Skeptical</td>
<td>Dogmatic</td>
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</tbody>
</table>
Adhering to Norms/Counternorms

- Principle
- Self
- Others
OBRIGADO

Eu Para mais informações

nsteneck@umich.edu