Research Integrity

Teaching Research Ethics
Poynter Center for the Study of Ethics and American Institutions
May 2011

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Passion, Ethics and Trust

- How can you:
  - Sustain it
  - Foster it
  - Feed it
  - Grow it through others

Integrity challenges

- Have research ethics and research integrity changed?
- What is “responsible research”?
- Who is responsible for ensuring research integrity?
- Is science self-correcting?
- What about fraud?
- Do legal /government structures and academic administration /freedom conflict?

Integrity challenges

- Is research academia or a business, or have the two merged?
- What about the broader issue of responsible management of the research enterprise?
- Does its new rules change NSF's view of institutions having full responsibility for projects?
- How are government oversight /responsibility for funds related to institutional /individual responsibility?

Context

- Number of women, minorities and foreign-born dramatically increasing in research work force.
- Aging and retiring research workforce
- Science and engineering occupations are an increasing percentage of workforce (only 10% hold doctorates)

  http://www.nsf.gov/statistics/seind06/figures.htm

- More transparency, focus on accountability,
- Greater skepticism (current climate of transparency, increased oversight and seeking waste in government funding)

Why am I here?

- **Represent Office of Inspector General**
- **OIG's focus on:**
  - Fraud, waste, abuse
  - Economy, efficiency
  - New and improved policies

- **Tools of the trade:**
  - Audits, inspections, evaluations, investigations, outreach

- **Jurisdiction:** NSF Programs and Operations

OIG Investigative Process

- Required by rules to report significant problems' including RM
- Allegation intake from ANY source
- Gather sufficient information to assess allegation
- Civil/Criminal case investigated by OIG and refered to Justice for prosecution

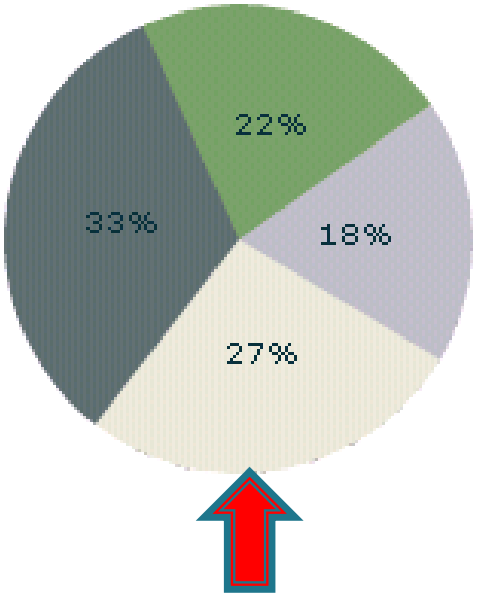
- Consequences:

- ✓ Special Oversight / Review
- ✓ Administrative Sanctions
- ✓ Suspension or Termination of Awards
- ✓ Civil/Criminal Violations
- ✓ Suspension/Debarment/Exclusion
- ✓ Corrective Action Plans
- ✓ Compliance Plans
- ✓ Fines, Penalties
- ✓ Exceptional Status

☞ May apply to either individual or entire institution

From the Government's Perspective, Grants are not "Small Business"

Award Type	Amount	%
Direct Payments	$79.9B	33%
Grants	**$659.1B**	**27%**
Contracts	$537.8B	22%
Insurance	$443.6B	18%
Others	$2.2B	0%
Loans	$0.7B	0%



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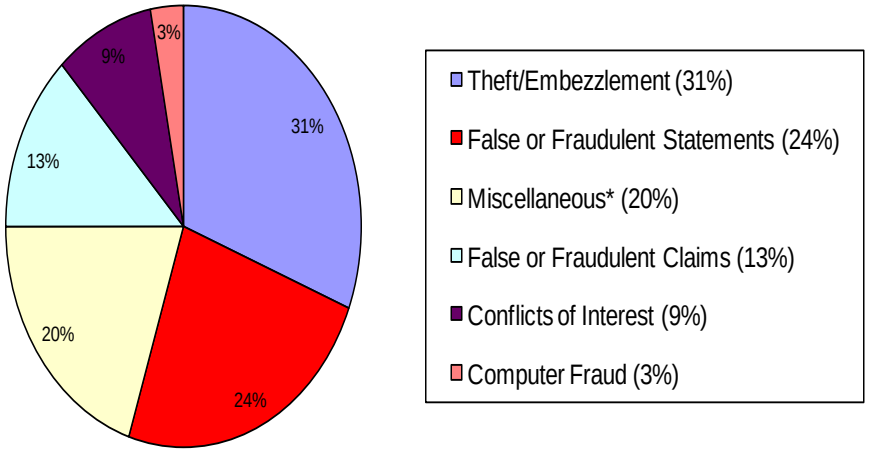
What is Fraud?

- It's a civil or criminal investigation it is NOT Research Misconduct.

Common Types of Civil/Criminal Allegations



*Includes mail fraud, false identification insurance fraud, impersonating a government officer, and copyright infringement.

Grant money used for rent and tuition

<u>Individual fraud on an NSF Grant</u>

- Fraudulent final report submitted to NSF by professor
- NSF grant money used for personal expenses
- NSF: Professor's grant was suspended and he had to repay almost $200,000
- Criminal result: Professor pled guilty and was fined $15,000 and faced 5-years probation

Institutional Consequences:

Government Imposed Compliance Plans

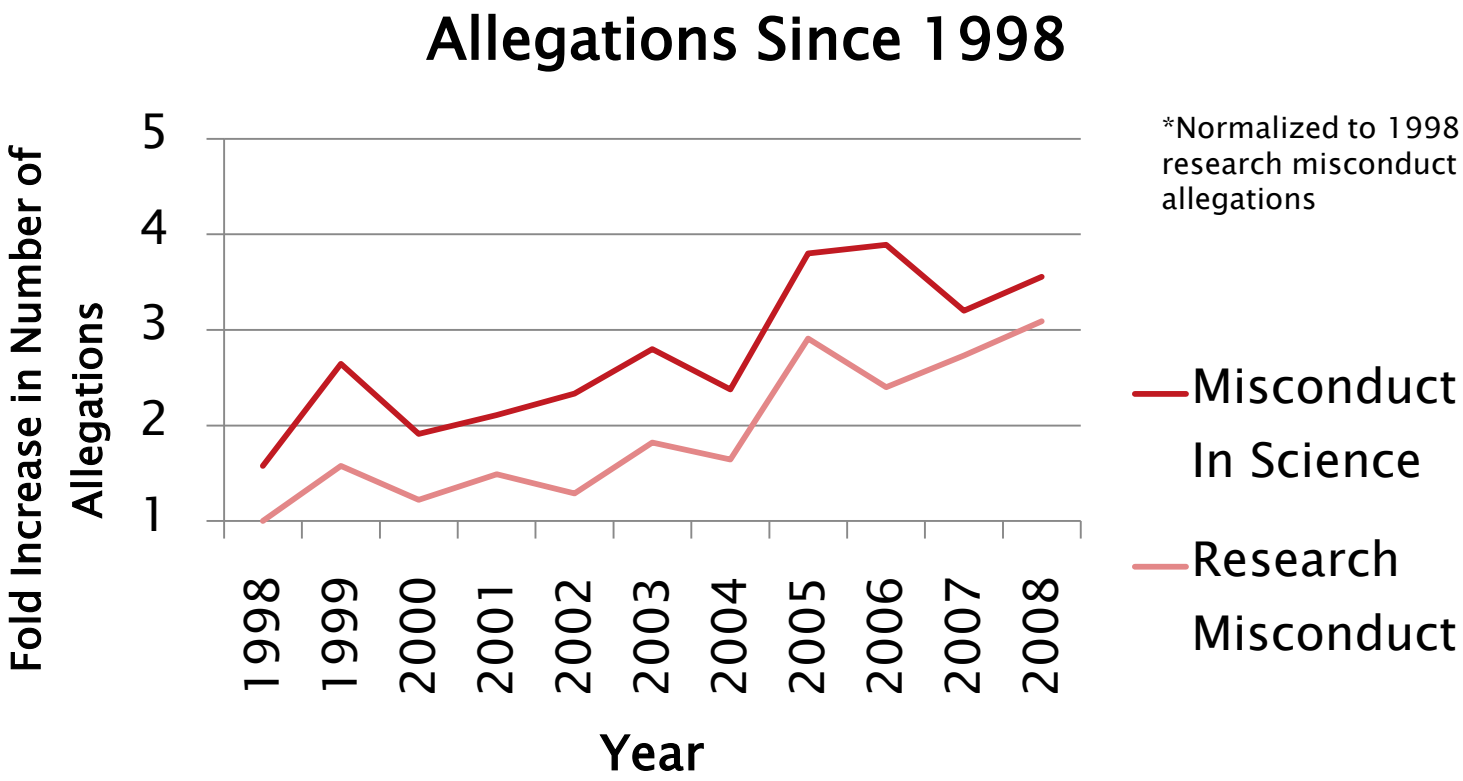
- $15 M; overcharging IDC
- $30 M, exceptional status and oversight program; misuse of federal grant funds
- $12 M; overbilling
- $1.5 M, 5-year compliance program; cost-sharing
- $1.2 M; inflated research grant costs
- $150,000, 5-year compliance program; misuse of federal funds
- $2.5 M, 5-year compliance program; cost-sharing, salaries, double charging
- $6.5 M, increased oversight; mischarging awards
- $3.4 M, 5-year compliance program; misuse of federal funds

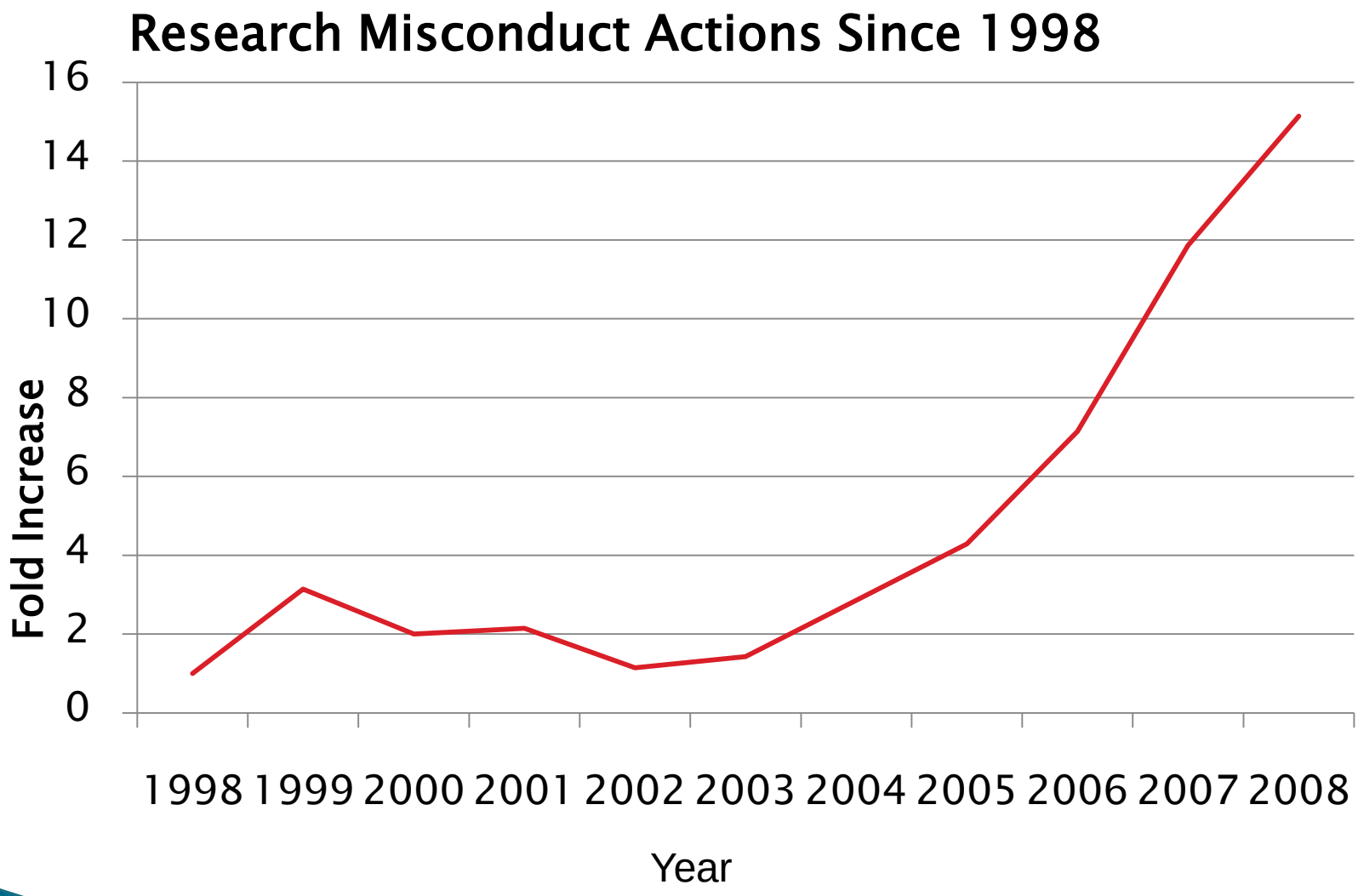
Research Misconduct Process

Step	Time-frame Targets	
1. Receipt	30 days - OIG	
2. Inquiry	90 days - OIG	90 days - Awardee
3. Investigation	180 days - OIG	180 days -Awardee
4. Adjudication	120 days - NSF (Deputy Director)	
5. Appeal	30 days - NSF (Director) response in 60 days	

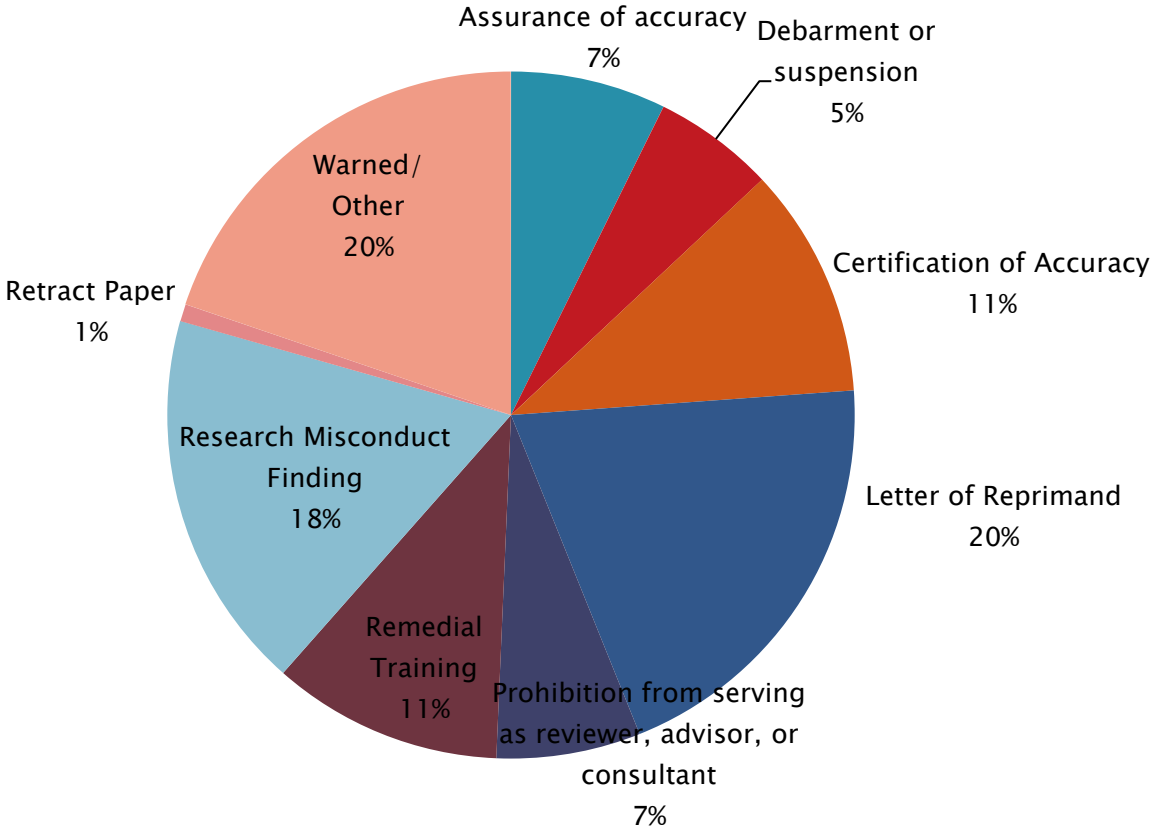
- Case may close at any step
- Referral:
  - Awardees – conduct vast majority of initial investigations (local issues and institution definition)
  - Many awardee investigations require additional investigation for federal purposes.
  - Provide on-site assistance

What do the numbers say?




Research Misconduct Actions Since 1998
16
14
12
10
8
6
4
2
0
Fold Increase
1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
Year

Research Misconduct Actions Since 1998



16 fold increase in remedial training (2003-2009)
Doubling in number of QRP letters sent (2006-2009)

Questionable Practices

- ✓Questionable Research Practice **(QRPs)**
  - ✓meet the definition of SCIENTIFIC MISCONDUCT as an "other serious deviation."

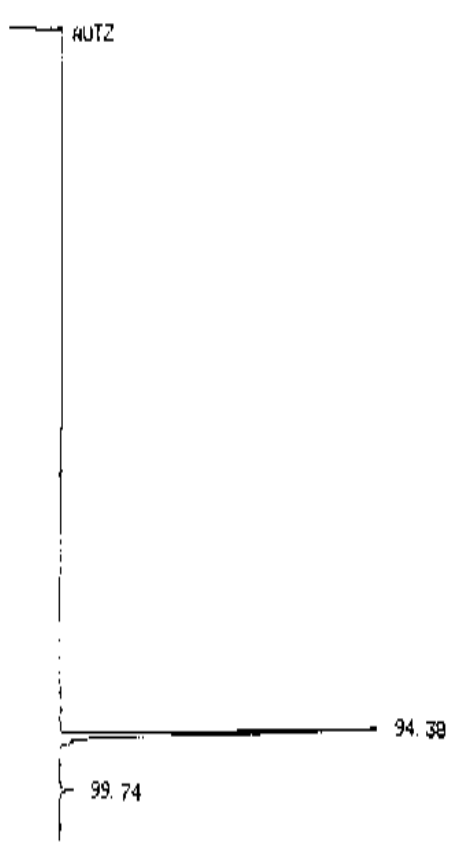
- ✓Questionable Administrative Practice **(QAPs)**
  - ✓fall outside the definition of RM, *e.g.*, violating NSF's merit review, COIs (but not EEO allegations).

- ✓Questionable Financial Practices **(QFPs)**
  - ✓relate to either institutional or individual financial practices which are not civil or criminal but do need correcting

- ✓Questionable Responsible Conduct of Research Practices**(QRCRPs)**
  - ✓are a new category used after America COMPETES Act to designate those **institutions** that have questionable training practices

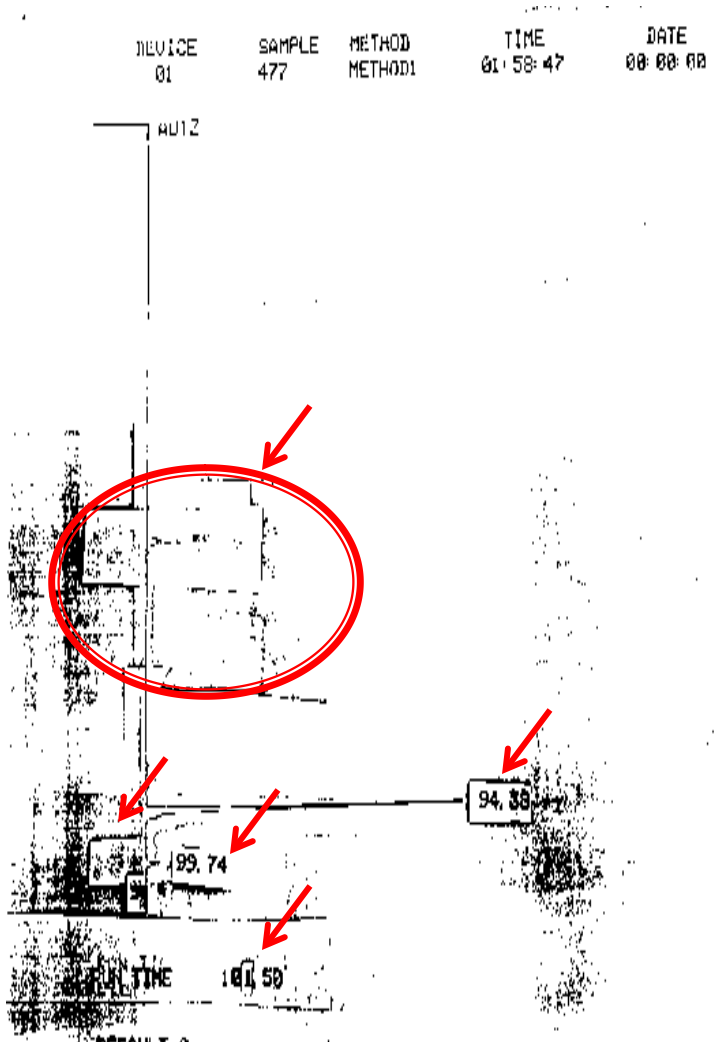
Consider some cases

- **Student fabricates data in 3 papers and one manuscript because uninterested in project**
  - Undetected for extended period of time.
  - 3 year debarment, certs, assurances, ethics training
- **Student fabricates "curb stoning" data presented in manuscript; lied to committee, mislead professor**
  - Undetected until thesis
  - 3 year debarment
- **Student fabricates data in Master's thesis, claims in part not taught how to record data correctly**
  - Undetected until thesis submitted
  - 3 year debarment, certs, assurances
- **New Faculty member plagiarizes 4 pages and one figure into proposal**
  - no mentoring; Institution improves training
  - RM finding; certs, assurances, training
  -
- **Foreign trained student steals data, papers**
  - No mentoring: Institution improves training, rm investigation process
  - 5 year debarment
- **Faculty member plagiarizes 3 pages of a proposal he peer reviewed**
  - Incomplete investigation; Institution agrees to improve its investigation
  - 1 year debarment



DEFAULT 0
NORMALIZATION METHOD USING AREA

TIME	AREA		%AREA	PK NAME
94.38	4421582	P	94.03302274	
99.74	141960	P	3.29512541 4	



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94.38	4421582	P	94.03302274	
99.74	141960	P	3.29512541 4	

With scissors and tape

Hall of Excuses

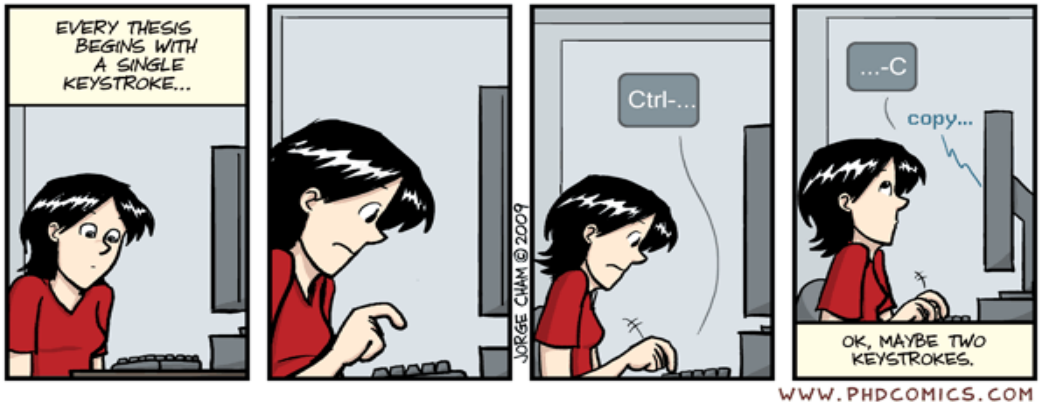
- I didn't do it. My grad student/undergraduate/postdoc/grant writer/faculty colleague/secretary/Co-PI/SRO/AOR/VP of Research/Dean/spouse wrote that section.
- It's only background/introductory material (or it had no technical merit).
- The reviewers are smart enough to know what is my work and what is someone else's.
- It's in the public domain.
- It's not plagiarism; it's just bad citation.
- I used the same words, but I meant something different.
- There's no other way to say that.
- I didn't have space for all the citations

And More……..

- "It's only a proposal. It's not like it's a publication"
- "Fastlane removed all the quotation marks"
- "My English teacher told me it's not plagiarism if I change every 7th word."
- "I was told that having between 70-80 citations in a proposal was enough.
- Anymore and I would look like I wasn't proposing to do something new."
- "If that was done by me, it was not intentional, and if I did it, I was not aware that I was doing it, and if I did it, it stopped."
- A bird distracted me.
- I was suffering from severe acid reflux.

Electronic technology and plagiarism

- Single to multiple sources
  - 1 proposal – 24 sources
  - 6 proposals and 56 sources
- Large blocks of text to individual sentences
- Evidence of a pattern in publications, theses, other proposals easier to find



PhD Comics 4/10/2009

Distribution of RM Findings:

Fabrication	12%	Falsification	15%
Plagiarism	66%	Other	11%

Individual Consequences

- Reprimand
- Denial of tenure or termination
- Loss of salary
- Suspension or termination of awards
- Retraction of Papers
- Added review of published works, grant proposals
- Restrictions on numbers of students
- Ethics classes (attend or teach)
- Ban from serving as a reviewer
- Certifications by subject
- Assurances by supervisors or institution official
- Federal-wide debarment
- Civil, Criminal case and actions (probation, fines / restitution)
- Public disclosure of actions

"He was copying from the other students."

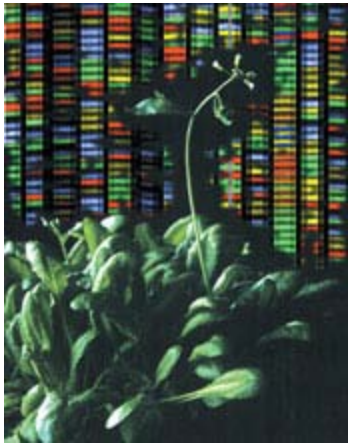
Hemispheres Magazine, United Airlines, June 2006, p. 80.

Research Integrity: a balance of training and investigating

A well-designed system guides your choices.

Responsible Professional Practices

- Compliance with rules and regulations
- Peer Review Rules
- Mentor/ Trainee Responsibilities
- Human Subjects Regulations
- Animal Welfare Regulations
- Research Misconduct
  - Fabrication
  - Falsification
  - Plagiarism
- Collaborative Research Practices
- Publication/Authorship Practices
- Data Sharing/ Acquisition/Management/Ownership Practices
- Financial Management



And some more . . . .

- Conflict of Interest and Commitment
- Laboratory Management Skills (people/supplies)
- Grantsmanship
- Patent Issues
- Global Competence: contributing to knowledge, comprehension, analysis, and evaluation in the context of an increasingly globalized world
- Appropriate alternative actions provided by ethical principles and current professional guidelines
- Ethical reasoning
- Long term development of research agenda

Institutional Responsibilities (proposals submitted ON or AFTER January 4, 2010)

- a. An institution **must have a plan in place** to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students, and postdoctoral researchers **who will be supported by NSF** to conduct research. As noted in GPG Chapter II.C.1.e, **institutional certification to this effect is required for each proposal**.

- b. While **training plans** are not required to be included in proposals submitted to NSF, institutions are advised that they **are subject to review**, upon request.

- c. An institution **must designate one or more persons to oversee compliance** with the RCR training requirement.

- d. **Institutions are responsible for verifying** that undergraduate students, graduate students, and postdoctoral researchers supported by NSF to conduct research have received training in the responsible and ethical conduct of research.

http://www.nsf.gov/pubs/policydocs/rcr/faqs_aug10.pdf

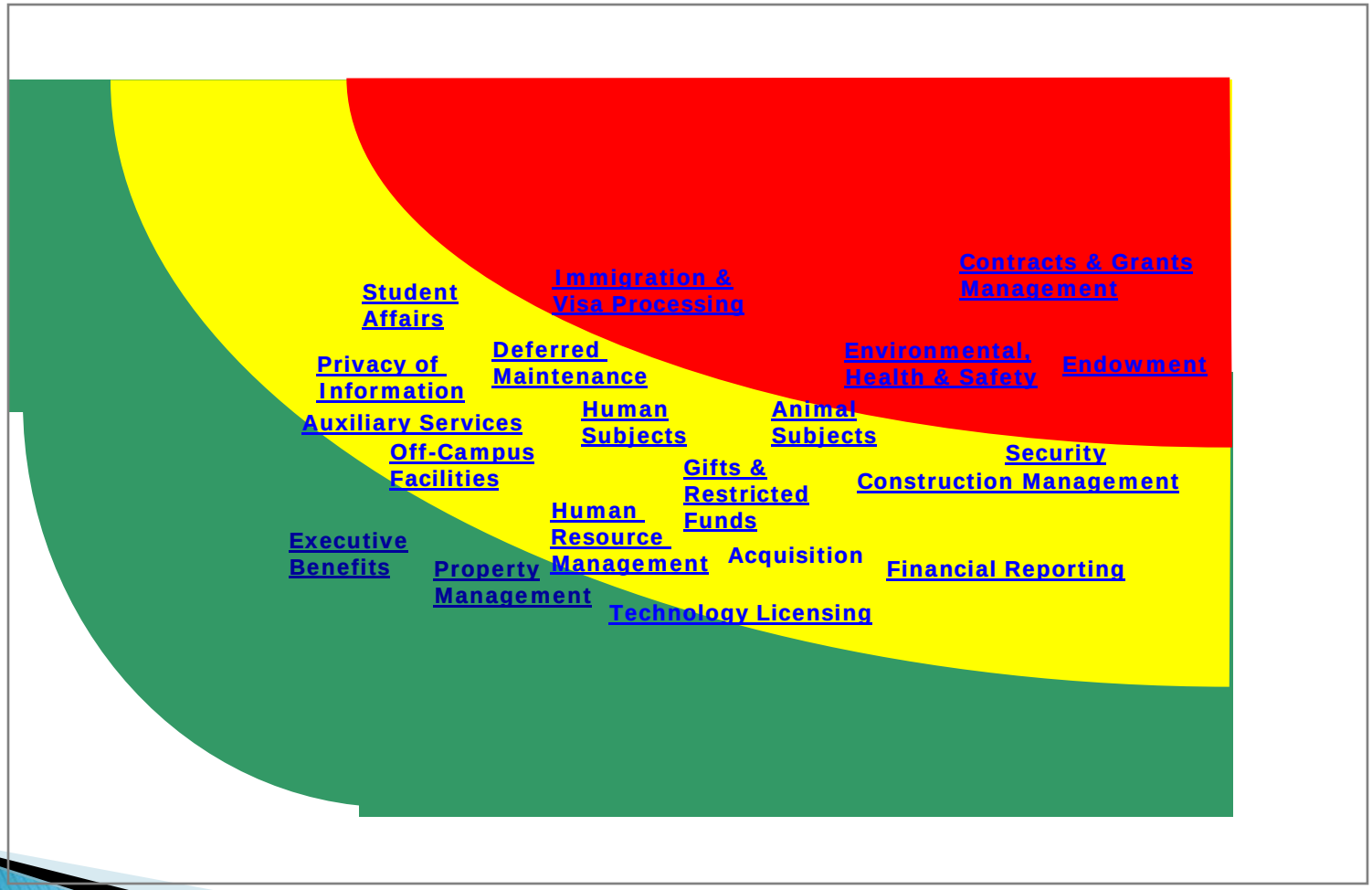
Who must receive the RCR training?

- NSF expects institutions to . . . verify that . . . Students . . .who receive NSF funds (support from salary and/or stipends to conduct research on NSF grants) will obtain RCR training. However, NSF anticipates that institutions will develop their RCR training programs in a manner that helps prepare the next generation of researchers, **including the consideration of risks or other factors associated with student and postdoctoral researcher participation in research.**

Similar language in GPG II-C.1.e (NSF 10-01) Certification Regarding Responsible Conduct of Research (RCR)

One University's Risk Assessment

Heat Map



Promoting Individual and Institutional Integrity

1) Establish standards and procedures
2) Designate someone to be responsible for the E&C Program
3) Care in assigning substantial discretionary authority
4) Effectively communicate and train on E&C Program elements
5) Establish monitoring and evaluation of E&C Program (risk evaluation)
6) Consistently promote and enforce E&C Program
7) Respond appropriately to problems

*Federal Sentencing Guidelines, OIG HHS (8 elements), COGR

What's in your plan?

What's the format?

- On-line?
- Face-to-face meetings w/advisor?
- Faculty-led courses?

What's the subject matter?

- RM policies, authorship and citation practices, data acquisition and sharing*, animal/human subjects protection, IRBs, gov't requirements
- issues as determined by risk assessment
- real life scenarios: http://www.nsf.gov/oig/closeouts.jsp

Who participates?

- Only students/postdocs directly funded by an NSF grant?
- Foreign-educated?
- All?

2 case studies

University A: invited us to visit to discuss it's implementation of its RCR program .

- Phased approach beginning with all students/postdocs on active NSF grants and 'high risk' students, broadening each year to eventually include all STEM students/postdocs regardless of support.
- Training included courses supplemented by on-line material.
- Univ's designated RCR person worked across campus for inclusiveness and had staff to assist.

University B: while also compliant with NSF requirements: had more open cases than any university in OIG's history

- For RCR: Univ interpreted support as who was receiving direct salary from NSF grants started after Jan 2010 (**2 students**);
  - it had no immediate plans to broaden participation.

- Univ assigned RCR duties to VPR (low priority).
  - VPR was not working with other parts of the university
  - had one other staff assigned to help in this area.

- Training: students could take any on-line course, academic course, or discuss w/advisor (no format).

Conclusions

- We connect allegations to the training subjects received
    - Affects determination of intent;
    - QRPs with recommendations for required training if RM finding
    - Potential for QRCRPs to Universities
- A failure to train creates opportunities for RM
    - Should grants be reimbursed?
- Training information to be used in preparation for OIG RCR reviews.
    - Planning to initiate reviews this year

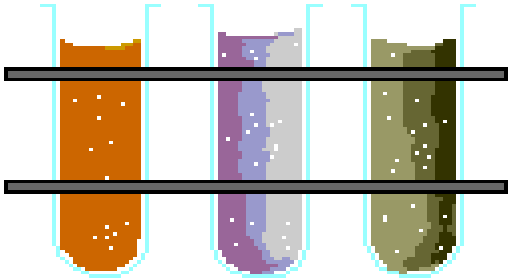
New Global Considerations

- For the U.S. to support international S&E partnerships, there must be accountability, research integrity, and minimal bureaucratic overhead from many sources. Common standards for research integrity among participants in international S&E partnerships must be created. . . **(National Science Board 08-4)**

- Global Science Forum (science policy group of government delegates under Organization for Economic Co-operation and Development - OECD)
  - Best Practices for Ensuring Scientific Integrity and Preventing Misconduct http://www.oecd.org/dataoecd/37/17/40188303.pdf
  - Co-ordinating Committee for Facilitating International Research Misconduct Investigations http://www.oecd.org/dataoecd/29/4/42713295.pdf

Research is Exciting

- Ethics Programs in your laboratory, your department and institution can:
  - create a safe environment of integrity for passion and inquiry to thrive
  - excite the next generation
  - allow us to adapt to the new challenges the science community faces



References

- http://oig.hhs.gov/fraud/complianceguidance.html
- http://www.nacua.org/documents/FedSentencingGuidelines.pdf
- http://www.ussc.gov/corp/Murphy1.pdf
- http://www.usdoj.gov/dag/cftf/corporate_guidelines.html
- http://ethicspoint.sitestream.com/Webinar%20fulfillment/VickyNemersonMarch2005/EthicsPoint_FSG%20Whitepaper-Feb05.pdf
- Grant, G. Odell, G., and Forrester, R; Creating Effective Research Compliance Programs in Academic Institutions; **Academic Medicine**, Vol 74, No. 9, September 1999, p. 951.
- Jordan, K.S.; and Murphy, J.E.; Compliance Programs: What the Government Really Wants. Page 121.
- A variety of University web sites
- Managing Externally funded Research Programs; A Guide to Effective Management Practices; Council on Government Relations, June 2005
- DHHS Draft OIG Compliance Program Guidance for Recipients of PHS Research Awards; Fed. Reg. Monday Nov 28, 2005, vol. 70#227, p:71312
- http://www.bhef.com/BHEFEhtics5-31.pdf
- http://www.ussc.gov/corp/advgrprpt/advgrprpt.htm

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