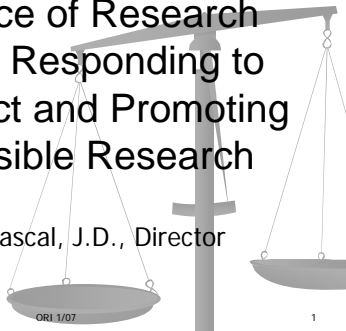


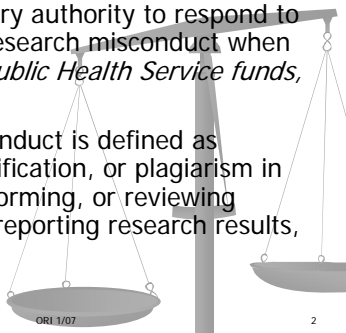
The Office of Research Integrity: Responding to Misconduct and Promoting Responsible Research

Chris B. Pascal, J.D., Director



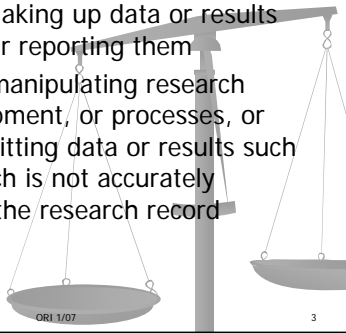
The ORI Mission and Authorities

- ORI has statutory authority to respond to allegations of research misconduct when supported by *Public Health Service funds*, 42 USC 289b
- Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results, 42 CFR Part 93



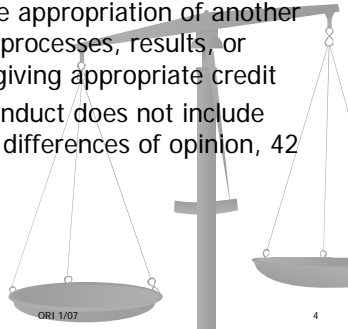
ORI Mission and Authority

- 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



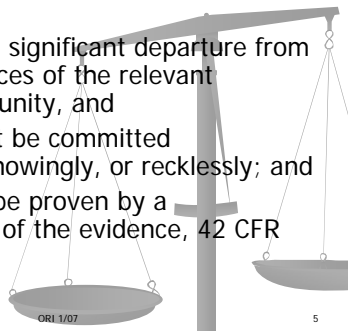
ORI Mission and Authority (cont)

- Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit
- Research misconduct does not include honest error or differences of opinion, 42 CFR Part 93



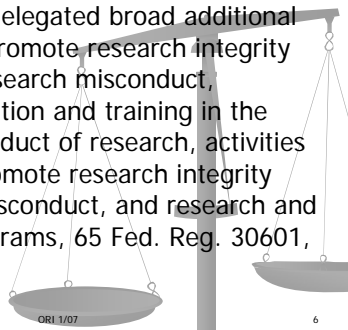
Proof of Research Misconduct

- Requires-
- That there be a significant departure from accepted practices of the relevant research community, and
- The misconduct be committed intentionally, knowingly, or recklessly; and
- The allegation be proven by a preponderance of the evidence, 42 CFR Part 93



Additional authorities delegated to ORI

- ORI has been delegated broad additional authorities to promote research integrity and prevent research misconduct, including education and training in the responsible conduct of research, activities designed to promote research integrity and prevent misconduct, and research and evaluation programs, 65 Fed. Reg. 30601, May 12, 2000



Additional ORI Functions and Activities

- Receive and assess allegations of research misconduct
- Determine ORI jurisdiction
- Oversee institutional inquiry and investigation reports and procedures
- Make determinations of misconduct or recommendations for settlement
- Participate in civil or criminal cases of alleged research misconduct directly or through other offices, including HHS OIG, US Attorney's Office or in collaboration with other federal agencies

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Additional ORI Activities

- Maintain the assurance of 4,000 research institutions for responding to misconduct
- Correct or retract scientific papers to protect the integrity of the published literature and the public
- Protect the confidentiality of respondents, complainants, and witnesses
- Protect the complainant from retaliation through regulatory obligations imposed on the research institutions, 42 CFR 93.300 (d)

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ORI Activities (cont)

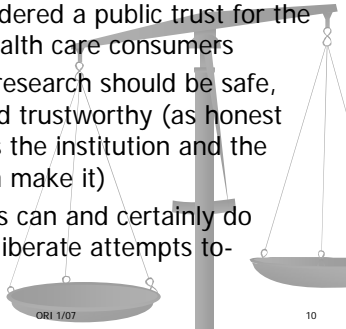
- Provide education in the responsible conduct of research
- Collaborate with the research community to improve biomedical research
- Exclude dishonest investigators from PHS and Federal agency funded research
- Make public findings of misconduct so that institutions and individuals will be aware of wrongdoing

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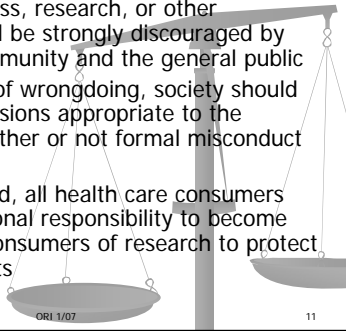
Views of the ORI Director

- Publicly funded biomedical research should be considered a public trust for the benefit of all health care consumers
- Therefore, the research should be safe, transparent, and trustworthy (as honest and accurate as the institution and the investigator can make it)
- Honest mistakes can and certainly do happen, but deliberate attempts to-



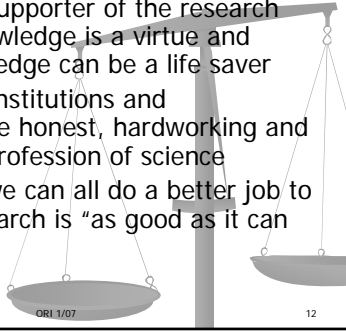
Director (cont)

- Compromise the truth and obtain an unfair monetary, business, research, or other advantage should be strongly discouraged by the research community and the general public
- In serious cases of wrongdoing, society should demand repercussions appropriate to the wrongdoing, whether or not formal misconduct occurs
- On the other hand, all health care consumers should take personal responsibility to become knowledgeable consumers of research to protect their own interests



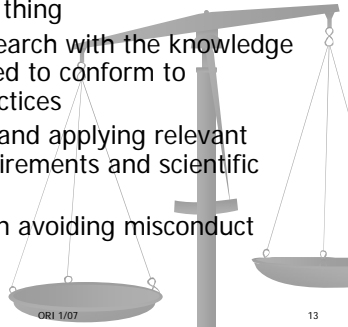
Director (cont)

- I am a strong supporter of the research enterprise; knowledge is a virtue and scientific knowledge can be a life saver
- Most research institutions and investigators are honest, hardworking and believe in the profession of science
- Nevertheless, we can all do a better job to make sure research is "as good as it can be"



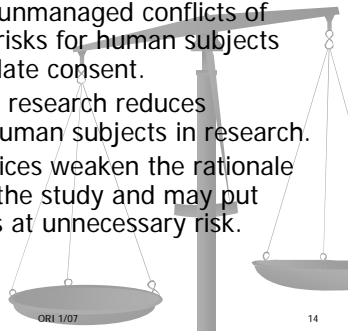
What is RCR-The ORI View?

- Doing the right thing
- Conducting research with the knowledge and skills needed to conform to responsible practices
- Understanding and applying relevant regulatory requirements and scientific norms
- Much more than avoiding misconduct



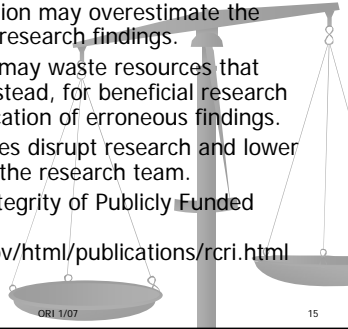
WHY IS RCR RELEVANT TO HUMAN SUBJECTS?

- Undisclosed or unmanaged conflicts of interest create risks for human subjects and may invalidate consent.
- Fraud in clinical research reduces confidence of human subjects in research.
- Poor data practices weaken the rationale for conducting the study and may put human subjects at unnecessary risk.



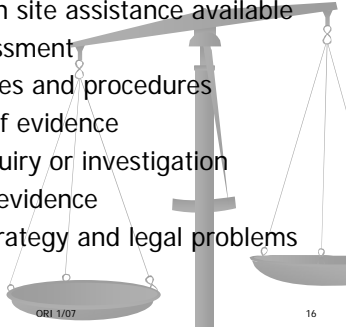
RCR RELEVANCY (CONT)

- Duplicate publication may overestimate the benefit of clinical research findings.
- "Massaged data" may waste resources that could be used, instead, for beneficial research and lead to publication of erroneous findings.
- Authorship disputes disrupt research and lower morale, affecting the research team.
- "Assessing the Integrity of Publicly Funded Research,"
<http://ori.dhhs.gov/html/publications/rcrj.html>



ORI Rapid Response Technical Assistance 240 453 8800

- Telephone or on site assistance available
- Allegation assessment
- Advice on policies and procedures
- Sequestration of evidence
- Starting the inquiry or investigation
- Analysis of the evidence
- Investigative strategy and legal problems

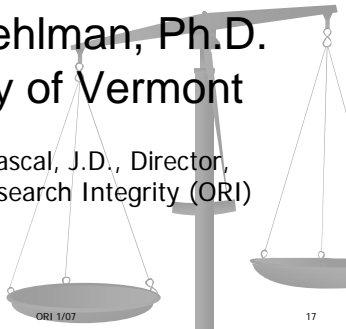


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Major misconduct case: Eric Poehlman, Ph.D. University of Vermont

Chris B. Pascal, J.D., Director,
Office of Research Integrity (ORI)



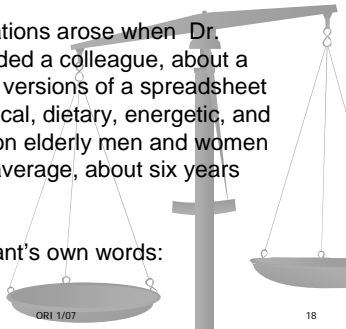
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Initial Allegations

The initial allegations arose when Dr. Poehlman provided a colleague, about a week apart, two versions of a spreadsheet containing physical, dietary, energetic, and metabolic data on elderly men and women seen twice, on average, about six years apart.

In the complainant's own words:

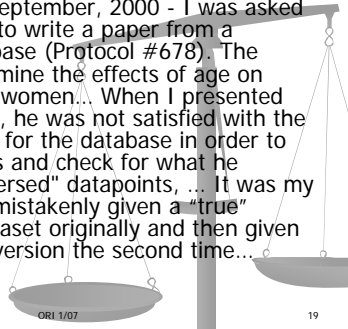


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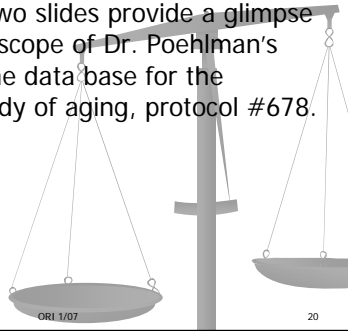
Initial allegations (cont)

- The incident that triggered my suspicions occurred in late September, 2000 - I was asked by Dr. Poehlman to write a paper from a longitudinal database (Protocol #678). The paper was to examine the effects of age on lipids in men and women... When I presented him with the data, he was not satisfied with the results and asked for the database in order to verify data entries and check for what he described as "reversed" datapoints, ... It was my belief that I was mistakenly given a "true" version of the dataset originally and then given the manipulated version the second time...



The Scope of the Misconduct

- The following two slides provide a glimpse of the massive scope of Dr. Poehlman's alterations in the data base for the longitudinal study of aging, protocol #678.



First	BodyComp&EE		Revised TEE's	
	TEE-1	TEE-2	TEE1	TEE2
jean		2043.00	2399	2043
ray			3369	2928
beth			3728	3404
beth	2460.00	1838.00	2460	1838
alice			2750.00	2750
thomas	2540.00	2945.00		
david			3382	3312
henry		3423.00	3423	2656
frances		1854.00	2377	1854
john		2147.00	3244	2147
aria			2880	2868
carol			2136	2130
anthony	2919.00	3264.00	3264	3264
ron		2950.00	3593	2950
pattick		3221.00	3453	3221
walter			4442	3873
tom		2545.00	3001	2545
john		2723.00	3541	2723
arn		2261.00	2201	2351
mary	2638.00	2227.00	2638	2227
terrell		4066.00	4314	4066
jean		3350.00	3473	3350
tyrd			3593	3410
david		3780.00	3991	3780
beraneca		2611.00	2698	2611
david			3037	3471
hd	2328.00	2516.00	2516	2328
allist			3739	2822
arn	2045.00	2359.00	2359	2045

Correct TEE values

Dr. Poehlman's TEE values

Dr. Poehlman's changes to total energy expenditure values included many fabrications (blue) and reversals of visit one and visit two values (red)

The net effects were to greatly inflate the number of subjects and to reverse the apparent effect of aging.

	BodyComp&EE		Revised TEE's	
	TEE-1	TEE-2	TEE1	TEE2
Count	55.00	109.00	135	135
Mean	2391.09	2658.07	2925.97037	2624.57037
Std. Dev.	618.53	640.12	645.699389	613.445074

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Additional Issues (cont)

- The UVM investigation, ORI, and the U.S. Attorney's office determined that Dr. Poehlman falsified data in additional papers and grant applications in areas as wide ranging as Alzheimer's disease, the effect of endurance training on RMR, and the effects of hormone replacement therapy on post-menopausal women.
- Many of these false claims were also made in talks given by Dr. Poehlman, some of which were documented, allowing findings of scientific misconduct to be made.

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Dr. Poehlman's obstruction efforts

- Starting immediately after being accused of misconduct, Dr. Poehlman aggressively attempted to obstruct the University investigation, and subsequently the Government's review.
- He accused his young colleagues of having falsified the 678 database.
- He went to Federal court to attempt to block UVM from notifying ORI of the pending investigation.

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Obstruction (cont)

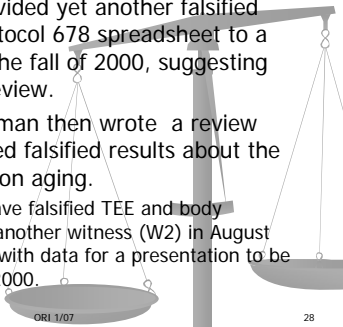
- During the investigation, he solicited letters of support from collaborators and former technicians who claimed that they had helped with the longitudinal menopause study; these claims resulted from Dr. Poehlman's false assurances and edits of the letters, and they placed these witnesses in legal jeopardy.
- Dr. Poehlman submitted falsified and fabricated documents to the UVM committee in an effort to show that the 35 women in the menopause study had visited the GCRC a second time.

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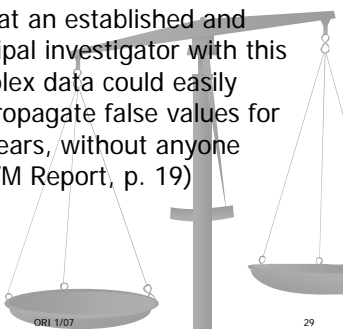
Additional Findings Made by ORI in its Oversight Review Include:

- Dr. Poehlman provided yet another falsified version of the Protocol 678 spreadsheet to a witness (W1) in the fall of 2000, suggesting that W1 write a review.
- W1 and Dr. Poehlman then wrote a review article that included falsified results about the decline in RMR upon aging.
- Dr. Poehlman also gave falsified TEE and body composition data to another witness (W2) in August 2000 to provide him with data for a presentation to be given in September 2000.



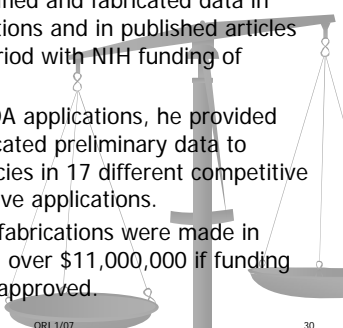
Why did it take so long to discover?

- The reality is that an established and renowned principal investigator with this volume of complex data could easily generate and propagate false values for months, even years, without anyone catching on (UVM Report, p. 19)



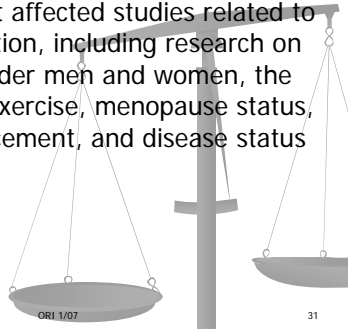
Summary

- Dr. Poehlman falsified and fabricated data in NIH grant applications and in published articles over a 10 year period with NIH funding of almost \$3 million
- Counting two USDA applications, he provided falsified and fabricated preliminary data to government agencies in 17 different competitive and non-competitive applications.
- Falsifications and fabrications were made in applications worth over \$11,000,000 if funding would have been approved.



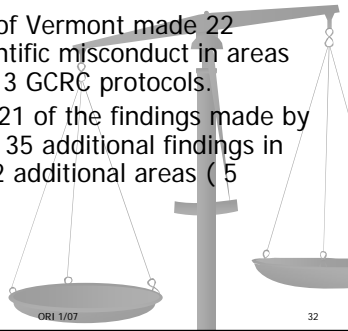
Summary

- The misconduct affected studies related to disease prevention, including research on the health of older men and women, the effect of diet, exercise, menopause status, hormone replacement, and disease status



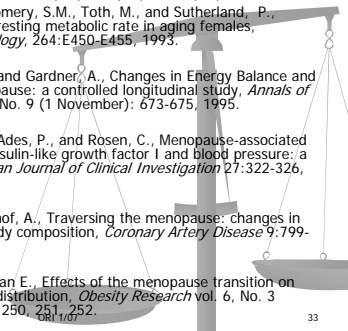
Summary

- The University of Vermont made 22 findings of scientific misconduct in areas represented by 3 GCRC protocols.
- ORI confirmed 21 of the findings made by UVM and made 35 additional findings in the same plus 2 additional areas (5 protocols).



Publications Identified for Retraction/Correction

- 1. Poehlman E., Goran, M., Gardner, A., Ades, P., Arclero, P., Katzman-Rooks, S., Montgomery, S.M., Toth, M., and Sutherland, P., Determinants of decline in resting metabolic rate in aging females, *American Journal of Physiology*, 264:E450-E455, 1993.
- 2. Poehlman, E., Toth, M., and Gardner, A., Changes in Energy Balance and body composition at menopause: a controlled longitudinal study, *Annals of Internal Medicine* vol. 123, No. 9 (1 November): 673-675, 1995.
- 3. Poehlman, E., Toth, M., Ades, P., and Rosen, C., Menopause-associated changes in plasma lipids, insulin-like growth factor I and blood pressure: a longitudinal study. *European Journal of Clinical Investigation* 27:322-326, 1997. All pages.
- 4. Poehlman, E. and Tchernof, A., Traversing the menopause: changes in energy expenditure and body composition, *Coronary Artery Disease* 9:799-803, 1998.
- 5. Tchernof, A. and Poehlman E., Effects of the menopause transition on body fatness and body fat distribution, *Obesity Research* vol. 6, No. 3 (May):246-254 1998. 249, 250, 251, 252.



Published Papers

- 6. Tchernof, A., Poehlman, E., and Despres, J., Body fat distribution, the menopause transition, and hormone replacement therapy. *Diabetes and Metabolism* 26:12-20 2000. 17.
- 7. Rawson, E. and Poehlman, E., Resting metabolic rate and aging. In: *Recent Research Developments in Aging*, Research Signpost Group, India, 2000 (pp. R 1791, R 1792 and R 1804, reference 34).
- 8. Poehlman, E. "Menopause, energy expenditure, and body composition," *Acta Obstet Gynecol Scand* 81:603-611, 2002 (pages 605, 606 and 607, 608) (falsified RMR, LTPA, FM, W/H, RO from the "longitudinal menopause study").
- 9. Poehlman, E., Gardner, A., and Goran, M., Influence of Endurance training on energy intake, nor epinephrine kinetics, and metabolic rate in older individuals, *Metabolism* 41(September):941-948, 1992
- 10. Poehlman, E., Gardner, A., Arciero, P., Goran, M., and Calles, J., Effects of endurance training on total fat oxidation in elderly persons *J. Appl. Physiol.* 76(6):2281-2287, 1994.

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Assurance

- Assurance on application form PHS 398, #15
- Principal Investigator/Program Director
Assurance: I certify that the statements herein are true, complete and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if a grant is awarded as a result of this application.

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4 2 7 8 8
APR 22 1999
FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
WASHINGTON, D.C. 20535

NAME: ERIC POEHLMAN
ADDRESS: 1000 UNIVERSITY AVENUE
STATE: VT
CITY: BURLINGTON
ZIP: 05405

ORGANIZATION: UNIVERSITY OF VERMONT
DEPARTMENT: COLLEGE OF MEDICINE
TITLE: ASSISTANT PROFESSOR

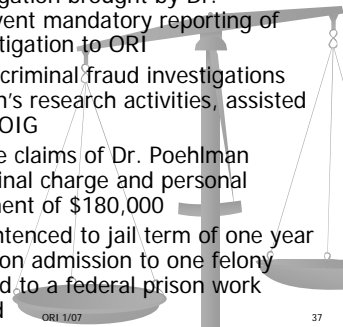
DATE: APR 22 1999

This is what led to Dr. Poehlman pleading guilty to a felony

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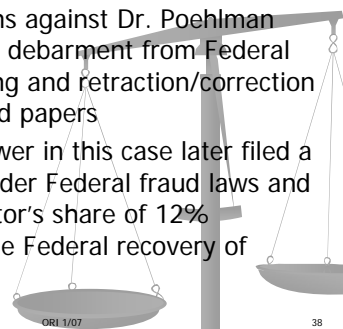
What Was the involvement of the Vermont U.S. Attorney

- Defended civil litigation brought by Dr. Poehlman to prevent mandatory reporting of misconduct investigation to ORI
- Opened civil and criminal fraud investigations into Dr. Poehlman's research activities, assisted by ORI and HHS OIG
- Decided that false claims of Dr. Poehlman warranted a criminal charge and personal monetary settlement of \$180,000
- Dr. Poehlman sentenced to jail term of one year and a day based on admission to one felony count and ordered to a federal prison work camp in Maryland



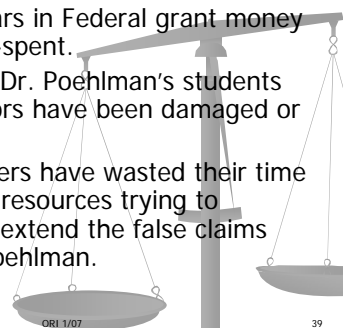
ORI actions and the Whistleblower's role

- ORI/ASH actions against Dr. Poehlman include lifetime debarment from Federal research funding and retraction/correction of ten published papers
- The whistleblower in this case later filed a qui tam suit under Federal fraud laws and received a relator's share of 12% (\$22,000) of the Federal recovery of \$180,000



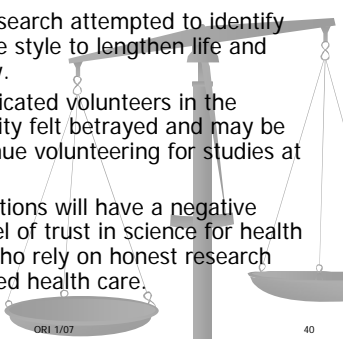
Impact of Dr. Poehlman's Actions in the Scientific Community

- Millions of dollars in Federal grant money have been mis-spent.
- The careers of Dr. Poehlman's students and collaborators have been damaged or impaired.
- Other researchers have wasted their time and laboratory resources trying to reproduce and extend the false claims made by Dr. Poehlman.



Impact of Dr. Poehlman's Actions on the General Public

- Dr. Poehlman's research attempted to identify ways to modify life style to lengthen life and improve its quality.
- The loyal and dedicated volunteers in the Vermont community felt betrayed and may be reluctant to continue volunteering for studies at UVM.
- Dr. Poehlman's actions will have a negative impact on the level of trust in science for health care consumers who rely on honest research results for improved health care.

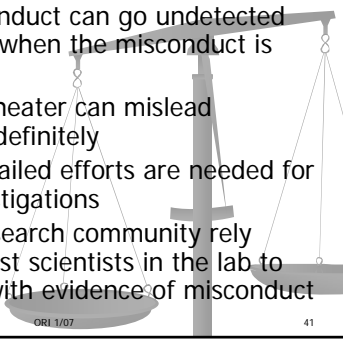


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Lessons Learned

- Research misconduct can go undetected for years, even when the misconduct is massive
- A determined cheater can mislead collaborators indefinitely
- Serious and detailed efforts are needed for successful investigations
- ORI and the research community rely heavily on honest scientists in the lab to come forward with evidence of misconduct

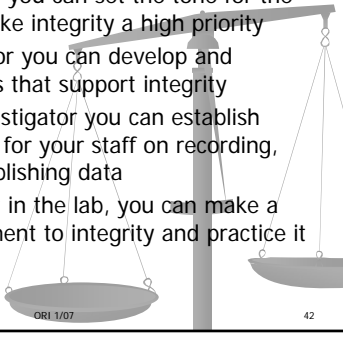


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What can you do at your institution?

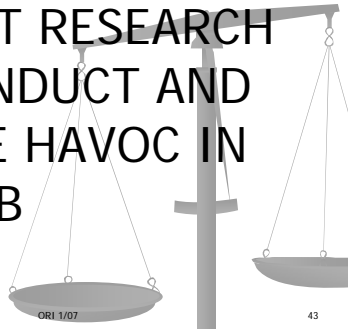
- As a senior official you can set the tone for the institution and make integrity a high priority
- As an administrator you can develop and implement policies that support integrity
- As a principal investigator you can establish specific standards for your staff on recording, reporting, and publishing data
- As a staff scientist in the lab, you can make a personal commitment to integrity and practice it on a daily basis



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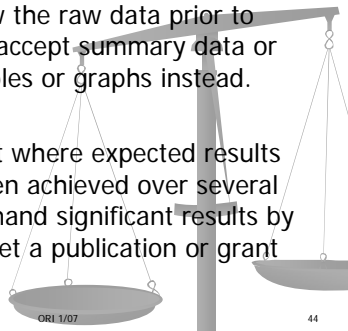
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TEN EASY WAYS TO COMMIT RESEARCH MISCONDUCT AND CREATE HAVOC IN THE LAB



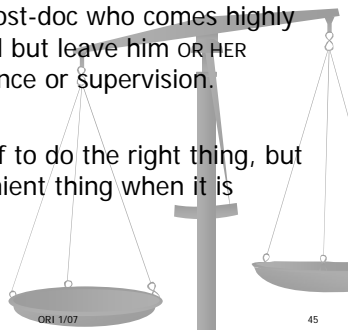
TEN EASY WAYS

1. Don't review the raw data prior to publication; accept summary data or prepared tables or graphs instead.
2. On a project where expected results have not been achieved over several months, demand significant results by Friday to meet a publication or grant deadline.



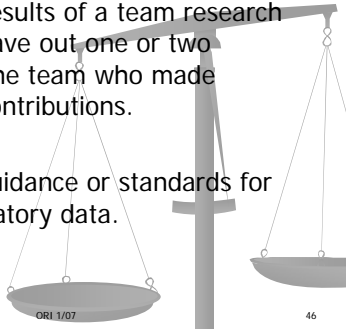
TEN EASY WAYS

3. Hire a new post-doc who comes highly recommended but leave him OR HER without guidance or supervision.
4. Tell your staff to do the right thing, but do the convenient thing when it is expedient.



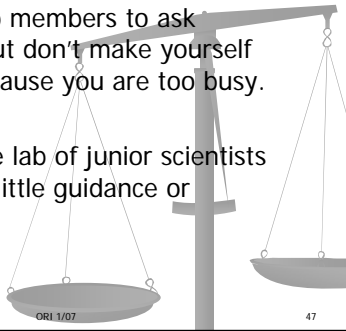
TEN EASY WAYS

5. Publish the results of a team research project but leave out one or two members of the team who made substantive contributions.
6. Provide no guidance or standards for keeping laboratory data.



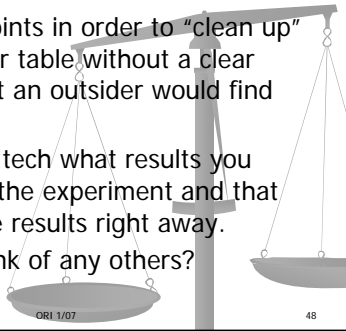
TEN EASY WAYS

7. Tell your lab members to ask questions, but don't make yourself available because you are too busy.
8. Have a large lab of junior scientists and provide little guidance or supervision.



TEN EASY WAYS

9. Drop data points in order to "clean up" your graph or table without a clear rationale that an outsider would find reasonable.
10. Tell your lab tech what results you expect from the experiment and that you need the results right away.
Can you think of any others?



Introduction to the Responsible Conduct of Research

Chris B. Pascal, J.D.
Director, Office of Research Integrity

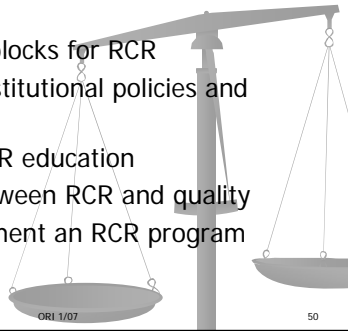


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The RCR Road Map

- Defining RCR
- Basic building blocks for RCR
- Examples of institutional policies and guidelines
- Elements of RCR education
- Connection between RCR and quality
- Develop/implement an RCR program

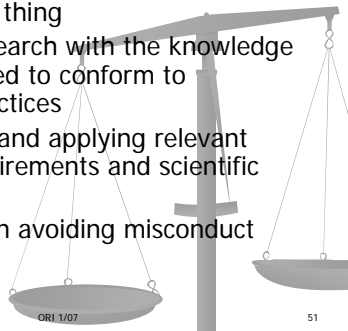


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What is RCR-The ORI View?

- Doing the right thing
- Conducting research with the knowledge and skills needed to conform to responsible practices
- Understanding and applying relevant regulatory requirements and scientific norms
- Much more than avoiding misconduct

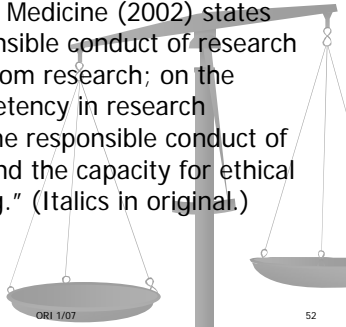


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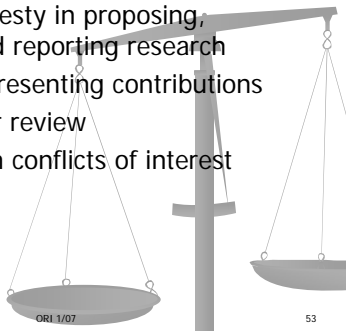
What is RCR-The IOM View?

- The Institute of Medicine (2002) states that “the responsible conduct of research is not distinct from research; on the contrary, competency in research *encompasses* the responsible conduct of that research and the capacity for ethical decision making.” (Italics in original.)



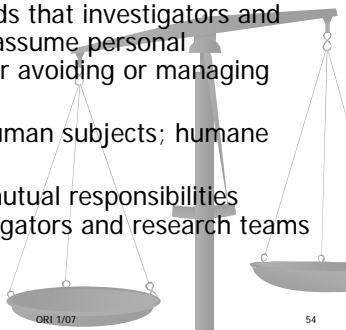
IOM-What is RCR at the Individual Level?

- Intellectual honesty in proposing, performing, and reporting research
- Accuracy in representing contributions
- Fairness in peer review
- Transparency in conflicts of interest



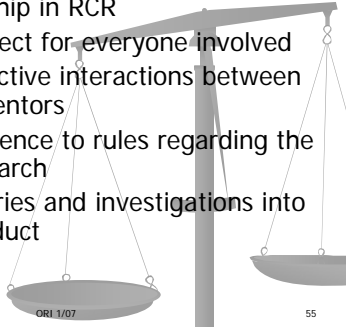
RCR at the Individual Level (cont)

- ORI recommends that investigators and administrators assume personal responsibility for avoiding or managing conflicts
- Protection of human subjects; humane care of animals
- Adherence to mutual responsibilities between investigators and research teams



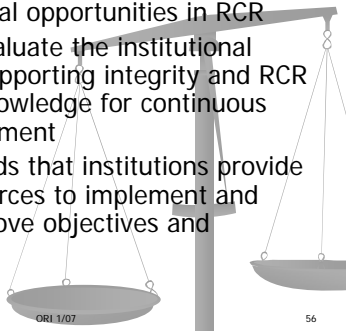
IOM-What is RCR at the institutional level?

- Provide leadership in RCR
- Encourage respect for everyone involved
- Facilitate productive interactions between trainees and mentors
- Advocate adherence to rules regarding the conduct of research
- Thorough inquiries and investigations into alleged misconduct



IOM-Institutional level (cont.)

- Offer educational opportunities in RCR
- Monitor and evaluate the institutional environment supporting integrity and RCR and use this knowledge for continuous quality improvement
- ORI recommends that institutions provide adequate resources to implement and manage the above objectives and principles



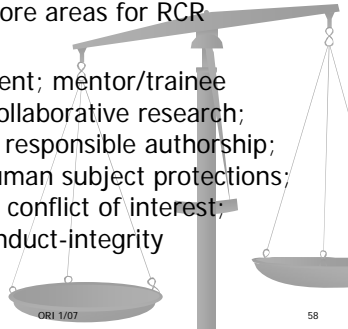
Basic Building Blocks for RCR

- Understand Questionable Research Practices and Other Misconduct
- Adopt institutional policies
- Adopt research guidelines
- Demonstrate leadership at the individual and institutional level



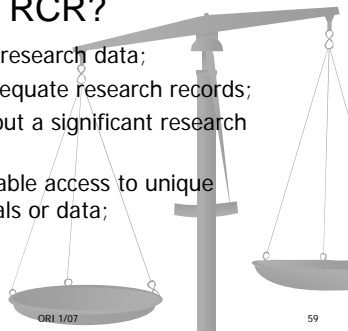
Basic Building Blocks (cont)

- ORI/PHS nine core areas for RCR education
- Data management; mentor/trainee relationships; collaborative research; publication and responsible authorship; peer review; human subject protections; animal welfare; conflict of interest; research misconduct-integrity



Questionable Research Practices: How Related to RCR?

1. Failure to retain research data;
2. Maintaining inadequate research records;
3. Authorship without a significant research contribution;
4. Refusing reasonable access to unique research materials or data;



QRP (cont.)

5. Misrepresenting speculations as fact or releasing preliminary research results, without sufficient data to allow critical review.
6. Inadequate supervision or exploitation of subordinates; and
7. Using inappropriate statistics to enhance significance of research findings

Source: "Responsible Science: Ensuring the Integrity of the Research Process" (NAS, 1992).

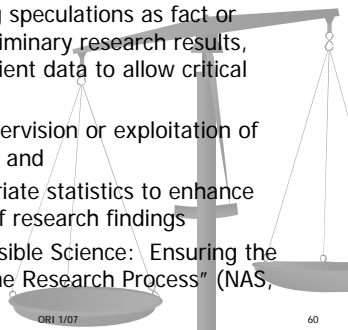


Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)

Top ten behaviours	All	Mid-career	Early-career ¹
1. Falsifying or 'cooking' research data	0.3	0.2	0.5
2. Ignoring major aspects of human-subject requirements	0.3	0.3	0.4
3. Not properly disclosing involvement in firms whose products are based on one's own research	0.3	0.4	0.3
4. Relationships with students, research subjects or clients that may be interpreted as questionable	1.4	1.3	1.4
5. Using another's ideas without obtaining permission or giving due credit	1.4	1.7	1.0
6. Unauthorized use of confidential information in connection with one's own research	1.7	2.4	0.8 ***
7. Failing to present data that contradict one's own previous research	6.0	6.5	5.3
8. Circumventing certain minor aspects of human-subject requirements	7.6	9.0	6.0 **
9. Overlooking others' use of flawed data or questionable interpretation of data	12.5	12.2	12.8
10. Changing the design, methodology or results of a study in response to pressure from a funding source	15.5	20.6	9.5 ***



Table 1 | Percentage of scientists who say that they engaged in the behaviour listed within the previous three years (n = 3,247)

Other behaviours	All	Mid-career	Early-career ¹
11. Publishing the same data or results in two or more publications	4.7	5.9	3.4 **
12. Inappropriately assigning authorship credit	10.0	12.3	7.4 ***
13. Withholding details of methodology or results in papers or proposals	10.8	12.4	8.9 **
14. Using inadequate or inappropriate research designs	13.5	14.6	12.2
15. Dropping observations or data points from analyses based on a gut feeling that they were inaccurate	15.3	14.3	16.5
16. Inadequate record keeping related to research projects	27.5	27.7	27.3

Note: significance of χ^2 tests of differences between mid- and early-career scientists are noted by ** ($P < 0.01$) and *** ($P < 0.001$).

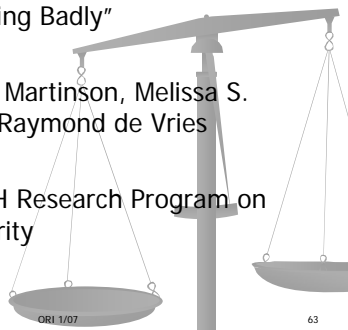


Nature, Vol. 435, June 9, 2005

"Scientists Behaving Badly"

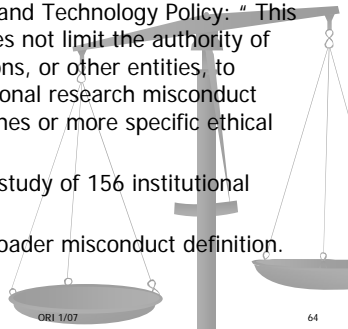
Authors: Brian C. Martinson, Melissa S. Anderson, and Raymond de Vries

Funding: ORI/NIH Research Program on Research Integrity



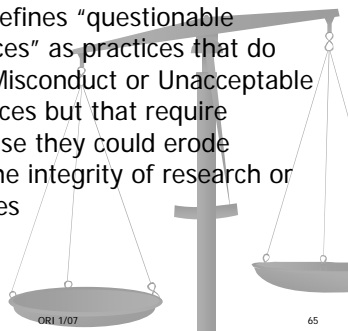
OTHER MISCONDUCT

- Office of Science and Technology Policy: “ This Federal policy does not limit the authority of research institutions, or other entities, to promulgate additional research misconduct policies or guidelines or more specific ethical guidance.”
- ORI conducted a study of 156 institutional policies.
- Over 50% had broader misconduct definition.



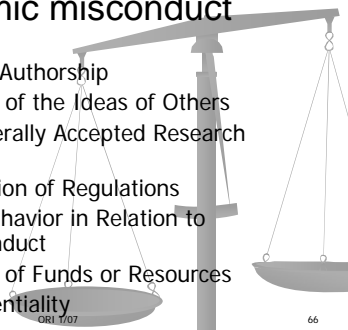
Michigan State University: Questionable Research Practices

The MSU policy defines “questionable research practices” as practices that do not constitute Misconduct or Unacceptable Research Practices but that require attention because they could erode confidence in the integrity of research or creative activities



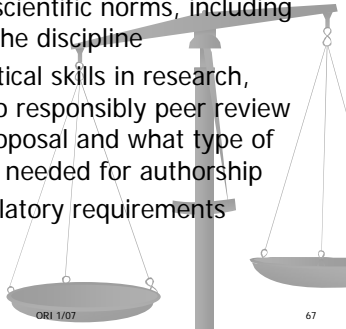
UM-Baltimore defines academic misconduct

- Improprieties of Authorship
- Misappropriation of the Ideas of Others
- Violation of Generally Accepted Research Practices
- Deliberate Violation of Regulations
- Inappropriate Behavior in Relation to Academic Misconduct
- Misappropriation of Funds or Resources
- Abuse of Confidentiality



Elements of RCR Education

- Education on scientific norms, including norms within the discipline
- Teaching practical skills in research, such as how to responsibly peer review a paper or proposal and what type of contribution is needed for authorship
- Teaching regulatory requirements related to



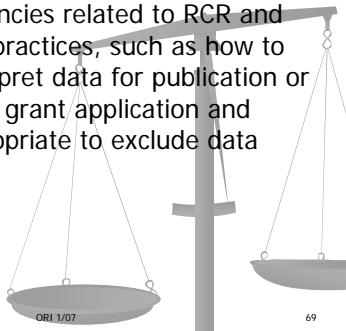
RCR Education (cont)

- (cont) human subjects, animal welfare, misconduct, and conflict of interest
- Teaching on institutional specific standards, such as research guidelines and institutional policies on academic misconduct and questionable research practices
- Teaching/development of specific skills, abilities, and



RCR Education (cont)

- (cont) competencies related to RCR and good research practices, such as how to select and interpret data for publication or submission in a grant application and when it is appropriate to exclude data



Potential benefits of RCR

- For the scientist
- In the lab
- For the institution
- For the public interest



Conclusion

DEVELOP AN RCR PROGRAM THAT WORKS FOR YOU!

<http://ori.hhs.gov>

