There are problems to be overcome: negative faculty attitudes toward compliance with regulations, the entrenched reward system for hyper-productive individuals and aggressive research groups, and the opprobrium of being known as a whistle-blower. The leadership must provide convincing assurances that fine work will be rewarded and that error and fraud will both be weeded out and corrected. Faculty members should be rewarded for the quality of their work rather than for the length of their bibliographies. Administrators can limit the growth of laboratories to a size in which trainees can be adequately supervised by exercising proper control of space and personnel resources. "The integrity and good judgment of the administration in dealing with its faculty, department chairs, and the public sets a standard for the integrity of the faculty and trainees."
People are complicated

Context matters

Institutional research environments can be a part of the problem—and should be part of the solution

2017 NASEM Report:
Fostering Integrity in Research
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Part 1: Integrity of Research
1. Introduction
2. Core values and guiding norms
3. Trends and changes in the environment

Part 2: Research Misconduct and Detrimental Research Practices
1. Context and definition
2. Incidence and consequences
3. Understanding the causes
4. Addressing misconduct and detrimental research practices
5. Exploring new approaches

Part 3: Fostering Integrity
1. Best practices for research integrity (for researchers, institutions, sponsors, journals, and societies)
2. Education in the Responsible Conduct of Research
3. Findings and Recommendations

Appendices include:
1. Five detailed case studies
2. Empirical research on RCR efficacy
Research is being transformed:

- Technology
- Globalization
- Collaboration across disciplines and sectors (e.g. industry)
- Growing competition
- Increased policy relevance
These trends are changing the research environment and creating new challenges for fostering integrity.
Chapter 9: Best Practices

For all involved parties:

1. Research institutions
2. Individual researchers
3. Journals
4. Research Sponsors
5. Scientific Societies

Addresses relationships between, among components
Framework: Disciplinary Authorship Standards

• Contributions defined: design, conduct, data analysis and drafting for intellectual content, etc.
• All authors approve final manuscript,
• Identify author(s) responsible for entire work, require disclosure of roles,
• Unacceptable: gift/honorary, coercive, and ghost authorship,
• Developed by leading societies and/or journals

Detrimental Research Practices ("DRPs")

• Authorship misrepresentation
• Not retaining or making available data, code, or other significant information
• Misleading statistical analysis
• Neglectful or exploitative supervision in research
• Inadequate institutional policies, responses
• Irresponsible publication practices by journal editors, peer reviewers
International issues, local challenges

“You] are the easiest person to fool. So you have to be very careful about that. After you’ve not fooled yourself, it’s easy not to fool other scientists…”

Richard Feynman, 1974
“Nothing is easier than self deceit.”

Demosthenes, 3rd Century, BC
Sorting Out the FACS: A Devil in the Details

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The reproduction of results is the cornerstone of science; yet, at times, reproducing the results of others can be a difficult challenge. Our two laboratories, one on the East and the other on the West Coast of the United States, decided to collaborate on a problem of mutual interest—namely, the heterogeneity of the human of studying cells close to their context in vivo makes the exercise even more challenging. Paired with in situ characterizations, FACS has emerged as the technology most suitable for distinguishing diversity among different cell populations in the mammary gland. Flow instruments have breast reduction mammoplasties. Molecular analysis of separated fractions was to be performed in Boston (K.P.’s laboratory, Dana-Farber Cancer Institute, Harvard Medical School), whereas functional analysis of separated cell populations grown in 3D matrices was to take place in Berkeley (M.J.B.’s laboratory, Lawrence Berkeley National Laboratory).

Sure, there are bad apples

We are each always individually responsible for our own actions.
And, the barrel shapes perceptions and choices.

Consider the **environment**. We know that people are influenced by the choices of those *around* them.
The amount of cheating in which human beings are willing to engage depends on the structure of our daily environment.


Context matters.

On the Folly of Rewarding A While Hoping for B

... reward systems that are fouled up in that the types of behavior rewarded are those which the rewarder is trying to discourage, while the behavior desired is not being rewarded at all.

Rescuing US biomedical research from its systemic flaws

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Edited by Inder M. Verma, The Salk Institute for Biological Studies, La Jolla, CA, and approved March 18, 2014 (received for review March 7, 2014)

By many measures, the biological and medical sciences are in a golden age. That fact, which we celebrate, makes it all the more difficult to acknowledge that the current system contains systemic flaws that are threatening its future. A central flaw is the long-held assumption that the enterprise will constantly expand. As a result, there is now a severe imbalance between the dollars available for research and the still-growing scientific community in the United States. This imbalance has created a hypercompetitive system that is discouraging even the most outstanding prospective students from entering our profession—and making it difficult for seasoned investigators to produce their best work. This is a recipe for long-term decline, and the problems cannot be solved with simplistic approaches. Instead, it is time to confront the dangers at hand and rethink some fundamental features of the US biomedical research ecosystem.

Mixed Messages

Hyper competition

Irresponsibility rewarded (counting papers, H factors)

RCR low priority, status, funding

"Responsible research training" is too compliance-focused, poorly timed, often ineffective

Culture not tended; dysfunctional units
Too Many Environments

- Mixed messages
- Results, not process
- Bad examples
- Uneven mentoring
- Abuses of power
- Problem-solving resources lacking
- Suppression of concerns
- Retaliation

Context matters
Leaders shape the environment.
Setting the tone requires attention to everyday behaviors and interactions and formal effective, realistic RCR.

One-size-fits-all multiple choice compliance training is not RCR.
Research Ethics Programs

- By some estimates, institutions devote less than 0.1% of research funding to RCR.
- Mostly delivered through on-line, multiple-choice programs (89.6% in one survey).
- Because they are scalable, and documentable.
- Even that isn’t reliably done.
- Focus is on rules and compliance vs. real problems encountered in research.

Real-World Research Needs

- Professional skills: present research, mentor, support diversity, good laboratory practices.
- How to have a dispute professionally.
- How to maneuver in the trenches for getting credit and giving it vs. the formal rules of authorship.
- How to choose a mentor and colleagues for character.
- The line between making your data look “pretty” and manipulating/altering data and images.
- Finding the line between inappropriate self-promotion and advancing your career sensibly.
- How to get useful advice, and recognize it, when you encounter a problem.
It Should Be:

- Relevant to the audience
- Required for all
- Interactive, experiential; using best practices
- Meaningful: related to work being done
- Delivered at least in part by respected researchers
- Assessed

Career TRAGEDIES

- Temptation
- Rationalization
- Ambition
- Group, Authority Pressure
- Entitlement
- Deception
- Incrementalism
- Embarrassment
- Stupid Systems

People are complicated
Tone  Buzz  Mood

Example:
We can always justify improper actions to ourselves.

Think about a graduate student who is about to submit a paper for publication that will determine job prospects.

- Experiments to complete
- Limited time to repeat and iterate
- Believes the research is good and important work
- Data almost tell the best story

People are complicated
"Action expresses priorities"

The argument that science must be regulating itself pretty well because it is making progress is far from compelling; perhaps progress would be twice or four times as fast with greater ‘scrupulosity.’”

On Misunderstanding Scientific Misconduct
Paul J. Friedman
Knowledge: Creation, Diffusion, Utilization.
vol. 14 No. 2, December 1992 153-156
Thank you!