# RESEARCH INTEGRITY GOING GLOBAL

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# THE US EXPERIENCE

Early recognition and response to misconduct in research began in the US in the early 1980s

# The origins of policy

- Public disclosure of cases of serious misconduct
- Reaction of the research community
  - ✓Surprise: events such as this are rare
  - ✓Confidence: science is self-correcting
  - ✓Assurance: we will correct the situation
  - ✓Rationalize: there will always be a few bad apples
- Reaction of the public/government
  - ✓Trust: agree to allow self-regulation take its course
  - ✓Skepticism: but new cases continue to be reported
  - ✓Impatience: how long will it take to deal with the problems
  - ✓Regulation: to protect our investment in research, you must….
- Pattern followed throughout the world

# US began with “patchwork mouse”

- William Summerline, Sloane Institute, 1974
- Response: Peter Medawar
  - ✓I could not believe that this rabbit had received a graft of any kind . . . because the pattern of blood vessels in the ring around the cornea was in no way disturbed. Nevertheless I simply lacked the moral courage to say at the time that I thought we were the victims of a hoax or confidence trick.
- Outcome
  - ✓Eventually caught
  - ✓Reinforce notion that science was self correcting
- Research community did not understand or confront the issue of integrity in research
  - ✓To some extent, still true today

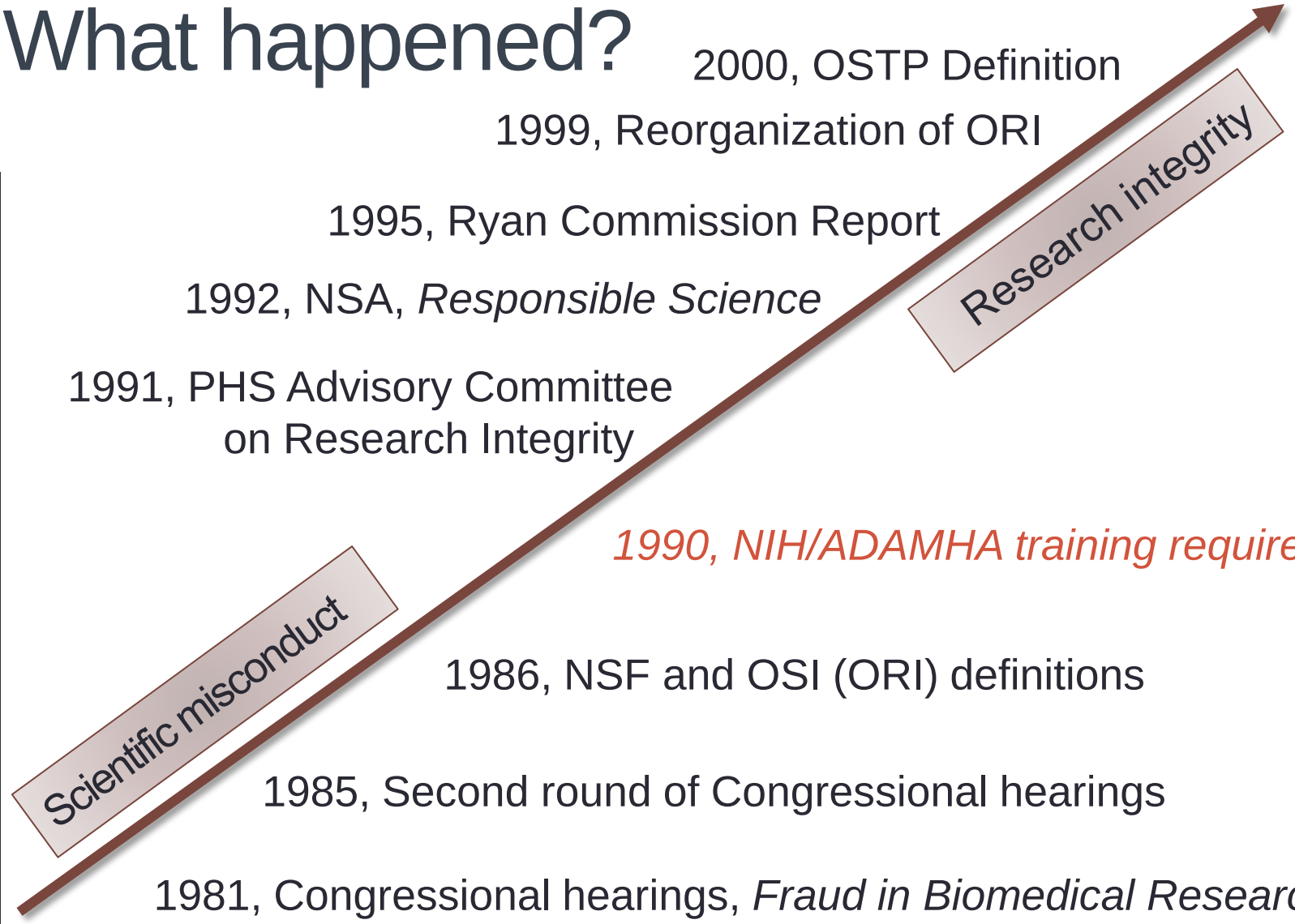
# Evidence of self-confidence

- Our analysis of deviant behavior and social control in science has turned up an interesting hypothesis, . . . that the greater the socially induced pressure for deviant behavior, the greater the likelihood that it will be detected. . . . The intense competition for making original scientific contributions, the "race for priority" and the peer recognition that comes with it created pressures for deviant behavior. . . . But that same intense competition as a system-property also focuses the attention of scientists on particular problems, intensifies their critical review of others' work in the field, and encourages efforts to check important new truth claims through replication. *This should increase the chances that any deviant behavior which does occur will be identified*. (Zuckerman, 1977, p. 131)

# Common wrong assumptions

- 1981 Congressional testimony
  - ✓“The system succeeds in policing itself." Philip Handler, NAS
  - ✓“[No regulation] is necessary, for the natural sciences contain ultimate correctives for any debasement of the knowledge derived from research." NIH director Donald Frederick
  - ✓ “The scientific community has a number of built-in controls, negative sanctions and positive rewards which are a constant reminder to scientists to adhere to rigorous standards" Patricia Wolff, Sociologist
- Researchers incorrectly assumed that:
  - ✓Misconduct is “rare”
  - ✓Science is self-correcting
  - ✓Overall standards for integrity in research were high

# What happened?



# GOING GLOBAL

Misconduct is not a “US problem.” Every major research country has been impacted or is not looking.

# Response driven by major cases

- Yoshitaka Fujii
- Japan, Toho University
- Field: Anesthesiology
- Misconduct: 193 publications suspected of fabrication and violation of ethics rules; 183 retracted to date
- Impact:
  - ✓Pressure on editors & universities to do something
- Question: How can 183 fabricated publications make it through the peer review process?
- More recently STAP / RIKEN case

# No longer mostly biomedical sciences

- Diederik Stapel
- Netherlands
- Social psychology
- Falsified evidence in studies over many years
- Lost position, students and
- colleagues have retracted papers
- 51 papers retracted to date
- Consequence: "Reproducibility Project" and other efforts to test whether research can be replicated
- Has written a book: *Ontsporing [Derailed*]

# New cases broaden scope

November 13, 2011

## Fraud Scandal Fuels Debate Over Practices of Social Psychology

### Even legitimate researchers cut corners, some admit


Justin Sullivan, Getty Images

One recent study said exposure to an image of the American flag—even months earlier—could push people toward voting Republican. It made a good headline, and Travis Carter, one of its authors, says it was also good science: "We don't have a big file drawer of failed studies."

*By Christopher Shea*

The discovery that the Dutch researcher Diederik A. Stapel made up the data for dozens of research papers has shaken up the social psychology, fueling a discussion not just about outright fraud, but also about subtler ways of misusing research data. Such misuse can happen even unintentionally, as researchers try to make a splash with their peers—and a splash, maybe, with the news media, too. (*Chronicle of Higher Education, emphasis added*)

# Brazil has “joined the club”*

- Physicists with retraction for a “pattern that was unphysical” lose another for manipulation (Physics,2014)
- Editor in chief steps down after being found plagiarizing in her own journal (Biomedical, 2014)
- Did article on doped indium contain a doped image? (Materials science, 2014)
- Not-so-tiny ethics issues as Micron retracts first-ever paper, and authors apologize for five duplicates (Physics, 2014)
- Brazilian researcher on 11 retracted papers loses academic post (Chemistry, 2014)
- Medical journal guilty of citation manipulation retracts two “inadequate” review articles (Biomedical, 2013)

*** Source: Retraction Watch**

# Stakes are increasing

- Craig B. Thompson
- US, Sloan-Kettering Cancer Center
- Cancer treatment
- Took data from former employer (University of Pennsylvania) without permission
- **$1,000,000,000 law suit**
- Suit settled out of court, terms no revealed

"The lawsuits essentially accused Dr. Craig B. Thompson, who worked at the University of Pennsylvania before becoming president of Sloan-Kettering in 2010, of hiding his use of the research he conducted at Penn to help start Agios." (New York Times 31 Aug 2012)

# Level of scrutiny increasing

- Ulrich Lichtenthaler
- Mannheim University
- Management Studies
- Case is in process
  - ✓9 articles retracted of over 80 articles published
  - ✓Issues:
    - Duplicated publication, i.e. failure to site similar prior publications
    - Misused of statistical significance
    - Data manipulation (different conclusions from same data set)
    - **Salami publication**
- Germany and elsewhere, misconduct has brought down major political figures

# GLOBAL RESPONSE

Usually ignore as long as possible. But if the problem does not go away, what next?

# Form committees, issue reports

- Key reports:
  - ✓2000, ESF, Good Scientific Practice in Research
  - ✓2007 OECD, Best Practices for Ensuring Scientific Integrity and Preventing Misconduct
  - ✓2010, WCRI, Singapore Statement
  - ✓2011, ESF/ALLEA, The European Code of Conduct for Research Integrity
  - ✓2013, WCRI, Montreal Statement
  - ✓2013, IAP Responsible Conduct in the Global Research Enterprise Policy Statement
  - ✓2013, Statement of Principles and Actions for Shaping the Future: Supporting the Next Generation of Researchers
- Provide guidance but have no authority

# Global agreement on principles

| Category | Singapore Statement | European Code | IAP Code |
|---|---|---|---|
| **Overall honesty** | Honesty in all aspects of research | Honesty in communication | Honesty |
| **Conduct of research** | Accountability in the conduct of research | | Accountability |
| | | Reliability in performing research | Reliability |
| | | Objectivity | Objectivity |
| | | Impartiality and independence | Skepticism |
| **Professional relations** | Professional courtesy and fairness in working with others | Fairness in providing references and giving credit | Fairness |
| | | Openness and accessibility | Openness |
| | | Responsibility for the scientists and researchers | |
| **Responsibility to society** | Good stewardship of research on behalf of others | Duty of care | |

# Different approaches to definition

- US FFP widely used, but has narrowed over time:
  - ✓Initially recognized and discussed as “fraud”
  - ✓Narrowed to fabrication, falsification, plagiarism (FFP) and other practices that seriously deviation from the normal practice of science
  - ✓Further narrowed to FFP that seriously deviates from the normal practice of science
- Evaluation:
  - ✓Advantage: Focuses action on most serious cases
  - ✓Weakness: Ignores wide range of misbehavior that negatively impacts research
- Currently, no interest in reconsidering the definition

# Some countries adopting different approach

- Canada & Australia
  - ✓Describe best practice
  - ✓Define misconduct as a breech of best practice
    - Serious cases must be reported to funding agencies
    - Lesser misconduct handled by institutions
  - ✓Enforce through “memorandum of understanding”
- Public still thinks in terms of fraud

University Suspects Fraud by a Researcher Who Studied Red Wine

The New York Times

By NICHOLAS WADE
Published: January 11, 2012

# Global examples

| Country | National System | Institutional System | Cases | Discussed |
|---|---|---|---|---|
| China | Yes, China Ministry of Science and Technology has a regulation effective Jan 1, 2007 (for science and technology programs) | Yes | Some | Some discussion, mostly by media on publicized cases |
| Southern cone (Argentina, Chile, Uruguay) | No | No | Some | No |
| Nigeria | No | No | High profile cases involving drug company, no local cases | Discussed by Nigerian editors |
| Tunisia | Yes, includes sanctions | No | No public cases | Beginning |
| Costa Rica | No, law proposed | No | No public cases | Yes, hence law proposed |
| Guatemala | Partial | No | High profile case of abuse by US researcher in 40 s | Yes, because of high profile cases |
| India | No | Yes | "Whispers" and case reported in BMJ and WSJ | Some, nothing formal |
| Peru | Partial | Yes, because NIH grant | No public cases. 3/30 masters students guilty of plagiarism | "Barely" |
| South Africa | Yes, National Ethics Council | Yes | One very high profile case. People aware that it happens | "Not much" |
| Bangladesh | No | Yes | Some cases reported | No |

Ana J, Koehlmoos T, Smith R, Yan LL (2013) Research Misconduct in Low- and Middle-Income Countries. PLoS Med 10(3): e1001315. doi:10.1371/journal.pmed.1001315
http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1001315

PLOS | MEDICINE

# Global comparisons

| Country | Fraudulent Retractions 2000–2010 | Number of Papers 2010 (Thousands) | Ratio of Fraudulent to Total Papers (Thousands) |
|---|---|---|---|
| USA | 84 | 140 | 0.6 |
| China | 20 | 28 | 0.71 |
| Japan | 18 | 25 | 0.72 |
| India | 17 | 13 | 1.31 |
| UK | 7 | 41 | 0.17 |
| Turkey | 2 | 11 | 0.18 |
| Iran | 1 | 5 | 0.2 |
| All Asian | 63 | 94 | 0.67 |

doi:10.1371/journal.pmed.1001315.t002

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PLOS | MEDICINE

# Key players, summary

- National systems:
  - ✓ Exception, not the rule
  - ✓ Mostly rely on institutions to do investigations
  - ✓ Poor accountability
- Institutional systems:
  - ✓ Depend on institutional commitment
  - ✓ Often lack expertise to conduct investigations
  - ✓ Lack transparency and ways to handle conflicts of interests
- Other players:
  - ✓ Journals, active players, mixed results
  - ✓ Foundations, some policies covering research they fund
  - ✓ Public, more active in detecting and exposing

# Attitudes & assumptions

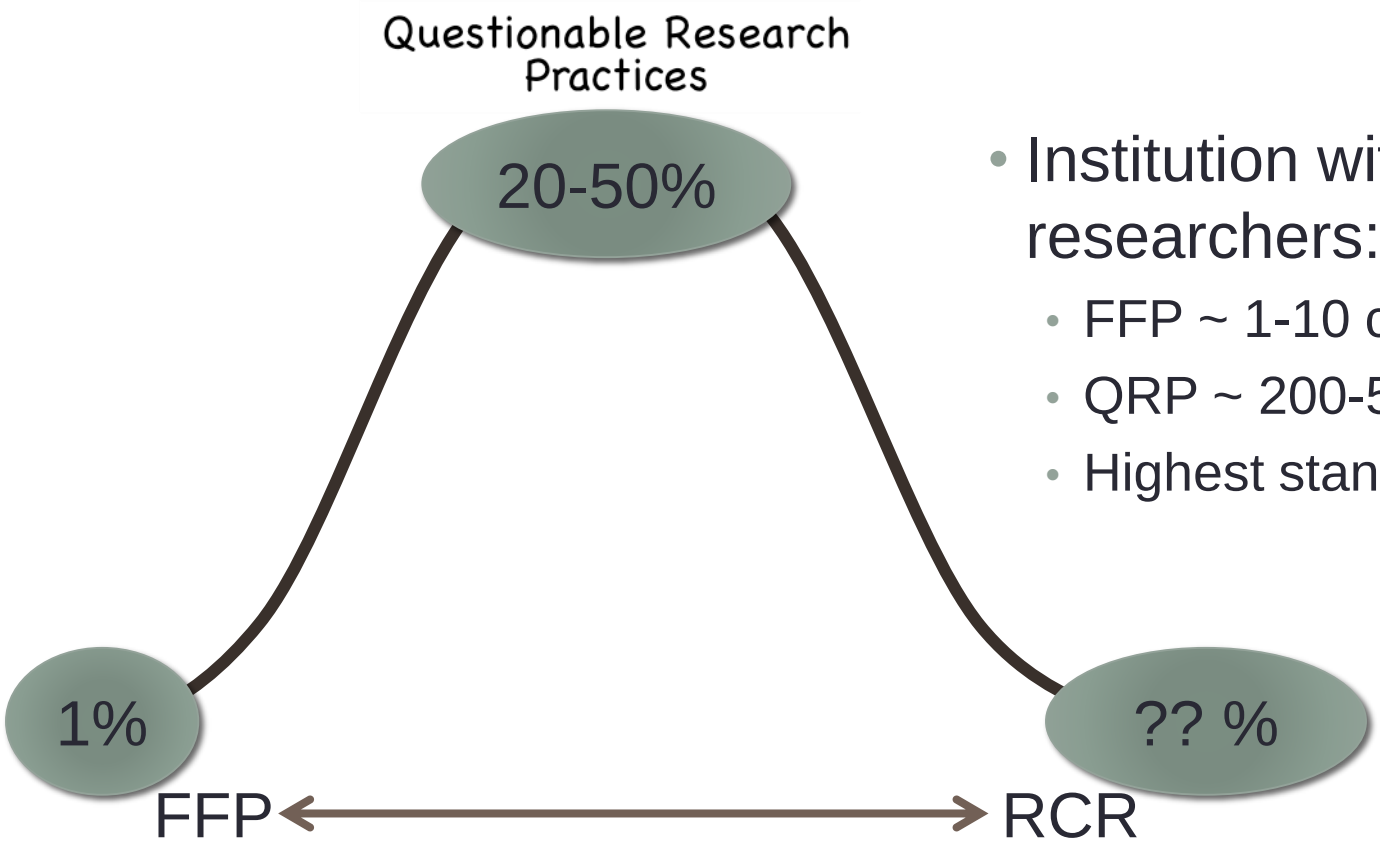
- Global response is developing in three ways:
  1. More countries
  2. Wider range of misbehaviors considered
  3. Cases in fields previously ignored, especially social sciences
- Early assumptions about integrity no longer hold:
  - ✓Misconduct is *not* rare
  - ✓*Not necessarily* most common in highly competitive fields such as biomedicine
  - ✓Standards for integrity in research are not as high as usually claimed
  - ✓Misconduct is *not the most important problem* that needs to be addressed

# CHALLENGES

Questions:

1. Has research integrity improved, stayed the same or worsened over the last three decades?
2. What should / can be done to improve integrity in research?

# Size of the problem is challenging




- Institution with 1,000 researchers:
  - FFP ~ 1-10 cases
  - QRP ~ 200-500 cases
  - Highest standards ~ ?

# Some small problems are large

- In 2009, we published a Viewpoint by Iain Chalmers and Paul Glasziou called “Avoidable waste in the production and reporting of research evidence”, which made the extraordinary claim that as much as 85% of research investment was wasted.
- Five articles in ways to reduce waste (Lancet, January 2014)

**Research: increasing value, reducing waste 1**

**How to increase value and reduce waste when research priorities are set**

*Iain Chalmers, Michael B Bracken, Ben Djulbegovic, Silvio Garattini, Jonathan Grant, A Metin Gülmezoglu, David W Howells, John P A Ioannidis, Sandy Oliver*

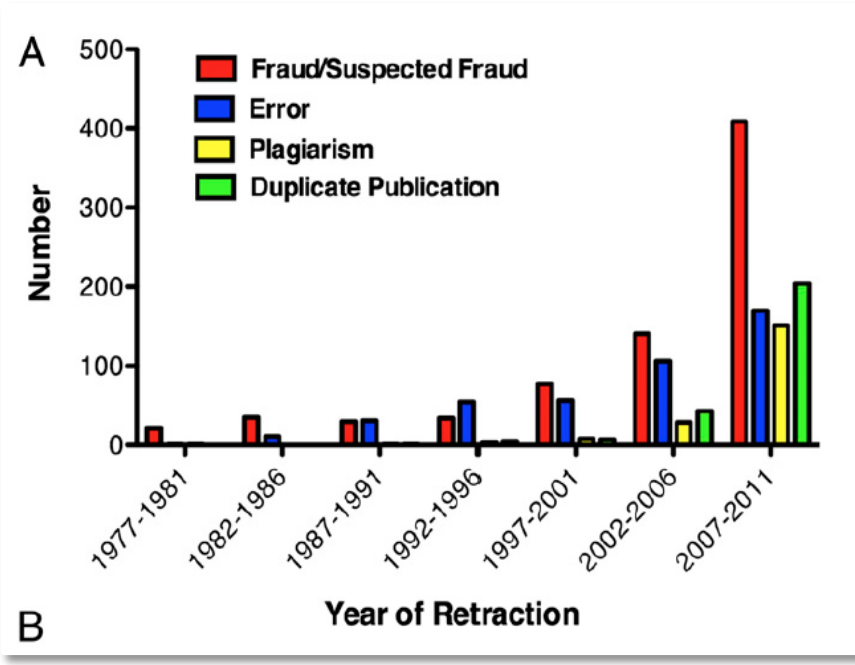
# Some problems are ignored

- Deja Vu / eTBLAST
  - ✓Identifies similar text
  - ✓Primarily titles and abstracts
  - ✓Manual verification of suspicions
- Results:
  - ✓~81,000 matches
  - ✓~2,000 verified
  - ✓~79,000 unverified
- eTBLAST team now studying duplicate funding
- Question. Have universities taken this evidence seriously? Is there a cover up?

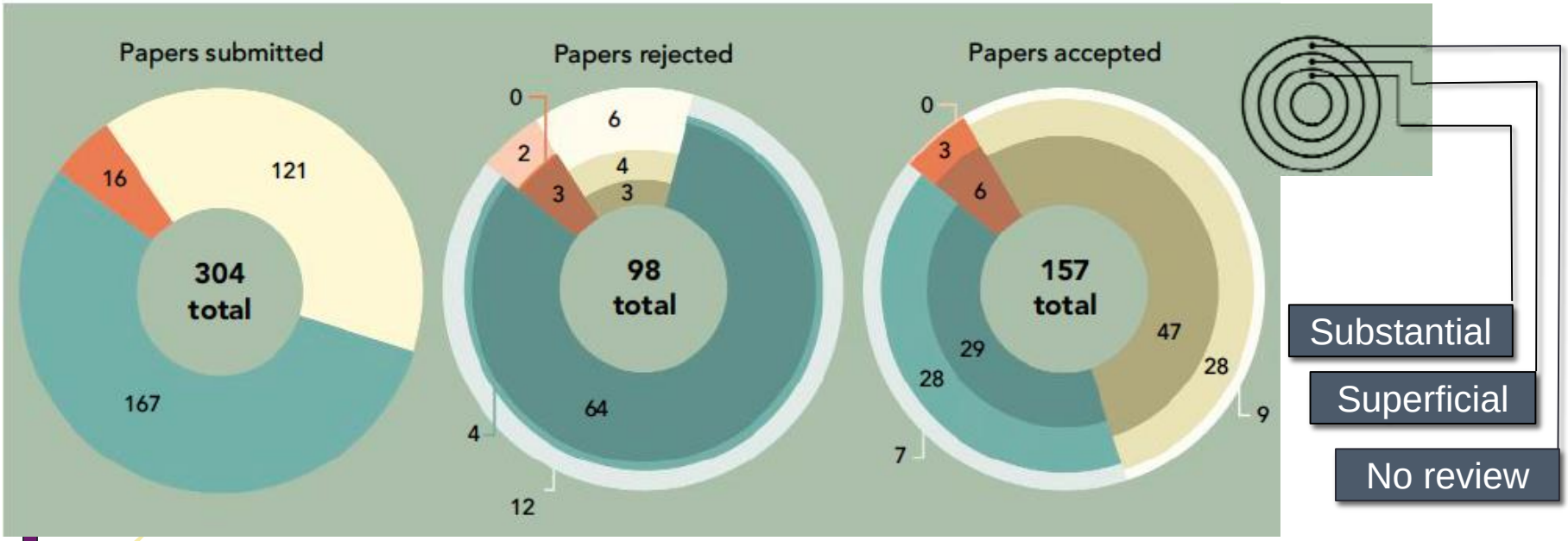

| Entry type | Count |
|---|---|
| Comments | 271 |
| Erratum | 129 |
| Examined | 2,106 |
| Medline Issue | 103 |
| Sanctioned | 1906 |
| Unverified | 74,868 |
| Total | 79,383 |

# Some problems are hidden

- FC Fanga et al., “Misconduct accounts for the majority of retracted scientific publications,” PNAS 1 October 2012 (online).
  - ✓Prior studies, most retractions due to error
  - ✓New evidence, 67% due to misconduct
  - ✓Evidence of misconduct in the public record
- Why have editors /employers allowed this to happen?
- Institutions do not release names, journals issue vague descriptions



# Some problems are embarrassing




- Directory of Open-Access Journals (good)
- Beal's list = predatory publishers (bad)
- Beal and DOAJ

**Peer review reviewed.** Few journals did substantial review that identified the paper's flaws.

# How long with public ignore?

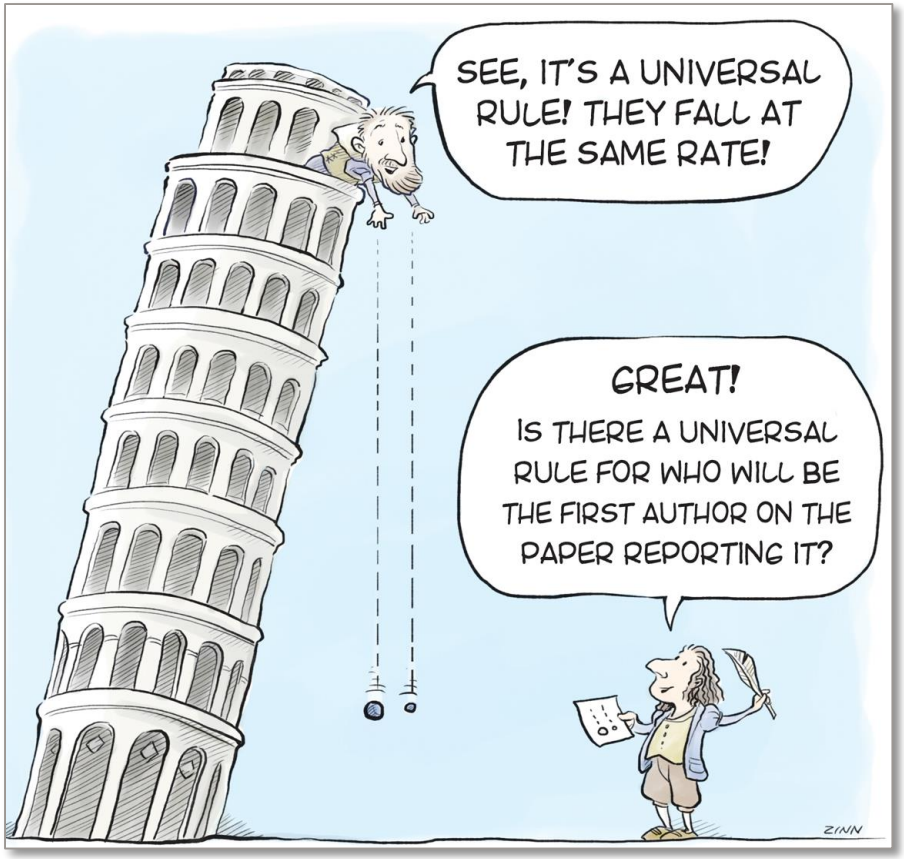
- Comments on Retraction Watch:
  - ✓Out of curiosity, I just perused the paper The Impact of ….. When you look at the regression output they report, you can fairly easily see that SE's and coefficients don't add up to the reported significance levels.
  - ✓If the entire Journal of Management Studies was filled with cooked data from cover to cover :
    - A. Would anybody be able to tell the difference?
    - B. Would anybody care?
  - ✓Well I hope I am not being overly cynical here, but these types of journals are essentially vanity publications – places for academic non-managers to justify their academic position and perks.
  - ✓How does the public know which research it reliable / has integrity?

# How high is RI risk?


- Risk is high and increasing

# Global way forward

1. Improve & harmonize policies at all levels
2. Meaningful engagement by research leaders
3. Pay more attention to causes, particularly climate
4. Improve training
5. Reduce journals & publications by 50%



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