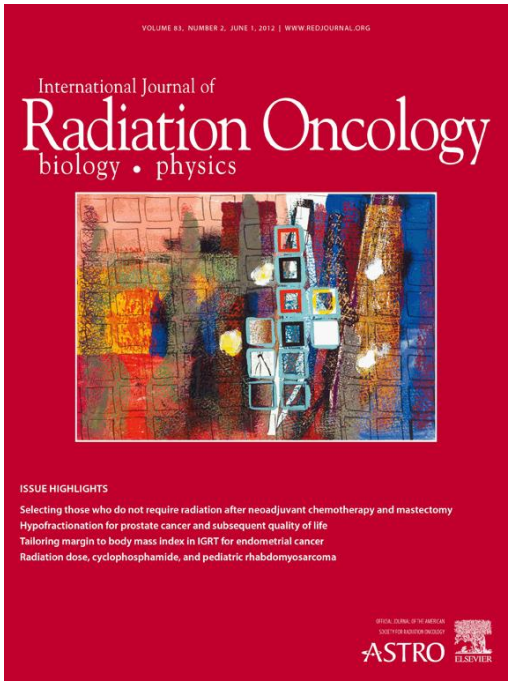
# Ethical issues in scientific publishing:

# Do we have a problem?





## Anthony Zietman MD

**Shipley Professor, Harvard Medical School**

**Editor-in-Chief, “Red Journal”**

# Ethical issues in scientific publication

- **Is there a problem?**
- **Why might this problem exist?**
- **What can be done now?**
- **Changing the culture**

# Ethical issues in scientific publication

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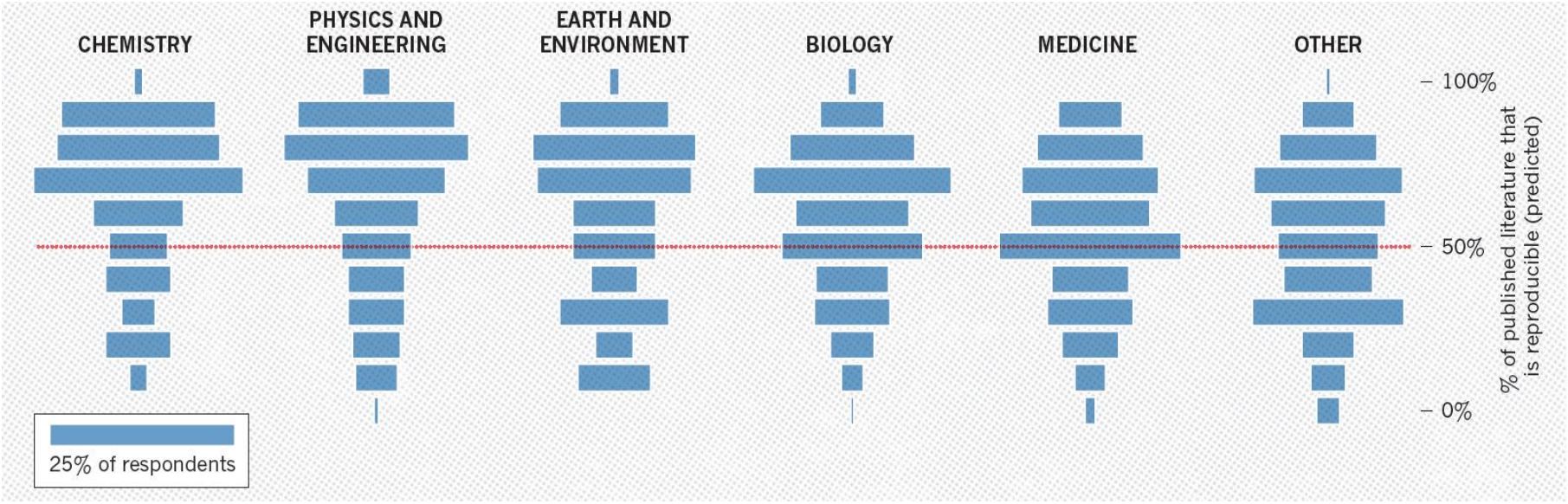
# The “Reproducibility Crisis”

**Survey of >1500 scientists**
**“How much of the work in your field is reproducible?”**




**Physicists and chemists most confident**

***Begley et al Nature 2012***

# Reproducibility issues in scientific publication

## The spectrum:

- Faulty research practices
- Honest error/“Sloppiness”
- Misbehavior

## The consequences:

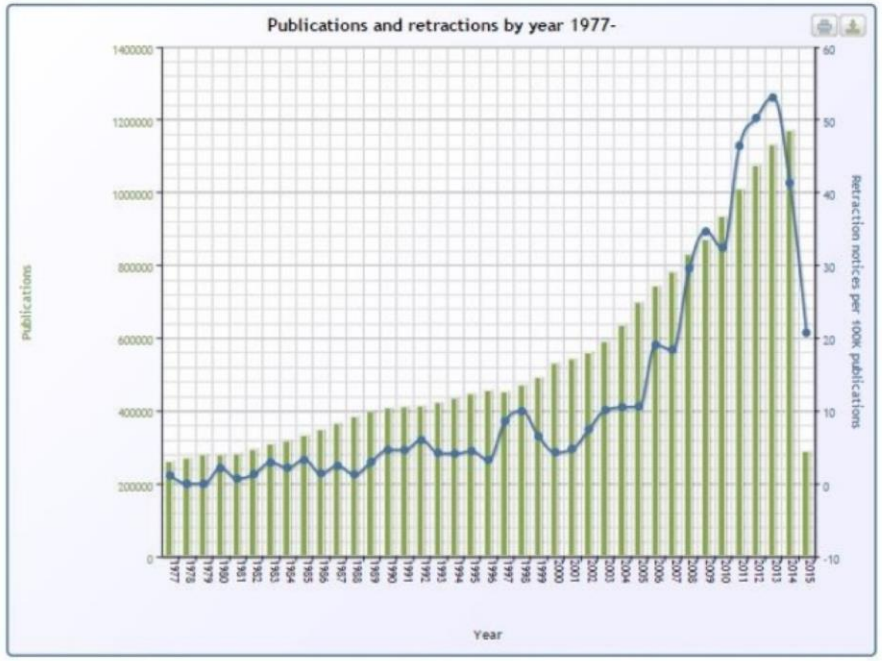
- Erratum
- Statement of concern
- Retraction

# Rising rates of Retraction

**17- fold since 2000**

## Retractions on the Rise

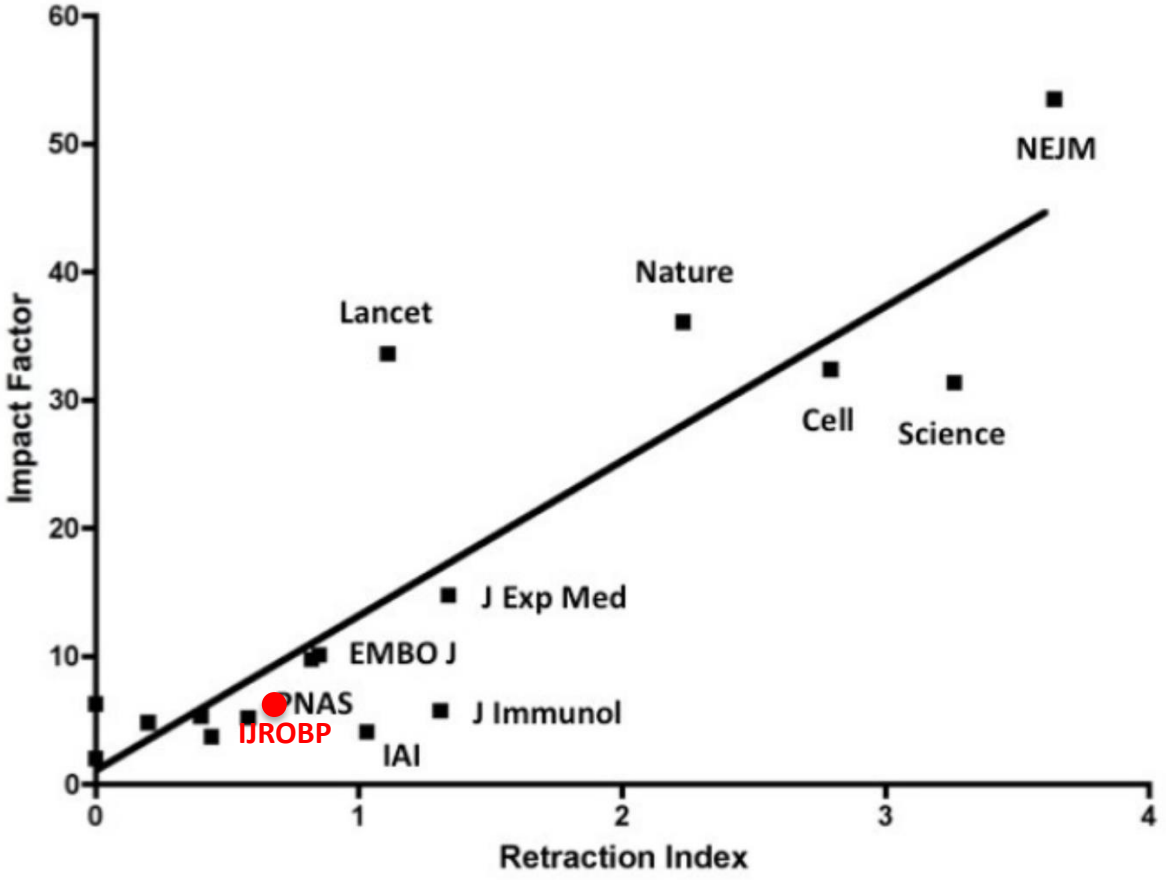
**PubMed Retraction Notices - By Year**




Retraction Watch

http://pmretract.heroku.com/byyear

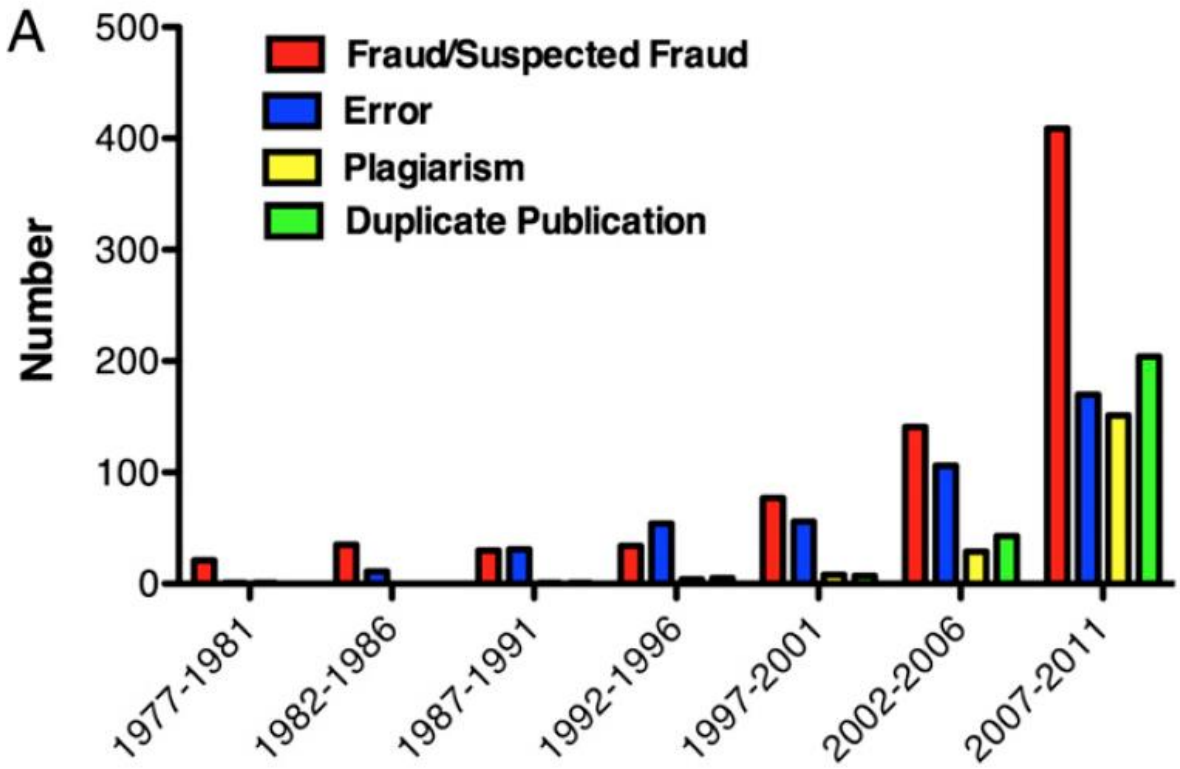
# Which journals retract the most?




Retraction index = $\frac{\text{\# papers retracted over 10 years x 1000}}{\text{\# papers published over 10 years}}$

# Most retractions result from misbehavior and not error

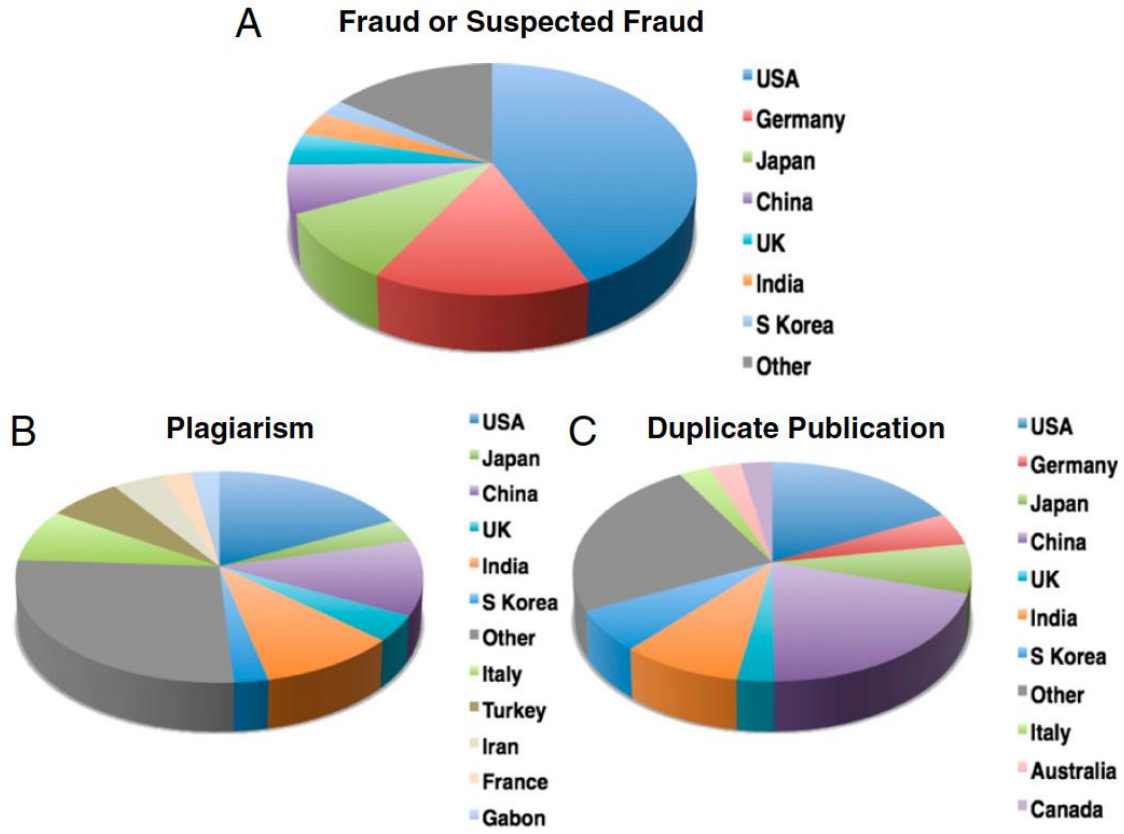
**Review of all 2,047 biomedical and life-science research articles indexed by PubMed as retracted on May 3, 2012**




***Fang et al PNAS 2012***

# Misbehaviors link weakly to geography

**Review of all 2,047 biomedical and life-science research articles indexed by PubMed as retracted on May 3, 2012**




*Fang et al PNAS 2012*

# Ethical issues in scientific publication

- **Authorship**
- **Plagiarism**
- **Duplicate publication**
- **Falsehood**
- **Fabrication**
- **Fake reviews**

# Authorship

## Authors:

**Definition “One who originates or creates”**

**ICMJE Criteria 1985, 2000**

**All 3 must be fulfilled:**

- **substantial contribution to the study conception and design, the acquisition of data, or the analysis and interpretation of data**
- **drafting of the manuscript or critical revision of it for important intellectual content**
- **final approval of the version to be published**

# Authorship

## Authors:

**Anyone who cannot fulfill the ICMJE Criteria is not an author and should not be included**

- **11-29% of authors are undeserving**
  ***Flanagin JAMA 1998***

- **Ask first authors it is 26%**
  ***Eisenberg Radiology 2011***

# Authorship

## “Honorary” or “Guest” Authors:

- **Dilute and undermines the importance of authorship**
- **Undermine accountability**
- **Creates atmosphere in which young scientists come to believe that dishonesty in purpose of career advancement is the norm**

# Duplicate Publication and Salami Slicing


**CV “stuffing” of the most common and egregious kind**

# Plagiarism

**“Use of the words of others without attribution”**

- **Short-cutting**
- **Cultural differences**
- **Made easier in a web-based “cut and paste” environment**
- **Includes “self-plagiarism**

***“If you copy from one man’s book you are a plagiarist. If you copy from 10 men’s books, you are a scholar. And if you copy from 30 men’s books, you are a great scholar”***

***Amos Oz***

# Ethical issues in scientific publication

- Is there a problem?
- **Why might this problem exist?**
- What can be done now?
- Changing the culture

# Culture of publication misconduct

## Career advancement

**"Many academic fraudsters aren't aiming for a string of high-profile publications. That's too risky. They want to produce *publications that are near invisible*, but can give them the kind of *curriculum vitae that matches the performance metrics used by their academic institutions*. They aim high, but not too high"**

**Biagioli Nature 2016**

# Financial incentives

## China

**Began at Nanjing University in 1990**

**System designed to develop a top tier of 39 world-class universities**

| | 2008 | 2016 |
|---|---|---|
| *Nature, Science* | $26,212 | $43,783 |
| *PNAS* | $3,156 | $3,513 |
| *PLOS One* | $1,096 | $984 |
| *MIS Quarterly* | $2,613 | $2,938 |
| *JASIST* | $1,737 | $2,488 |
| *Journal of Documentation* | $1,082 | $1,408 |
| *Library Hi Tech* | $781 | $783 |
| *LIBRI* | $650 | $484 |

* All the amounts are full am

**Average income of a university professor $8600**

arxiv.org/abs/1707.01162

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# Plagiarism detectors


- 95% of papers have <15% word-match
- <1% have >50% word-match

# Plagiarism detectors

Aloe vera gel or best supportive care to reduce acute toxicity in patients with breast cancer receiving adjuvant radiotherapy ?

ORIGINALITY REPORT

69%

SIMILARITY INDEX

PRIMARY SOURCES

| | | |
|---|---|---|
| 1 | www.jcojournal.org<br>*Internet* | 983 words — 25% |
| 2 | clinicaltrials.gov<br>*Internet* | 222 words — 6% |
| 3 | www.ons.org<br>*Internet* | 189 words — 5% |
| 4 | Williams, M.S.. "Phase III double-blind evaluation of an aloe vera..<br>*CrossCheck* | 180 words — 5% |
| 5 | Mihkaila Maurine Wickline. "Prevention and Treatment of Acute R..<br>*CrossCheck* | 115 words — 3% |
| 6 | journals.ons.org<br>*Internet* | 93 words — 2% |
| 7 | jco.ascopubs.org<br>*Internet* | 87 words — 2% |
| 8 | cms.herbalgram.org<br>*Internet* | 77 words — 2% |

# Plagiarism detectors

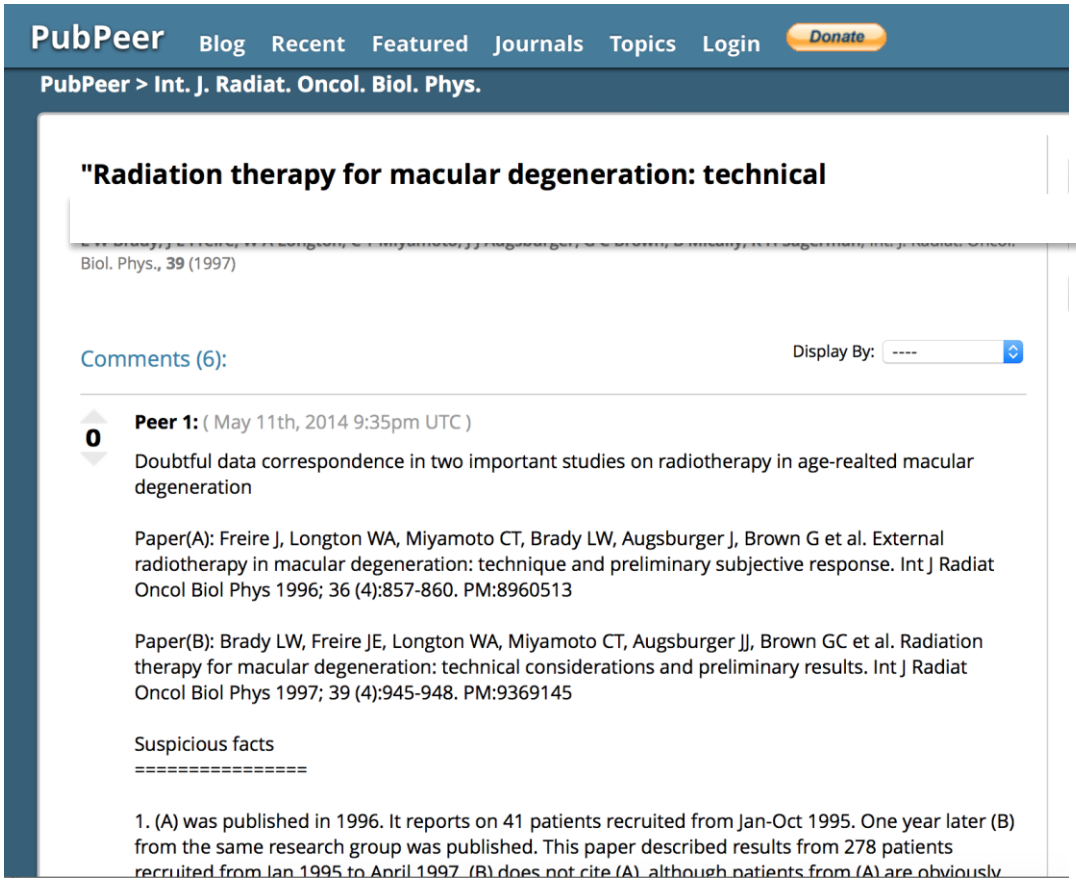
Aloe vera gel or best supportive care to reduce acute toxicity in patients with breast cancer receiving adjuvant radiotherapy ?

Phase III Randomized Trial of *Calendula Officinalis* Compared With Trolamine for the Prevention of Acute Dermatitis During Irradiation for Breast Cancer

*P. Pommier, F. Gomez, M.P. Sunyach, A. D'Hombres, C. Carrie, and X. Montbarbon*

# Watchdog #1: PubPeer

- Forum for post-publication discussion
- Forum for raising concerns
- Anonymous



# Watchdog #2: Retraction Watch

- Collate data – registry function
- Track individuals and patterns of behavior
- Seek the "back story"

## "Extensive" errors force retraction of lymphoma radiation paper

without comments

A group of researchers from Mexico has been forced to retract their July 2012 paper in the *International Journal of Radiation Oncology *Biology*Physics* after a reader noticed cracks in the data that proved to be signs of fatal instability.


Here's the retraction notice for the article, titled, "Randomized Clinical Trial to Assess the Efficacy of Radiotherapy in Primary Mediastinal Large B-Lymphoma": Read the rest of this entry »

**Share this:**

Email Facebook Twitter

**Retractionwatch.com**

# Promoting integrity in research publication

COPE is a forum for editors and publishers of peer reviewed journals to discuss all aspects of publication ethics. It also advises editors on how to handle cases of research and publication misconduct. Read more about COPE...

**Join here**
What are the benefits of COPE membership?



## Resources

From our Code of Conduct and our Guidelines to useful sample letters and flowcharts, COPE offers a range of useful tools for journal editors and writers.

### Code of Conduct

**Through the Code of Conduct, COPE aims to define best practice in the ethics of scholarly publishing and to assist editors, editorial board members, owners of journals and publishers to achieve this.**

View Code

### Flowcharts

**Flowcharts are designed to help editors follow COPE's Code of Conduct and implement its advice when faced with cases of suspected misconduct.**

View Flowcharts

### Guidelines

**Access COPE's official guidance, including the Retraction Guidelines.**

View Guidelines

### eLearning

**COPE's eLearning course is designed to give editors a deeper understanding about publication ethics and practical guidance about how to detect, prevent and handle misconduct.**

View eLearning

# Ethical issues in scientific publication

- Is there a problem?
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- **Changing the culture**

# Changing the culture

- Emphasize and teach ethics early
- Mentors to lead by example
- Change the metrics for academic promotion
- Re-educate minor offenders
- Visibly punish offenders

# Mentorship and example

**Avoid meaningless publication**

- **Weak methodology**
- **P-value fishing**
- **Salami slicing**
- **Write with clarity and avoid spin**
- **Avoid meaningless authorship**

**This is the responsibility of mentors**

**These are all GATEWAY BEHAVIORS**

# Mentorship and example

**Write with clarity and avoid “spin”**

- **Strong methodology**
- **Hypothesis and endpoints**
- **Tight discussion**

# Clarity and “Spin”


Harry Frankfurt
Princeton University


THE SCIENCES

## The True Meaning of BS

Would you know it if you saw it?

By Michael Shermer on April 1, 2016

- **Impress through obfuscation**
- **“Truthy” rather than true**

**Most commonly seen in:**

- **Title**
- **Abstract**
- **Conclusion**

# “Spin”

## Boutron et al JAMA 2006

**72 PubMed listed RCTs with p values of >0.05 for primary outcomes (negative studies)**

**39% reported as “positive” through unspecified sub-group analyses, comparisons with placebos in other trials etc.**

**Most commonly seen**

- **In abstract**
- **In conclusions**
- **When industry-funded**

**Is this wilful or ignorant? Are reviewers as culpable as investigators?**

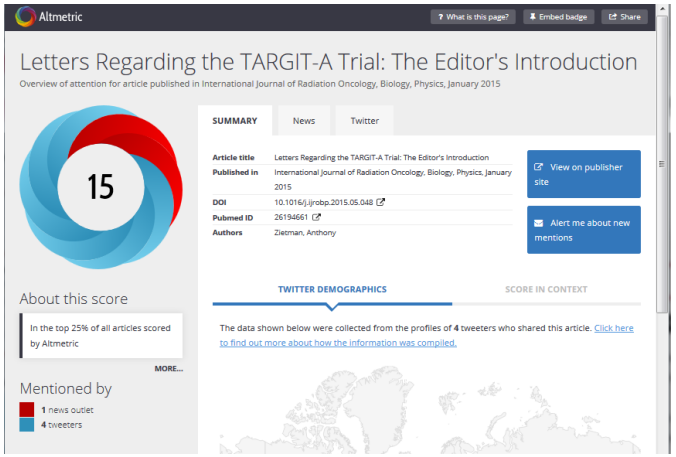
# Changing the grounds for academic promotion

- **Less reliance on Impact Factor**
- **Alternative metrics to assess impact of article not journal**

# Altmetrics

## (Article level metrics)


- Evaluate impact of *article* not *journal* in real time
- Citations, page-views, downloads, tweets
- View over time – “shape of curve”
- So many measures now hard “to game”
- Algorithmic forensics used by credit card companies
- Level of “discussion” becomes the measure of impact. Real time, real world



# Punish the worst offenders

## The Retraction Watch Leaderboard

with 18 comments

Who has the most retractions? Here's our unofficial list (see notes on methodology), which we'll update as more information comes to light:

1. Yoshitaka Fujii (total retractions: 183) Sources: Final report of investigating committee, our reporting
2. Joachim Boldt (94) Sources: Editors in chief statement, additional coverage
3. Diederik Stapel (58) Source: Our cataloging
4. Adrian Maxim (48) Source: IEEE database
5. Peter Chen (Chen-Yuan Chen) (43) Source: SAGE, our cataloging
6. Hua Zhong (41) Source: Journal
7. Shigeaki Kato (39) Source: Our cataloging
8. James Hunton (37) Source: Our cataloging
9. Hendrik Schön (36) Sources: PubMed and Thomson Scientific
10. Hyung-In Moon (35) Source: Our cataloging

- **Office of Research Integrity**
- **Suspensions**
- **Grant reimbursements**

# Changing the culture

- **Acknowledge that poor science and deliberate misconduct underlie irreproducibility.**
- **Train them young. Prevention through mentorship**
- **Mentors, senior faculty, institutions; those who contribute to misconduct should be penalized.**
- **Universities must promote through an assessment of research quality not quantity**

# Leading by Example