Monstrously Bad Research Cases

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Presentation Overview

- Subject Matter Basics
  - Research Misconduct Overview
- Let's Get to the Monsters!!!
  - Monstrous Themes in Research Misconduct Cases
  - A REALLY Scary Scenario
  - One Final Monster

Research Misconduct

- What is it?
- Fabrication, Falsification or Plagiarism in proposing, performing or reviewing Research; submitting proposals for Research: or in reporting Research results. It does not include honest error or honest differences in interpretations or judgments of data”
  - 42 CFR Section 93.103

FF&P

- Fabrication = “Making up of Research data or results and recording or reporting them.” [42 CFR Section 93.103]
- Falsification = “Manipulating Research materials, equipment, or processes or changing or omitting data or results such that the Research is not accurately represented in the Research Records.” [42 CFR Section 93.103]
- Plagiarism = “The appropriation of another person’s ideas, processes, results or words without giving appropriate credit.” [42 CFR section 93.103]

Who Investigates/Regulates It?

- Institutions
- Journals
- Dept. of Health & Human Services Office of Research Integrity
- National Science Foundation
- FDA

Process for Handling Research Misconduct Allegations

- Reporting – Can be done anonymously
- Review by the Research Integrity Office
- Inquiry
- Investigation
- Determination
- Reporting to sponsors and governmental regulatory agencies
- Agencies may bring their own cases

Finally . . .

THE MONSTERS!!!!

Classic Monster #1 – Frankenstein
Data Fabrication at its Best!

What Makes a “Frankencase”?

- Dr. Frankenstein put different parts together to make his creation.
- The “Frankenstein-tist” puts together data from a lot of different (and often irrelevant experiments) and fabricates data to make new results.

Where Do Frankencases Show Up?

- Image Manipulation
  - Images that are "photoshopped"
  - Images that are taken from other experiments and "re-cycled" in different experiments
- Frequency of Image Manipulation
  - ORI: Allegations involving data manipulation up from 30% of case in 2001-2002 to 68% in 2007-2008.

See http://ori.hhs.gov/documents/newsletters/vol17_no4.pdf

Frankencase Example

- **Case Summary: Mayack, Shane**
  - "Respondent falsely represented eight (8) flow cytometry contour plots as different experimental results by using identical plots but with different labels and different numerical percentages. Specifically, the following contour plots in the Blood paper, the Nature paper, an earlier version of the Nature paper submitted to Science (hereafter referred to as the "Science manuscript"), and a July 2008 PowerPoint presentation were identical but were labeled differently . . ."

http://www.ori.dhhs.gov/content/case-summary-mayack-shane

He’s calling from inside the house !!!!!

Emory Frankencase

- **Case Summary: Kim, Sinae**
- Falsified data by using experimental results from her prior work in Korea with human embryonic stem cells (hESCs) to confirm the generation, differentiation, and verification of human induced pluripotent stem cells (iPSCs).
- Falsified data by substituting "data" from various cell lines that did not exist.
- Falsified research materials when the Respondent distributed cells to laboratory members that she claimed were chemical/non-viral factor induced-mouse iPSCs and human iPSCs generated from peripheral blood of coronary artery disease patients, when she knew they were of other origin.

http://www.ori.dhhs.gov/content/case-summary-kim-sinae

Classic Monster #2 – The Invisible Man: The Best Data is the Stuff you Can't See. .

. . because it's not there!

- Highlights of an "Invisocase" – Data Fabrication
- Why do experiments ? You know how they would have turned out.
- No subjects – no problem!
- Missing data – fill it in.

Inviso-case Example

- **Case Summary: Hauser, Marc**
- Conducted "experiments designed to determine whether tamarin monkeys habituated to a sound pattern consisting of three sequential syllables (for example AAB) would then distinguish a different sound pattern (i.e., ABB)."
- "Because the tamarins were never exposed to the same sound pattern after habituation, half of the data in the graph was fabricated."

http://ori.hhs.gov/content/case-summary-hauser-marc

Inviso-case Example

- **Case Summary: Francis, Peter**
- "Respondent claimed that after the injection of ECS-derived RPE cells 21 days postnatal, the rats were tested at day 60 postnatal for optomotor acuity, and that the retinal histology of eyes receiving ECS-derived RPE cells, compared to mock-injected controls, showed enhanced photoreceptor preservation and no adverse effects. Respondent admitted that this experiment had not been conducted either by the time the original grant application had been submitted or by the time the later R01 EY021214-01A1 application was submitted."

http://ori.hhs.gov/content/case-summary-francis-peter

Inviso-case with a Twist! – Invisible Peer Reviewers

- **Case Summary: Moon, Hyung-In**
- "Retraction count grows to 35 for scientist who faked emails to do his own peer review"
- "He suggested preferred reviewers during the submission which were him or colleagues under bogus identities and accounts. In some cases the names of real people were provided (so if Googling them, you would see that they did exist) but he created email accounts for them which he or associates had access to and which were then used to provide peer review comments. In other cases he just made up names and email addresses. The review comments submitted by these reviewers were almost always favourable but still provided suggestions for paper improvement."

http://retractionwatch.wordpress.com/category/by-author/hyung-in-moon/

Oh no!!! The call's coming from the basement!

Emory Invisiocase

- **Case Summary: Robertson, Rashanda**
- "Created a fabricated enrollment form for each of the non-existent enrollees; specifically, Respondent fabricated a participant's name by using the name of a patient who had failed screening and then fabricated the date of enrollment by using the date of the patient's screening failure; using this method, Respondent fabricated the participant names, personal information, and enrollment dates on twenty-eight (28) enrollment forms."

http://ori.hhs.gov/content/case-summary-robertson-rashanda

Classic Monster #3 -- The Vampire
A Monster with a Conflict

Conflict of Interest

- What is it?
- "A conflict of interest occurs when Academic Employee compromises his/her professional judgment in carrying out University teaching, research, outreach, or public service activities because of an external relationship that directly or indirectly affects the Financial Interest of the Academic Employee, and Family Member, or any Associated Entity."
  - From http://www.research.umn.edu/ethics/curriculum/conflict_interest.html

Vampire Conflict

- Every time a vampire claims another victim, he creates another vampire who also competes for victims.
- The "science" behind the conflict: **Cinema Fiction vs Physics Reality: Ghosts, Vampires and Zombies,** C.J. Efthimiou, S. Gandhi at http://arxiv.org/abs/physics/0608059
- If the first vampire struck on 1/1/1600 and fed once a month, within 2.5 years the entire human population would have been vampires.

Vampire Cases

- Research Misconduct and Conflict of Interest can be fellow travelers, just like vampires and bats.
- The researcher's conflict of interest can cause the researcher to falsify or fabricate data to generate results that are personally beneficial.

Where do Vampire Cases Show Up?

- Clinical trials involving drugs and devices.
- Researchers may have financial interests in the companies for which the clinical trials are conducted.

Vampire Case Allegations in the News

- **"Medtronic Documents Spur New Questions" Wall Street Journal (WSJ), October 25, 2012, John Carreyrou**

"Medtronic was 'heavily involved in drafting, editing and shaping the content of medical journal articles' about the product – a bone-growth protein used in spine surgery called Infuse – even as it was paying the physicians who wrote the articles a total of $210 million for unrelated work . . ."

Vampire Case – Medtronic Infuse

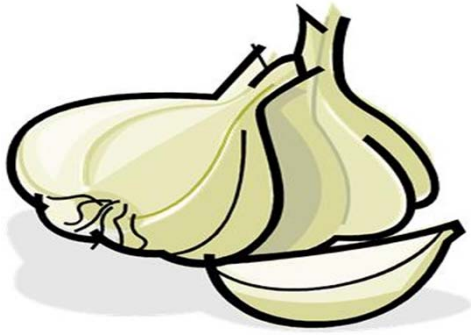
WSJ, October 25, 2012:

- Journal articles attacked by Eugene Carragee in Spine Journal as underreporting adverse events.
- "Published study showing 13 of the articles failed to report serious complications associated with Infuse and a sister drug called Amplify, which hasn't been approved by FDA."

Hey, It’s the Phone Again!

New Regulations – Better than Garlic?

- New PHS COI Regulations
- Physician Payments Sunshine Act
  - Legislation passed; but final regulations delayed
- FDA becoming more involved in pursuing research misconduct.
  - FDA now in charge of policing adverse events reporting to clinicaltrials.gov



Classic Monster #4 – Werewolf

Really not so bad. You just have to watch him.

Werewolf

- Knows he has a tendency to get out of hand on full moon nights.
- Basically does ok if he keeps a calendar and has some good deadbolts.

Hallmarks of Wolfish Cases

- Doesn't know the rules and doesn't bother learning them.
- Two Cases from the "Basement" – Plagiarism
  - Political scientist took text verbatim from another researcher's paper and used it in a speech. Did not think it was plagiarism because it wasn't "a paper."
  - Verbatim use of text picked up by Journal via auto-check tool. Author from whom text was taken was credited but poor use of appropriate punctuation and footnotes.

Hallmarks of Wolfish Cases

- Rules aren't enforced.
- Sloppy; poor record-keeping
- "Normalization of Deviance"
- Plagiarism cases
- Sometimes no FF&P is involved

Stopping a Werewolf

- Is education enough?
- What are labs doing?
- What are journals doing?
- Setting the tone.

But there’s no supervising some monsters!

Would Supervision Have Helped?

The Chronicle of Higher Education, Oct. 8, 2012

Japanese Fraud Case Highlights Weaknesses in Scientific Publishing by David McNeil

Tokyo anesthesiologist Yoshitaka Fujii was investigated by Nagasaki University for research misconduct.

Out of 212 original papers, the investigation committee found just 3 were authentic; 172 were fraudulent; 37 no decision.

Repeatedly cited experiments that did not take place at hospitals at which he never worked.

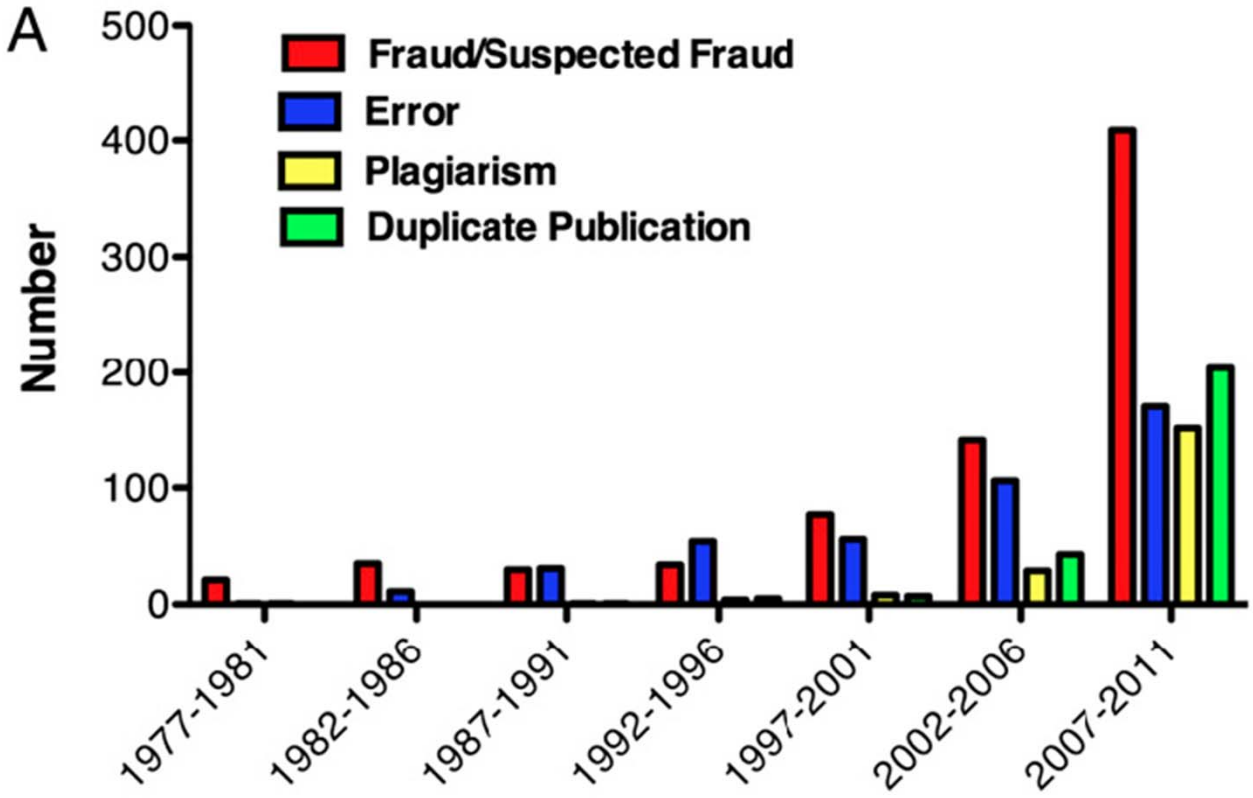
Super Scary Scenario: Help My Boss is a Monster !!!!!

Help my boss is a MONSTER

- What do I do?
- Deciding whether to bring allegations.
  - Is it really research misconduct? Is there intent?
  - Know the research area.
  - Authorship dispute vs. research misconduct
- How to bring the allegations?
  - Identify yourself? Anonymously?
- Getting through the investigation process.
- Fallout
  - Retaliation

How to Avoid the Monsters

And there are lots of them!

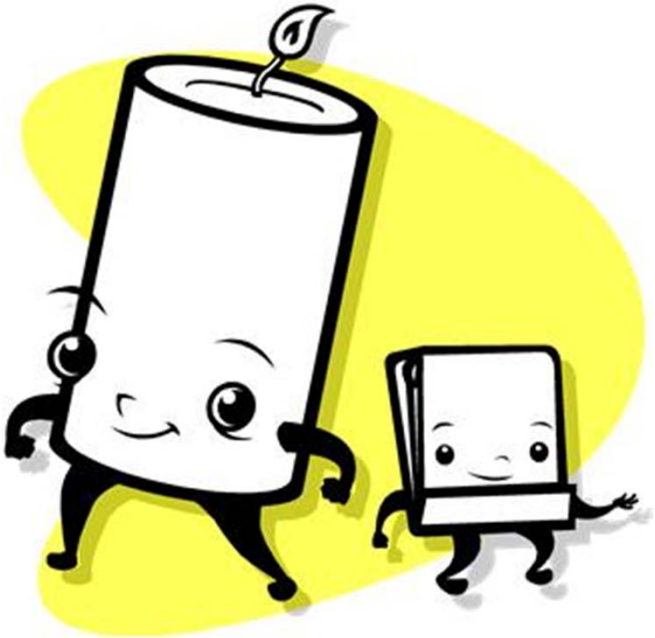


Number of retractions since 1977 and cause of retraction

(Image source: Fang et al. PNAS 2012). (A. Jogalekar, *Misconduct, not error, is the source of most retracted papers*, Scientific American, October 2, 2012)

Don’t work in a Secret Laboratory

Be afraid of the Dark



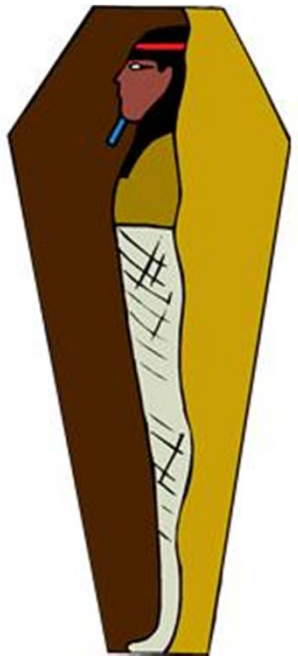
Don’t be a Mad Scientist

Finally, one more monster that been plaguing your friends at the Office of Research Compliance lately . . .

Classic Monster #5 – The Mummy
Not a Monster, as long as he's secure.

The Ultimate Mummy Case – HIPAA Breaches

- Keep that PHI under WRAPS.
- Lately, way too many calls from inside the Emory pyramid!
- Lock that sarcophagus!



Resources

- ORC Website link to Research Misconduct Policy: http://www.orc.emory.edu/research_miscond uct/research_misconduct.php
- ORI Website http://www.ori.dhhs.gov/
- Trustline Number: 1-888-550-8850

Have a Happy Halloween