

# RCR Summer Seminar Series

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## Research Misconduct Overview

Cassandra Farley

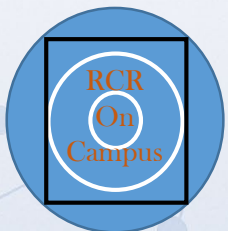
Research Integrity Officer

UF Research Integrity, Security and Compliance (UF RISC)



# Reminders

- You must log in with UFL email in order to receive RCR certificate credit
- Please take the survey after the class—we value your feedback
- In order to allow for free flow of ideas and questions, we will not record the session
- Slides and other materials will be sent to attendees after the class

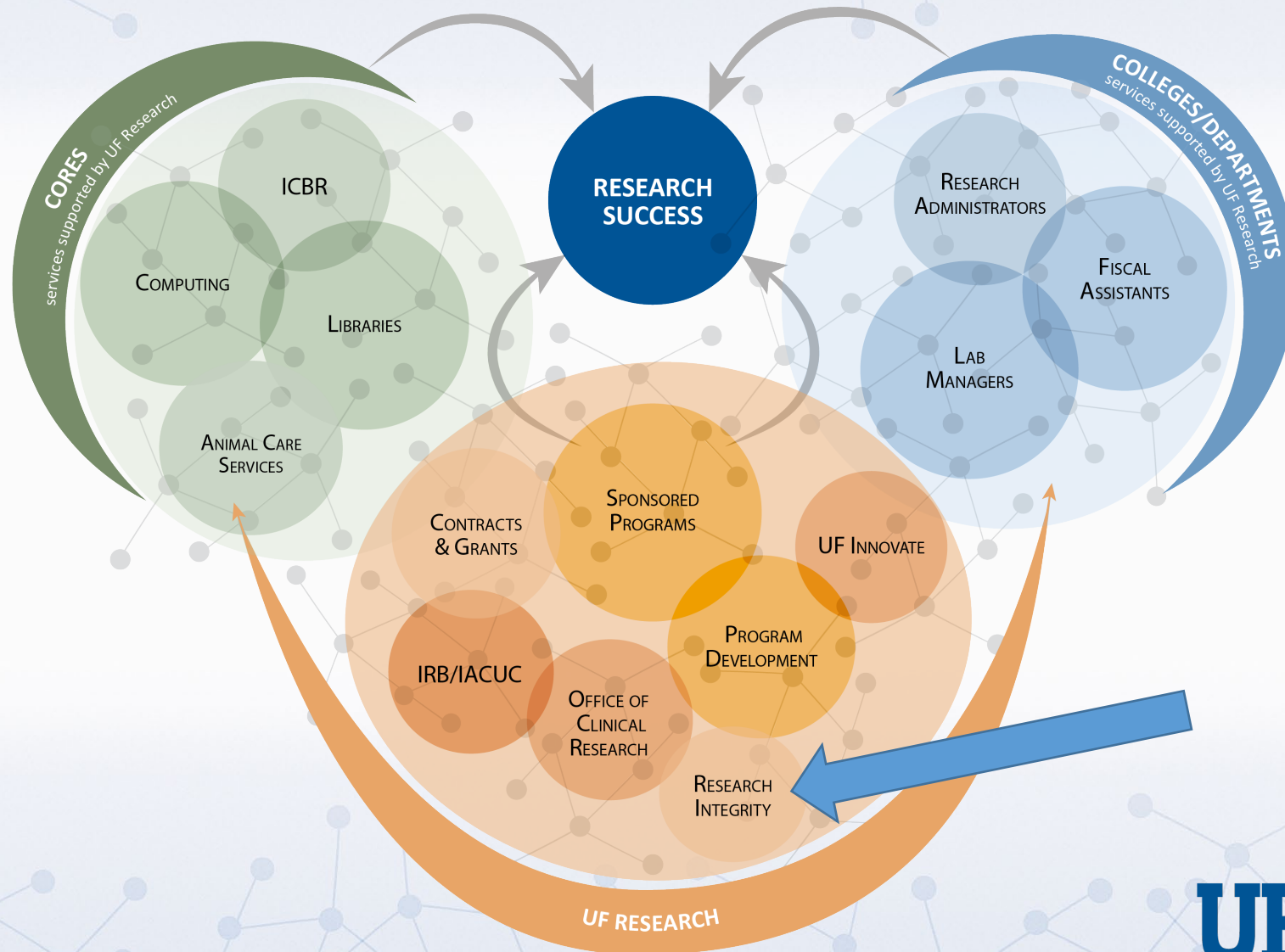


# RCR Certification

- Mentor/Mentee Relationships- Finding the Right Balance
- Collaborative Research
- Conflicts of Interest
- Data Management and Artificial Intelligence
- Research Misconduct Overview
- Research Misconduct: Plagiarism
- Research Misconduct: ORI: The Lab
- Ethics of Authorship
- Rigors of Peer Review
- Reproducibility & Replicability
- IRB & Informed Consent
- Export Control Overview Including an overview of Dual Use Technology
- Putting it All Together



# UF Research Enterprise



# UF Research Integrity, Security and Compliance

Research Integrity  
(Includes RM and  
QRP)

International  
Engagements and  
Collaboration

Research Conflicts  
of Interest

Export Control

Facility Security

Other UF Research  
Services: IRB,  
IACUC, Animal Care



# What is Research Integrity?

National Academy of Sciences Definition:

- **Honesty** and **fairness** in proposing, performing, and reporting research;
- **Accuracy** and fairness in representing contributions to research proposals and reports;
- **Proficiency** and fairness in peer review;
- **Collegiality** in scientific interactions, communications and sharing of resources;
- **Disclosure** of conflicts of interest;
- **Protection** of human subjects in the conduct of research;
- **Humane care** of animals in the conduct of research;
- Adherence to the **mutual responsibilities** of mentors and trainees.



# Principles and Decision Making--Breakout Room

“Our *principles* define our identity and tell the world what to expect from us, as well as how we expect others to behave. Principles apply to ethics choices in all aspects of our lives”

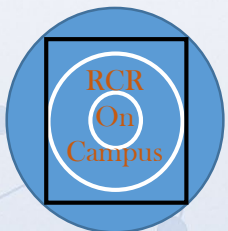
–Susan Liataud, *The Power of Ethics*

- Quick Intro: Name, Department, Role
- What are your top 3-5 principles?
- How do your principles influence your...
  - Decisions day-to-day?
  - Goals?
  - Research?



# What are Your Principles?

- Family
- Freedom
- Loyalty
- Connection
- Creativity
- Humanity
- Success
- Respect
- Diversity
- Generosity
- Integrity
- Love
- Openness
- Advancement
- Forgiveness
- Faith
- Wisdom
- Honesty
- Kindness
- Communication
- Learning
- Excellence
- Quality
- Commonality
- Strength
- Hard work
- Clarity
- Leadership
- Renewal
- Contentment
- Friendship
- Courage
- Community
- Compassion
- Knowledge
- Patience
- Wellness
- Gratitude
- Achievement
- Others...





# Research Misconduct

Research misconduct means **fabrication**, **falsification**, or **plagiarism** in proposing, performing, or reviewing research, or in reporting research results.

*Does not include honest error, differences of opinion, or authorship disputes.*

Fabrication	Falsification	Plagiarism
<p><u>Making up</u> data or results and recording or reporting them</p>	<p><u>Manipulating</u> research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record</p>	<p>The <u>appropriation</u> of another person's ideas, processes, results, or works <u>without giving appropriate credit</u></p>

# Who Cares?

Sponsors



U.S. Department of Health & Human Services

**ORI** THE OFFICE OF RESEARCH INTEGRITY

Home About ORI News & Events Research Misconduct RCR Resources Programs

ORI - The Office of Research Integrity » Research Misconduct » Case Summaries

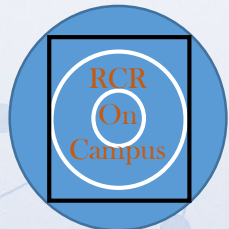
## Case Summaries

This page contains cases in which administrative actions were imposed due to findings of research misconduct. The list only includes those who CURRENTLY have an imposed administrative actions against them. It does NOT include the names of individuals whose administrative actions periods have expired. Each case is categorized according to the year in which ORI closed the case.

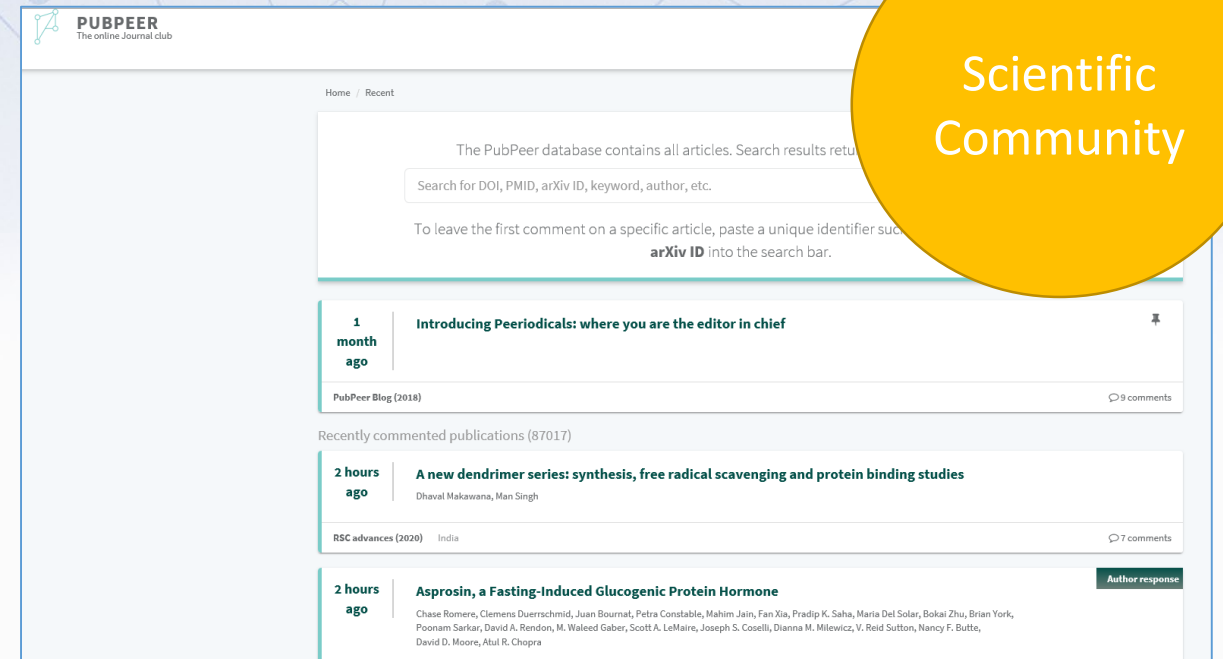
**2020**

- Case Summary: Fulford, Logan
- Case Summary: Jaiswal, Anil Kumar
- Case Summary: Jayant, Rahul Dev
- Case Summary: Kim, Shin-Hee
- Case Summary: Nemani, Prasadarao
- Case Summary: Tataroglu, Ozgur
- Case Summary: Wang, Zhiwei

Journals  
and  
Publications



Scientific  
Community



**PUBPEER**  
The online Journal club

Home / Recent

The PubPeer database contains all articles. Search results returned 0 items.

Search for DOI, PMID, arXiv ID, keyword, author, etc.

To leave the first comment on a specific article, paste a unique identifier such as the **arXiv ID** into the search bar.

**1 month ago** **Introducing Peeriodicals: where you are the editor in chief** **9** comments

PubPeer Blog (2018)

Recently commented publications (87017)

**2 hours ago** **A new dendrimer series: synthesis, free radical scavenging and protein binding studies** **7** comments

RSC advances (2020) India

**2 hours ago** **Asprosin, a Fasting-Induced Glucogenic Protein Hormone** **Author response**

Chase Romere, Clemens Duerrschmid, Juan Bourmat, Petra Constable, Mahim Jain, Fan Xia, Pradip K. Saha, Maria Del Solar, Bokai Zhu, Brian York, Poonam Sarkar, David A. Rendoni, M. Waleed Gaber, Scott A. LeMaire, Joseph S. Coselli, Dianna M. Milewicz, V. Reid Sutton, Nancy F. Butte, David D. Moore, Atul R. Chopra

Public

## Retraction Watch

Tracking retractions as a window into the scientific process

### PAGES

How you can support Retraction Watch

Meet the Retraction Watch staff

## The Center For Scientific Integrity

The mission of the Center for Scientific Integrity, the parent organization of Retraction Watch, is to promote transparency and integrity in science and scientific publishing, and to disseminate best practices and increase efficiency in science.



# Trivia



When was the scientific method established?

- First documented in the 1600s, widespread use in the 1800s

When was the first scientific journal published?

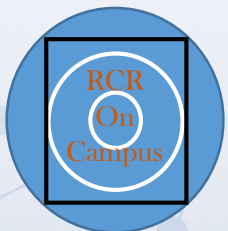
- 1665 -- Philosophical Transactions of the Royal Society

When was the concept of research misconduct created?

- 1985– First federal regulation related to RM

When was the concept of RCR established?

- 1995



# Rules and Regulations



# Federal Oversight

U.S. Department of Health and Human Services (HHS), 42 C.F.R. parts 50 and 93; Public Health Service Policies on Research Misconduct

- “Institutions and institutional members have an affirmative duty to protect PHS funds from misuse by ensuring the integrity of all PHS supported work, and primary responsibility for responding to and reporting allegations of research misconduct”

NSF Research Misconduct regulation, 49 C.F.R. § 689

- “Awardee institutions bear primary responsibility for prevention and detection of research misconduct and for the inquiry, investigation, and adjudication of alleged research misconduct.”



# Research Misconduct at a Glance

- UF Regulation 1.0101 – Research Integrity
  - Regulation and associated policy closely follow PHS policy
- The RM process is highly regulated
  - Proceedings confidential
  - Consequences are severe
  - Process designed to ensure due process
- UF employees and students have an obligation to report and an obligation to participate in RM proceedings



# Reporting RM

Before making an allegation—

- Document
  - Who did what, where, when, how?
  - Separate fact from speculation
- Review rules and policies
  - UF policy, applicable federal rules, UF RISC website
- Seek perspective
  - Is it misconduct, miscommunication, or misunderstanding?
- Consider your motivation—why are you making the allegation?
- Not sure if it is RM? Call the RIO!



# Review Process

## Allegation Assessment

- Intake of allegation and initial review
- Who did what, where, when, how?

## An inquiry (60 days) is warranted if:

- the allegation falls within the definition of Research Misconduct, and
- is sufficiently credible and specific so that potential evidence of Research Misconduct may be identified.

## An investigation (120 days) is warranted if:

- there is a reasonable basis for concluding that the allegation falls within the definition of Research Misconduct, and
- preliminary fact finding from the inquiry indicates the allegation may have substance.





# Finding of Research Misconduct

Fabrication, falsification or plagiarism occurred; **and**

There is a significant departure from accepted practices of the relevant research community; **and**

The misconduct is committed intentionally, knowingly, or recklessly; **and**

The allegation is proven by a preponderance of the evidence.



# Poll

- What happens if a person is found to have committed research misconduct?
  - Article Retraction
  - Degree withdrawal
  - Termination
  - Fines and jail time
  - Suspension or debarment from federal research
  - PI Summer Camp
  - All of the above
  - None of the above



# Consequences of Research Misconduct

Article  
Retraction

Supervision

Termination

Reprimand

Fines and jail  
time

Suspension or  
debarment

Restricted from  
serving on  
federal  
committees,  
boards, etc.

Retraining

Degree withdrawal

Recovery of  
Funds

Name published in Federal  
Register and on website

UF Actions

Federal Actions

# Fabrication and Falsification



# Fabrication and Falsification

## Fabrication

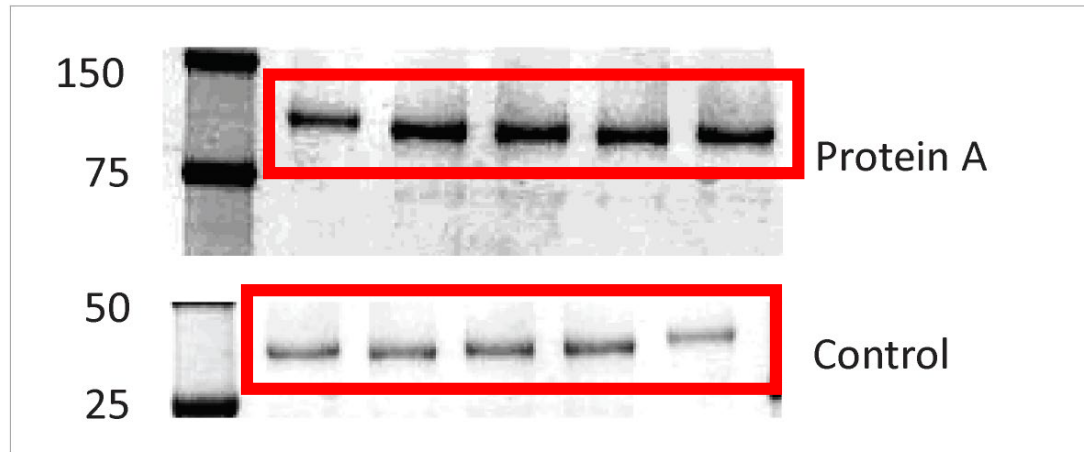
Making up data or results and recording or reporting them

## 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 record



# Can you spot the issue?



- The top panel and bottom panel of Figure 3 are from the same source image. The Protein A blot image has been flipped horizontally and represented as the control blot image.

Source: Office of Research Integrity <https://ori.hhs.gov/infographics>



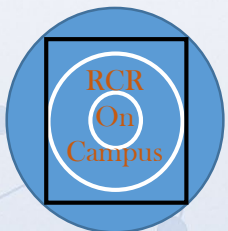
# Fabrication and Falsification

- Data Manipulation
- Changing original data
  - Survey data
  - Excel entries
- Omitting data to change results
- Manipulation in data processing
  - Functions
  - Rounding



# How to Avoid Allegations of Fabrication or Falsification

- Clearly mark any image adjustments
  - Cropping/ Magnification
  - Color Enhancements
  - Splicing
- Keep records and all original images
  - Clearly label records
- Follow your data management plan
- Follow community and journal guidelines for image and data processing

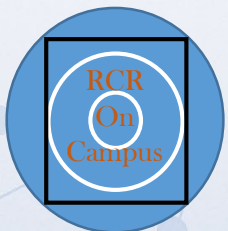




# Fabrication Case Study – Duke University

Lab technician Erin Pott-Kant had a knack for getting good results sought by researchers. When new tech Thomas joined the lab and performed similar tasks, he became suspicious of her work because the error rates were too low and he was unable to replicate her results. “Erin always got these experiments to work!” the supervising scientist once yelled. Thomas raised his concerns, but nothing changed. At this time, Duke was the nation’s eighth-largest NIH recipient, with more than 800 grants totaling \$475 million.

Thomas filed a whistleblower lawsuit alleging fabrication of data, and ORI agreed, determining that Pott-Kant had engaged in research misconduct by knowingly and intentionally fabricating research data in 117 figures and 2 tables in 39 published papers, 3 manuscripts, and 2 research records, while supported by NIH funds. As a result, Pott-Kant is permanently excluded from working with any U.S. agency. Duke agreed to pay a \$112.5 million fine.



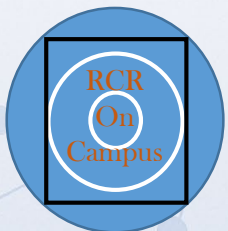
# Breakout Room: Duke Case

1.) Do you think a case like this (scale, funding, etc.) is common? Uncommon? Why?

2.) What principles do you think motivated Pott-Kant to falsify results? What principles motivated the whistleblower?

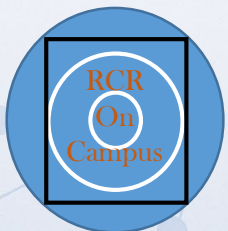
3.) What role, if any, do you think the faculty lab leader played? Do you think the faculty member bears any responsibility?

4.) What principles guided this Duke lab? What principles *should* guide a lab? Is there overlap?



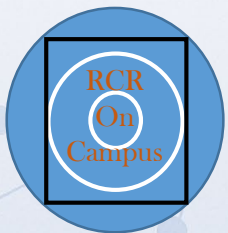
# Example Principles

- Family
- Freedom
- Loyalty
- Connection
- Creativity
- Humanity
- Success
- Respect
- Diversity
- Generosity
- Integrity
- Love
- Openness
- Advancement
- Forgiveness
- Faith
- Wisdom
- Honesty
- Kindness
- Communication
- Learning
- Excellence
- Quality
- Commonality
- Strength
- Hard work
- Clarity
- Leadership
- Renewal
- Contentment
- Friendship
- Courage
- Community
- Compassion
- Knowledge
- Patience
- Wellness
- Gratitude
- Achievement
- Others...



# What if it isn't Research Misconduct?

Careless, irregular, or contentious research practices may not meet the standard for research misconduct, but may be a research integrity violation.



# Questionable Research Practices

**Failure to disclose:** failing to disclose outside activities or financial interests

**Breach of confidentiality:** taking or releasing the ideas or data of others when there was an understanding or expectation of confidentiality

**Dishonesty in publication:** knowingly publishing material that will mislead readers (e.g., misrepresenting data or research progress; omitting contributors)

**Failure to report observed research misconduct:** failing to report observed, suspected, or apparent research misconduct by others

**Retaliation:** taking adverse action against an individual for having reported allegations

**Directing or encouraging others to engage in any of the above listed offenses**

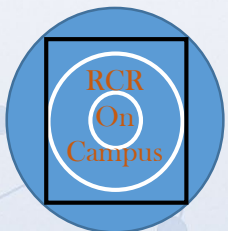
**Property violations:** stealing, tampering with, or destroying research property of others



# Poll

In your field of research, is it acceptable to...(check all that apply)

- Omit outliers?
- Splice images (with or without marking the splice)?
- Report a finding as predicted, when it wasn't?
- Only report or publish partial analysis?
- Choose not to publish results that did not align with your hypothesis?



# QRPs in Practice

- A recent study<sup>1</sup> published in Educational Researcher found that:

Use of QRPs was prevalent in education research. For example, [the authors] found that nearly 46% reported an exploratory finding as having been predicted, 67% reported having omitted some analyses from published studies. If researchers only report a portion of the analyses they run, readers do not get the full story.<sup>2</sup>

- Studies in other fields show similar findings

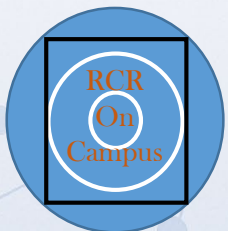


1. <https://www.forbes.com/sites/jonathanwai/2021/05/10/how-improving-research-practices-can-enhance-education-research-and-policy/?sh=b4f4cde56c38>
2. <https://journals.sagepub.com/doi/full/10.3102/0013189X14545513>

# Breakout Room: QRPs

Discussion:

- If QRPs are this widespread, what does this mean for science?
- Does knowing this change the way you view publications?
- What does it mean to you?
  - As a researcher?
  - As a taxpayer?
  - As a patient? Voter? Student? Consumer?





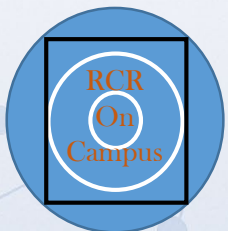
# Why this Matters: The RM Slippery Slope...

1. **TAKING SHORTCUTS** Lack of care in experimentation that might impact reproducibility
2. **CHEATING** Such as puffery, which is inflating your resume, can establish dangerous behavior patterns
3. **“BEAUTIFICATION” OF IMAGES** Removing an unwanted feature, even if unrelated to the result, could be scientifically significant
4. **LACK OF APPROPRIATE CONTROLS** Failure to perform a control with the experimental sample could affect result interpretation
5. **COMPOSITE IMAGES** Assemblies of images that are not clearly labeled, such as a montage of cell images from the same experiment but not labeled as such.
6. **OUTLIERS** Omitting outlier data without appropriate pre-experiment justification which alters the overall conclusion of the analysis
7. **IMAGE MANIPULATION** Splicing, cutting, or cropping images; without properly documenting changes, that alters the results or falsely claims a result which was not obtained.



# Closing Thoughts

- Educate yourself, know what the right thing is, and do it
- Incorporate ethical behaviors, professionalism, and accountability into your work everyday
- Always practice the responsible conduct of research—if you don't know, ask!
- If you see something suspicious, ask questions, say something
- Remember, acts of research misconduct destroy your reputation, the public's confidence in science, and the scientific record
- Make ethical decisions—find a framework that works for you



# Questions?



Source: Cone of Silence from Get Smart, Episode 1: "Mr. Big", 1965

# Thank you!

- Please take the survey at [https://ufl.qualtrics.com/jfe/form/SV\\_1WVLQUcrykr7YFM](https://ufl.qualtrics.com/jfe/form/SV_1WVLQUcrykr7YFM)
- For more information, visit our website at: <https://research.ufl.edu/compliance/research-integrity.html>
- UF RISC has a series of Research Integrity posters, to request one (or several!), email [RIO@research.ufl.edu](mailto:RIO@research.ufl.edu)



# If You Suspect Research Misconduct...

Research Misconduct means **fabrication, falsification, or plagiarism** in proposing, performing, or reviewing research, or in reporting research results.

Questionable Research Practices are reports of **careless, irregular, or contentious research practices**, as well as authorship disputes, may not meet the standard for research misconduct but may be a research integrity violation.

Make a **confidential report** to the UF Research Integrity Officer (RIO)

**Cassandra C. Farley**  
(352) 273-3052 | [rio@research.ufl.edu](mailto:rio@research.ufl.edu)

You may also report anonymously  
UF Compliance Hotline: 877-556-5356



*Still not sure if it is Misconduct or a QRP?* The RIO can help you better understand the situation. You can speak in hypotheticals as you consider making an official allegation.

