

Research Integrity in Academia

Jeannette M. Wing

Executive Vice President for Research
Professor of Computer Science

Columbia University

NASEM-GUIRR Webinar on Research Integrity
April 11, 2024
Virtual Meeting

Why is Research Integrity So Important

- Trust in science is based on trust in the conduct of science, the scientific process
- Trust by whom?
Peers, media, public, funders
- Violation of trust means
Potential reputational risk (to institution and individual)
Funding risk
Career risk

Elements of a Research Integrity Office

- Responsible conduct
 - Plagiarism, image manipulation, falsification, fabrication
 - Ethical standards of profession/field
 - Responsible authorship
- Conflicts of interest, conflicts of commitment
- Financial management
- Human subjects research
- Animal subjects research
- Data management
- Lab safety
- Research security
- Continuous training

[Sponsored Projects Handbook](#)

Gives practical guidance in the management of sponsored projects funded by both governmental and private organization, in accordance with the research policies and procedures of the University.

[Animal Research Handbook](#)

A companion resource to the Sponsored Projects Handbook, designed to be a reference guide for faculty and staff who are involved in research using animals.

[Research Radiation Safety Handbook](#)

Gives practical guidance on research using sources of ionizing radiation, in accordance with applicable laws, regulations and University policies and procedures.

[Clinical Research Handbook](#)

A companion resource to the Sponsored Projects Handbook, geared to the clinical research coordinator. Also includes a chapter on FDA-regulated research.

[Environmental Health and Safety Handbook](#)

Gives practical guidance to faculty, staff and students who are conducting research using hazardous materials.

[Postdoctoral Officers Handbook](#)

Provides up to date, in-depth information on all policies, procedures and offerings for Columbia Postdocs.

research
Quick
Guide
To
Research
at Columbia University

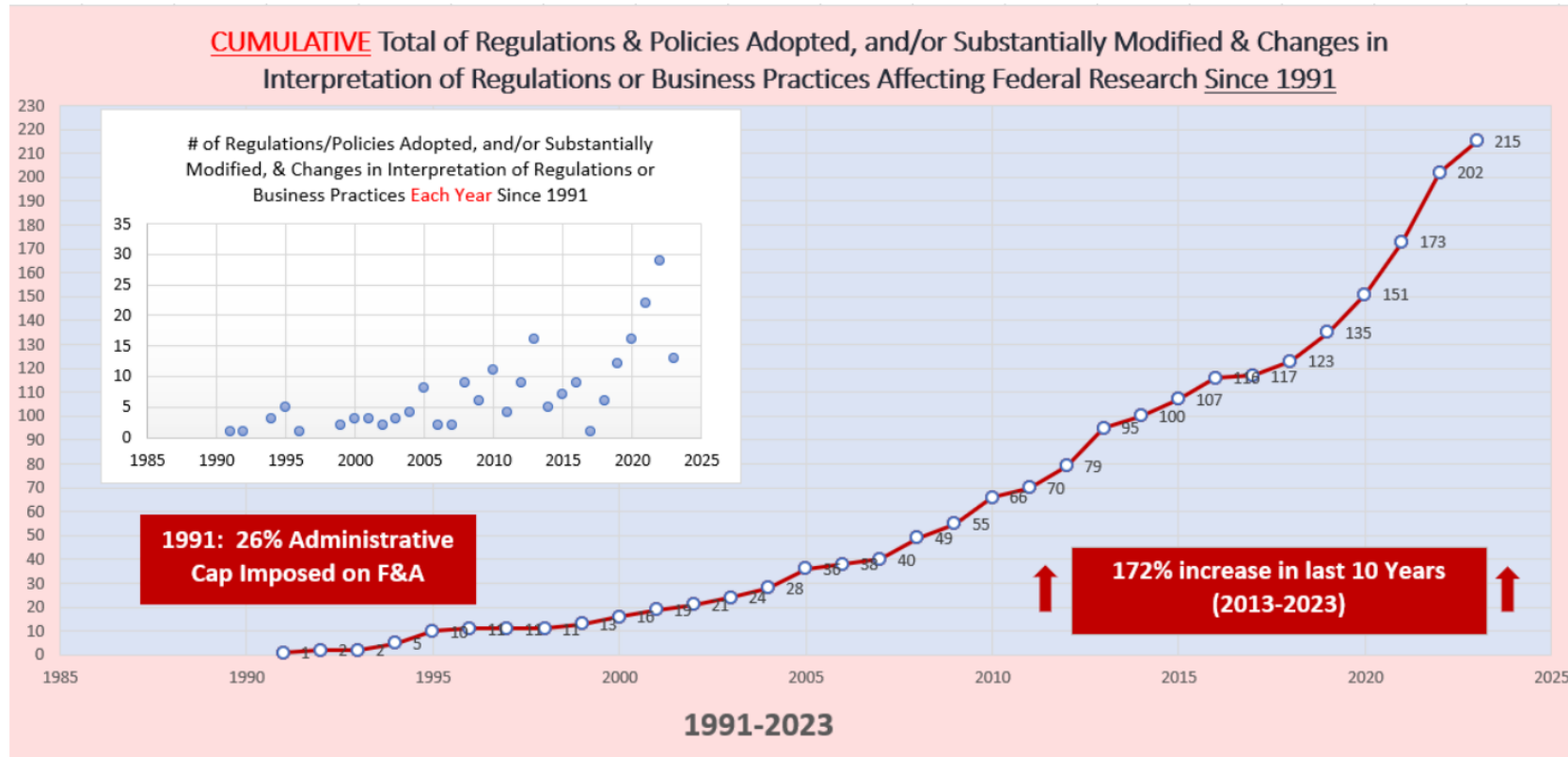
research
Quick
Guide
for
Principal
Investigators
at Columbia University

Managing Academic Integrity

- Each university, especially R1s, has an office and officer in charge of research integrity
- Universities share best practices through national organizations
 - American Association of Universities (AAU), e.g., “Senior Research Officers” group
 - Council of Governmental Relations
- Universities and PIs are accountable to government funding agencies
- Research is highly regulated.

172% Increase in Number of *Changes* in Regulations (in last 10 years)

Figure 1: *Cumulative Total of Regulations & Policies Adopted, and/or Substantially Modified & Changes in Interpretation of Regulations or Business Practices Affecting Federal Research Since 1991*



Columbia University

- Research and Data Integrity Program ([ReaDI](#))
 - Rich set of resources, training, and consultation for research community
 - ReaDI@columbia.edu
- Two training modules (February 2024) on the proper handling of digital scientific images
 - Expect all postdocs to take training
- Generative AI
 - University policy on the appropriate use in the classroom and for research

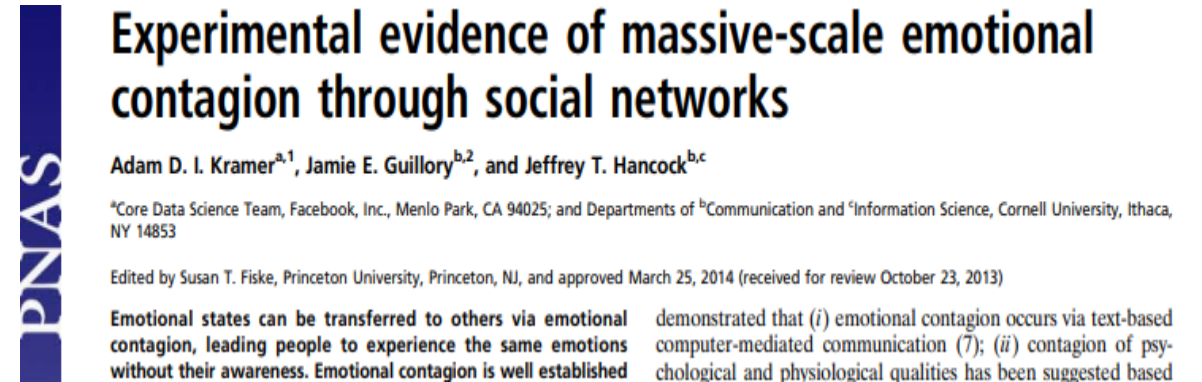


Looking Ahead

- Research security
 - Threat to NSDD-189 (Fundamental Research)
 - Reduction of foreign collaborations, especially a decoupling between US and China
- Generative AI
 - Unethical people will use generative AI to fabricate and falsify data in ways that are difficult or impossible to detect, increasing the risk that people will distrust science
 - There needs to be additional assurance that what researchers present are not “deep fakes.” Minimally, scientists should not present AI-generated content as observations collected in the real world.
- Incentives in research
 - Consequences of “publish-or-perish”

Research Integrity in Industry: Two Stories

1. Facebook and Cornell authors publish “emotional contagion” 2014 PNAS paper, leading to massive uproar by public, press, and academia.



2. Microsoft releases chatbot Tay on March 23, 2016...



...and shuts it down within 24 hours.



Follow-up by Tech Companies

- Ethics Review Board internal to company
 - Akin to privacy review boards and Institutional Review Boards (IRB) for human subjects research
 - Especially germane now for generative AI technology
- Partnership in AI created in 2016
 - Founding companies: Amazon, Apple, DeepMind, Facebook, Google, IBM, Microsoft
 - Now 123 industry, government, academia, and non-profit partners



Columbia University Upcoming Event

Symposium on Promoting Credibility, Reproducibility, and Integrity in
Research (PCRI)

March 28, 2025

Theme: Generative AI

with participation from
Sheila Garrity and hopefully Marcia McNutt

4th in series: 2016, 2019, 2022 (virtual), 2025