Research Integrity

presentation prepared by

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x2907

www.researchcompliance.caltech.edu

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Why?

Research Integrity

"Caltech researchers are expected to adhere to the highest professional standards in the conduct of research."

What are the standards?

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What is Research Integrity?

Research Integrity Requires:

- the **use of honest and verifiable methods** in proposing, performing, and evaluating research, without bias
- Conducting and reporting research results with particular attention to **adherence to rules, regulations, guidelines, and policies**
- **following commonly accepted professional codes or norms; and**
- **treating colleagues fairly and with respect.**

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Use Honest and Verifiable Methods: Responsible Conduct of Research

- Using/Practicing the Scientific Method as it Applies to Your Field of Research: Rigor
- Transparency in Reporting & Integrity in Reviewing Research
- Generating Sound and Reproducible Data
- Avoiding Research Misconduct
- Avoiding Conflicts of Interest and Conflicts of Commitment
- Education:
  - Responsible Conduct of Research (RCR)
  - In person, BI252

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Use Honest and Verifiable Methods: Avoid Research Misconduct

Research Misconduct:

42 CFR Part 93 §93.103: Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

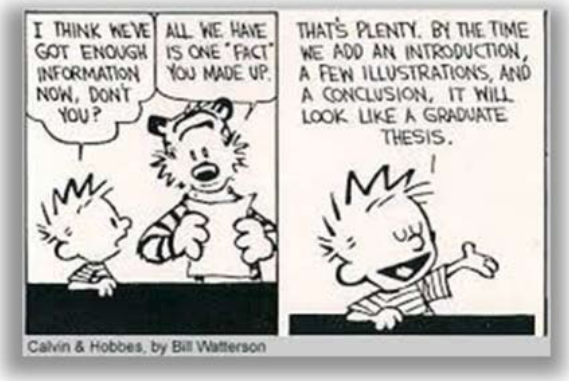
a) **Fabrication** is making up data or results and recording or reporting them.

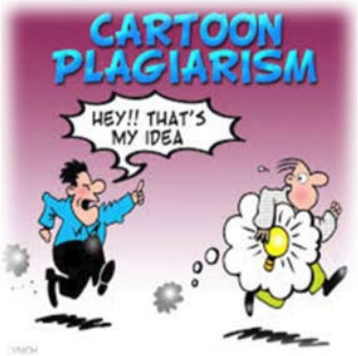
b) **Falsification** is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

c) **Plagiarism** is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

* Authorship (Planning, Disputes)

d) *Research misconduct **does not** include honest error or differences of opinion.*





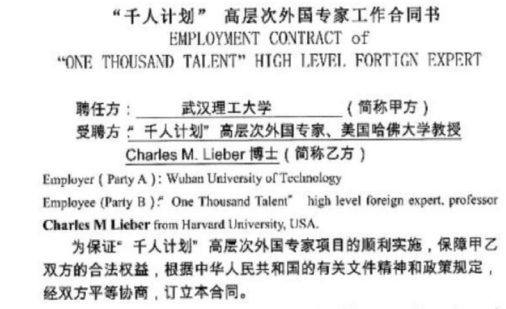
Use Honest and Verifiable Methods: Avoid Conflicts of Interest (and/or Commitment)

- Caltech has a Conflict of Interest Policy, Specific Policy for Federally-Funded Research, and PD Handbook
- What sorts of things could constitute conflict?
  - Paid and Non-Paid Activities
  - Consulting
  - Entrepreneurial Activity
  - Equity Holdings
- Priority Commitment to Caltech/Research
- Problem: Outside interests can result in bias in research or otherwise significantly affect the design, conduct, or reporting of research; compromise IP, lead to other unethical research behaviors
- TRANSPARENCY/DISCLOSURE
  - Foreign Government Talent Programs

Acclaimed Harvard Scientist Is Arrested, Accused Of Lying About Ties To China

January 28, 2020 · 2:31 PM ET

BILL CHAPPELL



"千人计划" 高层次外国专家工作合同书
EMPLOYMENT CONTRACT of
"ONE THOUSAND TALENT" HIGH LEVEL FORTIGN EXPERT

聘任方：武汉理工大学（简称甲方）
受聘方："千人计划"高层次外国专家、美国哈佛大学教授
Charles M. Lieber 博士（简称乙方）

Employer (Party A): Wuhan University of Technology
Employee (Party B)." One Thousand Talent" high level foreign expert, professor
Charles M Lieber from Harvard University, USA.
为保证"千人计划"高层次外国专家项目的顺利实施，保障甲乙双方的合法权益，根据中华人民共和国的有关文件精神和政策规定，经双方平等协商，订立本合同。

An FBI affidavit that lays out the case against Charles Lieber includes what federal prosecutors say is a contract between the Harvard researcher and a university in China.
U.S. Attorney's Office/Screenshot by NPR

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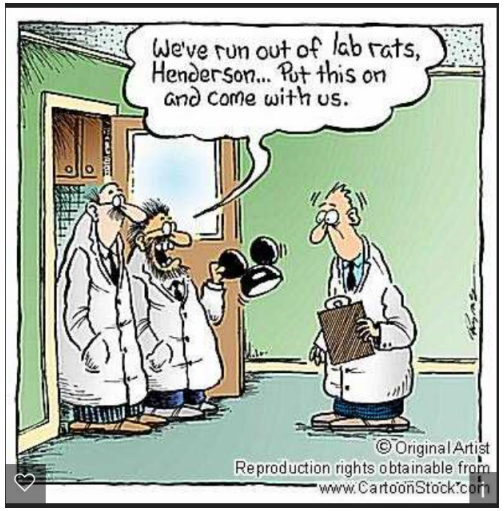
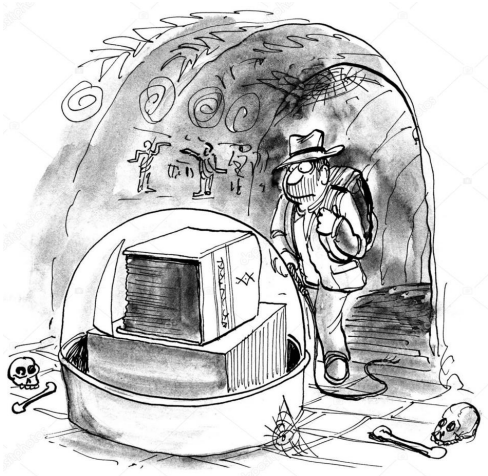
Adherence to Rules, Regulations, and Policies: Compliance



- Animal Research
- Biosafety/Dual Use/Recombinant DNA Research
- Reporting Conflicts of Interest and Commitment
- Cost Sharing
- Data Management/Sharing
- Effort Allocation
- Export Control/Foreign Engagement
- Human Subjects Research
- Intellectual Property (Patents, Copyrights)
- Privacy
- Publication/Authorship
- Radiation Use
- Research Misconduct
- **Research Security**
- Responsible Conduct of Research
- Salary Caps
- Stem Cell Research
- Sub-Award Monitoring
- Use of Controlled Substances and Chemical Precursors



At last he had found the Regulatory Guidelines.

https://researchcompliance.caltech.edu/ https://researchadministration.caltech.edu/osr

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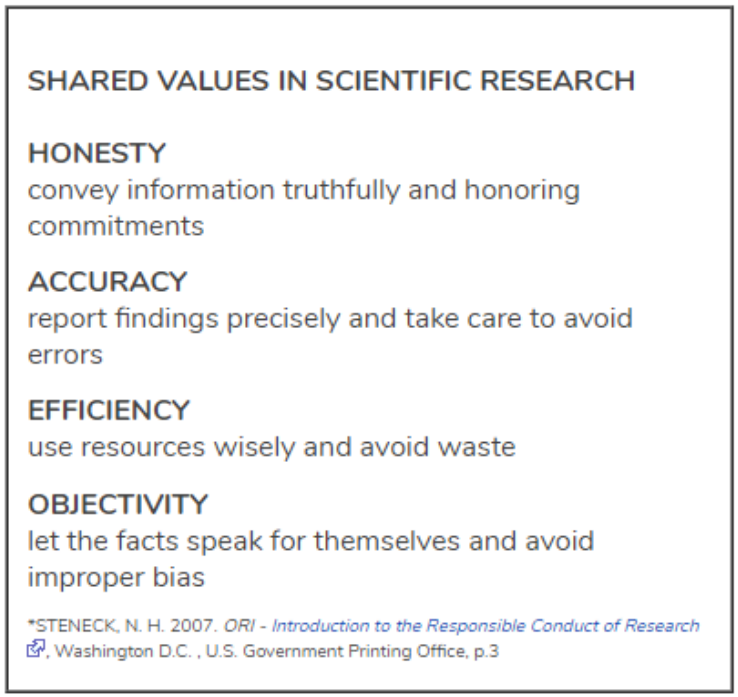
Following Commonly Accepted Professional Codes or Norms



SHARED VALUES IN SCIENTIFIC RESEARCH

HONESTY
convey information truthfully and honoring commitments

ACCURACY
report findings precisely and take care to avoid errors

EFFICIENCY
use resources wisely and avoid waste

OBJECTIVITY
let the facts speak for themselves and avoid improper bias

*STENECK, N. H. 2007. *ORI - Introduction to the Responsible Conduct of Research*, Washington D.C. , U.S. Government Printing Office, p.3

- Ethical Codes: Caltech Honor Code; Caltech Code of Conduct
- Professional Codes: Generally, subject matter specific, but there are some overarching similarities:
  - Common Values
  - Data Management/Sharing
  - Documentation
  - Publication/Responsible Authorship

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Publication and Authorship

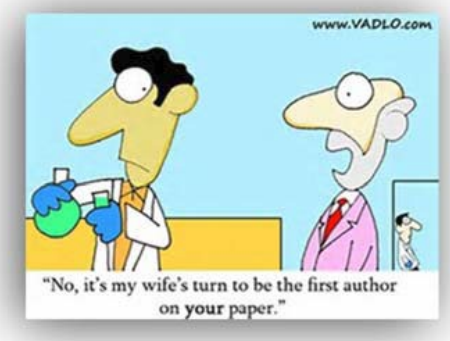
Responsible Authorship

Who determines authorship?

- The PI is responsible for determining authorship in the lab.

- The co-authors of a paper should be all those persons who have made *significant scientific contributions* to the work reported and who share responsibility and accountability for the results.

- NIH has a reference table that provides various scenarios: https://oir.nih.gov/sites/default/files/uploads/sourcebook/documents/ethical_conduct/guidelines-authorship_contributions.pdf



Caltech Guidance and Authorship Dispute Process: https://researchcompliance.caltech.edu/documents/17607/authorship_dispute_process_final.pdf

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Treating Colleagues Fairly and with Respect

The climate and culture in the laboratory should provide an environment that is productive and collaborative.

http://www.thecomicstrips.com/subject/The-Collaboration-Comic-Strips.php

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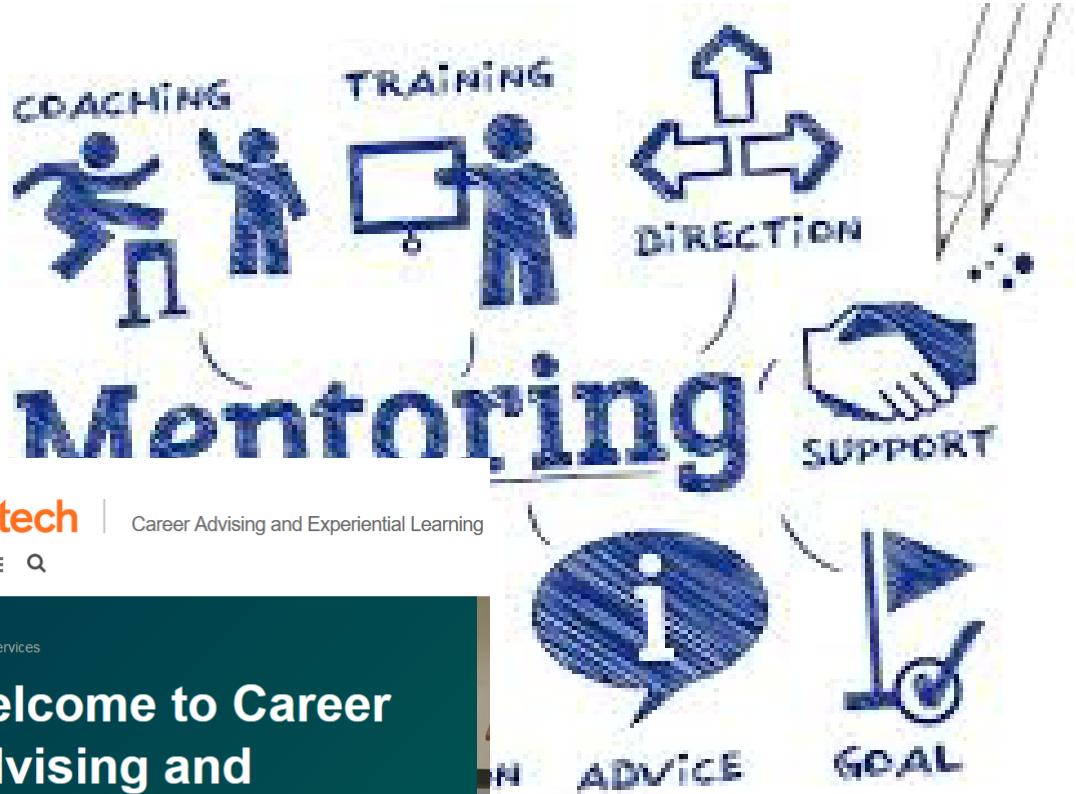
Mentoring and Being Mentored



Caltech | Career Advising and Experiential Learning

Menu

Career Services

Welcome to Career Advising and Experiential Learning!

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Launching Research Pt. 1: Laboratory Readiness

The purpose of this course, Launching Research, Part 1: Laboratory Readiness, is to inspire students to confidently explore research and acquaint them with skills that they will use throughout the course of their education and career. The purpose is also to introduce the concept that research can provide new and exciting opportunities. This course will help mentees or students get acclimated and introduced to the research laboratory and laboratory setting.

This course is divided into three modules. The first module introduces the user to research, provides guidelines for mentor and mentee responsibilities, and discusses the development of a professional image. The second module addresses research compliance including the protection of human subjects, the welfare of laboratory animals, and guidance for developing standard operating procedures. The third module covers research ethics including conflicts of interest, article perspectives, research articles, and provides instruction for creating and maintaining a laboratory notebook.

Each module will take approximately 45 minutes to complete, and users are able to pause between lessons within the modules. A certificate is awarded upon completion of the course.

Enroll in the Launching Research Pt. 1 Course

Launching Research Pt. 2: Tools For Investigation and Organization

The purpose of this course, Launching Research, Part 2: Tools for Organization and Investigation, is to inspire students to confidently explore research and acquaint them with skills that they will use throughout the course of their education and career. The purpose is also to introduce the concept that research can provide new and exciting opportunities.

This course is divided into three modules. The first module introduces the user to data gathering, scientific and engineering methods, and data management and practices. The second module addresses the SWOT analysis, collaboration, research misconduct, and citation /reference management. The third module covers authorship and publication, theses and dissertations, scientific meetings, and intellectual property (patents and other IP).

Each module will take approximately 45 minutes to complete, and users are able to pause between lessons within the modules. A certificate is awarded upon completion of the course.

Enroll in the Launching Research Pt. 2 Course

Mentor Training

For **all career stages.** Mentors of research trainees learn to

- Align expectations
- Address equity and inclusion
- Articulate a mentoring philosophy and plan
- Assess understanding
- Cultivate ethical behavior
- Enhance work-life integration
- Foster independence
- Maintain effective communication
- Promote mentee research self-efficacy
- Promote professional development

Mentoring content from Nature journals

Career Column
16 Mar 2023
Nature

Tormentor mentors, and how to survive them
Bad mentors can go absent, sap your energy or embroil you in their paranoia. Here are five tips for tackling a toxic relationship.
Jennifer S. Davila & Ruth Gotian

Career Q&A
10 Mar 2023
Nature

TikTok's dancing chemist catalyses joy in students
Chemist André Isaacs produces fun-loving social-media videos to bond with his Gen Z students and build an inclusive community.
Spoorthy Raman

Career Q&A
13 Jan 2023
Nature

How coaching could help tackle toxic research cultures
Simon Kay wants to use his newly acquired skills as a life and leadership coach to improve how science is led and managed.
Linda Nordling

Career Feature
3 Jan 2023
Nature

Classroom assistance: the scientists turning the tools of their trade to education
A small but growing number of scientific faculty positions are focusing on the science of teaching.
Amber Dance

Career Guide
7 Sep 2022

Hiring and being hired: faculty members share their stories
Competition for the best talent is stiff. Here are ways for recruiters and jobseekers to stand out from the

What if I Have Questions or Need Help with Research Integrity or Compliance Issues?

- Office of Research Compliance
- Office of Technology Transfer and Corporate Partnerships
- Office of Sponsored Research
- Office of Export Control
- Research Compliance Committees (IRB, IACUC, IBC, Radiation, HESC)
- Environmental Health and Safety
- Postdoc Office

There are links to all of these offices/organizations at:

www.researchcompliance.caltech.edu

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Thanks!

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