Ethics and Integrity in Research

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What constitutes cheating in school?

• Copying someone else’s work
• Writing test answers on your hand
• Turning in fake or “enhanced” outcomes
• Minimally participating in group work
Misconduct of Research is cheating...
Types of Research Misconduct

• Plagiarism
• Falsification of data
• Taking credit for something someone else did OR not giving credit to someone
And...

- Unethical treatment of human or animal subjects
- Improperly storing, sharing, and maintaining data
- Not providing sufficient training or mentoring
- Having compromised judgment due to conflicts of interest
How to avoid these pitfalls...
Responsible Data Management

• What could possibly go wrong?
Responsible Data Management

• Be organized, dutiful, and proactive in the collection, storage, and maintenance of data

• Keep data **safe and secure** even if not confidential
  - Back up copy
  - Password protected
  - Locked cabinets and desk drawers
  - Know who has access to what
Falsification/Fabrication of Data

Percentage of Total Bacteria Remaining After the Application of Antibiotic Z

- Bacterium A
- Bacterium B
- Bacterium C
Other data issues...

• Who owns the data?
• How long should data be kept?
• How should data be disposed of?
Responsible Conduct of Human and Animal Research

• Know IRB and IACUC procedures at your institution
• Have a developed research plan that warrants the use of human or animal subjects
• Seek guidance from your faculty adviser
Human Subjects Research

• Follow principles of voluntary participation, informed consent, and confidentiality
• Benefits must always outweigh risks
Animals in Research

• Follow principles of minimizing pain and distress, and providing as close to natural environment as possible

• In the field, IACUC approval also required
Responsible Authorship

• Everyone should understand what constitutes plagiarism and how to properly cite sources

• Discuss in advance who will be listed on publications/presentations and in what order (alphabetical, hierarchical, who contributed most)

• Who will be thanked, acknowledged, or recognized in other ways?
Recognizing and Avoiding Potential Conflicts of Interest

- Occurs when a researcher stands to make a significant financial gain from a sponsored project
- Required to disclose any potential financial gains
- Should have an agreement regarding potential discoveries and intellectual property
- Know the rules regarding COI and IP at your institution
Not all Conflicts are Financial

• Desire to validate one’s own work
• Desire to promote the department or college
• Desire to do a favor for a friend, colleague, or spouse at the institution
• A situation in which personal beliefs influence objectivity (conflict of conscience)
• Pressure to produce/approve quickly
Did you know....?

Inventions must be disclosed to the institution.
At NAU, the Arizona Board of Regents owns intellectual property developed by researchers within the scope of their employment.
Responsible Training and Mentoring

- Long tradition of mentor/trainee relationships in academia going back to ancient Greece
- Mentor as adviser, teacher, role model, guide, informant, and support advocate
- Mentors should make sufficient time to actively train professionals-in-training
- Mentors are THE resource for ethical conduct of research and academic integrity
A Failure to Train

In 2008, UCLA Research Assistant Sheharbano “Sheri” Sangji was accidentally splashed with a chemical compound that ignited her clothing. She died from severe burns. The University has been fined, the board of regents sued, and the chemistry professor in charge of the lab faces felony charges. Proper lab safety training and accountability and the use of a lab coat would have prevented this tragic accident.
A lab safety inspection revealed more than 2 dozen deficiencies two months prior to the incident.
Consequences of Research Misconduct

• Sanctions from conducting research
• Seizure of data and research notes
• Barring from publication
• Written reprimand
• Retraction of published research
• Lab closure/banning from lab
• Loss of funding
Good luck with your research!