

# Introduction to the Responsible Conduct of Research



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# Research Ethics

## Why it is important to adhere to ethical norms in research?

- Encourage integrity of scientific investigation and the discovery of new knowledge
- Promote good research values: trust, accountability, mutual respect, and fairness
- Help ensure that researchers can be held accountable to the public and build public support for research
- Promote other important values, such as social responsibility, human rights, animal welfare, and public health and safety

# Academic Integrity at Purdue

- Purdue values and demands **intellectual integrity** and the **highest standards of academic conduct**
- Prepares students and trainees to become **leaders** and **role models**
- Instills highest **ethical standards** of **honor** and **scholarship**
- Purdue students and trainees **adhere** to the **Code of Conduct** - [https://www.purdue.edu/purdue/about/integrity\\_statement.php](https://www.purdue.edu/purdue/about/integrity_statement.php)

**Dishonesty**

never leads to

**Success**

# Responsible Conduct of Research (RCR)

## Definition

RCR is good citizenship applied to professional life

## Principles

- Honesty in all academic and research activities
- Maintaining the highest possible standards when engaging in research activities
- Compliance with federal and state laws and regulations

# RCR - shared values



## HONESTY



conveying information truthfully and honoring commitments,



## ACCURACY



reporting findings precisely and taking care to avoid errors,



## EFFICIENCY



using resources wisely and avoiding waste, and



## OBJECTIVITY



letting the facts speak for themselves and avoiding improper bias.

# New RCR Standard at Purdue

- ❖ Becomes effective on July 1, 2020
- ❖ Sets a new RCR training requirement for all researchers at Purdue
- ❖ Aim: to create a culture of research integrity and minimize the occurrence of research misconduct
- ❖ Available online at: [RCR Standard \(S20\)](#)

# RCR training at Purdue

**Researcher**: a person who **designs** research, **conducts** research, **collects and analyzes** data or **writes and runs** computing software, and/or **reports** research findings

## **RCR education for undergraduate researchers:**

- Online training courses
- In-person training with faculty mentors and instructors

## **Online RCR curriculum for undergraduates:**

- Plagiarism
- Data Management
- Research Misconduct
- Conflicts of interest

# Basic RCR Topics and Case studies

Plagiarism: the appropriation of another person's ideas, processes, results or words without giving appropriate credit.

*Ref: Office of Science and Technology Policy (OSTP)*



# Case Study\*: Plagiarism

*\*The following case was adapted by Shaké Ketefian from [Association of American Medical Colleges \(1994\)](#), "Teaching the Responsible Conduct of Research Through a Case Study Approach." Washington, D.C., AAMC. Case B6, pages 51-52. (Adapted by University of Michigan: <http://www.responsibility.research.umich.edu/casematerialsdir.html>) – fair use.*

Dr. Charles, a mid-career faculty member, was revising and updating a book chapter. This led her to review other articles on the same subject to help determine what new material to cover. During the course of her reading, she came upon a chapter in a major text by Dr. Long, a department chair in a leading psychology department, that contained long passages from her previous chapter without attribution. Dr. Charles called Dr. Long and confronted him with her finding. At first, he vehemently denied having used any of Dr. Charles' text inappropriately. Dr. Charles then faxed Dr. Long copies of the offending passages [and ostensibly her original chapter for comparison purposes].

After some delay, Dr. Long finally responded, acknowledging that the language was indeed remarkably similar; he noted that he had engaged younger members of his research team to write portions of the chapter because he was very busy at the time that the deadline was approaching. Furthermore, to defend himself, he pointed out that much of the original research on which her chapter was based was derived from the work of his team. He admitted only to negligence in not adequately monitoring the activities of his students and subordinates.”

Dr. Charles replied that the students/other team members were not acknowledged in Dr. Long's chapter either, and that admission of plagiarism required more than an apology. She indicated her intention to report the matter to Dr. Long's dean and the editor of the text [his and hers].

# Case Study: Plagiarism

## Considerations

Keep in mind the various perspectives, points of view, and the types of considerations that might be held by different parties in the conflict; identify the consequences of alternative courses of action; describe any conflicts of interest, obligations, or values; describe duties, obligations, or legitimate expectations of the different parties.

## Questions:

- Did Dr. Charles act appropriately?
- Considering the differences in status between herself and Dr. Long, what professional risks was she taking, if any?
- Did Dr. Long do anything wrong? If so, what? What obligations did he violate, if any? Would your answer be different if he were copying *his own* previous writings instead of someone else's?
- What should Dr. Long's dean consider in deciding on a course of action?
- What would the editor of *Dr. Long's* text consider and do? What would *Dr. Charles'* editor consider and do?
- What obligations as mentor does Dr. Long have to his students and research team members? What obligations as senior investigator and/or author? Do you see any role in this case that might be played by Dr. Long's students and team members? If so, what?

# Basic RCR Topics and Case studies

## Data Management

- What are data?

“Any form of factual information used for reasoning” (examples: numbers collected from a measurement, pictures, inventories, answers to survey questions, etc.)

- Who should collect data?

People who are trained to do it

- How should data be collected?

According to established protocols

- Why manage and retain?

Analysis and interpretation, definitive source of facts, norms of accuracy, replication and reliability; resolving challenges (e.g. research misconduct, challenges from other research groups)

# Basic RCR Topics and Case studies

## Data Management (Contd...)

- Who is responsible for data management and retention?

Everyone who collects, analyzes and reports the data has an interest in the quality, accuracy, and preservation of data

- Who has rights to the data?

- ✓ The researcher who is collecting the data
- ✓ All who collaborate in the design of an experiment
- ✓ Purdue University; in some cases federal agencies sponsoring the project
- ✓ Principal investigator - retains the original data
- ✓ It is customary for students to retain a copy of the data collected in the course of their thesis or dissertation research

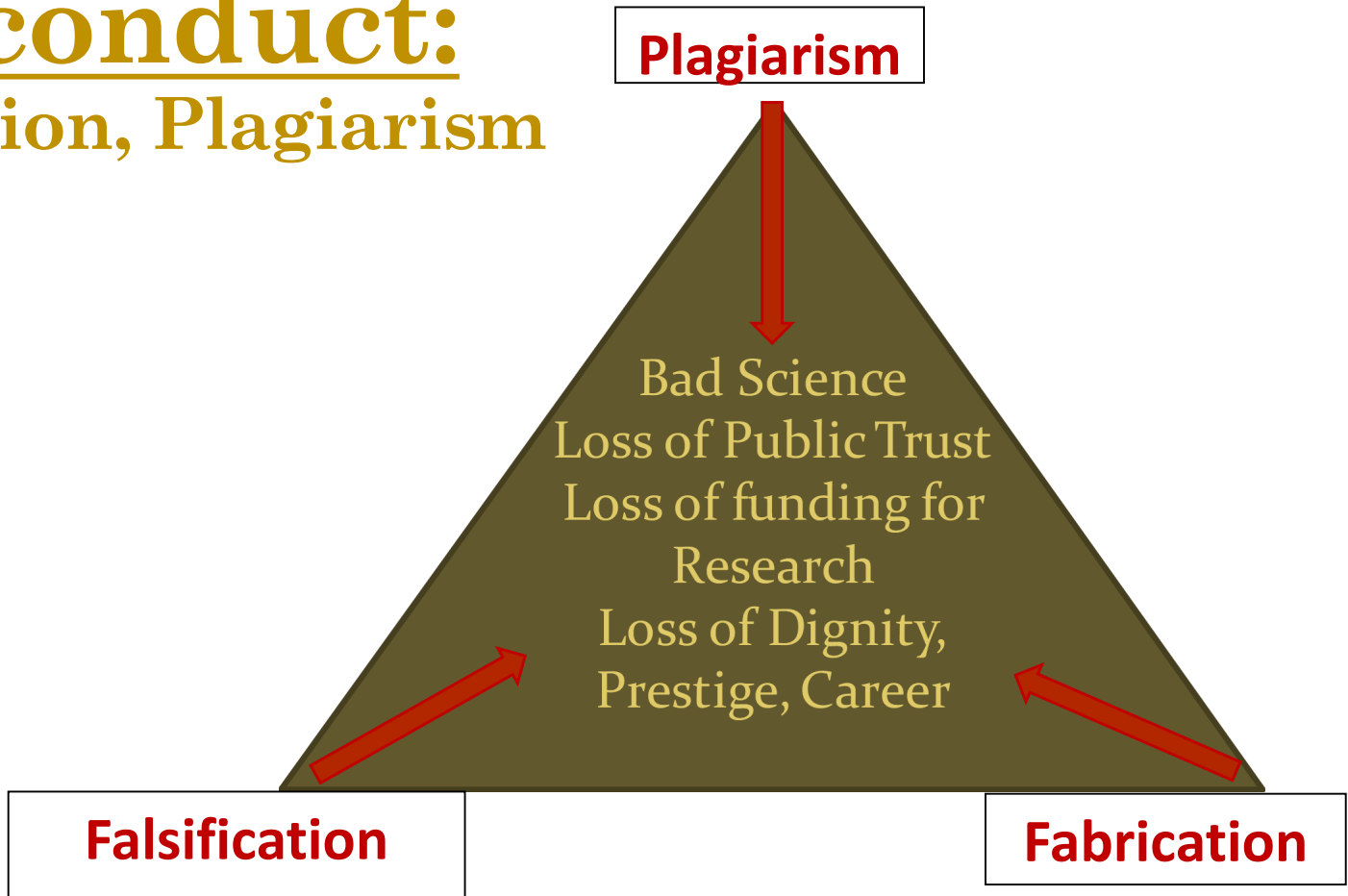
- How long must the original data be maintained and accessible?

- ✓ As long as possible – best answer
- ✓ If federally sponsored research, all data should be maintained for at least three years
- ✓ after the final financial transaction involving the grant and contract
- ✓ Vary with discipline and form of data

# Research Misconduct: Falsification, Fabrication, Plagiarism

## Early Childhood Ethics

- Cheating → Falsification
- Lying → Fabrication
- Stealing → Plagiarism



**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

# Basic RCR Topics - Conflicts of Interest

Conflict of interest (COI): Any financial or other interest which conflicts with the service of the individual because of (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization (*Ref: National Academies*)

**Example:** A team of researchers is planning to commercialize a technology developed in a Purdue laboratory

- Researchers must consult Purdue's COI policies
- The researchers must disclose their financial interests to Purdue
- If a conflict of interest emerges, it will need to be managed

*“The public trust in what we do is just essential, and we cannot afford to take any chances with the integrity of the research process” (NIH 2018).*

# Additional RCR topics - Authorship

## **Credit and responsibility**

- List of authors identifies researchers who deserves credit for the work
- The authors bear responsibility for any deficits in the integrity or quality of the work

## **Who should be an author?**

Researchers who meet the criteria for authorship should be included as authors

## **Transparency**

- Research groups and collaborators should be clear about the criteria and plans for authorship
- Individual scientists should discuss authorship during the planning of any collaboration and continue those discussions as the research project evolves.

# Checklist for Authorship Determination

## General Guidelines for Authorship Contributions

Contributions		Authorship? ( <span style="color: green;">■</span> yes; <span style="color: magenta;">■</span> no)	Comments
<b>Design &amp; interpretation of results</b>	original idea, planning & input	<span style="color: green;">■</span>	An idea alone may not warrant authorship, unless highly original & unique
	other intellectual contribution	<span style="color: green;">■</span>	Yes, but assuming active involvement
<b>Supervisory role</b>	supervision of the project	<span style="color: green;">■</span>	Yes, but assuming active involvement
	training, education	<span style="color: magenta;">■</span>	
	mentoring of 1st author	<span style="color: magenta;">■</span>	No, unless substantive contribution made to study
<b>Administrative &amp; technical support</b>	resources: \$	<span style="color: magenta;">■</span>	Acknowledgements yes, authorship no
	resources: animals, reagents	<span style="color: green;">■</span>	No if already published; yes if novel
	resources: patients	<span style="color: green;">■</span>	Maybe, depending on circumstances
<b>Data acquisition</b>	original experimental work	<span style="color: green;">■</span>	
	technical experimental work	<span style="color: green;">■</span>	No if routine; yes if novel methods added, or specific role, e.g., statistics, imaging etc.
	data analysis (assays)	<span style="color: green;">■</span>	Yes, unless only very basic
	data analysis (statistics)	<span style="color: green;">■</span>	Yes, unless only very basic (t-tests e.g.)
<b>Writing &amp; other</b>	drafting of manuscript	<span style="color: green;">■</span>	Warrants first authorship
	reading/ commenting on manuscript	<span style="color: magenta;">■</span>	Substantial feedback can be acknowledged
	none	<span style="color: magenta;">■</span>	Includes honorary authorship for lab chiefs, celebrities etc.



# Intellectual Property

Ownership of intellectual property created by Purdue employees and students, or through use of Purdue University resources is determined through the application of Purdue's policy on Intellectual Property.

- <https://www.purdue.edu/research/regulatory-affairs/intellectual-property.php>
- <https://www.purdue.edu/policies/academic-research-affairs/ia1.html>

# RCR Resources at Purdue

- Office of the Executive Vice President for Research & Partnerships  
<https://purdue.edu/research>
- Purdue RCR Training Standard  
<https://www.purdue.edu/policies/academic-research-affairs/s20.html#contacts>
- Office of Undergraduate Research  
<https://purdue.edu/undergrad-research>
- Honors College  
<https://honors.purdue.edu>
- Office of Research Integrity  
<https://purdue.edu/provost/researchintegrity>
- Guidance for completion of the online RCR training is available [here](#).

# QUESTIONS?

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