

Research Integrity and Scientific Misconduct

Introduction

- The enduring peculiar characteristics of researchers, part players and environment where research is done could affect the process, outcome, evaluation and utilisation of research.
- But research is expected to be conducted with strict adherence to scientific method and also in good faith.
- Misdemeanours and misconducts in research challenge the integrity of the investigators, stakeholders and the integrity of research.

Integrity in research

- The support of the public for science, scientists and scientific institutions is based on trust and honesty.
- Scientists and scientific institutions are accountable NOT only to sponsors, but largely to the public.
- Fostering an environment that promotes integrity in the conduct of research is part of that accountability.

Dealing with Disappointment-Case Study

- Dr. Smith was a well-known and well-respected researcher at a mid-western university. John, her graduate student, was devoted to the lab and was its lab Director.
- John had spent more than a year on a research that Dr. Smith had expected to provide impressive results. The research simply did not pan out as they expected. Both Dr. Smith and John were extremely disappointed.
- Dr. Smith had depended on the results from this piece of research so that she could submit an abstract for presentation at an upcoming conference. The student had planned his thesis on the expected outcome of this research.

Case study - 2

- Dr. Smith and John were certain that their hypothesis was correct, but had not yet been able to figure out what had gone wrong with John's experiments.
- Dr. Smith greeted John with a smile the next Monday. "I can't replace your thesis," she said, "but I can get you a publication in an important journal." Dr. Smith handed John materials from a completed experiment that he had never before seen--the description of a protocol, notebooks of data results, and a draft of conclusions. "I've been planning to write this one up for months because I know that it will be a good publication. But, I haven't had time. You go ahead and do it while I see if I can figure out what went wrong with this experiment or find another thesis project for you. All you have to do," said Dr. Smith, "is finish the literature review and write the manuscript from the data and conclusions that are all here." For this, Dr. Smith would give the student first authorship. "The publication will look great on your CV," Dr. Smith said.

Case study - 3

Which of the following options would you choose and why?

a. Accept the offer

b. Decline the offer

Accept the offer?

- John gratefully accepted the materials and got to work writing the article. Dr. Smith decided to write up the results for her presentation abstract based on the findings she had expected to see. Her plan was to then get busy finding out what had gone wrong with John's work.
- Both John's and Dr. Smith's choices are ethically and legally prohibited. If John writes up the material and takes credit for the experiment as though it is his work, he has plagiarized. Plagiarism is using the work of another without giving appropriate credit. Dr. Smith cannot ethically give her work, or the work of others, as a gift to John.

Accept the offer - 2

- John's acceptance of first authorship as a gift ultimately deceives the profession as a whole. Reviewers and readers of the resulting journal article will be intentionally led to a false conclusion -- namely, that John is responsible for at least a significant proportion of the work presented in the article.
- If Dr. Smith writes up the results for her abstract as she expected the findings to be, rather than what they are, she has fabricated the results. Plagiarism and fabrication are both examples of research misconduct.

Reject the offer?

- John declined Dr. Smith's offer with a laugh. "I'm not going to put my name on something when I don't know anything about how the work was done. What if someone asked me to defend it? Anyway, I've been thinking about these results all weekend," he said. "Until I repeat the experiment and figure out whether I made a mistake, whether there is some sort of calibration error, or whether we are seeing true results that we didn't expect, I'm not going to be able to think about anything else." John expected that whatever he discovered, he would have the foundation for his thesis.

Reject the offer - 2

- John's refusal of the offer was ethically required. Claiming the work as his own would have been an example of plagiarism, a type of research misconduct.

Elements of the research environment

- Research environment
 - Organizational structure
 - Physical structure
 - Funding
 - Incentives and rewards
 - Collaboration
 - Effectiveness of codes of conduct and honour codes
- All these can impact on the research integrity and potential research misconduct

Meaning of integrity

- Possession of firm principles.
- The quality of possessing and steadfastly adhering to high moral principles or professional standards.
- Research Integrity is required in four areas:
 - Handling of data i.e. including acquisition, management and storage
 - Communication/Publication of findings
 - Correction of errors
 - Mentoring and training of others

Research misconduct

- It is the violation of the standard codes of scholarly conduct and ethical behaviour in professional scientific research
- The 3 Fs of the forms and types of research misconduct include:
 - Fabrication
 - Falsification
 - Failure to publish

Fabrication

- The publication of deliberately false or misleading research. It is a deliberately untrue account: an invented statement, story, or account devised with intent to deceive.
- Fabrication also means concocting lies: the act of making up or falsifying something. It is the actual “making up” of research data and (the intent of) publishing them.

Falsification

- It means manipulation of research data and processes or omitting critical data or results-the p-hacking phenomenon
- Falsification could be through:
 - **Fraudulent alteration:** to alter something in order to deceive
 - **Disprove falsely:** to prove that something correct is incorrect
 - **Misrepresent:** to misrepresent the facts in order to mislead

Suppression/non publication

- Studies could be suppressed or remain unpublished because:
 - the findings are perceived to undermine the commercial, political or other interests of the sponsoring agent
 - they fail to support the ideological goals, values, or belief of the researcher.
- Examples include:
 - the failure to publish studies if they demonstrate the harm of a new drug
 - or truthfully publishing the benefits of a treatment while omitting harmful side-effects.

Misconduct in Publications

- Deceptive authorship .
- Submission of papers with sections lifted from other papers without acknowledgements.
- Resubmission of previously published data with minor alterations and no acknowledgements.
- Lecturer submit papers with figures from students' dissertations without students permission.
- Lecturer writes paper with data derived from students' dissertation without citing student as co-author.

Consequences of misconduct

- **Fabrication & Falsification**
 - Undermine Scientific Integrity
 - Unjustified Career advancement
 - Removes Incentives for hard work
- **Plagiarism**
 - Misallocation of Credit
 - Integrity and character of scientist questioned
- Public perception that scientists are rogues
- Ruin career and reputation of scientists
- Undermine scientific progress

How to prevent misconduct

- Personal integrity
- Peer review
- Replication of studies (but large long term studies are difficult to reproduce; limited funds for duplicative studies)
- Formulation of guidelines, rules and recommendations for good scientific practice eg GPP, GCP, GLP
- Good role modeling
- Initial and continuing education of scientists
- Disclosure of potential conflicts of interests

How to Improve integrity in science

- Attention to the issues of integrity in research
- Promoting and evaluating research integrity
- Education in the responsible conduct of research
- Promulgation of and adherence to policies on research integrity
- Institutional self assessment
- Funding of research on scientific integrity

What education does

- Development of abilities that enhance responsible conduct of research
- Provided within the context of the overall education programme of institution/organisation
- Should take place over the entire educational programme
- Active learning and interactions between instructors and trainees.

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- Dr. T.O. Ogundiran's lecture slides on Research Integrity

Thanks for listening!



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