
Research Ethics in Undergraduate Research

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Research ethics

The aim of discussing research ethics is to encourage integrity in the pursuit of scientific investigation and practice among of scientists, scholars, and professionals

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In other words, researchers must be aware of aspect of being a responsible researcher, know how to conduct research appropriately and understand ones role in the research process

Responsible conduct of research (RCR)

By understanding the underlying principles of responsible conduct of research

- ❑ discourage research misconduct and questionable research practices
- ❑ ensure integrity of research and scholarly activities

Plan for today

- Review the basic tenets of RCR
- Show brief video examples* for several of these and invite your discussion
- Sum up the meaning of RCR

* Syracuse University, Research Ethics and Academic Integrity video vignettes, 2002,
<http://gradschpdprograms.syr.edu/resources/videos.php>

Responsible Conduct of Research

- Research Misconduct
- Data Acquisition, Management, Sharing and Ownership
- Conflict of Interest and Commitment
- Protection of Human Subjects
- Welfare of Laboratory Animals
- Publication Practices and Responsible Authorship
- Mentor / Trainee Responsibilities
- Peer Review
- Collaborative Science

RCR Areas and key issues

■ Research Misconduct

- ❑ Institutions should have in place policies that define research practices that one must avoid and deal with issues of egregious behavior (i.e. fabrication, falsification, or plagiarism – FFP)
- ❑ Other examples - misrepresenting authorship, violation of generally accepted research practices failure to comply with federal requirements inappropriate behavior in relation to misconduct (“looking the other way”)
- ❑ Should have minimum standard for measuring acceptable behavior and have a process to investigate allegations but also have in place practices to protect the “whistleblower”.
- ❑ Research misconduct does not include honest error or differences of opinion

■ Data Acquisition, Management, Sharing and Ownership

- ❑ Data are a collection of facts, measurements, or observations acquired through a scientifically designed method
- ❑ Data are physically collected and stored in some type of notebook (hard copy) or computer file (electronic copy)
- ❑ Data has to be protected (for confidentiality and privacy purposes) and stored for a specific period of time
- ❑ Data should be shared, but when and with whom is important to decide

■ Conflict of Interest and Commitment

- ❑ Real or perceived interference of one person’s interests (financial or professional relationship) with the interests of another person – something that will influence a personal or professional relationship.
- ❑ Involves researchers (faculty, students, staff), administrators, and other University officers,
- ❑ Involve outside interests - ties to private industry through privately-funded research, consulting practices, or individual entrepreneurial activity
- ❑ Must be managed to assure that the interests do not adversely influence the research

RCR Areas and key issues

■ Protection of Human Subjects

- Must comply with relevant Federal regulations as well as institutional guidelines and policies
- Responsibility for obtaining appropriate approval before conducting research involving human subject
- Need for approval based on if the work qualifies as research, it involves human subjects, and if it is exempt from IRB (human research compliance) review

■ Welfare of Laboratory Animals

- Animal research is as carefully regulated as human research, but most animal research is conducted primarily for the benefit of humans, not animals
- Special needs of animals have evolved into policies for the appropriate and humane care and use of all animals involved in research and training
- These policies are founded on the appropriate respect for animals in the “three Rs of alternatives – **Replacement** (using non-animal models or computer simulations); **Reduction** (methods aimed at reducing the numbers of animals used); **Refinement** (elimination or reduction of unnecessary pain and distress)

■ Publication Practices and Responsible Authorship

- All forms of publications should have a full and fair description of the work, an accurate report of the results and an honest and open assessment of the finding
- Authors listed in publications should fairly and accurately represent the person or persons responsible for the work in question; questions may be asked of authors – agreements must be made well ahead of submission for publication
- Publications must be carefully prepared to ensure completeness and accuracy (i.e. methods, results, discussion, etc.)

RCR Areas and key issues

■ Mentor / Trainee Responsibilities

- Often complex and may develop potential conflicts
- Common sense mentoring involves a clear understanding of mutual responsibilities/proper supervision and a commitment for a productive and supportive research environment, and an understanding the primary purpose is to prepare trainees to become successful researchers
- Early understanding in the relationship is not one sided and must put on the table to prevent problems from arising later.

■ Peer Review

- An evaluation by colleagues with similar knowledge and experience—an essential component of research and the self-regulation of the discipline
- Responsible review means completing the review obligation in a timely manner and assessing whether the research methods are appropriate
- Also make judgments about the importance of proposed research by being aware of personal biases

■ Collaborative Science

- Researchers continue to have the responsibilities as discussed above, but in collaborative research roles should be clarified early discussing and reaching agreement on the details
- Deal with how data is collected and shared, how changed to design will be handled, who will draft publication, proper identification of authors, etc.
- Collaborators should not ignore any responsibilities but agree upon the choices of appropriate action

In sum the meaning of Responsible Conduct of Research

- Protect animal subjects, human participants, research personnel, and the environment
- Be honest and transparent, not deceptive (e.g., falsifying, fabricating, or plagiarizing data or deceitful attribution of authorship)
- Be fair by not introducing unwanted bias into research results, conclusions, or inferences (e.g., conflicts of interest and commitment, sloppiness)
- Be benevolent, not be malicious (e.g., thievery of ideas, unfair criticism during peer review for personal gain; exploitive of others)
- Be open to creativity and innovation
- Protect the public trust

John Galland, Office of Research Integrity, 2009, <http://ori.hhs.gov/blog/?p=15>

Questions?

- Web Guide to Research for Undergraduates (WebGURU) - <http://www.webguru.neu.edu/index.php>