



MSFP
ETHICS IN
SCIENCE
WORKSHOP

7/1/21

Intro notes

Ethics includes many types of issues and concerns,

for the first half the “CODE OF ETHICS FOR UNDERGRADUATE RESEARCH” in this presentation is a good description of ethics for all research endeavors as well as mentor-mentee or advisor-advisee relationships

The second half is from “The Culture of Science, Scientific Ethics”

BY ANTHONY CARPI, PH.D., ANNE E. EGGER, PH.D.

Reference

The first half of this presentation is taken from:

**CODE OF ETHICS FOR
UNDERGRADUATE RESEARCH**

Adopted July 1, 2017 The Council on Undergraduate
Research

734 15th Street NW Suite 850

Washington, DC 20005

Tel: 202/783-4810 Email: cur@cur.org www.cur.org

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MISSION OF THE COUNCIL ON UNDERGRAD UATE RESEARCH

The mission of the Council on Undergraduate Research (CUR) is to support and promote high quality undergraduate student-faculty collaborative research and scholarship. In support of this mission, the membership of CUR has developed the following code of ethics to promote dialogue about ethical issues and to serve as a framework for ethical decision making by CUR members and others engaged in and promoting undergraduate research, scholarship, and/or creative inquiry.

**CODE OF
ETHICS FOR
THE COUNCIL
ON
UNDERGRAD
UATE
RESEARCH**

Students, faculty, organizations, and institutions involved in undergraduate research, scholarship, and creative inquiry should be committed to the following (modeled on NAFA 2009):

Integrity

Integrity

- Exhibit honesty, show responsibility and integrity, and encourage others to do so.
- Avoid conflict of interest among roles when possible, and openly acknowledge current and potential conflicts of interest when they exist.

Collaboration

Collaboration

- Promote disciplinary and interdisciplinary involvement and engagement wherever possible
- Encourage and assist in the development of safe, diverse, inclusive, and equitable communities
- Communicate goals, expectations, and concerns in a clear and timely manner

Respect

- Acknowledge the diversity of people, cultures, and disciplines, as well as their respective contributions to society
- Treat colleagues, students, employees, and the public with respect

Fairness

- Treat others in a fair, equitable, and nondiscriminatory manner**

Truthfulness and Transparency

Undergraduate research practices and decision-making processes will be appropriately disclosed, periodically reviewed, and effectively revised as needed.

☐ Institutional and program policies and practices involved in decision-making, program development, fund allocation, and partnership agreements will be developed with appropriate openness as well as clearly defined and equitable criteria.

☐ Institutional, programmatic, and individual communications will be accurate, clear, and consistent, with confidentiality protected where appropriate.

☐ Institutional, programmatic, and individual marketing and promotional materials will provide relevant, timely, and accurate information, and avoid unfair and misleading statements.

Observance of Best Practices

Institutions and organizations will endeavor to identify and follow best professional practices, exhibit sensitivity and respect for diversity, and ensure compliance with the law.

□ Programs and individuals will actively recruit students of diverse backgrounds, including race, gender, economic circumstances, and academic preparedness. This is reflected in the Council on Undergraduate Research's statement on diversity that serves as a model for undergraduate research programming:

The Council on Undergraduate Research is committed to inclusivity and diversity in all of its activities; therefore, CUR will increase and nurture participation of individuals and groups that have been traditionally underrepresented in undergraduate research.

□ Institutions, programs, and individuals will develop and implement clear standards of research integrity. The Office of Research Integrity of the U.S. Department of Health and Human Services has a wealth of information on research compliance issues.

<http://ori.hhs.gov>

□ Institutions, programs, and individuals will be good stewards of resources (financial, facilities, and human resources).

□ Harassment of individuals on the basis of race, color, religion, sex, gender, sexual orientation, gender identity or expression, national origin, age, marital status, disability, or other basis—including sexual harassment (as defined and protected by applicable law)—is unacceptable and must not be tolerated.

Conflicts of Interest

Institutions and organizations will identify and appropriately handle **potential conflicts of interest, or the appearance thereof**, based on the best interests of the students and the common good (The Forum on Education Abroad 2011).

Individuals, including students, will be provided with **training** to allow them to become aware, recognize, and avoid conflicts of interest that could adversely influence their judgment or objectivity.

When unavoidable, individuals with conflicts of interest will **openly acknowledge current and potential conflicts of interest** (Council for the Advancement of Standards in Higher Education

2014). Conflicts of interest can arise when an individual or institution is involved with multiple interests that may unduly influence one another, preventing objective decision making. Conflict of interest **may be both financially and non-financially related**.

Expectations for Mentors

Mentors are committed to help each student realize his or her potential, stimulating the spirit of inquiry, creativity, acquisition of knowledge and understanding, and formulation of goals (National Education Association 1975).

Mentors will not impose their own agenda, and the mentoring relationship must not be exploitative in any way (London Deanery 2014).

The mentor is taking on the responsibility of teaching the student the skills, knowledge base, and culture of the student's area of study (Monte 2001).

Mentors will treat all research collaborators fairly and appropriately acknowledge contributions.

Mentors must be aware of the limits of their own competence in the practice of mentoring (London Deanery 2014).

Ten best practices of mentorship are identified in Shanahan et al. (2015) and include the following:

- Strategic planning for student needs and commitment of time
- Establishment of clear and well-scaffolded expectations
- Instruction of technical skills within the discipline
- Provision of a balance of rigorous expectations with the support and personal interest of student, allowing increasing responsibility of mentees as they grow or mature
- Assistance with professional development and establishment of professional networks

Additional guidelines are provided in the London Deanery (2014) Coaching and Mentoring Ethical Code of Practice and Barnett 2008:

- Provision of guidance and observance of relevant federal and state laws, and institutional and governmental policies
- Definition and discussion of the relationship of mentors and mentees
- Definition of appropriate boundaries in terms of accessibility, sharing of personal information, and prevention of intrusion in areas that the mentee wishes to keep private until invited to do so

Expectations for Students

Students are committed to excitement in learning; communication; academic integrity; respect for others; and, when appropriate, working collaboratively.

Common ethical principles parallel those of mentors and include the following:

- Acquire and model understanding of professional standards within the particular discipline
- Display honesty and originality in all communications
- Maintain integrity and accuracy in all work
- Maintain accurate records
- Critically examine own work and the work of others
- Display objectivity and open-mindedness in the design of experiments, projects, or studies; in the analysis/interpretation of data and texts; in peer review; and in writing
- Treat others with respect and courtesy, which includes preparedness and effective communication
- Protect confidentiality, respect for privacy, and respect of appropriate boundaries
- Demonstrate knowledge of and adherence to relevant federal and state laws, and institutional and governmental policies. Work in concert with Institutional Review Boards, Institutional Animal Care and Use Committees, and Offices of Research Compliance

**The second half of this presentation is
taken from:**

The Culture of Science

Scientific Ethics

**BY ANTHONY CARPI, PH.D., ANNE E.
EGGER, PH.D.**

several core principles

Resnik, D. (1993).
Philosophical foundations of
scientific ethics. Proceedings
of Ethical Issues in
Physics. Eastern Michigan
University, Ypsilanti, MI
(July 17-18, 1993).

1. Honesty in reporting of scientific data ;
2. Careful transcription and analysis of scientific results to avoid error;
3. Independent analysis and interpretation of results that is based on data and not on the influence of external sources;
4. Open sharing of methods , data, and interpretations through publication and presentation;
5. Sufficient validation of results through replication and collaboration with peers;
6. Proper crediting of sources of information, data, and ideas;
7. Moral obligations to society in general, and, in some disciplines, responsibility in weighing the rights of human and animal subjects

Example of Disclosure of funding

in 2006 Dr. Claudia

Henschke, a radiologist at the Weill Cornell Medical College, published a paper that suggested that screening smokers and former smokers with CT chest scans could dramatically reduce the number of lung cancer deaths (Henschke et al., 2006). However, Henschke failed to disclose that the foundation through which her research was funded was itself almost wholly funded by Liggett Tobacco. The case caused an outcry in the scientific community because of the potential bias toward trivializing the impact of lung cancer. Almost two years later, Dr. Henschke published a correction in the journal that provided disclosure of the funding sources of the study (Henschke, 2008). As a result of this and other cases, many journals instituted stricter requirements regarding disclosure of funding sources for published research.

Other examples in paper

Fabrication of data

Lack of proper replication of experiments

Research on Human subjects

Key Concepts

Ethical conduct in science assures the reliability of research results and the safety of research subjects.

Ethics in science include: a) standards of methods and process that address research design, procedures, data analysis, interpretation, and reporting; and b) standards of topics and findings that address the use of human and animal subjects in research.

Replication, collaboration, and peer review all help to minimize ethical breaches, and identify them when they do occur.

