

## Research Ethics

Academicians were often cautious about the ethical dilemmas they face in their research and academic work, but that environment is changing today. The main ethical duties of researchers derive from universal scientific ethical values. Research ethics provides guidelines for the responsible conduct of research. In addition, it educates and monitors scientists conducting research to ensure a high ethical standard. The following is a general summary of some ethical principles:

- *Honesty*: Honestly report data, results, methods and procedures, and publication status. Do not fabricate, falsify, or misrepresent data.
- *Objectivity*: Strive to avoid bias in experimental design, data analysis, data interpretation, peer review, personnel decisions, grant writing, expert testimony, and other aspects of research.
- *Integrity*: Keep your promises and agreements; act with sincerity; strive for consistency of thought and action.
- *Carefulness*: Avoid careless errors and negligence; carefully and critically examine your own work and the work of your peers. Keep good records of research activities.
- *Openness*: Share data, results, ideas, tools, resources. Be open to criticism and new ideas.
- *Respect for Intellectual Property*: Honor patents, copyrights, and other forms of intellectual property. Do not use unpublished data, methods, or results without permission. Give credit where credit is due. Never plagiarize.
- *Confidentiality*: Protect confidential communications, such as papers or grants submitted for publication, personnel records, trade or military secrets, and patient records.
- *Responsible publication*: Publish in order to advance research and scholarship, not to advance just your own career. Avoid wasteful and duplicative publication.
- *Responsible mentoring*: Help educate, mentor, and advise students. Promote their welfare and allow them to make their own decisions.
- *Respect for colleagues*: Respect your colleagues and treat them fairly.
- *Social responsibility*: Strive to promote social good and prevent or mitigate social harms through research, public education, and advocacy.
- *Nondiscrimination*: Avoid discrimination against colleagues or students on the basis of sex, race, ethnicity, or other factors that are not related to their scientific competence and integrity.
- *Competence*: Maintain and improve your own professional competence and expertise through lifelong education and learning; take steps to promote competence in science as a whole.
- *Legality*: Know and obey relevant laws and institutional and governmental policies.
- *Animal care*: Show proper respect and care for animals when using them in research. Do not conduct unnecessary or poorly designed animal experiments.
- *Human subjects protection*: When conducting research on human subjects, minimize harms and risks and maximize benefits; respect human dignity, privacy, and autonomy.
- *Research misconducts*: Research integrity is an essential requirement for professionals who work in all areas of health. Integrity is absent when a researcher engages in fabrication or falsification of data or plagiarism: (a) Fabrication — making up data or results and recording or reporting them; (b) Falsification — manipulating research materials, or changing or omitting data or results such that the research is not accurately represented in the research record; and (c) Plagiarism — the appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

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