

4. Recommendations for Researchers and Institutions Involved in Research

This final chapter compiles the recommendations that appear earlier in this report, as a brief guide for researchers and for institutions involved in research.

The Research Plan

Researchers have a responsibility to safeguard privileged information and to provide credit when using others' ideas.

Researchers have a responsibility to participate in the review of research proposals and not to abuse the trust on which the review process is based. They should disclose conflicts of interest and treat colleagues fairly in reviewing their ideas. **Research sponsors** should use international reviewers where feasible.

Researchers should bear in mind the possible consequences of their work, including harmful consequences, in planning research projects.

Carrying Out Research

Researchers have the primary responsibility for upholding standards of responsible conduct in research. They should employ the expected standards of their fields, observe applicable laws and regulations, be willing to share data with others, and agree on the standards to be observed in multi-disciplinary collaborations.

Researchers have an obligation to themselves, their colleagues, and society to avoid both the egregious transgressions of falsification, fabrication, and plagiarism and the other forms of irresponsible conduct that can undermine the research enterprise.

Researchers have a responsibility to maintain high standards of responsible conduct and to take appropriate actions when they witness or suspect irresponsible conduct.

Guidelines for responsible conduct and procedures to address irresponsible research practices need to be established in the initial stages of international collaborations.

Reporting Research Results

Peer reviewers need to assess proposed publications fairly and promptly, with full disclosure of conflicts of interest or bias.

Researchers should agree in the early stages of a research project as to who will be listed as author in publications emerging from that project and the criteria for determining the order of authors.

Communicating with Policy Makers and the Public

Researchers need to communicate the policy implications of their results clearly and comprehensively to policy makers and the public—including a clear assessment of the uncertainties associated with their results—while avoiding advocacy based on their authority as researchers.

Scientific policy advice to governments, industry, or nongovernmental organizations should undergo peer review and should not be made from an advocacy perspective.

Institutional Responsibilities: Research Institutions, Public and Private Funding Agencies, Journals, and Academies

Research institutions need to establish clear, well-communicated rules that define irresponsible conduct and ensure that all researchers, research staff, and students are trained in the application of these rules to research. They should establish effective mechanisms for addressing allegations of research misconduct. **Research institutions** also need to create an environment that fosters research integrity through education, training, and mentoring and by embracing incentives that deter irresponsible actions.

Public and private funding agencies should avoid policies that might lead to overemphasis of quantity over quality in the reward systems for researchers. They should provide support to researchers and research institutions at a level sufficient to ensure that research can be undertaken properly and responsibly, without compromising quality or integrity. **Funding agencies** should also support efforts of research institutions to develop education and training programs on responsible research conduct.

They should require research institutions to have mechanisms in place to respond to irresponsible practices. When supporting international research collaborations, **funding agencies** should make sure that rules are clear and understood by all parties to the collaboration in advance.

Journals should use technological means to protect the integrity of the research literature. They should make retractions visible so that retracted papers are not used or cited. **Both authors and journals** should take steps to avoid duplicated publications that readers expect to be original and should refrain from citations designed only to boost the journal's impact factor.

As the most prestigious national scientific bodies, **national academies** should provide forceful leadership on issues involving responsible conduct in research, including the establishment and dissemination of standards. They should work within their own scientific communities to ensure that effective mechanisms exist to address allegations of research misconduct. **Interacademy organizations** can play analogous roles at the regional and global levels.