

# **Guidelines for Scientific Research and Publication Ethics**

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## I. Introduction

Ethical norms are crucial in research for several reasons. They help researchers achieve their objectives, such as acquiring new knowledge, preventing errors, and uncovering the truth. Ethical norms also promote effective collaboration, such as authorship, copyright, and privacy measures. They also ensure researchers can be held accountable by the public, such as the federal government enacting legislation on research misconduct, conflicts of interest, and animal welfare. Additionally, moral criteria in research can garner public support, as individuals are more likely to support research activities based on their confidence in the study's quality and integrity. Academic pursuits' regulations are designed to foster various ethical and societal principles, such as public health and safety, animal welfare, human rights, social responsibility, and legal adherence. Many professional associations, government agencies, and institutions have established their ethical research practices, emphasizing the importance of ethics in pursuing knowledge.

### **Brief overview of the importance of ethics in scientific research and publication**

Adhering to ethical norms is crucial when conducting research for several reasons. Initially, rules serve as a means for researchers to achieve their objectives, which encompass acquiring new knowledge, preventing errors, and uncovering the truth. Enforcing restrictions on fabricating, altering, or falsifying research findings, for instance, facilitates the dissemination of accurate information and reduces the likelihood of errors.

Furthermore, research frequently necessitates extensive coordination and collaboration across numerous individuals from diverse organizations and domains, and ethical norms advocate for the qualities necessary for effective collaboration. These principles include equity, confidence, accountability, and reciprocal regard. For instance, numerous ethical guidelines in the research domain, such as regulations regarding authorship, copyright and patent laws, data sharing protocols, and privacy measures in peer review, aim to safeguard intellectual property rights while promoting collaboration among individuals. Many researchers have concerns about the possibility of their work being plagiarized or prematurely disclosed, leading to the loss of credit for their ideas (Resnik, 2020).

Besides, numerous ethical standards ensure that researchers can be held accountable by the public. For instance, the federal government must enact legislation concerning research misconduct, conflicts of interest, safeguarding human subjects, and the treatment and utilization of animals. This is necessary to ensure that researchers who receive public funding may be held accountable to the public.

Including moral criteria in research is the fourth rationale for garnering public support for research. A significant number of individuals are inclined to provide financial contributions to endorse research responsibilities, contingent upon their confidence in the calibrating and integrity of the study.

Ultimately, the regulations that govern academic pursuits are designed to foster a diverse array of significant ethical and societal principles. Some examples are public health and safety, animal welfare, human rights, social responsibility, and adherence to legal regulations. Unethical research can have detrimental effects on both human and animal subjects, as well as on students and the wider public. An instance of this is when a researcher fabricates data during a clinical study, which has the potential to harm or even cause the death of people. Similarly, a researcher who disregards the regulations and recommendations for biological or nuclear safety jeopardizes not only their well-being but also the well-being of students and staff.

The following are the regulations and principles that dictate the moral standards of scientific investigation.

It is not unexpected that numerous professional associations, government agencies, and institutions have established their own regulations, guidelines, and protocols regarding ethical research practices. It is crucial for individuals to remember the significance of ethics in the pursuit of knowledge, which is the reason for this. Many governmental organizations have regulations on the ethical conduct of researchers who receive funding.

### **Purpose of the document**

This document outlines ethical guidelines and scientific pathways for scientific research and publication, guiding researchers, authors, reviewers, and editors to ensure the integrity and credibility of scientific work. It covers research conduct, authorship, peer review, and publication. These guidelines foster a culture of integrity, public trust, and societal knowledge advancement. Please also note that this document has been prepared as an integrated review document from public sources. Please see the references for more information.

## **II. Ethical Conduct in Scientific Research**

Ethical conduct is crucial in scientific research, ensuring the credibility of the process, validity of results, and trustworthiness of the scientific community. Key principles include integrity in research, fair data collection and analysis, ethical experimental design, respect for intellectual property rights, and humane treatment of research subjects. Adherence to these principles ensures the highest standards of ethical conduct in research. Further sections will explore authorship and collaboration, peer review processes, and the publication and dissemination of research findings.

### **Importance of integrity in research**

Research integrity is crucial for research activity and excellence, as it is the foundation for researchers to trust each other and society's trust in research evidence and expertise. Research misconduct is not a victimless crime and can damage reputations, careers, patients, and the public. It is also a waste of public research investment and costly to remediate.

Scandals in medicine and health can cause anxiety and fear among the public, making it more susceptible to misinformation and disinformation. Research integrity also ensures the legitimacy of the expertise of researchers, as governments frequently consult them to provide expert opinions on societal issues. In such a crowded and often contradictory environment, the opinion of scientific experts must be recognized as trustworthy and based on integrity.

Research integrity underpins continued public investment in research, as taxes finance it and rely on taxpayers to allow researchers to practice their profession. Disclosures of misconduct can have profound implications for the scale of (dis)continuing public investment and risks the intellectual capacity of a country.

Research integrity is crucial for protecting the reputation and careers of researchers, preventing adverse impacts on patients and the public, and promoting economic advancement. Research misconduct can lead to significant collateral damage to students, colleagues, and the field of study associated with the guilty party. Graduate students may experience career retardation, while other authors connected to the guilty party may suffer reputational damage. Whistleblowers also face negative consequences in their personal and professional lives.

Undertaking research involving human or animal participants that yields unreliable results is unethical and can strongly impact people, particularly in medicine, health, social sciences, and humanities. Incomplete data about adverse events in trials can harm patients, and incomplete data about risks and benefits can lead to futile costs to health systems. The time lag to retraction of flawed clinical data means that other researchers can use it in their clinical studies and treatment protocols for many years.

Research misconduct also prevents avoidable waste of resources, as there are significant direct financial costs to funding agencies and research institutions arising from the support of studies whose publication outputs are retracted due to flaws in design, conduct, analysis, or misrepresentation of results. There is no Europe-wide agreement on policies and procedures for dealing with misconduct, leading to limited transparency and litigation.

In conclusion, research misconduct wastes significant time, work, money, and human capital, affecting the reputation and careers of researchers, patients, and society (Science Europe, 2015).

### **Guidelines for data collection and analysis**

Data collection is a systematic process for gathering observations or measurements to gain first-hand knowledge and original insights into research problems. It involves defining the aim of the research, choosing the type of data to collect, and following the methods and procedures to collect, store, and process the data.

To conduct a research study, follow these steps:

- Plan your data collection procedures. Determine the form of the questions you will ask and the experimental design.
- Operationalize your variables. Turn abstract concepts into measurable observations. For example, you can measure leadership by asking managers to rate their leadership skills on 5-point scales or asking their direct employees to provide anonymous feedback.
- Develop a sampling plan. Define a population and sample, considering factors like sample size, accessibility, and timeframe.
- Standardize procedures. Write a detailed manual to standardize data collection procedures, ensuring consistency and avoiding common research biases. This ensures data reliability and can be used for future replication.
- Create a data management plan. Ensure anonymization and safeguard sensitive information. Conduct transcriptions or data entry in systematic ways to minimize distortion. Regularly back up your organization system.
- Collect data. Use surveys, interviews, or content analysis to measure or observe variables. Record all relevant information and double-check manual data entry for errors. Assess the reliability and validity of your quantitative data to ensure its quality.

To collect high-quality data, follow these four steps:

1. Define the aim of the research: Write a problem statement and formulate research questions that define what you want to find out. Quantitative data is expressed in numbers and graphs, while qualitative data is expressed in words and analysed through interpretations and categorizations.
2. Choose the data collection method: Based on the data you want to collect, choose the method best suited for your research. Data collection methods include experiments, surveys, interviews, focus groups, observation, ethnography, archive research, and secondary data

collection. Carefully consider which method will help you directly answer your research questions.

3. 3. Data collection involves planning the methods and procedures for observing or measuring variables. This includes deciding on the form of questions for surveys or interviews and determining the experimental design. Operationalization involves translating abstract concepts into measurable observations, such as asking managers to rate their leadership skills on 5-point scales or direct employees to provide anonymous feedback. A sampling plan is necessary to obtain data systematically, defining a population and sample. Standardizing procedures, such as conducting experiments under the same conditions and using objective criteria, helps avoid common research biases and ensures data reliability. A data management plan is also crucial, ensuring anonymity and safeguarding sensitive information. Regular backups of the organization system can prevent data loss. This process ensures the reliability and reproducibility of the study.
4. 4. To collect data on managers' perceptions, a survey with closed- and open-ended questions was administered to 300 employees across departments and locations. The closed-ended questions rated their manager's leadership skills, while the open-ended questions focused on their strengths and areas for improvement. The data was categorized through content analysis for further insights. Best practices included recording relevant information, double-checking manual data entry, and assessing the reliability and validity of the collected data (Bhandari, 2020).

### **Ethical considerations in experimental design**

Research often involves people and sensitive topics, which can be manipulated for experimental purposes. When designing and carrying out studies, researchers must consider ethical principles such as informed consent, confidentiality/anonymity, voluntary participation, deception, risk of harm, and accuracy in analysis and reporting. Institutional Review Boards (IRBs) are responsible for reviewing research proposals to ensure adherence to ethics and the protection of human subjects. Data collection can only begin after IRB approval, and researchers should spend time planning, discussing the project with others, and submitting IRB applications as early as possible. IRBs may request revisions and resubmit the project for reconsideration, which can take over a month. To avoid delays, researchers should ask themselves questions and consider their actions throughout the research process. It is important to remember that not every ethical procedure is detailed in published articles due to space limitations, and assuming some ethical practices is becoming more customary. By doing so, researchers can avoid potential legal issues and ensure the integrity of their research (Research Design and Ethics, 2022).

### **Respect for intellectual property and avoiding plagiarism**

Reference is the methodical process of citing sources in scholarly research. Each author, faculty member, researcher, and student must credit the original ideas in their research papers, publications, assignments, and other work. To avoid plagiarism, people must understand the fundamentals of citing sources, honesty, respect, trust, fairness, and academic integrity. Citing references in publications protects the work's integrity and allows access to primary sources, facilitating additional research. Correctly created references using applicable reference styles give the publication scholarly authority. This requires proper referencing and source citations. Researchers can cite sources in-text and in the bibliography. Plagiarism, academic theft, intellectual property theft, deceiving, and academic misconduct should be avoided. Maintaining past research principles and avoiding plagiarism is crucial. There are many ways to avoid plagiarism when writing research papers. These methods include citations, quotations, paraphrases, summaries, and general knowledge. The study aims to help academics comprehend the entire referencing

process. This study examined how citation management software helps academic researchers avoid plagiarism by appropriately referencing sources. This publication also offers tips to help researchers avoid plagiarism (Prashanth et al., 2018).

### **III. Authorship and Collaboration**

Authorship is a crucial aspect of research, requiring active participation. However, pressure and interpretations can lead to questionable practices. Managing conflicts of interest is essential, involving identifying, disclosing, and managing them. Continuing learning and adhering to regulations maintain ethical conduct.

#### **Criteria for authorship**

Authorship is a crucial aspect of research and publication, as it involves substantial contributions to conception, data acquisition, analysis, intellectual content development, final version approval, and integrity. A successful career often involves peer-reviewed manuscripts, which are used as a parameter for career progression or funding acquisition. Authorship conveys privileges, responsibilities, and legal rights, and it is fair that only those who actively participate in the work should benefit from the positive aspects of being an author. However, pressure to be productive and different interpretations of general guidelines have led to questionable research practices, such as honorary authorship, gift authorship, prestige authorship, plagiarism, self-plagiarism, citation amnesia, multiple submissions, and duplicate publication. Practice guidelines vary according to the scientific field, and professional bodies provide guidelines or recommendations (Authorship Criteria, 2021).

#### **Managing conflicts of interest**

Conflicts of interest can arise from various sources, including financial rewards, career advancement, and responsibilities to family or friends. Researchers should comply with regulations to identify, disclose, and manage these conflicts. While avoiding all conflicts is impossible, it's crucial to recognize and minimize them. Conflicts should be disclosed to the institution and other parties involved if they cannot be avoided. Conflicts should be managed by isolating conflicted individuals from decision-making functions. It's essential to keep learning and comply with current regulations to avoid misperceptions and maintain ethical conduct (Kalichman, 2001).

Please follow the below five steps to avoid from conflict of interest:

- Comply with regulations,
- Avoid and minimize conflict,
- Disclose interests,
- Manage conflicts,
- Keep learning.

### **IV. Peer Review Process**

The peer review process is an essential component of scientific study and publication. It guarantees the authenticity and excellence of the research being published. This section will provide a concise overview of

the fundamental aspects of the peer review process, with a particular focus on the double-blind peer review method that is often employed in scientific journals.

- **Manuscript Submission:** The procedure commences when a researcher submits a manuscript to a scientific journal. The manuscript must be comprehensive, eloquently written, and strictly follow the submission rules of the publication.
- **Initial Evaluation:** The editor of the journal does an initial evaluation to determine the significance and excellence of the paper. Once it satisfies the fundamental requirements, it is submitted for peer review.
- **Double-blind peer review** is a technique where both the authors and the reviewers remain anonymous to each other. This approach is specifically devised to reduce prejudice and provide an equitable and impartial evaluation.
- Reviewers assess the paper using many criteria, such as the soundness of the research technique, the importance and originality of the study findings, and the clarity and thoroughness of the reporting.
- Reviewers' response encompasses a comprehensive analysis of the paper, highlighting both its strong points and areas for improvement, along with specific recommendations for enhancing its quality. In addition, they provide a recommendation regarding whether the work should be accepted, changed, or rejected.
- **Author adjustments:** If adjustments are suggested, the author implements the necessary modifications to enhance the document, which is subsequently resubmitted for review.
- The editor's final decision on the publishing of the manuscript is based on the input from the reviewers and the updated version of the manuscript.
- After the paper is accepted, it undergoes a final round of editing and formatting before being published in the journal.

The double-blind peer review procedure is a meticulous and comprehensive method that guarantees the utmost standards of scientific study are maintained. It is a fundamental principle of ethical behaviour in the sharing of scientific information.

### **Role and importance of peer reviewing process**

Peer review is subjecting an author's scholarly work, research, or ideas to the scrutiny of experts in the same field. It serves two primary purposes: ensuring high-quality research is published, especially in reputable journals, and improving the quality of manuscripts deemed suitable for publication. The concept of peer review has been developed since ancient Greece, with its first description by physician Ishaq bin Ali al-Rahwi in his book *Ethics of the Physician*. The invention of the printing press in 1453 allowed written documents to be distributed to the general public, increasing the prevalence of peer editing. Francis Bacon's work *Novum Organum* in 1620 was instrumental in shaping the Scientific Method (Kelly et al., 2014).

The peer review process evolved, with the Royal Society of Edinburgh and the Royal Society of London adopting the procedure in 1731 and 1752, respectively. Since the Second World War, peer review has become standard practice by most credible scientific journals, ensuring experimental and ethical soundness and determining which papers meet the journal's standards of quality and originality before publication.

Peer review has become the foundation of the scholarly publication system, encouraging authors to produce high-quality research that advances the field. It also supports and maintains integrity and authenticity in the advancement of science. A scientific hypothesis or statement is generally not accepted by the academic

community unless it has been published in a peer-reviewed journal. The Institute for Scientific Information (ISI) only considers peer-reviewed journals as candidates to receive Impact Factors.

### **Ethical responsibilities of reviewers**

The Public Library of Science (PLOS) publisher (PLOS, 2020) explicitly endorses the fundamental ethical principles for peer reviewers:

1. Select assignments judiciously.
2. Deliver an objective, sincere, and impartial evaluation.
3. Maintain the confidentiality of the review process, and
4. Demonstrate respect and professionalism.

Several prominent organizations, such as the International Committee of Medical Journal Editors (ICMJE), Committee on Publication Ethics (COPE), and American Journal Experts (AJE), advocate for the ethical practice of peer review (ICMJE, 2021; COPE council, 2017; Panter, 2020). VSI also offers a concise overview of the ethical principles and obligations that peer reviewers have towards the authors, readers, and editors of the VSI in the "Instructions for Reviewers" titled page on its website (Vascular Specialist International).

The ethics and responsibilities of peer reviewers are outlined in the following guidelines (Min, 2021):

- Confidentiality: All reviewers must maintain confidentiality about the manuscript they are reviewing, including the contents and disclosure of their identities. They should not share or discuss the manuscript with others before publication unless permission is obtained from the editors.
- Integrity, diligence, and professionalism: Reviewers should only accept a manuscript offer when they are experts in the specific field and can finish the review within a predefined deadline. They should read the manuscript thoroughly and provide constructive feedback with a respectful tone to improve the quality of the article.
- Objectivity and constructive critique: Reviewers should avoid negative bias and prejudice, as well as the positive bias of discrimination. They should remain blinded to reduce present or future bias and declare and decline requests to review if they have any conflicts of interest.
- Conflict of interest: Reviewers should avoid collaborations, comments on drafts, direct competition, history of disputes, or financial interest in the outcome. They should also be familiar with publication ethics and report ethical concerns regarding plagiarism, fraud, duplicate publication, data fabrication, inappropriate authorship, or unethical study design and execution to the editor.
- Timeliness: Reviewers are responsible for providing a review in a timely fashion based on the journal's policy for review. VSI editors should create continuing education programs for peer reviewers and accreditation processes for new reviewers. Training materials for language and English expressions are also crucial for non-native English-speaking reviewers.

### **Confidentiality and bias in the review process**

The editor must exhibit impartiality and discretion while allocating the work for review to prevent prejudice. This involves carefully selecting a suitable reviewer and ensuring that the author or authors' identity remains confidential. While assessing the presence of plagiarism in the article, the editor must adhere to a transparent approach and utilize universally recognized software tools to prevent personal bias.

To maintain anonymity, the reviewer must preserve the decisions and only reveal the outcome to the body responsible for deciding on the case.

The author must adhere to strict confidentiality regarding the identities of patients participating in our research trials. Furthermore, the revelation of the participants' names, photographs, and other personal information not only violates research standards but also infringes upon the participants' right to privacy. Authors must disclose any financial interests or collaborations that could potentially introduce bias in their submitted work. Authors must acknowledge any financial or institutional support received in the manuscript (Publication Ethics).

## V. Publication and Dissemination of Research

The writers' enthusiasm for the publication and distribution of your research is praiseworthy and crucial for the progress of scientific knowledge is invaluable. The act of disseminating their discoveries confirms the effort they have put in and enhances the shared comprehension of their discipline. We all regard this matter, and each publication serves as a fundamental component in the structure of human knowledge. Scientists must ensure that their research is presented clearly, concisely, and complete when they prepare their manuscript for publication. The methodology should comprehensively present the findings. It is important for the text to actively participate in the peer review process positively and constructively, recognizing it as a chance to improve and enhance the quality of your work. After the research is published, distribute the paper's findings extensively - as the research could potentially stimulate future discoveries. Above all, authors are very satisfied with their contributions to science and are mindful of the potential long-term influence their study may have on their respective fields. However, there are certain aspects that need to be emphasized.

### Avoiding predatory journals

A predatory journal is an entity that prioritizes self-interest at the expense of scholarship and is characterized by false or misleading information, deviation from best editorial and publication practices, lack of transparency, and aggressive solicitation practices. Red flags that signal a predatory journal include the scope of interest, including unrelated subjects, website errors, distorted images, targeted homepage language, lack of description of the manuscript handling process, low article processing/publication charges, and claims to be a leading publisher. Although those red flags, your picked journal cannot be marked as a predatory journal.

The journal's website is not professional, lacks an editorial board, does not reveal the journal's editorial office location, or uses an incorrect address. The journal title claims a national affiliation that does not match its location, and the journal mimics another journal title or website. The journal also provides an impact factor, claims an unrealistically high impact, posts non-related or non-academic advertisements, and has released an overwhelmingly large suite of new journals.

Predatory journals may also include articles outside their stated scope, send unsolicited invitations to submit articles, use poor language, charge submission or handling fees instead of publication fees, and make unrealistic promises about the speed of the peer review process. They may also not clearly describe copyright agreements or demand the copyright of the paper while claiming to be an open-access journal (Gleason, 2022).

## Ethical considerations in public communication of research findings

Scientific advancement relies on strict adherence to ethical guidelines for research and scientific writing. Professional organizations like the Committee on Publication Ethics have policies to address these issues. Plagiarism and authorship are two major issues related to scientific misconduct. Plagiarism involves appropriating another person's ideas, processes, results, or words without proper credit. Duplicate publication is another form of plagiarism, resulting in an increasing number of manuscripts being retracted yearly. Authorship issues include determining author responsibilities and author order. The benefits of research can only be realized if results are published in the literature for others to replicate and expand upon. The U.S. Office of Research Integrity (ORI) oversees public health research and develops policies and procedures to detect, investigate, and prevent research misconduct (Carver, et al., 2011).

## VI. Research Misconduct

Research misconduct is a serious issue, and all authors should pay attention to this. The Office of Research Integrity (ORI) identifies instances of plagiarism through the restricted use of terms and disagreements among collaborators. Journals accept plagiarism reports to some extent, but not more than 2% from a single source; also, there is another rule of total plagiarism. Research misconduct can lead to career ruin, loss of trust, reputation damage, and tarnished credibility. To prevent misconduct, institutions should develop ethical conduct and establish policies that incentivize best practices.

### Definition and examples of research misconduct (fabrication, falsification, plagiarism)

Research misconduct can be defined under three branches:

- fabrication,
- falsification, and
- plagiarism.

Fabrication is creating fictional information or findings and documenting or reporting them as real results. An instance of fabrication could be when a study coordinator filled up trial enrolment forms using fictitious identities and participants' information to justify recruitment demands and satisfy expectations (Research Misconduct).

- Eric Poehlman, a Vermont investigator, fabricated data for non-existent patients in order to substantiate his scientific assertions. Learn about “Poehlman's case” (Interlandi, 2006).
- Access the June 2012 article “Parkinson's Researcher Fabricated Data” (Parkinson's Researcher Fabricated Data).

Falsification is manipulating research items, instruments, materials, or procedures, as well as altering or omitting data or outcomes in such a way that the research is not accurately represented in the research record. Investigators may engage in result falsification by manipulating western blot images through splicing and pasting, combining disparate segments to create the illusion that the final image originated from a single western blot technique.

- Harvard researcher Marc Hauser was shown to have falsified and manipulated research findings. Access information regarding “Hauser's case” (Staff, 2012).

- Access the news story titled “Image Manipulation: CSI: cell biology” (Pearson, 2005).

Plagiarism is adopting the thoughts, procedures, outcomes, or words, such as excerpts of another individual without providing credit where credit is due, which is known as plagiarism. The Office of Research Integrity (ORI) identifies instances of plagiarism through the restricted utilization of the same or nearly identical terms that do not significantly mislead or hold major importance, as well as disagreements among previous collaborators (ORI Policy on Plagiarism, 1994). Many tools are present in the modern world to detect plagiarism throughout the current literature. On the contrary, expressing an original idea matching some of the current literature may not be possible. Therefore, journals accept plagiarism reports to some extent. The IJAST journal accepts 15% plagiarism reports excluding the references; not more than 2% from a single source, and this shouldn't be a whole passage at all.

### **Consequences of research misconduct**

Research misconduct is a serious issue that can have severe consequences beyond the individuals involved. It can lead to career ruin, loss of trust, reputation damage, and tarnished credibility. It can also complicate matters for entire institutions and fields of science, leading to funding loss, investigation of prior research, and public distrust.

To prevent misconduct, institutions should conduct thorough training and strong leadership. Ensure staff know best practices and guidelines and install these values within the team's culture. Establish policies that incentivize best practices and proper conduct. Establishing a competitive culture that prioritizes results over methods can create a motive for misconduct.

The IJAST journal also asks for the corresponding author's consent to undertake this responsibility. The “Publication Misconduct Policy” is designed to deal with this situation and guide the editors in approaching misconduct Situations if any are noticed (Publication Misconduct Policy, 2022). In addition, IJAST journal removes the article if the allegations are serious, and detected outcomes are present.

## **VII. Conclusion**

The main summary of this article is represented with bullet points as below:

- Ethical conduct in scientific research is crucial for credibility, validity, and trustworthiness.
- Key principles include integrity, fair data collection, ethical experimental design, respect for intellectual property, and humane treatment of subjects.
- Research integrity is essential for trust among researchers, society, and policymakers.
- Research integrity is vital for continued public investment in research and protecting the reputation of researchers.
- Guidelines for data collection and analysis involve planning, operationalizing variables, sampling, standardizing procedures, and data management.
- High-quality data collection involves defining research aims, choosing appropriate methods, planning data collection, and ensuring reliability and validity.
- Ethical considerations in experimental design include informed consent, confidentiality, voluntary participation, and accuracy in reporting.
- Respect for intellectual property and avoiding plagiarism are essential in research to maintain integrity and academic honesty.

- Authorship and collaboration in research require active participation, managing conflicts of interest, and adhering to ethical guidelines.

### Importance of ethical conduct in maintaining the integrity of the scientific publication world

The pursuit of integrity, honesty, and self-reflection is a continuous process that is crucial for success in scientific research. The need for accurate reporting of information is critical to society, and the use of big data has made it easier to detect unethical behavior. Once an individual's reputation is damaged, it becomes difficult to recover it. This integrity is essential for employment, research grants, and disseminating important findings.

Unethical behavior in scientific research has occurred for centuries, often revealed in "too good" data without any random error or variation. Even today, statistical rigor and proper experimental design are lacking in many studies. Plagiarism and misappropriation of contributions are forms of theft that intrude on the proper acknowledgment of the original work, costing the true owner time, effort, and money.

The American Chemical Society (ACS) and the National Institutes of Health (NIH) Office of Research Integrity offer guidelines for scientific professionals to act responsibly and avoid unethical conduct. Many scientific organizations have active programs and resources for raising awareness of principles and issues related to scientific ethics. Ethical conduct of research is critical not only for scientific professionals but also for society as a whole, as innovation is essential for addressing health, environmental, and technological challenges and improving quality of life (Doemeny and Knerr, 2017).

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