



National Research Council of Italy

Code of Conduct for Research Integrity

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Outline

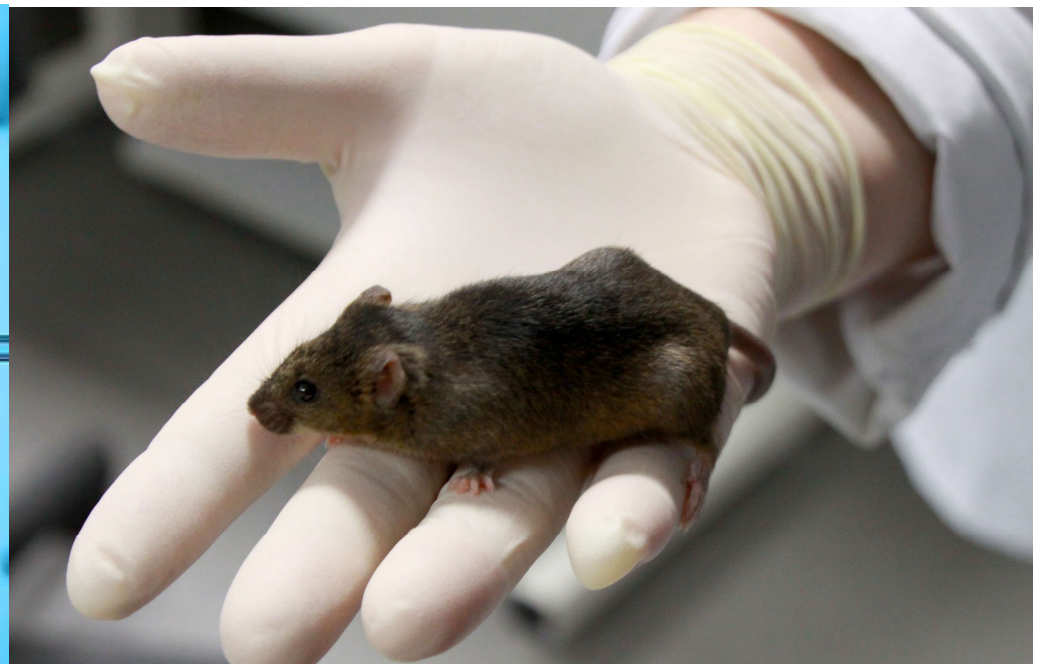
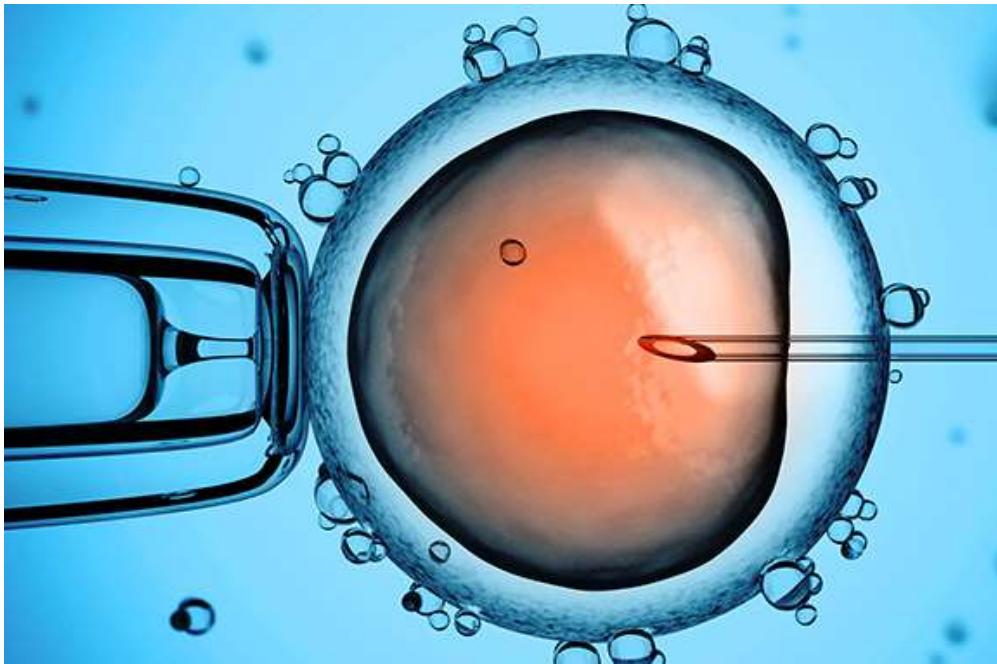
1. What is RI?
2. Why is RI important?
3. The ALLEA Code of Conduct for RI
4. RI at the National Research Council of Italy (CNR)



The “Tuskegee syphilis study”



- 1932 – 1972: 399 men enrolled in the study (201 control)
- 1943: penicillin was discovered, but the participants were untreated
- The longest natural history study on syphilis





National Research Council of Italy

Research Integrity

By Research Integrity we intend the body of principles and ethical values, deontological obligations and professional standards that form the basis of the responsible and correct conduct of those who carry out, finance or evaluate scientific research, as well as the institutions that promote and perform it.

All key resources on RI:

<https://www.cnr.it/en/research-integrity>

Recommendations for the Investigation of Research Misconduct

 Enrio Handbook

Integrity in practice toolkit

Cases of R.I. (1)



Both James Crick and Francis Watson scored themselves some sweet, sweet Nobel Prize lovin' for discovering the double helix structure of DNA. Missing from the honors? Rosalind Franklin, whose research and X-Ray photographs proved integral to the groundbreaking find. The snub remains one of the most prominent controversies regarding the invisible role women played (and, occasionally, still play) in the sciences. While Watson and Crick cannot be said to have plagiarized since they built everything on top of her foundation, the scandal comes in their failure to properly acknowledge her contributions.

Cases of R.I. (2)

Andrew Wakefield's Vaccine Connection

In 1998, physician Andrew Wakefield published a study in *The Lancet*, claiming that his research indicated a connection between autism and the measles-mumps-rubella vaccine. This research was highly respected and undermined public confidence in the vaccine, leading to many parents refusing the shot. Ultimately, this led to increases in the number of cases of measles and mumps in the U.S. and Europe, with some areas reporting very dangerous and widespread outbreaks. When faced with an investigation in 2010, it was revealed that Wakefield and his colleagues had altered facts about the children in their study, and Wakefield had even been paid off by a lawyer planning to sue the manufacturer of the vaccine. The British General Medical Council found Wakefield guilty of fraud and misconduct, and his work is now viewed by the medical and research community as an "elaborate fraud." Wakefield, however, still defends his research and promises that he "will not be deterred."

Cases of R.I. (3)

Hwang Woo-suk's Stem Cell Research

In 2006, Korean researcher Hwang Woo-suk was found to have fabricated a series of experiments in stem cell research, a field in which he was once considered one of the pioneering experts. He was previously infamous for his two *Science* journal articles in which he reported success in creating human embryonic stem cells through cloning, but is now infamous for his massive case of fraud and scientific misconduct after it was revealed that much of his stem cell research had been faked. Hwang was charged with embezzlement and bioethics law violations, for which he was sentenced to a two-year suspended prison sentence and barred from engaging in stem cell research by the South Korean government, as well as fired from his position with Seoul National University. However, Hwang continues to lead research in creating embryonic stem cell lines from cloned pig embryos, and his lab has been actively publishing manuscripts on PubMed.

Cases of R.I. (4)

Bengü Sezen's Research Misconduct

For Bengü Sezen at Columbia University, research was just a matter of manipulation. Over the course of a decade, Sezen held a "massive and sustained effort" to manipulate and falsify research data, and even created fictitious people and organizations to back up her data and results. When investigated by the Office of Research Integrity, Sezen was found guilty of 21 counts of research misconduct, with at least nine papers found to be falsified, fabricated, plagiarized, or unable to be replicated. It is likely that Columbia University will revoke her PhD, as reports paint her as a "master of deception" who would, "defend the integrity of her research results in the face of all evidence to the contrary." Sezen did not seem to care about the effect her fraud had on others, as the reports explain that young colleagues of the fake scientist spent "considerable time attempting to reproduce [Sezen's] results" to no avail, with three students even leaving the program as a result. Her fraud is believed to be one of the worst ever in the chemistry community.

Cases of R.I. (5)

Photoshopping the Benefits of Red Wine

News about the benefits of red wine sounds great to just about everyone, so researcher Dipak K. Das' work indicating longevity for wine drinkers was welcomed with open arms. However, Das has been charged with widespread scientific fraud, spanning 26 articles in 11 journals. A report indicated that his published research articles contained 145 instances of data falsification and even fabrication, many of which involved cutting and pasting photographic images and manipulating them without an explicit description of what had been done. His current grants, totaling nearly \$1 million, have been returned to the federal government, and it seems that Das' work in resveratrol research is over.

Sally emigrated from China to pursue a research career in the United States. Her understanding of English is excellent, but she still finds it difficult to write papers in any language other than Mandarin. She is doing a federally funded postdoctoral fellowship in a health psychology lab. Her research focuses on behavioral interventions aimed at reducing obesity. As she writes up the results of her study, she finds two articles that are relevant — a systematic review article on the same subject and a study done by someone in her lab two years earlier. She borrows text extensively from both articles without citing them, and then submits her paper for publication. While the paper is still under review, she is visited by her institution's research integrity officer, who notifies her that the journal found plagiarized text in her article. Her case will be reported to a federal oversight body. Sally is shocked that her failure to cite sources is being treated so seriously.

<http://www.apa.org/monitor/2014/01/research-misconduct.aspx>

William has run a successful lab for years. He is surprised one day to find out he is being investigated for data fabrication. For many years, he and others in his lab dropped outliers and made up values when they had missing data — without reporting such activities in their manuscripts. He felt this just made it easier to get through peer review. It yielded clearer and stronger patterns, but never changed the basic conclusions of his research. An angry post-doctoral fellow whom he fired for consistently sloppy work reported him to the university's research integrity officer. William lost all of his research funding and his lab was closed. Three staff members lost their jobs, and two doctoral students had to find new mentors and start new projects. William admits that what he did was wrong. He feels intense shame and regrets the pain it caused his staff and students.

Why does R.I. matter? /1

- None of us is perfectly honest all the time!
- "People behave dishonestly enough to profit but honestly enough to delude themselves of their own integrity" (Mazar, Amir, and Ariely 2008 p. 633)
- **We need to be aware of our own (moral) pitfalls!**

Why does R.I. matter? /2

“It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you'll do things differently.”

Warren Buffett

- Researchers are responsible for their reputation as well as for the reputation of the institutions for which they work, and even for the reputation of science as a collective endeavor

Why does R.I. matter? /3

- Ethics is now entrenched in **all research activities**
- Understanding, anticipating, planning, and incorporating ethical considerations into routine activities saves time, effort and is now perceived as a **competitive advantage** in winning grants

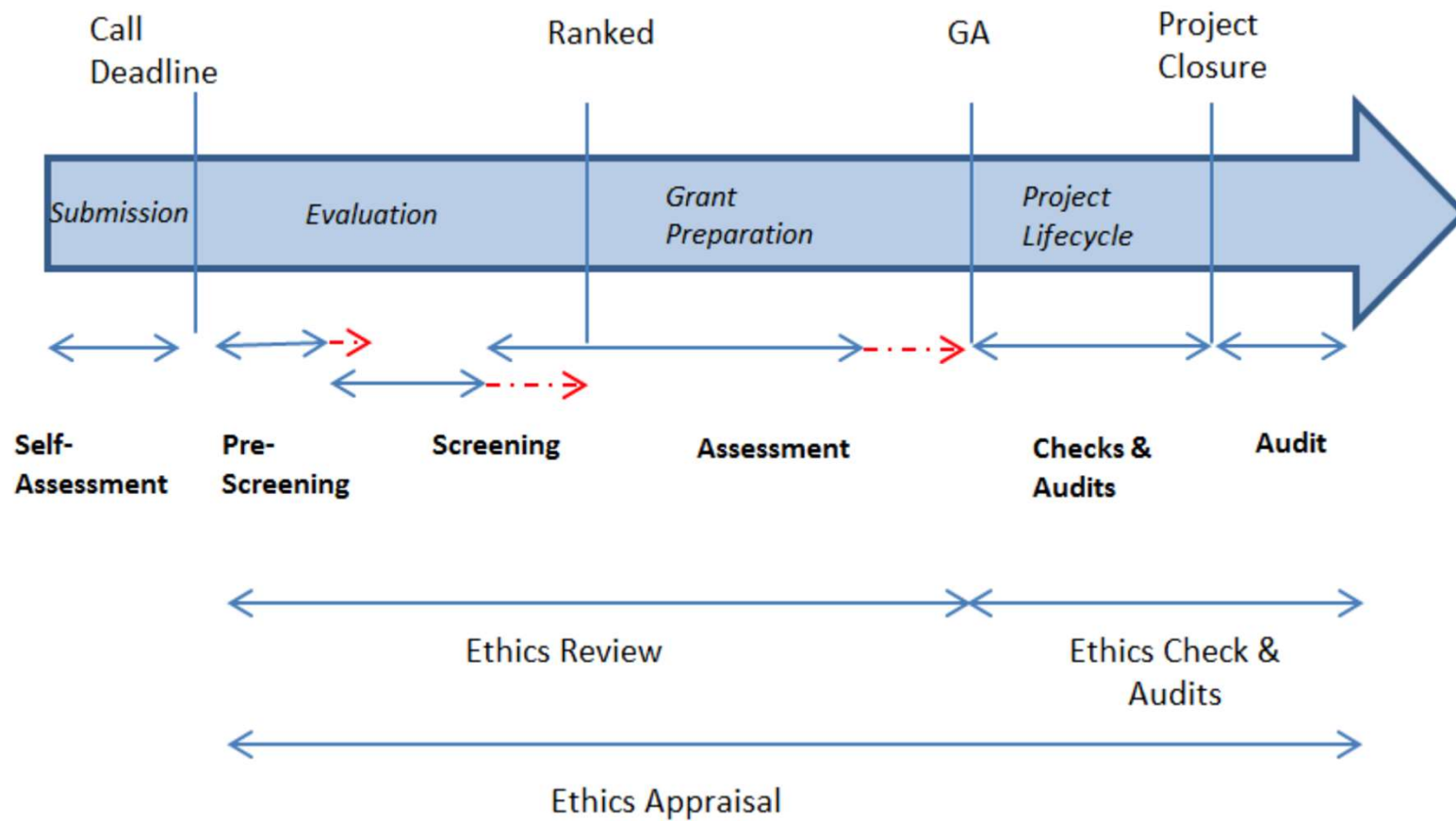
Why does R.I. matter? /4

Article 19

Ethical principles

1. All the research and innovation activities carried out under Horizon 2020 shall comply with ethical principles and relevant national, Union and international legislation, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols.

**Today, all researchers have
precise ethical duties concerning R.I !**



ALLEA
ALL European
Academies



integrity | in
the quality of being h
integrity.

The European Code of Conduct for Research Integrity

REVISED EDITION

+ Royal Danish Academy of Sciences and Letters



Preamble



Research is the quest for knowledge obtained through systematic study and thinking, observation and experimentation. While different disciplines may use different approaches, they share the motivation to increase our understanding of ourselves and the world in which we live. Therefore, "The European Code of Conduct for Research Integrity" applies to research in all scientific and scholarly fields.

1. Principles



Good research practices are based on fundamental principles of research integrity. They guide researchers in their work as well as in their engagement with the practical, ethical and intellectual challenges inherent in research.

These principles are:

- **Reliability** in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources.

- **Honesty** in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way.

- ***Respect*** for colleagues, research participants, society, ecosystems, cultural heritage and the environment.
- ***Accountability*** for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts.



GRANTS & FUNDING

NIH Central Resource for Grants and Funding Information

SHARED VALUES IN SCIENTIFIC RESEARCH

HONESTY

convey information truthfully and honoring commitments

ACCURACY

report findings precisely and take care to avoid errors

EFFICIENCY

use resources wisely and avoid waste

OBJECTIVITY

let the facts speak for themselves and avoid improper bias

*STENECK, N. H. 2007. *ORI - Introduction to the Responsible Conduct of Research*

Washington D.C. , U.S. Government Printing Office, p.3

2. Good Research Practices





We describe good research practices in the following contexts:

- Research Environment
- Training, Supervision and Mentoring
- Research Procedures
- Safeguards
- Data Practices and Management
- Collaborative Working
- Publication and Dissemination
- Reviewing, Evaluating and Editing

2.1 Research Environment

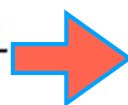
- Research institutions and organisations promote awareness and ensure a prevailing culture of research integrity.
- Research institutions and organisations reward open and reproducible practices in hiring and promotion of researchers.
- Research institutions and organisations demonstrate leadership in providing clear policies and procedures on good research practice and the transparent and proper handling of violations.
- Research institutions and organisations support proper infrastructure for the management and protection of data and research materials in all their forms (encompassing qualitative and quantitative data, protocols, processes, other research artefacts and associated metadata) that are necessary for reproducibility, traceability and accountability.

2.2 Training, Supervision and Mentoring

- Research institutions and organisations ensure that researchers receive rigorous training in research design, methodology and analysis.
- Research institutions and organisations develop appropriate and adequate training in ethics and research integrity and ensure that all concerned are made aware of the relevant codes and regulations. 
- Researchers across the entire career path, from junior to the most senior level, undertake training in ethics and research integrity. 
- Senior researchers, research leaders and supervisors mentor their team members and offer specific guidance and training to properly develop, design and structure their research activity and to foster a culture of research integrity.

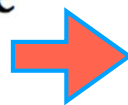
2.3 Research Procedures

- Researchers take into account the state-of-the-art in developing research ideas.
- Researchers design, carry out, analyse and document research in a careful and well-considered manner.
- Researchers make proper and conscientious use of research funds.
- Researchers publish results and interpretations of research in an open, honest, transparent and accurate manner, and respect confidentiality of data or findings when legitimately required to do so.
- Researchers report their results in a way that is compatible with the standards of the discipline and, where applicable, can be verified and reproduced.



2.4 Safeguards

- Researchers comply with codes and regulations relevant to their discipline.
- Researchers handle research subjects, be they human, animal, cultural, biological, environmental or physical, with respect and care, and in accordance with legal and ethical provisions.
- Researchers have due regard for the health, safety and welfare of the community, of collaborators and others connected with their research.
- Research protocols take account of, and are sensitive to, relevant differences in age, gender, culture, religion, ethnic origin and social class.
- Researchers recognise and manage potential harms and risks relating to their research.



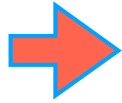
2.5 Data Practices and Management

- Researchers, research institutions and organisations ensure appropriate stewardship and curation of all data and research materials, including unpublished ones, with secure preservation for a reasonable period.
 - Researchers, research institutions and organisations ensure access to data is as open as possible, as closed as necessary, and where appropriate in line with the FAIR Principles (Findable, Accessible, Interoperable and Re-usable) for data management.
 - Researchers, research institutions and organisations provide transparency about how to access or make use of their data and research materials.
- Researchers, research institutions and organisations acknowledge data as legitimate and citable products of research.
 - Researchers, research institutions and organisations ensure that any contracts or agreements relating to research outputs include equitable and fair provision for the management of their use, ownership, and/or their protection under intellectual property rights.

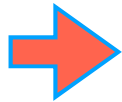
2.6 Collaborative Working

- ➡ • All partners in research collaborations take responsibility for the integrity of the research.
- All partners in research collaborations agree at the outset on the goals of the research and on the process for communicating their research as transparently and openly as possible.
- ➡ • All partners formally agree at the start of their collaboration on expectations and standards concerning research integrity, on the laws and regulations that will apply, on protection of the intellectual property of collaborators, and on procedures for handling conflicts and possible cases of misconduct.
- All partners in research collaborations are properly informed and consulted about submissions for publication of the research results.

2.7 Publication and Dissemination



- All authors are fully responsible for the content of a publication, unless otherwise specified.



- All authors agree on the sequence of authorship, acknowledging that authorship itself is based on a significant contribution to the design of the research, relevant data collection, or the analysis or interpretation of the results.

- Authors ensure that their work is made available to colleagues in a timely, open, transparent, and accurate manner, unless otherwise agreed, and are honest in their communication to the general public and in traditional and social media.

- Authors acknowledge important work and intellectual contributions of others, including collaborators, assistants, and funders, who have influenced the reported research in appropriate form, and cite related work correctly.

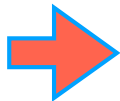
- All authors disclose any conflicts of interest and financial or other types of support for the research or for the publication of its results.

- Authors and publishers issue corrections or retract work if necessary, the processes for which are clear, the reasons are stated, and authors are given credit for issuing prompt corrections post publication.

- Authors and publishers consider negative results to be as valid as positive findings for publication and dissemination.

- Researchers adhere to the same criteria as those detailed above whether they publish in a subscription journal, an open access journal or in any other alternative publication form.

2.8 Reviewing, Evaluating and Editing



- Researchers take seriously their commitment to the research community by participating in refereeing, reviewing and evaluation.
- Researchers review and evaluate submissions for publication, funding, appointment, promotion or reward in a transparent and justifiable manner.
- Reviewers or editors with a conflict of interest withdraw from involvement in decisions on publication, funding, appointment, promotion or reward.
- Reviewers maintain confidentiality unless there is prior approval for disclosure.
- Reviewers and editors respect the rights of authors and applicants, and seek permission to make use of the ideas, data or interpretations presented.

3. Violations of Research Integrity




It is of crucial importance that researchers master the knowledge, methodologies and ethical practices associated with their field. Failing to follow good research practices violates professional responsibilities. It damages the research processes, degrades relationships among researchers, undermines trust in and the credibility of research, wastes resources and may expose research subjects, users, society or the environment to unnecessary harm.

3.1 Research Misconduct and other Unacceptable Practices

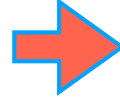
Research misconduct is traditionally defined as fabrication, falsification, or plagiarism (the so-called FFP categorisation) in proposing, performing, or reviewing research, or in reporting research results:

- ***Fabrication*** is making up results and recording them as if they were real.
- ***Falsification*** is manipulating research materials, equipment or processes or changing, omitting or suppressing data or results without justification.
- ***Plagiarism*** is using other people's work and ideas without giving proper credit to the original source, thus violating the rights of the original author(s) to their intellectual outputs.

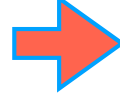
These three forms of violation are considered particularly serious since they distort the research record. There are further violations of good research practice that damage the integrity of the research process or of researchers. In addition to direct violations of the good research practices set out in this Code of Conduct, examples of other unacceptable practices include, but are not confined to:



- Manipulating authorship or denigrating the role of other researchers in publications.



- Re-publishing substantive parts of one's own earlier publications, including translations, without duly acknowledging or citing the original ('self-plagiarism').



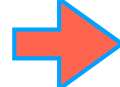
- Citing selectively to enhance own findings or to please editors, reviewers or colleagues.

- Withholding research results.

- Allowing funders/sponsors to jeopardise independence in the research process or reporting of results so as to introduce or promulgate bias.

- Expanding unnecessarily the bibliography of a study.


- Accusing a researcher of misconduct or other violations in a malicious way.



- Misrepresenting research achievements.


- Exaggerating the importance and practical applicability of findings.

- Delaying or inappropriately hampering the work of other researchers.



- Misusing seniority to encourage violations of research integrity.

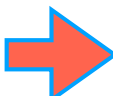
- Ignoring putative violations of research integrity by others or covering up inappropriate responses to misconduct or other violations by institutions.



- Establishing or supporting journals that undermine the quality control of research ('predatory journals').

In their most serious forms, unacceptable practices are sanctionable, but at the very least every effort must be made to prevent, discourage and stop them through training, supervision and mentoring and through the development of a positive and supportive research environment.

3.2 Dealing with Violations and Allegations of Misconduct



National or institutional guidelines differ as to how violations of good research practice or allegations of misconduct are handled in different countries. However, it always is in the interest of society and the research community that violations are handled in a consistent and transparent fashion. The following principles need to be incorporated into any investigation process.

Integrity

- Investigations are fair, comprehensive and conducted expediently, without compromising accuracy, objectivity or thoroughness.

- The parties involved in the procedure declare any conflict of interest that may arise during the investigation.
- Measures are taken to ensure that investigations are carried through to a conclusion.
- Procedures are conducted confidentially in order to protect those involved in the investigation.
- Institutions protect the rights of 'whistle-blowers' during investigations and ensure that their career prospects are not endangered.
- General procedures for dealing with violations of good research practice are publicly available and accessible to ensure their transparency and uniformity.

Fairness

- Investigations are carried out with due process and in fairness to all parties.
- Persons accused of research misconduct are given full details of the allegation(s) and allowed a fair process for responding to allegations and presenting evidence.
- Action is taken against persons for whom an allegation of misconduct is upheld, which is proportionate to the severity of the violation.
- Appropriate restorative action is taken when researchers are exonerated of an allegation of misconduct.
- Anyone accused of research misconduct is presumed innocent until proven otherwise.



The Research Ethics and Integrity Committee is chaired by the President of the CNR. The Committee is an independent body with an advisory role on matters of research ethics, bioethics and biolaw. These include ethical, deontological and juridical issues that fall within the scope of Research

Integrity, as it is described in the scientific literature and the main international Charters and Conventions, as well as in the “[Guidelines for Research Integrity](#)” produced by the CNR, approved on the 10 June 2015 and updated in 2019.



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A) How to prevent the accidental presence of fabrication/falsification of images/data and the plagiarism of texts

The Research Integrity Unit of the Committee can be contacted, exclusively by CNR personnel, for the **verification of the eventual presence of falsified, fabricated or plagiarized images/data/texts before the submission of articles/projects to editors/subsidiary agencies.**

The outcome of the verification will be communicated to the researcher who requested it in the form of a technical report that will allow him/her to correct any criticalities identified or to revoke the consent to be included among the authors.

To request verification, please write to the e-mail address integrity@cnr.it, enclosing in the request the documentation to be examined. The same e-mail address can be used to request ethical advice regarding the attribution of the status of co-author of a scientific article in the process of submission.

B) How to report a case of research misconduct

Reports of alleged research misconduct, duly documented, can be submitted in several ways:

1. by writing to the Committee at the following e-mail address: integrity@cnr.it
2. by post, at the address:
Research Ethics and Integrity Committee of the CNR,
Via dei Taurini, 19 - 00185, Rome
3. by contacting the Institute Director, the Director of Department, The Director General or the President of the CNR

Allegations may concern research activities carried out by CNR staff or carried out with CNR funds, or publications with authors affiliated to the CNR.

The Coordinator of the Committee, after pseudonymization, submits cases of alleged research misconduct to the Committee for evaluation, together with the documentation submitted in support of the allegation, when appropriate, as well as explanations and possible counter-arguments made in this respect by the CNR staff named in the allegations. If appropriate, in addition to this documentation, the Coordinator submits a technical report analysing the fabrication/falsification/plagiarism of images/data/texts prepared together with the Research Integrity Unit of the Committee using software developed for this purpose. All documentation sent to the Committee will be circulated only within the Committee.

The authors of the allegations and the personnel named in the allegations will be granted confidentiality, within the limits of the law, during the process of analysis and evaluation of the case as well as after the release of the ethical advisory report by the Committee.

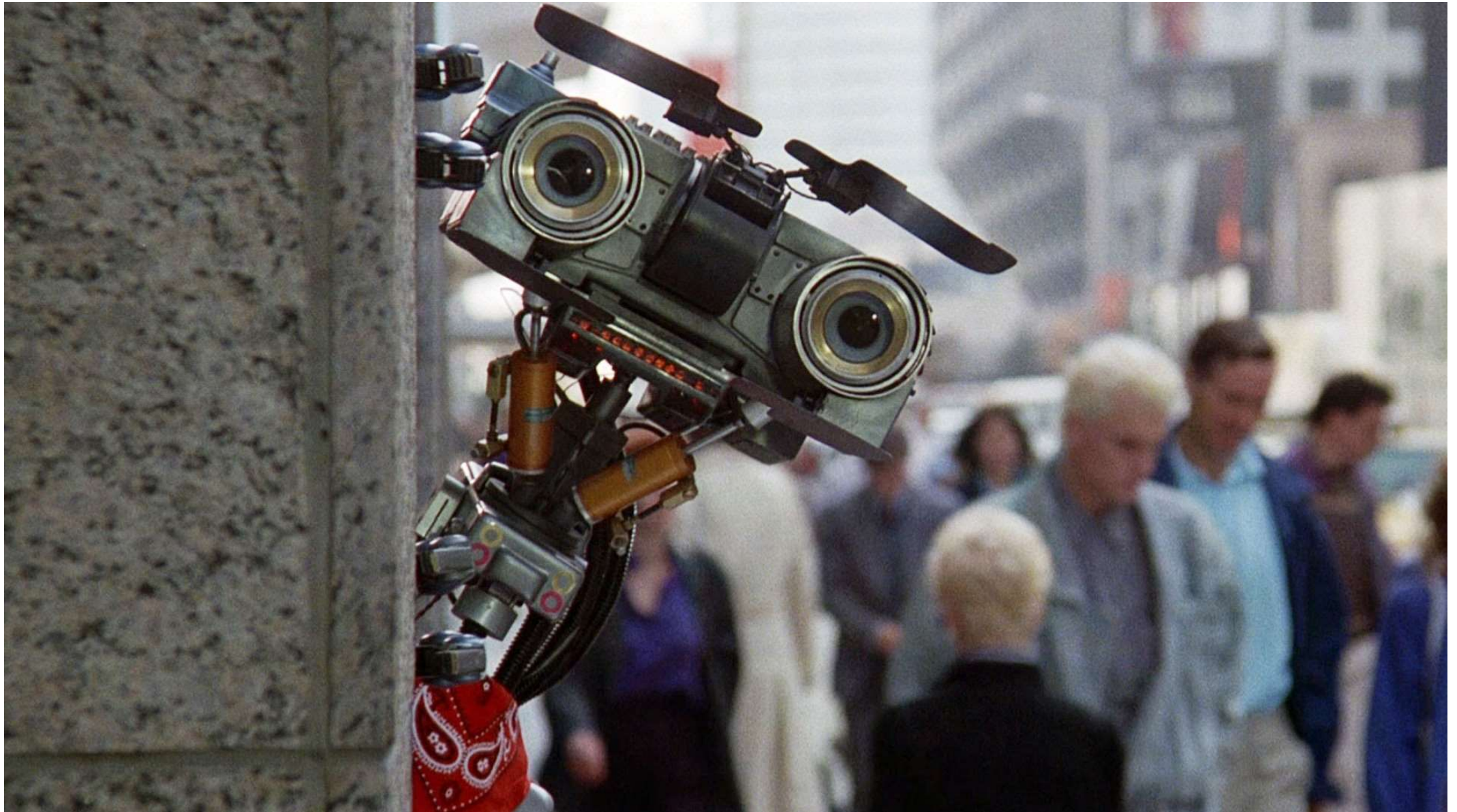


National Research Council of Italy

C) How to report a case of research misconduct concerning personnel from universities, research institutions and scientific institutions

The Deans of Universities, the Presidents of Research Institutions and, in general, the heads of scientific or technological institutions, public or private, may request from the Committee an ethical advice on cases of alleged research misconduct concerning personnel belonging to their structures. The process for verifying alleged research misconduct is carried out in accordance with the warranty procedures used for the personnel of the CNR. The Committee's Coordinator shall involve the personnel concerned by the allegations in the investigation process and shall keep the abovementioned persons, who submitted the request to the Committee, informed of the progress of the examination.

Thank you!
marco.annoni@itb.cnr.it



RI: case studies / 1

- Image that Andrew, Michael, and Chris decide to collaborate on some research. Andrew has had a brilliant idea for a study, and he and Chris carry it out successfully. Michael writes a paper based on their results and analysis, and Chris checks and corrects it. All three approve the final draft. They are aware that their paper is of great importance, so they decide to submit to the BMJ
- What do you think the author order should be here? Why?

RI: case studies 2.1

You have a radical idea regarding how to perform genomic editing much more efficiently than was previously possible. You tell your colleague Anastasia about it and how you plan to test the hypothesis. Anastasia does not work in your lab, but you spend some time explaining to her the details of your study and she offers a number of unsolicited suggestions on how to make a compelling case for the novelty of your method.

RI: case studies 2.2

After this initial conversation, Anastasia talks to you frequently about the project and comes to several of your lab presentations. She comments critically on your work and makes suggestions, including the idea that you try different cell types to further build your case. These experiments strongly support your initial hypothesis and show that the technique can be generalized. You decide to submit your exciting results to a prestigious journal and ask Anastasia to comment on it before sending it to the journal. Anastasia returns it with some insightful comments and argues strongly she should be a coauthor on the manuscript

RI: case studies 2.3

- Should you agree to include Anastasia as a co-author and why?
- What is the relative importance of thinking of and planning experiments compared to being able to effectively execute them? How should these two aspects of research be reflected in authorship and authorship positions?
- Was there a time when it would have been helpful to discuss Anastasia's role in the project?

RI: case studies 3

- Let's imagine three researchers from different fields named Robert Roberts, James Jameson, and Charles Charleston write an interdisciplinary research paper together. The paper is read by many people, but we focus on three in particular, Ava, Anna, and Jana. They all enjoy the paper and are interested in collaborating with the person who had the idea for it. The order of authors given at the start of the paper is Charles, James, Robert.
- What are the author's probable contributions to the paper?

RI: case studies 3.2

- Ava works in the medical faculty and assumes that Robert had the idea, because he is last author and thus senior. Anna works in philosophy and assumes that Charles did the most work and it was probably his idea too, because in philosophy authors tend to be listed in diminishing order of contribution. Finally, Jane is a biologist who always uses the principle that authors are listed alphabetically.
- Who do you think is correct?