

The European Code of Conduct for Research Integrity

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Table of Contents

Preamble	3
1. Principles	5
2. Good Research Practices	6
3. Violations of Research Integrity	10
Annex 1: Key Resources	13
Annex 2: Revision Process	16
Annex 3: List of Stakeholders	17
Annex 4: ALLEA Permanent Working Group on Science and Ethics	18

Preamble

is the auest esearch knowledge obtained through systematic study, thinking, obserexperimentation. While vation. and different disciplines may use different they each approaches. share 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.

Research is a common enterprise, carried out by many different actors in academic. industry, and other settings. It involves collaboration, direct or indirect, which often transcends social, political, and cultural boundaries. It is underpinned by the freedom to define research questions and develop theories, gather empirical evidence, and emplov appropriate methods in an impartial way. Therefore, research draws on the work of the community of researchers and should develop independently of from commissioning parties and from ideological. economic. or political interests

Research integrity is crucial to preserving the trustworthiness of the research system and its results. It encompasses the basic responsibility of the research community to formulate the principles of research, to define the criteria for proper research behaviour, to maximise the quality, reliability, and robustness of research and its results, and to respond adequately to threats to, or violations of, good research practices. Research results in this context include, but are not limited to, publications, data, metadata, protocols, code, software, images, artefacts, and other research materials and methods. The primary purpose of this European Code of Conduct is to help realise this responsibility and to serve the research community as a framework for self-regulation.

The research community encompasses a broad range of stakeholders including individual researchers, research teams, and research support staff. It also includes the institutions and organisations that enable research, such as research performing organisations, research funders, academies, learned societies, editors and publishers, and other relevant bodies. The European Code of Conduct describes professional, legal, societal, ethical, and moral responsibilities of the different actors in different settings, including those who define and implement the priorities and criteria for research funding, assessment, and publication. It acknowledges the role of institutions and organisations in facilitating good research practices through appropriate policies. processes. resources. and infrastructure.

Interpretation of the values and principles that regulate research may be affected by social, political, or technological developments and by changes in the research environment. Such changes since the 2017 edition of the European Code of Conduct include the development and application of technologies in research in new ways,

and the use and impact of social media to share and disseminate research results. The 2023 edition also takes account of changes in data management practices, the General Data Protection Regulation (GDPR), and recent developments in Open Science and research assessment. The 2023 edition of the European Code of Conduct also reflects a new awareness of the importance of research culture in enabling research integrity and implementing good research practices.

An effective European Code of Conduct for the research community promotes an ethical mindset. Its principles are relevant across the research system and in all disciplines and are applicable to publicly funded and private research. It can be the basis for local, national, and disciplinespecific policies and guidelines, and applies to existing and new research practices such as citizen science or participatory research. Each stakeholder within the research community needs to take active responsibility for observing and promoting these practices and the principles that underpin them.

This document is an updated version of the 2017 edition of the European Code of Conduct for Research Integrity, developed by the European Federation of Academies of Sciences and Humanities (ALLEA). It is updated periodically to take account of evolving concerns and emerging areas so that it can continue to be fit for purpose in guiding the research community towards good research practice.

1. Principles

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

These principles include:

- Reliability in ensuring the quality of research, reflected in the design, methodology, analysis, and 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, research subjects, 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 societal impacts.

2. Good Research Practices

This section describes good research practices in the following contexts:

- · Research Environment
- · Training, Supervision, and Mentoring
- · Research Procedures
- Safeguards
- · Data Practices and Management
- · Collaborative Working
- Publication, Dissemination, and Authorship
- · Reviewing and Assessment

2.1 Research Environment

- Research institutions and organisations promote awareness and resource incentives to ensure a culture of research integrity.
- Research institutions and organisations create an environment of mutual respect and promote values such as equity, diversity, and inclusion.
- Research institutions and organisations create an environment free from undue pressures on researchers that allows them to work independently and according to the principles of good research practice.
- Research institutions and organisations demonstrate leadership in clear policies and procedures on good research practice and the transparent and proper handling of suspected research misconduct and violations of research integrity.

- Research institutions and organisations actively support researchers who receive threats and protect bona fide whistleblowers, taking into account that early career and short-term employed researchers may be particularly vulnerable.
- Research institutions and organisations support appropriate infrastructure for the generation, management, and protection of data and research materials in all their forms 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, analysis, dissemination, and communication.
- Research institutions and organisations develop appropriate and adequate training in ethics and research integrity to ensure that all concerned are made aware of the relevant codes and regulations and develop the necessary skills to apply these to their research.
- Senior researchers, research leaders, and supervisors mentor their team members, lead by example, and offer specific guidance and training to properly develop and structure their research activities.
- Researchers across the entire career path, from junior to the most senior level, undertake training in ethics and research integrity.

2.3 Research Procedures

- Researchers take into account the state-of-the-art in relevant fields when developing research ideas.
- Researchers design, carry out, analyse, and document research in a careful, transparent, and well-considered manner.
- Research protocols take account of, and are sensitive to, relevant differences among research participants, such as age, gender, sex, culture, religion, worldview, ethnicity, geographical location, and social class.
- Researchers make proper and conscientious use of research funds.
- Researchers share their results 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 and methods, including the use of external services or AI and automated tools, in a way that is compatible with the accepted norms of the discipline and facilitates verification or replication, where applicable.

2.4 Safeguards

- Researchers, research institutions, and organisations comply with relevant codes, guidelines, and regulations.
- Researchers handle research participants and subjects (be they human, animal, cultural, biological, environmental,

- or physical) and related data with respect and care, and in accordance with legal provisions and ethical principles.
- Researchers have due regard for the health, safety, and welfare of the community, of collaborators, and others connected with their research.
- Researchers recognise and weigh potential harms and risks relating to their research and its applications and mitigate possible negative impacts.
- Researchers overseeing projects that cross professional boundaries, such as citizen science or participatory research, take responsibility for ensuring research integrity standards, oversight, training, and safeguards.

2.5 Data Practices and Management

- Researchers, research institutions, and organisations ensure appropriate stewardship, curation, and preservation of all data, metadata, protocols, code, software, and other research materials for a reasonable and clearly stated period.
- Researchers, research institutions, and organisations ensure that 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 Reusable) for data management.
- Researchers, research institutions, and organisations are transparent about how to access and gain permission to use data, metadata, protocols, code, software, and other research materials.

- Researchers inform research participants about how their data will be used, reused, accessed, stored, and deleted, in compliance with GDPR.
- Researchers, research institutions, and organisations acknowledge data, metadata, protocols, code, software, and other research materials as legitimate and citable products of research.
- Researchers, research institutions, and organisations ensure that any contracts or agreements relating to research results include equitable and fair provisions for the management of their use, ownership, and protection under intellectual property rights.

2.6 Collaborative Working

- All partners in research collaborations take responsibility for the integrity of the research and its results.
- All partners in research collaborations formally agree at the outset, and monitor and adapt as necessary, the goals of the research and the process for communicating their research as transparently and openly as possible.
- All partners in research collaborations formally agree at the outset, and monitor and adapt as necessary, the expectations and standards concerning research integrity, the laws and regulations that will apply, protection of the intellectual property of collaborators, and procedures for handling conflicts and possible cases of misconduct.
- · All partners in research collaborations

are consulted and formally agree on submissions for publication of research results and other forms of dissemination or exploitation of the results.

2.7 Publication, Dissemination, and Authorship

- Authors formally agree on the sequence of authorship, acknowledging that authorship itself is based on: (1) a significant contribution to the design of the research, relevant data collection, its analysis, and/or interpretation; (2) drafting and/or critical reviewing the publication; (3) approval of the final publication; and (4) agreeing to be responsible for the content of the publication, unless specified otherwise in the publication.
- Authors include an 'Author Contribution Statement' in the final publication, where possible, to describe each author's responsibilities and contributions.
- Authors acknowledge important work and contributions of those who do not meet the criteria for authorship, including collaborators, assistants, and funders who have enabled the research.
- Authors disclose any financial and nonfinancial conflicts of interest as well as sources of support for the research or the publication.
- Authors and publishers promptly issue corrections or retract publications, if necessary, the retraction processes are clear and the reasons stated, and authors are given credit for issuing corrections post-publication.

- Authors, research institutions, publishers, funders, and the research community acknowledge that negative results can be as relevant as positive findings for publication and dissemination.
- Authors are accurate and honest in their communication to colleagues, policymakers, and society at large.
- Authors are transparent in their communication, outreach, and public engagement about assumptions and values influencing their research as well as the robustness of the evidence, including remaining uncertainties and knowledge gaps.
- Authors adhere to the same criteria as those detailed above whether they publish in a subscription journal, an open access journal, or in any other publication form, including preprint servers.

2.8 Reviewing and Assessment

- Researchers take seriously their commitment and responsibility to the research community through refereeing, reviewing, and assessment, and this work is recognised and rewarded by researchers, research institutions, and organisations.
- Researchers, research institutions, and organisations review and assess submissions for publication, funding, appointment, promotion, or reward in a transparent and justifiable manner, and disclose the use of Al and automated tools.
- Reviewers and editors declare any actual or perceived conflicts of interest and, when necessary, withdraw from involvement

- in discussion and 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.
- Researchers, research institutions, and organisations adopt assessment practices that are based on principles of quality, knowledge advancement, and impact that go beyond quantitative indictors and take into account diversity, inclusiveness, openness, and collaboration where relevant.

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 participants and 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 data or results and recording them as if they were real.
- Falsification is manipulating research materials, equipment, images, or processes, or changing, omitting, or suppressing data or results without justification.
- **Plagiarism** is using other people's work or ideas without giving proper credit to the original source.

There are further violations of good research practice that distort the research record or damage the integrity of the research process or of researchers. In addition to violations

of the good research practices set out in this European Code of Conduct, examples of other unacceptable practices include, but are not confined to:

- Allowing funders, sponsors, or others to jeopardise independence and impartiality in the research process or unbiased reporting of the results.
- Misusing seniority to encourage violations of research integrity or to advance one's own career.
- Delaying or inappropriately hampering the work of other researchers.
- Misusing statistics, for example to inappropriately suggest statistical significance.
- Hiding the use of AI or automated tools in the creation of content or drafting of publications.
- Withholding research data or results without justification.
- Chopping up research results with the specific aim of increasing the number of research publications ('salami publications').
- · Citing selectively or inaccurately.
- Expanding unnecessarily the bibliography of a study to please editors, reviewers, or colleagues, or to manipulate bibliographic data.

- 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').
- Establishing, supporting, or deliberately using journals, publishers, events, or services that undermine the quality of research ('predatory' journals or conferences and paper mills).
- Participating in cartels of reviewers and authors colluding to review each other's publications.
- Misrepresenting research achievements, data, involvement, or interests.
- Accusing a researcher of misconduct or other violations in a malicious way.
- Ignoring putative violations of research integrity by others or covering up inappropriate responses to misconduct or other violations by institutions.

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

- Anyone accused of research misconduct is presumed innocent until proven otherwise.
- Investigations are fair, comprehensive, and conducted expediently, without compromising accuracy, objectivity, or thoroughness.
- The parties involved in the investigation declare any conflict of interest that may arise during the investigation.
- Measures are taken to ensure that investigations are carried through to a conclusion.
- Investigations are conducted confidentially in order to protect those involved.
- Institutions protect the rights of bona fide 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.
- Persons accused of research misconduct are given full details of the allegation(s) and are allowed a fair process for responding to allegations and presenting evidence.
- Investigations into research misconduct consider the role of both individuals and institutions contributing to the breach of good research practice.

- 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.

Annex 1: Key Resources

All European Academies (ALLEA) (2013). "Ethics Education in Science: Statement by the ALLEA Permanent Working Group on Science and Ethics." www.allea.org/wp-content/uploads/2015/07/Statement_Ethics_Edu_web_final_2013_10_10.pdf [Accessed 26/04/2023]

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Annex 2: Revision Process

The original European Code of Conduct for Research Integrity was developed in 2011 by the European Federation of Academies of Sciences and Humanities (ALLEA) and the European Science Foundation (ESF). From the start, the European Code of Conduct has been conceived as a living document that will be reviewed and revised as necessary to take account of evolving concerns and emerging areas, so that it can continue to serve the research community as a framework for good research practices.

A new version of the European Code of Conduct for Research Integrity was developed in 2017 by ALLEA. This revision was motivated by developments in, among others, the European research funding and regulatory landscapes, institutional responsibilities, communication and dissemination, the use of social media, review procedures, open access publishing, the use of repositories, and citizen involvement in research. The revision included extensive consultation among major stakeholders in European research, both public and private, to ensure a sense of shared ownership.

The present document is a revision of the 2017 European Code of Conduct for Research Integrity. This edition contains revisions to ensure that the European Code of Conduct remains fit for purpose and relevant to all disciplines and emerging areas of research or research practices. It takes account of changes in data management practices, the General Data Protection Regulation (GDPR), and recent developments in Open Science and research assessment. The changes reflect a new awareness of the importance of research culture in enabling research integrity and implementing good research practices. They also reflect greater awareness in the research community of mechanisms of discrimination and exclusion and the responsibility of all actors to promote equity, diversity, and inclusion.

Annex 3: List of Stakeholders

ALLEA would like to thank all stakeholder organisations and projects who generously provided detailed and insightful written feedback during the consultation process:

- Association of Learned and Professional Society Publishers (ALPSP)
- Committee on Publication Ethics (COPE)
- Conference of European Schools for Advanced Engineering Education and Research (CESAER)
- FU-LIFF
- European Association of Research and Technology Organisations (EARTO)
- European Association of Research Managers and Administrators (EARMA)
- European Chemical Society (EuChemS)
- European Commission
- European Group on Ethics in Science and New Technologies (EGE)
- European Industrial Research Management Association (EIRMA)
- European Molecular Biology Organization (EMBO)
- European Network of Research Ethics Committees (EUREC)
- European Network of Research Integrity Offices (ENRIO)
- European Physical Society (EPS)
- European University Association (EUA)
- EuroScience
- FoodDrinkEurope
- Global Young Academy (GYA)
- HYBRIDA
- International Association of Scientific, Technical and Medical Publishers (STM)
- League of European Research Universities (LERU)
- Open Access Scholarly Publishers Association (OASPA)
- Path2Integrity
- PRO-Fthics
- Responsible Open Science in Europe (ROSiE)
- Science Europe
- Standard Operating Procedures for Research Integrity (SOPs4RI)
- TechEthos
- The Guild
- UK Publishers Association
- Young European Research Universities Network (YERUN)

A detailed summary of the stakeholder feedback process and how this informed the 2023 revision can be found at https://allea.org/code-of-conduct/.

Annex 4: ALLEA Permanent Working Group on Science and Ethics

The ALLEA Permanent Working Group on Science and Ethics (PWGSE) is concerned with a wide range of 'internal' (within the research community) and 'external' (relations between science and society) issues. Since ethical considerations have been an essential component in the consolidation of a united Europe, and also in the creation of ALLEA, the PWGSE was established to bring together experts from academies across Europe and provide them with a platform for continuous debate on research ethics and research integrity.

The PWGSE has been extending its capacities and activities during recent years, in order to adequately fulfil its mission of collective deliberation on topics such as research integrity, ethics education in science and research training, ethics of scientific policy advice, trust in science, scientific misconduct, and plagiarism, among others.

Further topics recently addressed include ethical issues of open access publishing, reforming research assessment, and research on digital and (bio)medical technologies. Additionally, the group provides expertise for Horizon 2020 Science with and for Society (SwafS) and Horizon Europe WIDERA projects concerned with research ethics and integrity, and supports ALLEA membership of the TechEthos project, which addresses the ethics of new and emerging technologies with high socio-economic impact.

The PWGSE meets regularly and has also convened thematic meetings in wider settings, typically in partnerships with other relevant transnational organisations. The members of the PWGSE drew on their extensive network of experts and institutions for the successful execution of the revision process of "The European Code of Conduct for Research Integrity".

Members of the ALLEA Permanent Working Group on Science and Ethics

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Göran Hermerén – Royal Swedish Academy of Letters, History and Antiquities, *Drafting Group*

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Anne Sophie Meincke – Austrian Academy of Sciences

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Michael Quante – Union of German Academies of Sciences and Humanities

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Els Van Damme – Royal Academy of Sciences, Letters and Arts of Belgium, *Drafting Group*

Krista Varantola – Council of Finnish Academies, *Drafting Group (Chair)*

Support to the PWGSE and Drafting Group: Mathijs Vleugel (ALLEA Secretariat)

More information about the ALLEA Permanent Working Group on Science and Ethics can be found at https://allea.org/research-integrity-and-research-ethics/.

ALLEA - All European Academies

ALLEA, the European Federation of Academies of Sciences and Humanities, represents more than 50 academies from nearly 40 EU and non-EU countries. Since its foundation in 1994, ALLEA speaks on behalf of its members on European and international stages, promotes science as a global public good, and facilitates scientific collaboration across borders and disciplines.

Academies are self-governing bodies of distinguished scientists drawn from all fields of scholarly inquiry. They contain a unique human resource of intellectual excellence, experience, and multidisciplinary knowledge dedicated to the advancement of science and scholarship in Europe and the world.

Jointly with its members, ALLEA seeks to improve the conditions for research, to provide the best independent and interdisciplinary science advice available, and to strengthen the role of science in society. In doing so, ALLEA channels the expertise of European academies for the benefit of the research community, decision-makers, and the public. Outputs include science-based advice in response to topics that are critical to society as well as activities to encourage scientific cooperation, reasoning, and values through public engagement.

ALLEA is a not-for-profit association and remains fully independent from political, religious, commercial, or ideological interests.



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