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Národní technická knihovna
National Library of Technology

National Centre
for Information Support of Research,
Development, and Innovation

Academic Integrity

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Courses, Workshops and Webinars (in English)

March 4, 2025

March 13, 2025

The project National Centre for Information Support of Research, Development and Innovation with the identification code MS2101 is implemented with the support of the Ministry of Education, Youth and Sports.

Agenda

- Academic/research integrity and ethics
- Guidelines for academic and research integrity
- Examples of good research practice
- Dealing with specific ethical issues

Academic integrity and ethics

Academic integrity and ethics

Ethics

"Choice making around '**right**' and '**wrong**' values and behavior"

Definition taken from: Williams, L.G. (2015). *Review of Ethics Principles and Guidance in Evaluation and Research* [online]. Available at: https://www.oecd.org/dac/evaluation/DFID-Ethics-Principles-Report.pdf [Accessed 2024-07-03].

Integrity

"Compliance with **ethical** and **professional principles**, **standards** and consistent system of **values**, that serves as **guidance** for making **decisions** and taking actions"

Academic integrity "… in education, research and scholarship"

Research integrity "… by individuals or institutions in research" (good research practice)

Definitions taken from: Tauginienė, L. et al. (2018). *Glossary for Academic Integrity: Report (revised version)* [online]. European Network for Academic Integrity. Available at: https://www.academicintegrity.eu/wp/wp-content/uploads/2023/02/EN-Glossary_revised_final_24.02.23.pdf [Accessed 2024-07-03].

Why is academic and research integrity important?

- Ensures **honest, responsible**, and **fair** behavior
- Prevents causing harm to research participants, society, and the environment
- Builds and preserves **trustworthiness**
- Maximizes **reliability, quality**, and **credibility** of research/scholarship
- Protects **reputation** and **career** over the long-term

Consequences of research integrity violations (for researchers, colleagues, university/institution, society)

More reading on academic and research integrity:

STEMskiller - Academic ethics and integrity: Concepts and definitions
On Being a Scientist: A guide to responsible conduct in research
European Network for Academic Integrity (ENAI)
Embassy of Good Science

?

How to ensure that academic integrity is maintained?

Guidelines
for academic and research integrity

Guidelines for academic and research integrity

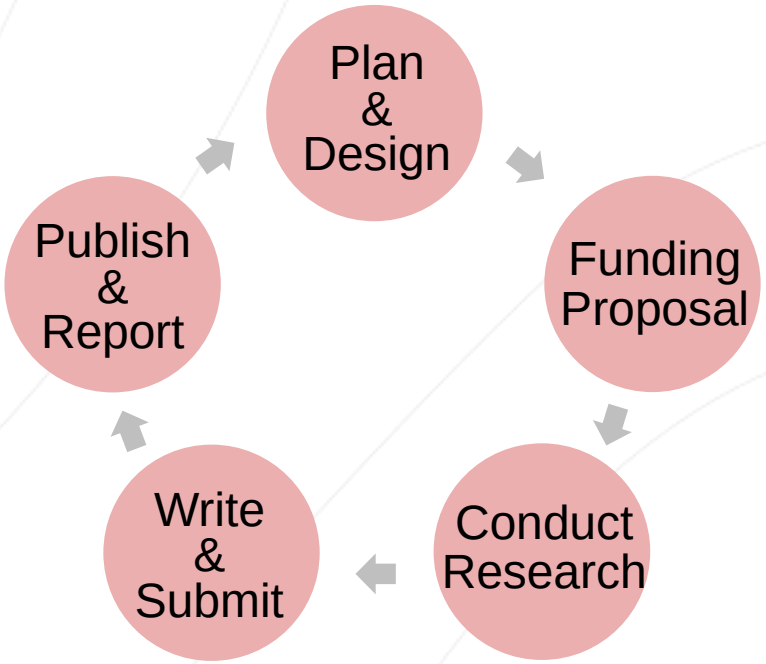
Codes/guidelines

- Documents defining ethical and professional principles, values, and standards
- National, institutional, and disciplinary variations
- Students/researchers should be aware of and comply with specific codes and guidelines related to their own context (i.e., studies/research).

Embassy of Good Science

- **International concepts**
- **National concepts**
- **Universities**
- **Research institutes**
- **Journals and publishers**
- **Funding agencies**

Research process



International concepts of research integrity

The European Code of Conduct for Research Integrity (ALLEA, 2023)

"Serves as a framework for self-regulation across all scientific and scholarly disciplines"

1. Principles

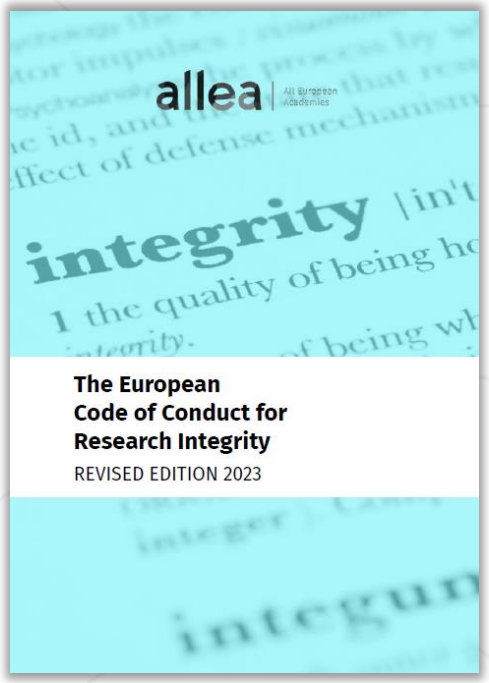
- Reliability
- Honesty
- Respect
- Accountability

2. Good Research Practices

- Research environment
- Training, supervision, mentoring
- Research procedures
- Safeguards
- Data practices and management
- Collaborative working
- Publication, dissemination, authorship
- Reviewing and assessment

3. Violations of Research Integrity = research misconduct

- Fabrication
- Falsification
- Plagiarism



Source: ALLEA (2023). *The European Code of Conduct for Research Integrity: Revised Edition 2023* [online]. Berlin. DOI 10.26356/ECOC
Available at: https://allea.org/wp-content/uploads/2023/06/European-Code-of-Conduct-Revised-Edition-2023.pdf [Accessed 2024-07-03].

International concepts of research integrity

World Conferences on Research Integrity:

2007: Lisbon

2010: Singapore
Singapore Statement on Research Integrity

2013: Montreal
Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations

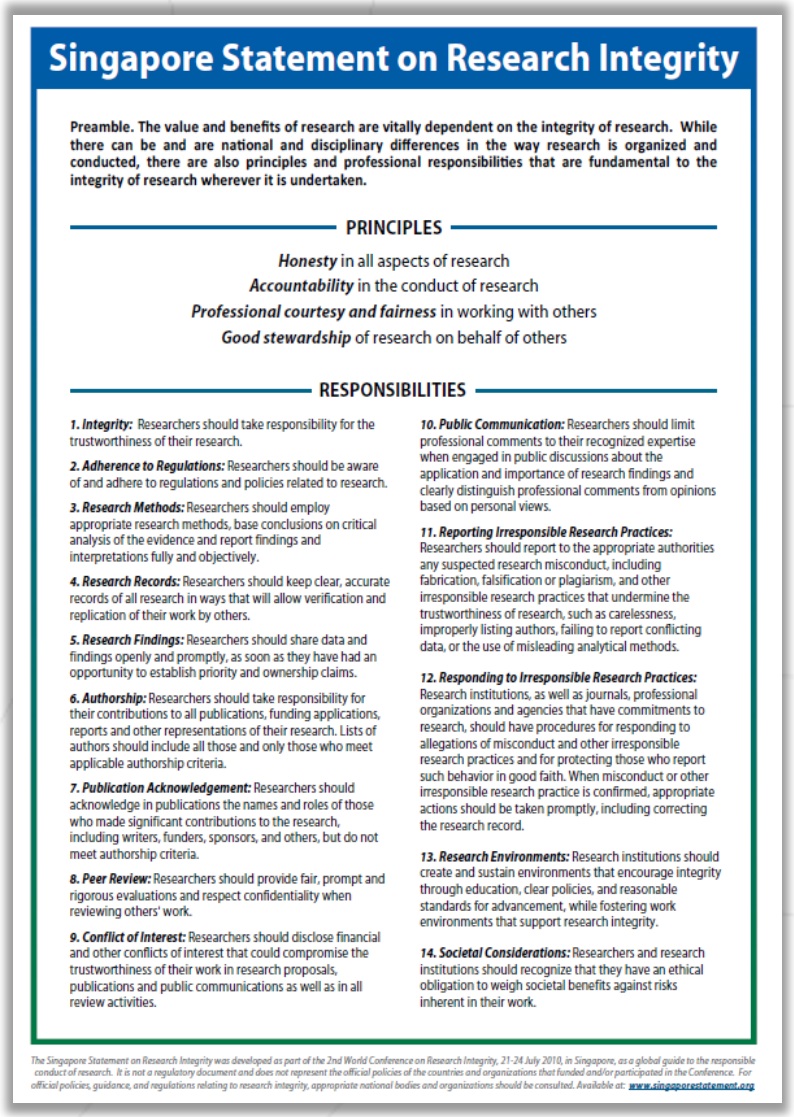
2015: Rio de Janeiro

2017: Amsterdam
Amsterdam Agenda

2019: Hong Kong
Hong Kong Principles for Assessing Researchers

2022: Cape Town
Cape Town Statement on Fostering Research Integrity through Fairness and Equity

2024: Athens



Singapore Statement on Research Integrity

Preamble. The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

PRINCIPLES

Honesty in all aspects of research
Accountability in the conduct of research
Professional courtesy and fairness in working with others
Good stewardship of research on behalf of others

RESPONSIBILITIES

1. Integrity: Researchers should take responsibility for the trustworthiness of their research.

2. Adherence to Regulations: Researchers should be aware of and adhere to regulations and policies related to research.

3. Research Methods: Researchers should employ appropriate research methods, base conclusions on critical analysis of the evidence and report findings and interpretations fully and objectively.

4. Research Records: Researchers should keep clear, accurate records of all research in ways that will allow verification and replication of their work by others.

5. Research Findings: Researchers should share data and findings openly and promptly, as soon as they have had an opportunity to establish priority and ownership claims.

6. Authorship: Researchers should take responsibility for their contributions to all publications, funding applications, reports and other representations of their research. Lists of authors should include all those and only those who meet applicable authorship criteria.

7. Publication Acknowledgement: Researchers should acknowledge in publications the names and roles of those who made significant contributions to the research, including writers, funders, sponsors, and others, but do not meet authorship criteria.

8. Peer Review: Researchers should provide fair, prompt and rigorous evaluations and respect confidentiality when reviewing others' work.

9. Conflict of Interest: Researchers should disclose financial and other conflicts of interest that could compromise the trustworthiness of their work in research proposals, publications and public communications as well as in all review activities.

10. Public Communication: Researchers should limit professional comments to their recognized expertise when engaged in public discussions about the application and importance of research findings and clearly distinguish professional comments from opinions based on personal views.

11. Reporting Irresponsible Research Practices: Researchers should report to the appropriate authorities any suspected research misconduct, including fabrication, falsification or plagiarism, and other irresponsible research practices that undermine the trustworthiness of research, such as carelessness, improperly listing authors, failing to report conflicting data, or the use of misleading analytical methods.

12. Responding to Irresponsible Research Practices: Research institutions, as well as journals, professional organizations and agencies that have commitments to research, should have procedures for responding to allegations of misconduct and other irresponsible research practices and for protecting those who report such behavior in good faith. When misconduct or other irresponsible research practice is confirmed, appropriate actions should be taken promptly, including correcting the research record.

13. Research Environments: Research institutions should create and sustain environments that encourage integrity through education, clear policies, and reasonable standards for advancement, while fostering work environments that support research integrity.

14. Societal Considerations: Researchers and research institutions should recognize that they have an ethical obligation to weigh societal benefits against risks inherent in their work.

The Singapore Statement on Research Integrity was developed as part of the 2nd World Conference on Research Integrity, 21-24 July 2010, in Singapore, as a global guide to the responsible conduct of research. It is not a regulatory document and does not represent the official policies of the countries and organizations that funded and/or participated in the Conference. For official policies, guidance, and regulations relating to research integrity, appropriate national bodies and organizations should be consulted. Available at: www.singaporestatement.org

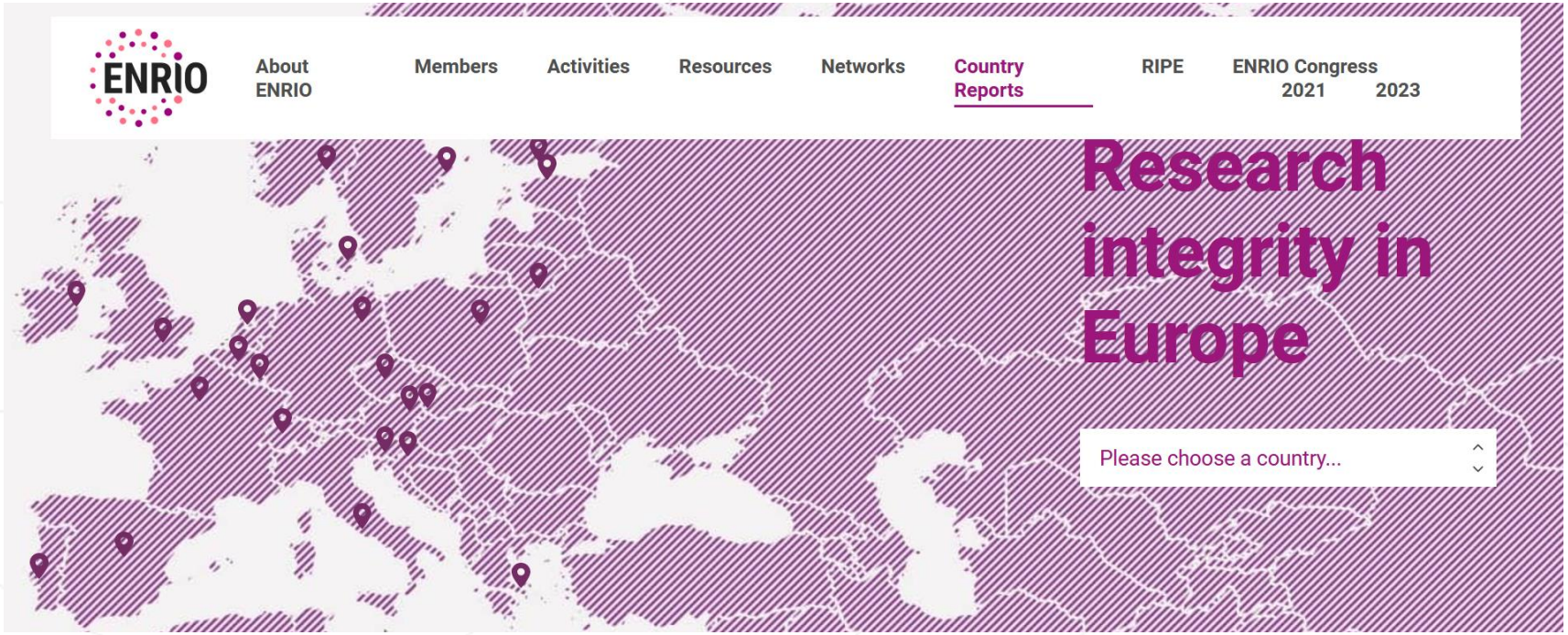
Source: World Conferences on Research Integrity (2010). *Singapore Statement on Research Integrity* [online]. Available at: https://www.wcrif.org/downloads/main-website/singapore-statements/223-singpore-statement-a4size/file [Accessed 2024-07-03].

National concepts of research integrity

Czech Republic

- Ministry of Education, Youth and Sports: Etický rámec výzkumu (2005), Czech only
- Czech Academy of Sciences: Code of Ethics for Researchers of the CAS

EU country reports also at: European Network of Research Integrity Offices (ENRIO)



Source: European Network of Research Integrity Offices (n.d.). Country Reports. *ENRIO* [online]. © 2024 www.enrio.eu. Available at: www.enrio.eu/country-reports/ [Accessed 2024-07-03].

Universities

Code of Ethics

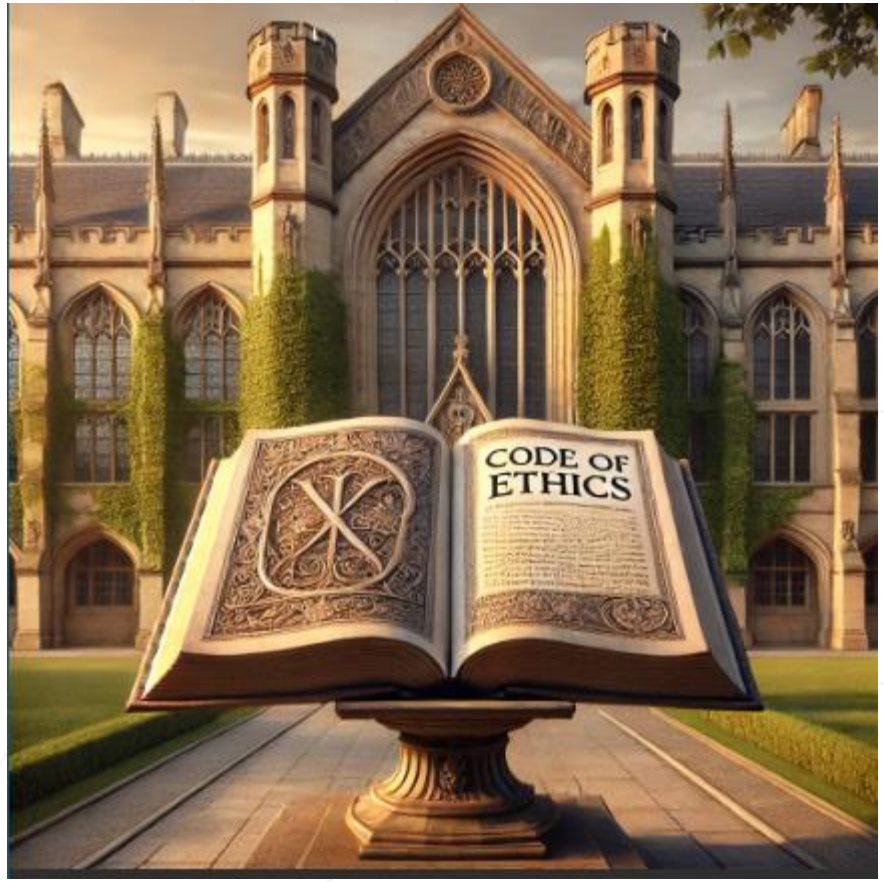
Czech universities

- Charles University
- Czech Technical University in Prague
- University of Chemistry and Technology, Prague
- Czech University of Life Sciences Prague

Collaborating universities (internships, exchanges)

- Stanford: Code of Conduct

? Have you read your university's code of ethics?



"Create a building of an old university with an open 'Code of Ethics' book in front of it. The book is in the middle." prompt, *ChatGPT*, version 4o, OpenAI, 28 Feb. 2025, https://chatgpt.com/.

Research institutes

Czech research institutes

- Czech Academy of Sciences: Code of Ethics for Researchers of the CAS
- Institute of Organic Chemistry and Biochemistry: Code of Ethics for Researchers of the IOCB

Collaborating research institutes (internships, exchanges)

- Max Planck institute: Code of Conduct

Research fields and disciplines

- World Medical Association: WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects

Research ethics committee/institutional review board (IRB)

- Charles University: Faculty Committee for Ethics in Research

Journals and publishers

Publishers: Guidelines and policies

- Elsevier: Policies and Ethics for Authors, Publishing Ethics
- Springer: Publishing Ethics for Journals, Editorial Policies
- Wiley: Guidelines – Publishing Ethics

Journals: **Instructions for authors/ Guide for authors** (or reviewers)

- Journal of Hydrology

General guidelines

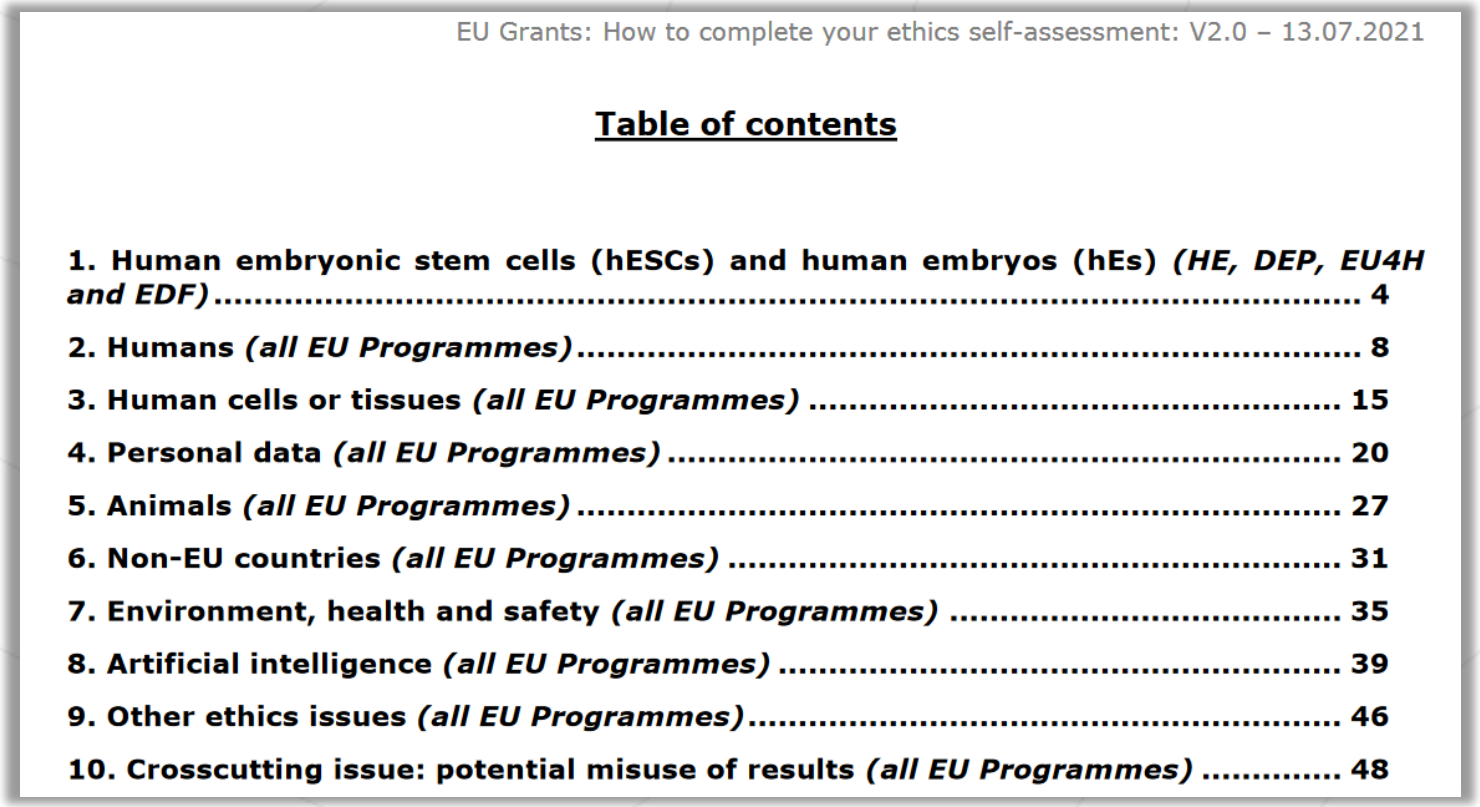
- Committee on Publication Ethics (COPE): Guidelines

Funding agencies

Czech Science Foundation (GAČR): Code of Conduct (PI, Tender documents, Reviewers)

European Commission: Funding & tender opportunities (Ethics review)

Horizon Europe: Programme Guide, How to complete your ethics self-assessment



EU Grants: How to complete your ethics self-assessment: V2.0 – 13.07.2021

Table of contents

Source: European Commission (2021). *EU Grants: How to complete your ethics self-assessment* [online]. Version 2.0. Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/how-to-complete-your-ethics-self-assessment_en.pdf [Accessed 2024-07-03].

Examples of good research practice

Examples of good research practice

Safeguards

- Comply with relevant **codes**, **regulations**, and **guidelines**
- Cause **no harm** to society, environment, or cultural values
- Research results should **benefit** society
- Consider **ethical and safety aspects** (e.g., research involving human participants, animals, personal data) and **requirements** (e.g., ethical approval, GDPR, informed consent)

Research environment, training, supervision, and mentoring

- Openness and correctness in communication
- Respect, equity, diversity, and inclusion
- Supervision, mentoring, and transfer of knowledge skills
- Free exchange of information and opinions
- Expand **skills** and **knowledge** (e.g., training, courses, conferences)

Examples of good research practice

Research procedures and data management

- Accuracy, objectivity, and critical thinking in research; avoid bias
- Proper data management:
  - Clear and complete data **documentation** and description (e.g., lab notebook, metadata)
  - Consistent data **organizing** (e.g., formats, names, versions)
  - **Storage**, **backup**, and **preservation** (e.g., security, confidentiality)
  - Appropriate **sharing** of data and results (e.g., access rights, licenses, repositories)
  - Open Science and FAIR principles
  - **NTK materials:** Introduction to research data management (slides from webinar, 2023)

Collaborative work

- Define roles, responsibilities, intellectual property rights, authorship, and data use

Examples of good research practice

Publishing research results

- Clear and **complete description** of materials and methods
- Give credit to all contributions
- Acknowledge **sources** and **cite** properly
- Provide appropriate **affiliation(s)**
- Publish in **reputable journals** (avoid predatory journals)
- Multiple submission is unethical

- **Always read and follow the instructions of the target journal/publisher:**
  - Journal policies
  - Required statements
  - Ethics declarations
  - Intellectual property rights

Good research practice

Research integrity (good research practice) concerns the entire research process

(planning, conducting, reporting, and so on)

Interactive tools for academic/research integrity:

- Data management plan tools: RDMkit
- Checklists: Checklist for Master and Doctoral Students and Data Ethics Checklist (Bridge)
  Recommended Checklist for Researchers (UKRIO)
- Applications and games: Integrity Matters Mobile Application, Integrity Games, Dilemma Game
- Interactive movie: The Lab: Avoiding Research Misconduct
- Self-Evaluation Tools: European Network for Academic Integrity

Specific issues

Falsification and fabrication

"**Falsification** is manipulating research materials, equipment, images, or processes, or changing, omitting, or suppressing data or results without justification."

"**Fabrication** is making up data or results and recording them as if they were real."

Definition taken from: ALLEA (2023). *Op. cit.*, p. 10.

Video: Data Fabrication and Falsification

How to avoid

- Be meticulous when working with data, do not tamper with results
- Keep the (raw) data, have a documented research plan, keep a research log
- Double-check your work (by yourself and your colleagues): On discovering mistakes

Falsification and fabrication

- **Image manipulation**
  - Inappropriate enhancement of the image: e.g. removing/moving/adding/obscuring specific features, duplication, rotation, plagiarism
  - Small adjustments might be acceptable (but always check the journal policies)
  - ORI: Tips for Presenting Scientific Images with Integrity
    Guidelines for Best Practices in Image Processing
    Examining image techniques: Forensic Droplets

- The Misleading graph

Cases

- Image discrepancies at Dana-Farber Cancer Institute
- The Rector Who Never Was
- Potential fabrication in Alzheimer research (with a meta-ethical twist): also in a book!

Plagiarism

"**Plagiarism** is using other people's work and ideas without giving proper credit to the original source."

Definition taken from: ALLEA (2023). *Op. cit.*, p.10.

- Several types of plagiarism
- **Anti-plagiarism (text duplication) software:** it is easily discovered (universities check their theses, journals their articles); e.g., Turnitin, Odevzdej.cz, iThenticate
- Both **ethical** and **legal issue** (intellectual dishonesty, copyright violation)

Cases

- What is (too much) plagiarism? The resignation of Claudine Gay

Plagiarism

- **Unintentional plagiarism** (e.g., cryptomnesia): still plagiarism, punishment might be less severe, but your reputation is damaged nonetheless

  How to avoid:

  - Be meticulous when writing and working with citations (more)
  - Before submitting a manuscript, run it through text duplication/anti-plagiarism software
  - Try not to rush things at the last minute

- **Self-plagiarism**: presenting your previously published findings as original (the case of Zygmunt Bauman)

  How to avoid:

  - Cite yourself! (but don't overdo it)

Authorship

"Authorship should be limited to those who have made a significant contribution to the concept, design, execution or interpretation of the research study. All those who have made significant contributions should be offered the opportunity to be listed as authors. Other individuals who have contributed to the study should be acknowledged, but not identified as authors."

Definition taken from: American Physical Society (1991). *APS Guidelines for Professional Conduct*. American Physical Society Sites [online]. Available at: https://www.aps.org/policy/statements/02_2.cfm [Accessed 2021-10-20].

- Ghost/gift authorship is considered an ethical issue as well
- Publishers: **author contribution statement** (CRediT Contributor Roles Taxonomy)
- How to handle authorship disputes: a guide for new researchers (COPE)
- Acknowledgement section (minor contributions)
- Different fields, different customs: sequence of authors (significance, alphabetical, last author)

Other ethical issues in science

- **Predatory practices** (journals, conferences): check for typical characteristics; see WoS and Scopus “white lists” or list of excluded journals; consult your supervisor/librarian/colleague
- Pseudoscience, junk science, paper mills, vanity press, hijacked, or other **controversial journals** (Hindawi and MDPI special issues controversy)
- **Peer review**: open/blind, fake, conflict of interest (reviewer, author)
- **Evaluation** of research: validity of metrics, funding (2017+)
- **Publishing industry**: publishers and subscription policies (open access, open science)
- **AI and technology in science**: can be used to fabricate text and images but also to detect fraud and errors

Articles: Rejection and retraction

- Rejecting papers before publication (review, anti-plagiarism software)

- **Retraction** of already published papers:
  - Reasons: misconduct or honest mistakes
  - Different journals might use different ways to mark retracted articles, (not) provide reasons
  - COPE: Retraction guidelines for scholarly publishing

Source: National Library of Medicine (2011). *PubMed* [online]. Available at: https://www.ncbi.nlm.nih.gov/pubmed/22088800 [Accessed 2024-02-09].

Retraction studies

An in-depth analysis of papers retracted in the Web of Science *Proceedings of the 19th International Conference on Science and Technology Indicators* (pp. 337–344)
Thed van Leeuwen, Marc Luwel (2014)
Web of Science (?–2014) – 2479 retracted articles 22.1% Fraud 21.2% Errors 12.4% Fraud by 1 author 11.5% Duplicated / concurrent publishing 8.0% Plagiarizing 6.2% No motivation given 5.3% No approval by competent authority for experiments 4.4% Classification errors in journal or WoS 4.4% Independent review 2.7% Incomplete consultation between authors/listed an author without consent 1.8% Errors by editors

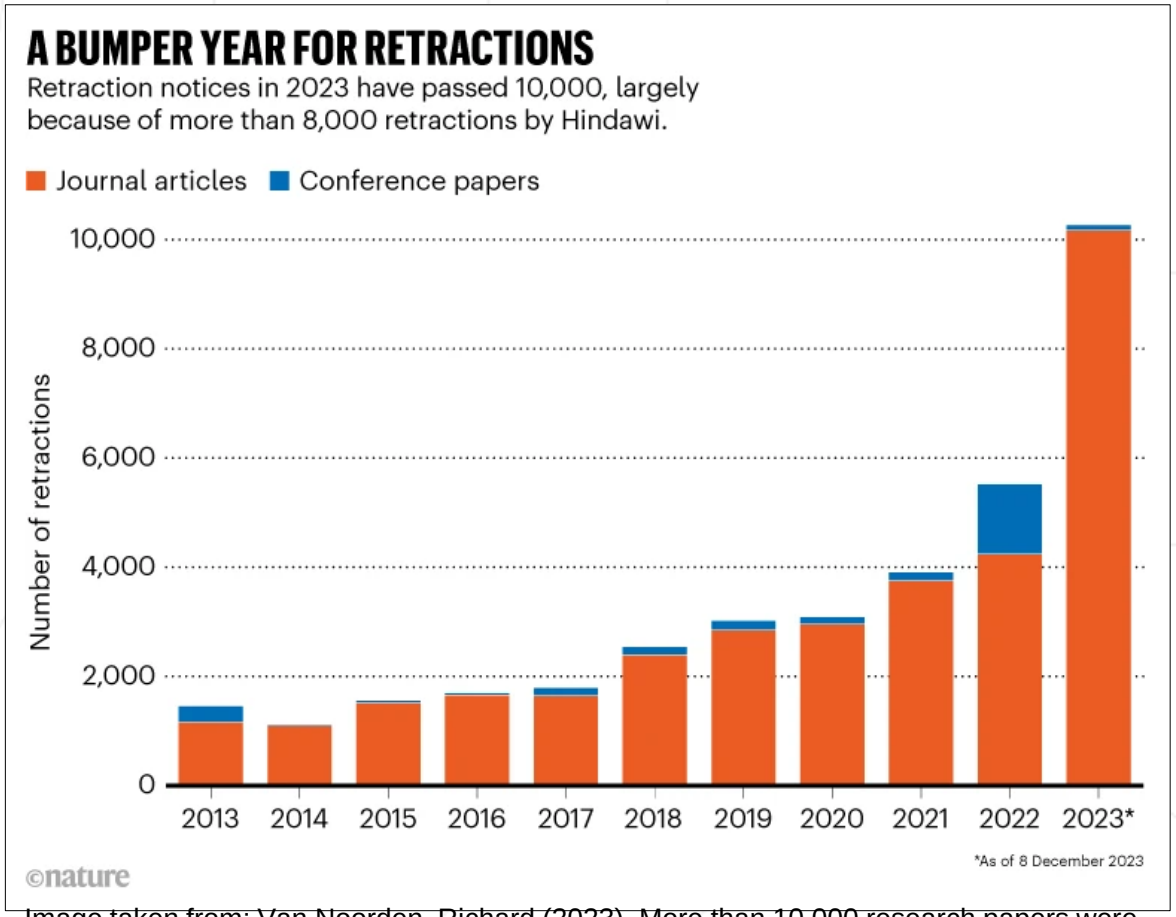


Image taken from: Van Noorden, Richard (2023). More than 10,000 research papers were retracted in 2023 – a new record. *Nature* [online]. DOI: https://doi.org/10.1038/d41586-023-03974-8 [Accessed 2024-02-09].

What do you think:
Why does scientific misconduct occur?

Sources: Stay updated

- Retraction Watch: database
- Committee on Publication Ethics (COPE): Flowcharts
- The Office of Research Integrity
- PubPeer: post-publication peer-review forum
- Wikipedia: List of scientific misconduct incidents
- Věda a výzkum: Akademická Integrita

Useful links:

- STEMskiller: skills set map for early career researchers
- ENAI & FAIT: support and consultation when you suspect academic misconduct
- ČAD: The Czech Association of Doctoral Researchers

Learning outcomes

- Ethics are an integral part of research process
- The most common breaches of academic integrity are fabrication, falsification, and plagiarism
- There might not be a straightforward solution for every situation; norms and requirements differ in time and space – stay updated
- Be aware of your institutional and journal/funding requirements
- To avoid problems:
  - Be meticulous when working with data and resources
  - Aim for replicability of research (dealing with data, reporting research)
  - Stick to the scientific method
  - Respect your colleagues, society, and the environment

Get Assistance

1) Schedule a consultation with us

- Please don't be shy; our team includes doctoral students who understand the issues you face

2) Attend another webinar

3) Explore on your own

- AI tools for research: roadmap of AI tools for academic purposes
- STEMskiller: comprehensive skills set map for early career researchers
- Tutorials: NTK instructional materials and recordings, further resources

4) Stay ahead in your research journey!
Subscribe to our **newsletter** for updates on academic resources, writing support, publishing, research evaluation, and training opportunities.

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Thank you

Questions?