Overview of the European Research Integrity Principles and Guidelines

Tartu 2017
Table of Contents

Preamble ........................................................................................................................................... 3

I Research Integrity Principles ........................................................................................................ 5

II Good Research Practices .............................................................................................................. 6
  2.1. Research Environment ............................................................................................................. 7
  2.2 Training, Supervision and Mentoring ..................................................................................... 8
  2.3 Research Procedures and Safeguards .................................................................................... 9
  2.4 Data Practices and Management ........................................................................................... 10
  2.5 Collaborative Working .......................................................................................................... 11
  2.6 Publication and Dissemination ............................................................................................... 12
  2.7 Reviewing, Evaluating and Editing ....................................................................................... 13

III Violations of Research Integrity ................................................................................................ 14
  3.1 Research Misconduct and other Unacceptable Practices ..................................................... 14
  3.2 Dealing with Violations and Allegations of Misconduct ....................................................... 15
  3.3. Possible sanctions ................................................................................................................. 16

Annex: Resources ............................................................................................................................... 18
Preamble

The purpose of research is to study nature and society to discover and understand the principles and mechanisms of the world. The adamant prerequisite of scientific truth is honesty. Everything concerning research has to be reliable for the researchers themselves and for the society. For research to be able to play its part in the society, it is necessary to pay more attention to the principles of research itself.

To ensure reliability as the essential value of research, many countries have developed guidelines of research integrity. At the same time, the importance of materials put together in international collaboration has increased. The most important ones are The European Charter for Researchers and The Code of Conduct for the Recruitment of Researchers (European Commission 2006), Singapore Statement of Research Integrity (WCRI: 2010), and The Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations (WCRI: 2013).

In Estonia, the first Code of Ethics of Estonian Scientists was drafted in 2002 by the Estonian Academy of Sciences. In the last decade there have been significant changes in research in the world, including Europe: the societal expectations to research have grown; the competition for allocating the societal resources to research has intensified compared to other areas of life; the competition for research funding has increased in the research community; research has become more international.

During the last years, many international research integrity working groups have been established and different framework documents have been developed in the European research community. The most important one is the 2017 revised edition of The European Code of Conduct for Research Integrity put together by the organization connecting the European Academies of Sciences (ALLEA: 2017). The European Code of Conduct for Research Integrity was put together by the working group formed by ALLEA consisting of European renowned research integrity specialists, including professor Raivo Uibo who was representing the Estonian Academy of Sciences. The document describes the main principles of research integrity and good research practice in general. The European Code of Conduct for Research Integrity is becoming the most important document in this field and will be translated into all of the official languages of the European Union.

The other important international initiative is Science Europe’s Survey Report on Research Integrity Practices (Science Europe: 2016), in which the guidelines of implementing research integrity principles have been presented based on experience and suggestions of Science Europe member organisations – the major Research Funding and Research Performing Organisations in Europe.

For better understanding of different international research integrity regulations and documents, the Estonian Research Council has compiled this overview of the European
research integrity principles and their implementation guidelines. It also includes a chapter how to deal with research misconduct.

The research integrity principles come from the European Code of Conduct for Research Integrity (ALLEA: 2017), incl. the chapter on research misconduct and unacceptable practices. This chapter contains also the part of unacceptable practices in reviewing listed by the Council of Science Editors (2012). The implementation guidelines are based on the recommendations of the European Charter for Researchers (European Commission: 2005), and of the Working Group on Research Integrity established by Science Europe (Science Europe: 2015; 2016), which have been adapted according to the Estonian context.

This overview has been put together as a support material to the Estonian research performing and research funding organisations for reviewing and complementing their research integrity related regulations, guidelines and processes in accordance with international agreements.

Following the principles of research integrity and not tolerating research misconduct is the common obligation and task for the whole research community. In performing this task, the Estonian research community will be supported by the Estonian research integrity framework document—The Estonian Code of Conduct for Research Integrity.

The Estonian Research Council formed a working group in March 2016 in order to compile this framework document which would be a guideline to the the research community to maintain the good name of research. The purpose of the document is to support the common knowledge of research integrity and the implementation of its principles in Estonia. The working group consisted of representatives of universities, the Estonian Academy of Sciences, Estonian research institutions, the Centre for Ethics of the University of Tartu, the Ministry of Education and Research, and the Estonian Research Council. The working group studied the research integrity principles of many countries, and discussed the broader matters of research ethics with research institutions and research community. Final compilation of this framework document was supervised by the Centre for Ethics of the University of Tartu. The Estonian Code of Conduct for Research Integrity will be open to join for all research institutions in November 2017.
I Research Integrity Principles

Research Integrity
There is no universally accepted definition of research integrity, although it is generally understood to relate to the performance of research to the highest standards of professionalism and rigour, in an ethically robust manner. The behaviours espoused by ethics and research integrity should ultimately ensure the accuracy and truth of the research record in publications and elsewhere (Science Europe 2015:3).

Research integrity can be defined as commitment of all research performing and financing parties (researchers, research performing organizations and research financing organizations) to the ethical principles and high professional standards essential for the responsible conduct of research.

Good research practices are based on fundamental principles of research integrity. These are in the European Code of Conduct for Research Integrity the following:

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.
II Good Research Practices

In the European Code of Conduct, good research practices are described 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

In the Survey Report on Research Integrity Practices of Science Europe, good research practices are described in Science Europe member organisations in the following contexts:
- Policies and procedures,
- Raising awareness,
- Training,
- Collaboration and mobility

In the European Charter for Researchers research ethics and good research practice have not been regarded separately, instead they have been described (including with short comments) with the set of general principles and requirements of researchers.

Since good research practice has been described in different structure and detail in different documents, the following principles of research integrity will be presented according to the European Code of Conduct for Research Integrity. After each set of principles, corresponding guidelines from the Survey Report of Science Europe and from the European Charter for Researchers have been presented, provided they are not repetitions of the principles but specify them and include recommendations to their implementation.

---

1 In the Code of Conduct the clauses 2.4 Research Procedures and 2.5 Safeguards are separated, however in this document they will be presented together.
2.1. Research Environment

Principles

- RPOs and PFOs promote awareness and ensure a prevailing culture of research integrity.
- RPOs and RFOs demonstrate leadership in providing clear policies and procedures on good research practice and the transparent and proper handling of violations.
- RPOs support proper infrastructure for the management 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.
- RPOs reward open and reproducible practices in hiring and promotion of researchers.

Guidelines

- Research Performing Organizations (RPOs)\(^2\) and Research Funding Organizations (RFOs)\(^3\) should develop a policy on research integrity which includes promotion of good research practice, the types of misconduct which the institution should process, clear procedures for dealing with allegations of research misconduct and a description of the possible sanctions (see below) that can be employed in proven cases of misconduct, and a policy that protects persons from disciplinary action where they raise concerns about alleged misconduct.
- RPOs and RFOs should make a clear statement on their public websites describing the organisation’s policy on research integrity and making it possible to download relevant documents. The information should be available in Estonian and in English and include the name and contact information of the person responsible for the policy within the organisation.
- RPOs and RFOs should aim to make public the outcomes of all proven cases of research misconduct; ideally this should include the names of the researchers involved, but this will need to be considered on a case-by-case basis. They should also support the central collection of data on research integrity, including data on cases – either under investigation or proven.
- RFOs should provide general information and/or guidelines about good research practice in the terms and conditions of grants and contracts. In each of their calls, they should provide information about how research integrity is dealt with during the

---

\(^2\) Research Performing Organizations (RPO) are performers of R&D that undertake (i.e. perform) R&D in each of the main sectors: Business enterprise, Government, Higher education and Private non-profit (Frascati 2015:377).

\(^3\) Research Funding Institutions (RFO) are governmental (ministries, government agencies) or non-governmental (Business enterprise, Private non-profit) units that provide the funds for R&D performance (mugandatud: Frascati 2015:380).
assessment procedure, including what is expected of peer reviewers and evaluation committee members.

- RFOs should provide a clause on research integrity in application forms; in some cases researchers may be required to sign a formal agreement.

2.2 Training, Supervision and Mentoring

Principles

- RPOs ensure that researchers receive rigorous training in research design, methodology and analysis.
- RPOs develop appropriate and adequate training in 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 research integrity.
- Senior researchers, research leaders and supervisors mentor their team members and offer specific guidance and training to properly develop their research activity and to foster a culture of research integrity.

Guidelines

- RPOs and RFOs should actively support training in research integrity. They should encourage responsible bodies to establish train-the-trainer courses to introduce knowledge sharing and harmonisation and to maintain training standards.
- RPOs, and researchers should ensure that other R&D personnel, incl. students who is involved in R&D will receive an appropriate training, guidance and control in research integrity principles. Depending on research field and/or R&D activity, special contractual agreements (data protection, intellectual property protection, conflict of interest, etc.) may be needed as well.
- RPOs should ensure that training in research integrity is mandatory at all levels of higher education and continues throughout a researcher’s career. They have to ensure that supervisors of early-stage researchers are sufficiently expert in supervising research, incl. guiding in research integrity principles and issues.
- Researchers at all career stages should seek to continually improve themselves by regularly updating and expanding their competencies, incl. research integrity awareness and regulations concerning intellectual property rights.
2.3 Research Procedures and Safeguards

**Principles**

- 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 wellconsidered 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.
- 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 safeguard the health, safety and welfare of the community, of collaborators and others connected with their research.
- Researchers make sure that the 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.

**Guidelines**

- The RPOs and RFOs recognize the freedom of researchers to choose approaches to solving particular research problems. However, the RPOs and RFOs have the right and the obligation to ensure that the research is conducted in accordance with some general (e.g. legal, financial, ethical) precepts, incl. their research integrity policy.
- With supporting and controlling mechanisms, the RPOs and RFOs should increase the responsibility of the researchers to be familiar with the national, discipline-specific, or institutional regulations governing research integrity rules and guidelines, regulations of intellectual property rights, and the relevant requirements of RPOs.
- Regardless of discipline, researchers must adopt, and promote in others, high standards of professional conduct. Professional conduct of research implies not only acceptance of, but commitment to research integrity principles in each researcher’s own actions, as well as in their responses to the actions of other researchers.
- The RPOs should clearly define in the academic career model and in the requirements for academic positions that the responsibility for ensuring that students and other inexperienced researchers understand good research practice lies with all members of
the research community, but particularly with Principal Investigators, and Deans/Directors of institutes.

- The RPOs should actively support the self-reflection of researchers, and regular discussions on research integrity issues within the research community of an RPO as well as between them.
- Researchers should ensure, if any aspect of their work is delegated, that the person to whom it is delegated has the competence to carry it out.
- The RPOs and researchers should perform risk analysis with reasonable frequency to determine possible research related threats to people’s health, environment, data, and cyber security. They should specify safeguards activities to anticipate and prevent these threats.

2.4 Data Practices and Management

Principles

- Researchers, RPOs and RFOs ensure appropriate stewardship and curation of all data and research materials, including unpublished ones, with secure preservation for a reasonable period.
- Researchers, RPOs and RFOs 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 Re-usable) for data management.
- Researchers, RPOs and RFOs provide transparency about how to access or make use of their data and research materials.
- Researchers, RPOs and RFOs recognise data as legitimate and citable products of research.
- Researchers, RPOs and RFOs 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.

Guidelines

- RPOs should maintain a policy on the retention of data that includes information on ownership of data; secure and safe disposal of data, incl. after the retention period; responsibility for and access to data; accessibility and ownership when researchers leave the institution, open access, etc.
- Researchers should already in the planning phase of each research project compile a Data Management Plan (DMP) – a written description of which data are expected to acquire or generate during the research project; how those data, incl. sensitive data will be managed, described, analyzed, stored, and protected, incl. data backup; how the IT
costs of data management will be covered; what mechanisms will be used at the end of the project to share and preserve the data, etc.

- RFOs should require a DMP with every funding application. The assessment criteria should include the principle that applications with an open data statement are preferred (if appropriate).

2.5 Collaborative Working

Principles

- 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 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.

Guidelines

- National law and the relevant legislation concerning the research integrity, Intellectual Property protection, and dealing with research misconduct may differ considerably in different countries. Therefore, RFOs and RPOs should ensure that all formal agreements for (International) research collaboration include a section on expectations concerning research integrity and an agreement on the process that would be used if an allegation of research misconduct were made against someone working on the research project.
- RPOs and RFOs should share information at national and international level regarding cases of research misconduct which are under investigation, or regarding proven cases – whether or not sanctions have been imposed.
- RPOs and RFOs should ensure that the mechanisms set out in their research integrity policies for investigating allegations of misconduct include a means of investigating the allegation even if a person leaves the institution, e.g. moves from one institution to another (either within Estonia or between Estonia and another countries), and that both institutions will be involved in pursuing these allegations.
- RPOs should consider, when making appointments to research positions, requiring applicants to state in their application that they have not had an allegation of research misconduct against them upheld (within a previous specified period), and that they are not subject to an ongoing investigation.
2.6 Publication and Dissemination

**Principles**

- 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 popular 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.

**Guidelines**

- **RPOs and RFOs should specify policies and practices what Intellectual Property Rights belong to researchers and/or, where applicable, to their employers or other parties, including external commercial or industrial organisations, as possibly provided for under specific** (e.g. collaboration) **agreements.**
- **RPOs and RFOs should acknowledge co-authorship when evaluating staff/grant applicants, as evidence of a constructive approach to the conduct of research. They should therefore develop strategies, practices and procedures to provide researchers, including early-stage researchers, with the necessary framework conditions so that they can enjoy the right to be recognised and listed and/or quoted, according to their actual contributions, as co-authors of papers, patents, etc, or to publish their own research results independently from their supervisor(s).**
- **Researchers (especially senior researchers) should ensure, in compliance with their contractual arrangements, that the results of their research are disseminated and exploited, e.g. communicated, transferred into other research settings or, if appropriate, commercialised.**
2.7 Reviewing, Evaluating and Editing

**Principles**

- 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.

**Guidelines**

- *RPOs and RFOs should maintain a policy of the reviewer selection process by choosing reviewers whose expertise most closely matches the manuscript’s/application’s topic, and preferably excluding reviewers from the same institution as that of the author(s).*
- *In order to disclose any potential conflict of interest RPOs and RFOs should ask reviewers to decline the assignment if they believe there is a potential conflict of interest, feel unqualified to do the review, or cannot review in a timely manner.*
- *RPOs and RFOs should develop procedures of withdrawing unsuitable reviewers and/or reviews.*
- *RPOs and RFOs should compile and make available to reviewers written instructions on the purpose as well as the expectations for the scope, content, and quality of the review.*
- *RPOs and RFOs should explicitly make clear to researchers/applicants and reviewers in which review system the review process is/shall be performed, and guarantee the anonymity of the review process parties in accordance with the used system.*
- *RPOs and RFOs should allow researchers to suggest preferred reviewers and reviewers they would prefer to be excluded.*
III Violations of Research Integrity

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:

<table>
<thead>
<tr>
<th>Fabrication</th>
<th>is making up results and recording them as if they were real.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falsification</td>
<td>is manipulating research materials, equipment or processes or changing, omitting or suppressing data or results without justification.</td>
</tr>
<tr>
<td>Plagiarism</td>
<td>is using of 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.</td>
</tr>
</tbody>
</table>

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

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

Council of Science Editors (Council of Science Editors: 2012:33) has set out unacceptable practices in reviewing:

- Misrepresenting facts in a review
- Unreasonably delaying the review process
- Unfairly criticizing a competitor’s work
- Breaching the confidentiality of the review
- Proposing changes that appear to merely support the reviewer’s own work or hypotheses
- Making use of confidential information to achieve personal or professional gain
- Using ideas or text from a manuscript under review
- Including personal or ad hominem criticism of the author(s)
- Failing to disclose a conflict of interest that would have excluded the reviewer from the process

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 indifferent 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 that need to be incorporated into any investigation process are set out in the European Code of Conduct.

Integrity

- Investigations are fair, comprehensive and conducted expeditiously, 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 ‘whistleblowers’ 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.

### 3.3. Possible sanctions

In the survey report on research integrity practices, Science Europe has listed **possible sanctions for proven misconduct** which may be applied (according to national employment law, civil law, or professional standards) against individuals or against the organisations which employ them.

**The possible sanctions against an individual employee** may include one or more of:

- A written letter of reprimand, expressing the criticism and/or warning
- A remark in the employee’s file
- Enforced resignation
- Dismissal
- Issuing an order to stay away from the institution for a period of time
- Requiring the individual to hand over or forfeit stolen scientific material, imposition of financial penalties for copyright infringement or other costs associated with personal rights, patenting rights, and competition law
- Repayment of funds, such as for scholarships, grants or other external funding, or of claims for compensation filed by the institute or by a third party.
- Withdrawal of an academic degree
- Withdrawal of an academic title (e.g. ‘Professor’) and/or a teaching qualification/accreditation
- Exclusion from acting as a reviewer
- Exclusion from membership of academic and/or professional bodies (including, for example, denying voting rights, eligibility in elections for academic bodies and committees, or termination of representation on external committees)
Termination of a grant
Removal of the individual from a research project or requirement for additional supervision or oversight
Removal of the individual from supervising a student or all students
Exclusion of the individual from applying for further grants
Retraction or correction of published papers
Removal or time-limited suspension of licence to practice as a health professional (e.g. doctor, nurse, pharmacist, etc.)

Sanctions that may be applied against institutions include, but are not confined to:
Cessation, or even repayment, of research funds to/from the institution
Banning the institution from applying to the funder for a set period of time. The latter may be pertinent where the institution has itself not taken scientific integrity seriously, for example by not having a clear policy, by not following its own procedures, or by lying about a proven case against one of its employees.
Annex: Resources


