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Deliverable title: EU-CONEXUS Research and Innovation code of conduct regarding research integrity
D. coordinating partner: Geoniko Panepistimion Athinon (AUA)
Title of working group: Research Integrity Committee
Type: Public



EU-CONEXUS
Research for Society

Research for Society



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D1.5 EU-CONEXUS Research and Innovation code of conduct regarding research integrity

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The Research Integrity Committee of the EU-CONEXUS RFS

In Task 1.5 “Monitoring and promoting research integrity and ethics” it is foreseen the establishment of a Research Integrity Committee (RIC), that is composed of one representative from the research community of each University. This Task is led by the Geononiko Panepistimion Athinon (AUA: Agricultural University of Athens) and Prof. Eleni Miliou, acting as Chair. The RIC has been established on 12/5/ 2021 (see Table 1) and held seven virtual meetings (kick off on 12/5/2021; 2nd meeting on 9/6/2021; 3rd meeting on 7/9/2021; 4th meeting on 13/10/2021, 5th meeting on 17/11/2021, 6th meeting on 15/12/2021 and 7th meeting on 24/1/2022). After every meeting, minutes were held. The aim of the RIC is to monitor and promote research integrity and ethics within EU-CONEXUS community.

Table 1. Members of the Research Integrity Committee (RIC) of the EU-CONEXUS RFS.

EU-CONEXUS Partner	Name
AUA – Agricultural University of Athens, Greece (Geononiko Panepistimion Athinon)	Eleni Miliou (EM), Chair, Professor, Director of Lab. of Applied Hydrobiology
AUA – Agricultural University of Athens, Greece (Geononiko Panepistimion Athinon)	Sophie Mavrikou (SM), Assistant Professor, Department of Biotechnology
UCV - Catholic University of Valencia, Spain (Fundacion Universidad Catolica De Valencia San Vicente Martir)	Carme Soler (CS), Director of the Veterinary Hospital UCV, Lecturer of the Animal Medicine and Surgery Department, Researcher at CIT-SAM
KU - Klaipeda University, Lithuania (Klaipedos Universitetas)	Erika Zuperkiene (EZ), Associate Professor, Management Department
UNIZD – University of Zadar, Croatia (Sveuciliste u Zadru)	Jelena Ombla (JO), Assistant Professor, Department of Psychology.
UTCB - Technical University of Civil Engineering Bucharest, Romania	Ilinca Nastase (IN), Professor, Faculty of Building Services Engineering

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(Universitatea Tehnica De Constructii Bucuresti)	
UROS - University of Rostock, Germany	Doreen Schwarz (DS), Pro-Rectorate of Research and Transfer of Knowledge (<i>till October 2021</i>) Stephan Redlich (SR), Head of Unit EU Liaison Officer (<i>from November 2021 onwards</i>)
WIT - Waterford Institute of Technology, Ireland	Michel Foley (MF), Research Integrity Officer at WIT
FredU - Frederick University, Cyprus	Charalambos Chasos (ChC), Associate Professor, Mechanical Engineering Department
FredU - Frederick University, Cyprus	Milton Demosthenous (MD), Professor, Director of the Laboratory of Mechanics
LRUniv - La Rochelle Université, France	Aurelia Kuga (AK), EU-CONEXUS Junior Project Manager (temporarily)

The EU-CONEXUS-RFS RIC believes and support the free and unimpeded research activity, regardless of political, economic or other affiliations, and that research is an individual right of every researcher. At the same time, it is a social good, which promotes human knowledge, innovation, the educational process and, potentially, contributes to improving health, quality of life and the well-being of society as a whole.

In the RIC 2nd and 3rd meeting it has been decided that D1.5 will reflect the EU-CONEXUS policy on Code of Conduct Research Integrity (CCRI) that may reflect the EU-CONEXUS alliance Partners Policy as a base including all disciplinary and interdisciplinary research (WP2), as well as research infrastructure and innovation (WP4, WP6), related to "Smart Urban Coastal Sustainability" (SUCS). The basic document that was used to build the EU-CONEXUS CCRI is the "European code of conduct for research integrity" (2017).



1. Research Integrity Principles

2.1. Research Integrity

Research integrity can be broadly defined as commitment of all research performing and financing parties to the ethical principles and high professional standards essential for the responsible conduct of research. The above definition condenses and summarizes the following definitions of Research Integrity that are used by numerous Universities and Research Organisations:

Research Integrity:

“means conducting research in such a way that allows others to have confidence and trust in the methods and the findings of the research. It relates both to the scientific integrity of conducted research and to the professional integrity of researchers” (University of Edinburgh, 2021)¹.

“is a broad concept covering a number of principles and sets of practice in the conduct of research. These principles and practices are intended to ensure that researchers are ethically responsible and methodologically rigorous in the context of creating scholarly inquiry and the creation of knowledge. Research integrity is distinguished from simple error through the intentionality of the researcher to knowingly violate the norms and standards of good scholarly inquiry. Research integrity violations are not honest mistakes” (Encyclopedia of Quality of Life and Well-Being Research, 2014)².

“all of the rules and values that must govern research in order to ensure its honesty and scientific rigor” (INSERM)³.

“deals with "best practices" or rules of professional practice of researchers and stems from an OECD report of 2007” (Wikipedia)⁴.

¹ See: <https://www.ed.ac.uk/research-office/research-integrity/what-is-research-integrity>. Accessed on 3/1/2022.

² See: https://link.springer.com/referenceworkentry/10.1007%2F978-94-007-0753-5_2486. Accessed on 4/1/2022.

³ See: <https://www.inserm.fr/en/our-research/scientific-integrity/>. Accessed on 4/1/2022.

⁴ See: https://en.wikipedia.org/wiki/Scientific_integrity. Accessed on 4/1/2022.



Good research practices are based on **fundamental principles** of research integrity and according to the European Code of Conduct for Research Integrity they are as follows:

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.

2.2. Good Research Practices

In the European Code of Conduct for Research Integrity (2017), 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

Each context is described in detail below with Guidelines on Good Research Practices (hereinafter - Guidelines) prepared by Research Integrity Committee (hereinafter - RIC) for EU-CONEXUS European University. Guidelines are based on the principles of European Code of Conduct and are intended to



assist the EU-CONEXUS academic community in assessing compliance with research ethics by ensuring compliance with the principles of academic integrity.

2.2.1. Research Environment

Principles

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

Guidelines

- *It is recommended that EU-CONEXUS institutions to be provided with Institutional Ethics Committee (hereinafter - the Committee). The competence of the members of the Committee must cover the main scientific disciplines of certain institution and studies and typical ethical issues related to the field of science. The main function of the Committee is to assess the compliance of the planned research with the research ethics before the start of the research. However, the Committee may also provide for supervisory and advisory functions. The activities of this Committee must be based on ethical principles (eg objectivity, accountability, transparency). Information on a member of the Committee must be provided on the website of the research and study institution.*
- *The Committee should provide general information and/or guidelines about good research practice in the terms and conditions of grants and contracts. In each of the calls, provides information about how research integrity is dealt with during the assessment procedure, including what is expected of peer reviewers and evaluation committee members.*



- *The Committee should provide a clause on research integrity in application forms; in some cases, researchers may be required to sign a formal agreement.*
- *The RIC should make a clear statement on public EU-CONEXUS website describing its policy on research integrity and making it possible to download relevant documents. The information should be in English and the native languages of partner Universities and include the name and contact information of the person responsible for the policy within the Consortium.*
- *Guidelines emphasize personal responsibility of each researcher considering awareness of ethical standards of their own professional behavior in science, respecting for the fundamental human rights, dignity and values all people.*
- *Researcher needs to be tolerant to existing differences and needs to eliminate every observable sign of discrimination in his environment.*
- *Researcher should strive to achieve a high level of competence in his work.*
- *Researcher should encourage ethical behavior in their students, associates and colleagues.*
- *Researcher is planning, conducting and reporting on his or her own research in accordance with known standards of scientific competence and research ethics. The falsification of scientific data or any type of plagiarism is not allowed.*

2.2.2 Training, Supervision and Mentoring

Principles

- ✓ Research institutions ensure that researchers receive rigorous training in research design, methodology and analysis.
- ✓ Research institutions 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

- *For EU Conexus, the effective education⁵ of all researchers from junior to the most senior level in research integrity is a central component for long-term globally successful research.*
- *The key for a fruitful implementation of principles and practices of research integrity in research institutions and organisations and for the development of an awareness of research integrity among each individual researcher in research institutions and organisations is based on a positive and continuous approach to and confrontation with research integrity issues.*
- *The establishment of relevant education programmes for all researchers across the career path contributes to embed the principles and practices of research integrity sustainable into the culture of research. Education programmes are based on the elements training, supervision and mentoring and is aimed to the requirements of each career level.*
- *The researchers are introduced to the relevant codes and regulations. This includes among others the areas research design, ethics, methodology, analysis and data management, management of copyright and intellectual property.*
- *A comprehensive and transparent design of the educational offers increase the acceptance, the active awareness and the open dialogue in the context of research integrity issues.*
- *Supervisors and mentors play another key role in living research integrity. Because of their proximity to early career researchers, they have a special responsibility and exemplary role. Accordingly, supervisors and mentors must also be trained accordingly.*

2.2.3 Research Procedures

Principles

- ✓ Researchers take into account the state-of-the-art in developing research ideas.

⁵ Training aimed at developing the intellectual, moral and affective capacity of people in accordance with the culture and the norms of coexistence of the society to which they belong. At the same time, is the transmission of knowledge to a person so that he or she acquires a certain training.

Education is the process of facilitating learning or the acquisition of knowledge, as well as skills, values, beliefs and habits. The educational process occurs through research, debate, storytelling, discussion, teaching, example, and training in general. Education is not only produced through the word, it is also present in all our actions, feelings and attitudes. Education is generally carried out under the direction of authority figures, but students can also educate themselves in a process called self-taught learning. The set of people who have an active role in education are called the Educational Community. Any experience that has a formative effect on the way one thinks, feels, or acts can be considered educational.



- ✓ Researcher's 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.

Guidelines

- *EU-CONEXUS recognize the freedom of researchers to choose approaches to solving particular research problems. However, the Committee has the right and the obligation to ensure that the research is conducted in accordance with some general (e.g. legal, financial, ethical) precepts.*
- *With supporting and controlling mechanisms, the Committee 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 the institutions.*
- *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.*
- *EU-CONEXUS RIC clearly defines 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.*
- *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.*
- *More guidelines are given in Appendix I*



2.2.4 Safeguards

Principles

- ✓ Researchers comply with codes and regulations relevant to their discipline, as well as local Laws and European Union directives.
- ✓ 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, based on risk assessment where it is applicable.

Guidelines

- *EU-CONEXUS institutions 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.*
- *Researchers should follow the Laboratory Safety Manual in the EU-CONEXUS website.*
- *EU-CONEXUS RIC supports the implementation of research integrity policies and processes in a harmonised manner across the research performing organisations.*
- *EU-CONEXUS RIC monitors international developments and policy in the area of research integrity, and periodically review the integrity policy.*
- *EU-CONEXUS RIC communicates the importance of research integrity to research community and to the general public;*
- *EU-CONEXUS RIC shares experiences on the number and type of instances of research misconduct that have been dealt with through formal mechanisms within the institutions;*



- *Researchers should apply the **3Rs principles of Replacement, Reduction, Refinement**, which were first described by William Russell & Rex Burch in 1959. Specifically, researchers should ensure that any new procedures or improvements in techniques that avoid or replace animal use, reduce the number of animals needed for research, testing or diagnosis, or reduce the suffering arising from scientific procedures or husbandry and care are communicated to other researchers and to veterinary and animal care staff, as appropriate.*
- *When doing research with animals as subjects as few experimental animals as possible are used in research.*
- *Animals must be treated humanely in research.*
- *Researchers and research institutions who use animals in scientific purposes are responsible for their treatment during keeping in the laboratory or other institution spaces. Each animal should be taken care of properly, according to their regular living conditions.*
- *Researchers and research institutions must take all possible measures to eliminate unpleasant living conditions, infections, diseases and pain.*
- *Experimental procedures that cause pain, stress or deprivation in animals of any kind are used only when there are no other ways and methods to arrive at scientific knowledge that is of exceptional value.*
- *While doing research with animals as subjects, researchers should be competent in a way that they are familiar with characteristics of certain species. It should be borne in mind that some animal species suffer less than others, so whenever possible researchers must choose members of the species that are more resistant to pain and unpleasant treatment.*
- *Competence of researcher is essential considering that appropriate experimental design can be starting point that is ensuring less suffering for the animals.*

2.2.5 Data Practices and Management

Principles

- ✓ Researchers and research institutions ensure appropriate stewardship and curation of all data and research materials, including unpublished ones, with secure preservation for a reasonable period.



- ✓ Researchers and research institutions 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 and research institutions provide transparency about how to access or make use of their data and research materials.
- ✓ Researchers and research institutions recognise data as legitimate and citable products of research.
- ✓ Researchers and research institutions 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

- *EU-CONEXUS 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.*
- *The Committee 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).*
- *Researchers and research institutions should perform research according to scientific and ethical values. Each measurement procedure, evaluation and diagnostics as well as every scientific report, must be based on valid procedures and techniques.*



- *Only acceptable data gathering procedure is one that provides necessary and sufficient data for interpretation, and is consistent with the purpose for which it is are used.*
- *Researchers must be familiar with the measurement characteristics of the procedures and techniques used. Researchers are obliged to take appropriate measures to prevent misuse and misinterpretation of measurement results.*
- *Researchers and research institutions must properly and in accordance with the professional regulations store documentation on their own professional or scientific work. Only by doing so it is possible to achieve an insight into the results of work, it is possible to replicate the findings of specific research, as well as to perform a scientific verification of results presented. Researchers and research institutions are responsible for organizing and storing documentation according to the rules of the profession. It is recommended that the data be stored for at least 5 years, and that longer storage periods be required in the case provided for in con agreements, funded research projects and professional assignments.*
- *When interpreting the measurement results, researchers must take into account all the characteristics of the procedure or technique used, as well as the characteristics of the measurement subject. By doing so, the possibility of misinterpretation of the achieved results is reduced to minimum. Researchers should be specifically careful to restraints in interpretation. Integrity and safety of measurement procedures are crucial. Research institutions are obliged to ensure proper research resources for their scientific staff.*
- *Research institutions and researchers are responsible for the nature of the collected data as well as possible use, misuse, and protection of scientific data. If data gathering procedure concerns live subjects (animals, human participants) the informed consent of the regulating institutions/persons involved must be obtained for each data collection, respecting for fundamental ethical principles.*

2.2.6 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, EU-CONEXUS RIC 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.*
- *EU-CONEXUS RIC 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.*
- *The Committees of the EU-CONEXUS institutions 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 the same Country or in another Country), and that both institutions will be involved in pursuing these allegations.*
- *EU-CONEXUS institutions 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.*



2.2.7 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

- *Publication and Dissemination will be central to the mission of EU-CONEXUS.*
- *Authorship in a publication is the collective decision of all authors. For the clarification of Authorship, the Vancouver recommendations could be adopted. According to them, four criteria must be fulfilled for someone to qualify as a co-author of a paper:*



- *The person in question must have made a substantial contribution to the conception or design of the work; or to the acquisition, analysis, or interpretation of data for the work.*
- *She or he must have been involved in drafting the work or revising it critically for important intellectual content.*
- *She or he must have approved the version of the manuscript to be published.*
- *She or he must agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work*
- *For describing the roles and responsibilities of each co-author, CRediT (Contributor Roles Taxonomy) is recommended as a tool that can be used to represent the roles typically played by contributors to scientific scholarly output.*
- *Authors acknowledge important work and intellectual contributions of others in case that they do not meet the criteria for authorship.*
- *The Committee 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.*
- *Intellectual Property Rights defined in each institution and in specific agreements (where applicable) should be taken into consideration prior to publishing.*
- *EU-CONEXUS institutions 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.*

2.2.8 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

- *EU-CONEXUS 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 EU-CONEXUS 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.*
- *EU-CONEXUS should develop procedures of withdrawing unsuitable reviewers and/or reviews.*
- *EU-CONEXUS 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.*
- *EU-CONEXUS should explicitly make clear to researchers/applicants and reviewers in which review system (including the stages of review and evaluation criteria if applicable) the review*

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process is/shall be performed, and guarantee the anonymity of the review process parties in accordance with the used system.

- *EU-CONEXUS should allow researchers to suggest preferred reviewers and reviewers they would prefer to be excluded.*



2. 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:

- ✦ 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 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.

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').

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.

The Organisation of Economic Co-operation and Development (OECD) types of misconduct are adopted in the present document as illustrated in Table 2.

Table 2. Description of types of misconduct by scientists and scholars according to OECD.

Core "Research Misconduct"	Research practice misconduct
<ul style="list-style-type: none"> • Fabrication of data • Falsification of data • Plagiarism FFP normally includes: <ul style="list-style-type: none"> - Selectively excluding data from analysis - Misinterpreting data to obtain desired results (including inappropriate use of statistical methods) - Doctoring images in publications - Producing false data or results under pressure from a sponsor 	<ul style="list-style-type: none"> - Using inappropriate (e.g., harmful or dangerous) research methods - Poor research design - Experimental, analytical, computational errors - Violation of human subject protocols - Abuse of laboratory animals
Data-related misconduct	Publication-related misconduct
<ul style="list-style-type: none"> - Not preserving primary data - Bad data management, storage - Withholding data from the scientific community NB: The above applies to physical research materials as well.	<ul style="list-style-type: none"> - Claiming undeserved authorship - Denying authorship to contributors - Artificially proliferating publications ("salami-slicing") - Failure to correct the publication record
Personal misconduct in the research setting	Financial and other misconduct
<ul style="list-style-type: none"> - Inappropriate personal behaviour, harassment - Inadequate mentoring, counselling of students 	<ul style="list-style-type: none"> - Peer review abuse e.g., non-disclosure of conflict of interest, unfairly holding up a rival's publication



- Insensitivity to social or cultural norms	- Misrepresenting credentials or publication record - Misuse of research funds for unauthorised purchases or for personal gain - Making an unsubstantiated or malicious misconduct allegation
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Source: OECD 2007. Best Practices for Ensuring Scientific Integrity and Preventing Misconduct.

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 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 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 '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.

4. Next steps

The next steps of the RIC are to evolve into an advisory body that will continuously support the partners of the EU-CONEXUS-Alliance for Research Integrity issues. Its members will foster Research Integrity and will be mandated to minimise research misconduct and questionable research practices and will promote the need, actions and activities to nurture a supportive environment throughout the EU-CONEXUS consortium.

RIC will monitor the compliance of the projects' activities and its outcomes to high ethical standards. It will work closely with the data management task force (Task 1.4) that will guarantee the sound management of all data gathered and the ethical management of these data. RIC will also collaborate with any equivalent Committees that operate in the EU-CONEXUS partners, including RI Committees, bioethics Committees etc.

The basic principles for the operation of the EU-CONEXUS RIC will follow the European Code of Conduct (2017), aiming to promote scientific knowledge in accordance with internationally accepted scientific theories or the elaboration of new theories, capable of being recognized by the international scientific community.

A statement on the EU-CONEXUS research integrity policy will be uploaded on the web site of the project.

Adequate training in research integrity will be provided to researchers at all career stages by qualified trainers. Training research integrity could also be incorporated in various EU-CONEXUS activities, as Research Hours, interdisciplinary Ph.D. Summer Camps, etc.



APPENDIX I

Procedures on design, carry out, analyse and document research, use of research funds, publishing of results, confidentiality of data or findings.

The Procedures on Research Design section describes the path through which the researchers develop the overall purpose and aims of their study as well as provide a brief synopsis of the study procedures and/or interventions. Additionally, the research design and methodology section also indicate how the research outcome will be achieved in line with the objective of the study. It includes the research methodology of the study from the research strategy, sampling methods or criteria for subjects' selection, data collection and analysis methods to the publication of the results. Consequently, the purpose of this methodology is to comply with the research plan and target set by the researcher.

1. Selection of a research design type

Several types of research design can be selected depending either on qualitative or quantitative approaches.

1.1. Quantitative research designs

This type of research design can be divided into four main sub-categories. Experimental and quasi-experimental designs permit the investigation of cause-and-effect relationships, whereas descriptive and correlational designs test variables measurements and describe relationships between them. With these two subgroups researchers are able to acquire a picture of the actual trends, characteristics and relationships, but conclusions about cause and effect cannot be exported.

1.2. Qualitative research designs

The approach of qualitative designs focuses on gaining rich, detailed knowledge of a specific situation or phenomenon, allowing more creative and flexible decisions during the research design.



Some common types of qualitative design are case studies, ethnographies, grounded theories, and phenomenologies. Most of them have similar approaches with regard to data collection, but follow different paths during data analysis.

2. Population and sampling method identification

One of the main factors that can strongly affect the outcome of a research project is the clear definition of the orientation the research will focus on, and how the selection process of participants or subjects will be performed.

2.1. Defining the population

A population is an entire group from which conclusions will be made and it can be made up of plants, animals, organizations, texts, countries, etc. In the social sciences, it most often refers to a group of people. A precise definition of the population facilitates the collection of a representative sample.

2.2. Sampling methods

In general data collection from every individual of a population is not plausible. Thus, data are collected from a sample that is a smaller group of individuals. Two main approaches can be followed. Probability sampling by utilizing random methods that allow strong statistical inferences about a very small and accessible population. Non-probability sampling where the sample is selected in a non-random way but there is more risk of bias. The researcher should make efforts to collect a sample that's as representative as possible of the general population.

In some types of qualitative designs such as ethnographies or case studies, sampling may not be necessary for extracting conclusions, since the aim is the deep understanding of a specific context, thus the aim will be the collection of as much data as possible about the context of the study.

3. Data collection methods

Data collection methodologies allow the direct measurement of variables and gathering information. A researcher can either choose to use one or several data collection methods in the same study. By conducting surveys (questionnaires and interviews) and posing direct questions to



people researchers can collect data about opinions, behaviors, experiences, and characteristics. In addition, when a researcher chooses to make observations unobtrusive data collection can be obtained by characteristics, behaviors, or social interactions observations without relying on self-reporting. Secondary data that other researchers already collected can also be used i.e., datasets from government surveys or previous studies on the topic.

In addition, a systematic plan of data collection that's consistent, accurate, and unbiased is particularly significant in quantitative research, especially in the case of a precise definition of the variables is needed for assuring the reliability and validity of the measurements.

3.1. Sampling procedures

A concrete plan is necessary for the determination of the methodology regarding the steps a researcher must follow in order to contact and recruit a selected sample. This procedure demands making decisions about the minimum sample size, inclusion and exclusion criteria, etc.

4. Data collection methods

Data collection methodologies allow the direct measurement of variables and gathering information. A researcher can either choose to use one or several data collection methods in the same study. By conducting surveys (questionnaires and interviews) and posing direct questions to people researchers can collect data about opinions, behaviors, experiences, and characteristics. In addition, when a researcher chooses to make observations unobtrusive data collection can be obtained by characteristics, behaviors, or social interactions observations without relying on self-reporting. Secondary data that other researchers already collected can also be used i.e., datasets from government surveys or previous studies on the topic.

In addition, a systematic plan of data collection that's consistent, accurate, and unbiased is particularly significant in quantitative research, especially in the case of a precise definition of the variables is needed for assuring the reliability and validity of the measurements.

4.1. Sampling procedures



A concrete plan is necessary for the determination of the methodology regarding the steps a researcher must follow in order to contact and recruit a selected sample. This procedure demands making decisions about the minimum sample size, inclusion and exclusion criteria, etc.

4.2. Data management

A data management plan is also mandatory for data organization and storage. Anonymity and security of sensitive data (by frequent back-ups) must be ensured. A proper data organization allows the rapid data analysis as well as it will provide a helpful tool to other researchers to validate and add to your findings.

5. Data analysis strategies

The last step of the research design procedure is choosing the appropriate plan for analyzing the data. In quantitative data analysis, researchers use several statistical analysis forms in order to summarize the sample data, make estimations, and test hypotheses. With descriptive statistics, valuable information about the sample data can be acquired regarding the distribution, the central tendency, and the variability depending on the level of measurement of the variables. On the other hand, with inferential statistics estimations about the sample data population and hypotheses testing can be performed. For example, associations between two or more variables can be examined by regression and correlation tests, while differences in the outcomes of different groups can be tested by comparison tests (such as t-tests and ANOVAs).

In case of qualitative research data analysis where complicated information and ideas are presented, interpretation and pattern identification can be obtained by thematic analysis (coding and organizing the data to identify key themes) and discourse analysis (analysis of different levels of communication).

6. Use of research funds

The Research Services Office of the university is authorized to receive funding in support of Research and to record the funding in a unique Research Fund within the University financial system in all of the following cases:



- i) the proposed project is in accordance with the definition of Research and the funding is expendable and it was received internally or from a third party as a result of a proposal, competition, or agreement;
- ii) Reporting to a third party is required with respect to the attainment of identified milestones or deliverables, specific outcomes from Research activities, or actual expenditures according to types or classification or budgets;
- iii) The funding is for the recovery of eligible costs associated with Funded Research activities, including capital asset, infrastructure operating costs, and health region service costs (if applicable), etc.; or
- iv) The funding is a donation used to match funding provided under a Funded Research Agreement, where the terms of the Funded Research Agreement specify that the donation cannot be used for another purpose.
- v) Donations for Research that are not specifically directed by the donor to a particular academic unit within the University, or directed for use on a topic normally undertaken by a particular academic unit, will be brought to the attention of RSEO for a determination of the appropriate disposition of the funding in accordance with the donor's wishes.

7. Publishing of results

7.1. Principles of publication and access

All the planned and ongoing research projects and patent application processes must be kept confidential. The research outputs should be published, with exception when confidentiality or contractual obligations do not allow publication. During the end of the project and publication of the respective results, third parties expressing the desire to reproduce the experiments for verifying the results will have access to the data required. The researchers are recommended to publish their research outcomes according to the "principle of open access"; in compliance with the requirements of the "Open Access Policy. Researchers are advised not to divide up their results in order to publish them in separate publications with the aim to increase their published papers.



7.2. Author Information

All individuals who have contributed as authors in scientific publications must be acknowledged. As authors are considered all the individuals who have an essential contribution to the planning, execution, control or evaluation of the research work; participate in the manuscript draft; and give their approval of the final version of the manuscript. In the case of individuals who meet these criteria only partially they should be mentioned in the "Acknowledgements" part. Moreover, individuals who have a role at the managing function or financial and organizational support to the project are not entitled to be cited as authors. The same applies to honorary or courtesy authorships.

The order of authors must be determined in a transparent manner by the conventions of the respective scientific community or determined in part by the editors. Unless otherwise specified by the rules of the journals, footnotes or the acknowledgments section can be used to this effect. The questions concerning authorship, participation in the drafting of the manuscript and author order must be discussed at an early stage among all individuals who meet at least one of the criteria set forth. The discussion must be resumed if more individuals join the project, or if the tasks of the individuals already involved in the project have changed significantly. These questions must be definitively settled upon completion of the manuscript.

7.3. References, plagiarism

All sources utilized must be cited in the published manuscript. Additionally, the students must follow the rules regarding plagiarism.

7.4. Institutional affiliation information

When a research study that was conducted solely or partially at the UNIVERSITY is published, the UNIVERSITY must be mentioned at the affiliations section. This institutional affiliation information must conform to the uniform UNIVERSITY'S address format. The university's professors who concurrently work in another institution of the university's domain, double professors and members of common institutes should indicate both affiliations in publications.



7.5. Data Protection

Due to the emergence of electronic databases, several scientific researchers are storing their data on their computer networks. However, data protection is an issue for both paper- and computer-based data. The best way to protect data is to limit the number of individuals who have access to the data. However, this is a complex issue and employing a multifaceted security approach is the best way to ensure that your data is protected.

In order to maintain the integrity of stored data, project data should be protected from physical damage as well as from tampering, loss, or theft. This is best done by limiting access to it. The principal investigator (PI) should decide which project members are authorized to access and manage the stored data. Privacy and anonymity can be assured by replacing names and other information with encoded identifiers, with the encoding key kept in a different secure location. The best approach to protect data may be to fully educate all members of the research team about data protection procedures.

Theft and hacking are particular concerns with electronic data. Many research projects involve the collection and maintenance of human subjects' data and other confidential records that could become the target of hackers. The costs of reproducing, restoring, or replacing stolen data and the length of recovery time in the event of a theft highlight the need for protecting the computer system and the integrity of the data.

Several precautions may assure the protection of electronic data such as: Protecting access to data, Use unique user IDs and passwords that cannot be easily guessed, Change passwords regularly to ensure that only current project members can access data, Provide access to data files through a centralized process, Evaluate and limit administrator access rights, Ensure that outside wireless devices cannot access your system's network, Keep updated anti-virus protection on every computer, Maintain up-to-date versions of all software and media storage devices, use of a firewall, use of intrusion detection software to monitor access, Protecting data integrity, Record the original creation date and time for files on the systems, Use encryption, electronic signatures, or watermarking to keep track of authorship and changes made to data files, Regularly back up electronic data files (both on and offsite) and create both hard and soft copies, Ensure that data are



properly destroyed. **Third-Party Data Protection** Many research institutions have offices for information technology that work with the PI to assess the project's needs and develop a data protection protocol. For PIs without such an office, contracting with an outside information technology firm or hiring a project member to specifically focus on data protection and maintenance may be necessary. Finally, database software programs often include features that help with data protection.

7.6. Data Retention

There is no set amount of time for which data should be stored. In some cases, the time period is at the discretion of the PIs; however, many sponsor institutions require that data be retained for a minimum number of years after the last expenditure report. Once the minimum storage period has been met, the PI must decide whether to continue storing the data. Although data can be kept indefinitely, a PI must evaluate the benefits and risks of extended storage. On the one hand, one never knows when data might be needed. On the other hand, continued storage of confidential data increases the risk of possible violation. The monetary cost of retention and security are additional concerns. **Destroying Data** When the decision has been made to end data storage, data should be thoroughly and completely destroyed. Effective data destruction ensures that information cannot be extracted or reconstructed. Many document storage companies offer onsite shredding and secure destruction of written and electronic records.

7.7. Data Analysis

Data analysis is the way raw data is chosen, evaluated, and expressed as the form of data analysis meaningful content. For many researchers, it would be time consuming and must be appropriate for the undesirable to use all of the data collected over the course of a study. The form of analysis the data analysis methods should come from a particular project's functions and needs. Additional considerations might include the research setting (e.g., controlled laboratory vs. field site) or the type of research (e.g., qualitative or quantitative). With few exceptions, guidelines and objectives for data analysis should be determined before a project begins.

Team Members' Responsibility can be delegated to a biostatistical about data analysis services department or to a project's statistician. If an outside statistical service is hired to do the analysis,



the PI should work with the agency to ensure that the agency understands and complies with that project's data management protocol. While some members of the research team will be minimally involved with data analysis, they should all understand the data analysis plan and be able to interpret the results within the context of the study.

7.7.1. Data Analysis Considerations

Potential pitfalls that can invalidate or lessen the integrity of the study's data must be avoided. The researcher should take into account: the methods for analysis, when planning data analyses accepted standards for the particular area of study should be followed, significance does not imply causation or establish clinical significance or practical importance, usage of data (include or exclude outliers, what to do when data are missing or incomplete, when to appropriately alter or amend collected data, how to display or organize data in a meaningful way).

Data analysis becomes "Intentional falsification or fabrication of data or results" when the following are met:

- forging: inventing some or all of the reported research data or reporting experiments never performed
- cooking: retaining only those results that fit the hypothesis
- trimming: the unreasonable smoothing of irregularities to make the data look more accurate and precise

However, in some instances the amending or excluding of data is appropriate within data management: after instrument problems or malfunctions, after loss of or change in subjects or specimens, after any interruptions or deviations in procedure



7.8. Data Sharing and Reporting

As part of the scientific process, data are expected to be shared and reported. This serves several purposes, such as acknowledging a study's implications, contributing to a field of study, and stimulating new ideas.

Data sharing usually occurs once a study has been completed. Data reporting includes discussion of the data, the data analysis, and the authorship of a project, especially in the context of a particular scientific field.

Data sharing and reporting are typically accomplished by publishing results in a scientific journal or establishing a patent on a product. Sharing Data Prior to Publication Before publication, there is often no obligation to share any preliminary data that have been collected. In fact, sharing at this stage is sometimes discouraged because the implications for a set of data may not be understood while a project is still in progress, and there is a fear that less scrupulous researchers will use shared research results for their own gain. However, in some cases preliminary data should be shared immediately with the public and/or other researchers since it would be of immediate benefit. In addition, many researchers find it worthwhile to present preliminary findings in a conference setting before the study is complete to inform peers about their forthcoming research.

Sharing Data After Publication After a project's research has been published or patented, any information related to the project should be considered open data. Other researchers may request raw data or miscellaneous information related to the project in order to verify the published data or to further their own research project. However, each project should evaluate its ability to share raw data in terms of specific needs and budget constraints. Obligation to Report PIs should be aware of the various guidelines and restrictions that may apply to the dissemination of their research. There are usually stipulations, specific to the funding agency or sponsor institution, describing when and how results should be shared.



7.9. Managing Confidentiality

All individuals conducting research involving human participants have a duty to keep their participants' information confidential. This duty entails that researcher implement safeguards to protect the confidentiality of their participants throughout all stages of the research cycle: Recruitment, initial collection of information/data, use of and analysis of the information/data collected, dissemination of the findings, storage and retention of information; and disposal of records or devices on which information is stored.

The types of safeguards that may be put into place in order to help protect the confidentiality and privacy of research participants are: physical safeguards (secure the location of private and sensitive information from unauthorized personnel), administrative safeguards (protect the privacy of participants' information by clearly delineating who does and who does not have access to participants' information, and in what ways), technical safeguards (protect the privacy of participants), and research design safeguards (measures intrinsic to the research design of a project that help protect the privacy of research participants).

There are three circumstances where the duty to protect the privacy and confidentiality of participants' information may be outweighed by other competing factors:

- where adopting measures to protect the privacy of participants is inimical to the integrity of the research design;
- where researchers are under a legal responsibility or a duty to report participants' information to the authorities;
- and where respecting the confidentiality of participants' information undermines the autonomy of research participants.



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