NATIONAL SCIENCE CENTRE

Annex no 1 to Resolution No 39/2016 of the NCN Council of 11 May, 2016

The Code of the National Science Centre on Research Integrity and Applying for Research Funding

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Introduction – basic principles of research integrity

It is understandable that the increased public financing of scientific research is matched by growing social interest in the manner in which research is being conducted. To ensure that research contributes to a significant progress in a specific field, integrity is a must. Shortcomings in research result in a waste of funds allocated to research projects. Following many countries, where such regulations have been adopted, the National Science Centre (hereinafter: Centre) adopts this Code which outlines and briefly discusses the rules of integrity in scientific research. Generally, these rules are known and respected by scientists submitting their projects to the Centre. Still, sometimes we receive projects which – due to applicant's insufficient knowledge or for other reasons – are affected by shortcomings in terms of research integrity.

The Centre cannot allow such omissions. The compliance with the Code is a precondition for awarding funds to research projects, while an infringement of its provisions will result in imposing relevant sanctions. This Code covers basic rules of research integrity – to present their exhaustive list is neither possible, nor necessary. This document is to reinforce the attitude founded on research integrity, which should be the bedrock of any research activity.

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The Code consists of three parts. The first one contains a discussion of possible methods of applying good practices and principles of integrity to scientific research, starting from the stage of planning, to implementation, to the publication of results. The research integrity rules give rise to researcher's obligations both when applying for funds and with respect to the institutions that carry out the financed research (e.g. in terms of results documentation). Particular attention has been paid to the issue of authorship and scientific collaboration, as well as conflicts of interests.

The second chapter is dedicated to the issues of teaching, training and supervision in connection with research integrity rules. We firmly believe that the dissemination of research integrity culture must take place by ensuring high quality of the research itself on the one hand and by introducing generally accepted good research practices on the other.
In this context, teaching, training and supervision are indispensable for the development of the culture of research integrity.

The third chapter deals with the lack of research integrity and possible forms of abuse in this respect, as well as sanctions the Centre may impose on the researcher and the institution if the lack of research integrity is found in the application or at the subsequent stages of implementation of the project, including the presentation of research results.

These issues, governed by this Code, rely on basic rules of research integrity described in numerous documents (including *Singapore Statement on Research Integrity*[1], *European Code of Conduct for Research Integrity*[2] etc.). We refer to these rules in this document, emphasizing, after the so-called Singapore Declaration (signed also by Poland), that "*The value and benefits of research are vitally dependent on the integrity of research*. *While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also*

[1] *Singapore Statement on Research Integrity* , 2nd Conference on Research Integrity, 22 September 2010 r. [text available at: https://wcrif.org/statement, accessed on: 11.08.2021].
[2] European Science Foundation (ESF), All European Academies (ALLEA), *The European Code of Conduct for Research Integrity*, March 2011, revised in 2017 [text available at: https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf, accessed 11.08.2021

principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken"[3]. These principles are:

- *Honesty in every aspect of research* – researchers should act honestly when presenting their hypotheses, research methods, analyses, results and their interpretations. The principle of honesty must be complied with in every aspect of scientific research: when recognizing work by other researchers, applying for funds, assessing the results of other researchers' research.
- *Accountability in the conduct of research* – researchers are expected to carry out their work in a diligently planned and possibly faultless manner. To ensure that these conditions are met, it is necessary to ensure: measurability in research planning, ability to select the appropriate research methods and methods applicable to the analysis of results, the exactness of measurements and compliance with relevant regulations and procedures.
- *Professional courtesy and fairness in working with others* – research should be carried out in an objective manner, assuming the pursuit of the truth. This objective requires: openness in reporting a conflict of interests, courage in making relevant steps whenever non-integrity is identified in research, objectivity in research planning and applying research methodology and in the analysis of results. Researchers specify the topic of their research independently, and they independently make decisions in substantive, financial matters and with respect to the selection of collaborators. Meanwhile, both specific researchers and research institutions must be aware of their ethical accountability for maintaining balance between social benefits resulting from their work and the related risks.
- *Good stewardship of research on behalf of others* – research should be purposeful, carried out making the best use of the financial resources and other assets (e.g. research equipment), with the overall objective to avoid any waste. Pursuant to the European Charter for Researchers: *"Researchers need to be aware that they are accountable towards their employers, funders or other related public or private bodies as well as, on more ethical grounds, towards society as a whole. In particular, researchers funded by public funds are also accountable for the efficient use of taxpayers' money."*[4].

This Code governs the rules of research integrity in the relationship: researcher – financing institution. However, the dissemination of the culture of research integrity requires the participation of other organisations as well. In fact, research institutions and institutions supporting research, as well as academic journals and associations, should adopt relevant codes of conduct applicable in cases of suspicion that infringements have been made or irresponsible research practices adopted, taking relevant steps to protect whistle-blowers reporting such cases in good faith. Having proven the charges, it is instrumental to ensure expedient response and make relevant changes to the research records. What is more, specific institutions carrying out research are also obliged to create and support – by ensuring training, transparent rules and reasonable conditions for promotion – research environment that fosters reliability and credibility of research.

[3] *Singapore Statement...*, Preamble [after: https://wcrif.org/documents/327-singapore-statement-a4size/file, accessed on: 11.08.2021].
[4] European Charter for Researchers [text available at: https://euraxess.ec.europa.eu/jobs/charter/european-charter, accessed on: 11.08.2021].

SEVEN REASONS TO CARE ABOUT INTEGRITY IN RESEARCH[5]

The care about integrity in research:

1. safeguards the foundations of science and scholarship;
2. maintains public confidence in researchers and research evidence;
3. underpins continued public investment in research;
4. protects the reputation and careers of researchers;
5. prevents adverse impact on the public;
6. promotes economic advancement;
7. prevents avoidable waste of resources.

Chapter 1. Research integrity – good practices

Responsible conduct of research requires that everyone involved in the research process follows high standards for conducting research typical for a specific field. The foregoing applies to all stages of research, starting from proper data collection and management of data, to the dissemination of final results. These standards apply to:

1. Planning and conduct of research;
2. Data management;
3. Research results publication and disclosure;
4. Authorship;
5. Collaborative research;
6. Conflict of interest.

It is recommended that further specification and detailed procedures and regulations are developed at the institutional level.. Research institutions are fully accountable for informing researchers they employ of the adopted rules of conduct. Both researchers and research institutions should know legal regulations pertaining to, among other things, the processing of personal data, intellectual property protection and binding rules of ethics[6].

1.1. Planning and conduct of research

Conscientious planning and conduct of research are prerequisites for research integrity, and, in consequence, fundamental to ensuring scientific transparency and credibility. This applies to all scientific disciplines, regardless of their specific methodologies[7].

[5] See Science Europe Working Group on Research Integrity – Task Group „Knowledge Growth", *Seven Reasons to Care about Integrity in Research*, D/2015/13.324/2, June 2015, available at: https://www.scienceeurope.org/media/42sphgqt/20150617_seven-reasons_web2_final.pdf, accessed on: 11.08.2021].

[6] Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*, November 2014 [text available at: https://ufm.dk/en/publications/2014/files-2014-1/the-danish-code-of-conduct-for-research-integrity.pdf, accessed on: 11.08.2021].

[7] Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*, November 2014 [text available at: https://ufm.dk/en/publications/2014/files-2014-1/the-danish-code-of-conduct-for-research-integrity.pdf, accessed on: 11.08.2021].

Responsibilities

It is essential that the study design, collection of data and the conduct of research, including data analysis methods, be planned and documented (in analogous paper form or electronically), in a manner consistent with practices within the field of research[8].

When planning research, researcher must scrutinize whether the fact of proving or disproving the hypotheses presented in the research will contribute to the development of a specific area or allow to develop new research methods. It is also essential to consider whether the research plan allows for finding an answer to the question posed and, most importantly, whether it is free from a biased approach.

Experimental data and protocols should be readily accessible for the purpose of verification by other people. Research must be planned and conducted in a conscientious, careful and thought-through manner, taking appropriate use of time and resources.

Researchers and research institutions applying for public funds from the Centre are accountable for research planning and conduct.

In consequence, they should know whether (some or all) planned research activities require relevant opinions and/or permits, e.g. the permit of the bioethics committee, patient's knowledgeable consent, etc.

Research institutions should have in place relevant rules of correct research planning and conduct, which comprise the process of obtaining relevant opinions and permits[9].

Researchers and research institutions must be sure that changes to the research plan are compliant with previously presented standards of research integrity and do not infringe the provisions of the agreement with the Centre.

1.2. Data management

Responsible conduct of research includes appropriate management of the primary materials and data[10].

Definitions:

Primary material is any material (e.g. biological material data bases, notes, records, images, literature, digital raw data) that forms the basis of the research.

Primary data (if present, depending on the research discipline) are detailed records of the primary materials that comprise the basis for the analysis that generates the results. *These data are unpublished.*

Responsibilities

Primary materials and data should be retained and stored in an accurate form that allows the result to be assessed, the procedures to be retracted and, when relevant and applicable – the research to be reproduced. Primary materials and data obtained by research must be protected

[8] Ibid, p.8.

[9] Ibid, p.9.

[10] Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*, November 2014 [text available at: https://ufm.dk/en/publications/2014/files-2014-1/the-danish-code-of-conduct-for-research-integrity.pdf, accessed on 11.08.2021], p.9.

against damage or loss and retained as long as they are of significant value for the researcher and research community, but in any case for at least five years from the date of publication[11], unless effective laws or the agreement with the Centre stipulate for a longer period of data retention.

Primary materials and data must be documented in a manner that allows identification of the researcher or the research institution in charge of collecting the primary material and data, and for the analysis of the final results. The data records should contain a precise and traceable reference to the source of the primary materials. Any changes to the primary materials or data stored should be clearly accounted for in a way that allows clear identification of the changes made[12]. "In the procedure concerning the charge of the infringement of research integrity rules, the lack of such data is treated as an incriminating circumstance"[13].

For the duration of the research, researchers should prepare a plan of data management and protection and make it available at Centre's potential request. The information must pertain, in particular, to the type of results to be obtained in the project, manners of their protection, period of retention and protection, as well as the period of availability to other researchers. Every project which assumes the development of data bases or collections with potentially long-term value should have in place a plan of results management and disclosure. This applies in particular to the research that may constitute the so-called social resource, pursuant to the definition included in the Declaration of Toronto of 2009[14] on the release of primary data that may accelerate the advancement of science. This group includes, without limitation, the results of large-scale research, cost-intensive research and results of broad utility or constituting primary material for further research.[15].

Researchers are responsible for retaining primary materials and data for the period specified above. They should consider the scientific value of the material in the context of assessing the research results and ensure the conditions for storage of the material at the institution.

The research institution should have in place a policy on the retention of primary materials and data. The policy must include information on the methods of archiving, safeguarding and safe forms of disposal or utilisation of materials after the required retention period; the storage, availability of archived materials, right to keep the primary materials and results in the institution when the researcher responsible for obtaining the results changes their place of employment. Furthermore, the institution must protect archived materials against damage and unauthorised access, in compliance with the regulation on the protection of personal data, with specific emphasis on the protection of sensitive data [16].

Pursuant to the rule of professional kindness, **a research institution** should, at researchers' request, allow access to the stored primary materials and results available to them, except when

[11] Ibid, p.9.
[12] Ibid, p.9.
[13] See Research Ethics Team at the Ministry of Science, *Dobra praktyka badań naukowych. Rekomendacje (Good Research Practice. Recommendations), p.8.*
[14] See *Benefits and Best Practices of Rapid Pre-Publication Data Release*, Toronto 2009 Data Release Workshop Authors, [text available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3073843/, accessed on: 11.08.2021].
[15] See *Prepublication Data Sharing. Opinion*, "Nature" No. 461(7261), 10 September 2009, p. 168–170 [text available at: http://www.nature.com/nature/journal/v461/n7261/full/461168a.html, accessed on: 11.08.2021]
[16] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.10.

this is in conflict with contractual legal obligations or current regulations on, for example, ethical, confidentiality or privacy matters or intellectual property rights[17].

1.3. Dissemination of results

Publication and communication are essential for enabling the research community to discuss research results. Research can be communicated through various channels, ranging from scientific publications or conference papers to more popular research communication aimed at a broader audience[18]. Researchers are expected to ensure that their research results are made known to society at large in such a way that they can be understood by non-specialists[19]. Although the form of communication may vary, the standards for research integrity must be always met. It is necessary to bear in mind that the settlement of the project conduct and the financing agreement requires publishing evaluated research results in a publication(s) with international impact.

Definitions:

Publication is the process of reporting research results to the research community through articles, reports, etc. in periodicals, journals or other academic media.

Communication is a form of conveying research results to society at large, usually in the spoken form, often with the use of media.[20]

Responsibilities

Research results should be published in an honest, transparent and accurate manner[21].

Publishing the same results in more than one publication may only occur in exceptional situations. Such a decision should be documented, clearly explained and honestly described[22].

If access to the data is limited, this should be declared in a clear manner to the readers. Any potential financial conflict of interest involving researchers carrying out the research needs to be disclosed. Whenever the results of research by other researchers are used in a publication, they must be clearly described and marked with relevant references to sources[23]. The same applies to one's own previous works (self-quotes).

The right of researchers to unrestricted publication of their research should be respected[24].

Researchers are responsible for publishing and communicating their research[25]. The decisions about such activities are made by the principal investigator. Following publication of the results, the collected data and unique material analysed in the research should be made immediately and fully available to researchers looking for relevant information. Exceptions are made in situations

[17] See Ibid, p.10.
[18] See Ibid, p.10.
[19] See European Charter for Researchers, quote p. 14.
[20] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.10.
[21] See Ibid, p.10.
[22] See Ibid, p.11.
[23] See Ibid, p.11.
[24] See Ibid, p.11.
[25] See Ibid, p.11.

where data confidentiality (e.g. personal data) must be ensured or the collected unique material was obtained under an agreement that prevents dissemination[26].

Researchers must ensure that their publications contain correct references to works done by other researchers, and if certain (researcher's or other people's) results are omitted, they must appropriately justify this fact. The presented results must be credible[27] and impartial.

Researchers must inform the Centre – as an research funding organization described in their publications – about their papers, published and submitted for publication, as well as cases when their text is rejected by the publisher or withdrawn from print, either at principal's investigator own request or at publisher's discretion. Failure to meet this obligation may be interpreted as an attempt at falsifying the report (see chapter 3 on the examples of the lack of integrity in research).

Research institutions should promote and foster honesty, transparency and accuracy when disseminating research findings, e.g. through policies and regulations relating to publication and communication. Research institutions should also ensure that the publication or other form of communication of research findings contains information about the Centre (project name and registration number).

1.4. Authorship

The authorship of scientific publications reflects the contribution to the development of the publication. Scientific works can have one or more authors. However, cooperation in the development of the work does not tantamount to co-authorship.

The issue of authorship is governed by the Act of 4 February 1994 on Copyright and Related Rights[28]. Polish law does not deprive of copyright anyone who makes even the most modest, but independent and creative contribution to the development of the work[29].

Responsibilities

Attribution of authorship (co-authorship) should take account the following four criteria laid down in the Vancouver guidelines[30], and everybody who meets them should be considered a co-author of a research work. These criteria must be met jointly:

a. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; and

b. Drafting the work or revising it critically for important intellectual content; and

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[26] See *Guidelines for the Conduct of Research in the Intramural Research Program at N*[*ational*] *I*[*nstitutes of*] *H*[*ealth*], ed. 4 May 2007 [text available at: http://www.wesleyan.edu/molbiophys/Graduate%20Program/Ethics_docs/Conduct_Research.pdf, accessed on: 11.08.2021].

[27] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…quote p.11.

[28] See The Act of 4 February 1994 on Copyright and Related Rights, consolidated text: Polish Journal of Laws 2006.90.631 as amended [Polish text available for downloading at: http://isap.sejm.gov.pl/DetailsServlet?id=WDU19940240083, accessed on: 11.08.2021].

[29] See *Rzetelność w badaniach naukowych oraz poszanowanie własności intelektualnej (Research Integrity and Intellectual Property Protection)*, MNiSW, Warszawa 2012 [text available for downloading online at: https://www.bip.pw.edu.pl/var/pw/storage/original/application/de99e93f657288ab003e115cfdcc869f.pdf , accessed on: 11.08.2021].

[30] See International Committee of Medical Journal Editors, *Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals*, updated in December 2019 [text available at: http://www.icmje.org/icmje-recommendations.pdf, accessed on: 11.08.2021].

c. Final approval of the version to be published; and

d. Agreement 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.

Irrespectively of being accountable for the parts of the work he or she has done, a co-author should be able to identify which co-authors are responsible for other specific parts of the work.

The foregoing criteria should not be used to exclude persons who otherwise meet co-authorship criteria. Therefore, persons who meet criterion „a" should be given the opportunity to meet criteria b-d[31].

Authors have the right to decline authorship of the publication or findings, e.g. if they disagree with the methodology or conclusions in the publication. However, contributions of such persons should be always recognized and disclosed as acknowledgements[32].

What is more, the contributions by persons who have not meet the four authorship criteria should be also recognized in acknowledgements.

Participation in the preparation of documents accompanying the application for funding , supervision, the position of a head of an institution or department do not entitle relevant persons to be acknowledged as co-authors of the published findings[33].

Guest authorship (i.e. listing authors who do not qualify as such) or ghost authorship (i.e. omitting individuals who should have been listed as authors) should not take place[34].

Decisions concerning co-authorship and publication of results should be agreed on jointly and should be communicated to all members of the research team. Any alterations to manuscripts after submission should be approved by all co-authors[35].

All authors are responsible for the content of the publication. However, the responsibility of each author should concern specific parts of the work, depending on their area of expertise, experience and seniority. Another relevant factor is the performance of a supervisory role in the project. Thus, in some cases, an author may have wider responsibility for than the others for ensuring the integrity of the publication or its specific part[36].

Authors are jointly responsible for ensuring that all persons named as authors of the publication meet the authorship criteria. Good practices include appropriate acknowledgement of contributions to the work or adding an editor's note recognizing people and the manner in which they contributed to the work in its final form[37].

Researchers who are co-authors of a scientific work should jointly agree who the corresponding author would be and should specify the order of authors depending on practices in a field. The roles of specific authors in a publication should be identified at the beginning of cooperation, in line with common practice in a given field.

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[31] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.12.
[32] See ibid, p.12.
[33] See *Rzetelność w badaniach naukowych*…, quote p. 14.
[34] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.11.
[35] See Ibid, p.13.
[36] See Ibid, p.13.
[37] See ibid, p.13.

Research institutions should maintain internal regulations on the attribution of authorship and on how to handle potential authorship disputes[38].

1.5. Collaborative research

Collaborative research contributes value added to the development of science. Multidisciplinary collaboration of researchers representing various approaches to a specific problem focusing on its multiple goals guarantee that the problem will be examined faster and in a more thorough manner. Research collaboration must be supported and promoted, since many scientific issues require interdisciplinary approach.

Such collaboration can present challenges, as research cultures and perceptions of research integrity may differ across disciplines, institutions and countries[39].

Partners are all parties involved in the collaborative research, including researchers, students, technical personnel, administrative personnel and institutions[40].

Collaborating partners should – if feasible, and preferably as early as possible in the research process – establish agreement on all relevant areas and specify how they understand research integrity that will be applied throughout the collaborative research[41].

Responsibilities

All collaborating partners are responsible for the integrity of the collaborative research. Already at the initial stage of the collaboration partners should agree on all the matters governed by regulations and guidelines on research integrity, especially in the case of international cooperation[42].

When necessary, common agreements should be established on the following:

a. Intellectual property rights;
b. Procedures related to legal regulations;
c. Procedures for resolution of conflicts of interests between collaborating partners;
d. d. Publication authorship;
e. Sharing and use of findings, management and proprietary rights;
f. Confidentiality;
g. Procedures for reporting and handling breaches of research integrity and rules of conduct when breach of integrity is found[43].

[38] See Ibid, p.13.
[39] See Ibid, p.14.
[40] See Ibid, p.14.
[41] See Ibid, p.14.
[42] See OECD Global Science Forum, Investigating Research Misconduct Allegations in International Collaborative Research Projects. A Practical Guide, April 2009 [text available at: http://www.oecd.org/sti/sci-tech/42770261.pdf, accessed on: 11.08.2021].
[43] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.14.

Researchers should identify areas of collaborative research where common agreements may be necessary. If the collaboration involves the exchange of primary materials, formal consent for their use or provision should be signed.

Research institutions are responsible for providing documentation and tools necessary for establishing agreements as specified above[44].

1.6. Conflicts of interest

Responsible conduct of research includes disclosure of all potential conflicts of interest. This allows financial or other interests to be assessed on an informed basis in order to evaluate possible bias of professional judgement[45].

Conflict of interest is a situation in which the pursuit of one's own benefits, including material, procedural or psychological benefits, has impact on issuing an opinion or taking actions against the interests or in compliance with interests of another person[46].

Responsibilities

All parties involved with the research must disclose any conflict of interest and be aware of the rules of procedure applicable to the cases where the risk of such a conflict exists.

Research institutions are responsible for addressing conflicts of interest ensuring that appropriate standards are met. For this purpose, the institution should put in place a policy for preventing conflicts of interests and rules of procedure applicable to situations where a conflict of interests exists and must be addressed[47].

Chapter 2. Research integrity – teaching, training and supervision

Fostering a culture of research integrity and the implementation of commonly accepted good research practices constitute key elements for ensuring high quality and integrity of research. In this context, teaching, training and supervision are indispensable for the development of research integrity culture[48].

The dissemination of good practices is a complex process revolving around conducting research under the supervision of experienced researchers. The supervision not only enables the conduct of research delegated by these persons, but also allows a student or a young researcher to make independent decisions on the selection and formulation of hypotheses, ideas and assumptions and to carry out the project. The primary role of the supervisor, sometimes referred to as the mentor, involves creating and fostering valuable research environment in which a student may acquire technical skills and develop independent and creative thinking ability. A mentor is a role model for the student in terms of ethics and as a researcher reliably conducting research. To ensure valuable and high quality teaching, a mentor should supervise student's work and maintain

[44] See Ibid, p.14.
[45] See Ibid, p.15.
[46] Zob. A. Lewicka-Strzałecka, *Teoretyczne i praktyczne aspekty identyfikacji i ograniczania konfliktu interesów (Theoretical and Practical Aspects of Conflict of Interest Identification and Mitigation),* [text available at: https://www.antykorupcja.gov.pl/ak/analizy-i-raporty/raporty-sytuacyjne/3470,Konflikt-interesow-Teoretyczne-i-praktyczne-aspekty-identyfikacji.html, accessed on: 11.08.2021].
[47] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, p.17.
[48] See Ibid, p.17.

ongoing contact with him or her. The mentor must ensure that that the number of students is such so that every one of them can receive reliable and appropriate supervision. The way in which supervision is carried out must match individual needs and the stage of academic career of a student or young researcher. Mentor's supervision should also include – not only in the form of theoretical instruction, but primarily by way of practice supported by mentor's own example – the aspect of research integrity. A supervisor is to encourage a student to establish cooperation with other researchers, present research findings during conferences and academic meetings and establish contacts with persons having similar research interests. Students and young researchers must comply with procedures and regulations in force at a research institution. Both experienced and young researchers, as well as students, are bound by the same standards concerning research integrity[49].

2.1. Teaching, training and supervision in the context of research integrity rules

The aim of research integrity teaching and supervision is to disseminate the culture of research based on the principles of research integrity and accountability. Heads of research institutions and supervisors of students, doctoral candidates and young researchers play a pivotal role in this process.

Responsibilities

The principles of research integrity and responsible conduct of research should be an element of educational curricula for students and other people involved in research[50].

All involved in the research must promote an environment that fosters reliable and accountable conduct of research where fundamental principles of research integrity are emphasized and practiced as a matter of daily routine.

Research integrity teaching, training and supervision should include:

a. Principles of research integrity;

b. Responsible conduct of research;

c. Research misconduct and breaches of responsible conduct of research, including the procedures for handling reported inaccuracies.

Training on research integrity should also apply to PhD students (doctoral candidates) and researchers commencing their academic career, while the task of the research supervisor is to provide clear guidance on how to conduct research in compliance with accepted standards.

By his or her stance and example, the supervisor should promote the awareness of the ethical rules applicable to the academic profession, both in the context of research and teaching.

Chapter 3. Research misconduct

The pressure exerted by institutions and community in connection with professional development promotes situations where research integrity standards are not met. This Code identifies cases of abuse and misconduct concerning research integrity.

[49] See *Guidelines for the Conduct of Research*…, quote

[50] See Ministry of High Education and Science, *Danish Code of Conduct for Research Integrity*…, quote, p.18.

Failure to comply with the standards of research integrity laid down in this document may serve as a basis for the Centre to impose relevant sanctions on the infringing institution or researcher.

Definitions:

Research (scientific) misconduct involves a breach of the ethics applicable to research that involves fabrication and falsifying of data and findings, as well as the appropriation of someone else's ideas and works (e.g. plagiarism) when applying for research funding, conducting and reviewing research, reporting, publishing and communicating findings[51].

Fabrication involves the making up of data, recording and publishing findings which have not been obtained[52]. At the stage of applying for funding, fabrication involves providing false information on the course of professional academic career, on research publications, supervised grants, etc.

Falsifying involves manipulating research material, devices or methodology and changing or disregarding experimental data in a way resulting in the presentation of research findings in a manner which does not reflect reality[53]. At the stage of applying for financing, falsification involves omitting information on the course of professional academic career, on research publications (e.g. on the withdrawal of a publication, supervised grants, etc.).

Plagiarism involves the appropriation of authorship of someone else's work in full or in part in the meaning of the Act of 4 February 1994 on copyright and related rights. In a broader sense, plagiarism also involves the appropriation of someone else's ideas, findings or terminology without appropriate reference to the name of the author, as well as unauthorized use of information obtained in confidential reviewing of applications and manuscripts[54].

The presentation of a dissenting view or unintentional error are not cases of research misconduct. Every researcher has the right to present their own independent view.

A finding of research misconduct requires that all the following criteria be met jointly:

a. a significant departure from accepted practices of the relevant research community;

b. research misconduct is committed intentionally or recklessly;

c. the allegation be proven by a preponderance of evidence[55].

If research misconduct is identified, the Centre may impose sanctions or restrictions on the applicant or the beneficiary. Relevant measures will be taken depending on the significance of the misconduct and its duration.

Apart from the cases of research misconduct referred to above, there are other questionable practices that, while they may not directly distort the research, still damage the reputation of researchers and the research community, and ultimately societies' trust in research.

[51] See Research Ethics Team at the Ministry of Science, *Dobra praktyka badań naukowych*…, p. 4, and *Code of Federal Regulations*, title 45: *Public Welfare*, vol. 1, chap. 6

[52] See Research Ethics Team at the Ministry of Science, *Dobra praktyka badań naukowych*…, p. 4

[53] See ibid, p. 4.

[54] See ibid, p. 4.

[55] See *Code of Federal Regulations*, title 45: *Public Welfare*, vol. 1, chap. 6: *National Science Foundation*, part 689: *Research Misconduct*, 1 October 2012 [text available at: https://www.gpo.gov/fdsys/granule/CFR-2012-title45vol3/CFR-2012-title45-vol3-part689/content-detail.html, accessed on: 11.08.2021]. p. 243.

These practices include[56]:

a. Poor research design, using inappropriate research methods or equipment and the appropriate use of such equipment;

b. Inappropriate preservation and disclosure of primary data;

c. Poor practices related to the publication of findings, including: denying authorship, artificially proliferating publications, refusal to correct the publication or failure to notify that it has been withdrawn by the publisher;

d. Inappropriate personal behaviour between members of a research group, in master – apprentice relationship, abuse and intimidation, authority abuse;

e. Misappropriation of funds related to the failure to report a conflict of interest, abuse of competences, misuse of research funds allocated to the conduct of a research project.

The Centre may classify the foregoing practices as cases of research misconduct and impose relevant sanctions on this basis.

Responsibilities

Every person aware of fraud and abuse in projects funded by the Centre must report this fact: either – at the institution – to the person handling projects in the research department or – at the Centre – to the person in charge of the project (name and last name specified in the application in the Financing Streams Handling system) or to the NCN Audit Team. Particulars of the whistleblower are treated as confidential unless the obligation to disclose them is stipulated by commonly binding law.

Researchers must store the primary material and data for the purpose of verification of findings (see subchapter 1.2.). The lack of possibility to confirm the findings due to unavailability of the primary data or materials speaks against the researcher, unless the unavailability is not caused by circumstances for which the researcher and his or her co-workers are not liable.

When applying for funds to conduct research, **researchers** must fill in the application in an exhaustive, reliable manner compliant with facts as of the date of submission. Provision of incomplete, false information or information appropriated from other people without their consent will be treated as research misconduct and will result in relevant sanctions applied by the Centre.

Researchers must present in the report (as papers or publications) only such findings which were developed in the project and are thematically compliant with the aims of the project. Inclusion of publications prepared before the project or unrelated to it thematically is treated as the falsification of findings and is subject to sanctions imposed by the Centre.

Researchers must inform the Centre whenever a publication funded by the Centre has been retracted by the publisher or withdrawn at author's own request. Failure to meet this obligation will be treated as the falsification of results and may serve as a basis for sanctions being imposed on the researcher by the Centre.

Researchers must publish original works reflecting their creative process. The same applied to the originality of applications submitted to the Centre. In consequence, a publication being a

[56] *Research Integrity: What it Means, Why it Is Important and How we Might Protect it. Briefing Paper*, December 2015 [text available at: https://www.scienceeurope.org/media/dnwbwaux/briefing_paper_research_integrity_web.pdf, accessed on 11.08.2021].

compilation of fragments of works by other authors (a mosaic) or containing one significant fragment of a work by another author with references, as well as a submission of an application prepared in this way is classified as research misconduct. Furthermore, it is also contemptible to include significant portions of one's own publications without relevant references.

Liability towards the Centre does not release the researchers from liability stemming from commonly binding laws.

Research institution must supervise information disclosed in the documents, meaning the verification that they are true and compliant with research integrity standards. This pertains to every single research stage: application for funds, conduct of research, reporting to Centre and the publication of findings.

Research institution should carry out explanatory and administrative procedures if any suspicion of research misconduct in a project it supervises arises. If misconduct is reported by the Centre, the institution must:

a. Institute and carry out, in compliance with the procedures in force at the institution or general provisions of law, a procedure aimed at clarifying the suspicions of research misconduct;

b. Ensure appropriate personal data protection with respect to the persons suspected of research misconduct and whistle-blowers;

c. Conclude, as fast as possible, the clarification procedure, and notify the Centre of its results.

The Centre will notify the institution or – at institution's request – natural person, of a suspicion of research misconduct in the application, report or publication submitted by the researcher, asking for clarifications.

If research misconduct is found in the application, report or publication, the **Centre will immediately apply** sanctions on the principal investigator and the institution, depending on the severity of the misconduct (see subsection 3.2).

If an institution or a natural person fail to submit relevant clarifications by the prescribed date, the Centre will settle the issue to the detriment of the person or institution and will impose relevant sanctions.

The Director of the Centre, by way of a separate regulation, will specify in detail:

1. Rules of procedure applicable to the cases which require the application of sanctions stipulated by this document;

2. Appeal measures an institution or natural person has against the decision declaring the existence of research misconduct.

3.1. Sanctions

Possible sanctions listed below range from minimal sanctions (Group I) to the most severe and restrictive (Group III)[57]:

group I:

a. Rejection of an application for formal reasons at every stage of assessment;
b. A letter of reprimand to the principal investigator;
c. Requirement of more frequent reporting of findings;
d. Requirement to remedy the situation ensuring compliance with the provisions of this document.

group II:

a. Additional supervision on funds being spent;
b. Periodical suspension of an award without the possibility to restore the eligibility of expenses in this period;
c. Requirement to remedy the situation ensuring compliance with the provisions of this document.

group III:

a. Termination of an award;
b. Prohibition from service as an expert team member or a reviewer of the Centre;
c. Debarment from eligibility to receive funds for grants in a specified period.

When making a decision on imposing a relevant sanction for research misconduct, the Centre takes account, in particular, of the following aspects:

a. The severity of misconduct;
b. To what extent the misconduct was intentional and the provision of fabricated or false information aimed at obtaining benefits;
c. Whether the conduct was an isolated event or a pattern;
d. How the misconduct impacted researchers, institutions, patients, society.

Until it is clarified whether research misconduct has actually taken place, the Centre may introduce remedial actions aimed at the protection of public funds involved.

Those activities may include:

a. Suspension of an award until irregularities are clarified;
b. Debarment from eligibility to receive funds for grants fromthe Centre for a specified period, not longer than until the matter is clarified;
c. The requirement to provide additional certifications or permits to ensure the protection of persons or animals (e.g. registration of research as a non-commercial clinical trial, consent for the participation of children or prisoners in psychological tests, etc.)[58];

[57] See *Code of Federal Regulations*, title 45: *Public Welfare*, vol. 1, chap. 6, p. 243.
[58] See ibid, p.244.

d. Sanctions may be imposed jointly.

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