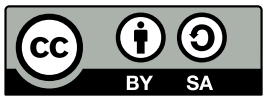
Principles of Good Research Practice and Creative Activity

at Palacký University Olomouc



Version 1.0

VUP 2024/0298, 2024/0340
DOI: www.doi.org/10.5507/rup.2024-0298

Obsah

1 Principles of Good Research Practice and Creative Activity at Palacký University Olomouc

In the context of the process of obtaining the HR Excellence in Research award, Palacký University in Olomouc (UP) has subscribed to the principles enshrined in the *European Charter for Researchers*, which is a set of general principles and requirements that specify the responsibilities and rights of researchers and students. An essential part of research is adherence to the highest standards of research work, both in the preparation and execution of the research itself and in subsequent scientific communication. The basic ethical requirements for creative activities are set out in the *Code of Ethics for UP Employees and Students* and the *Statute of the Ethics Board of Palacký University Olomouc*. In terms of respecting the principles of good research practice, creative activities and teaching, UP identifies itself with the rules and principles defined in the *Ethical Framework for Research (2005)* (only in Czech), the Government Council for Research, Development and Innovation and the *European Code of Conduct for Research Integrity (2023)*.

The aim of the present document is to provide basic guidelines for good research practice. The defined principles and rules are intended to help conduct high-quality research, promote a healthy research culture of the university and help prevent errors in the research and generally in scientific creative activities of UP employees and students. It is intended for all UP employees and students who are involved in the generation, collection, or other management of research data, their interpretation for research purposes and/or otherwise engaged in the performance of scientific creative activities. Science is a constant quest for truth and knowledge, and it is constantly accompanied by new phenomena. The requirements and rules for good research practice therefore reflect the state of science to date and cannot be an exhaustive list.

The designation of positions, job titles and functions in the form of a generic masculine in the text of this policy is in line with the legislative and technical rules, without being discriminatory in any way or being considered as gender imbalanced. All generic masculinities must be understood to include their feminine forms (male author/female author, male employee/female employee, etc.).

1.1 Research integrity

In a university, and in any scientific environment, scientific integrity is a fundamental asset of every individual researcher. It is a kind of standard of reliability of results, of truthfulness of communication, on which scientists around the world must rely within their community. Palacký University strives to maintain a high standard of integrity at all steps of the research process according to the *European Code of Conduct for Research Integrity (2023)*, which defines key values for good research practice:

- Respect for colleagues in academia, other staff, trainees, students, research participants (respect for human and animal rights principles), respect for societal impacts, cultural heritage, the environment and living organisms.
- Honesty in research and educational design, implementation, evaluation and communication of research, proper citation and avoidance of unfair publication practices.
- Reliability with respect to ensuring the quality of research and teaching as a fundamental pillar of trust in science. Reliability, with a focus on reproducibility, applies to all steps of research work (from project design to publication or other research, development or innovation outcome, including data management).
- Accountability for the consequences of one's own actions in research and teaching, especially related to staff safety and the careful use of resources. Researchers also seek to minimize the negative consequences of their research activities. The researcher is responsible for the research from its planning to the publication of the results.

Another key value is the impartiality of the researcher, which is important to ensure the quality of the research and society's confidence in the research and its results. In particular, where conflicts of interest may arise, researchers and research institutions have a duty to ensure that research results are published objectively and responsibly. Individual researchers also have an independent responsibility not to allow others to deviate from good research practice. Any errors in research must be brought to the attention of the researcher. If there is no doubt that an error has occurred, they are obliged to admit the error, correct it and ensure that the consequences of the error are minimised. In the event that a researcher is wrongly accused of an error, they should have the opportunity and space to defend their procedures and results, and a fair and transparent investigation of these accusations should be ensured, preferably before the UP Ethics Committee.

1.2 Transparency

Research transparency is a key pillar of good scientific practice in research. Transparent research consistently documents all steps of the research process so that at the end of the process, research data, metadata and research documentation are understandable and accessible. Transparent research should be easily reproducible by other researchers; it enhances the credibility of the scientific endeavor and thus strengthens its quality.

Transparency is important for:

a. Checking of protocols, documentation, and overall research results.
b. Preventing redundant research studies that do not focus on reproducibility.
c. Maximizing the efficient use of financial resources.

1.3 Reproducibility

Reproducibility is the ability of independent researchers to repeat experiments using the same methods, materials and conditions, and thereby achieve authentic results.

In the context of reproducibility, we may encounter the *Association for Computing Machinery* terms repeatability and replicability:

a. Repeatability refers to obtaining consistent results within the same study or experiment using the same methods under the same conditions.
b. Replicability refers to obtaining consistent results across different studies aimed at answering the same scientific question, each working with its own data.

It is important to note that both concepts are understood differently across different disciplines. Sometimes repeatability can refer to reproducing calculations and replicability to reproducing experiments. In some cases “replication”, “reproduction” and “repetition” are used interchangeably see *Stanford Encyclopedia of Philosophy*.

1.4 Cooperation, funding and economic utilization of results

1.4.1 Research collaboration

UP cooperates with a wide range of public institutions, agencies and private companies. These collaborations often bring about an increase in the quality and relevance of research, for example on societal topics. In research collaboration with external partners, it is important that the integrity of the research is unquestionable. It is therefore important to observe the following principles:

a. The external partner may contribute to the definition of research topics and questions, but scientific methods should be selected only on the basis of scientifically sound considerations and the UP researcher is responsible for the scientific methods chosen.

b. Researchers must have the freedom to present research results within the framework of research integrity.

c. To ensure the quality and availability, researchers should have full access to the data (including primary and metadata) obtained by the external partner if the research is based on such data.

d. It may be contractually agreed between UP and the external collaborator to delay publication of results for relevant reasons such as intellectual property protection.

e. The research collaboration with the external partner should be adequately described in a written agreement existing in permanent form. The written agreement should include, as a minimum, provisions on the rights and obligations of the partners, confidentiality obligation if necessary to protect intellectual property or, for example, trade secret, the duration of the collaboration and the possibility of terminating the collaboration, if any.

When planning a joint project, researchers should agree on:

a. The financial remuneration of employees.

b. Share of the expenses of the research project.

c. Handling of research data, including with respect to publication within the time-frame, see above.

d. Scientific research outcomes and their publication, researcher affiliations, invention applications, etc.

e. Protection of and anticipated shares in the intellectual property generated.

They may do so, for example, by an affidavit defining the amount of their creative contributions in relation to a joint publication, patent application, co-authorship agreement, co-authorship or co-inventorship agreement (in the case of industrial property objects), etc. In relation to this, it must always be ensured that expressions of will on behalf of UP in this sense are made by the person legally authorized to act for it on the basis of the law or an internal UP regulation. It is also important to clarify and understand mutual expectations, obligations, responsibilities, roles, possible outcomes and potential conflicts of interest. The research community is international and research results should be shared across borders. Research in other countries may be governed by different ethical principles, which may cause ethical problems. UP Researchers are obliged to comply with the legal and ethical requirements in force and effect at UP (and other discipline-specific codes) and at the partner institution. This also applies to researchers registered for a stay abroad who participate in research at Palacký University.

1.4.2 Research funding

Funding is a key factor that makes scientific research possible. Proper knowledge of how to raise and manage funding is essential for every researcher. There is a Project Service (PSUP) at UP, as a consultancy center, which provides project support across international, national and internal grants. Information on current calls, training or seminars can be found in the monthly PSUP Bulletin, sent out to the university email. A *Handbook for Beginning Researchers* (only in Czech) is also available, which defines useful terms and describes in more detail research funding opportunities and the process of submitting a project at UP. At the same time, analogous project services exist at some units.

1.4.3 Economic utilization of research results

All new results produced at the university fall under the category of author's work or employee's (enterprise) invention or other subject of industrial property. This generally means that the university exercises the property rights in these results. Every employee should then consider, when a new research result is produced, whether it might have commercial potential in addition to its publication potential, before it is published (conferences, publications, etc.). In this case, the results of science and research can be used e.g., for offering a unique service, licensing, transfer, setting up a spin-off, etc.

If commercial potential is also identified, the following steps are recommended (where possible):

a. Conduct an analysis of the possibilities of utilization of research results (knowledge and technology transfer).

b. If it is a result that will be protected as industrial property, its creation should be notified immediately according to the relevant standard (B3-16/1-SR-ÚZ01), English version in preparation) to the e-mail patenty@upol.cz and to the senior employee immediately superior to the originator or co-authors.

c. Ensure the protection of industrial property rights. This means filing an application for an invention (patent), utility model, industrial design, trademark, etc. Alternatively, the content of classified know-how that will not be made public can be defined.

d. Initiate the actual steps leading to the commercialization of the result.

e. Subsequently, choose an appropriate form of publication (conference, publication) which could also have a marketing impact and could help to utilize the research.

To support the above-mentioned activities, a university facility, the UP Science and Technology Park (www.vtpup.cz, English version in preparation), has been established at UP. It is therefore possible to contact the UP VTP for advice or assistance in all the above-mentioned matters.

1.5 Evaluation, assessment and other similar activities

So-called peer review is an important part of good research practice in publishing, assessing results and evaluating projects for grants. The principles of the peer review process should follow the *Committee on Publication Ethics (COPE) guidance for publication ethics*.

A researcher who is involved in reviewing the work of others (publications, grants, positions, research papers, etc.) should:

a. Assess their qualifications and impartiality.

b. Report any potential conflict of interests and, if necessary, take no further part in discussions and decision-making.

c. Act according to the highest standards of thoroughness and objectivity.

d. Not to use ideas and knowledge from the material being evaluated for their own benefit or to pass it on to others.

e. Respect authors' rights and other intellectual property rights by not making unauthorized use of the material under consideration himself/herself or by not making it available for unauthorized use by others, in particular by not discussing it publicly.

f. Protect the evaluated material by not sharing it with generative AI tools (including machine translation language models such as DeepL, Grammarly, etc.) to protect personal data, confidential information, or data security.

g. In the case of a negative evaluation, formulate the criticism in a substantive, respectful manner, with any recommendations from the evaluator

2 Handling of research data

2.1 General principles

Research data and other research material must be handled responsibly by each researcher and research team throughout the life cycle of the research data and the research activity or research project. At the same time, research data management must be consistent with ethical, legal, organizational and other legitimate requirements, while at the same time following discipline-specific and so-called *F.A.I.R. principles*.

Every researcher or research team should:

a. Plan for the management of research data and develop a plan (called a Data Management Plan (DMP)) for how research data will be handled throughout the life cycle of the data (in preparation) and subsequently update this plan. The DMP can be developed e.g. in:

- Data Stewardship Wizard tool https://ds-wizard.org/ (ELIXIR) (recommended)
- DMPOnline: https://dmponline.dcc.ac.uk/, run by Digital Curation Centre & University of California Curation Center
- ARGOS: https://argos.openaire.eu/splash/index.html, run by OpenAIRE & EUDAT

b. **Document their work** and research data in sufficient detail and clarity so that research results can be reproduced (e.g., by independent experts) based on information available in documentation and metadata.
c. Ensure the confidentiality, availability and integrity of research data and choose appropriate procedures to protect and secure data and minimize risks.
d. Ensure the long-term preservation and accessibility of research data, in particular those research data that are needed for reproducibility and validation of published research results and that have the potential for future re-use, including documentation and metadata, research data which are the basis for published research results, the basis for an application for legal protection under legislation governing industrial rights, or are themselves the result of research, must be preserved for a minimum period of 10 years, unless this is completely precluded by law or for other compelling reasons.
e. Share data according to the principle of "as open as possible, as closed as necessary".

Proper data management reduces the risk of data loss, improves research processes and work continuity, and facilitates the publication process, sharing and reuse of research data for future research. **Data sharing improves transparency and reproducibility of results,** visibility of research outcomes and can contribute to more citations. Data sharing is also sometimes mandated by some journals or funders.

2.2 Research involving human participants

2.2.1 Voluntary informed consent and privacy protection

Consent is a key point in research on humans or information and materials that can be associated with humans. This consent should be informed, explicit, voluntary and verifiable. If the research is conducted in an organization, the consent of the organization's statutory representative or other person authorized to give such consent is also required.

The general requirements regarding freely given informed consent require the researcher to ensure that the person or persons participating in the research:

a. They understand the purpose of the research and the part related to their participation in it.
b. They are able to assess their situation.
c. They are able to decide independently whether they want to participate in the project without external pressure, based on their preferences and values.
d. They can communicate their decision freely.
e. They can interrupt or terminate their participation at any time without giving reasons.

There are areas where it is necessary to protect the privacy of research subjects, in particular where special categories of personal data are collected (personal data revealing racial or ethnic origin, religious, political or philosophical beliefs or sexual orientation). Similarly, the processing of genetic and biometric data for the purpose of uniquely identifying a natural person, data relating to the health, sex life or sexual orientation of a natural person also falls within the area of

sensitive information of special categories of personal data. Information about individuals who participate in the research project or other individuals with whom the researcher becomes acquainted during the research process should be handled carefully and sensitively, commensurate with the aim of the research. The researcher must inform participants how the information will be protected and stored, and ensure confidentiality or anonymity for those who request it. Anonymization depends on the subject's request and the purpose of the research (anonymization of data is the alteration or removal of information that can lead to the identification of a specific person). More information can be found at *How to write an informed consent form-Utrecht University* or *Information sheet template-Utrecht University*.

2.2.2 Data handling in clinical research

Clinical research focuses on the study of new drugs, treatments, medical devices and therapies in humans. The aim of clinical research is to improve preventive, diagnostic and therapeutic interventions.

Clinical research involving human subjects, including human material and data, is governed by the ethical principles of the *Declaration of Helsinki* and the codes of ethics of the*: European Federation of Psychologists' Associations* (EFPA), *American Psychological Association* (APA) and *Czech-Moravian Psychological Society* (ČMPS) (only in Czech).

In general, the following principles apply:

a. The rights and interests of individual subjects always take precedence over scientific interests.

b. There is a duty to promote and protect the health, welfare, and rights of research participants.

c. Clinical research must be conducted only by persons with appropriate ethical and scientific qualifications.

d. Clinical research must be preceded by a careful assessment of the foreseeable risks to subjects and may only be conducted if the expected importance and benefit of the objective outweighs these risks.

e. Measures must be put in place to minimize risks and these risks must be continuously monitored, assessed and documented.

f. The proposal and conduct of any clinical study involving human subjects shall be clearly described in the research protocol.

g. The research protocol must be submitted to the appropriate research ethics committee for review prior to the commencement of the study.

h. When testing chemical or biological drugs, their manufacture, handling, and storage must be in accordance with *Good Manufacturing Practice*; the use of drugs must follow an approved protocol.

i. Participation in clinical research must be entirely voluntary and human subjects have the right to withdraw from research at any time.

j. The human subject has the right and opportunity to ask questions before and during any information about the research of which they are a part.

In accordance with the basic principles of the Convention on Human Rights and Biomedicine (according to the Communication of the Ministry of Foreign Affairs No. 96/2001 Coll., concerning the adoption of the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine), hereinafter referred to as the Convention, it is understood that scientific research in the field of biology and medicine shall be carried out freely, respecting the provisions of this Convention and in accordance with other legislation that serves to protect human beings.

In general, and in particular, scientific research on human beings may be carried out only if all of the following conditions are met:

a. There is no alternative to human research of comparable effect.

b. The risks of the research to which the human subject may be exposed are not disproportionately high in relation to the potential benefits of the research.

c. The research project has been approved by the competent authority after an independent assessment of its scientific merit, including an evaluation of the importance of the research aim and a multidisciplinary assessment of its ethical acceptability.

d. The subjects involved in the research have been informed of their rights and the guarantees provided by law for their protection.

e. Necessary consent has been given explicitly, specifically and is documented. Such consent may be freely withdrawn at any time.

f. If the law allows for in vitro embryo research, adequate protection of the embryo must be provided in accordance with the law. The creation of human embryos for research purposes is prohibited.

2.3 Unethical practices in the handling of research data

***European Code of Conduct Revised Edition 2023*:**

Deliberate deviations from good research practice for the handling of research data are considered unethical practices and will be considered by the UP Ethics Committee according to the *Code of Ethics for UP Employees and Students*.

The most common unethical practices include:

a. Intentional misuse, theft, destruction, or loss of research data (often a way to "cover one's tracks" when handling data).

b. Fabrication, falsification, plagiarism, or unfair manipulation of any kind (see Section 3.4.1 for details).

c. Misuse of statistical analysis to influence the statistical significance of results ("P-hacking").

d. "HARKing" (hypothesizing after the results are known). Typically, after the data is obtained and the original hypothesis is not confirmed, the researcher creates a new hypothesis from the data that is statistically significant and presents it as the initial hypothesis *Big little lies: a compendium and simulation of p-hacking strategies*.

e. Unjustified withholding of data or research results.

f. Allowing funders to compromise the independence and impartiality of the research process.

g. Failure to comply with legal, ethical and professional obligations, e.g., in research involving human participants or in clinical research.

3 Publication of results and research data

3.1 Authorship

Defining the Role of Authors and Contributors

Authorship, or in the case of a subject of industrial property, origination, represents the recognition of an individual's contribution to a research result (publication, patent, etc.) and also determines responsibility for the outcome. The basic concepts of authorship are defined in the internal policy *Ochrana autorských práv, práv souvisejících s právem autorským a databází na Univerzitě Palackého v Olomouci* (English version in preparation: Protection of Copyright, Copyright-related Rights and Databases at Palacký University Olomouc). There are no general rules for determining the order of authors. Principles, customs and practices vary considerably from one field to another. Researchers should be familiar with the practices regarding authorship within their disciplines and should always follow any requirements set out by publishers in the guidelines to authors. To increase transparency, it is advisable to include with the manuscript a description of each author's contribution to the publication, even when not directly required by the publisher. The description is normally given in an acknowledgement. A number of major publishers commonly work with the *CREDIT taxonomy*, which includes 14 roles that identify the typical roles of authors in producing a research outcome.

3.2 Authorship planning

Authorship criteria should be agreed upon by all researchers at an early stage of research design. The author may be only a natural person who has created a work as a unique result of their creative activity; the same shall apply to a co-author of a work in respect of their share, contribution to the joint creative activity of two or more authors until the completion of the work of joint authors as a single work. It is not detrimental to the creation of a work of joint authors if the results of the creative activity of the individual co-authors can be distinguished in the work, provided that they are not capable of separate use (Section 8 subsection 1 of Act No. 121/2000 Coll., Copyright Act). In the case of the eligibility of an author's contribution for separate use, it will in principle be an independent work that can be included in a collective work. Where possible, written records of authorship decisions should be kept and these records should be revisited if roles and contributions change during the course of the research or if new researchers join the project. Anyone listed as an author on a paper should approve the final version of the paper or outcomes and accept responsibility for the final outcome and for being familiar with the content of the paper and being able to identify their contribution to it. Persons who have contributed to the creation of an work only by providing assistance or advice of a technical, administrative or professional nature or by providing documentary or technical material, or who have merely initiated the creation of the work, do not act as co-authors (see Section 8 subsection 2 of Act No. 121/2000 Coll., Copyright Act), but should be properly acknowledged (usually also in the acknowledgement section). In particular, the assistance of technical support staff (lab technician, data steward, facility, etc.) should be acknowledged where relevant.

3.3 Cases of misuse of authorship

The most common examples of misconduct on the part of the authorship of a scientific work are the naming of an individual or group of individuals whose contribution to the unique creative activity expressed in the copyright work was minor or nonexistent, and the omission of those whose creative activity made a relevant contribution to the creation of the copyright work. Another unethical practice is for a senior researcher to automatically claim authorship based on his or her financial support or position in the institution's hierarchy. Furthermore, in the supervisor-student relationship, merely supervising a student through studies is not considered to be an authorial contribution. The involvement of the dissertation supervisor in the disertation processing in the form of co-authorship of the supervisor is undesirable in order to prevent situations in which the exercise of property author's rights to the co-author's share of a doctoral student without an employment relationship with UP is evidenced to the doctoral student himself and to the co-author's share of the supervisor to UP as his employer.

3.3.1 Gift authorship

Sometimes also known as guest or courtesy authorship – is authorship granted to a person who does not meet the criteria for authorship according to the UP internal policy *Ochrana autorských práv, práv souvisejících s právem autorským a databází na Univerzitě Palackého v Olomouci*.

The reasons for this may be various:

a. Attributing authorship to older or better-known colleagues in the belief that this will help to increase the credibility of the research team and the chances of publication of the outcome.
b. To ingratiate oneself with colleagues or collaborators as a reward for earlier help.
c. Intention to maintain good relations and expectation of reciprocal action in the future.
d. Attributing authorship to superior, senior staff as a sign of loyalty.
e. Recognition of formal leadership or material or non-material support (or other expression of gratitude).

An exception to this may be "critical reading", where usually the senior author contributes to key improvements to the publication (e.g., data interpretation and coherence), but not in the sense of Section 8 subsection 2 of the Copyright Act

3.3.2 Hidden authorship

This occurs when an individual who directly meets the criteria for authorship or has made a significant contribution to the research is deliberately omitted from the list of authors or at least from the acknowledgements. This may include colleagues who have ceased working with the research team during the course of the research, students who do not (actually or allegedly) aspire to an academic career, etc. Omissions may seem like a minor issue at first glance, but may hide ethically questionable issues such as conflicts of interest - indeed, this practice is sometimes used to deliberately obscure the involvement of an individual or institution (e.g., a private company sponsoring research). A particularly serious unfair practice involves studies (e.g., pharmacological studies) being conducted by employees of private companies to promote a product within the scientific community, with the real authors remaining hidden and the outcome being associated prima facie with unbiased authors who are supposed to lend it credibility.

3.4 Availability, publication and distribution of results

The general rule is that research results should be **accessible and open,** unless there are compelling ethical, legal, security grounds (e.g. GDPR, intellectual property protection), protection of trade secrets, classified information, or ensuring that results are filed for legal protection or planned commercialization. The availability and openness of results may be limited by the contract with the partner or funding body. The availability and openness of research results and research data is essential to ensure their verifiability, reproducibility and reusability to return concrete benefits of the research to their participants and society, and to ensure dialogue with the public. More information on Open Science can be found at https://openscience.upol.cz/en/. Every research activity should be linked to objectivity, reliability and accuracy. Researchers should therefore take care in publishing their findings and research results to ensure their completeness, truthfulness, verifiability and objective interpretation, which includes critical reflection on the weaknesses and strengths of their research. Authors should be prepared to take responsibility for their findings, assertions and arguments; therefore it is important to properly approach the issue of authorship, defined according to the UP internal policy "Protection of Copyright, Copyright-related Rights and Databases at Palacký University Olomouc". Researchers collaborating on the project are responsible for the accuracy, correctness and reproducibility of the data they have contributed to the research. To ensure the achieving of desirable qualitative parameters of research data and material, researchers should follow FAIR principles, the UP internal policy for research data handling, and discipline specific guidelines.

3.4.1 "Back-to-back" publishing

The scientific environment is highly competitive. Sometimes two or more groups will independently achieve similar results. This can then lead to hasty publication of results to insure recognition for the initial contribution. In doing so, publishing overlapping research from two different departments in the same journal can make a significant contribution to the research community (e.g., in terms of reproducibility). New scientific findings then have a greater impact if they have already been independently validated. Publishers offer the possibility of a "back-to-back" process where authors can agree to publish together and thus have their work evaluated simultaneously. The initiative to publish together must come from the authors themselves. The situation is more complicated if the authors do not know about their work. Publishers are bound by confidentiality and therefore cannot inform authors about research overlap and the possibility of "back-to-back" publication.

3.4.2 Unethical publication practices

(inspired by ***European Code of Conduct Revised Edition 2023***)

Researchers must not commit plagiarism, falsification and fabrication.

3.4.2.1 Fabrication

Creating non-existent data or results and presenting them as real.

E.g.: Creating data for an experiment that was never conducted.

3.4.2.2 Falsification

Manipulation of research material, equipment or processes, or omission of data/results without proper scientific or statistical justification.

E.g.: Modification of data to change the significance of a result.

3.4.2.3 Plagiarism

Copying other works or parts of works without appropriate references to the sources subject to the conditions of Section 31 of the Copyright Act and the relevant citation standard. By work is meant ideas, writing, images, code, structure, design, etc.

E.g.: Paraphrasing another person's ideas without an appropriate reference.

It is not considered plagiarism to state commonly known facts (even subject-specific ones) that can be found in a large number of available sources. More information on plagiarism can be found on the *University of Oxford-Plagiarism* website.

3.4.2.3.1 "Auto-plagiarism"

Republishing substantial portions of one's own previously published work without proper acknowledgement or citation. Multiple publication of results in different formats, serving to increase reach, is not considered self-plagiarism.

3.4.2.4 “Salami” publishing

The purposeful distribution of results into multiple publications to increase publication activity.

3.4.2.5 Misinterpretation

Hiding relevant results/data deliberately or negligently; misinterpretation of data, research contribution, qualifications or publication history.

3.4.2.6 “Paper mills”

Research integrity: trending topic – paper mills

There are profit-oriented, unofficial and potentially illegal organizations that produce and sell products that range from research data to fraudulent manuscripts (written by “ghostwriters”). Researchers who need publications for further career development or to meet institutional criteria can purchase ready-made manuscripts. Paper mills can also sell authorship once their article has been accepted for publication.

Although the outcome produced by paper mills may not always be fabricated or falsified, personal attribution of authorship without creative involvement in the creation of the work is unethical. There can also be problems with plagiarism, which often goes undetected because the text comes from a translated version of another article.

3.4.2.7 Predatory journals

With the spread of open science/open research and the increasing need for authors to publish their work in open access, the frequent charging for this service has led to the emergence of so-called predatory journals (or even publishers) that parasitize the system to generate profit. They are often characterized by sub-standard peer review, false or misleading information about themselves, deviations from editorial and publishing best practices, lack of transparency and/or aggressive solicitation practices such as repeated email solicitations, frequent and repeated offers to edit special issues of journals. These publishers often do not adhere to the principles of long-term preservation of digital content; eventually, the published publications may not be accessible at all.

Publishing in predatory journals can significantly damage the professional reputation of the author and the prestige of the institution. They can also mar an author's success in grant competitions or in pursuing a job in academia. The time and effort spent on a research project may be compromised by such publications. Similarly problematic are membership on editorial boards of non-serious or otherwise dubious journals and participation in predatory conferences.

Before submitting a manuscript to an unfamiliar journal, it is advisable to check the available databases (e.g. https://thinkchecksubmit.org/), specifically to see if:

a. Does the journal have a valid ISSN code, e.g., on the ISSN Portal (https://portal.issn.org).

b. It is indexed in recognized databases, e.g. Web of Science (https://jcr.clarivate.com/jcr/home) or Scopus (https://www.scopus.com/search/form.uri?display=basic#basic). (Beware, some dubious journals will from time to time get into these databases).

c. A journal that is referred to as open access may be listed in the DOAJ open access journal registry (https://www.doaj.org). (Beware, some dubious journals will from time to time get into these databases).

d. The reported scientometric data are true, e.g., at https://jcr.clarivate.com/jcr/home or https://scopus.com.

It is advisable to study the journal's website in detail and check the quality of the published texts, looking for signs of predatory journals:

a. The website looks unprofessional, the texts contain grammatical and stylistic errors.

b. Suspicious calls for publication on social media journals, with similar titles to reputable impacted journals.

c. Image attachments have low resolution, are blurry or are explicit imitations (e.g. of authentic logos).

d. The content of the site does not target the scientific community, but primarily potential authors – it praises the journal and tries to persuade scientists to publish their article in the journal.

e. There is no description of the manuscript process (i.e., peer-review process), no mention of the policy on retraction of articles (e.g., due to fraud or plagiarism), and no information on how digital content will be preserved.

f. Fees for publishing an article in open access mode may be suspiciously low or high.

g. Verifying the composition of the editorial board is complicated - e.g., affiliations are missing, board members do not list their membership on the journal's board in their profiles, such as ORCID iD, department-specific websites. The fact that multiple journals of the same publishing house have the same board or that editorial board members come from the same country or geographic region may be suspicious.

The decision to publish the results of research work requires caution on the part of authors, and a critical assessment of tempting and underhanded offers to review articles from unfamiliar journals or offers to publish in them. Similarly, with offers of membership of editorial boards of unproven journals or in the case of offers from publishers that verge on predatory or whose publishing practices raise any doubts. It is advisable to consult with more experienced colleagues in the field.

3.5 Citation

Acknowledging the work of others is important for maintaining a collegial culture and is a precondition for accountability and criticism. Proper citation is also a precondition for the legal use of another author's work, or excerpts from it to the extent provided for in the Copyright Act. Researchers should provide accurate references to all sources they use. This also applies when reusing text from their own publications and when using non-scientific sources. References must be sufficient to allow others to locate, assess and interpret the content in its original context. Researchers who build on the ideas and research of others, whether published or unpublished, must state this accurately so that it is clear what their own contribution is. Researchers must present the research of others objectively, in a balanced and accurate manner. They need to cite all relevant papers, even those that do not support their assumptions and interpretations of the results. The UP Library offers detailed guidance on how to cite and what tools can be used to create and manage citations on its portal https://ezdroje.upol.cz/citace/index.php?lang=en.

3.5.1 Unethical citation practices

(inspired with ***European Code of Conduct Revised Edition 2023***)

- **a.** Obtain citations of your own work by (unwritten) agreement with other authors on reciprocal citation.
- **b.** Purposeful citation of colleagues or results from specific journals to increase their scientometric rating.
- **c.** Selective or inaccurate citation.
- **d.** Unnecessary distribution of bibliographies to please editors, reviewers, or colleagues or to manipulate bibliographic data.

3.6 Affiliation

Correct and complete affiliation, i.e., the identification of the author to the relevant organization, is a fundamental precondition for the correct publication of scientific and research results, as well as other metadata.

The author's affiliation is used by various evaluation systems through citation and abstract databases such as Web of Science or Scopus, and the wrong form of affiliation, which can lead to incorrect identification of the author's home institution, is a consequence of not including such results in various levels of evaluation of the author's home institution (e.g. international rankings, national R&D evaluation according to the 2017+ Methodology, distribution of the science budget, etc.). It is therefore essential to comply with the obligation to report with each R&D result the correct affiliation of at least the highest level, in the form "Univerzita Palackého v Olomouci" in Czech and "Palacký University Olomouc" in English.

The persistent identifier of the University within the *Research Organization Registry* can also ensure the correct identification and designation of the institution in applications that allow the use of the identifier.

By declaring an affiliation, the author also acknowledges that this institution is the source of funding for the submitted research results and is entitled to the relevant rights to the result. In some cases, it is possible to report affiliations to more than one institution. However, the reasons and conditions for this should be contractually regulated between such institutions and it is still the case that these institutions must have participated in some way in the realization of such a research result. In such cases, each affiliation should be reported individually

(for each institution separately) and, ideally, the reasons for listing multiple affiliations should be justified in the result itself or in its metadata description.

3.7 Conflict of interest

Contract research and external funding of research projects can make it difficult to maintain transparency and impartiality due to the increased risk of conflicts of interest. When research is commissioned by an external funder, and when the funder influences the content and thematic delineation to a greater or lesser extent, a number of conflicts can arise that affect the research or its communication. In particular, where conflicts of interest arise, project leaders have a duty to ensure that research results are published objectively and responsibly. Contract research should be based on explicit contracts between the sponsor and the institution conducting the research, with contracts formulated in such a way that researchers can be guided by research ethics.

In order to ensure sufficient transparency, it is necessary that:

a. The research institution and the project leader had overall responsibility for the selection of methods, the acquisition of results and their interpretation.

b. Research results were shared as widely as possible. In the case of an agreed time-limited exclusive right of use by the funding body, the research results must be shared with the public after the research has been completed, where possible, i.e., unless other reasons (e.g. personal data protection) prevent disclosure.

c. The exclusive right to use the research results has not been granted for an indefinite period of time.

3.8 Assistive tools including artificial intelligence

(Grammarly, OpenAI-ChatGPT, etc.)

The use of assistive tools ranging from spell checking to longer content generation is possible as long as they are used with respect to good research practice. The UP Faculty of Education has issued recommendations for the use of assistive tools – *PdF UP k problematice využívání umělé inteligence* (only in Czech). Many journals deal with this issue in their instructions to authors, so the rules may vary. Artificial intelligence is a dynamically developing field and it is therefore necessary to keep track of its evolution. For this purpose UP has created a website – *https://ai.e-bezpeci.cz/* (only in Czech), where the current state of AI issues is discussed.

4 Violations of the principles of research integrity and dealing with breaches of the rules of good research and publication practice

In accordance with research integrity, any scientific misconduct must be addressed in a vigorous and effective manner. It is necessary to ensure that the damage that has already been done is eliminated and that measures are taken to ensure that similar conduct cannot be repeated in the future. Preventive mechanisms must be set up so that the potential for the above scientific misconduct can be minimized or eliminated altogether.

The resolution of scientific misconducts and disputed cases in the field of ethics of scientific work, especially publishing activities, is within the competence and authority of the head of department, or supervisor, and the dean/director of the relevant UP component part, or the rector of UP, if the offender is assigned to a UP component part other than a faculty or higher education institute. A sanction may be activated against the perpetrator if their misconduct is violating their relevant legal obligations, whether in the form of a sanction in private law, in particular employment sanctions, legal remedies against infringement of intellectual property rights or compensation for damages, or a criminal complaint (criminal law level), or disciplinary proceedings may be initiated before the relevant

disciplinary committee within UP if the perpetrator in the position of a UP student has violated an obligation set forth in a legal regulation or an internal UP regulation. Furthermore, the misconduct may be referred to the UP Ethics Committee for resolution (in the form of a complaint for a decision of this committee within the meaning of Article 7 of the Statute of the UP Ethics Committee) or to the ethics panels and committees of the faculties, in the case of suspected violations of the *Code of Ethics for UP Employees and Students* . Complaint for a decision of the case by the UP Ethics Committee may be submitted to its chair by an employee or student of UP, a former employee or former student of UP, a professor emeritus, a member of a UP body and the ombudsman (Article 7 clause. 3 of the Statute of the UP Ethics Committee).

Each case under consideration must be assessed individually, impartially and responsibly, on the basis of the specific facts and, where necessary, with the assistance of external experts in the field. It is appropriate to use the recommendations in the *Recomendations for the investigation of research misconduct (European Network of Research Ethics and Research Integrity 2020)* in this assessment.

Other practices such as: attempts to cover up evidence, retaliation against whistleblowers or failure to follow the procedures set out in the UP rules, especially in the Constitution of the UP Ethics Committee, when clarifying potential misconduct in research are also completely unethical and unacceptable.

4.1 Sanctions for breach of good research practice

Minor cases of scientific misconduct in publishing or other creative activity, mistakes or careless errors may be dealt with by written or oral explanation and mediation. These procedures should lead to learning from mistakes and avoiding such behavior in the future.

In case the scientific misconduct is proven by evidence, whether during the hearing before the UP Ethics Committee or the proceeding before the competent public authority under the procedural legislation (in this event in particular witness interviews, documentary evidence, incl. electronic evidence, expert opinions, taken especially by the court or a misdemeanor committee or the results of the use of means of operational investigation in criminal proceedings), regardless of the form of fault, it is essential to take corrective and preventive measures graded according to the severity of the case. In dealing with each case, until such conduct is proven, the rights and interests of the UP employee or student concerned, whether as the author of an author's work (especially a publication) or as the originator of an industrial property object, must be respected to the maximum extent possible and acted objectively and impartially, especially since information about a particular person's misconduct may have extensive consequences for him or her, both in terms of work and in terms of their honor, dignity and private life. The spreading of false information may lead to liability of the individual and/or UP for the damage caused by the spreading of such information; under other conditions, it may also lead to liability for misdemeanor or criminal liability.

A person accused of misconduct in the field of science and research should always respond to such accusations, provide an explanation for the allegations of misconduct and substantiate them with evidence.

For problematic publications with proven scientific misconduct, corrective action must then be taken, both internally within UP (establishing new or supplementing existing organizational, personnel and technical measures and desirable and appropriate changes to existing UP policies or adopting new policies) and externally, especially in relation to the editors of professional journals and publishers of other publications in which the work of UP scientists containing scientific fraud or other scientific misconduct has been recorded. After communication with the editors, the necessary step is corrigendum or retraction of the work. Retraction from the record of Information Register of R&D results (RIV) and the UP internal record of publications (OBD) is also an essential part of the correction.

In the case of any scientific misconduct, within the meaning of the second paragraph of Article 4, regardless of the procedure under the preceding provisions of this subsection, it is necessary for the dean/director or rector of UP, if the offender is assigned to a UP unit other than a faculty or higher education institute, to decide without delay, at the latest so that the expiration of the statute of limitations or statute of limitations is not in vain, whether and what type of sanction (penalty) will be applied to the perpetrator of scientific misconduct, if any.

5 List of references

- https://www.UP.cz/fileadmin/userdata/UP/uredni-deska/zakladni_dokumenty/2023-Eticky___kodex_zamestnancu_a_studentu_UP.pdf
- https://allea.org/wp-content/uploads/2021/08/European_Code_of_Conduct_Digital_CZ.pdf
- https://www.wma.net/wp-content/uploads/2016/11/Helsinska-deklarace-WMA-preklad-2013.pdf
- https://www.who.int/teams/health-product-policy-and-standards/standards-and-specifications/gmp
- https://files.UP.cz/normy/normy/R-B-23-03.pdf
- https://www.go-fair.org/fair-principles/
- https://allea.org/code-of-conduct/
- https://onderzoektips.ugent.be/en/tips/00002034/
- https://www.apa.org/ethics
- https://www.efpa.eu/working-groups/ethics
- https://cmpsy.cz/?page=eticky-kodex
- https://www.uu.nl/sites/default/files/RDM_Support_Template_Information_letter.pdf
- https://www.uu.nl/en/research/research-data-management/guides/legal-considerations/how-to-write-an-informed-consent-form

6 Recommended sources

- Rada VŠ. (2007) Vzorový etický kodex pro akademické pracovníky vysokých škol.
- Etický rámec výzkumu (2005). MŠMT. http://www.msmt.cz/vyzkum/eticky-ramec-vyzkumu-1
- https://publicationethics.org/peerreview
- Příklad informovaného souhlasu
- POLICY BRIEF: Data Ethics and Research Integrity