



LEIBNIZ CENTRE
for Tropical Marine Research

ZMT



**Guidelines for Safeguarding
Good Scientific Practice
at the Leibniz Centre for
Tropical Marine Research
(ZMT)**

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Disclaimer:

This English translation of the Guidelines for Safeguarding Good Scientific Practice at the Leibniz Center for Tropical Marine Research is provided for informational purposes. The English text was carefully translated and reviewed for accuracy. In the event that the English and German versions permit different interpretations, the German text shall prevail.

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1. Preamble

The employees of the Leibniz Centre for Tropical Marine Research (ZMT) GmbH are aware of their responsibility to ensure and communicate the rules of good scientific practice and to prevent scientific misconduct by means of appropriate procedures and measures. To this end, they regularly update their knowledge on the standards of good scientific practice. The following guidelines are meant as an institution-specific refinement and supplement to the "Leibniz Code for Good Research Practice¹" (2021) and the Guidelines for Good Scientific Practice in the Leibniz Association (2019) and the Code of Conduct "Guideline for Safeguarding Good Research Practice"² by the German Research Foundation (DFG). ZMT scientists acknowledge the code of conduct issued by the DFG as amended from time to time as a legally binding frame of reference. Several passages contained in the present ZMT guidelines follow verbatim the two aforementioned documents. The respective passages have not been specifically marked. ZMT employees at all career levels and all ZMT members, such as visiting scientists shall in general accept and follow all recommendations and requirements formulated herein. Every employee has confirmed by signature, usually immediately after signing the employment or guest contract, that he or she acknowledges the 19 Guidelines for Safeguarding Good Scientific Practice at the Leibniz Centre for Tropical Marine Research (ZMT) contained in this document.

Scientific integrity forms the basis for trustworthy research. It is an example of academic voluntary commitment that encompasses a respectful attitude towards peers, research participants, animals, cultural assets, and the environment, and strengthens and promotes vital public trust in research. The constitutionally guaranteed freedom of research is inseparably linked to a corresponding responsibility. Taking this responsibility into full account and embedding it in individual conduct is an essential duty for every ZMT researcher. The research community itself ensures good research practice through fair and honest attitudes and conduct as well as organisational and procedural regulations.

Individuals who report a well-founded suspicion of misconduct fulfil a crucial function in the self-regulation of the research community. Scientific and academic societies promote good research practice by developing a shared understanding among their members and by defining binding ethical standards, which they establish within their specialist communities. Journal publishers take into account the requirements of high-quality research with a stringent peer-review process. The German Research Ombudsman³, an independent body,

¹ <https://www.leibniz-gemeinschaft.de/ueber-uns/leibniz-integritaet/gute-wissenschaftliche-praxis-und-ombudswesen>

² <https://wissenschaftliche-integritaet.de/>

³ <https://ombudsman-fuer-die-wissenschaft.de/>

and local ombudspersons are trustworthy points of contact that offer advice and conflict mediation on issues relating to good research practice and potential misconduct.

These guidelines provide all ZMT researchers with a reliable reference with which to embed good research practice as an established and binding aspect of their work. We expect honesty and compliance with high standards in everyday research.

2. Standards of Good Research Practice

2.1. Applicability

The guidelines of good research practice at the Leibniz Centre for Tropical Marine Research (ZMT) is aimed at researchers of all career levels. They outline the main standards of good research practice and describe the procedure to follow in the event of non-compliance with these standards.

2.2. Principles

2.2.1 Guideline 1: Commitment to the general principles

- ▶ Individual researchers are responsible for ensuring that their own conduct complies with the standards of good research practice.

Explanations

In particular, the principles include working *lege artis*⁴, maintaining strict honesty in attributing one's own contributions and those of others, rigorously questioning all findings, and permitting and promoting critical discourse within the research community.

For new ZMT employees at all career levels, the ZMT Academy annually organises the *ZMT Welcome Week*, which also includes advanced training on good scientific practice, authorship and the prevention of plagiarism. In addition, ZMT supports all employees in the continuous process of learning and further training on good scientific practice, e.g. by the ombudspersons who pass on information gained in further training courses during the weekly ZMT forum "Palaver".

⁴"according to the rules of the art"

2.2.2 Guideline 2: Professional ethics

- ▶ ZMT researchers are responsible for putting the fundamental values and norms of research into practice and advocating for them. Education in the principles of good research begins at the earliest possible stage in academic teaching and research training. ZMT researchers at all career levels regularly update their knowledge about the standards of good research practice and the current state of the art.

Explanations:

Experienced and early career researchers support each other in a process of continuous mutual learning and ongoing training and maintain a regular dialogue.

At ZMT this is implemented at various levels, such as regular panel and project meetings during doctoral training, internal working group meetings, regular department meetings, working group leader meetings and an annual ZMT internal conference promoting scientific exchange.

2.2.3 Guideline 3: Organisational responsibility of ZMT management

- ▶ The management of ZMT creates the basic framework for research. They are responsible for ensuring adherence to and the promotion of good research practice, and for appropriate career support for all ZMT researchers. The management of ZMT guarantees the necessary conditions to enable researchers to comply with legal and ethical standards. The basic framework includes clear written policies and procedures for staff selection and development as well as for early career support and equal opportunity.

Explanations:

The management of ZMT is responsible for ensuring that an appropriate organisational structure is in place at the institution; they work in a respectful and trusting manner with the department heads, who are committed to these principles within their sphere of influence. The organisational structure makes certain that the tasks of leadership, supervision, quality assurance and conflict management are clearly allocated in accordance with the size of individual research work units and suitably communicated to members and employees.

With regard to staff selection and development, due consideration is given to gender equality and diversity. The relevant processes are transparent and avoid unconscious bias as much as possible. To insure the implementation, the works council and the Women's Representative of ZMT are involved in the application process. Staff development meetings are held annually. Suitable supervisory structures and policies are established via the ZMT Academy for early career researchers. The ZMT Academy offers honest career advice, training opportunities and mentoring to researchers and research support staff. ZMT pursues a staff policy that takes into account family and life phases - and is certified pursuant to the audit "berufundfamilie" (work and family).

2.2.4 Guideline 4: Responsibility of the heads of research work units

- ▶ The head of a research work unit is responsible for the entire unit (e.g. department, programme area or working group (WG)). Collaboration within the unit is designed such that the group as a whole can perform its tasks, the necessary cooperation and coordination can be achieved, and all members understand their roles, rights and duties. The leadership role includes ensuring adequate individual supervision of early career researchers, integrated in the overall ZMT institutional policy, as well as career development for researchers and research support staff. Suitable organisational measures are in place at the level of the individual unit and of the leadership of the institution to prevent the abuse of power and exploitation of dependent relationships.

Explanations:

The size and the organisation of the research unit (e.g. department, programme areas or WGs) are designed to allow leadership tasks, particularly skills training, research support and supervisory duties, to be performed appropriately. The performance of leadership tasks is associated with a corresponding responsibility. ZMT researchers and research support staff benefit from a balance of support and personal responsibility appropriate to their career level. They are given adequate status with corresponding rights of participation. Apart from methodological skills, ZMT will teach young scientists a basic ethical attitude for scientific working as well as skills for responsible handling of results and for cooperating with other scientists. The *ZMT Doctoral Studies Regulations* provide a binding description of the rights and obligations applicable to doctoral candidates and their supervisors at ZMT, as well as the framework for obtaining a scientific degree. The head of a scientific unit shall create organisational structures in which the results achieved by specialised division of tasks can be mutually communicated, criticised and integrated

into a common state of knowledge. An active communication, especially within a working group, and guaranteed mentoring relations are the most effective means to prevent the development of dishonest behaviour. Each junior researcher must therefore have a primary reference person in the working group who also communicates the content of these guidelines on good scientific practice. A growing degree of independence will enable young academics to shape their own careers.

2.2.5 Guideline 5: Dimensions of performance and assessment criteria

- ▶ To assess the performance of ZMT researchers, a multidimensional approach is called for; in addition to academic and scientific achievements, other aspects may be taken into consideration. Performance is assessed primarily on the basis of qualitative measures, while quantitative indicators may be incorporated into the overall assessment only with appropriate differentiation and reflection. ZMT adheres to the evaluation criteria of the Leibniz Association when assessing its scientists. Where provided voluntarily, individual circumstances stated in curricula vitae – as well as the categories specified in the German General Equal Treatment Act [*Allgemeines Gleichbehandlungsgesetz*] – are taken into account when forming a judgement.

Explanations:

High-quality research is oriented towards criteria specific to individual disciplines and interdisciplinary criteria. In addition to the generation of and critical reflection on findings, other aspects of performance are taken into consideration in the evaluation process. Examples include involvement in teaching, academic self-governance, ZMT public relations, knowledge and technology transfer as well as societal impact; contributions in civil society engagement and the general good of society may also be recognised. An individual's approach to research, such as an openness to new findings and a willingness to take risks, is also considered. Appropriate allowance is made for periods of absence due to personal, family or health reasons or for prolonged training or qualification phases resulting from such periods, and for alternative career paths or similar circumstances.

2.2.6 Guideline 6: Ombudspersons

- ▶ ZMT appoints at least one independent ombudsperson to whom their members and employees can turn with questions relating to good research practice and in cases of suspected misconduct. ZMT takes sufficient care to ensure that people are aware of who the ombudspersons at the institution are. For each ombudsperson there must be a

designated substitute in case there is any concern about conflicts of interest or in case the ombudsperson is unable to carry out his or her duties.

Explanations

Ombudspersons must not be members of the ZMT directorate while exercising this function. The term for ombudspersons is limited to three years. Another term is possible. The ZMT ombudsperson's substitute shall assume the role of the ZMT ombudsperson if the latter cannot act objectively in a given case due to a conflict of interest, or is prevented from attending due to absence. In addition, the substitute shall assume the ZMT ombudsperson's role if the latter leaves the institute or resigns from their office prematurely for other reasons. The modalities of the election are specified in the election regulations. ZMT scientists with integrity and leadership experience are selected as ombudspersons. They provide advice as neutral and qualified contact persons in questions of good research practice and in cases of suspected scientific misconduct and contribute, as far as possible, to solution-oriented conflict mediation. Conflicts shall be addressed openly as early as possible. In a process initiated by the ombudsperson, an amicable solution shall initially be sought. The ZMT ombudsperson takes action if a scientist calls upon them. The ombudsperson can take action in justified cases if they are informed by third parties of alleged scientific misconduct. Any approach to the ombudsperson will be treated confidentially. The ombudsperson shall observe strict confidentiality with respect to all information which has come to their knowledge in the course of their activity. The academic management provides the ombudspersons with the necessary support and acceptance in terms of content and organisation when carrying out their tasks. The ZMT ombudsperson shall attend further training measures, for example those offered by the Leibniz Association, in order to support their work. Moreover, the ZMT ombudsperson shall be in contact with ombudspersons of other Leibniz Institutes as well as with other research facilities and universities in the region to exchange experience and thus ensure that their role is adequately fulfilled. In order to increase the functionality of this system, ZMT takes measures to reduce the workload of the ombudspersons. Alternatively, and particularly in cases of suspected bias, persons concerned can turn to the central Ombuds Committee of the Leibniz Association or the nationally operating body "The German Research Ombudsman". The German Research Ombudsman is an independent body providing advice and support on issues of good research practice and its violation by scientific misconduct.

2.3. Research Process

2.3.1 Guideline 7: Cross-phase quality assurance

- ▶ ZMT researchers carry out each step of the research process *lege artis*. When research findings are made publicly available (in the narrower sense of publication, but also in a broader sense through other communication channels), the quality assurance mechanisms used are always explained. This applies especially when new methods are developed.

Explanations:

Continuous quality assurance during the research process includes, in particular, compliance with subject-specific standards and established methods, processes such as equipment calibration, the collection, processing and analysis of research data, the selection and use of research software, software development and programming, and the keeping of laboratory notebooks in all ZMT laboratories.

If ZMT researchers have made their findings publicly available and subsequently become aware of inconsistencies or errors in them, they make the necessary corrections. If the inconsistencies or errors constitute grounds for retracting a publication, ZMT researchers will promptly request that the publisher, infrastructure provider, etc. correct or retract the publication and make a corresponding announcement. The same applies if ZMT researchers are made aware of such inconsistencies or errors by third parties.

The origin of the data, organisms, materials and software used in the research process is disclosed and the reuse of data is clearly indicated; original sources are cited. The nature and the scope of research data generated during the research process are described. Research data are handled in accordance with the requirements of the relevant subject area. The source code of publicly available software must be persistent, citable and documented. The infrastructure group Research Data "Digital ZMT (DigiZ)" supports data publication and archiving in compliance with the ZMT "Open Data Policy". The goal of the quality assurance is that results or findings can be replicated or confirmed by other researchers (for example with the aid of a detailed description of materials and methods). Depending on the field concerned, this is an essential part of quality assurance.

2.3.2 Guideline 8: Stakeholders, responsibilities and roles

- ▶ The roles and responsibilities of ZMT researchers and research support staff participating in a research project must be clear at each stage of the project.

Explanations

The participants in a research project engage in regular dialogue. They define their roles and responsibilities in a suitable way and adapt them where necessary. Adaptations are likely to be needed if the focus of a participant's work changes. Partner(s) in the project or collaboration should be kept informed of the progress and manuscripts produced from the joint research project at every stage of the project, regardless of their active involvement in a specific section. This applies regardless of whether they are potential (co-)authors of the manuscript in question or not. Rights and obligations arising from cooperation with business partners should be agreed upon in advance by contract with the involvement of the ZMT's Office for Knowledge Exchange (OKE). In this context, it is important to have an agreement in place ensuring that the results can be developed freely and independently and that clearly defines which of them can be published and reused.

2.3.3 Guideline 9: Research design

- ▶ ZMT researchers take into account and acknowledge the current state of research when planning a project. To identify relevant and suitable research questions, they familiarise themselves with existing research in the public domain. ZMT ensures that the necessary basic framework for this is in place.

Explanations

Methods to avoid (unconscious) distortions in the interpretation of findings, e.g. the use of blinding in experiments, are used where possible. ZMT researchers examine whether and to what extent gender and diversity dimensions may be of significance to the research project (with regard to methods, work programme, objectives, etc.). The context in which the research was conducted is taken into consideration when interpreting findings. The choice of research approach is crucial for the findings gained in terms of their informative value, but also for their compatibility and potential for generalisation. All partners involved shall cooperate closely and equally in the design of a study or a project. The choice of methodology and modelling system should be carefully assessed; the advantages and disadvantages should be openly stated and reflected on in the evaluation. Models used should be valid and a robust research design should be applied. This can also include ethical aspects, such as establishing suitable quality assurance measures, e.g. by applying the 3Rs (Replacement, Reduction and Refinement) when planning animal experiments.

2.3.4 Guideline 10: Legal and ethical frameworks, usage rights

- ▶ ZMT researchers adopt a responsible approach to the constitutionally guaranteed freedom of research. They comply with rights and obligations, particularly those arising from legal requirements and contracts with third parties, and where necessary seek approvals and ethics statements and present these when required. With regard to research projects, the potential consequences of the research should be evaluated in detail and the ethical aspects should be assessed. The legal framework of a research project includes documented agreements on usage rights relating to data and results generated by the project.

Explanations

ZMT researchers maintain a continual awareness of the risks associated with the misuse of research results. Their responsibility is not limited to compliance with legal requirements but also includes an obligation to use their knowledge, experience and skills such that risks can be recognised, assessed and evaluated. They pay particular attention to the aspects associated with security-relevant research (dual use). Respectful treatment of living organisms, the environment and the researched ecosystems, reflection on risks and awareness of ethical or legal issues are an indispensable part of life science research projects. ZMT ensures that its members' and employees' actions comply with regulations and promote this through suitable organisational structures. They develop binding ethical guidance and policies which are queried and reviewed via the binding ZMT Ethical clearance procedure.

Where possible and appropriate, ZMT researchers conclude documented agreements on usage rights in collaboration with the Office for Knowledge Exchange (OKE) at the earliest possible point in a research project. Documented agreements are especially useful when multiple academic and/or non-academic institutions are involved in a research project or when it is likely that a researcher will move to a different institution and continue using the data generated for their own research purposes. In particular, the researcher who collected the data is entitled to use them. During a research project, those entitled to use the data decide whether third parties should have access to them (subject to data protection regulations). Original data are the property of ZMT, unless other contractual arrangements have been agreed upon within the projects. Scientists may take copies with them, provided nothing to the contrary is stipulated by data protection regulations. The scientific director and their representative(s) shall have the right to inspect the original data at any time. ZMT encourages its scientists to publish research results pursuant to ZMT's Open Access Policy, aiming at the most open availability and free reuse of scientific

achievements and underlying data. Researchers provide correct information about their own preliminary work and that of others.

2.3.5 Guideline 11: Methods und Standards

- ▶ To answer research questions, ZMT researchers use scientifically sound and appropriate methods. When developing and applying new methods, they attach particular importance to quality assurance and the establishment of standards.

Explanations:

The application of a method normally requires specific expertise that is ensured, where necessary, by suitable cooperative arrangements. They use the advisory services offered by the infrastructure group leaders already in the project planning phase. The establishment of standards for methods, the use of software, the collection of research data and the description of research results is essential for the comparability and transferability of research outcomes.

Many relevant questions require the comparison, revision and further development of methods. In some cases, this also involves the development of new methods, particularly when complex problems and resilient approaches to problem solving shall be developed. ZMT scientists make conscious and comprehensible decisions about such methodological innovations; they reflect on the process and the boundaries of knowledge resulting from it. If possible, they apply test runs using traditional methods and publish their findings in peer-reviewed journals to achieve a deeper reflection on methods.

2.3.6 Guideline 12: Documentation

- ▶ ZMT researchers document all information relevant to the production of a research result as clearly as is required by and appropriate for the relevant subject area to allow the result to be reviewed and assessed. In general, this also includes documenting individual results that do not support the research hypothesis. The selection of results or intermediate results is not permitted in this context. Where subject-specific recommendations exist for review and assessment, ZMT researchers create documentation in accordance with these guidelines. If the documentation does not satisfy these requirements, the constraints and the reasons for them are clearly explained. Documentation and research results must not be manipulated; they are protected as effectively as possible against manipulation.

Explanations:

An important basis for enabling replication is to make available the information necessary to understand the research (including the research data used or generated, the methodological, evaluation and analytical steps taken, and, if relevant, the development of the hypothesis), to ensure that citations are clear, and, as far as possible, to enable third parties to access this information. Where research software is being developed, the source code is documented. As part of the strategic extension "Digital ZMT (DigiZ)", the Infrastructure Group Research Data supports data management during all stages of the research data life cycle, starting with planning and ending with archiving.

2.3.7 Guideline 13: Providing public access to research results

- ▶ As a rule, ZMT researchers make all results available as part of scientific/academic discourse. In specific cases, however, there may be reasons not to make results publicly available (in the narrower sense of publication, but also in a broader sense through other communication channels); this decision must not depend on third parties. ZMT researchers decide autonomously – with due regard for the conventions of the relevant subject area – whether, how and where to disseminate their results. If it has been decided to make results available in the public domain, ZMT researchers describe them clearly and in full. Where possible and reasonable, this includes making the research data, materials and information on which the results are based, as well as the methods and software used, available and fully explaining the work processes. Software programmed by ZMT researchers themselves is made publicly available along with the source code. Researchers provide full and correct information about their own preliminary work and that of others.

Explanations:

In the interest of transparency and to enable research to be referred to and reused by others, whenever possible ZMT researchers make the research data and principal materials on which a publication is based available in recognised archives and repositories in accordance with the FAIR principles (**F**indable, **A**ccessible, **I**nteroperable, **R**eusable). Restrictions may apply to public availability in the case of patent applications. ZMT encourages its scientists to publish research results in accordance with the ZMT Open Access Policy. If self-developed research software is to be made available to third parties, an appropriate licence is provided.

In line with the principle of “quality over quantity”, researchers avoid splitting research into inappropriately small publications. They limit the repetition of content from publications of which they were (co-)authors to that which is necessary to enable the reader to understand the context. They cite results previously made publicly available unless, in exceptional cases, this is deemed unnecessary by the general conventions of the discipline.

2.3.8 Guideline 14: Authorship

- ▶ An author is an individual who has made a genuine, identifiable contribution to the content of a research publication of text, data or software. All authors agree on the final version of the work to be published. Unless explicitly stated otherwise, they share responsibility for the publication. Authors seek to ensure that, as far as possible, their contributions are identified by publishers or infrastructure providers such that they can be correctly cited by users.

Explanations:

Only an independent and comprehensible contribution to the scientific content of the publication qualifies for authorship. What constitutes a genuine and identifiable contribution must be evaluated on a case-by-case basis and depends on the subject area in question. An identifiable, genuine contribution is deemed to exist particularly in instances in which a researcher – in a research-relevant way – takes part in

- the development and conceptual design of the research project, or
- the gathering, collection, acquisition or provision of data, software or sources, or
- the analysis/evaluation or interpretation of data, sources and conclusions drawn from them, or
- the drafting of the manuscript, including internal quality assurance if the latter results in significant changes to the draft of a manuscript.

If a contribution is not sufficient to justify authorship, the individual’s support may be properly acknowledged in footnotes, a foreword or an acknowledgement. Honorary authorship where no such contribution was made is not permissible. A leadership or supervisory function does not itself constitute co-authorship. Individual contributions, which taken on their own are not eligible for authorship, but should be mentioned within the acknowledgement, include for example: merely technical support for data production, instruction of scientists in standard methods, providing access to sampling sites or research permissions, providing access to equipment or instruments, proofreading of the manuscript without performing any substantial work on the content (such as proofreading

the English language); only organizational responsibility for third party proposals or management of the institution or organisational unit in which the publication was produced.

ZMT scientists agree on who will be the author of the research results. Each author has critically reviewed and approved the final manuscript. As a practical rule, each author named on the article should be able to present its content.

The question of authorship, i.e. who is to be included in what order, and the respective duties of the authors should be clarified at an early stage of the project, but no later than before starting the joint writing of an article. Planned manuscripts, for example, may be the subject of a cooperation agreement in large collaborative research projects, particularly as the meaning and importance of the role played by the last and first mentioned author may vary according to the discipline, country or institutional environment. ZMT proposes as follows: The lead author or first author initiates the publication, supervises the entire writing process, agrees on co-authorship and involves ZMT partner institutions, if any. Potential conflicts may arise with regard to the identification of the first author, co-authors and senior author, as there are different customs depending on the discipline or country. Possible options include alphabetical order, guidelines for involving each member of a working group, a research cruise, or political argumentations. ZMT proposes that the first author shall be the lead author providing the greatest individual contribution to the content and the author of the first draft. Many journals also offer the possibility to name two lead or senior authors on an equal footing. Ideally, the journal will offer the possibility to list the individual contribution of each author.

ZMT researchers may not refuse to give their consent to publication of the results without sufficient grounds. Refusal of consent must be justified with verifiable criticism of data, methods or results.

2.3.9 Guideline 15: Publication medium

- ▶ Authors select the publication medium carefully, with due regard for its quality and visibility in the relevant field of discourse. ZMT researchers who assume the role of editor carefully select where they will carry out this activity. The scientific/academic quality of a contribution does not depend on the medium in which it is published (see also the "San Francisco Declaration on Research Assessment; DORA").

Explanations:

In addition to publication in journals, authors may also consider books, academic repositories, data and software repositories, and blogs. A new or unknown publication medium is evaluated to assess its seriousness.

A key criterion to selecting a publication medium is whether it has established guidelines on good research practice. ZMT encourages its scientists to publish peer reviewed research results preferably according to the Open Access principle.

2.3.10 Guideline 16: Confidentiality and neutrality of review processes and discussions

- ▶ Fair behaviour is the basis for the legitimacy of any judgement-forming process. ZMT researchers who evaluate submitted manuscripts, funding proposals or personal qualifications are obliged to maintain strict confidentiality with regard to this process. They disclose all facts that could give rise to the appearance of a conflict of interest. The duty of confidentiality and disclosure of facts that could give rise to the appearance of a conflict of interest also applies to members of research advisory and decision-making bodies.

Explanations

ZMT scientists constructively submit themselves to review processes, i.e. to peer review procedures. The confidentiality of third-party material to which a reviewer or committee member gains access precludes sharing the material with third parties or making personal use of it. ZMT researchers immediately disclose to the responsible body any potential or apparent conflicts of interest, bias or favouritism relating to the research project being reviewed or the person or matter being discussed.

2.3.11 Guideline 17: Archiving

- ▶ ZMT researchers back up research data and results made publicly available, as well as the central materials on which they are based and the research software used, by adequate means according to the standards of the relevant subject area, and retain them for an appropriate period of time. Where justifiable reasons exist for not archiving particular data, ZMT researchers explain these reasons. ZMT provides the necessary infrastructure for archiving via the Infrastructure Group Scientific Data Services (within DigiZ).

Explanations:

When scientific and academic findings are made publicly available, then, depending on the subject area, the research data (usually raw data) on which they are based, are

generally archived in an accessible and identifiable manner for a period of ten years on permanent and secure data carriers in the working group/infrastructure unit where the data were produced or in cross-location repositories, depending on the respective subject area. Authorised staff must have access to the research data.

In justified cases, shorter archiving periods may be appropriate; the reasons for this are described clearly and comprehensibly. The archiving period begins on the date when the results are made publicly available.

3. Non-Compliance with Good Research Practice, Procedures

3.1.1 Guideline 18: Complainants and respondents

- ▶ The ZMT ombudspersons and any investigating committee convened to examine allegations of misconduct take appropriate measures to protect both the complainant and the respondent. The investigation of allegations of research misconduct must be carried out in strict confidentiality and adhere to the presumption of innocence. The information disclosed by the complainant must be provided in good faith. Knowingly false or malicious allegations may themselves constitute misconduct. The disclosure should not disadvantage the research or professional career prospects of either the complainant or the respondent.

Explanations:

Particularly in the case of early career researchers, the disclosure should not lead to delays in the complainant's own qualification phase and no disadvantage should arise to the writing of final dissertations or doctoral theses; the same applies to working conditions and possible contract extensions.

The investigating body will respect the presumption of innocence vis-à-vis the respondent at each stage of the process when considering each case. The respondent should not experience any disadvantage resulting from the investigation of the allegation until such time as research misconduct has been formally established. The complainant must have objective reasons for suspecting that an infringement of the standards of good research practice may have occurred.

If the complainant is unable to verify the facts personally, or if there is uncertainty with regard to the interpretation of the guidelines on good research practice in relation to an observed set of circumstances, the complainant should consult the ZMT ombudsperson, the central

Ombuds Committee of the Leibniz Association or the German Research Ombudsman to clarify the suspicion.

The ombudsperson shall weigh up whether or not to pursue anonymous complaints. For an appropriate investigation of the allegation, the complainant should principally disclose their identity on a confidential basis to the ombudsperson. Disclosures made anonymously can only be investigated if the complainant provides the party investigating the allegation with solid and sufficiently concrete facts. If the complainant's identity is known, the investigating body will keep the individual's name confidential and will not share it with third parties without the individual's consent. Different requirements apply only if there is a legal obligation or if the respondent cannot otherwise properly defend themselves because the identity of the complainant is of exceptional importance to the case. The investigating body will promptly inform the complainant if their name is to be disclosed; the complainant can decide whether to withdraw the allegation due to the impending disclosure. The confidentiality of the process is limited if the complainant makes their suspicion public. The investigating body will decide on a case-by-case basis how to handle the breach of confidentiality on the part of the complainant. Should research misconduct not be proven, the complainant must continue to be protected, assuming that the allegations cannot be shown to have been made against their better knowledge.

3.1.2 Guideline 19: Procedures in cases of alleged research misconduct

► ZMT will respond to any suspected non-compliance with good research practice with the utmost attention and stringency. Examples for violations of good research practice shall include, without being limited, to the following:

- data fabrication (invention of data and/or results) and its publication;
- falsification (manipulation, suppression of data or modification of experimental conditions which are not appropriately reflected in the analysis);
- plagiarism (use of ideas, references, results or arguments and representations of others or of oneself, without indicating this appropriately);
- assumption or unjustified adoption of scientific authorship or co-authorship or using another person's name as co-author without his/her permission;
- non-disclosure with regard to conflicts of interest and parallel publications or applications;
- culpable obstruction of research activities performed by other scientists and attempts to compromise the scientific reputation of another person;

- sabotage of research activities;
- culpable deletion of original data and culpable violation of the documentation and storage obligation or culpable removal of sample material from ZMT;
- other infringements of the principles of good research practice committed with intent or gross negligence.

Scientists will have to assume joint responsibility for misconduct, in particular

- if they are involved in or aware of the scientific misconduct of others;
- if they grossly neglect their direct management responsibility, supervision and monitoring duty;
- if they are involved as co-authors in publications that contain falsified content.

The procedure for investigating alleged scientific misconduct by the decentralised ZMT ombudsperson is based on the following rules:

- (1) The ombudspersons shall acknowledge receipt of the complaint to the complainant within one week of receipt.
- (2) The ZMT ombudsperson conducts a preliminary examination (cf. subsection 4). In the first step, they will inform the scientists concerned and attempt to find a solution by means of mediation.
- (3) Unless it is a case of scientific misconduct that has already been committed (e.g. publication of falsified data), but rather a case of advice on how to avoid misconduct or involving mediation between persons (e.g. supervisor and supervised person), the discussions can be discontinued by any involved parties at any time without giving reasons. In the case of mediation, the parties to the conflict themselves are responsible for the implementation and realisation of the proposed solutions. The ombudspersons are not authorised to take measures to enforce or monitor the agreements made.
- (4) If scientific misconduct is suspected, the ombudspersons conduct a preliminary review. For this preliminary review, the ombudsperson shall at least hear the respondent as well as the complainant. Persons who are requested by ombudspersons to attend a meeting for the purpose of this preliminary review are obliged to comply with this request without delay (within a maximum of 2 weeks after the request).
- (5) Respondent and complainant shall be given the opportunity to comment at each stage of the procedure.

- (6) The investigation of any alleged scientific misconduct will be carried out strictly confidentially and with due regard to the presumption of innocence.
- (7) The ombudspersons can interview other persons and commission external expert opinions. Everything said and discussed with an ombudsperson is confidential. No one, not even ZMT management, will be granted access to files in the course of a preliminary investigation.
- (8) As a result of the preliminary investigation, the ombudsperson responsible for the specific case will decide whether to discontinue the proceedings or to establish a committee of inquiry. If the ZMT ombudspersons decide during the preliminary investigation that an external examination of the allegations is necessary, the case can be referred to an external body, e.g. the central Ombuds Committee of the Leibniz Association or the German Research Ombudsman. The ombudsperson will inform all parties involved before an external opinion is obtained.
- (9) If the ombudspersons discontinue the proceedings, the parties involved have the right to appeal. The proceedings are then forwarded directly to the central Ombuds Committee of the Leibniz Association.
- (10) If a committee of inquiry needs to be established, the ombudspersons shall inform the complainant(s), the respondent(s) and the ZMT management in writing of the results of the preliminary examination and the reasons for establishing a committee of inquiry.
- (11) The ZMT management then sets up a committee of inquiry to examine the alleged scientific misconduct.
- (12) The committee of inquiry shall consist of at least four members: the chairperson of the Internal Scientific Council, the scientific management of ZMT or a scientist without a direct working relationship to the persons concerned by the proceedings. Furthermore, a German *Volljurist* must be appointed to the committee of inquiry. One of the ZMT ombudspersons is a member of the committee of inquiry, although without voting rights. In addition, members of other research institutions may be involved. The committee of inquiry shall nominate a chairperson and a vice chairperson from among its members.
- (13) All voting members shall have equal voting rights.
- (14) The committee of inquiry shall meet in a non-public and oral meeting. At its first meeting, the facts to be examined will be agreed upon. The members of the committee of inquiry, ZMT scientists involved and all persons attending or informed about the proceedings shall be obliged to maintain confidentiality.

- (15) ZMT supports the work of the committee of inquiry with regard to organisation and in all respects; in particular, the committee of inquiry shall be granted access to all requested data and documents.
- (16) The committee of inquiry examines whether scientific misconduct has occurred by freely assessing the evidence. The committee of inquiry shall hear the respondent(s) and the complainant(s) and may also interview other persons and commission and consult experts.
- (17) As a general rule, the examination by the committee of inquiry shall be completed within a maximum period of six months after the constitutive meeting of the committee of inquiry.
- (18) The committee of inquiry can decide to discontinue the proceedings.

The committee of inquiry shall draw up a report that either justifies the discontinuation of the proceedings or determines that scientific misconduct has occurred. If the committee of inquiry concludes that scientific misconduct has occurred, i.e. if the majority of the investigation committee considers scientific misconduct to be sufficiently proven, the report shall in particular:

- determine, whether such conduct was committed with gross negligence or intent, and
- assess how serious the scientific misconduct was
- also state what further action the committee of inquiry recommends (consulting further institutions and bodies, initiating appropriate measures, etc.).

The committee of inquiry shall submit the report to the parties involved and to the ZMT management. The ZMT management shall address the report in a timely manner and, if necessary, decide on further measures.

Conclusion of proceedings

(1) The ZMT management shall decide on necessary measures or on the discontinuation of the proceedings based on the report of the committee of inquiry. The following measures may be taken against the person involved:

- written reprimand, warning or other measures pursuant to labour law,
- exclusion from ZMT internal competition for research funds and the Leibniz competition for one to five years (depending on the severity of the scientific misconduct),

- exclusion from commencing new supervisory relationships and/or handing over current supervisory relationships and supervisor functions to competent third parties for one to five years (depending on the severity of the scientific misconduct),
- request to withdraw (an) incriminated publication(s) in whole or in part and to correct incorrect data,
- depending on the severity of the case: disciplinary, labour, civil or criminal consequences.

(2) If, on the basis of the committee of inquiry's report, the ZMT management determines that the research misconduct may require that academic degrees be withdrawn or not awarded, the management shall submit the matter to the awarding university.

(3) The report submitted by the committee of inquiry and the decisions taken by the ZMT management shall be conclusive for the proceedings within ZMT.

(4) The main reasons that led to the discontinuation of the proceedings or to the decision of ZMT management on measures to be implemented shall be communicated to the person involved and to any complainants.

(5) The result shall be communicated to the science organisations concerned and to third parties, if any, having a justified interest in the decision after the investigations have been completed.

(6) ZMT management shall decide on the publication of the decisions and reports of the committee of inquiry on a case-by-case basis, taking into account the existence of a legitimate public interest.

The present ZMT declaration on safeguarding good scientific practice was approved for implementation by the scientific director of ZMT, Prof. Dr. Raimund Bleischwitz, in March 2022.



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Fahrenheitstr. 6
28359 Bremen
Germany
Phone: +49 421 23800 21
Fax: +49 421 23800 30
E-mail: contact@leibniz-zmt.de
www.leibniz-zmt.de