

Leibniz Code for Good Research Practice

Adopted by the General Assembly of the Leibniz Association on 18 November 2021.

This English translation of the Leibniz Code for Good Research Practice is provided for information purposes only. The German version shall prevail.

Preamble

The freedom of research guaranteed in the constitution is inextricably linked to a correspondingly high level of responsibility. Scientific integrity is an expression of researchers' awareness of this responsibility and forms the basis for trustworthy research. Scientific integrity and good research practice are genuine examples of scientific self-organisation and place an obligation on every researcher, and on all institutions where research is conducted. They are also an essential condition for both knowledge-oriented and public welfare-oriented science and research.

The Leibniz Association hereby commits itself to the following version of the Guidelines for Safeguarding Good Research Practice, the code of conduct produced by the German Research Foundation (DFG) in 2019, as a binding basis for all issues relating to good scientific practice at central association level and at the level of the Leibniz institutions. The individual Leibniz institutions are required to implement this commitment, where necessary with institution-specific adaptations and additions. This document is supplemented by the latest version of the *Guidelines for Good Scientific Practice in the Leibniz Association*.¹

1. Standards of good research practice

1.1 Commitment to the general principles

The Leibniz Association and its member institutions define rules of good research practice, communicate them within their institutions and commit to upholding them – with due regard for specific characteristics of an institution's structure and of the subject area in question.

¹ See *Guidelines for Good Scientific Practice in the Leibniz Association* at www.leibniz-gemeinschaft.de/fileadmin/user_upload/Bilder_und_Downloads/%C3%9Cber_uns/Integrit%C3%A4t/Guidelines_for_Good_Scientific_Practice_in_the_Leibniz_Association.pdf.

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

A fundamental principle of good scientific practice is working *lege artis*. This includes observing 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.

1.2 Professional ethics

Leibniz researchers are responsible for putting the fundamental values and norms of research into practice and advocating for them. In the Leibniz Association, education in the principles of good research begins at the earliest possible stage of research training. Researchers at all career levels regularly update their knowledge about the standards of good research practice and the current state of the art.²

Within the Leibniz Association, experienced and early career researchers support each other in a process of continuous mutual learning and ongoing training and maintain a regular dialogue on issues of good research practice.

1.3 Organisational responsibility of heads of research institutions

The directors of the Leibniz institutions create the basic framework for research. They are responsible for ensuring adherence to and the promotion of good practice, and for appropriate career support for all Leibniz researchers. The directors guarantee the necessary conditions to enable researchers in the Leibniz Association to comply with all legal and ethical standards. The basic framework includes clear written policies and procedures for staff selection, career development and equal opportunity.

The directors of the Leibniz institutions are responsible for ensuring that an appropriate organisational structure is in place at the institution. This ensures 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. Suitable supervisory structures and policies are established for early career

² See for example the Borstel Model at <https://repository.publisso.de/resource/fri:6399232>.

researchers. Honest career advice, training and advice opportunities are offered to researchers and research support staff.³

1.4 Responsibility of the heads of research work units

Heads of research work units within Leibniz institutions are responsible for the entire unit. 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 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 Leibniz institution in question to prevent the abuse of power and exploitation of dependent relationships. The Leibniz Association supports its member institutions in this regard through suitable association-wide agreements and services.⁴

The size and the organisation of the unit 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. Leibniz researchers and research support staff benefit from a balance of guidance and personal responsibility appropriate to their career level. They are given adequate status with corresponding rights of participation. Through gradually increasing autonomy, they are empowered to shape their career.

1.5 Dimensions of performance and assessment criteria

To assess the performance of researchers in the Leibniz Association, a multidimensional approach is called for: performance is assessed primarily on the basis of qualitative, discipline-specific measures. Quantitative indicators should be incorporated into the overall assessment with appropriate differentiation and reflection. Other aspects besides scientific achievements

³ See *Guidelines on Career Development in the Leibniz Association* at www.leibniz-gemeinschaft.de/en/about-us/whats-new/media-centre/publications/career-guidelines-of-the-leibniz-association.

⁴ See *Guiding Principles for our Actions in the Leibniz Association* at www.leibniz-gemeinschaft.de/en/about-us/leibniz-integrity/guiding-principles-for-our-actions and the Advice Centre for Conflict Guidance and Prevention at www.leibniz-gemeinschaft.de/en/about-us/leibniz-integrity/guide-for-dealing-with-conflict/advice-centre-for-conflict-guidance-and-prevention.

may be taken into consideration. The Principles of the Leibniz Evaluation Procedure also allow for this multidimensional approach.⁵

High-quality research is oriented towards criteria specific to individual disciplines. 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, public relations, and knowledge and technology transfer; contributions to the general good of society may also be recognised. Where provided voluntarily, individual circumstances stated in curricula vitae – as well as the categories specified in the German General Act on Equal Treatment (*Allgemeines Gleichbehandlungsgesetz*) – are taken into account when forming a judgement. 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.

1.6 Ombudspersons

Leibniz institutions appoint independent decentralised ombudspersons, in line with the *Guidelines for Good Scientific Practice in the Leibniz Association*, to whom Leibniz employees and, where relevant, third parties can turn with questions relating to good research practice and in cases of suspected misconduct. The Leibniz institutions take sufficient care to ensure that people are aware of who the ombudspersons at the institution are. There must be designated substitutes in case there is any concern about conflicts of interest or in case the ombudspersons are unable to carry out their duties. The Leibniz Association appoints a Leibniz Ombuds Committee with central Leibniz ombudspersons in line with the *Guidelines for Good Scientific Practice in the Leibniz Association*.

Suitable candidates for the role of ombudsperson are researchers who have the personal integrity, objective power of judgment and experience, e.g. in leadership positions, required to fulfil their duties. However, ombudspersons may not serve as members of a central governing body of their institution while serving in this role. An ombudsperson has a set term of office. Re-election is permissible. As neutral and qualified contact persons, Leibniz ombudspersons advise on issues relating to good research practice and in suspected cases of scientific misconduct and, where possible, contribute to solution-oriented conflict mediation. The Leibniz ombudspersons maintain confidentiality in dealing with queries and, if necessary, refer suspected cases of misconduct to the responsible body named in their internal regulations. Institute directors give the decentralised Leibniz ombudspersons the support and acceptance they need to carry out their duties. Institutions may initiate additional measures to help facilitate

⁵ See the *Leibniz Association Senate Evaluation Procedure Basic Principles* at www.leibniz-gemeinschaft.de/en/about-us/evaluation/the-evaluation-procedure.

the work of the ombudspersons. The relationship between decentralised ombuds structures and the central Leibniz Ombuds Committee is governed by the *Guidelines for Good Scientific Practice in the Leibniz Association*. In addition, all employees have the option of contacting the national German Research Ombudsman.

2. Research process

2.1 Cross-phase quality assurance

Researchers in the Leibniz Association 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.

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.

Leibniz researchers correct their data and findings if they become aware of inconsistencies or errors after they have been made publicly available. If the inconsistencies or errors constitute grounds for retracting a publication, researchers in the Leibniz Association will promptly request that the publisher, infrastructure provider, etc. corrects or retracts the publication and makes a corresponding announcement. The same applies if Leibniz 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. Depending on the particular subject area, it is an essential part of quality assurance 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).

2.2 Stakeholders, responsibilities and roles

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

The participants in a research project conducted by or involving the Leibniz Association 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.

2.3 Research design

When planning a project, researchers in the Leibniz Association take into account the current state of research and consider it comprehensively and critically. To identify relevant and suitable research questions, they familiarise themselves with existing research in the public domain. The member institutions of the Leibniz Association ensure that the necessary basic framework for this is in place.

Methods to avoid (unconscious) distortions in the interpretation of findings, e.g. the use of blinding in experiments, are used where possible. Leibniz 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.

2.4 Legal and ethical frameworks, usage rights

Leibniz 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.

Researchers in the Leibniz Association must stay abreast 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). The Leibniz Association and its institutions are responsible for ensuring that their members' and employees' actions comply with regulations and promote this through suitable organisational structures. They develop binding ethical guidance and policies and define procedures to assess ethical issues relating to research projects.⁶

⁶ See *Rules of Procedure of the Leibniz Commission for Research Ethics* at www.leibniz-gemeinschaft.de/en/about-us/leibniz-integrity/research-ethics.

Where possible and practicable, Leibniz researchers conclude documented agreements on usage rights 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 researchers will move to a different institution and continue using the data they generated for their own research purposes. In particular, the researchers who collected the data are entitled to continue using 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).

2.5 Methods and standards

To answer research questions, Leibniz 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.

The application of a method normally requires specific expertise that is ensured, where necessary, by suitable cooperative arrangements. 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.

2.6 Documentation

Leibniz researchers document all information relevant to the production of a research result as clearly as is required by and is 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 must be avoided. Where subject-specific recommendations exist for review and assessment, researchers in the Leibniz Association 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 and are to be protected as effectively as possible against manipulation.

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.

2.7 Providing public access to research results

As a rule, researchers in the Leibniz Association 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. 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, Leibniz 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 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.

In the interest of transparency and to enable research to be referred to and reused by others, whenever possible Leibniz 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 (Findable, Accessible, Interoperable, Reusable). Restrictions may apply, for example, to public availability in the case of patent applications. 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”, Leibniz 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.

2.8 Authorship

An author is an individual who has demonstrably made a material and independent 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. They share responsibility for the publication. Any divergence from this principle must be explicitly mentioned in the publication. Authors in the Leibniz Association 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.

The contribution justifying authorship must add to the research content of the publication. What constitutes a material, independent and demonstrable contribution must be evaluated on a

case-by-case basis and depends on the subject area in question. In general, it is deemed to exist 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.

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 in the Leibniz Association. A leadership or supervisory function does not itself constitute co-authorship.

Collaborating researchers in the Leibniz Association agree on authorship of a publication. The decision as to the order in which authors are named is made in good time, normally no later than when the manuscript is drafted, and in accordance with clear criteria that reflect the practices within the relevant subject area. 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.

2.9 Publication medium

Authors in the Leibniz Association select the publication medium carefully, with due regard for its quality and visibility in the relevant field of discourse. Leibniz 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.

In addition to publication in books and journals, authors may also consider academic repositories, data and software repositories, and blogs. New or unknown publication mediums are evaluated within the Leibniz Association to assess their seriousness.

A key criterion to selecting a publication medium is whether it has established guidelines on good research practice.

2.10 Confidentiality and neutrality of review processes and discussions

Fair behaviour is the basis for the legitimacy of any judgement-forming process. Leibniz 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.

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. Leibniz 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.

2.11 Archiving

Researchers in the Leibniz Association 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, researchers explain these reasons. The Leibniz institutions ensure that the necessary infrastructure is in place.

When scientific and academic findings are made publicly available, the research data (raw data) on which they are based are generally archived in an accessible and identifiable manner for a period of ten years at the institution where the data were produced or in cross-location repositories. This practice may differ depending on the subject area. In justified cases, shorter archiving periods may be appropriate. The reasons for this must be clearly stated. The archiving period begins on the date when the results are made publicly available.

3. Procedures in cases of non-compliance with good research practice

3.1 Complainants and respondents

The procedures for dealing with allegations of scientific misconduct are governed by the *Guidelines for Good Scientific Practice in the Leibniz Association* and the relevant guidelines of the Leibniz institution in question. The decentralised and central ombudspersons of the Leibniz Association examining allegations of misconduct take appropriate measures to protect both the complainant and the respondent at all stages of the process. 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.

Particularly in the case of early career researchers, disclosures 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 applicable rules on good research practice in relation to an observed set of circumstances, the complainant should consult the responsible ombudsperson at the Leibniz institution in question and, where relevant, the central Ombuds Committee of the Leibniz Association to clarify the suspicion. This does not affect the fundamental responsibility of the German Research Ombudsman.

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 himself or herself because, as an exception, the case concerns the identity of the complainant. The investigating body will promptly inform the complainant if his or her name is to be disclosed; the complainant can decide whether to withdraw the allegation due to the impending disclosure.

The confidentiality of a process is limited if the complainant makes his or her 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 his or her better knowledge.

3.2 Procedures in cases of alleged research misconduct

The Leibniz Association and Leibniz institutions establish procedures to handle allegations of research misconduct based on a sufficient legal foundation and on the applicable Leibniz Guidelines on Good Scientific Practice. The relevant regulations define the circumstances that constitute misconduct, procedural rules and the measures to take should an allegation be upheld. The regulations are always applied in addition to relevant higher-level laws.

Not every breach of good research practice constitutes misconduct. The nature and seriousness of potential breaches are set out in detail in the relevant guidelines and regulations of the Leibniz Association and the Leibniz institutions. These regulations clarify, in particular, questions regarding responsibility for each step of a procedure, the consideration of evidence, substitutes for ombudspersons and members of investigation committees, conflicts of interest and, where relevant, the procedural principles of the rule of law. They are to be arranged in such a way that both the respondent and the complainant are given the opportunity to be heard at each stage of the process, and that, until such time as it is demonstrated that misconduct has occurred, information relating to the individuals involved in the process and the interim findings of the investigation are treated in confidence. The Leibniz Association and its institutions ensure that the entire process is conducted as promptly as possible and implement the steps necessary to complete each stage of the procedure within an appropriate time frame. The regulations of the Leibniz institutions and the Leibniz Association should stipulate various measures to be applied according to the seriousness of the scientific misconduct ascertained. If, after it has been established that misconduct has occurred, the revocation of an academic degree is being considered, the responsible bodies are included in deliberations. Once inquiries are complete, the result is announced to affected research organisations and, if relevant, third parties with a justified interest in the decision.

All the principles set out in 3.1 and 3.2 must be taken fully into account when applying and updating the rules of procedure relating to the Leibniz Guidelines.