

Rules for Safeguarding Good Scientific Practice at Helmholtz Zentrum München

The primary objectives of Helmholtz Zentrum München are to investigate major common diseases in the context of environmental factors, lifestyle and individual genetic disposition, to develop new approaches to prevention, diagnosis and treatment, and to disseminate scientific knowledge in these areas. The following rules for all employees shall serve to achieve these goals.

Scientific work is based on the principles of scientific integrity, diligence, honesty and open discourse, which apply in all scientific disciplines and internationally. These principles are based on honesty toward oneself and others, and are an essential precondition that new findings – as provisionally secured basis for further investigations – can ever be gained. This honesty is at the same time an ethical standard and the basis of the rules of scientific professionalism that vary from discipline to discipline, i.e. for Good Scientific Practice. In turn, Good Scientific Practice is a prerequisite for effective, internationally recognized scientific work.

By complying with the following rules governing day-to-day scientific practice, all employees engaged in science and science management at Helmholtz Zentrum München shall commit themselves to fair practices within the entire scientific community.

1. General principles of Good Scientific Practice

The following rules are to be observed as general principles of scientific work at Helmholtz Zentrum München. HMGU employees shall

- work in accordance with the current state of knowledge (lege artis)
- comply exactly with discipline-specific rules for planning research work and for collecting, selecting and processing data
- document results
- critically question all results
- maintain strict honesty with regard to the contributions of employees, colleagues, partners, competitors and predecessors
- be open to criticism and doubt from colleagues and staff
- not obstruct the scientific work of others
- avoid and prevent scientific misconduct

In addition, as a matter of principle, employees of Helmholtz Zentrum München shall comply with national and international legal rules.

2. Organization of research units

The heads of organizational units in which scientific work is carried out shall ensure through appropriate organization of their area of responsibility that the tasks of managing, supervising, regulating conflicts and quality assurance are clearly assigned and guaranteed, and that they are actually implemented.

The management of an institute, research unit or research group demands presence and supervision. If necessary, management tasks must be delegated.

The leader of a research group or equivalent functional unit shall be responsible for ensuring that the group as a whole can fulfill its tasks, that the necessary cooperation and coordination to achieve this are being well implemented and that all members of the group are aware of their rights and obligations. Each scientist is responsible for his/her own behavior.

The interaction within a group must be such that each member is regularly informed of the results obtained through the division of labor and that these results are mutually discussed and can be integrated into a common level of knowledge. This is particularly important with regard to training doctoral students and young researchers to become independent.

The same rules shall apply for cooperation within institutes/research units as well as between different institutes/research units.

3. Education/training and supervision of young scientists

The training and support of young scientists shall be given special attention. In the research units of Helmholtz Zentrum München it must be ensured that for young scientists, in particular for undergraduate and graduate students as well as for younger postdocs, there is adequate supervision and that a primary contact person exists.

Young scientists shall be informed through regular training courses on the rules of Good Scientific Practice and the consequences of scientific misconduct.

The supervision of doctoral students is regulated in the Guidelines for the Education and Support of Graduate Students ([link](#)). Each graduate student must have a primary contact person in his/her respective institute of Helmholtz Zentrum München (advisor at HMGU). Each dissertation shall be supervised by a Thesis Committee (see Guidelines for the Education and Support of Graduate Students).

Besides a doctoral advisor at Helmholtz Zentrum München, each graduate student shall also have other contact persons, e.g. his/her advisor from the university, the institute director/research unit head as well as the ombudspersons for graduate students.

If conflicts cannot be resolved within this framework, the graduate student may contact the Graduate Student Office, Strategy, Programs, Resources (SPR), or to turn to one of the ombudspersons or the Commission for Issues of Good Scientific Practice (see Number 11).

4. Quality assurance in research and documentation

- The research must be carefully planned, conducted and documented to ensure integrity, authenticity and traceability.
- An essential hallmark of Good Scientific Practice is the willingness to interpret all results impartially and to question them consistently and critically. This includes, inter alia, discussing the results with colleagues.
- All results of studies shall be checked for their reproducibility prior to publication.
- All experiments/investigations as well as all primary data must be recorded so that the experiments and their results can be controlled according to the records at any time – and if identical test materials exist – also can be reproduced at any time.
- All employees and guests working in experimental research at Helmholtz Zentrum München shall be provided a uniform laboratory notebook (bound book with logo, table of contents, consecutive page numbers) by their group leaders, in which all experimental steps/considerations/observations as well as data and results are recorded. Loose data sheets shall be pasted into the notebook or archived elsewhere. References shall be made in the laboratory notebooks about stored data/evaluations and data sheets that are archived elsewhere. A brief summary of the results and the plans agreed upon in meetings shall ensure the traceability of an investigation.

The same requirements shall apply to electronic laboratory notebooks. These must meet the requirements of a secure long-term archiving with respect to completeness, integrity and authenticity of the data as well as to traceability and reproducibility.

- All employees and guests working in the data protected scientific field at Helmholtz Zentrum München shall be provided uniform work guidelines (Standard Operating Procedures, SOPs) by their group leaders for processing, documentation and archiving of primary data, processed data, programs, software applications and results of evaluations. The data shall be archived according to HMGU specifications. All procedures and SOPs shall be constantly updated and traceably stored on central servers. For studies with person-related data, the integrity, authenticity and traceability of databases and biological samples must be preserved for decades.
- Every scientist is responsible for the proper keeping of the laboratory notebooks and/or the documentation of the work (in German or English) as well as the archiving of digital data. The records shall be made available to all members of the research group unless this conflicts with obligations of confidentiality. In case of doubt, the institute director or research unit head shall decide.

In addition to person-related documentation, it is also possible to implement a plan- or project-related documentation (including the respective date and names). Respective references shall ensure traceability. To assure quality, the group leaders shall make random checks of the lab notebooks to ascertain if they have been kept properly.

- The collection, processing and analysis of digital data in experimental scientific work shall be documented by creating a central table of contents in a lab notebook (name of the data medium, file name, creation date, cross-references, etc.). Digital data shall be backed up and stored at regular intervals, if possible in non-rewritable form.
- Taking the possibilities of the individual disciplines into account, all important steps of experiments/investigations as well as all primary data shall be recorded on non-manipulable data carriers (such as bound log books, revision-proof software) and archived for ten years.
- The basic documentation of a publication, diploma thesis, dissertation or post-doctoral thesis (*Habilitation*) (complete data, manuscript, correspondence) shall be archived in the institute of the corresponding author at Helmholtz Zentrum München and shall remain there for ten years.
- Within the context of developments that may lead to inventions and within the scope of clinical trials and cooperative projects (e.g. governed by contracts), different recording rules may be applicable or required in the particular case. Unless special provisions for a longer required storage period exist, the data/data carriers shall be stored for ten years; they are the property of Helmholtz Zentrum München. Copies for a use other than internal purposes may only be made with the consent of the institute director/research unit head.
- All data carriers shall remain in Helmholtz Zentrum München even after termination of the employment relationship. If an employee wishes to make copies or take them with him/her, he/she must first obtain the consent of the institute director/research unit head.

5. Publication of scientific results and performance and evaluation criteria

Each scientific and technical employee of Helmholtz Zentrum München is entitled and obliged to publish the results of his/her work in accordance with the publication policy of HMGU ([link](#)).

For the evaluation of scientific productivity in Helmholtz Zentrum München, first and foremost the contents of the publications and other quantitative and qualitative aspects shall be included, such as internal and external collaborations, the acquisition of funding, successful technology transfer, expert reviewer activities and the training of the next generation of scientists. Originality and quality as an evaluation standard always take precedence over quantity.

6. Activity as peer reviewer

The assessment of other scientists in the same discipline ('peer review') with respect to research projects or publications can only fulfill its intended purpose if the members of the scientific community are willing to conduct these evaluations fairly and impartially on the basis of relevant expertise and knowledge. Information and ideas obtained when conducting this review activity must be treated confidentially and may never be used to gain a competitive advantage.

Employees of Helmholtz Zentrum München must strictly comply with the requirements made by research institutions and publishers of scientific journals with regard to confidentiality and the disclosure of conflicts of interest or biases.

Institute directors/research unit heads shall promote the willingness and ability of experienced scientific staff members to carry out peer review activity. In the event that the review activity is delegated, the respective employee must be mentioned by name.

7. Activity as an expert

The writing of scientific expert reports, which are commissioned by public (or other) institutions, is an important instrument for placing the scientific competence of Helmholtz Zentrum München in the service of the public. This requires a particularly high degree of personal and scientific integrity and neutrality from the expert reviewer. The expert report shall reflect the current status of scientific knowledge; the sources used shall be carefully documented. So-called "courtesy reports" are unacceptable; they damage the reputation of Helmholtz Zentrum München and science in public opinion.

8. Conflicts of interest between science and industry

In collaborations with companies, areas of conflict exist which are due to the collision of scientific interests with economic, financial or political interests. For instance, there may be conflicts about the practice of patent applications, the implementation of commissioned research projects and the publication of results or the confidentiality of unpublished data. Ancillary activities as expert reviewer or consultant may also lead to conflicts, particularly if a particular outcome is desired by the client, but on the basis of the existing data cannot be objectively achieved. Membership in supervisory boards or stakes in companies that are active in the researcher's own field may also lead to significant conflicts of interest. Relationships with industry must therefore be designed and practiced as equal partnerships. Economic aspects may not take priority over academic freedom.

To prevent conflicts of interest, all persons involved in a research project must disclose their financial and other interests and commitments to their supervisors and/or responsible authorities, insofar as they could come into conflict with their research activity.

Individual researchers can be publicly discredited or discriminated against because of the undesirability of their research results. The integrity of the science, the research center, or individual person can be the focus of the allegations. Helmholtz Zentrum München is committed to protecting the personal rights of employees. In such cases, the "Commission on Issues of Good Scientific Practice" (see Number 11) shall be convened, which shall investigate these cases and advise the Board of Directors.

9. Scientific misconduct

Scientific misconduct occurs when serious deviations are made from the generally accepted practice of scientific work, in particular when consciously or with gross negligence false information is given, intellectual property of others is violated or their research activities are compromised.

In particular the following is considered misconduct:

- Falsification of scientific content e.g. by inventing, faking or falsifying results
- False information in grant applications or reports on the use of funds, publications, applications, etc.
- Violation of intellectual property, e.g. through
 - unauthorized utilization under the pretense of authorship (plagiarism) and the pretense or unfounded assumption of scientific authorship or co-authorship
 - exploitation of unpublished scientific ideas or research approaches of other people (idea theft)
 - publishing or making accessible content without the consent of the entitled person
- Willful damage, destruction or manipulation of work equipment or work results
- Making wrongful allegations of purported misconduct of others
- The removal of original data, insofar as it violates the legal provisions or discipline-related accepted principles of scientific work
- Double or multiple publications, redundant information

Partial responsibility for the misconduct of others can inter alia arise from:

- Participation in the misconduct of others
- Co-authorship of falsified publications
- Gross negligence of supervisory responsibilities

10. Ombudspersons and the "Commission on Issues of Good Scientific Practice"

Helmholtz Zentrum München appoints ombudspersons, who are available to advise and support all HMGU scientists on issues of Good Scientific Practice and its violation. If possible, they shall mediate disputes before the invocation of institutional control bodies.

The members of the Management Committee (MC) have the right to nominate two ombudspersons. Following the recommendation of the MC, the ombudspersons are appointed by the Board of Directors for a term of three years. They are independent, experienced and

respected scientists with knowledge of the internal conditions at Helmholtz Zentrum München and are directly approachable for all employees.

For issues of scientific misconduct, there is a "Commission on Issues of Good Scientific Practice" (= Commission) in Helmholtz Zentrum München.

Along with the ombudspersons (here they have an advisory role) the Commission consists of one leading HMGU scientist (Chair), who is proposed by the MC, the chairman of the Assembly of Speakers or his/her deputy, a representative of the Board of Directors and the Compliance Officer. The Commission reports to the MC about its activities.

11. Procedures for dealing with issues of research misconduct

Information about scientific misconduct can be given to the ombudspersons or to a member of the Commission on Issues of Good Scientific Practice.

If the ombudspersons receive information about scientific misconduct, they shall ask the relevant individual suspected of misconduct for a statement. The name of the whistleblower shall not be disclosed without his/her consent.

- The ombudspersons shall try to resolve the violations against Good Scientific Practice in direct contact with the individual suspected of misconduct. They shall inform the whistleblower about the status of the procedure. Upon request, the ombudspersons shall report to the members of the Commission in writing about the cases in which they have become active.
- If the efforts of the ombudspersons remain unsuccessful or if there is suspicion of serious misconduct, they shall refer the case to the Commission. In doing so, they shall notify in writing the Chairman of the Commission and the Scientific Director. The Chairman shall call a meeting of the Commission.
- Furthermore, a meeting of the Commission shall be directly called if a member of the Commission receives a notice of scientific misconduct.
- The Commission may, with the consent of the whistleblower, entrust the ombudspersons with the clarification of the suspicion of scientific misconduct and the restoration of Good Scientific Practice.
- Otherwise, the Commission shall request an oral and/or a written statement within two weeks from the individual suspected of misconduct, in reply to the stated allegations and evidence. At this stage, the name of the whistleblower shall not be revealed without his/her consent to the individual suspected of misconduct.
- The Commission shall prepare a report and inform the Scientific Director, the individual suspected of misconduct as well as the whistleblower.
- The Board of Directors shall decide within two weeks whether to terminate the proceedings, whether to refer the issue back to the Commission for mediation or

whether to initiate further consequences while preserving all statutory rights of the Works Council.

- Conflict of interest of a person involved in investigations must be arguable both by him- or herself and by the respondent.
- During the ongoing proceedings all persons involved are required to maintain strict confidentiality regarding all relevant information about the case.

12. Possible consequences of scientific misconduct

The consequences for scientific misconduct depend on the circumstances of the individual case and depend on the severity of the proven misconduct. Depending on the situation, the following measures with relevant proceedings can be initiated or caused:

- Correction or withdrawal of scientific publications
- Consequences under employment law (e.g. a warning notice or dismissal)
- Academic consequences (e.g. in the form of revocation of academic degrees)
- Civil law consequences (e.g. issuing a ban from the premises or claims for damages)
- Criminal prosecution

13. Protection of whistleblowers

Scientific staff members who call attention to scientific misconduct must not suffer any disadvantages from this for their own scientific and career advancement. The report of scientific misconduct must be made “in good faith”. The ombudspersons and the Commission that check a suspected case must provide protection in an appropriate manner. The whistleblower who expresses a justified suspicion is not the one who harms the colleague or the research institution but rather the scientist who commits scientific misconduct.

14. Amendments

Amendments to the Rules for Safeguarding Good Scientific Practice at Helmholtz Zentrum München shall require the approval of the MC. The employees of Helmholtz Zentrum München shall be informed of the amendments.

These rules are based on the Memorandum for Safeguarding Good Scientific Practice of the German Research Foundation (1998) and its amendments (2013).

Please note: Terms used to refer to persons and positions are understood as applying to both men and women.

The above document is an English translation of the original German *Regeln zur Sicherung guter wissenschaftlicher Praxis*. In case of discrepancy, the German version shall prevail.