Resolution on

safeguarding “Good Scientific Practice” at the

Leibniz-Institute of Freshwater Ecology and Inland Fisheries,

within the Forschungsverbund Berlin e.V.

The Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB), within the Forschungsverbund Berlin e.V., determines the following binding standards, based on the principles of the "Rules of Good Scientific Practice" of the Deutsche Forschungsgemeinschaft (DFG) from 1998, including changes from 2013 as well as the "Guidelines in Safeguarding Good Scientific Practice and on Dealing with Allegations of Scientific Misconduct within the Leibniz Association" from 29 November 2018. All personal references in the text like "he", "his" etc. apply equally to males and females.

I. Announcing the "Rules of Good Scientific Practice"

The "Rules of Good Scientific Practice" are part of the work obligations of scientists defined in the employment contract. All scientific employees – especially new employees – have to be familiar with these rules, which are available on the webpage and the intranet of the IGB.

The "Rules of Good Scientific Practice" are important elements in the education of young scientists at the IGB.

Questions arising from the "Rules of Good Scientific Practice" will be discussed in the scientific board, department and/or project meetings.

II. General principles

The recommendations of the DFG on safeguarding good scientific practice refer to principles, which – derived from the daily work and the scientific self-perception – are a binding basis of the work at the IGB.

- Good scientific practice means working *lege artis* (i.e. respecting current professional standards). This requires knowledge of up-to date literature and use of the most adequate scientific methods and a very carefully assurance of quality.
- Working steps, used methods and results need to be fully documented and the documentation and research data must be stored safely. This documentation ensures the verification and reproducibility of published results and third parties may be permitted to access the data.
- The core element of good scientific practice is the critical discussion of the aimed results and the systematic scientific questioning of conclusions. Research results should be possibly independently verified, especially – but not only – if experiments and studies show the expected result.
- Each data set will be interpreted according to plausibility with respect to the state-of-the-art knowledge. Necessary scientific discussions on competing positions should be conducted with integrity and probity towards colleagues, employees, competitors, and predecessors.

As scientific misconduct cannot be excluded in principle, it is warranted also at the IGB to introduce suitable measures ensuring good scientific practice in the following areas:

1. Ensuring the leadership responsibilities, the supervision, and cooperation within working groups
2. Ensuring high-level and responsible supervision of young scientists
3. Assured data documentation and long-term storage for review
4. Responsibility for the content of scientific publications by everybody involved
5. Priority of authenticity and quality over quantitative criteria for evaluating research output

The scientific director and the board of directors are obliged to enforce appropriate measures to reach these aims.

III. Ombudsperson

The scientific employees of the IGB elect an ombudsperson and a substitute. This ombudsperson must not be a member of IGB's management board. All IGB members can approach them with questions regarding good scientific practice and in case of potential scientific misconduct. The names of the two ombudspersons will be published on the IGB webpage and other internal documents. Due to the high importance of this function for the assurance of scientific quality and research ethics, the responsible persons keep their independence by being suspended from their information obligation and their dependency on directives. If necessary, IGB employees can also approach external ombudspersons (e.g. at DFG or Leibniz Association).

The ombudspersons' task is to receive possible accusations of scientific misconduct *in confidence*, to mediate between involved persons and to inform the responsible person in case of proven misconduct. Responsible persons are scientific superiors, the director, or, in case of a project funded by DFG, the DFG ombudsperson (as there is a penalty catalogue). The ombudsperson is no contact person or mediator for other conflicts within the institute.

According to DFG guidelines, whistle-blowers (persons reporting justified suspicions of scientific misconduct) must not have disadvantages for their own scientific and professional career. However, careless reporting or even evoking of wrong accusations of scientific misconduct can constitute scientific misconduct itself. The ombudsperson decides individually if he investigates anonymous charges.

In cases of conflicts and infringements against the good scientific practice the ombudsperson suggests solutions, after consulting with all persons involved. The director or an external ombudsperson can be consulted depending on the severity of the conflict or the infringement. Proven infringements on good scientific practice may result in disciplinary actions and other penalties.

Deselection of the ombudspersons is foreseen in the event that it no longer appears possible for them to fulfil their duties reliably in the long term, or if there is no longer any trust that they will fulfil their duties properly. The regulation must provide for the ombudsperson to be deselected only if at least two-thirds of the scientists in the member institution are in favour of the deselection. Before a deselection decision is taken, the ombudsperson must be given a hearing.

IV. Rules of good scientific practice

1. Responsibility and cooperation

The design of the cooperation and clearly structured responsibilities within working groups and all other scientific areas at the IGB are essential for the protection of good scientific practice.

The scientific director determines the overall organisation of responsibilities in the entire institute. He creates organisational units of suitable sizes and defines their individual tasks. He assures that delegated tasks of leading, controlling, conflict management and quality control are clearly defined as well as assigned and actually safeguarded.

2. Education and supervision of young researchers

The IGB is obliged to educate and supervise young scientists (bachelor students, master students, diploma students, doctoral candidates, postdoctoral researchers) with high quality and much responsibility.

In order to achieve this, the education of the young scientists at the IGB adheres to the following principles and includes the following components:

- Every young scientist is supervised by an IGB-scientist. This supervisor provides guidance on

how to work scientifically, and is available for frequent professional advice and support. Specifics for the supervision of doctoral candidates are defined in the IGB rules for doctoral research.

- Acquainting young scientist with the principles and professional requirements of good scientific practice is an integral part of the education and is the duty of the main advisor.
- For advancing interdisciplinary knowledge there are regular research colloquia at the IGB. Additionally, doctoral candidates shall participate in the doctoral training program. All young researchers shall be enabled to participate in such events to foster their scientific development.
- Furthermore, the IGB promotes the participation of young scientists at scientific conferences, limited stays at other national and international research institutes and the attendance of courses being organized in cooperation with partner universities.

With these and other measures, the IGB supports the career perspectives of young scientists.

3. Storage of primary data

An essential part of the required documentation of working steps and results is to record primary data in order to be able to understand and reproduce the research results.

- All scientific studies of the working groups must be fully documented according to the discipline specific methods. The protocols are official documents and have to be kept for at least ten years by the working group leader, his successor or at a location determined by the scientific board of directors or the group leader.
- Primary data used for publications must be stored on a durable and secured medium for at least ten years.
- The documentation must be well structured so that an authorized person can later access data and protocols without further consultation with the producer.
- In case the group member responsible for data production changes location, the original documentation stays at the location of production; if necessary, copies might be made or access rights might be granted. Further details must be individually determined.
- Apart from that, discipline-specific legal standards for storage of original data and media are applicable (e.g. genetic engineering law, animal protection law, access-benefit-sharing etc.).

4. Use of research results

Scientists are expected to make their research results available to the scientific community and the society in the best possible and reasonable manner.

- All IGB scientists shall not only publish in scientific journals, but also transfer their knowledge to society, e.g. by consultation and information of societal stakeholders, policymakers, economy and the media on the basis of their research.
- As representatives of the IGB, scientists offer sound background information, deliver independent evaluations and show options for action. It is mandatory to keep an objective, scientific point of view and communicate evaluations only on the basis of scientific findings. Personal opinions need to be indicated clearly and shall not be, not even implicitly, communicated as official opinion of the IGB.
- Special attention has to be paid when choosing projects with contracts between the IGB and companies or authorities which might limit the scientific freedom and the use of results. In these cases the head of department and the director have to agree on the project before the contract is signed.
- Achieved scientific findings shall not only be distributed into the scientific community via relevant publications and conferences, but shall also be included in teaching and education of young scientists.

5. Scientific publications / agreement of authorship/ data property

5.1 Only persons who made an essential contribution to the scientific publication shall be defined as authors. This is usually the case if authors have significantly contributed *to at least two* of the following issues:

(1) Conception of study
(2) Practical work for data production
(3) Data analysis
(4) Interpretation of data
(5) Writing the manuscript

Other contributions do not warrant authorship. These include:

- Merely technical support of data production
- Instruction of employees on standard methods
- Subletting of equipment and instruments
- Proofreading of the manuscript without substantial content work
- Only organizational responsibility for third-party funding applications
- Leading the institution or organisational unit in which the publication has been produced

If an IGB employee claims authorship for himself, it should be discussed with a high amount of honesty and scientific-ethic responsibility. Honorary authorship is inadmissible.

5.2 Authors of scientific publications are always jointly responsible for their content. The release of a manuscript must be approved by all authors. By this consent, the authors take responsibility that the publication complies with the state-of-the-art scientific standards. If not all authors can vouch for the entire content it is recommended to mark individual contributions.

5.3 The adding of a scientist to the list of authors without his knowledge and explicit approval violates the good scientific practice, regardless of a subsequent approval.

5.4 As national and international research networks are becoming more and more important and the number of people involved in the production of results is therefore rising, it is recommended to agree on specific details of authorship and data use before the start of any project, in order to avoid conflicts and be able to mediate in case of disagreement.

5.5 It violates the rules of good scientific practice to end a co-operation without sufficient reason or to refuse or slow down the publication of results as a co-author, when approval is urgently needed. Refusing publications has to be based on critique of data, methods or results. In case it is suspected that the approval is being refused to obstruct, the co-authors can approach the ombudsperson to ask for mediation. If the ombudsperson determines that the publication is being hindered to obstruct, he can issue a statement permitting publication. This permit may contain certain conditions.

5.6 The order of authors is being dealt with differently among and within disciplines. The IGB suggests using the bracket order, mainly used for technical and life sciences, or an order with decreasing importance of contribution to the publication. First author is definitely the main author, the one with the greatest individual contribution to the content and who produced the publication. Many journals offer the possibility to list two equal main authors. This possibility may be used. The last one in the bracket order is the one giving the idea or the supervisor of the work, e.g. the project leader. Between these two all further contributors are listed, either organized by decreasing importance or alphabetical order.

5.7 For a publication the listed address of an author is the institution where the main work for a publication was done. In case of change of employment or in other exceptional cases (e.g. the author is employed at two institutions) it is possible to list more than one. But if just minor work

(e.g. minor revisions for a reviewed manuscript) had been conducted at an institution, it is only listed as recent address or as mailing address. Such a publication cannot be included in the work record of this institution, as no relevant work or resources were used. Analogous to the standards for authorship, at least two of the named criteria of 5.1 should be realized at the institute.

5.8 Results and ideas from others should be marked completely and correctly by quoting clearly. Already published own results and considerations should be marked clearly and only be repeated as much as it is necessary for understanding. Direct quote in quotation marks as well as logical quotations of others must be labelled with references. These must be clear, consistent and logical. Quotation style and standards are subject to the discipline and the publication medium.

5.9 All data produced at the IGB are property of the IGB. The supervisor (working group leader or project leader) shall have complete access at any time. Usage of produced data by former employees has to be regulated individually. Respective agreements need to be in written form (see also 5.10).

5.10 Thesis research shall always be designed for possible publication. The supervisor decides how to publish results of bachelor and master thesis, preferably in agreement with the student. In case of doctoral thesis, publications are discussed between the doctoral candidate and the scientific advisors and developed together. In principle, the doctoral student is granted the possibility for first authorship. In case there is no manuscript to publish the data 12 months after the supervisory relationship ended, the supervisor can take initiative to publish the study, respecting the authorship rights. Deviations from this rule need to be in writing and must be approved by all persons concerned.

6. Performance and evaluation criteria

When evaluating scientific performance at the IGB in the context of hiring, exams or for other purposes, originality and quality are always ranked higher than quantitative criteria. This is also applicable for performance based resource allocation. Particular consequences are:

- Also in disciplines where intense competition forces a quick publication of results, the quality of the work and the publication must have top priority. Results must be, wherever possible controlled and replicated, before submitting them for publication.
- The consultation of bibliometric indictors, such as “impact factors”, does not substitute the necessary evaluation of content of publications and other scientific achievements. The assessment of the originality of the problem and its solution as well as the contribution to the advancement of knowledge is crucial. The individual contribution to the research concept, data production, analysis and interpretation and composition of the manuscript is also important (see 5.1).
- Important achievements are not only the scientific publication of results, but also their communication to society and their transfer into education (see 4.). Any activity improving working conditions at the IGB is also considered an important achievement.

V. Scientific misconduct

1) Scientific misconduct includes misrepresentation and misstatements in a scientifically relevant context, in particular:

a. inventing data,
b. falsifying data (for instance, by selecting desirable results or evaluation methods or dismissing

unwanted results or evaluation methods, without disclosing this decision, or by manipulating diagrams or illustrations),

c. including incorrect information in publication lists or funding applications (including false information about the publication medium or about forthcoming publications),
d. undisclosed duplication of publication of data or texts.

2) Scientific misconduct includes the infringement of intellectual property rights, in particular:

a. in relation to works of others that are protected by copyright, or to significant scientific findings, hypotheses, theories or research approaches of others:
   - the unauthorised appropriation or other use of passages without proper acknowledgement (plagiarism),
   - exploitation of research approaches or ideas without approval, especially as a reviewer,
   - assuming or unjustifiably claiming scientific authorship or co-authorship, or refusing the same,
   - falsifying content or
   - unauthorised publication or unauthorised sharing with third parties while the work, findings, hypothesis, theory or research approach has not yet been officially published;
b. using another person's name as (co-)author without their permission.

3) Scientific misconduct includes sabotaging the research activities of others – including damaging, destroying or manipulating experiment installations, equipment, documents, hardware, software, chemicals or other things that the other person needs to conduct an experiment.

4) Deleting research data is a form of scientific misconduct insofar as it violates legal requirements or established principles of scientific practice, as is the unlawful failure to delete data (especially personal data).

5) The neglect of scientific leadership responsibility or supervision duties by a leader of a work group or institute in a way that promotes violations of good scientific practice is a form of scientific misconduct.

6) Accepting to be a co-author while risking involvement in a falsified publication is a form of scientific misconduct.

7) The deliberate pretence of having carried out or made use of quality assurance measures and methods (e.g. peer review) is a form of scientific misconduct, e.g. by publishing in so-called predatory journals (see "Handreichung Predatory Publishing" of the Leibniz Association, October 2018).

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