

## Appendix 1 of the PhD Regulations for the Degree Program Experimental Medicine

# Principles of the Faculty of Medicine of the Eberhard Karls Universität Tübingen for the Safeguarding of Good Scientific Practice

This text is based on the recommendations of the *Deutsche Forschungsgemeinschaft* (DFG) and the *Hochschulrektorenkonferenz* (German Conference of University Presidents) HRK.

### 1. The principles of good scientific practice

Scientists and scholars (including PhD students) are obligated to observe the principles of good scientific practice and to set a good example with their own work. These principles shall be made known to students and young scientists. The responsibility for doing this lies in particular with university professors. According to the recommendations of the DFG (Commission on Professional Self Regulation in Science, January 1998) the following general principles of good scientific practice apply:

- observation of the fundamentals of scientific work;
- documentation of results, including the securing and storing of primary data;
- critical questioning of one's own findings and the conclusions drawn from those findings;
- honesty with regard to the contributions of third parties to one's own work;
- responsible mentorship of young scientists and scholars
- unrestricted coordination of the contributions of all members of a workgroup by the leader;
- publication of results and disclosure of all the conditions necessary for their execution.

### 2. Violations of the principles of good scientific practice

The following actions are considered violations of the rules of good scientific practice and, under certain conditions, constitute scientific fraud or incitement to scientific fraud:

- fabrication, falsification or withholding of data;
- plagiarism;
- authorship in publications when gained under false pretences;
- failure to acknowledge justified authorships;
- lacking or insufficient scientific discussion in the work group;
- inadequate supervision of PhD students;
- loss or inadequate documentation of original data;
- failure to instruct participants in research on the principles of good scientific practice;
- defamation with regard to good scientific practice;
- betrayal of confidence as a reviewer or superior.

### **3. Responsibility to implement the rules of good scientific practice**

Every scientist is responsible for his own behavior in the context of scientific work. Anyone who leads a work group is responsible for ensuring that the conditions for good scientific practice are provided within his own work group and that the rules are observed.

This presupposes active communication within the work group and in particular the disclosure of scientific data as a part of a constant internal dialog within the group.

For this reason it is the task of the leaders of scientific work groups to ensure that all the members of a group are aware of their rights and obligations in the context of good scientific practice. They must provide the environment needed to conform to these rules. In particular, they must make a point of ensuring that the hypotheses, theories and above all scientific data developed and acquired by the individual members of group are openly discussed and subjected to critical examination. The leadership of a scientific work group demands presence and awareness. Where these conditions are not met adequately, leadership tasks must be delegated.

### **4. Supervision of PhD students**

Together with the PhD student, the supervisor shall work out a written outline of the goals and execution of the planned project before work is actually taken up. The outline includes the written confirmation that the PhD student was made aware of the principles of good scientific practice by his supervisor. If in the course of doctoral work a conflict between student and supervisor should arise, the Dean or the Chairperson of the PhD Board may be consulted as mediators.

### **5. Documentation requirements**

Primary data forming the basis of publications must be kept available on durable media in the work group in which they were gathered for a period of ten years. The individual scientist is responsible for ensuring this and for demonstrating proper recording of data. All steps of each experiment and each numerical calculation must be recorded in such detail that another scientist would be able to reproduce the experiment or calculations. The reproducibility of a scientific experiment is its primary test. Laboratory notebooks must have a sewn binding and consecutively numbered pages. Pages may not be removed from the notebook. Laboratory notebooks must be securely stored. The disappearance of original records from a laboratory is a violation of the basic principles of careful scientific practice and justifies a prima facie assumption of dishonesty or gross negligence.

If a scientist moves to a different institution, the original records remain as a matter of principle in the laboratory of origin. In special cases, arrangements can be made between the "old" and "new" institutions at which the scientist works to allow for other provisions for the storage of the original data. Agreements about the storage of laboratory records should be recorded on the original data carriers and signed by the persons involved.

### **6. Publication, authorship**

Authors of scientific publications bear joint responsibility for the content of those publications. A so-called "honorary authorship" is not acceptable.

In publications, particularly those reporting new scientific findings, the results must be described completely and understandably. Correct and complete references must be given to previous work by the authors and by others.

Previously published findings must be clearly marked as such and repeated only where they are necessary for an understanding of the context.

Only those persons who have made significant contributions to the conception of studies or experiments, to the generation, analysis and interpretation of data and to the preparation of

the manuscript and who have consented to its publication shall be named as authors of an original scientific publication, thereby assuming responsibility for it. Where appropriate, the extent of the contribution of PhD students to a publication may be reflected in their first authorship.